Recommended Spare Part List

RNP DCU Plant Project (WP1)

Supplier Name:	PHB Weserhütte
SDR Code(s):	~~P03-A06-DO1~~ D01-A06, P03-A06
Equipment / Tag Number(s):	ALL
Document Title:	Recommended Spare Part List
Supplier Document No:	000951-00-0CG-LT-0003

Supplier's Revision Record

Rev	Date	Issue State	By	Checked	Approved
7	24/10/2019	Cover update	SDV	Margarita P	JL Moral
6	13/07/2019	As per comments	Javier A	Margarita P	JL Moral
5	28/06/2019	As per comments	Javier A	Margarita P	JL Moral
4	03/06/2019	As per comments	Javier A	Margarita P	JL Moral
3	29/03/2018	General updates	Javier A	Margarita P	JL Moral
2	12/12/2018	General updates	Javier A	Margarita P	Michel F
1	30/10/2018	General updates	Javier A	Margarita P	Michel F
0	10/07/2018	First submission	Javier A	Margarita P	Michel F

Project Document Number

Project Number		Purchase Order Number			Seq. No.	Project Rev.
172784	-	0300-001	-	SD -	000006	6

SUPPLIER DOCUMENT REVIEW STATUS

Purchaser's review of Supplier's documents does not relieve Supplier of the responsibility for correctness under the Purchase Order. Permission to proceed does not constitute acceptance of design, detail and calculations, test methods or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with the Purchase Order or any other obligations, nor detract from any of the Purchaser's rights.

Purchaser's Review Stamp

CB&I
RNP DCU Plant Project No. 172784

Engineering Review Status	By:
Code 1 - No Comments	CHARLOTTE.PARRA Date: 10/31/2019

These comments do not relieve the supplier of his responsibility to meet the requirements of the PO.

Should the Supplier consider that any comments made by the Purchaser change the Scope of Supply, the Supplier shall advise the price and delivery implications of such changes within five working days of receipt. The Supplier must not incorporate such changes without prior approval of the Purchaser of the revised price and/or delivery period. RETROSPECTIVE CLAIMS WILL NOT BE CONSIDERED.

The document consists of this front sheet
plus 63 pages.

SPARE PARTS & INTERCHANGEABILITY RECORD

Instructions for Completion

1 INTRODUCTION

The SPIR workbook file is a formatted spreadsheet file made in Microsoft's Excel and contains four different worksheets: AUTHORISATION, EQUIPMENT LIST, SPIR and SUMMARY.

1,1 AUTHORISATION - This single sheet shows the total cost resulting from the recommendation or authorisation by the parties involved. By signing and dating a hard copy of this sheet (after completing the workbook), SELLER, PURCHASER and OWNER each successively endorse their input.

1,2 EQUIPMENT LIST - All tagged parent equipment is entered in this worksheet.

1,3 SPIR 1A-1L (and SPIR 2A-2L, etc) - This part of the workbook contains the actual Spare Parts & Interchangeability Record. The parts data are entered in this list.

1,4 SUMMARY - This sheet summarises the total quantities of installed parts from the preceding SPIR sheets allowing SELLER, PURCHASER and OWNER to enter their recommended/authorised quantities of Two Year Operating Spare Parts.

1,5 DEFINITION OF SPARE PART CATEGORIES:

TWO YEAR OPERATING SPARE PARTS	Are parts required to maintain equipment in satisfactory working order during the first two (2) years of operation.

2 INSTRUCTIONS FOR COMPLETION

Just the yellow-shaded cells are intended for SELLER's input. Data only have to be entered once, Excel copies the data to other sheets where neccesary. Start with the Authorisation sheet, then the Equipment List, the SPIR sheet(s) and the Summary sheet as last.

2,1 AUTHORISATION - complete by inputting:
SELLER's data: reference, name & address etc., currency, date of submission of the recommendation and name of authorized contact person.

2,2 EQUIPMENT LIST - complete by inputting:
Equipment data: QTY, tag no., model and serial number.

2,3 SPIR sheets - complete by inputting:
Parts data: the number of installed Parts per single unit of Equipment, unit of measure, description, drawing number, part number and (sub)manufacturer's part number.

!! Interchangeability may only be assessed if a part figures just once on the list. All parts are input in SPIR sheet 1A-1L. Excel copies the parts data to the other sheets SPIR 2A-2L, SPIR 3A-3L etc. in case the number of equipment items exceeds 12.

!! For bought-out items, the original component manufacturer's unique part number must be input as well. This identification is an indispensable tool for OWNER's management of spare parts.

!! In case of packaged (skid-mounted) equipment, containing large sub-assemblies from sub-suppliers, it is advisable to make separate SPIRs for each sub-assembly (or have the SPIRs completed by the sub-suppliers themselves)

SPARE PARTS & INTERCHANGEABILITY RECORD

2,4 SUMMARY sheet - complete by inputting:
SELLER:
- Recommended number of Two Year Operating Spare Parts as well as unit price and delivery time.

PURCHASER:
- Recommendation for number of Two Year Operating Spare Parts.

OWNER:
- Required number of Two Year Operating Spare Parts.

!! Pricing should include all costs for labeling (identification of the spare parts), packing, marking, and delivery on the basis of FCA Supplier's works including shipping documents.

!! Packing must be suitable for two years storage as a minimum. Any special storage requirements are also to be included in SELLER's offer.

3 AFTER COMPLETION OF THE SPIR FORM

3,1 The Authorisation sheet will now show the total cost resulting from SELLER's recommendation. Return the completed file by E-mail to the spare parts coordinator.

3,2 The relevant assembly or cross sectional drawings referenced in the SPIR as well as any related standard parts lists, are to be submitted with the SPIR.

3,3 The recommendation and selection of spare parts is to be the balanced result of input by SELLER, PURCHASER and OWNER. The final version of this SPIR will contain all spare parts and equipment related data as well as the historical data on who recommended / selected / purchased what and when.

3,4 It goes without saying that the quality of the data should be such as to allow the SPIR to be used as scope of supply for the Spare Parts Purchase Order and as input for OWNER's Maintenance Management System.

3,5 Contact the spare parts coordinator for any support you may require to complete the SPIR file.

4 CONTACT DETAILS SPARE PARTS COORDINATOR

CB&I
Holandská 8
639 00 Brno
Czech Republic

Spare Parts Coordinator:
Tel : To be advised
Fax : To be advised
E-mail : To be advised

SPARE PARTS & INTERCHANGEABILITY RECORD

Client : NIS			Always refer to this number :
Plant : RNP DCU Plant Project (WP1)			**172784 -** 0300-001-SD-000006
Location : Pancevo, Serbia			(project number) (spir number)
Equipment :	Rev.: 4	Date:	13-ago-19

S E L L E R 'S D A T A

SELLER's Ref. N	: 000951-00-0CG-LT-0003		
Company	: PHB WESERHÜTTE S.A.U		
Address	: ADA BYRON 220		
Zip/City	: 33203 GIJON		
Country	: SPAIN		
Contact person	: MARGARITA PEREZ	E-mail	: margarita.perez@pwh.es
Tel. number	: +34 984 49 56 71		
Fax number	:		

A U T H O R I S A T I O N

RECOMMENDATION BY **SELLER:**		CURRENCY
1. TWO YEAR OPERATING SPARE PARTS :		555.535,00
DATE : 13-ago-19	SIGNATURE :	NAME : JAVIER ALLER

REVIEW BY **PURCHASER:**		
1. TWO YEAR OPERATING SPARE PARTS :		
DATE :	SIGNATURE :	NAME :

REVIEW & AUTHORISATION FOR PURCHASE BY **CLIENT:**		
1. TWO YEAR OPERATING SPARE PARTS :		
DATE :	SIGNATURE :	NAME :

PURCHASER	Contact person	:	To be advised
	Direct telephone	:	To be advised
	Fax	:	To be advised
	E-mail	:	To be advised

EQUIPMENT LIST

ITEM	QTY	TAG NUMBER(S)	DESCRIPTION	MODEL	SERIAL NUMBER(S)
1A		SP-5304	HOPPER	SP-5304	000951-TT-01-0600
1B		SP-5307	BELT FEEDER	SP-5307	000951-EX01
1C		SP-5315	MAGNETIC SEPARATOR	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991
1D		SP-5305	CRUSHER	COB 24"-36"-003	20188001
1E		SP-5601	METAL DETECTOR	TKDE 650/300 Ex2D	2042
1F		JD-5601A	BELT CONVEYOR	JD-5601A	000951-TR-01
1G		VX-5601	BELT SCALE	BEP 06 / VX-5601	50-V127071A01
1H		JD-5601B	BELT CONVEYOR	JD-5601B	000951-TR-02
1I		SP-5321	HOIST FOR SEPARATOR	GKC-SH4 Ex	7101210
1J		JD-5601C	TUBE CONVEYOR	JD-5601C	000951-TR-03
1K		JD-5602	FEED CONVEYOR	JD-5602	000951-TR-04
1L		FC-5601A	DUST COLLECTOR A	FABRIPULSE-EV 12-10	118801-EV
2A		FC-5601B	DUST COLLECTOR B	FABRIPULSE-EV 12-10	118800-EV
2B		FE-5601A	EXPLOSION PANELS	KER 940x1440	1806049
2C		FE-5601B	EXPLOSION PANELS	KER 940x1440	1806049
2D		JD-5605A BELT	WEIGHING FEEDER	MTD-E 1245	50-V127070.A01
2E		JD-5605B BELT	WEIGHING FEEDER	MTD-E 1245	50-V127069.A01
2F		JD-5606A	MOVEABLE CONVEYOR	JD-5606A	000951-TR-05
2G		JD-5606B	MOVEABLE CONVEYOR	JD-5606B	000951-TR-05
2H		SP-5612A	TELESCOPIC CHUTE	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004
2I		SP-5612B	TELESCOPIC CHUTE	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004
2J		SP-5605	TRUCK WASHING BOX	RC4.32TAS1RS	361.18
2K		252PLC-221-222-223	PLC/CABLE	300-17-003	30017003-001
2L		SP-5614	VULCANIZER	SVP-3954-17	2018-10-28978
3A		HBV-1641	ELECTROACTUATED GATE A	BC-03 "S" / Z106.136	099681-001 / 3218MM64188
3B		HBV-1651	ELECTROACTUATED GATE B	BC-03 "S" / Z106.136	099681-001 / 3218MM64188
3C		SP-5608	FEEDING CHUTE	EC1-250	PP018-0171
3D		SP_5607	Primary Sampler	HPN650/30/482/D/300	48497
3E		JD-5603	Primary Belt Feeder	GFB500x3175	48498
3F		JD-5617	Secondary Sampler	DKT370 A/1P	48500
3G		SP-5616	Sample Rotary Collector	S4/10L	48501
3H		SP-5615	Single Roller Mill	EW30/25	48499
3I		252PLC-224	Sampler Control Unit	Control Unit	

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

	QUANTITY OF INSTALLED PARTS PER SINGLE UNIT OF EQUIPMENT :												NO. OF INSTALLED PARTS IN 1A to 1L	UNIT OF MEASURE	DESCRIPTION	DRAWING No.	PART NUMBER			REMARKS
																	SELLER'S	MANUFACTURER'S	OWNER'S	
1															**INSTRUMENTS**					
2		2				2		2		7	2		15	PC	HAND SWITCH	172784-0300-001-SD-000114	LHPEw-10/1-B-EX	TAEX		
3		4				4		4		4	4		20	PC	POSITION SWITCH	172784-0300-001-SD-000114	LHPEw-10/2EX-L50\	TAEX		
4		1				1		1		1	1		5	PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 62 CP62	VEGA		
5		1										1	2	PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 65 CP65	VEGA		
6												1	1	PC	LEVEL DETECTION	172784-0300-001-SD-000114	VEGAPULS 69 PS69	VEGA		
7		2											2	PC	SPEED LIMIT SWITCH	172784-0300-001-SD-000114				
8		1								1			2	PC	INDUCTIVE SENSOR	-	XS630B1PAL10EX	SCHNEIDER		
9		1				1		1		1	1		5	PC	INDUCTIVE SENSOR	-	XSAV12373EX	SCHNEIDER		
10								1		1			2	PC	LIMIT SWITCH	-	XCKD3945P16 EX	SCHNEIDER		
11														PC	ENCODER	-	8.5863FS2.1A4BG72	PEPPERL & FUCHS		
12															**ROTOFLUID COUPLING ALFA 55 K02 FC**					
13										3			3	PC	120ºC 1/2" GAS FUSIBLE PLUG	000951-03-0TTR-EM-1100	N/A	WESTCAR		
14										1			1	PC	FLEXIBLE ELEMENT RN5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
15										1			1	PC	VITON SEALS KIT GU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
16										1			1	PC	BEARINGS KIT CU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
17															**ELECTROMAGNETIC SEPARATOR SK 16.15**					
18			1										1	SET	SET OF FUSES	000951-01-0EX-EM-1200	GZ000052	MEC		
19			1										1	PC	24 Vdc FEEDER	000951-01-0EX-EM-1200	CA007020	MEC		
20			1										1	SET	SET OF LED LAMP	000951-01-0EX-EM-1200	GZ000029	MEC		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

| | | |

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

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PARTS

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EQUIPMENT

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(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

67												12	12	PC	BAG FILTER	-	27-100003	AAF		
68												1	1	PC	ELECTRICAL CLEANING CIRCUIT	-	GAMMA	AAF		
69												3	3	PC	MEMBRANE VALVE REPAIR KIT	-	FPVD25	AAF		
70												3	3	PC	ELECTROVALVE REPAIR KIT	-	FPV24V	AAF		
71												12	12	PC	GALVANIZED CAGE	-	N/A	AAF		
72															**ELASTIC COUPLING**					
73		1											1	PC	ELASTIC COUPLING	000951-01-0EX-EM-1100	POLY-NORM 38 ADI	KTR		
74															**MOTORS**					
75							1						1	PC	Motor M3GP 132SME 4. 7.50 kW	000951-01-0TR-EM-0070	3GGP132250-BDL	ABB		
76								1					1	PC	Motor M3GP 160MLB 4. 15 kW	000951-02-0TR-EM-0070	3GGP162420-BDL	ABB		
77										1			1	PC	Motor M3GP 225SMB 4. 45 kW	000951-03-0TR-EM-1100	3GGP222220-ADL	ABB		
78											1		1	PC	Motor M3GP 132SMB 4. 5.50 kW	000951-04-0TR-EM-0070	3GGP132220-BDL	ABB		
79														PC	Motor M3GP 112ME 4. 4 kW	000951-05-0TR-EM-1000	3GGP112350-BDL	ABB		
80				1									1	PC	Motor M3GP 250SMA 6. 37 kW	000951-00-0OM-CO-0090	3GGP253210-ADL	ABB		
81		1											1	PC	Motor M3GP 132SMF 6. 4 kW	000951-01-0EX-EM-1100	3GGP133260-ADL	ABB		
82															**HOIST SH4016-16 4/1**					
83									45				45	METER	WIRE ROPE Ø9	-	3300079	STAHL		
84									1				1	PC	ROPE GUIDE RING LEFT 8,5-9	-	0443000430	STAHL		
85									1				1	PC	BOTTOM HOOK 6300 KG H162-4	-	0143027510	STAHL		
86									1				1	PC	BRAKE DISC 12/2H42MF (HOIST)	-	2327043650	STAHL		
87									1				1	PC	BRAKE DISC 8/2F12 (TROLLEY)	-	2127023650	STAHL		
88									1				1	PC	MOTOR 12/2H42-MF (HOIST)	-	70002098	STAHL		
89									1				1	PC	MOTOR 8/2F12 (TROLLEY)	-	2127087119	STAHL		
90															**BELT CLEANER**					
91		1						1		1			3	PC	QC1 Heavy duty segment blade W 1200	-	35381-421040OR	MARTIN ENGINEERING		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

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1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

92											1		1	PC	QC1 Heavy duty segment blade W 650	-	35381-241022OR	MARTIN ENGINEERING	
93															**ELECTRO ACTUATED GATE BC**				
94														PC	SLIDER KIT FOR BC 900X1150	-	N/A	ORBINOX	
95														PC	JOINT FOR BC 900X1150 (2 SEAL OF 5 METERS)	-	N/A	ORBINOX	
96														PC	PACKING ST+ O-RING EPDM FOR BC 900X1150)	-	N/A	ORBINOX	
97															**AISI**				
98		2								2			4	PC	AISI #6X450X600	000951-01-0EX-EM-1031 000951-03-0TR-EM-1041	AISI 316L	PHB	
99		1											1	PC	AISI #6X298X1751	000951-01-0EX-EM-1034	AISI 304	PHB	
100		1											1	PC	AISI #6X318X1820	000951-01-0EX-EM-1035	AISI 304	PHB	
101		1											1	PC	AISI #6X263X1820	000951-01-0EX-EM-1036	AISI 304	PHB	
102		1											1	PC	AISI #5X80X183	000951-01-0EX-EM-1037	AISI 304	PHB	
103		4											4	PC	AISI #6X90X668	000951-01-0EX-EM-1061	AISI 316L	PHB	
104		1											1	PC	AISI #6X75X708	000951-01-0EX-EM-1160	AISI 316L	PHB	
105		3											3	PC	AISI #6X140X708	000951-01-0EX-EM-1160	AISI 316L	PHB	
106		1											1	PC	SKIRT BOARD AISI	000951-01-0EX-EM-1510	AISI 316L	PHB	
107		1											1	PC	CLOSING BAR AISI	000951-01-0EX-EM-1550	AISI 316L	PHB	
108						2		2			2		6	PC	AISI #6X490X520	000951-01-0TR-EM-0024 000951-02-0TR-EM-0024	AISI 316L	PHB	
109						1							1	PC	DUCT AISI	000951-01-0TR-EM-0031	AISI 316L	PHB	
110								1					1	PC	DUCT AISI	000951-02-0TR-EM-0031	AISI 316L	PHB	
111								1					1	PC	SKIRTBOARD AISI	000951-02-0TR-EM-0083	AISI 316L	PHB	
112											1		1	PC	HEAD CHUTE AISI	000951-04-0TR-EM-0028	AISI 316L	PHB	
113											1		1	PC	DISCHARGE PIPE AISI	000951-04-0TR-EM-0029	AISI 316L	PHB	
114											1		1	PC	SKIRTBOARD AISI	000951-04-0TR-EM-0083	AISI 316L	PHB	
115														PC	BY PASS 500X500 DEFLECTOR	000951-03-0TR-EM-1076_1081_1082	AISI 316L	PHB	
116														PC	DISCHARGE DUCT AISI	000951-03-0TR-EM-1076_1161_1162_1171_1172_1173	AISI 316L	PHB	

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

117										1			1	PC	SKIRTBOARD AISI	000951-03-0TR-EM-1511	AISI 316L	PHB	
118														PC	HEAD CHUTE AISI	000951-05-0TR-EM-1060	AISI 304L	PHB	
119														PC	SKIRTBOARD AISI	000951-05-0TR-EM-1511	AISI 316L	PHB	
120															**METAL DETECTOR GRS-650X300 ATEX**				
121							1						1	PC	MODULE	000951-01-0TR-EM-0012	EKM 06-V2	A. TRISTANY	
122							1						1	PC	HORN	000951-01-0TR-EM-0012	P40A	A. TRISTANY	
123							4						4	PC	SHOCK ABSORBERS	000951-01-0TR-EM-0012		A. TRISTANY	
124							3						3	PC	GLAND	000951-01-0TR-EM-0012	EX 3D M25X1,5	A. TRISTANY	
125															**WEAR PLATES**				
126		3								3			6	PC	HARDOX 400 #6X487X600	000951-01-0EX-EM-1031 000951-03-0TR-EM-1041	HARDOX 400	PHB	
127		1											1	PC	HARDOX 400 #6	000951-01-0EX-EM-1061	HARDOX 400	PHB	
128						1		1			1		3	PC	HARDOX 400 #6X520x782	000951-01-0TR-EM-024 000951-02-0TR-EM-024 000951-04-0TR-EM-024	HARDOX 400	PHB	
129						2		2					4	PC	HARDOX 400 #6X150x530	000951-01-0TR-EM-0083 000951-02-0TR-EM-0083	HARDOX 400	PHB	
130								1					1	PC	HEAD CHUTE WEAR PLATES	000951-02-0TR-EM-028	HARDOX 400	PHB	
131											1		1	PC	HEAD CHUTE WEAR PLATES	000951-04-0TR-EM-028	HARDOX 400	PHB	
132										1			1	PC	DISCHARGE CHUTE HARDOX 400	000951-03-0TR-EM-1061	HARDOX 400	PHB	
133														PC	HARDODX #6X300X500	000951-05-0TR-EM-1031	HARDOX 400	PHB	
134														PC	DEFLECTOR	000951-05-0TR-EM-1050	HARDOX 400	PHB	
135															**RUBBER**				
136		1											1	PC	#15X150X1450	000951-01-0EX-EM-1063	45-50 SHORE	PHB	
137		1											1	PC	#10X165X3400	000951-01-0EX-EM-1161	45-50 SHORE	PHB	
138		1											1	PC	#10X200X728	000951-01-0EX-EM-1162	45-50 SHORE	PHB	
139		1											1	PC	SKIRT BOARD RUBBER	000951-01-0EX-EM-1510	45-50 SHORE	PHB	
140		1											1	PC	CLOSING BAR RUBBER	000951-01-0EX-EM-1550	45-50 SHORE	PHB	

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

141						1		1			1		3	PC	HEAD FRAMEWORK RUBBER	000951-01-0TR-EM-0025 000951-02-0TR-EM-0025	45-50 SHORE	PHB		
142						1							1	PC	SKIRT BOARD RUBBER	000951-01-0TR-EM-0083Pos 24	45-50 SHORE	PHB		
143								1					1	PC	SKIRT BOARD RUBBER	000951-02-0TR-EM-0083 Pos 25	45-50 SHORE	PHB		
144											1		1	PC	SKIRT BOARD RUBBER	000951-04-0TR-EM-0083 Pos 26	45-50 SHORE	PHB		
145										1			1	PC	DISCHARGE RUBBER #8X1155X1850	000951-03-0TR-EM-1043	45-50 SHORE	PHB		
146										1			1	PC	DISCHARGE CHUTE RUBBER #15X150X1400	000951-03-0TR-EM-1060_1066	45-50 SHORE	PHB		
147										1			1	PC	SKIRTBOARD RUBBER	000951-03-0TR-EM-1510	45-50 SHORE	PHB		
148										1			1	PC	TAKE UP SYSTEM	000951-03-0TR-EM-1920	45-50 SHORE	PHB		
149														PC	HEAD CHUTE RUBBER	000951-05-0TR-EM-1066	45-50 SHORE	PHB		
150														PC	SKIRTBOARD RUBBER	000951-05-0TR-EM-1510	45-50 SHORE	PHB		
151		12											12	PC	IMPACT BAR 70X200X830	000951-01-0ST-EM-0400		PHB		
152		2											2	PC	IMPACT BAR 70X200X240	000951-01-0ST-EM-0410		PHB		
153										1			1	PC	V-PLOW W1200 RUBBER	000951-01-0ST-EM-0950	45-50 SHORE	PHB		
154						1		2			1		4	PC	V-PLOW W650 RUBBER	000951-01-0ST-EM-0910	45-50 SHORE	PHB		
155															**BEARING & SUPPORTS**					
156														PC	SNL515+22215K+H315+2XFRB+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H3	SKF		
157														PC	SNL515+22215K+H315+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H3	SKF		
158		2								2			4	PC	SNLN3024+23024CCK	000951-02-0ST-EM-0010_0070		SKF		
159						2		2		6	2		12	PC	SNL518+22218K	000951-02-0ST-EM-0030_0080_0090_0110_0120		SKF		
160								4					4	PC	SNL513+22213K	000951-02-0ST-EM-0040		SKF		
161								4					4	PC	SNL511+22211EK	000951-02-0ST-EM-0060		SKF		
162		2											2	PC	22218EK+H318	000951-02-0ST-EM-9010		SKF		
163						2					2		4	PC	22213EK+H313	000951-02-0ST-EM-9020_9030		SKF		
164															**PULLEYS**					
165		1											1	PC	DRIVE PULLEY Ø500 W1200 SHAFT Ø140-110-90	000951-02-0ST-EM-0010		PHB		
166		1											1	PC	TAIL TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0020		PHB		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

167					1						1		2	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-50	000951-02-0ST-EM-0030		PHB		
168								2					2	PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0040		PHB		
169						1					1		2	PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0050_0100		PHB		
170								2					2	PC	TAIL TAKE UP PULLEY Ø315 W650 SHAFT Ø80-50	000951-02-0ST-EM-0060		PHB		
171										1			1	PC	DRIVE PULLEY Ø630 W1200 SHAFT Ø160-110-100	000951-02-0ST-EM-0070		PHB		
172										1			1	PC	TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0080		PHB		
173										1			1	PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0090		PHB		
174										1			1	PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0110		PHB		
175								1					1	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-60	000951-02-0ST-EM-0120		PHB		
176														PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-40	000951-02-0ST-EM-0130		PHB		
177				1									1		**24"x36" COBRA CRUSHER**					
178														PC	TIP Cr. PIMCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
179														PC	TIP BOLT 7/8" X 6"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
180														PC	FLAT WASHER 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
181														PC	GRIP NUT 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
182														PC	SEGMENT MCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
183														PC	SQUARE HEAD BOLT 1"X4"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
184														PC	FLAT WASHER 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
185														PC	GRIP NUT 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
186														PC	HOPPER SIDE LINER LH	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
187														PC	HOPPER SIDE LINER RH	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
188														PC	FLAT SOCKET HEAD CAPSCREW 3/4"X2"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
189														PC	GRIP NUT 3/4"	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
190														PC	HOLD-BACK BOLT ASSEMBLY	000951-01-0TT-EM-0001		MCLANAHAN CORPORATION		
191																				
192															**PLC**					

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

193	PC	7 Slot ControlLogix Chassis		1756-A7	ROCKWELL		Redundant Control
194	PC	ControlLogix, 85-265 VAC Power Supply (10 Amp @ 5V)		1756-PA72	ROCKWELL		Redundant Control
195	PC	ControlLogix 5570 Controller with 4 MB Memory, USB Port		1756-L72	ROCKWELL		Redundant Control
196	PC	EtherNet 10-100M Interface Module (supports 128 TCP/IP)		1756-EN2T	ROCKWELL		Redundant Control
197	PC	EtherNet dual port 10-100M Interface Module		1756-EN2TR	ROCKWELL		Redundant Control
198	PC	Redundancy Module		1756-RM2	ROCKWELL		Redundant Control
199	PC	Fiber Cable, 1 Meter		1756-RMC1	ROCKWELL		Redundant Control
200	PC	2-slot adapter base unit		1715-A2A	ROCKWELL		PERIFERIA SIL2
201	PC	3-slot I/O base unit		1715-A3IO	ROCKWELL		PERIFERIA SIL2
202	PC	EtherNet/IP Adapter		1715-AENTR	ROCKWELL		PERIFERIA SIL2
203	PC	16-point digital input module		1715-IB16D	ROCKWELL		PERIFERIA SIL2
204	PC	8-point digital output module		1715-OB8DE	ROCKWELL		PERIFERIA SIL2
205	PC	Termination Assembly - digital input simplex		1715-TASIB16D	ROCKWELL		PERIFERIA SIL2
206	PC	Termination Assembly - digital output simplex		1715-TASOB8DE	ROCKWELL		PERIFERIA SIL2
207	PC	1794 Flex, Flex Ex, Flex XT I/O System, FLEX I/O Dual Port EtherNet/IP		1794-AENTR	ROCKWELL		PERIFERIA ESTANDAR
208	PC	1794 Flex, Flex Ex, Flex XT I/O System, Input Module, 24VDC, 32 Sink Inputs		1794-IB32	ROCKWELL		PERIFERIA ESTANDAR
209	PC	1794 Flex, Flex Ex, Flex XT I/O System, Output Module, 24V DC, 32 Source		1794-OB32P	ROCKWELL		PERIFERIA ESTANDAR
210	PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog Input Modules, 8 Single-Ended Inputs		1794-IE8H	ROCKWELL		PERIFERIA ESTANDAR
211	PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog 8 Output Module		1794-OF8IH	ROCKWELL		PERIFERIA ESTANDAR
212	PC	40 point feed-through digital IFM, standard,		1492-IFM40F	ROCKWELL		PERIFERIA ESTANDAR
213	PC	Pre-wired cable 1,5mt (1794-IB32)		1492-CAB015B94	ROCKWELL		PERIFERIA ESTANDAR
214	PC	Ready cable 1,5mt (1794-IB32/1974-OB32P)		1492-CAB015H94	ROCKWELL		PERIFERIA ESTANDAR
215	PC	Terminal base, for 32 point modules, 62 pin D-shell termination		1794-TB62DS	ROCKWELL		PERIFERIA ESTANDAR
216	PC	1794 Flex, Flex Ex, Flex XT I/O System, Terminal Base, 3-Wire grounded, Screw Clamp		1794-TB3G	ROCKWELL		PERIFERIA ESTANDAR
217	PC	FLEX I/O 1ft extended cable 0,9m		1794-CE3	ROCKWELL		PERIFERIA ESTANDAR
218	PC	1606-XLE480E: Essential Power Supply, 24-28V DC, 480 W, 240V AC Input Voltage		1606-XLE480EP	ROCKWELL		POWER SUPPLY

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

| | | |

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

245	8	PC	Weight cell 1000T	000951-01-0SL-EM-0001	C3 ATEX 22	SERVIPESA		
246	8	PC	Support weight cell with accesories	000951-01-0SL-EM-0001	HDG	SERVIPESA		
247	2	PC	Conection box	000951-01-0SL-EM-0001		SERVIPESA		
248	2	PC	Panel with ethernet comunication	000951-01-0SL-EM-0001	MOD 1700	SERVIPESA		
249	1	Kit	HILTI DRILL KIT DX 351 BT G + SF BT 22-A + B22/2.6	-	DX351 BT G	HILTI		
250	1	Kit	HILTI SCREWDRIVER KIT SBT 4-A22 + B22/3.0 + S-DG BT M	-	SBT 4-A22	HILTI		
251								
252			**TELESCOPIC CHUTE**					
253		PC	Filter cartridge	000951-01-0CC-EM-0001	HE-FJ-OS-000164-K00	HENNLICH		
254		PC	Level switch	000951-01-0CC-EM-0001	HE-NZ-EM-000195-K00	HENNLICH		
255		PC	Inlet part	000951-01-0CC-EM-0001	HE-NZ-OD-024200-000	HENNLICH		
256		PC	Tube No. 1	000951-01-0CC-EM-0001	HE-NZ-OD-024170-000	HENNLICH		
257		PC	Tube No. 2	000951-01-0CC-EM-0001	HE-NZ-OD-024175-000	HENNLICH		
258		PC	Tube No. 3	000951-01-0CC-EM-0001	HE-NZ-OD-024181-000	HENNLICH		
259		PC	Tube No. 4	000951-01-0CC-EM-0001	HE-NZ-OD-024186-000	HENNLICH		
260		PC	Outer bellows	000951-01-0CC-EM-0001	HE-NZ-OS-024231-000	HENNLICH		
261		PC	Rope dia 6 mm	000951-01-0CC-EM-0001	HE-NZ-ME-024210-000	HENNLICH		
262								
263			**VULCANIZER**					

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

264	PC	spare bag size 39" x 54"	-	SVP3954-17 (39-54)	ALMEX	
265	PC	spare element 39" x 54"	-	SVP3954-17 (39-54)	ALMEX	
266	PC	Platen Receptacle Insert (High Temp)	-	SVP3954-17 (SVP-18)	ALMEX	
267	PC	1/4" (6mm) 100 Ohm RTD Probe	-	SVP3954-17 (SVP-23)	ALMEX	
268	PC	Platen Handle Assembly	-	SVP3954-17 (SVP-25)	ALMEX	
269	PC	Locking Pin	-	SVP3954-17 (SVP-3)	ALMEX	
270	PC	Quick coupler Male	-	SVP3954-17 (SVP-10)	ALMEX	
271	PC	Quick coupler Male Dust-cap	-	SVP3954-17 (SVP-11)	ALMEX	
272	PC	Quick coupler Female	-	SVP3954-17 (SVP-30)	ALMEX	
273	PC	Quick coupler Female Dust-cap	-	SVP3954-17 (SVP-31)	ALMEX	
274		FOR RC3 TEMPERATURE CONTROL PANEL	-		ALMEX	
275	PC	Fuse Holder C/w 2 Amp Fuse	-	SVP3954-17 (RC3-9)	ALMEX	
276	PC	Platen Connector Insert	-	SVP3954-17 (RC3-15)	ALMEX	
277	PC	Platen Connector Housing	-	SVP3954-17 (RC3-15)	ALMEX	
278						
279		**AUTOMATIC SAMPLING SYSTEM**				
280		**Hammer sampler HPN650/30/482/D/300**	000951-01-0CG-PI-0008_03 S-5600			
281	PC	Geared motor with brake	000951-01-0CG-PI-0008_03 S-5600	351005	SIEBTECHNIK	

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

282		PC	Proximity switches	000951-01-0CG-PI-0008_03 S-5600	351510	SIEBTECHNIK		
283		PC	Guide plates (set)	000951-01-0CG-PI-0008_03 S-5600	351551	SIEBTECHNIK		
284		PC	Back panel	000951-01-0CG-PI-0008_03 S-5600	351550	SIEBTECHNIK		
285		PC	Stripper rubber	000951-01-0CG-PI-0008_03 S-5600	351553	SIEBTECHNIK		
286		PC	Brush	000951-01-0CG-PI-0008_03 S-5600	351555	SIEBTECHNIK		
287		PC	Spherical roller bearings	000951-01-0CG-PI-0008_03 S-5600	131577	SIEBTECHNIK		
288		PC	Tension sleeve	000951-01-0CG-PI-0008_03 S-5600	217035	SIEBTECHNIK		
289		PC	V-sealing ring	000951-01-0CG-PI-0008_03 S-5600	195568	SIEBTECHNIK		
290			**Belt conveyor GFB500x3175**	000951-01-0CG-PI-0008_03 S-5600				
291		PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	351006	SIEBTECHNIK		
292		PC	Drive pulley	000951-01-0CG-PI-0008_03 S-5600	351303	SIEBTECHNIK		
293		PC	Take-up pulley	000951-01-0CG-PI-0008_03 S-5600	347771	SIEBTECHNIK		
294		PC	Flanged bearing FY65	000951-01-0CG-PI-0008_03 S-5600	351304	SIEBTECHNIK		
295		PC	Flanged bearing FY45	000951-01-0CG-PI-0008_03 S-5600	347751	SIEBTECHNIK		
296		PC	Idler, top	000951-01-0CG-PI-0008_03 S-5600	206482	SIEBTECHNIK		
297		PC	Idler, bottom	000951-01-0CG-PI-0008_03 S-5600	347755	SIEBTECHNIK		
298		PC	Belt	000951-01-0CG-PI-0008_03 S-5600	351516	SIEBTECHNIK		
299		PC	Rubber for material guide, set	000951-01-0CG-PI-0008_03 S-5600	357689	SIEBTECHNIK		
300		PC	Rubber for drum stripper	000951-01-0CG-PI-0008_03 S-5600	347759	SIEBTECHNIK		
301		PC	Rubber for angular stripper	000951-01-0CG-PI-0008_03 S-5600	347760	SIEBTECHNIK		
302		PC	Sensor for speed monitoring	000951-01-0CG-PI-0008_03 S-5600	350896	SIEBTECHNIK		
303			**Single roll crusher EW 30/25**	000951-01-0CG-PI-0008_03 S-5600				
304		PC	Roller body	000951-01-0CG-PI-0008_03 S-5600	200719	SIEBTECHNIK		
305		PC	Crushing bars	000951-01-0CG-PI-0008_03 S-5600	164696	SIEBTECHNIK		
306		PC	Wear plate towards the crusher wall, 2 parts	000951-01-0CG-PI-0008_03 S-5600	357690	SIEBTECHNIK		
307		PC	Wear plate towards the crusher wall, bottom	000951-01-0CG-PI-0008_03 S-5600	350645	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

308		PC	Wear plate towards the crusher housing	000951-01-0CG-PI-0008_03 S-5600	350647	SIEBTECHNIK		
309		PC	Stripper towards the back panel	000951-01-0CG-PI-0008_03 S-5600	200727	SIEBTECHNIK		
310		PC	Stripper for crushing bar	000951-01-0CG-PI-0008_03 S-5600	170846	SIEBTECHNIK		
311		PC	Rubber plate	000951-01-0CG-PI-0008_03 S-5600	200723	SIEBTECHNIK		
312		PC	Self-aligning roller bearing	000951-01-0CG-PI-0008_03 S-5600	200712	SIEBTECHNIK		
313		PC	Adapter sleeve	000951-01-0CG-PI-0008_03 S-5600	200713	SIEBTECHNIK		
314		PC	Rubber battery spring	000951-01-0CG-PI-0008_03 S-5600	118722	SIEBTECHNIK		
315		PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350632	SIEBTECHNIK		
316			**Turnstile divider DKT 370 A/1P**	000951-01-0CG-PI-0008_03 S-5600				
317		PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350926	SIEBTECHNIK		
318		PC	Rotary arm	000951-01-0CG-PI-0008_03 S-5600	265023	SIEBTECHNIK		
319		PC	Stripper for the rotary arm	000951-01-0CG-PI-0008_03 S-5600	350933	SIEBTECHNIK		
320		PC	Discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-5600	350931	SIEBTECHNIK		
321		PC	Stripper set for the discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-5600	357314	SIEBTECHNIK		
322		PC	Cone scraper	000951-01-0CG-PI-0008_03 S-5600	350932	SIEBTECHNIK		
323			**Sample collector S4/10**	000951-01-0CG-PI-0008_03 S-5600				
324		PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350895	SIEBTECHNIK		
325		PC	Proximity switches	000951-01-0CG-PI-0008_03 S-5600	350896	SIEBTECHNIK		
326		PC	Safety switch with actuator	000951-01-0CG-PI-0008_03 S-5600	268454	SIEBTECHNIK		
327		PC	Container	000951-01-0CG-PI-0008_03 S-5600	223146	SIEBTECHNIK		
328		PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350903	SIEBTECHNIK		
329		PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350904	SIEBTECHNIK		
330		PC	Hose clamp	000951-01-0CG-PI-0008_03 S-5600	39515	SIEBTECHNIK		
331		PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350905	SIEBTECHNIK		
332		PC	Hose clamp	000951-01-0CG-PI-0008_03 S-5600	39075	SIEBTECHNIK		
333			**Control unit**	000951-01-0CG-PI-0008_03 S-5600				

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
1A	1	SP-5304	SP-5304	000951-TT-01-0600	HOPPER
1B	1	SP-5307	SP-5307	000951-EX01	BELT FEEDER
1C	1	SP-5315	SK 16.15 BD / 220MEC54/M	S1802009.1/ M9991	MAGNETIC SEPARATOR
1D	1	SP-5305	COB 24"-36"-003	20188001	CRUSHER
1E	1	SP-5601	TKDE 650/300 Ex2D	2042	METAL DETECTOR
1F	1	JD-5601A	JD-5601A	000951-TR-01	BELT CONVEYOR
1G	1	VX-5601	BEP 06 / VX-5601	50-V127071A01	BELT SCALE
1H	1	JD-5601B	JD-5601B	000951-TR-02	BELT CONVEYOR
1I	1	SP-5321	GKC-SH4 Ex	7101210	HOIST FOR SEPARATOR
1J	1	JD-5601C	JD-5601C	000951-TR-03	TUBE CONVEYOR
1K	1	JD-5602	JD-5602	000951-TR-04	FEED CONVEYOR
1L	1	FC-5601A	FABRIPULSE-EV 12-10	118801-EV	DUST COLLECTOR A

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

334		PC	Enclosure heater 800/870W, 230V,50/60 Hz	000951-01-0CG-PI-0008_03 S-5600	350469-1	SIEBTECHNIK		
335		PC	Fan and filter unit	000951-01-0CG-PI-0008_03 S-5600	350469-2	SIEBTECHNIK		
336		PC	SITOP PSE200U	000951-01-0CG-PI-0008_03 S-5600	350469-3	SIEBTECHNIK		
337		PC	KTP700 Basic DP	000951-01-0CG-PI-0008_03 S-5600	350469-4	SIEBTECHNIK		
338		PC	CPU 314C PN/DP	000951-01-0CG-PI-0008_03 S-5600	350469-5	SIEBTECHNIK		
339		PC	SM 323, 16 DI/DO, DC24V, 0.5 A	000951-01-0CG-PI-0008_03 S-5600	350469-6	SIEBTECHNIK		
340		PC	Safety relais module SRB-Exi	000951-01-0CG-PI-0008_03 S-5600	350469-7	SIEBTECHNIK		
341		PC	Thermistor motor protection	000951-01-0CG-PI-0008_03 S-5600	350469-8	SIEBTECHNIK		
342		PC	Coupling relay	000951-01-0CG-PI-0008_03 S-5600	350469-9	SIEBTECHNIK		
343		PC	Sirius safety relay stanard series device	000951-01-0CG-PI-0008_03 S-5600	350469-10	SIEBTECHNIK		
344		PC	Contactor AC-3, 3 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-5600	350469-11	SIEBTECHNIK		
345		PC	Contactor AC-3, 5.5 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-5600	350469-12	SIEBTECHNIK		
346		PC	2NO+2NC contactor, AC 3, 4KW AC 230V50 Hz	000951-01-0CG-PI-0008_03 S-5600	350469-13	SIEBTECHNIK		
347		PC	Aux. Switch block, 2NO+2NC	000951-01-0CG-PI-0008_03 S-5600	350469-14	SIEBTECHNIK		
348		PC	Sitop PSU200 M	000951-01-0CG-PI-0008_03 S-5600	350469-15	SIEBTECHNIK		
349								
350			**TRUCK WASHING BOX**					
351		PC	Flat fan nozzels	000951-01-0CG-PI-0009_06 S-5600	JB 1/4	LECHLER		
352		PC	Photo-electric sensor	000951-01-0CG-PI-0009_06 S-5600	XUX5ARCNT16	SCHNEIDER		
353		KIT	Sseals kit for pumps	000951-01-0CG-PI-0009_06 S-5600	RC.SS1CG_C1	TECNOTER		
354								
355								
356								
357								
358								
359								

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

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(project number) (spir number)

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Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

	QUANTITY OF INSTALLED PARTS PER SINGLE UNIT OF EQUIPMENT :												NO. OF INSTALLED PARTS IN 2A to 2L	UNIT OF MEASURE	DESCRIPTION	DRAWING No.	PART NUMBER			REMARKS
																	SELLER'S	MANUFACTURER'S	OWNER'S	
1															**INSTRUMENTS**					
2						2	2						4	PC	HAND SWITCH	172784-0300-001-SD-000114	LHPEw-10/1-B-EX	TAEX		
3						4	4						8	PC	POSITION SWITCH	172784-0300-001-SD-000114	LHPEw-10/2EX-L50V	TAEX		
4						1	1						2	PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 62 CP62	VEGA		
5	1												1	PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 65 CP65	VEGA		
6	1												1	PC	LEVEL DETECTION	172784-0300-001-SD-000114	VEGAPULS 69 PS69	VEGA		
7														PC	SPEED LIMIT SWITCH	172784-0300-001-SD-000114				
8														PC	INDUCTIVE SENSOR	-	XS630B1PAL10EX	SCHNEIDER		
9						1	1						2	PC	INDUCTIVE SENSOR	-	XSAV12373EX	SCHNEIDER		
10														PC	LIMIT SWITCH	-	XCKD3945P16 EX	SCHNEIDER		
11						1	1						2	PC	ENCODER	-	8.5863FS2.1A4BG722.010	PEPPERL & FUCHS		
12															**ROTOFLUID COUPLING ALFA 55 K02 FC**					
13														PC	120ºC 1/2" GAS FUSIBLE PLUG	000951-03-0TTR-EM-1100	N/A	WESTCAR		
14														PC	FLEXIBLE ELEMENT RN5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
15														PC	VITON SEALS KIT GU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
16														PC	BEARINGS KIT CU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
17															**ELECTROMAGNETIC SEPARATOR SK 16.15**					
18														SET	SET OF FUSES	000951-01-0EX-EM-1200	GZ000052	MEC		
19														PC	24 Vdc FEEDER	000951-01-0EX-EM-1200	CA007020	MEC		
20														SET	SET OF LED LAMP	000951-01-0EX-EM-1200	GZ000029	MEC		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

21	PC	RECTIFIER DIODE	000951-01-0EX-EM-1200	CA005157	MEC		
22		**ELECTROMECANIC ACTUATOR**					
23	PC	ELECTRIC MOTOR	000951-01-0SL-EM-0009	3P-CA-660V-50Hz	MECVEL 02		
24	PC	TORQUE LIMITER	000951-01-0SL-EM-0009	N/A	MECVEL 03		
25	PC	LIMIT SWITCHES GROUP	000951-01-0SL-EM-0009	N/A	MECVEL 07		
26	PC	MANUAL HAND WHEEL	000951-01-0SL-EM-0009	N/A	MECVEL 04		
27	PC	BELLOWS BOOT	000951-01-0SL-EM-0009	N/A	MECVEL 05		
28	PC	FRONT END WITH SHOCK ABSORBER	000951-01-0SL-EM-0009	N/A	MECVEL 06		
29		**AUTOMATIC SAMPLING SYSTEM**					
30	PC	Limit switch type 1	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA		
31	PC	Limit switch type 2	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA		
32	PC	Atex brush	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA		
33	PC	Atex rubber strip	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA		
34	PC	Rubber scraper drum	000951-02-0TR-EM-0140	TEMA - GFB 500 CONVEYOR	TEMA		
35	PC	Rubber scraper lower belt	000951-02-0TR-EM-0140	TEMA - GFB 500 CONVEYOR	TEMA		
36	SET	Wearing plates for crushing roll	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA		
37	SET	Wearing plates for crushing plate, upper part	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA		
38	PC	Wearing plates for crushing plate, lower part	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA		
39	SET	Rubber scrapers	000951-02-0TR-EM-0140	TEMA - TURNSTILE DIVIDER DKT 370 A	TEMA		
40	PC	Rubber collar Ø154	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

41														PC	Rubber collar Ø162	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA		
42														PC	Sample collectors stainless steel	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA		
43															**BELTS**					
44														Meter	Rubber belt W1200	000951-01-0EX-EM-0002	TEXTER 400/3 6+3 BS W1200	SIG		
45						25,32	25,327						51	Meter	Rubber belt W650	000951-01-0TR-EM-0007000951-(	TEXTER 400/3 6+3 BS W650	SIG		
46														Meter	Rubber belt W1200	000951-03-0TR-EM-0007	PIPEX 500/4 6+2 BS W1200	SIG		
47															**IDLERS**					
48														PC	CARRYING IDLER W650 Ø89 X 250	000951-01-0ST-EM-0010_0030	PSV/1 20F14 89J	RULMECA		
49														PC	IMPACT IDLER W650 Ø89 X 250	000951-01-0ST-EM-0020	PSV/1 20F14 63/89	RULMECA		
50						27	27						54	PC	RETURN IDLER W650 Ø108 X 750	000951-01-0ST-EM-0040	PSV/1 20Y14 63/108	RULMECA		
51																				
52						3	3						6	PC	IMPACT IDLER Ø133/89 X 750	000951-01-0ST-EM-0400_0140	PSV/4 30F22 89/133	RULMECA		
53														PC	CLEANING IDLER Ø133/89 X 1400	000951-01-0ST-EM-0420_0430_0	PSV/1 20Y14 89/133	RULMECA		
54														PC	CARRYING IDLER W1200 Ø108 X 465	000951-01-0ST-EM-0150_0180	PSV/1 20F14 108J	RULMECA		
55														PC	IMPACT IDLER W1200 Ø108/63 X 465	000951-01-0ST-EM-0160	PSV/1 20F14 63/108	RULMECA		
56														PC	CARRYING IDLER W1200 Ø89 X 165	000951-01-0ST-EM-0170_0200	PSV/1 20F14 108J	RULMECA		
57																				
58																				
59															**GEARBOX**					
60														PC	Gearbox KA107 R77 AD4	000951-01-0EX-EM-1100	KA107 R77 AD4	SEW		
61														PC	Gearbox KA77/T AM13S/M/RS	000951-01-0TR-EM-0070 & 000951-04-0TR-EM-0070	KA77/T AM132S/M/RS	SEW		
62														PC	Gearbox KA87/T AM160/RS	000951-02-0TR-EM-0070	KA87/T AM160/RS	SEW		
63														PC	Gearbox KA127B AD8/RS	000951-03-0TR-EM-1100	KA127B AD8/RS	SEW		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

64						1	1						2	PC	Gearbox KA67/T AM112	000951-05-0TR-EM-1000	KA67/T AM112	SEW		
65														PC	Motor Gearbox KA87BB EDRN90L4	000951-05-0TR-EM-8010	KA87BB EDRN90L4	SEW		
66															**FABRIPULSE EV 12-10-B FILTRE**					
67														PC	BAG FILTER	-	27-100003	AAF		
68														PC	ELECTRICAL CLEANING CIRCUIT	-	GAMMA	AAF		
69														PC	MEMBRANE VALVE REPAIR KIT	-	FPVD25	AAF		
70						1	1						2	PC	ELECTROVALVE REPAIR KIT	-	FPV24V	AAF		
71						1	1						2	PC	GALVANIZED CAGE	-	N/A	AAF		
72															**ELASTIC COUPLING**					
73	12												12	PC	ELASTIC COUPLING	000951-01-0EX-EM-1100	POLY-NORM 38 ADR	KTR		
74	1												1		**MOTORS**					
75	3												3	PC	Motor M3GP 132SME 4. 7.50 kW	000951-01-0TR-EM-0070	3GGP132250-BDL	ABB		
76	3												3	PC	Motor M3GP 160MLB 4. 15 kW	000951-02-0TR-EM-0070	3GGP162420-BDL	ABB		
77	12												12	PC	Motor M3GP 225SMB 4. 45 kW	000951-03-0TR-EM-1100	3GGP222220-ADL	ABB		
78														PC	Motor M3GP 132SMB 4. 5.50 kW	000951-04-0TR-EM-0070	3GGP132220-BDL	ABB		
79						1	1						2	PC	Motor M3GP 112ME 4. 4 kW	000951-05-0TR-EM-1000	3GGP112350-BDL	ABB		
80														PC	Motor M3GP 250SMA 6. 37 kW	000951-00-0OM-CO-0090	3GGP253210-ADL	ABB		
81														PC	Motor M3GP 132SMF 6. 4 kW	000951-01-0EX-EM-1100	3GGP133260-ADL	ABB		
82															**HOIST SH4016-16 4/1**					
83														METER	WIRE ROPE Ø9	-	3300079	STAHL		
84														PC	ROPE GUIDE RING LEFT 8,5-9	-	0443000430	STAHL		
85														PC	BOTTOM HOOK 6300 KG H162-4	-	0143027510	STAHL		
86														PC	BRAKE DISC 12/2H42MF (HOIST)	-	2327043650	STAHL		
87														PC	BRAKE DISC 8/2F12 (TROLLEY)	-	2127023650	STAHL		
88														PC	MOTOR 12/2H42-MF (HOIST)	-	70002098	STAHL		
89														PC	MOTOR 8/2F12 (TROLLEY)	-	2127087119	STAHL		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

90															**BELT CLEANER**						
91														PC	QC1 Heavy duty segment blade W 1200	-	35381-421040OR	MARTIN ENGINEERIN(		
92														PC	QC1 Heavy duty segment blade W 650	-	35381-241022OR	MARTIN ENGINEERIN(		
93															**ELECTRO ACTUATED GATE BC**					
94														PC	SLIDER KIT FOR BC 900X1150	-	N/A	ORBINOX		
95														PC	JOINT FOR BC 900X1150 (2 SEAL OF 5 METERS)	-	N/A	ORBINOX		
96														PC	PACKING ST+ O-RING EPDM FOR BC 900X1150)	-	N/A	ORBINOX		
97						1	1						2		**AISI**					
98														PC	AISI #6X450X600	000951-01-0EX-EM-1031000951-(	AISI 316L	PHB		
99														PC	AISI #6X298X1751	000951-01-0EX-EM-1034	AISI 304	PHB		
100														PC	AISI #6X318X1820	000951-01-0EX-EM-1035	AISI 304	PHB		
101														PC	AISI #6X263X1820	000951-01-0EX-EM-1036	AISI 304	PHB		
102														PC	AISI #5X80X183	000951-01-0EX-EM-1037	AISI 304	PHB		
103														PC	AISI #6X90X668	000951-01-0EX-EM-1061	AISI 316L	PHB		
104														PC	AISI #6X75X708	000951-01-0EX-EM-1160	AISI 316L	PHB		
105														PC	AISI #6X140X708	000951-01-0EX-EM-1160	AISI 316L	PHB		
106														PC	SKIRT BOARD AISI	000951-01-0EX-EM-1510	AISI 316L	PHB		
107														PC	CLOSING BAR AISI	000951-01-0EX-EM-1550	AISI 316L	PHB		
108														PC	AISI #6X490X520	000951-01-0TR-EM-0024000951-(	AISI 316L	PHB		
109														PC	DUCT AISI	000951-01-0TR-EM-0031	AISI 316L	PHB		
110														PC	DUCT AISI	000951-02-0TR-EM-0031	AISI 316L	PHB		
111														PC	SKIRTBOARD AISI	000951-02-0TR-EM-0083	AISI 316L	PHB		
112														PC	HEAD CHUTE AISI	000951-04-0TR-EM-0028	AISI 316L	PHB		
113														PC	DISCHARGE PIPE AISI	000951-04-0TR-EM-0029	AISI 316L	PHB		
114														PC	SKIRTBOARD AISI	000951-04-0TR-EM-0083	AISI 316L	PHB		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

115														PC	BY PASS 500X500 DEFLECTOR	000951-03-0TR-EM-1076_1081_1082	AISI 316L	PHB		
116														PC	DISCHARGE DUCT AISI	000951-03-0TR-EM-1076_1161_1162_1171_1172_1173	AISI 316L	PHB		
117														PC	SKIRTBOARD AISI	000951-03-0TR-EM-1511	AISI 316L	PHB		
118						1	1						2	PC	HEAD CHUTE AISI	000951-05-0TR-EM-1060	AISI 304L	PHB		
119														PC	SKIRTBOARD AISI	000951-05-0TR-EM-1511	AISI 316L	PHB		
120															**METAL DETECTOR GRS-650X300 ATEX**					
121														PC	MODULE	000951-01-0TR-EM-0012	EKM 06-V2	A. TRISTANY		
122														PC	HORN	000951-01-0TR-EM-0012	P40A	A. TRISTANY		
123														PC	SHOCK ABSORBERS	000951-01-0TR-EM-0012		A. TRISTANY		
124														PC	GLAND	000951-01-0TR-EM-0012	EX 3D M25X1,5	A. TRISTANY		
125															**WEAR PLATES**					
126														PC	HARDOX 400 #6X487X600	000951-01-0EX-EM-1031 000951-03-0TR-EM-1041	HARDOX 400	PHB		
127														PC	HARDOX 400 #6	000951-01-0EX-EM-1061	HARDOX 400	PHB		
128						1	1						2	PC	HARDOX 400 #6X520x782	000951-01-0TR-EM-024 000951-02-0TR-EM-024 000951-04-0TR-EM-024	HARDOX 400	PHB		
129						1	1						2	PC	HARDOX 400 #6X150x530	000951-01-0TR-EM-0083 000951-02-0TR-EM-0083	HARDOX 400	PHB		
130														PC	HEAD CHUTE WEAR PLATES	000951-02-0TR-EM-028	HARDOX 400	PHB		
131														PC	HEAD CHUTE WEAR PLATES	000951-04-0TR-EM-028	HARDOX 400	PHB		
132														PC	DISCHARGE CHUTE HARDOX 400	000951-03-0TR-EM-1061	HARDOX 400	PHB		
133						1	1						2	PC	HARDODX #6X300X500	000951-05-0TR-EM-1031	HARDOX 400	PHB		
134						1	1						2	PC	DEFLECTOR	000951-05-0TR-EM-1050	HARDOX 400	PHB		
135															**RUBBER**					
136														PC	#15X150X1450	000951-01-0EX-EM-1063	45-50 SHORE	PHB		
137														PC	#10X165X3400	000951-01-0EX-EM-1161	45-50 SHORE	PHB		
138														PC	#10X200X728	000951-01-0EX-EM-1162	45-50 SHORE	PHB		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

139														PC	SKIRT BOARD RUBBER	000951-01-0EX-EM-1510	45-50 SHORE	PHB		
140														PC	CLOSING BAR RUBBER	000951-01-0EX-EM-1550	45-50 SHORE	PHB		
141														PC	HEAD FRAMEWORK RUBBER	000951-01-0TR-EM-0025 000951-02-0TR-EM-0025 000951-04-0TR-EM-0025	45-50 SHORE	PHB		
142														PC	SKIRT BOARD RUBBER	000951-01-0TR-EM-0083Pos 24	45-50 SHORE	PHB		
143														PC	SKIRT BOARD RUBBER	000951-02-0TR-EM-0083 Pos 25	45-50 SHORE	PHB		
144														PC	SKIRT BOARD RUBBER	000951-04-0TR-EM-0083 Pos 26	45-50 SHORE	PHB		
145														PC	DISCHARGE RUBBER #8X1155X1850	000951-03-0TR-EM-1043	45-50 SHORE	PHB		
146														PC	DISCHARGE CHUTE RUBBER #15X150X1400	000951-03-0TR-EM-1060_1066	45-50 SHORE	PHB		
147														PC	SKIRTBOARD RUBBER	000951-03-0TR-EM-1510	45-50 SHORE	PHB		
148														PC	TAKE UP SYSTEM	000951-03-0TR-EM-1920	45-50 SHORE	PHB		
149						1	1						2	PC	HEAD CHUTE RUBBER	000951-05-0TR-EM-1066	45-50 SHORE	PHB		
150						1	1						2	PC	SKIRTBOARD RUBBER	000951-05-0TR-EM-1510	45-50 SHORE	PHB		
151														PC	IMPACT BAR 70X200X830	000951-01-0ST-EM-0400		PHB		
152														PC	IMPACT BAR 70X200X240	000951-01-0ST-EM-0410		PHB		
153														PC	V-PLOW W1200 RUBBER	000951-01-0ST-EM-0950	45-50 SHORE	PHB		
154						1	1						2	PC	V-PLOW W650 RUBBER	000951-01-0ST-EM-0910	45-50 SHORE	PHB		
155															**BEARING & SUPPORTS**					
156						4	4						8	PC	SNL515+22215K+H315+2XFRB+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H315+2XFRB+2XTSNL	SKF		
157						4	4						8	PC	SNL515+22215K+H315+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H315+2XTSNL	SKF		
158														PC	SNLN3024+23024CCK	000951-02-0ST-EM-0010_0070		SKF		
159														PC	SNL518+22218K	000951-02-0ST-EM-0030_0080_0090_0110_0120		SKF		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

160														PC	SNL513+22213K	000951-02-0ST-EM-0040		SKF		
161														PC	SNL511+22211EK	000951-02-0ST-EM-0060		SKF		
162														PC	22218EK+H318	000951-02-0ST-EM-9010		SKF		
163														PC	22213EK+H313	000951-02-0ST-EM-9020_9030		SKF		
164															**PULLEYS**					
165														PC	DRIVE PULLEY Ø500 W1200 SHAFT Ø140-110-90	000951-02-0ST-EM-0010		PHB		
166														PC	TAIL TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0020		PHB		
167														PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-50	000951-02-0ST-EM-0030		PHB		
168														PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0040		PHB		
169														PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0050_0100		PHB		
170														PC	TAIL TAKE UP PULLEY Ø315 W650 SHAFT Ø80-50	000951-02-0ST-EM-0060		PHB		
171														PC	DRIVE PULLEY Ø630 W1200 SHAFT Ø160-110-100	000951-02-0ST-EM-0070		PHB		
172														PC	TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0080		PHB		
173														PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0090		PHB		
174														PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0110		PHB		
175														PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-60	000951-02-0ST-EM-0120		PHB		
176						1	1						2	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-40	000951-02-0ST-EM-0130		PHB		
177															**24"x36" COBRA CRUSHER**					
178														PC	TIP Cr. PIMCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
179														PC	TIP BOLT 7/8" X 6"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
180														PC	FLAT WASHER 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
181														PC	GRIP NUT 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
182														PC	SEGMENT MCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
183														PC	SQUARE HEAD BOLT 1"X4"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
184														PC	FLAT WASHER 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

					PC	GRIP NUT 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
185					PC	GRIP NUT 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
186					PC	HOPPER SIDE LINER LH	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
187					PC	HOPPER SIDE LINER RH	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
188					PC	FLAT SOCKET HEAD CAPSCREW 3/4"X2"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
189					PC	GRIP NUT 3/4"	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
190					PC	HOLD-BACK BOLT ASSEMBLY	000951-01-0TT-EM-0001		MCLANAHAN CORPOI		
191											
192						**PLC**					
193				1	1 PC	7 Slot ControlLogix Chassis		1756-A7	ROCKWELL		Redundant Control
194				1	1 PC	ControlLogix, 85-265 VAC Power Supply (10 Amp @ 5V)		1756-PA72	ROCKWELL		Redundant Control
195				1	1 PC	ControlLogix 5570 Controller with 4 MB Memory, USB Port		1756-L72	ROCKWELL		Redundant Control
196				1	1 PC	EtherNet 10-100M Interface Module (supports 128 TCP/IP)		1756-EN2T	ROCKWELL		Redundant Control
197				1	1 PC	EtherNet dual port 10-100M Interface Module		1756-EN2TR	ROCKWELL		Redundant Control
198				1	1 PC	Redundancy Module		1756-RM2	ROCKWELL		Redundant Control
199				1	1 PC	Fiber Cable, 1 Meter		1756-RMC1	ROCKWELL		Redundant Control
200				1	1 PC	2-slot adapter base unit		1715-A2A	ROCKWELL		PERIFERIA SIL2
201				1	1 PC	3-slot I/O base unit		1715-A3IO	ROCKWELL		PERIFERIA SIL2
202				1	1 PC	EtherNet/IP Adapter		1715-AENTR	ROCKWELL		PERIFERIA SIL2
203				1	1 PC	16-point digital input module		1715-IB16D	ROCKWELL		PERIFERIA SIL2
204				1	1 PC	8-point digital output module		1715-OB8DE	ROCKWELL		PERIFERIA SIL2
205				1	1 PC	Termination Assembly - digital input simplex		1715-TASIB16D	ROCKWELL		PERIFERIA SIL2
206				1	1 PC	Termination Assembly - digital output simplex		1715-TASOB8DE	ROCKWELL		PERIFERIA SIL2
207				1	1 PC	1794 Flex, Flex Ex, Flex XT I/O System, FLEX I/O Dual Port EtherNet/IP		1794-AENTR	ROCKWELL		PERIFERIA ESTANDAR
208				1	1 PC	1794 Flex, Flex Ex, Flex XT I/O System, Input Module, 24VDC, 32 Sink Inputs		1794-IB32	ROCKWELL		PERIFERIA ESTANDAR
209				1	1 PC	1794 Flex, Flex Ex, Flex XT I/O System, Output Module, 24V DC, 32 Source		1794-OB32P	ROCKWELL		PERIFERIA ESTANDAR
210				1	1 PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog Input Modules, 8 Single-Ended Inputs		1794-IE8H	ROCKWELL		PERIFERIA ESTANDAR

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

211											1		1	PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog 8 Output Module	1794-OF8IH	ROCKWELL		PERIFERIA ESTANDAR
212											1		1	PC	40 point feed-through digital IFM, standard,	1492-IFM40F	ROCKWELL		PERIFERIA ESTANDAR
213											1		1	PC	Pre-wired cable 1,5mt (1794-IB32)	1492-CAB015B94	ROCKWELL		PERIFERIA ESTANDAR
214											1		1	PC	Ready cable 1,5mt (1794-IB32/1974-OB32P)	1492-CAB015H94	ROCKWELL		PERIFERIA ESTANDAR
215											1		1	PC	Terminal base, for 32 point modules, 62 pin D-shell termination	1794-TB62DS	ROCKWELL		PERIFERIA ESTANDAR
216											1		1	PC	1794 Flex, Flex Ex, Flex XT I/O System, Terminal Base, 3-Wire grounded, Screw Clamp	1794-TB3G	ROCKWELL		PERIFERIA ESTANDAR
217											1		1	PC	FLEX I/O 1ft extended cable 0,9m	1794-CE3	ROCKWELL		PERIFERIA ESTANDAR
218											1		1	PC	1606-XLE480E: Essential Power Supply, 24-28V DC, 480 W, 240V AC Input Voltage	1606-XLE480EP	ROCKWELL		POWER SUPPLY
219											1		1	PC	1606-XLERED: Essential Redundancy Module, Vin 1 -.9Vin, 384 W, 10-60V DC Input Voltage	1606-XLERED	ROCKWELL		POWER SUPPLY
220											1		1	PC	Module voltage, module protection, 6A, 6A, 6A, 6A, Electronic Circuit Protection, 24Vdc	1692-ZG6666	ROCKWELL		POWER SUPPLY
221											1		1	PC	Stratix 5700 Switch, Managed, 8 Fast Ethernet Copper Ports, 2 Fast Ethernet Combo Ports	1783-BMS10CL	ROCKWELL		NETWORKS
222											1		1	PC	Networks and Communication Products, EtherNet/IP Tap1 copper port, 2 fiber ports	1783-ETAP2F	ROCKWELL		NETWORKS
223											1		1	PC	Networks and Communication Products, EtherNet/IP Tap2 copper ports, 1 fiber port	1783-ETAP1F	ROCKWELL		NETWORKS
224											1		1	PC	Stratix 2000 Switch, Unmanaged, 8 Copper Ports	1783-US8T	ROCKWELL		NETWORKS
225											1		1	PC	EtherNet/IP to Serial Linking Device Gateway	HMS-EN2SER	ROCKWELL		NETWORKS
226											1		1	PC	EtherNet/IP Adapter to Modbus-TCP Slave gateway	AB7632	ROCKWELL		NETWORKS
227											1		1	PC	Ethernet IP to Modbus TCP Gateway	PLX31-EIP-MBTCP	ROCKWELL		NETWORKS
228											1		1	PC	PanelView Plus 7 Standard Terminal, Touch Screen, 15 TFT Color, Ethernet DLR	2711P-T15C22D8S	ROCKWELL		HMI
229											1		1	PC	2-Channel Isolated Barrier, 24Vdc power supply, dry contact or NAMUR inputs,	KFD2-SR2-Ex2.W	PEPPERL-FUCHS		OTHERS
230											1		1	PC	PLC Relay Module, screw connection and pluggable miniature relay w/power	PLC-RSC-230UC/21	PHOENIX CONTACT		OTHERS
231											1		1	PC	PLC -INTERFACE, screw connection and plug-in miniature relay w/power contact	PLC-RSC-24DC/1/ACT	PHOENIX CONTACT		OTHERS
232											1		1	PC	Coupling Relay for SIL 2 high -and low- demand applications	PSR-PS21-1NO-1NC-24D	PHOENIX CONTACT		OTHERS
233											1		1	PC	Filter fan, 230Vac, up to 536m³/h, 223x223mm	01883.0-00	STEGO		OTHERS
234											1		1	PC	Miniature Circuit Breaker, 2P/16A, Curve C	5SL6516-7	SIEMENS		OTHERS
235											1		1	PC	Miniature Circuit Breaker, 2P/6A, Curve C	5SL6506-7	SIEMENS		OTHERS
236											1		1	PC	RCCB, 2-pole, type AC, 25A, 30mA	5SV53120FB	SIEMENS		OTHERS

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

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2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
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2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
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2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

237																		
238														**EXPLOSION PANELS**					
239		14											14	PC	EXPLOSION VENT KER 940X1440	000951-01-0SL-EM-0001	AISI 304 DIN 14301	ATEXPREVEN		
240		14											14	PC	SENSOR ATEX	000951-01-0SL-EM-0001	S3-HT	ATEXPREVEN		
241																				
242															**OTHER**					
243						1	1						2	PC	HORN&LAMP	-	D1XC1C10-AC230	PEPER&FUCHS		
244														Meter	15w/m HEAT TRACING CABLE	-				
245														PC	Weight cell 1000T	000951-01-0SL-EM-0001	C3 ATEX 22	SERVIPESA		
246														PC	Support weight cell with accesories	000951-01-0SL-EM-0001	HDG	SERVIPESA		
247														PC	Conection box	000951-01-0SL-EM-0001		SERVIPESA		
248														PC	Panel with ethernet comunication	000951-01-0SL-EM-0001	MOD 1700	SERVIPESA		
249														Kit	HILTI DRILL KIT DX 351 BT G + SF BT 22-A + B22/2.6	-	DX351 BT G	HILTI		
250														Kit	HILTI SCREWDRIVER KIT SBT 4-A22 + B22/3.0 + S-DG BT M	-	SBT 4-A22	HILTI		
251																				
252															**TELESCOPIC CHUTE**					
253								9	9				18	PC	Filter cartridge	000951-01-0CC-EM-0001	HE-FJ-OS-000164-K00	HENNLICH		
254								1	1				2	PC	Level switch	000951-01-0CC-EM-0001	HE-NZ-EM-000195-K00	HENNLICH		
255								1	1				2	PC	Inlet part	000951-01-0CC-EM-0001	HE-NZ-OD-024200-000	HENNLICH		
256								1	1				2	PC	Tube No. 1	000951-01-0CC-EM-0001	HE-NZ-OD-024170-000	HENNLICH		
257								1	1				2	PC	Tube No. 2	000951-01-0CC-EM-0001	HE-NZ-OD-024175-000	HENNLICH		
258								1	1				2	PC	Tube No. 3	000951-01-0CC-EM-0001	HE-NZ-OD-024181-000	HENNLICH		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
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2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

259								1	1				2	PC	Tube No. 4	000951-01-0CC-EM-0001	HE-NZ-OD-024186-000	HENNLICH		
260								1	1				2	PC	Outer bellows	000951-01-0CC-EM-0001	HE-NZ-OS-024231-000	HENNLICH		
261								1	1				2	PC	Rope dia 6 mm	000951-01-0CC-EM-0001	HE-NZ-ME-024210-000	HENNLICH		
262																				
263												1	1		**VULCANIZER**					
264												1	1	PC	spare bag size 39" x 54"	-	SVP3954-17 (39-54)	ALMEX		
265												4	4	PC	spare element 39" x 54"	-	SVP3954-17 (39-54)	ALMEX		
266												1	1	PC	Platen Receptacle Insert (High Temp)	-	SVP3954-17 (SVP-18)	ALMEX		
267												1	1	PC	1/4" (6mm) 100 Ohm RTD Probe	-	SVP3954-17 (SVP-23)	ALMEX		
268												1	1	PC	Platen Handle Assembly	-	SVP3954-17 (SVP-25)	ALMEX		
269												1	1	PC	Locking Pin	-	SVP3954-17 (SVP-3)	ALMEX		
270												1	1	PC	Quick coupler Male	-	SVP3954-17 (SVP-10)	ALMEX		
271												1	1	PC	Quick coupler Male Dust-cap	-	SVP3954-17 (SVP-11)	ALMEX		
272												1	1	PC	Quick coupler Female	-	SVP3954-17 (SVP-30)	ALMEX		
273												1	1	PC	Quick coupler Female Dust-cap	-	SVP3954-17 (SVP-31)	ALMEX		
274															FOR RC3 TEMPERATURE CONTROL PANEL	-		ALMEX		
275												1	1	PC	Fuse Holder C/w 2 Amp Fuse	-	SVP3954-17 (RC3-9)	ALMEX		
276												1	1	PC	Platen Connector Insert	-	SVP3954-17 (RC3-15)	ALMEX		
277												1	1	PC	Platen Connector Housing	-	SVP3954-17 (RC3-15)	ALMEX		
278																				
279															**AUTOMATIC SAMPLING SYSTEM**					
280															**Hammer sampler HPN650/30/482/D/300**	000951-01-0CG-PI-0008_03 S-56				
281														PC	Geared motor with brake	000951-01-0CG-PI-0008_03 S-56	351005	SIEBTECHNIK		
282														PC	Proximity switches	000951-01-0CG-PI-0008_03 S-56	351510	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

283														PC	Guide plates (set)	000951-01-0CG-PI-0008_03 S-56	351551	SIEBTECHNIK
284														PC	Back panel	000951-01-0CG-PI-0008_03 S-56	351550	SIEBTECHNIK
285														PC	Stripper rubber	000951-01-0CG-PI-0008_03 S-56	351553	SIEBTECHNIK
286														PC	Brush	000951-01-0CG-PI-0008_03 S-56	351555	SIEBTECHNIK
287														PC	Spherical roller bearings	000951-01-0CG-PI-0008_03 S-56	131577	SIEBTECHNIK
288														PC	Tension sleeve	000951-01-0CG-PI-0008_03 S-56	217035	SIEBTECHNIK
289														PC	V-sealing ring	000951-01-0CG-PI-0008_03 S-56	195568	SIEBTECHNIK
290															**Belt conveyor GFB500x3175**	000951-01-0CG-PI-0008_03 S-56		
291														PC	Geared motor	000951-01-0CG-PI-0008_03 S-56	351006	SIEBTECHNIK
292														PC	Drive pulley	000951-01-0CG-PI-0008_03 S-56	351303	SIEBTECHNIK
293														PC	Take-up pulley	000951-01-0CG-PI-0008_03 S-56	347771	SIEBTECHNIK
294														PC	Flanged bearing FY65	000951-01-0CG-PI-0008_03 S-56	351304	SIEBTECHNIK
295														PC	Flanged bearing FY45	000951-01-0CG-PI-0008_03 S-56	347751	SIEBTECHNIK
296														PC	Idler, top	000951-01-0CG-PI-0008_03 S-56	206482	SIEBTECHNIK
297														PC	Idler, bottom	000951-01-0CG-PI-0008_03 S-56	347755	SIEBTECHNIK
298														PC	Belt	000951-01-0CG-PI-0008_03 S-56	351516	SIEBTECHNIK
299														PC	Rubber for material guide, set	000951-01-0CG-PI-0008_03 S-56	357689	SIEBTECHNIK
300														PC	Rubber for drum stripper	000951-01-0CG-PI-0008_03 S-56	347759	SIEBTECHNIK
301														PC	Rubber for angular stripper	000951-01-0CG-PI-0008_03 S-56	347760	SIEBTECHNIK
302														PC	Sensor for speed monitoring	000951-01-0CG-PI-0008_03 S-56	350896	SIEBTECHNIK
303															**Single roll crusher EW 30/25**	000951-01-0CG-PI-0008_03 S-56		
304														PC	Roller body	000951-01-0CG-PI-0008_03 S-56	200719	SIEBTECHNIK
305														PC	Crushing bars	000951-01-0CG-PI-0008_03 S-56	164696	SIEBTECHNIK
306														PC	Wear plate towards the crusher wall, 2 parts	000951-01-0CG-PI-0008_03 S-56	357690	SIEBTECHNIK
307														PC	Wear plate towards the crusher wall, bottom	000951-01-0CG-PI-0008_03 S-56	350645	SIEBTECHNIK
308														PC	Wear plate towards the crusher housing	000951-01-0CG-PI-0008_03 S-56	350647	SIEBTECHNIK

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

309														PC	Stripper towards the back panel	000951-01-0CG-PI-0008_03 S-56(	200727	SIEBTECHNIK		
310														PC	Stripper for crushing bar	000951-01-0CG-PI-0008_03 S-56(	170846	SIEBTECHNIK		
311														PC	Rubber plate	000951-01-0CG-PI-0008_03 S-56(	200723	SIEBTECHNIK		
312														PC	Self-aligning roller bearing	000951-01-0CG-PI-0008_03 S-56(	200712	SIEBTECHNIK		
313														PC	Adapter sleeve	000951-01-0CG-PI-0008_03 S-56(	200713	SIEBTECHNIK		
314														PC	Rubber battery spring	000951-01-0CG-PI-0008_03 S-56(	118722	SIEBTECHNIK		
315														PC	Geared motor	000951-01-0CG-PI-0008_03 S-56(	350632	SIEBTECHNIK		
316															**Turnstile divider DKT 370 A/1P**	000951-01-0CG-PI-0008_03 S-56(				
317														PC	Geared motor	000951-01-0CG-PI-0008_03 S-56(	350926	SIEBTECHNIK		
318														PC	Rotary arm	000951-01-0CG-PI-0008_03 S-56(	265023	SIEBTECHNIK		
319														PC	Stripper for the rotary arm	000951-01-0CG-PI-0008_03 S-56(	350933	SIEBTECHNIK		
320														PC	Discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-56(	350931	SIEBTECHNIK		
321														PC	Stripper set for the discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-56(	357314	SIEBTECHNIK		
322														PC	Cone scraper	000951-01-0CG-PI-0008_03 S-56(	350932	SIEBTECHNIK		
323															**Sample collector S4/10**	000951-01-0CG-PI-0008_03 S-56(				
324														PC	Geared motor	000951-01-0CG-PI-0008_03 S-56(	350895	SIEBTECHNIK		
325														PC	Proximity switches	000951-01-0CG-PI-0008_03 S-56(	350896	SIEBTECHNIK		
326														PC	Safety switch with actuator	000951-01-0CG-PI-0008_03 S-56(	268454	SIEBTECHNIK		
327														PC	Container	000951-01-0CG-PI-0008_03 S-56(	223146	SIEBTECHNIK		
328														PC	Rubber collar	000951-01-0CG-PI-0008_03 S-56(	350903	SIEBTECHNIK		
329														PC	Rubber collar	000951-01-0CG-PI-0008_03 S-56(	350904	SIEBTECHNIK		
330														PC	Hose clamp	000951-01-0CG-PI-0008_03 S-56(	39515	SIEBTECHNIK		
331														PC	Rubber collar	000951-01-0CG-PI-0008_03 S-56(	350905	SIEBTECHNIK		
332														PC	Hose clamp	000951-01-0CG-PI-0008_03 S-56(	39075	SIEBTECHNIK		
333															**Control unit**	000951-01-0CG-PI-0008_03 S-56(				
334														PC	Enclosure heater 800/870W, 230V,50/60 Hz	000951-01-0CG-PI-0008_03 S-56(	350469-1	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

335														PC	Fan and filter unit	000951-01-0CG-PI-0008_03 S-56(	350469-2	SIEBTECHNIK
336														PC	SITOP PSE200U	000951-01-0CG-PI-0008_03 S-56(	350469-3	SIEBTECHNIK
337														PC	KTP700 Basic DP	000951-01-0CG-PI-0008_03 S-56(	350469-4	SIEBTECHNIK
338														PC	CPU 314C PN/DP	000951-01-0CG-PI-0008_03 S-56(	350469-5	SIEBTECHNIK
339														PC	SM 323, 16 DI/DO, DC24V, 0.5 A	000951-01-0CG-PI-0008_03 S-56(	350469-6	SIEBTECHNIK
340														PC	Safety relais module SRB-Exi	000951-01-0CG-PI-0008_03 S-56(	350469-7	SIEBTECHNIK
341														PC	Thermistor motor protection	000951-01-0CG-PI-0008_03 S-56(	350469-8	SIEBTECHNIK
342														PC	Coupling relay	000951-01-0CG-PI-0008_03 S-56(	350469-9	SIEBTECHNIK
343														PC	Sirius safety relay stanard series device	000951-01-0CG-PI-0008_03 S-56(	350469-10	SIEBTECHNIK
344														PC	Contactor AC-3, 3 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-56(	350469-11	SIEBTECHNIK
345														PC	Contactor AC-3, 5.5 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-56(	350469-12	SIEBTECHNIK
346														PC	2NO+2NC contactor, AC 3, 4KW AC 230V50 Hz	000951-01-0CG-PI-0008_03 S-56(	350469-13	SIEBTECHNIK
347														PC	Aux. Switch block, 2NO+2NC	000951-01-0CG-PI-0008_03 S-56(	350469-14	SIEBTECHNIK
348														PC	Sitop PSU200 M	000951-01-0CG-PI-0008_03 S-56(	350469-15	SIEBTECHNIK
349																		
350															**TRUCK WASHING BOX**			
351										14			14	PC	Flat fan nozzels	000951-01-0CG-PI-0009_06 S-56(	JB 1/4	LECHLER
352										1			1	PC	Photo-electric sensor	000951-01-0CG-PI-0009_06 S-56(	XUX5ARCNT16	SCHNEIDER
353										1			1	KIT	Sseals kit for pumps	000951-01-0CG-PI-0009_06 S-56(	RC.SS1CG_C1	TECNOTER
354																		
355																		
356																		
357																		
358																		
359																		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

	QUANTITY OF INSTALLED PARTS PER SINGLE UNIT OF EQUIPMENT :	NO. OF INSTALLED PARTS IN 2A to 2L	UNIT OF MEASURE	DESCRIPTION	DRAWING No.	PART NUMBER SELLER'S	PART NUMBER MANUFACTURER'S	PART NUMBER OWNER'S	REMARKS
1				**INSTRUMENTS**					
2			PC	HAND SWITCH	172784-0300-001-SD-000114	LHPEw-10/1-B-EX	TAEX		
3			PC	POSITION SWITCH	172784-0300-001-SD-000114	LHPEw-10/2EX-L50V	TAEX		
4			PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 62 CP62	VEGA		
5			PC	LEVEL SWITCH	172784-0300-001-SD-000114	VEGACAP 65 CP65	VEGA		
6			PC	LEVEL DETECTION	172784-0300-001-SD-000114	VEGAPULS 69 PS69	VEGA		
7			PC	SPEED LIMIT SWITCH	172784-0300-001-SD-000114				
8			PC	INDUCTIVE SENSOR	-	XS630B1PAL10EX	SCHNEIDER		
9			PC	INDUCTIVE SENSOR	-	XSAV12373EX	SCHNEIDER		
10			PC	LIMIT SWITCH	-	XCKD3945P16 EX	SCHNEIDER		
11			PC	ENCODER	-	8.5863FS2.1A4BG722.0100EX	PEPPERL & FUCHS		
12				**ROTOFLUID COUPLING ALFA 55 K02 FC**					
13			PC	120ºC 1/2" GAS FUSIBLE PLUG	000951-03-0TTR-EM-1100	N/A	WESTCAR		
14			PC	FLEXIBLE ELEMENT RN5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
15			PC	VITON SEALS KIT GU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
16			PC	BEARINGS KIT CU5	000951-03-0TTR-EM-1100	N/A	WESTCAR		
17				**ELECTROMAGNETIC SEPARATOR SK 16.15**					
18			SET	SET OF FUSES	000951-01-0EX-EM-1200	GZ000052	MEC		
19			PC	24 Vdc FEEDER	000951-01-0EX-EM-1200	CA007020	MEC		
20			SET	SET OF LED LAMP	000951-01-0EX-EM-1200	GZ000029	MEC		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

21														PC	RECTIFIER DIODE	000951-01-0EX-EM-1200	CA005157	MEC	
22															**ELECTROMECANIC ACTUATOR**				
23			1										1	PC	ELECTRIC MOTOR	000951-01-0SL-EM-0009	3P-CA-660V-50Hz	MECVEL 02	
24			1										1	PC	TORQUE LIMITER	000951-01-0SL-EM-0009	N/A	MECVEL 03	
25			1										1	PC	LIMIT SWITCHES GROUP	000951-01-0SL-EM-0009	N/A	MECVEL 07	
26			1										1	PC	MANUAL HAND WHEEL	000951-01-0SL-EM-0009	N/A	MECVEL 04	
27			1										1	PC	BELLOWS BOOT	000951-01-0SL-EM-0009	N/A	MECVEL 05	
28			1										1	PC	FRONT END WITH SHOCK ABSORBER	000951-01-0SL-EM-0009	N/A	MECVEL 06	
29															**AUTOMATIC SAMPLING SYSTEM**				
30				1									1	PC	Limit switch type 1	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA	
31				1									1	PC	Limit switch type 2	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA	
32				1									1	PC	Atex brush	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA	
33				1									1	PC	Atex rubber strip	000951-02-0TR-EM-0140	TEMA - HAMMER SAMPLE TAKER	TEMA	
34					1								1	PC	Rubber scraper drum	000951-02-0TR-EM-0140	TEMA - GFB 500 CONVEYOR	TEMA	
35					1								1	PC	Rubber scraper lower belt	000951-02-0TR-EM-0140	TEMA - GFB 500 CONVEYOR	TEMA	
36								1					1	SET	Wearing plates for crushing roll	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA	
37								1					1	SET	Wearing plates for crushing plate, upper part	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA	
38								1					1	PC	Wearing plates for crushing plate, lower part	000951-02-0TR-EM-0140	TEMA - SINGLE ROLLER MILL EW 30/40	TEMA	
39						1							1	SET	Rubber scrapers	000951-02-0TR-EM-0140	TEMA - TURNSTILE DIVIDER DKT 370 A	TEMA	
40							4						4	PC	Rubber collar Ø154	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA	
41							4						4	PC	Rubber collar Ø162	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA	

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

42	4	PC	Sample collectors stainless steel	000951-02-0TR-EM-0140	TEMA - SAMPLE COLLECTOR S 4/10L	TEMA		
43			**BELTS**					
44	Meter		Rubber belt W1200	000951-01-0EX-EM-0002	TEXTER 400/3 6+3 BS W1200	SIG		
45	Meter		Rubber belt W650	000951-01-0TR-EM-0007 000951-02-0TR-EM-0007 000951-04-0TR-EM-0007	TEXTER 400/3 6+3 BS W650	SIG		
46	Meter		Rubber belt W1200	000951-03-0TR-EM-0007	PIPEX 500/4 6+2 BS W1200	SIG		
47			**IDLERS**					
48	PC		CARRYING IDLER W650 Ø89 X 250	000951-01-0ST-EM-0010_0030	PSV/1 20F14 89J	RULMECA		
49	PC		IMPACT IDLER W650 Ø89 X 250	000951-01-0ST-EM-0020	PSV/1 20F14 63/89	RULMECA		
50	PC		RETURN IDLER W650 Ø108 X 750	000951-01-0ST-EM-0040	PSV/1 20Y14 63/108	RULMECA		
51								
52	PC		IMPACT IDLER Ø133/89 X 750	000951-01-0ST-EM-0400_0140	PSV/4 30F22 89/133	RULMECA		
53	PC		CLEANING IDLER Ø133/89 X 1400	000951-01-0ST-EM-0420_0430_0440	PSV/1 20Y14 89/133	RULMECA		
54	PC		CARRYING IDLER W1200 Ø108 X 465	000951-01-0ST-EM-0150_0180	PSV/1 20F14 108J	RULMECA		
55	PC		IMPACT IDLER W1200 Ø108/63 X 465	000951-01-0ST-EM-0160	PSV/1 20F14 63/108	RULMECA		
56	PC		CARRYING IDLER W1200 Ø89 X 165	000951-01-0ST-EM-0170_0200	PSV/1 20F14 108J	RULMECA		
57								
58								
59			**GEARBOX**					
60	PC		Gearbox KA107 R77 AD4	000951-01-0EX-EM-1100	KA107 R77 AD4	SEW		
61	PC		Gearbox KA77/T AM13S/M/RS	000951-01-0TR-EM-0070 & 000951-04-0TR-EM-0070	KA77/T AM132S/M/RS	SEW		
62	PC		Gearbox KA87/T AM160/RS	000951-02-0TR-EM-0070	KA87/T AM160/RS	SEW		
63	PC		Gearbox KA127B AD8/RS	000951-03-0TR-EM-1100	KA127B AD8/RS	SEW		
64	PC		Gearbox KA67/T AM112	000951-05-0TR-EM-1000	KA67/T AM112	SEW		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

65		PC	Motor Gearbox KA87BB EDRN90L4	000951-05-0TR-EM-8010	KA87BB EDRN90L4	SEW	
66			**FABRIPULSE EV 12-10-B FILTRE**				
67		PC	BAG FILTER	-	27-100003	AAF	
68		PC	ELECTRICAL CLEANING CIRCUIT	-	GAMMA	AAF	
69		PC	MEMBRANE VALVE REPAIR KIT	-	FPVD25	AAF	
70		PC	ELECTROVALVE REPAIR KIT	-	FPV24V	AAF	
71		PC	GALVANIZED CAGE	-	N/A	AAF	
72			**ELASTIC COUPLING**				
73		PC	ELASTIC COUPLING	000951-01-0EX-EM-1100	POLY-NORM 38 ADR	KTR	
74			**MOTORS**				
75		PC	Motor M3GP 132SME 4. 7.50 kW	000951-01-0TR-EM-0070	3GGP132250-BDL	ABB	
76		PC	Motor M3GP 160MLB 4. 15 kW	000951-02-0TR-EM-0070	3GGP162420-BDL	ABB	
77		PC	Motor M3GP 225SMB 4. 45 kW	000951-03-0TR-EM-1100	3GGP222220-ADL	ABB	
78		PC	Motor M3GP 132SMB 4. 5.50 kW	000951-04-0TR-EM-0070	3GGP132220-BDL	ABB	
79		PC	Motor M3GP 112ME 4. 4 kW	000951-05-0TR-EM-1000	3GGP112350-BDL	ABB	
80		PC	Motor M3GP 250SMA 6. 37 kW	000951-00-0OM-CO-0090	3GGP253210-ADL	ABB	
81		PC	Motor M3GP 132SMF 6. 4 kW	000951-01-0EX-EM-1100	3GGP133260-ADL	ABB	
82			**HOIST SH4016-16 4/1**				
83		METER	WIRE ROPE Ø9	-	3300079	STAHL	
84		PC	ROPE GUIDE RING LEFT 8,5-9	-	0443000430	STAHL	
85		PC	BOTTOM HOOK 6300 KG H162-4	-	0143027510	STAHL	
86		PC	BRAKE DISC 12/2H42MF (HOIST)	-	2327043650	STAHL	
87		PC	BRAKE DISC 8/2F12 (TROLLEY)	-	2127023650	STAHL	
88		PC	MOTOR 12/2H42-MF (HOIST)	-	70002098	STAHL	
89		PC	MOTOR 8/2F12 (TROLLEY)	-	2127087119	STAHL	
90			**BELT CLEANER**				

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
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3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

91														PC	QC1 Heavy duty segment blade W 1200	-	35381-421040OR	MARTIN ENGINEERIN(		
92														PC	QC1 Heavy duty segment blade W 650	-	35381-241022OR	MARTIN ENGINEERIN(		
93															**ELECTRO ACTUATED GATE BC**					
94	1	1											2	PC	SLIDER KIT FOR BC 900X1150	-	N/A	ORBINOX		
95	1	1											2	PC	JOINT FOR BC 900X1150 (2 SEAL OF 5 METERS)	-	N/A	ORBINOX		
96	1	1											2	PC	PACKING ST+ O-RING EPDM FOR BC 900X1150)	-	N/A	ORBINOX		
97															**AISI**					
98														PC	AISI #6X450X600	000951-01-0EX-EM-1031 000951-03-0TR-EM-1041	AISI 316L	PHB		
99														PC	AISI #6X298X1751	000951-01-0EX-EM-1034	AISI 304	PHB		
100														PC	AISI #6X318X1820	000951-01-0EX-EM-1035	AISI 304	PHB		
101														PC	AISI #6X263X1820	000951-01-0EX-EM-1036	AISI 304	PHB		
102														PC	AISI #5X80X183	000951-01-0EX-EM-1037	AISI 304	PHB		
103														PC	AISI #6X90X668	000951-01-0EX-EM-1061	AISI 316L	PHB		
104														PC	AISI #6X75X708	000951-01-0EX-EM-1160	AISI 316L	PHB		
105														PC	AISI #6X140X708	000951-01-0EX-EM-1160	AISI 316L	PHB		
106														PC	SKIRT BOARD AISI	000951-01-0EX-EM-1510	AISI 316L	PHB		
107														PC	CLOSING BAR AISI	000951-01-0EX-EM-1550	AISI 316L	PHB		
108														PC	AISI #6X490X520	000951-01-0TR-EM-0024 000951-02-0TR-EM-0024 000951-04-0TR-EM-0024	AISI 316L	PHB		
109														PC	DUCT AISI	000951-01-0TR-EM-0031	AISI 316L	PHB		
110														PC	DUCT AISI	000951-02-0TR-EM-0031	AISI 316L	PHB		
111														PC	SKIRTBOARD AISI	000951-02-0TR-EM-0083	AISI 316L	PHB		
112														PC	HEAD CHUTE AISI	000951-04-0TR-EM-0028	AISI 316L	PHB		
113														PC	DISCHARGE PIPE AISI	000951-04-0TR-EM-0029	AISI 316L	PHB		
114														PC	SKIRTBOARD AISI	000951-04-0TR-EM-0083	AISI 316L	PHB		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

115			1											1	PC	BY PASS 500X500 DEFLECTOR	000951-03-0TR-EM-1076_1081_1082	AISI 316L	PHB		
116			1											1	PC	DISCHARGE DUCT AISI	000951-03-0TR-EM-1076_1161_1162_1171_1172_1173	AISI 316L	PHB		
117															PC	SKIRTBOARD AISI	000951-03-0TR-EM-1511	AISI 316L	PHB		
118															PC	HEAD CHUTE AISI	000951-05-0TR-EM-1060	AISI 304L	PHB		
119															PC	SKIRTBOARD AISI	000951-05-0TR-EM-1511	AISI 316L	PHB		
120																**METAL DETECTOR GRS-650X300 ATEX**					
121															PC	MODULE	000951-01-0TR-EM-0012	EKM 06-V2	A. TRISTANY		
122															PC	HORN	000951-01-0TR-EM-0012	P40A	A. TRISTANY		
123															PC	SHOCK ABSORBERS	000951-01-0TR-EM-0012		A. TRISTANY		
124															PC	GLAND	000951-01-0TR-EM-0012	EX 3D M25X1,5	A. TRISTANY		
125																**WEAR PLATES**					
126															PC	HARDOX 400 #6X487X600	000951-01-0EX-EM-1031000951-03-0T	HARDOX 400	PHB		
127															PC	HARDOX 400 #6	000951-01-0EX-EM-1061	HARDOX 400	PHB		
128															PC	HARDOX 400 #6X520x782	000951-01-0TR-EM-024000951-02-0TR	HARDOX 400	PHB		
129															PC	HARDOX 400 #6X150x530	000951-01-0TR-EM-0083000951-02-0T	HARDOX 400	PHB		
130															PC	HEAD CHUTE WEAR PLATES	000951-02-0TR-EM-028	HARDOX 400	PHB		
131															PC	HEAD CHUTE WEAR PLATES	000951-04-0TR-EM-028	HARDOX 400	PHB		
132															PC	DISCHARGE CHUTE HARDOX 400	000951-03-0TR-EM-1061	HARDOX 400	PHB		
133															PC	HARDODX #6X300X500	000951-05-0TR-EM-1031	HARDOX 400	PHB		
134															PC	DEFLECTOR	000951-05-0TR-EM-1050	HARDOX 400	PHB		
135																**RUBBER**					
136															PC	#15X150X1450	000951-01-0EX-EM-1063	45-50 SHORE	PHB		
137															PC	#10X165X3400	000951-01-0EX-EM-1161	45-50 SHORE	PHB		
138															PC	#10X200X728	000951-01-0EX-EM-1162	45-50 SHORE	PHB		
139															PC	SKIRT BOARD RUBBER	000951-01-0EX-EM-1510	45-50 SHORE	PHB		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

140		PC	CLOSING BAR RUBBER	000951-01-0EX-EM-1550	45-50 SHORE	PHB		
141		PC	HEAD FRAMEWORK RUBBER	000951-01-0TR-EM-0025 000951-02-0TR-EM-0025 000951-04-0TR-EM-0025	45-50 SHORE	PHB		
142		PC	SKIRT BOARD RUBBER	000951-01-0TR-EM-0083Pos 24	45-50 SHORE	PHB		
143		PC	SKIRT BOARD RUBBER	000951-02-0TR-EM-0083 Pos 25	45-50 SHORE	PHB		
144		PC	SKIRT BOARD RUBBER	000951-04-0TR-EM-0083 Pos 26	45-50 SHORE	PHB		
145		PC	DISCHARGE RUBBER #8X1155X1850	000951-03-0TR-EM-1043	45-50 SHORE	PHB		
146		PC	DISCHARGE CHUTE RUBBER #15X150X1400	000951-03-0TR-EM-1060_1066	45-50 SHORE	PHB		
147		PC	SKIRTBOARD RUBBER	000951-03-0TR-EM-1510	45-50 SHORE	PHB		
148		PC	TAKE UP SYSTEM	000951-03-0TR-EM-1920	45-50 SHORE	PHB		
149		PC	HEAD CHUTE RUBBER	000951-05-0TR-EM-1066	45-50 SHORE	PHB		
150		PC	SKIRTBOARD RUBBER	000951-05-0TR-EM-1510	45-50 SHORE	PHB		
151		PC	IMPACT BAR 70X200X830	000951-01-0ST-EM-0400		PHB		
152		PC	IMPACT BAR 70X200X240	000951-01-0ST-EM-0410		PHB		
153		PC	V-PLOW W1200 RUBBER	000951-01-0ST-EM-0950	45-50 SHORE	PHB		
154		PC	V-PLOW W650 RUBBER	000951-01-0ST-EM-0910	45-50 SHORE	PHB		
155			**BEARING & SUPPORTS**					
156		PC	SNL515+22215K+H315+2XFRB+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H315+2XFRB+	SKF		
157		PC	SNL515+22215K+H315+2XTSNL	000951-05-0TR-EM-8010-8020	SNL515+22215K+H315+2XTSNL	SKF		
158		PC	SNLN3024+23024CCK	000951-02-0ST-EM-0010_0070		SKF		
159		PC	SNL518+22218K	000951-02-0ST-EM- 0030_0080_0090_0110_0120		SKF		
160		PC	SNL513+22213K	000951-02-0ST-EM-0040		SKF		
161		PC	SNL511+22211EK	000951-02-0ST-EM-0060		SKF		
162		PC	22218EK+H318	000951-02-0ST-EM-9010		SKF		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

163		PC	22213EK+H313	000951-02-0ST-EM-9020_9030		SKF		
164			**PULLEYS**					
165		PC	DRIVE PULLEY Ø500 W1200 SHAFT Ø140-110-90	000951-02-0ST-EM-0010		PHB		
166		PC	TAIL TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0020		PHB		
167		PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-50	000951-02-0ST-EM-0030		PHB		
168		PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0040		PHB		
169		PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60	000951-02-0ST-EM-0050_0100		PHB		
170		PC	TAIL TAKE UP PULLEY Ø315 W650 SHAFT Ø80-50	000951-02-0ST-EM-0060		PHB		
171		PC	DRIVE PULLEY Ø630 W1200 SHAFT Ø160-110-100	000951-02-0ST-EM-0070		PHB		
172		PC	TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0080		PHB		
173		PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0090		PHB		
174		PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80	000951-02-0ST-EM-0110		PHB		
175		PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-60	000951-02-0ST-EM-0120		PHB		
176		PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-40	000951-02-0ST-EM-0130		PHB		
177			**24"x36" COBRA CRUSHER**					
178		PC	TIP Cr. PlMCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
179		PC	TIP BOLT 7/8" X 6"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
180		PC	FLAT WASHER 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
181		PC	GRIP NUT 7/8"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
182		PC	SEGMENT MCL400 24X36	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
183		PC	SQUARE HEAD BOLT 1"X4"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
184		PC	FLAT WASHER 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
185		PC	GRIP NUT 1"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
186		PC	HOPPER SIDE LINER LH	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
187		PC	HOPPER SIDE LINER RH	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		
188		PC	FLAT SOCKET HEAD CAPSCREW 3/4"X2"	000951-01-0TT-EM-0001		MCLANAHAN CORPOF		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

189		PC	GRIP NUT 3/4"	000951-01-0TT-EM-0001		MCLANAHAN CORPOR		
190		PC	HOLD-BACK BOLT ASSEMBLY	000951-01-0TT-EM-0001		MCLANAHAN CORPOR		
191								
192			**PLC**					
193		PC	7 Slot ControlLogix Chassis		1756-A7	ROCKWELL		Redundant Control
194		PC	ControlLogix, 85-265 VAC Power Supply (10 Amp @ 5V)		1756-PA72	ROCKWELL		Redundant Control
195		PC	ControlLogix 5570 Controller with 4 MB Memory, USB Port		1756-L72	ROCKWELL		Redundant Control
196		PC	EtherNet 10-100M Interface Module (supports 128 TCP/IP)		1756-EN2T	ROCKWELL		Redundant Control
197		PC	EtherNet dual port 10-100M Interface Module		1756-EN2TR	ROCKWELL		Redundant Control
198		PC	Redundancy Module		1756-RM2	ROCKWELL		Redundant Control
199		PC	Fiber Cable, 1 Meter		1756-RMC1	ROCKWELL		Redundant Control
200		PC	2-slot adapter base unit		1715-A2A	ROCKWELL		PERIFERIA SIL2
201		PC	3-slot I/O base unit		1715-A3IO	ROCKWELL		PERIFERIA SIL2
202		PC	EtherNet/IP Adapter		1715-AENTR	ROCKWELL		PERIFERIA SIL2
203		PC	16-point digital input module		1715-IB16D	ROCKWELL		PERIFERIA SIL2
204		PC	8-point digital output module		1715-OB8DE	ROCKWELL		PERIFERIA SIL2
205		PC	Termination Assembly - digital input simplex		1715-TASIB16D	ROCKWELL		PERIFERIA SIL2
206		PC	Termination Assembly - digital output simplex		1715-TASOB8DE	ROCKWELL		PERIFERIA SIL2
207		PC	1794 Flex, Flex Ex, Flex XT I/O System, FLEX I/O Dual Port EtherNet/IP		1794-AENTR	ROCKWELL		PERIFERIA ESTANDAR
208		PC	1794 Flex, Flex Ex, Flex XT I/O System, Input Module, 24VDC, 32 Sink Inputs		1794-IB32	ROCKWELL		PERIFERIA ESTANDAR
209		PC	1794 Flex, Flex Ex, Flex XT I/O System, Output Module, 24V DC, 32 Source		1794-OB32P	ROCKWELL		PERIFERIA ESTANDAR
210		PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog Input Modules, 8 Single-Ended Inputs		1794-IE8H	ROCKWELL		PERIFERIA ESTANDAR
211		PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog 8 Output Module		1794-OF8IH	ROCKWELL		PERIFERIA ESTANDAR
212		PC	40 point feed-through digital IFM, standard,		1492-IFM40F	ROCKWELL		PERIFERIA ESTANDAR
213		PC	Pre-wired cable 1,5mt (1794-IB32)		1492-CAB015B94	ROCKWELL		PERIFERIA ESTANDAR
214		PC	Ready cable 1,5mt (1794-IB32/1974-OB32P)		1492-CAB015H94	ROCKWELL		PERIFERIA ESTANDAR

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

215	PC	Terminal base, for 32 point modules, 62 pin D-shell termination		1794-TB62DS	ROCKWELL		PERIFERIA ESTANDAR
216	PC	1794 Flex, Flex Ex, Flex XT I/O System, Terminal Base, 3-Wire grounded, Screw Clamp		1794-TB3G	ROCKWELL		PERIFERIA ESTANDAR
217	PC	FLEX I/O 1ft extended cable 0,9m		1794-CE3	ROCKWELL		PERIFERIA ESTANDAR
218	PC	1606-XLE480E: Essential Power Supply, 24-28V DC, 480 W, 240V AC Input Voltage		1606-XLE480EP	ROCKWELL		POWER SUPPLY
219	PC	1606-XLERED: Essential Redundancy Module, Vin 1 -.9Vin, 384 W, 10-60V DC Input Voltage		1606-XLERED	ROCKWELL		POWER SUPPLY
220	PC	Module voltage, module protection, 6A, 6A, 6A, 6A, Electronic Circuit Protection, 24Vdc		1692-ZG6666	ROCKWELL		POWER SUPPLY
221	PC	Stratix 5700 Switch, Managed, 8 Fast Ethernet Copper Ports, 2 Fast Ethernet Combo Ports		1783-BMS10CL	ROCKWELL		NETWORKS
222	PC	Networks and Communication Products, EtherNet/IP Tap1 copper port, 2 fiber ports		1783-ETAP2F	ROCKWELL		NETWORKS
223	PC	Networks and Communication Products, EtherNet/IP Tap2 copper ports, 1 fiber port		1783-ETAP1F	ROCKWELL		NETWORKS
224	PC	Stratix 2000 Switch, Unmanaged, 8 Copper Ports		1783-US8T	ROCKWELL		NETWORKS
225	PC	EtherNet/IP to Serial Linking Device Gateway		HMS-EN2SER	ROCKWELL		NETWORKS
226	PC	EtherNet/IP Adapter to Modbus-TCP Slave gateway		AB7632	ROCKWELL		NETWORKS
227	PC	Ethernet IP to Modbus TCP Gateway		PLX31-EIP-MBTCP	ROCKWELL		NETWORKS
228	PC	PanelView Plus 7 Standard Terminal, Touch Screen, 15 TFT Color, Ethernet DLR		2711P-T15C22D8S	ROCKWELL		HMI
229	PC	2-Channel Isolated Barrier, 24Vdc power supply, dry contact or NAMUR inputs,		KFD2-SR2-Ex2.W	PEPPERL-FUCHS		OTHERS
230	PC	PLC Relay Module, screw connection and pluggable miniature relay w/power		PLC-RSC-230UC/21	PHOENIX CONTACT		OTHERS
231	PC	PLC -INTERFACE, screw connection and plug-in miniature relay w/power contact		PLC-RSC-24DC/1/ACT	PHOENIX CONTACT		OTHERS
232	PC	Coupling Relay for SIL 2 high -and low- demand applications		PSR-PS21-1NO-1NC-24DC-SC	PHOENIX CONTACT		OTHERS
233	PC	Filter fan, 230Vac, up to 536m³/h, 223x223mm		01883.0-00	STEGO		OTHERS
234	PC	Miniature Circuit Breaker, 2P/16A, Curve C		5SL6516-7	SIEMENS		OTHERS
235	PC	Miniature Circuit Breaker, 2P/6A, Curve C		5SL6506-7	SIEMENS		OTHERS
236	PC	RCCB, 2-pole, type AC, 25A, 30mA		5SV53120FB	SIEMENS		OTHERS
237							
238		**EXPLOSION PANELS**					
239	PC	EXPLOSION VENT KER 940X1440	000951-01-0SL-EM-0001	AISI 304 DIN 14301	ATEXPREVEN		
240	PC	SENSOR ATEX	000951-01-0SL-EM-0001	S3-HT	ATEXPREVEN		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
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3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

241							
242		**OTHER**					
243	PC	HORN&LAMP	-	D1XC1C10-AC230	PEPER&FUCHS		
244	Meter	15w/m HEAT TRACING CABLE	-				
245	PC	Weight cell 1000T	000951-01-0SL-EM-0001	C3 ATEX 22	SERVIPESA		
246	PC	Support weight cell with accesories	000951-01-0SL-EM-0001	HDG	SERVIPESA		
247	PC	Conection box	000951-01-0SL-EM-0001		SERVIPESA		
248	PC	Panel with ethernet comunication	000951-01-0SL-EM-0001	MOD 1700	SERVIPESA		
249	Kit	HILTI DRILL KIT DX 351 BT G + SF BT 22-A + B22/2.6	-	DX351 BT G	HILTI		
250	Kit	HILTI SCREWDRIVER KIT SBT 4-A22 + B22/3.0 + S-DG BT M	-	SBT 4-A22	HILTI		
251							
252		**TELESCOPIC CHUTE**					
253	PC	Filter cartridge	000951-01-0CC-EM-0001	HE-FJ-OS-000164-K00	HENNLICH		
254	PC	Level switch	000951-01-0CC-EM-0001	HE-NZ-EM-000195-K00	HENNLICH		
255	PC	Inlet part	000951-01-0CC-EM-0001	HE-NZ-OD-024200-000	HENNLICH		
256	PC	Tube No. 1	000951-01-0CC-EM-0001	HE-NZ-OD-024170-000	HENNLICH		
257	PC	Tube No. 2	000951-01-0CC-EM-0001	HE-NZ-OD-024175-000	HENNLICH		
258	PC	Tube No. 3	000951-01-0CC-EM-0001	HE-NZ-OD-024181-000	HENNLICH		
259	PC	Tube No. 4	000951-01-0CC-EM-0001	HE-NZ-OD-024186-000	HENNLICH		
260	PC	Outer bellows	000951-01-0CC-EM-0001	HE-NZ-OS-024231-000	HENNLICH		
261	PC	Rope dia 6 mm	000951-01-0CC-EM-0001	HE-NZ-ME-024210-000	HENNLICH		
262							
263		**VULCANIZER**					
264	PC	spare bag size 39" x 54"	-	SVP3954-17 (39-54)	ALMEX		
265	PC	spare element 39" x 54"	-	SVP3954-17 (39-54)	ALMEX		
266	PC	Platen Receptacle Insert (High Temp)	-	SVP3954-17 (SVP-18)	ALMEX		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

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3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

267														PC	1/4" (6mm) 100 Ohm RTD Probe	-	SVP3954-17 (SVP-23)	ALMEX		
268														PC	Platen Handle Assembly	-	SVP3954-17 (SVP-25)	ALMEX		
269														PC	Locking Pin	-	SVP3954-17 (SVP-3)	ALMEX		
270														PC	Quick coupler Male	-	SVP3954-17 (SVP-10)	ALMEX		
271														PC	Quick coupler Male Dust-cap	-	SVP3954-17 (SVP-11)	ALMEX		
272														PC	Quick coupler Female	-	SVP3954-17 (SVP-30)	ALMEX		
273														PC	Quick coupler Female Dust-cap	-	SVP3954-17 (SVP-31)	ALMEX		
274															**FOR RC3 TEMPERATURE CONTROL PANEL**	-		ALMEX		
275														PC	Fuse Holder C/w 2 Amp Fuse	-	SVP3954-17 (RC3-9)	ALMEX		
276														PC	Platen Connector Insert	-	SVP3954-17 (RC3-15)	ALMEX		
277														PC	Platen Connector Housing	-	SVP3954-17 (RC3-15)	ALMEX		
278																				
279															**AUTOMATIC SAMPLING SYSTEM**					
280															**Hammer sampler HPN650/30/482/D/300**	000951-01-0CG-PI-0008_03 S-5600				
281				1									1	PC	Geared motor with brake	000951-01-0CG-PI-0008_03 S-5600	351005	SIEBTECHNIK		
282				2									2	PC	Proximity switches	000951-01-0CG-PI-0008_03 S-5600	351510	SIEBTECHNIK		
283				1									1	PC	Guide plates (set)	000951-01-0CG-PI-0008_03 S-5600	351551	SIEBTECHNIK		
284				1									1	PC	Back panel	000951-01-0CG-PI-0008_03 S-5600	351550	SIEBTECHNIK		
285				1									1	PC	Stripper rubber	000951-01-0CG-PI-0008_03 S-5600	351553	SIEBTECHNIK		
286				1									1	PC	Brush	000951-01-0CG-PI-0008_03 S-5600	351555	SIEBTECHNIK		
287				2									2	PC	Spherical roller bearings	000951-01-0CG-PI-0008_03 S-5600	131577	SIEBTECHNIK		
288				2									2	PC	Tension sleeve	000951-01-0CG-PI-0008_03 S-5600	217035	SIEBTECHNIK		
289				2									2	PC	V-sealing ring	000951-01-0CG-PI-0008_03 S-5600	195568	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
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3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

290															**Belt conveyor GFB500x3175**	000951-01-0CG-PI-0008_03 S-5600				
291					1								1	PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	351006	SIEBTECHNIK		
292					1								1	PC	Drive pulley	000951-01-0CG-PI-0008_03 S-5600	351303	SIEBTECHNIK		
293					1								1	PC	Take-up pulley	000951-01-0CG-PI-0008_03 S-5600	347771	SIEBTECHNIK		
294					2								2	PC	Flanged bearing FY65	000951-01-0CG-PI-0008_03 S-5600	351304	SIEBTECHNIK		
295					2								2	PC	Flanged bearing FY45	000951-01-0CG-PI-0008_03 S-5600	347751	SIEBTECHNIK		
296					16								16	PC	Idler, top	000951-01-0CG-PI-0008_03 S-5600	206482	SIEBTECHNIK		
297					3								3	PC	Idler, bottom	000951-01-0CG-PI-0008_03 S-5600	347755	SIEBTECHNIK		
298					1								1	PC	Belt	000951-01-0CG-PI-0008_03 S-5600	351516	SIEBTECHNIK		
299					1								1	PC	Rubber for material guide, set	000951-01-0CG-PI-0008_03 S-5600	357689	SIEBTECHNIK		
300					1								1	PC	Rubber for drum stripper	000951-01-0CG-PI-0008_03 S-5600	347759	SIEBTECHNIK		
301					1								1	PC	Rubber for angular stripper	000951-01-0CG-PI-0008_03 S-5600	347760	SIEBTECHNIK		
302					1								1	PC	Sensor for speed monitoring	000951-01-0CG-PI-0008_03 S-5600	350896	SIEBTECHNIK		
303															**Single roll crusher EW 30/25**	000951-01-0CG-PI-0008_03 S-5600				
304								1					1	PC	Roller body	000951-01-0CG-PI-0008_03 S-5600	200719	SIEBTECHNIK		
305								1					1	PC	Crushing bars	000951-01-0CG-PI-0008_03 S-5600	164696	SIEBTECHNIK		
306								1					1	PC	Wear plate towards the crusher wall, 2 parts	000951-01-0CG-PI-0008_03 S-5600	357690	SIEBTECHNIK		
307								1					1	PC	Wear plate towards the crusher wall, bottom	000951-01-0CG-PI-0008_03 S-5600	350645	SIEBTECHNIK		
308								1					1	PC	Wear plate towards the crusher housing	000951-01-0CG-PI-0008_03 S-5600	350647	SIEBTECHNIK		
309								1					1	PC	Stripper towards the back panel	000951-01-0CG-PI-0008_03 S-5600	200727	SIEBTECHNIK		
310								1					1	PC	Stripper for crushing bar	000951-01-0CG-PI-0008_03 S-5600	170846	SIEBTECHNIK		
311								1					1	PC	Rubber plate	000951-01-0CG-PI-0008_03 S-5600	200723	SIEBTECHNIK		
312								2					2	PC	Self-aligning roller bearing	000951-01-0CG-PI-0008_03 S-5600	200712	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

313								2					2	PC	Adapter sleeve	000951-01-0CG-PI-0008_03 S-5600	200713	SIEBTECHNIK		
314								5					5	PC	Rubber battery spring	000951-01-0CG-PI-0008_03 S-5600	118722	SIEBTECHNIK		
315								1					1	PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350632	SIEBTECHNIK		
316															**Turnstile divider DKT 370 A/1P**	000951-01-0CG-PI-0008_03 S-5600				
317						1							1	PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350926	SIEBTECHNIK		
318						1							1	PC	Rotary arm	000951-01-0CG-PI-0008_03 S-5600	265023	SIEBTECHNIK		
319						1							1	PC	Stripper for the rotary arm	000951-01-0CG-PI-0008_03 S-5600	350933	SIEBTECHNIK		
320						1							1	PC	Discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-5600	350931	SIEBTECHNIK		
321						1							1	PC	Stripper set for the discharge arm in the feeder housing	000951-01-0CG-PI-0008_03 S-5600	357314	SIEBTECHNIK		
322						1							1	PC	Cone scraper	000951-01-0CG-PI-0008_03 S-5600	350932	SIEBTECHNIK		
323															**Sample collector S4/10**	000951-01-0CG-PI-0008_03 S-5600				
324							1						1	PC	Geared motor	000951-01-0CG-PI-0008_03 S-5600	350895	SIEBTECHNIK		
325							2						2	PC	Proximity switches	000951-01-0CG-PI-0008_03 S-5600	350896	SIEBTECHNIK		
326							2						2	PC	Safety switch with actuator	000951-01-0CG-PI-0008_03 S-5600	268454	SIEBTECHNIK		
327							8						8	PC	Container	000951-01-0CG-PI-0008_03 S-5600	223146	SIEBTECHNIK		
328							4						4	PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350903	SIEBTECHNIK		
329							4						4	PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350904	SIEBTECHNIK		
330							12						12	PC	Hose clamp	000951-01-0CG-PI-0008_03 S-5600	39515	SIEBTECHNIK		
331							1						1	PC	Rubber collar	000951-01-0CG-PI-0008_03 S-5600	350905	SIEBTECHNIK		
332							2						2	PC	Hose clamp	000951-01-0CG-PI-0008_03 S-5600	39075	SIEBTECHNIK		
333															**Control unit**	000951-01-0CG-PI-0008_03 S-5600				
334								1					1	PC	Enclosure heater 800/870W, 230V,50/60 Hz	000951-01-0CG-PI-0008_03 S-5600	350469-1	SIEBTECHNIK		
335								1					1	PC	Fan and filter unit	000951-01-0CG-PI-0008_03 S-5600	350469-2	SIEBTECHNIK		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

336	1	1	PC	SITOP PSE200U	000951-01-0CG-PI-0008_03 S-5600	350469-3	SIEBTECHNIK		
337	1	1	PC	KTP700 Basic DP	000951-01-0CG-PI-0008_03 S-5600	350469-4	SIEBTECHNIK		
338	1	1	PC	CPU 314C PN/DP	000951-01-0CG-PI-0008_03 S-5600	350469-5	SIEBTECHNIK		
339	1	1	PC	SM 323, 16 DI/DO, DC24V, 0.5 A	000951-01-0CG-PI-0008_03 S-5600	350469-6	SIEBTECHNIK		
340	1	1	PC	Safety relais module SRB-Exi	000951-01-0CG-PI-0008_03 S-5600	350469-7	SIEBTECHNIK		
341	1	1	PC	Thermistor motor protection	000951-01-0CG-PI-0008_03 S-5600	350469-8	SIEBTECHNIK		
342	5	5	PC	Coupling relay	000951-01-0CG-PI-0008_03 S-5600	350469-9	SIEBTECHNIK		
343	1	1	PC	Sirius safety relay stanard series device	000951-01-0CG-PI-0008_03 S-5600	350469-10	SIEBTECHNIK		
344	1	1	PC	Contactor AC-3, 3 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-5600	350469-11	SIEBTECHNIK		
345	1	1	PC	Contactor AC-3, 5.5 kW/400V, 1NC, DC 24V	000951-01-0CG-PI-0008_03 S-5600	350469-12	SIEBTECHNIK		
346	1	1	PC	2NO+2NC contactor, AC 3, 4KW AC 230V50 Hz	000951-01-0CG-PI-0008_03 S-5600	350469-13	SIEBTECHNIK		
347	1	1	PC	Aux. Switch block, 2NO+2NC	000951-01-0CG-PI-0008_03 S-5600	350469-14	SIEBTECHNIK		
348	1	1	PC	Sitop PSU200 M	000951-01-0CG-PI-0008_03 S-5600	350469-15	SIEBTECHNIK		
349									
350				**TRUCK WASHING BOX**					
351			PC	Flat fan nozzels	000951-01-0CG-PI-0009_06 S-5600	JB 1/4	LECHLER		
352			PC	Photo-electric sensor	000951-01-0CG-PI-0009_06 S-5600	XUX5ARCNT16	SCHNEIDER		
353			KIT	Sseals kit for pumps	000951-01-0CG-PI-0009_06 S-5600	RC.SS1CG_C1	TECNOTER		
354									
355									
356									
357									
358									

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
3A	1	HBV-1641	BC-03 "S" / Z106.136	099681-001 / 3218MM641	ELECTROACTUATED GATE A
3B	1	HBV-1651	BC-03 "S" / Z106.136	099681-001 / 3218MM64	ELECTROACTUATED GATE B
3C	1	SP-5608	EC1-250	PP018-0171	FEEDING CHUTE
3D	1	SP_5607	HPN650/30/482/D/300	48497	Primary Sampler
3E	1	JD-5603	GFB500x3175	48498	Primary Belt Feeder
3F	1	JD-5617	DKT370 A/1P	48500	Secondary Sampler
3G	1	SP-5616	S4/10L	48501	Sample Rotary Collector
3H	1	SP-5615	EW30/25	48499	Single Roller Mill
3I	1	252PLC-224	Control Unit	0	Sampler Control Unit
3J					
3K					
3L					

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4
Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)
Location :	Pancevo, Serbia
Equipment :	.....
Seller's Ref. :	000951-00-0CG-LT-0003
Seller :	PHB WESERHÜTTE S.A.U
Tel. number :	+34 984 49 56 71

PARTS

359																		

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	Included in the Purchase Order for the Parent Equipment: COMMISSIO-NING Spare Parts	Included in the Purchase Order for the Parent Equipment: ,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	TOTALS FOR PURCHASE TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
1			**INSTRUMENTS**												
2	19	PC	HAND SWITCH	LHPEw-10/1-B-EX			TAEX	4					360,00		5
3	28	PC	POSITION SWITCH	LHPEw-10/2EX-L50V			TAEX	6					545,00		5
4	7	PC	LEVEL SWITCH	VEGACAP 62 CP62			VEGA	2					750,00		5
5	3	PC	LEVEL SWITCH	VEGACAP 65 CP65			VEGA	1					970,00		5
6	2	PC	LEVEL DETECTION	VEGAPULS 69 PS69			VEGA	1					2.390,00		5
7	2	PC	SPEED LIMIT SWITCH												
8	2	PC	INDUCTIVE SENSOR	XS630B1PAL10EX			SCHNEIDER	1					110,00		4
9	7	PC	INDUCTIVE SENSOR	XSAV12373EX			SCHNEIDER	2					165,00		4
10	2	PC	LIMIT SWITCH	XCKD3945P16 EX			SCHNEIDER	2					120,00		4
11	2	PC	ENCODER	8.5863FS2.1A4BG722.0100EX			PEPPERL & FUCHS								
12			**ROTOFLUID COUPLING ALFA 55 K02 FC**												
13	3	PC	120ºC 1/2" GAS FUSIBLE PLUG	N/A			WESTCAR	3					90,00		6
14	1	PC	FLEXIBLE ELEMENT RN5	N/A			WESTCAR	2					520,00		6
15	1	PC	VITON SEALS KIT GU5	N/A			WESTCAR	1					195,00		6
16	1	PC	BEARINGS KIT CU5	N/A			WESTCAR	1					550,00		6
17			**ELECTROMAGNETIC SEPARATOR SK 16.15**												
18	1	SET	SET OF FUSES	GZ000052			MEC	1					180,00		3
19	1	PC	24 Vdc FEEDER	CA007020			MEC	1					210,00		3
20	1	SET	SET OF LED LAMP	GZ000029			MEC	1					180,00		3
21	3	PC	RECTIFIER DIODE	CA005157			MEC	1					170,00		3
22			**ELECTROMECANIC ACTUATOR**												
23	1	PC	ELECTRIC MOTOR	MECVEL 02			MECVEL 02	1					550,00		5
24	1	PC	TORQUE LIMITER	MECVEL 03			MECVEL 03	1					745,00		5
25	1	PC	LIMIT SWITCHES GROUP	MECVEL 07			MECVEL 07	1					500,00		5
26	1	PC	MANUAL HAND WHEEL	MECVEL 04			MECVEL 04	1					260,00		5
27	1	PC	BELLOWS BOOT	MECVEL 05			MECVEL 05	1					290,00		5
28	1	PC	FRONT END WITH SHOCK ABSORBER	MECVEL 06			MECVEL 06	1					585,00		5
29			**AUTOMATIC SAMPLING SYSTEM**												
30	1	PC	Limit switch type 1	TEMA - HAMMER SAMPLE TAKER			TEMA	1					320,00		6

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment:			SUPPLIER'S RECOMMEN-DATION	RECOMMEN-DATION PURCHASER	COMPANY'S APPROVAL TO PURCHASE	RECEIVED ON SITE	HANDED OVER	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
					CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts		TWO YEAR OPERATING SPARE PARTS	
31	1	PC	Limit switch type 2	TEMA - HAMMER SAMPLE TAKER			TEMA	1					320,00		6
32	1	PC	Atex brush	TEMA - HAMMER SAMPLE TAKER			TEMA	1					940,00		6
33	1	PC	Atex rubber strip	TEMA - HAMMER SAMPLE TAKER			TEMA	1					225,00		6
34	1	PC	Rubber scraper drum	TEMA - GFB 500 CONVEYOR			TEMA	1					170,00		6
35	1	PC	Rubber scraper lower belt	TEMA - GFB 500 CONVEYOR			TEMA	1					180,00		6
36	1	SET	Wearing plates for crushing roll	TEMA - SINGLE ROLLER MILL EW 30/40			TEMA	1					5.200,00		6
37	1	SET	Wearing plates for crushing plate, upper part	TEMA - SINGLE ROLLER MILL EW 30/40			TEMA	1					1.250,00		6
38	1	PC	Wearing plates for crushing plate, lower part	TEMA - SINGLE ROLLER MILL EW 30/40			TEMA	1					2.100,00		6
39	1	SET	Rubber scrapers	TEMA - TURNSTILE DIVIDER DKT 370 A			TEMA	1					775,00		6
40	4	PC	Rubber collar Ø154	TEMA - SAMPLE COLLECTOR S 4/10L			TEMA	4					155,00		6
41	4	PC	Rubber collar Ø162	TEMA - SAMPLE COLLECTOR S 4/10L			TEMA	4					95,00		6
42	4	PC	Sample collectors stainless steel	TEMA - SAMPLE COLLECTOR S 4/10L			TEMA	4					725,00		6
43			**BELTS**												
44	16	Meter	Rubber belt W1200	TEXTER 400/3 6+3 BS W1200			SIG	19					110,00		10
45	307	Meter	Rubber belt W650	TEXTER 400/3 6+3 BS W650			SIG	65					70,00		10
46	480	Meter	Rubber belt W1200	PIPEX 500/4 6+2 BS W1200			SIG	60					130,00		10
47			**IDLERS**												
48	330	PC	CARRYING IDLER W650 Ø89 X 250	PSV/1 20F14 89J			RULMECA	36					30,00		6
49	27	PC	IMPACT IDLER W650 Ø89 X 250	PSV/1 20F14 63/89			RULMECA	6					45,00		6
50	95	PC	RETURN IDLER W650 Ø108 X 750	PSV/1 20Y14 63/108			RULMECA	5					70,00		6

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
51													40,00		6
52	25	PC	IMPACT IDLER Ø133/89 X 750	PSV/4 30F22 89/133			RULMECA	6					75,00		6
53	5	PC	CLEANING IDLER Ø133/89 X 1400	PSV/1 20Y14 89/133			RULMECA	2					70,00		6
54	66	PC	CARRYING IDLER W1200 Ø108 X 465	PSV/1 20F14 108J			RULMECA	6					40,00		6
55	9	PC	IMPACT IDLER W1200 Ø108/63 X 465	PSV/1 20F14 63/108			RULMECA	3					45,00		6
56	1642	PC	CARRYING IDLER W1200 Ø89 X 165	PSV/1 20F14 108J			RULMECA	50					25,00		6
57															
58															
59			**GEARBOX**												
60	1	PC	Gearbox KA107 R77 AD4	KA107 R77 AD4			SEW	1					5.250,00		6
61	2	PC	Gearbox KA77/T AM13S/M/RS	KA77/T AM132S/M/RS			SEW	1					2.350,00		6
62	1	PC	Gearbox KA87/T AM160/RS	KA87/T AM160/RS			SEW	1					3.050,00		6
63	1	PC	Gearbox KA127B AD8/RS	KA127B AD8/RS			SEW	1					8.600,00		6
64	2	PC	Gearbox KA67/T AM112	KA67/T AM112			SEW	1					2.525,00		6
65	2	PC	Motor Gearbox KA87BB EDRN90L4	KA87BB EDRN90L4			SEW	1					2.530,00		6
66			**FABRIPULSE EV 12-10-B FILTRE**												
67	12	PC	BAG FILTER	27-100003			AAF	12					20,00		6
68	1	PC	ELECTRICAL CLEANING CIRCUIT	GAMMA			AAF	1					820,00		6
69	3	PC	MEMBRANE VALVE REPAIR KIT	FPVD25			AAF	3					80,00		6
70	5	PC	ELECTROVALVE REPAIR KIT	FPV24V			AAF	3					60,00		6
71	14	PC	GALVANIZED CAGE	N/A			AAF	12					110,00		6
72			**ELASTIC COUPLING**												
73	13	PC	ELASTIC COUPLING	POLY-NORM 38 ADR			KTR	1					450,00		4
74	1		**MOTORS**												
75	4	PC	Motor M3GP 132SME 4. 7.50 kW	3GGP132250-BDL			ABB	1					2.800,00		8
76	4	PC	Motor M3GP 160MLB 4. 15 kW	3GGP162420-BDL			ABB	1					3.850,00		8
77	13	PC	Motor M3GP 225SMB 4. 45 kW	3GGP222220-ADL			ABB	1					6.650,00		8
78	1	PC	Motor M3GP 132SMB 4. 5.50 kW	3GGP132220-BDL			ABB	1					2.600,00		8
79	2	PC	Motor M3GP 112ME 4. 4 kW	3GGP112350-BDL			ABB	1					2.450,00		8
80	1	PC	Motor M3GP 250SMA 6. 37 kW	3GGP253210-ADL			ABB	1					8.300,00		8
81	1	PC	Motor M3GP 132SMF 6. 4 kW	3GGP133260-ADL			ABB	1					2.750,00		8

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	TOTALS FOR PURCHASE TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
82			**HOIST SH4016-16 4/1**												
83	45	METER	WIRE ROPE Ø9	3300079			STAHL	45					20,00		4
84	1	PC	ROPE GUIDE RING LEFT 8,5-9	0443000430			STAHL	1					2.100,00		4
85	1	PC	BOTTOM HOOK 6300 KG H162-4	0143027510			STAHL	1					2.200,00		4
86	1	PC	BRAKE DISC 12/2H42MF (HOIST)	2327043650			STAHL	1					1.650,00		6
87	1	PC	BRAKE DISC 8/2F12 (TROLLEY)	2127023650			STAHL	1					360,00		6
88	1	PC	MOTOR 12/2H42-MF (HOIST)	70002098			STAHL	1					11.600,00		9
89	1	PC	MOTOR 8/2F12 (TROLLEY)	2127087119			STAHL	1					5.700,00		9
90			**BELT CLEANER**												
91	3	PC	QC1 Heavy duty segment blade W 1200	35381-421040OR			MARTIN ENGINEERI	2					990,00		6
92	1	PC	QC1 Heavy duty segment blade W 650	35381-241022OR			MARTIN ENGINEERI	1					520,00		6
93			**ELECTRO ACTUATED GATE BC**												
94	2	PC	SLIDER KIT FOR BC 900X1150	N/A			ORBINOX	1					460,00		8
95	2	PC	JOINT FOR BC 900X1150 (2 SEAL OF 5 METERS)	N/A			ORBINOX	1					400,00		8
96	2	PC	PACKING ST+ O-RING EPDM FOR BC 900X1150)	N/A			ORBINOX	1					240,00		8
97	2		**AISI**												
98	4	PC	AISI #6X450X600	AISI 316L			PHB	4					185,00		4
99	1	PC	AISI #6X298X1751	AISI 304			PHB	1					170,00		4
100	1	PC	AISI #6X318X1820	AISI 304			PHB	1					180,00		4
101	1	PC	AISI #6X263X1820	AISI 304			PHB	1					150,00		4
102	1	PC	AISI #5X80X183	AISI 304			PHB								
103	4	PC	AISI #6X90X668	AISI 316L			PHB	4					100,00		4
104	1	PC	AISI #6X75X708	AISI 316L			PHB	1					50,00		4
105	3	PC	AISI #6X140X708	AISI 316L			PHB	3					140,00		4
106	1	PC	SKIRT BOARD AISI	AISI 316L			PHB	1					1.250,00		4
107	1	PC	CLOSING BAR AISI	AISI 316L			PHB	1					525,00		4
108	6	PC	AISI #6X490X520	AISI 316L			PHB	6					180,00		4
109	1	PC	DUCT AISI	AISI 316L			PHB	1					650,00		4
110	1	PC	DUCT AISI	AISI 316L			PHB	1					580,00		4
111	1	PC	SKIRTBOARD AISI	AISI 316L			PHB	1					320,00		4
112	1	PC	HEAD CHUTE AISI	AISI 316L			PHB	1					110,00		4

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
113	1	PC	DISCHARGE PIPE AISI	AISI 316L			PHB	1					2.050,00		4
114	1	PC	SKIRTBOARD AISI	AISI 316L			PHB	1					470,00		4
115	1	PC	BY PASS 500X500 DEFLECTOR	AISI 316L			PHB	1					465,00		4
116	1	PC	DISCHARGE DUCT AISI	AISI 316L			PHB	1					19.500,00		4
117	1	PC	SKIRTBOARD AISI	AISI 316L			PHB	1					490,00		4
118	2	PC	HEAD CHUTE AISI	AISI 304L			PHB						490,00		4
119		PC	SKIRTBOARD AISI	AISI 316L			PHB						200,00		4
120			**METAL DETECTOR GRS-650X300 ATEX**												
121	1	PC	MODULE	EKM 06-V2			A. TRISTANY	1					2.800,00		6
122	1	PC	HORN	P40A			A. TRISTANY	1					350,00		6
123	4	PC	SHOCK ABSORBERS				A. TRISTANY	4					160,00		6
124	3	PC	GLAND	EX 3D M25X1,5			A. TRISTANY	3					90,00		6
125			**WEAR PLATES**												
126	6	PC	HARDOX 400 #6X487X600	HARDOX 400			PHB	6					185,00		6
127	1	PC	HARDOX 400 #6	HARDOX 400			PHB	1					740,00		6
128	5	PC	HARDOX 400 #6X520x782	HARDOX 400			PHB	3					140,00		6
129	6	PC	HARDOX 400 #6X150x530	HARDOX 400			PHB	4					50,00		6
130	1	PC	HEAD CHUTE WEAR PLATES	HARDOX 400			PHB	1					200,00		6
131	1	PC	HEAD CHUTE WEAR PLATES	HARDOX 400			PHB	1					190,00		6
132	1	PC	DISCHARGE CHUTE HARDOX 400	HARDOX 400			PHB	1					220,00		6
133	2	PC	HARDODX #6X300X500	HARDOX 400			PHB	1					310,00		6
134	2	PC	DEFLECTOR	HARDOX 400			PHB	1					110,00		6
135			**RUBBER**												
136	1	PC	#15X150X1450	45-50 SHORE			PHB	1					270,00		3
137	1	PC	#10X165X3400	45-50 SHORE			PHB	1					450,00		3
138	1	PC	#10X200X728	45-50 SHORE			PHB	1					180,00		3
139	1	PC	SKIRT BOARD RUBBER	45-50 SHORE			PHB	1					2.100,00		3
140	1	PC	CLOSING BAR RUBBER	45-50 SHORE			PHB	1					540,00		3
141	3	PC	HEAD FRAMEWORK RUBBER	45-50 SHORE			PHB	1					630,00		3
142	1	PC	SKIRT BOARD RUBBER	45-50 SHORE			PHB	1					710,00		3
143	1	PC	SKIRT BOARD RUBBER	45-50 SHORE			PHB	1					95,00		3

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	Included in the Purchase Order for the Parent Equipment: COMMISSIO-NING Spare Parts	Included in the Purchase Order for the Parent Equipment: ,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
144	1	PC	SKIRT BOARD RUBBER	45-50 SHORE			PHB	1					110,00		3
145	1	PC	DISCHARGE RUBBER #8X1155X1850	45-50 SHORE			PHB	1					1.250,00		3
146	1	PC	DISCHARGE CHUTE RUBBER #15X150X1400	45-50 SHORE			PHB	1					270,00		3
147	1	PC	SKIRTBOARD RUBBER	45-50 SHORE			PHB	1					2.100,00		3
148	1	PC	TAKE UP SYSTEM	45-50 SHORE			PHB	1					450,00		3
149	2	PC	HEAD CHUTE RUBBER	45-50 SHORE			PHB	1					90,00		3
150	2	PC	SKIRTBOARD RUBBER	45-50 SHORE			PHB	1					2.100,00		3
151	12	PC	IMPACT BAR 70X200X830				PHB	12					280,00		3
152	2	PC	IMPACT BAR 70X200X240				PHB	2					120,00		3
153	1	PC	V-PLOW W1200 RUBBER	45-50 SHORE			PHB	1					180,00		3
154	6	PC	V-PLOW W650 RUBBER	45-50 SHORE			PHB	1					140,00		3
155			**BEARING & SUPPORTS**												
156	8	PC	SNL515+22215K+H315+2XFRB+2XTSNL	SNL515+22215K+H315+2XFRB +2XTSNL			SKF	1					280,00		5
157	8	PC	SNL515+22215K+H315+2XTSNL	SNL515+22215K+H315+2XTSN L			SKF	1					260,00		5
158	4	PC	SNLN3024+23024CCK				SKF	1					255,00		5
159	12	PC	SNL518+22218K				SKF	1					250,00		5
160	4	PC	SNL513+22213K				SKF	1					210,00		5
161	4	PC	SNL511+22211EK				SKF	1					150,00		5
162	2	PC	22218EK+H318				SKF	1					140,00		5
163	4	PC	22213EK+H313				SKF	1					110,00		5
164			**PULLEYS**												
165	1	PC	DRIVE PULLEY Ø500 W1200 SHAFT Ø140-110-90				PHB	1					9.500,00		10
166	1	PC	TAIL TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80				PHB	1					8.400,00		10
167	2	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-50				PHB	1					5.000,00		10
168	2	PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60				PHB	1					3.650,00		10
169	2	PC	TAIL TAKE UP PULLEY Ø400 W650 SHAFT Ø80-60				PHB	1					4.800,00		10
170	2	PC	TAIL TAKE UP PULLEY Ø315 W650 SHAFT Ø80-50				PHB	1					3.100,00		10
171	1	PC	DRIVE PULLEY Ø630 W1200 SHAFT Ø160-110-100				PHB	1					12.200,00		10
172	1	PC	TAKE UP PULLEY Ø500 W1200 SHAFT Ø120-80				PHB	1					6.850,00		10
173	1	PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80				PHB	1					7.950,00		10

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

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ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	TOTALS FOR PURCHASE TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
174	1	PC	TAKE UP BEND PULLEY Ø400 W1200 SHAFT Ø120-80				PHB	1					6.350,00		10
175	1	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-60				PHB	1					4.950,00		10
176	2	PC	DRIVE PULLEY Ø400 W650 SHAFT Ø100-80-40				PHB	1					4.980,00		10
177	1		**24"x36" COBRA CRUSHER**												
178		PC	TIP Cr. PIMCL400 24X36				MCLANAHAN CORPOR	1					10.220,00		14
179		PC	TIP BOLT 7/8" X 6"				MCLANAHAN CORPOR	2					30,00		10
180		PC	FLAT WASHER 7/8"				MCLANAHAN CORPOR	2					5,00		4
181		PC	GRIP NUT 7/8"				MCLANAHAN CORPOR	2					5,00		4
182		PC	SEGMENT MCL400 24X36				MCLANAHAN CORPOR	3					23.600,00		14
183		PC	SQUARE HEAD BOLT 1"X4"				MCLANAHAN CORPOR	24					50,00		6
184		PC	FLAT WASHER 1"				MCLANAHAN CORPOR	24					5,00		6
185		PC	GRIP NUT 1"				MCLANAHAN CORPOR	24					5,00		6
186		PC	HOPPER SIDE LINER LH				MCLANAHAN CORPOR	1					1.600,00		12
187		PC	HOPPER SIDE LINER RH				MCLANAHAN CORPOR	1					1.600,00		12
188		PC	FLAT SOCKET HEAD CAPSCREW 3/4"X2"				MCLANAHAN CORPOR	8					5,00		4
189		PC	GRIP NUT 3/4"				MCLANAHAN CORPOR	8					5,00		4
190		PC	HOLD-BACK BOLT ASSEMBLY				MCLANAHAN CORPOR	1					1.160,00		7
191															
192			**PLC**												
193	1	PC	7 Slot ControlLogix Chassis	1756-A7			ROCKWELL	1					580,00		4
194	1	PC	ControlLogix, 85-265 VAC Power Supply (10 Amp @ 5V)	1756-PA72			ROCKWELL	1					1.045,00		6
195	1	PC	ControlLogix 5570 Controller with 4 MB Memory, USB Port	1756-L72			ROCKWELL	1					8.925,00		8
196	1	PC	EtherNet 10-100M Interface Module (supports 128 TCP/IP)	1756-EN2T			ROCKWELL	1					3.160,00		4
197	1	PC	EtherNet dual port 10-100M Interface Module	1756-EN2TR			ROCKWELL	1					3.380,00		4
198	1	PC	Redundancy Module	1756-RM2			ROCKWELL	1					5.660,00		5
199	1	PC	Fiber Cable, 1 Meter	1756-RMC1			ROCKWELL	1					190,00		2
200	1	PC	2-slot adapter base unit	1715-A2A			ROCKWELL	1					560,00		4
201	1	PC	3-slot I/O base unit	1715-A3IO			ROCKWELL	1					160,00		3
202	1	PC	EtherNet/IP Adapter	1715-AENTR			ROCKWELL	1					1.690,00		6
203	1	PC	16-point digital input module	1715-IB16D			ROCKWELL	1					1.210,00		5
204	1	PC	8-point digital output module	1715-OB8DE			ROCKWELL	1					960,00		4

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

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ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	-	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	TOTALS FOR PURCHASE TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
205	1	PC	Termination Assembly - digital input simplex	1715-TASIB16D			ROCKWELL	1					280,00		3
206	1	PC	Termination Assembly - digital output simplex	1715-TASOB8DE			ROCKWELL	1					145,00		3
207	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, FLEX I/O Dual Port EtherNet/IP	1794-AENTR			ROCKWELL	1					800,00		4
208	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, Input Module, 24VDC, 32 Sink Inputs	1794-IB32			ROCKWELL	1					540,00		4
209	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, Output Module, 24V DC, 32 Source	1794-OB32P			ROCKWELL	1					610,00		4
210	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog Input Modules, 8 Single-Ended Inputs	1794-IE8H			ROCKWELL	1					1.510,00		4
211	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, HART Analog 8 Output Module	1794-OF8IH			ROCKWELL	1					2.260,00		4
212	1	PC	40 point feed-through digital IFM, standard,	1492-IFM40F			ROCKWELL	1					120,00		4
213	1	PC	Pre-wired cable 1,5mt (1794-IB32)	1492-CAB015B94			ROCKWELL	1					210,00		4
214	1	PC	Ready cable 1,5mt (1794-IB32/1974-OB32P)	1492-CAB015H94			ROCKWELL	1					200,00		4
215	1	PC	Terminal base, for 32 point modules, 62 pin D-shell termination	1794-TB62DS			ROCKWELL	1					190,00		4
216	1	PC	1794 Flex, Flex Ex, Flex XT I/O System, Terminal Base, 3-Wire grounded, Screw Clamp	1794-TB3G			ROCKWELL	1					220,00		4
217	1	PC	FLEX I/O 1ft extended cable 0,9m	1794-CE3			ROCKWELL	1					235,00		4
218	1	PC	1606-XLE480E: Essential Power Supply, 24-28V DC, 480 W, 240V AC Input Voltage	1606-XLE480EP			ROCKWELL	1					380,00		5
219	1	PC	1606-XLERED: Essential Redundancy Module, Vin 1 -.9Vin, 384 W, 10-60V DC Input Voltage	1606-XLERED			ROCKWELL	1					115,00		5
220	1	PC	Module voltage, module protection, 6A, 6A, 6A, 6A, Electronic Circuit Protection, 24Vdc	1692-ZG6666			ROCKWELL	1					130,00		5
221	1	PC	Stratix 5700 Switch, Managed, 8 Fast Ethernet Copper Ports, 2 Fast Ethernet Combo Ports	1783-BMS10CL			ROCKWELL	1					1.640,00		6
222	1	PC	Networks and Communication Products, EtherNet/IP Tap1 copper port, 2 fiber ports	1783-ETAP2F			ROCKWELL	1					750,00		6
223	1	PC	Networks and Communication Products, EtherNet/IP Tap2 copper ports, 1 fiber port	1783-ETAP1F			ROCKWELL	1					610,00		6
224	1	PC	Stratix 2000 Switch, Unmanaged, 8 Copper Ports	1783-US8T			ROCKWELL	1					230,00		6
225	1	PC	EtherNet/IP to Serial Linking Device Gateway	HMS-EN2SER			ROCKWELL	1					1.100,00		6
226	1	PC	EtherNet/IP Adapter to Modbus-TCP Slave gateway	AB7632			ROCKWELL	1					1.100,00		6
227	1	PC	Ethernet IP to Modbus TCP Gateway	PLX31-EIP-MBTCP			ROCKWELL	1					1.190,00		6
228	1	PC	PanelView Plus 7 Standard Terminal, Touch Screen, 15 TFT Color, Ethernet DLR	2711P-T15C22D8S			ROCKWELL	1					4.510,00		8

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

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Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
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229	1	PC	2-Channel Isolated Barrier, 24Vdc power supply, dry contact or NAMUR inputs,	KFD2-SR2-Ex2.W			PEPPERL-FUCHS	1					300,00		6
230	1	PC	PLC Relay Module, screw connection and pluggable miniature relay w/power	PLC-RSC-230UC/21			PHOENIX CONTAC	10					25,00		6
231	1	PC	PLC -INTERFACE, screw connection and plug-in miniature relay w/power contact	PLC-RSC-24DC/1/ACT			PHOENIX CONTAC	10					15,00		6
232	1	PC	Coupling Relay for SIL 2 high -and low- demand applications	PSR-PS21-1NO-1NC-24DC-SC			PHOENIX CONTAC	1					150,00		6
233	1	PC	Filter fan, 230Vac, up to 536m³/h, 223x223mm	01883.0-00			STEGO	1					220,00		6
234	1	PC	Miniature Circuit Breaker, 2P/16A, Curve C	5SL6516-7			SIEMENS	1					15,00		6
235	1	PC	Miniature Circuit Breaker, 2P/6A, Curve C	5SL6506-7			SIEMENS	1					20,00		6
236	1	PC	RCCB, 2-pole, type AC, 25A, 30mA	5SV53120FB			SIEMENS	1					25,00		6
237															
238			**EXPLOSION PANELS**												
239	14	PC	EXPLOSION VENT KER 940X1440	AISI 304 DIN 14301			ATEXPREVEN	2					750,00		6
240	14	PC	SENSOR ATEX	S3-HT			ATEXPREVEN	2					300,00		6
241															
242			**OTHER**												
243	12	PC	HORN&LAMP	D1XC1C10-AC230			PEPER&FUCHS	2					1.100,00		6
244		Meter	15w/m HEAT TRACING CABLE					500					14,00		3
245	8	PC	Weight cell 1000T	C3 ATEX 22			SERVIPESA	1					7.025,00		10
246	8	PC	Support weight cell with accesories	HDG			SERVIPESA								
247	2	PC	Conection box				SERVIPESA	1					650,00		10
248	2	PC	Panel with ethernet comunication	MOD 1700			SERVIPESA	1					1.690,00		10
249	1	Kit	HILTI DRILL KIT DX 351 BT G + SF BT 22-A + B22/2.6	DX351 BT G			HILTI	1					2.850,00		2
250	1	Kit	HILTI SCREWDRIVER KIT SBT 4-A22 + B22/3.0 + S-DG BT M10	SBT 4-A22			HILTI	1					1.450,00		2
251								1							
252			**TELESCOPIC CHUTE**												
253	18	PC	Filter cartridge	HE-FJ-OS-000164-K00			HENNLICH	9					180,00		8
254	2	PC	Level switch	HE-NZ-EM-000195-K00			HENNLICH	1					2.570,00		8
255	2	PC	Inlet part	HE-NZ-OD-024200-000			HENNLICH	1					1.250,00		8
256	2	PC	Tube No. 1	HE-NZ-OD-024170-000			HENNLICH	1					1.100,00		8
257	2	PC	Tube No. 2	HE-NZ-OD-024175-000			HENNLICH	1					1.100,00		8

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

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Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment:			SUPPLIER'S RECOMMEN-DATION	RECOMMEN-DATION PURCHASER	COMPANY'S APPROVAL TO PURCHASE	RECEIVED ON SITE	HANDED OVER	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
					CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts	TWO YEAR OPERATING Spare Parts		TWO YEAR OPERATING SPARE PARTS	
258	2	PC	Tube No. 3	HE-NZ-OD-024181-000			HENNLICH	1					1.100,00		8
259	2	PC	Tube No. 4	HE-NZ-OD-024186-000			HENNLICH	1					1.100,00		8
260	2	PC	Outer bellows	HE-NZ-OS-024231-000			HENNLICH	1					5.400,00		8
261	2	PC	Rope dia 6 mm	HE-NZ-ME-024210-000			HENNLICH	1					290,00		8
262															
263	1		**VULCANIZER**												
264	1	PC	spare bag size 39" x 54"	SVP3954-17 (39-54)			ALMEX	1					3.620,00		7
265	4	PC	spare element 39" x 54"	SVP3954-17 (39-54)			ALMEX	1					2.600,00		7
266	1	PC	Platen Receptacle Insert (High Temp)	SVP3954-17 (SVP-18)			ALMEX	1					350,00		7
267	1	PC	1/4" (6mm) 100 Ohm RTD Probe	SVP3954-17 (SVP-23)			ALMEX	1					150,00		7
268	1	PC	Platen Handle Assembly	SVP3954-17 (SVP-25)			ALMEX	2					170,00		7
269	1	PC	Locking Pin	SVP3954-17 (SVP-3)			ALMEX	2					50,00		7
270	1	PC	Quick coupler Male	SVP3954-17 (SVP-10)			ALMEX	1					50,00		7
271	1	PC	Quick coupler Male Dust-cap	SVP3954-17 (SVP-11)			ALMEX	1					50,00		7
272	1	PC	Quick coupler Female	SVP3954-17 (SVP-30)			ALMEX	1					130,00		7
273	1	PC	Quick coupler Female Dust-cap	SVP3954-17 (SVP-31)			ALMEX	1					30,00		7
274			FOR RC3 TEMPERATURE CONTROL PANEL				ALMEX	1							
275	1	PC	Fuse Holder C/w 2 Amp Fuse	SVP3954-17 (RC3-9)			ALMEX	1					75,00		7
276	1	PC	Platen Connector Insert	SVP3954-17 (RC3-15)			ALMEX	1					150,00		7
277	1	PC	Platen Connector Housing	SVP3954-17 (RC3-15)			ALMEX	1					150,00		7
278															
279			**AUTOMATIC SAMPLING SYSTEM**												
280			**Hammer sampler HPN650/30/482/D/300**												
281	1	PC	Geared motor with brake	351005			SIEBTECHNIK	1					10.670,00		14
282	2	PC	Proximity switches	351510			SIEBTECHNIK	2					350,00		10
283	1	PC	Guide plates (set)	351551			SIEBTECHNIK	1					1.725,00		10
284	1	PC	Back panel	351550			SIEBTECHNIK	1					1.540,00		10
285	1	PC	Stripper rubber	351553			SIEBTECHNIK	1					250,00		10
286	1	PC	Brush	351555			SIEBTECHNIK	1					1.050,00		10
287	2	PC	Spherical roller bearings	131577			SIEBTECHNIK	2					175,00		10
288	2	PC	Tension sleeve	217035			SIEBTECHNIK	2					50,00		10

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	Included in the Purchase Order for the Parent Equipment: COMMISSIO-NING Spare Parts	Included in the Purchase Order for the Parent Equipment: ,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
289	2	PC	V-sealing ring	195568			SIEBTECHNIK	2					50,00		10
290			**Belt conveyor GFB500x3175**												
291	1	PC	Geared motor	351006			SIEBTECHNIK	1					6.175,00		14
292	1	PC	Drive pulley	351303			SIEBTECHNIK	1					2.500,00		10
293	1	PC	Take-up pulley	347771			SIEBTECHNIK	1					2.050,00		10
294	2	PC	Flanged bearing FY65	351304			SIEBTECHNIK	2					250,00		10
295	2	PC	Flanged bearing FY45	347751			SIEBTECHNIK	2					150,00		10
296	16	PC	Idler, top	206482			SIEBTECHNIK	16					280,00		10
297	3	PC	Idler, bottom	347755			SIEBTECHNIK	3					350,00		10
298	1	PC	Belt	351516			SIEBTECHNIK	1					1.450,00		10
299	1	PC	Rubber for material guide, set	357689			SIEBTECHNIK	1					2.700,00		10
300	1	PC	Rubber for drum stripper	347759			SIEBTECHNIK	1					285,00		10
301	1	PC	Rubber for angular stripper	347760			SIEBTECHNIK	1					310,00		10
302	1	PC	Sensor for speed monitoring	350896			SIEBTECHNIK	1					350,00		10
303			**Single roll crusher EW 30/25**												
304	1	PC	Roller body	200719			SIEBTECHNIK	1					4.850,00		10
305	1	PC	Crushing bars	164696			SIEBTECHNIK	1					5.200,00		10
306	1	PC	Wear plate towards the crusher wall, 2 parts	357690			SIEBTECHNIK	1					850,00		10
307	1	PC	Wear plate towards the crusher wall, bottom	350645			SIEBTECHNIK	1					2.100,00		10
308	1	PC	Wear plate towards the crusher housing	350647			SIEBTECHNIK	1					4.400,00		10
309	1	PC	Stripper towards the back panel	200727			SIEBTECHNIK	1					630,00		10
310	1	PC	Stripper for crushing bar	170846			SIEBTECHNIK	1					580,00		10
311	1	PC	Rubber plate	200723			SIEBTECHNIK	1					175,00		10
312	2	PC	Self-aligning roller bearing	200712			SIEBTECHNIK	2					320,00		10
313	2	PC	Adapter sleeve	200713			SIEBTECHNIK	2					85,00		10
314	5	PC	Rubber battery spring	118722			SIEBTECHNIK	5					450,00		10
315	1	PC	Geared motor	350632			SIEBTECHNIK	1					6.000,00		14
316			**Turnstile divider DKT 370 A/1P**												
317	1	PC	Geared motor	350926			SIEBTECHNIK	1					2.250,00		14
318	1	PC	Rotary arm	265023			SIEBTECHNIK	1					2.950,00		10
319	1	PC	Stripper for the rotary arm	350933			SIEBTECHNIK	1					210,00		10

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 - 300-001-SD-000006**	
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	TOTALS FOR PURCHASE TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
320	1	PC	Discharge arm in the feeder housing	350931			SIEBTECHNIK	1					4.200,00		10
321	1	PC	Stripper set for the discharge arm in the feeder housing	357314			SIEBTECHNIK	1					350,00		10
322	1	PC	Cone scraper	350932			SIEBTECHNIK	1					1.900,00		14
323			**Sample collector S4/10**												
324	1	PC	Geared motor	350895			SIEBTECHNIK	1					3.650,00		10
325	2	PC	Proximity switches	350896			SIEBTECHNIK	2					350,00		10
326	2	PC	Safety switch with actuator	268454			SIEBTECHNIK	2					170,00		10
327	8	PC	Container	223146			SIEBTECHNIK	8					970,00		10
328	4	PC	Rubber collar	350903			SIEBTECHNIK	4					170,00		10
329	4	PC	Rubber collar	350904			SIEBTECHNIK	4					100,00		10
330	12	PC	Hose clamp	39515			SIEBTECHNIK	12					40,00		10
331	1	PC	Rubber collar	350905			SIEBTECHNIK	1					150,00		10
332	2	PC	Hose clamp	39075			SIEBTECHNIK	2					40,00		10
333			Control unit												
334	1	PC	**Enclosure heater 800/870W, 230V,50/60 Hz**	350469-1			SIEBTECHNIK	1					460,00		14
335	1	PC	Fan and filter unit	350469-2			SIEBTECHNIK	1					150,00		14
336	1	PC	SITOP PSE200U	350469-3			SIEBTECHNIK	1					260,00		14
337	1	PC	KTP700 Basic DP	350469-4			SIEBTECHNIK	1					1.700,00		14
338	1	PC	CPU 314C PN/DP	350469-5			SIEBTECHNIK	1					5.150,00		14
339	1	PC	SM 323, 16 DI/DO, DC24V, 0.5 A	350469-6			SIEBTECHNIK	1					1.250,00		14
340	1	PC	Safety relais module SRB-Exi	350469-7			SIEBTECHNIK	1					350,00		14
341	1	PC	Thermistor motor protection	350469-8			SIEBTECHNIK	1					120,00		14
342	5	PC	Coupling relay	350469-9			SIEBTECHNIK	5					280,00		14
343	1	PC	Sirius safety relay stanard series device	350469-10			SIEBTECHNIK	1					350,00		14
344	1	PC	Contactor AC-3, 3 kW/400V, 1NC, DC 24V	350469-11			SIEBTECHNIK	1					75,00		14
345	1	PC	Contactor AC-3, 5.5 kW/400V, 1NC, DC 24V	350469-12			SIEBTECHNIK	1					90,00		14
346	1	PC	2NO+2NC contactor, AC 3, 4KW AC 230V50 Hz	350469-13			SIEBTECHNIK	1					60,00		14
347	1	PC	Aux. Switch block, 2NO+2NC	350469-14			SIEBTECHNIK	1					50,00		14
348	1	PC	Sitop PSU200 M	350469-15			SIEBTECHNIK	1					560,00		14
349															
350			**TRUCK WASHING BOX**												

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

Owner	: NIS	SELLER's Ref.	:	ALWAYS REFER TO THIS NUMBER :	
Plant	: RNP DCU Plant Project (WP1)	SELLER	:	**172784 -**	**300-001-SD-000006**
Location	: Pancevo, Serbia	Tel. number	:	(project number) -	(SPIR number)
Equipment	:	E-mail	:	Rev.:	Date:

S U M M A R Y

ITEM	TOTAL QUANTITY OF INSTALLED PARTS	U N I T OF MEASURE	PART DESCRIPTION	SUPPLIER'S PART NUMBER	Included in the Purchase Order for the Parent Equipment: CAPITAL Spare Parts	COMMISSIO-NING Spare Parts	,	SUPPLIER'S RECOMMEN-DATION TWO YEAR OPERATING Spare Parts	RECOMMEN-DATION PURCHASER TWO YEAR OPERATING Spare Parts	COMPANY'S APPROVAL TO PURCHASE TWO YEAR OPERATING Spare Parts	RECEIVED ON SITE TWO YEAR OPERATING Spare Parts	HANDED OVER TWO YEAR OPERATING Spare Parts	UNIT PRICE EXW - SPAIN CURRENCY	T O T A L S F O R P U R C H A S E TWO YEAR OPERATING SPARE PARTS	DELIVERY TIME - WEEKS (EXW Gijón - Spain)
351	14	PC	Flat fan nozzels	JB 1/4			LECHLER	50					20,00		6
352	1	PC	Photo-electric sensor	XUX5ARCNT16			SCHNEIDER	1					190,00		4
353	1	KIT	Sseals kit for pumps	RC.SS1CG_C1			TECNOTER	1					160,00		2
354															
355															
356			**THE RE-CERTIFICATION OF THE SPARE PARTS IS NOT INCLUDED. IT MUST BE DONE BY CLIENT**												
357															
358			**The indicated delivery time and price is in EXW conditions**												
359															
359															

TELESCOPIC CHUTE SP-5612A/B
DATA SHEET

RNP DCU Plant Project (WP1)

Supplier Name:	PHB Weserhütte
SDR Code(s):	P03 - B02
Equipment / Tag Number(s):	SP-5612A/SP-5612B
Document Title:	Telescopic chute SP-5612A/B Data Sheet
Supplier Document No:	000951-00-0CG-HD-0018

Supplier's Revision Record

Rev	Date		Issue State	By	Checked	Approved
3	15 oct 2018		General update	Daniel C	MPP	Michel F
2	24/04/2018		General update	Daniel C	MPP	Michel F
1	29/01/2018		Updated	MPP	MPP	Michel F
0	27/12/2017		First submission	MPP	MPP	Michel F

Project Document Number

Project Number	Purchase Order Number		Seq. No.	Project Rev.
172784	**- 0300-001**	**- SD -**	**000025**	**2**

SUPPLIER DOCUMENT REVIEW STATUS

Purchaser's review of Supplier's documents does not relieve Supplier of the responsibility for correctness under the Purchase Order. Permission to proceed does not constitute acceptance of design, detail and calculations, test methods or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with the Purchase Order or any other obligations, nor detract from any of the Purchaser's rights.

Purchaser's Review Stamp

CB&I
RNP DCU Plant Project No. 172784

Engineering Review Status	By:
Code 1 - No Comments	CHARLOTTE.PARRA Date: 14.11.2018

These comments do not relieve the supplier of his responsibility to meet the requirements of the PO.

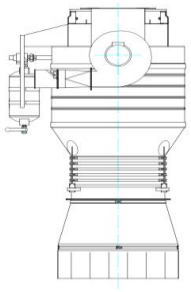
Should the Supplier consider that any comments made by the Purchaser change the Scope of Supply, the Supplier shall advise the price and delivery implications of such changes within five working days of receipt. The Supplier must not incorporate such changes without prior approval of the Purchaser of the revised price and/or delivery period. RETROSPECTIVE CLAIMS WILL NOT BE CONSIDERED.

The document consists of this frontsheet plus 1 page.

RNP DCU Plant Project (WP1)

Document title:	Document No.	Rev
Telescopic chute SP-5612 A & B. Data Sheet	000951-00-0CG-HD-0018	3

Pos	Design parameters	
1	Quantity	Two (2)
2	Equipment tag	SP-5612A/SP-5612B
3	Location	Outdoors
4	**Operating and design conditions**	
5	Flow rate	Max. 120 t/h
6	Bulk density	0.56 - 1.041 T/m3
7	Fed from	JD-5606A & JD-5606AB
1	Discharge to	Truck
2	Operating Pressure & Vacuum	Atmospheric
3	Design Tª	-28 ºC- 40 ºC mechanical
4		-20ºC to 40 ºC instrumentation
5	Operation design humidity	88-95%



6	**Chute construction**		**Rev**
7	Manufacturer	Hennlich	2
8	Material of Construction	S235JR + Hardox liners	0
9	Chute Size	To discharge 20 tons of coke into the truck in 10 minutes (120 t/h)	0
10	Discharge Type	Freefall type with dedusting filters	0
11	Retracted Height Above Floor	4600 mm	2
12	Extended Height Above Floor	1450 mm	2
13	Dimensions	Lmin. 1.850 / Lmax 5.000 mm / Stroke 3.150 mm	0
14	Weight	666 Kg	2
15	Loading tubes		0
16	Inner	Tubes of 235JR + Hardox 500 liners th.3mm	2
17	Outer	Antistatic bellows, diameter 1.100 mm	0
18	Discharge tubes diameter	400 mm	2
19	Upper connection flange	DN 400	0
20	Chute Support Type	Bolted connection	0
21	Hoist Type	Motor driven winch	0
22	No. of Sheaves	3	0
23	Wire Rope Dia and Type	8 mm Stainless Steel	0
24	**Dust collector**		
25	Flowrate	1.000 m³ / h	0
26	Filter element	Cartridge made of antistatic Polyester + PTFE membrane (with hygrofobic protection layer)	2
27	Q-ty of filter elements	9	0
28	Motor fan	SEW 1,5 kW / 2850 rpm / 50 Hz	2
29	**Driving system**		
30	Motor type	Motoreducer with brake	2
31	Motor characteristics	1,5 kW / 1450 rpm / 50 Hz	2
32	Supplier	SEW	0
33	**Instrumentation**		
34	Level switch	Yes (1), botton part of each chute	1
35	Slack rope switch	Yes (1), on the upper part of the chute	1
36	LAM Limit switch	Yes (1), on the upper part of the chute	1
37	**Painting**		
38	Painting procedure	SA 2.5 / zinc-primer 80 microns / final polyestere 60 microns RAL 9003	2
39	**Local control panel**		
40	Location	LCP in the filtre + Pendant for the telescopic chute	2
41	Enclosure	Stainless Steel	2
42	Functions	LCP: Fan Start; Fan Stop; Local/Remote selector; ESD Pendant: Telescopic Up Start; Telescopic Down Start; ESD	2
43	**ATEX**		
44	ATEX Classification	ATEX 21 (inside) / 22 (outside) IIIC T4 135ºC	0
45	**Electrical Data**		
46	Electrical Data	See document 172784-0300-001-SD-000215 - Motors Data Sheet See document 172784-0300-001-SD-000116 - Wiring Diagram	2

Operation Manual. Commercial equipment

RNP DCU Plant Project (WP1)

Supplier Name:	PHB Weserhütte
SDR Code(s):	P03-M01; P03-M02
Equipment / Tag Number(s):	SP-5612A/B
Document Title:	Installation, Operation and Maintenance manual for Telescopic Chutes
Supplier Document No:	000951-00-0CG-MN-0110

Supplier's Revision Record

3	13/03/19	Wiring diagrams and manual sensor added	Lola G	Margarita P	Michel F
2	11/01/19	Clarification note added	Lola G	Margarita P	Michel F
1	30/11/18	As per comments	Lola G	Margarita P	Michel F
0	09/10/18	Preliminary revision	Lola G	Margarita P	Michel F
Rev	**Date**	**Issue State**	**By**	**Checked**	**Approved**

Project Document Number

Project Number		Purchase Order Number			Seq. No.	Project Rev.
172784	**-**	**0300-001**	**-**	**SD** **-**	**000396**	**3**

SUPPLIER DOCUMENT REVIEW STATUS

Purchaser's review of Supplier's documents does not relieve Supplier of the responsibility for correctness under the Purchase Order. Permission to proceed does not constitute acceptance of design, detail and calculations, test methods or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with the Purchase Order or any other obligations, nor detract from any of the Purchaser's rights.

Purchaser's Review Stamp

CB&I
RNP DCU Plant Project No. 172784

Engineering Review Status	By:
Code 1 - No Comments	CHARLOTTE.PARRA Date: 21.3.2019

These comments do not relieve the supplier of his responsibility to meet the requirements of the PO.

Should the Supplier consider that any comments made by the Purchaser change the Scope of Supply, the Supplier shall advise the price and delivery implications of such changes within five working days of receipt. The Supplier must not incorporate such changes without prior approval of the Purchaser of the revised price and/or delivery period. RETROSPECTIVE CLAIMS WILL NOT BE CONSIDERED.

The document consists of this front sheet
plus 195 pages.

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CLARIFICATION NOTE

Terminals information:

1LE10/1MB10/1PC1							
80 and 90 [5]	TB1D00/TB1D10	3	M3.5	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10; M25 × 1.5: 9 ... 17	1 × M25 × 1.5/ 1 × M16 × 1.5 + 1 × M25 × 1.5	–
80 and 90	TB1E00/TB1E10	6	M4	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10; M25 × 1.5: 9 ... 17	1 × M25 × 1.5/ 1 × M16 × 1.5 + 1 × M25 × 1.5	–
100	TB1F00/TB1F10	6	M4	4	11 ... 21	2 × M32 × 1.5	NPT 3/4"
112							
132	TB1H00/TB1H10	6	M4	6	11 ... 21	2 × M32 × 1.5	NPT 3/4"
160	TB1J00/TB1J10	6	M5	16	19 ... 28	2 × M40 × 1.5	NPT 1"
1LE15							
71 ... 90	TB1D01	6	M4	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10 M25 × 1.5: 9 ... 17	1 x M16 × 1.5 + 1 × M25 × 1.5	–

1LE15/1LE16/1MB15/1MB16					
1LE15	71 ... 90	TB1D01	2 entries complete with sealing plugs, thread in terminal box, terminal box mounted and screwed in place	Cast iron	• Cable lug • Rigid cable, no cable lug

Terminal box type TB1D00

Terminal box type TB1E00

DIVISION HENNLICH ENGINEERING

HENNLICH s.r.o.

OPERATIONAL AND INSTRUCTION MANUAL

TELESCOPIC LOADING SPOUT FOR OPEN LOADING

TYPE NZO-F-TM-4-3L-VE-R

HENNLICH s.r.o.
HENNLICH ENGINEERING DIVISION
Ceskolipska 9
CZ – 412 01 Litomerice

GENERAL CONTENT:

1. General equipment description
2. Safety elements of the equipment
3. Safety of spout operation
4. Assembly and operation
5. Scope, schedules and ways of maintenance
6. Troubleshooting
7. Storage, transportation
8. Disassembly and liquidation
9. Technical support

1. GENERAL EQUIPMENT DESCRIPTION

Usage:

Loading spout can be used only at the below mentioned technical specification.

Product loaded:	petroleum coke
Flow rate:	120 t/h
Particle size:	80% < 30 mm, 20% max. 100 mm
Bulk density:	560 kg/m^3
Product temperature:	-20 / +70 °C
Product qualities:	flows well, abrasive, explosive
Type of loading:	open trucks
Lmin (rectracted lenght):	1 850 mm
Lmax (extended lenght):	5 000 mm
Stroke:	3 150 mm
Upper connecting flange (mm):	DN 400

Main parts:

Upper part

The main components is the base plate with the inlet flange. On the base plate there is electrical winch in three-ropes design that ensures the lifting up and down of the spout. Part of the winch are also pulleys for ropes convection and motor with the electro gearbox, complemented by a limit switch with integrated and adjustable position sensors (highest and lowest positions, emergency highest and lowest positions).

The winch is also equipped with rope suspension sensor, which responds to loosening and slacking of the outer rope. Ropes are wound on rope wheels, which are placed on the joint winch shaft.

Spout is completely cabled to a terminal box.

Built-in filter

It is mounted to the basic plate. It consists of the axial fan, filter cartridges, air tank for the cartridge regeneration, safety valve (set on 6 bar), electromagnetical valves and vacuum valve. Compressed air supply is regulated to 5 bar by a pressure regulator.

Loading conduit

Is used for transportation and directing of the loaded material
Inner – inner loading conduit is used for the product loading and direction
Outer – reinforced textile bellows. It covers the inner loading conduit and prevents dust escaping from the bottom part during the loading.

Bottom part:

Dustproof bell - closes around the pile and does not allow dust to escape.
Level switch is used as a signal switch to control the lifting up from pile of material

2. SAFETY ELEMENTS OF THE EQUIPMENT

- Gearbox situated on the winch ensures smooth movement. Simultaneously, this gearbox is statically self-locking and secures spout during lowering, so that spontaneous lowering of loading spout is not possible.
- Protection of spout upper position: in common working mode winch ensures the lifting of spout up to „Upper working position“. Overrun of this position is secured by means of „Emergency switch of upper position“.
- Clogging of spout is a state of emergency. If it happens, first of all it is necessary to stop material flow and then to find the cause of the clogging. Then release the space under the spout (gradually cautiously lift up the conduit or disassembly the clip fastening of the dustproof bell so that the material can flow away from inside chute). Then the lower part of spout has to be cautiously lifted up and the function of the level switch has to be verified. Do not overload the winch during this activities, use the winch once the conduit is released. Do not lift up the clogged spout using the winch. If there is a conduit damage danger, call the technical support.

Safety instructions

Take care of the observance of all local regulation related to accident avoidance. Only specially trained staff may operate the spout. After putting the equipment into operation, all safety instructions related to lifting devices have to be observed.
The owner has to prepare proper operating regulations for the spout and acquaint whole staff operating the spout with them demonstrably.

The manufacturer recommends the owner work out his own operating instruction in accordance with this Operational and Instruction Manual.

The lack of attention by operating staff could cause the injury or material damages. To avoid such situations it is necessary to observe following instructions.

Particular important safety instructions are highlighted with exclamation in yellow triangle. To secure the safety of individuals and to avoid material damages it is necessary to follow the instructions in this manual.

Range of application
Loading spout is suitable exclusively for the transportation of bulk solids for which it has been designed and manufactured (see Appendix 2 – Equipment technical specification).
In case of using for other types of bulk solids please ask the manufacturer for an advice.

Inadmissible utilization

- in no case, loading spout can be used for liquids or materials in gaseous state.
- loading spout is not intended for lifting of persons!
- loading spout is not intended for lifting of items.
- loading spout must not deflect from horizontal axis by more than 5° or by more than 100 mm in the loading place.

Guarantee
Guarantee does not apply to defects caused by mishandling, rough handling or utilization in conditions, for which the equipment was not designed, and further to all defects arising from non-observance of directions given in this Operational and Instruction Manual.
Guarantee does not apply to parts liable to wear caused by flowing material.
All damages caused by mishandling the loading spout cannot be a subject of claim.
The device, that is operating especially with chemically and corrosive materials, has to be provably (record in a maintenance book) cleaned and controlled on the daily basis.
Otherwise the manufacturer reserves a right to withdraw from the agreed guarantee.
The device that shows signs of malfunction must not be operated without the consent of device manufacturer.
The claim has to be immediately lodged by the customer in written form immediately after the detection of defect. The claim must especially include the type, serial number, date of defect detection, environment, in which the equipment was used, and description of sort and extent of defect.

3. SAFETY OF SPOUT OPERATION

Loading spout includes a lifting winch to which fully applies **all safety regulations in force as for common lifting devices**, including principal condition of ban on presence of persons in immediate vicinity under the loading spout, including standards for maintenance and handling of steel ropes of the winch and electrical equipment.
Maintenance and repairs related to electrical equipment may be carried out only by qualified person having necessary licences and properly kept documentation for electrical elements and circuits.
All mechanical parts of the spout including hangers, pivots, levers, safety sensors etc. have to be kept clean and attention must be paid to their full functionality. Especially in environment with increased corrosivity and chemical aggression the spout must be cleaned daily after the end of loading (do not flush the device!), lubricate the movable pivots and preserve the unprotected surfaces (also if they are made of stainless steel). Each maintaining service must be recorded in the maintenance book.

- Regularly check the air tank and air pressure regeneration for leaks - inspect and any defects rectified immediately.
- Check the safety valve, if it is satisfactory seal setting. In case of breaking the seal check the settings to 6 bar and re-sealed.
- According to the quality of compressed air check the status sludge reservoir pressure regulator, but min. once a week.

Forbidden operations and activities

- Any manipulation with rope hangers is forbidden, unless the spout parts are properly secured against loosening for example by securing the bottom part by external hanger with using of chains, ropes or belts.
- It is forbidden to bypass or switch the spout safety elements off.
- Any manipulation differing from recommended way of operation is strictly forbidden.

- It is forbidden to overload any parts of the winch, as especially rope wheels, ropes, rope hangers with special attention to operational safety (danger of breaking of rope hangers with subsequent fall of bottom part of spout).
- It is forbidden to stay under the device itself and in its close vicinity when the loading is in progress.
- Loading spout must not collide with the obstacles in its entire trajectory.
- Loading equipment must not be operated without supervision by trained staff.
- Do not put any part of your body into the rotating parts.
- Do not use a loading spout for delivery of material other than for which it was designed

HENNLICH s.r.o. is not responsible for damages caused by unskilled intervention or handling.

4. ASSEMBLY AND OPERATION

Assembly of the spout or replacement of spare parts has to be performed only by trained staff. The work related to electrical equipments has to be performed by trained and skilled electrician.

Assembly and completion can be carried out only in the presence of the manufacturer employee or manufacturer authorized person.

After the assembly it is needed to check the minimal and maximal length of the lift of the loading spout. Especially it is necessary to check the right high of the loading spout (distance between the loading spout in Lmin position and communication) to avoid the spout damage caused by passing vehicle!!

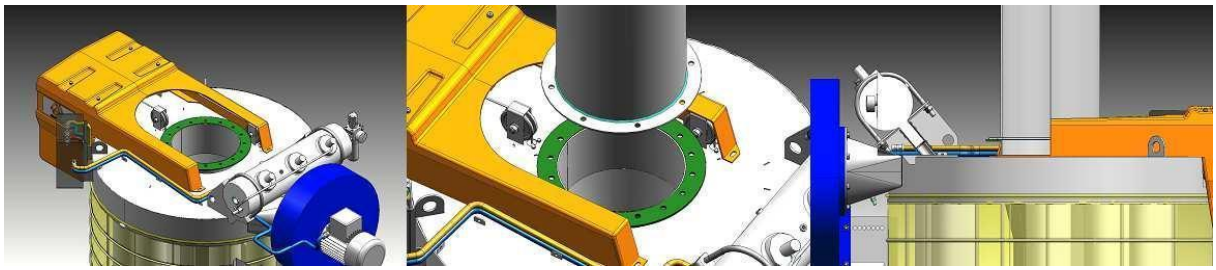
Electrical sensors such as level and limit switches are cabled to junction box on the upper part of the loading spout.

Assembly instructions

- Before the assembly, thoroughly clean the connecting flange surfaces,
- Assembly must be performed from the service platform or scaffold equipped with a safety railing,
- Loading capacity of the hopper including steel reinforcement must be higher than the weight of the spout,
- Before end of the assembly always check the function and settings of the limit switches Lmin and Lmax and emergency positions Lmin and Lmax,
- The device is passed into operation after performing of functional tests without material and material. The execution of functional test has to be recorded into the handover protocol
- Verify the correct orientation of the gearbox turns,
- After the assembly mount back the safety covers

The correct connecting flange with holes for the bolts is shown in the general assembly drawing (Appendix 3).
Loading spout is self-supporting, the whole weight is carried out on the connection flange at which the spout is connected to the related components.
For the connection of flanges the bolts must be used according to the flange design with a minimum length of 50 mm (or longer depending on the thickness of the flange), strength class 8.8., washers and nuts acc. to the drawings.

Mount the spout without the tension - otherwise there is a material damage!



Putting into the operation:
Putting the spout into the operation may be performed only by trained staff. The work related to electrical equipments may be carried out by trained and skilled electrician.

Make the assembled spout control:

- Check if individual clips fastening inside and outside bellows are properly mounted and fastened,
- Inlet flange and the bottom part must be in a horizontal position
- Orientation of conduit especially of bellows must correspond to the submitted drawings
- Check individual rope hangers are properly mounted and fastened,
- Verify functionality in 2 - 3 trial runs without material at full lift,
- Check equipment tightness as to dust release,
- Check if rope pulleys on upper parts are properly fastened and also transmitting rope pulleys and the electrical winch itself,
- Check if fastening screws are properly tightened, especially connection flange, bellows clips, rope clamps,
- The device is passed into operation after performing of functional tests without material and material. The execution of functional test has to be recorded into the handover protocol,
- Check the setting of the limit switch,
- During the functional tests check the communication with the superordinate system and functionality of local control elements,
- Check tightening and functionality of electrical parts,
- Check tightness of the equipment on the compressed air,
- The vacuum valve must move easily in pins
- Check correct connection of electric motor. Watch the correct direction of rotation of electric motor!

Maintenance and check of the spout

- Perform a visual test (see Chapter 5). Replace damaged or worn parts.
- All parts requiring lubrication with oil or grease must be lubricated regularly according to instructions for that device (for example, electro gearbox and pivots of the winding pulleys)
- Once a week, clean the equipment in dry way - remove the sedimentary dust from the functional and movable part of the spout. Each maintaining service must be recorded in the maintenance book.
- The wire ropes in use have to be replaced immediately, as soon as a damage appears or rupture of rope wire occurs.

- If wire diameter is reduced as a result of corrosion or abrasive wear, it is necessary to replace the rope immediately, even if no fracture or another mechanical damage is found. The operation of equipment is not safe until the rope is replaced.

Attention! Risk of injury!

Make sure that the spout is shut down by turning off of the main switch from the control box. Make sure that the equipment is shut down before starting the work and it is secured by the lock on the main switch against inadvertent turning on. Notify the control supervision. During the maintenance the control of the entire equipment must be carried.

5. SCOPE, SCHEDULES AND WAYS OF MAINTENANCE

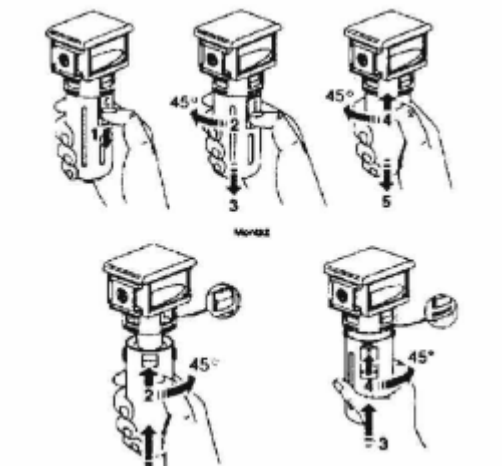
Warning!
All maintenance and inspection of loading spout may be performed only by trained specialist workers. All work related to electrical equipment may be performed by trained electrician.

Each day inspection:
Visual check of the spout must be done daily before the beginning of each shift.
Level switch - control the level switch daily, any possible stick must be removed.

Maintenance and inspection intervals:

Control points	Inspection intervals
Pull ropes	each 3 months
Rope clamps	each 3 months
Level switch	each 3 months
All safety elements	each 3 months
Movable parts	each 3 months
Overall inspection of the equipment	each 3 months
Overall inspection of winch	each 3 months
Oil filling of electric gearbox	each 3 months
Filter cartridges	each 3 months
Vacuum valve	each 3 months
Pressure valve	each 3 months
Desludging vessel	each 3 months or more frequently*
Safety valve	each 3 months

***) Maintenance of the air pressure regulator**



The pressure regulator is fixed on the air tank. The regulator includes the pressure indicator. Setting the value of the regulated pressure is performed by means of the regulation rosette as per the arrows. Pulling out the rosette and rotating it sets the value of the regulated pressure, the value is found on the pressure indicator; after the regulation push back the rosette in the secured position.

The desludging vessel removal is displayed on the figure. After cleaning, the vessel is placed back identically. The desludging vessel is removed after closing the pressure air inlet and zero pressure on the manometer.

Draining the condensate can be performed during air pressure by pushing the valve at the bottom of the glass collection vessel. Do not remove the vessel. The condensate draining must be performed at the latest when the level reaches approximately one half of the vessel weight, i.e. half of the inspection hole height on the protection vessel.

Write information about every executed control into the maintenance book. Keeping records in the maintenance book is a prerequisite for recognition of device warranty.

The maintenance book with numbered pages should content at least following information:

- Date of inspection
- Control points
- Description and state of controlled points
- Name of the person performing the inspection, his signature and date,
- Name of technician, who took over the control result, his signature and date

6. TROUBLESHOOTING

Defect description	Cause	Removal
The movement of the lower part does not comply with the control instructions	Switched phases of return part electrical motor	Repair the connection
The lower part does not reach the lower position	The tubes become stuck/clogged	Check the internal surface of the tubes and clean the paste contamination
	Incorrectly set limit switch	Set the end positions
The ropes are excessively loosen	Incorrect function of the rope suspension sensor	Check correct operation of the pulley arms of the sensor for the rope suspension
		Check the sensor setting of the rope suspension setting
The lower part is not in vertical position	Uneven lengths of the ropes	Set the length of the ropes on suspensions correctly
	Uneven winding occurs on the rope disk	Check the state of the ropes and the rope disks
The caving occurs during filling	The lower part does not react to the material	Check the state of the level switches
		Adjust the sensor sensitivity to the material detection
		Extend the cable of the rotary sensor /Extend the steel chain length of the tilt sensor

From the fan the air with a high amount of dust particles comes out	Filter cartridges are damaged	Check the filter cartridges, eventually make the exchange for the new ones
From the fan the weak flow of the air comes out	Clogging of filter cartridges	Shorten the regeneration time, eventually make the exchange of the cartridges. Check the regeneration function, check the compressed air connection.
	Different rotation of the fan	Control and set the proper fan rotation if needed
	Fan air flow is too weak	Regulate the flow by a throttle valve
The fan blows away the bigger particles of the product	Fan air flow is too strong	Regulate the flow by a throttle valve

7. STORAGE AND TRANSPORTATION

During transportation, the spout parts are tightly fastened to pallets by means of fixing tapes (metal or plastic ones) tightened by „strip biding tongs“. In this position, it can be also stored before the assembly on given discharging site.
Loading spout must not be seated on level switch or similar easily damageable parts.

Following storage conditions for the storage of spout have to be observed:

- Store in temperature above 0°C
- Do not store in atmosphere containing oil or other aggressive substances.
- Submitted documentation applies to the electrical components.
- Do not expose the equipment to climatic effects, as rain, snow etc.
- Store in a dry and clean warehouse, so that the device is protected against adverse weather

Before the spout is mounted it is necessary to loose fixing tapes in safely manner and to perform visual inspection of the equipment.

8. DISASSEMBLY AND LIQUIDATION

Disassembly and liquidation of the loading spout is performed after the expiration of its service life. Waste disposal will be carried out in accordance with applicable law at the time of disposal facilities (waste sorting, etc.).

WATCH OUT! INJURY HAZARD!

It is necessary to ensure that the equipment is properly shut down and secured against unintentional starting-up. Notify the control supervision

Safe liquidation of the equipment includes following steps:

- ensure proper, safe and complete disconnection of spout from electrical connections,
- perform safely disassembly of spout,
- drain oil from gearbox,
- dismantle individual parts of loading spout,
- sort dismantled parts according to waste classes (steel, rubber, cables, electrical components, plastic substances) and deliver to specialized institutions for proper liquidation.

9. TECHNICAL SUPPORT

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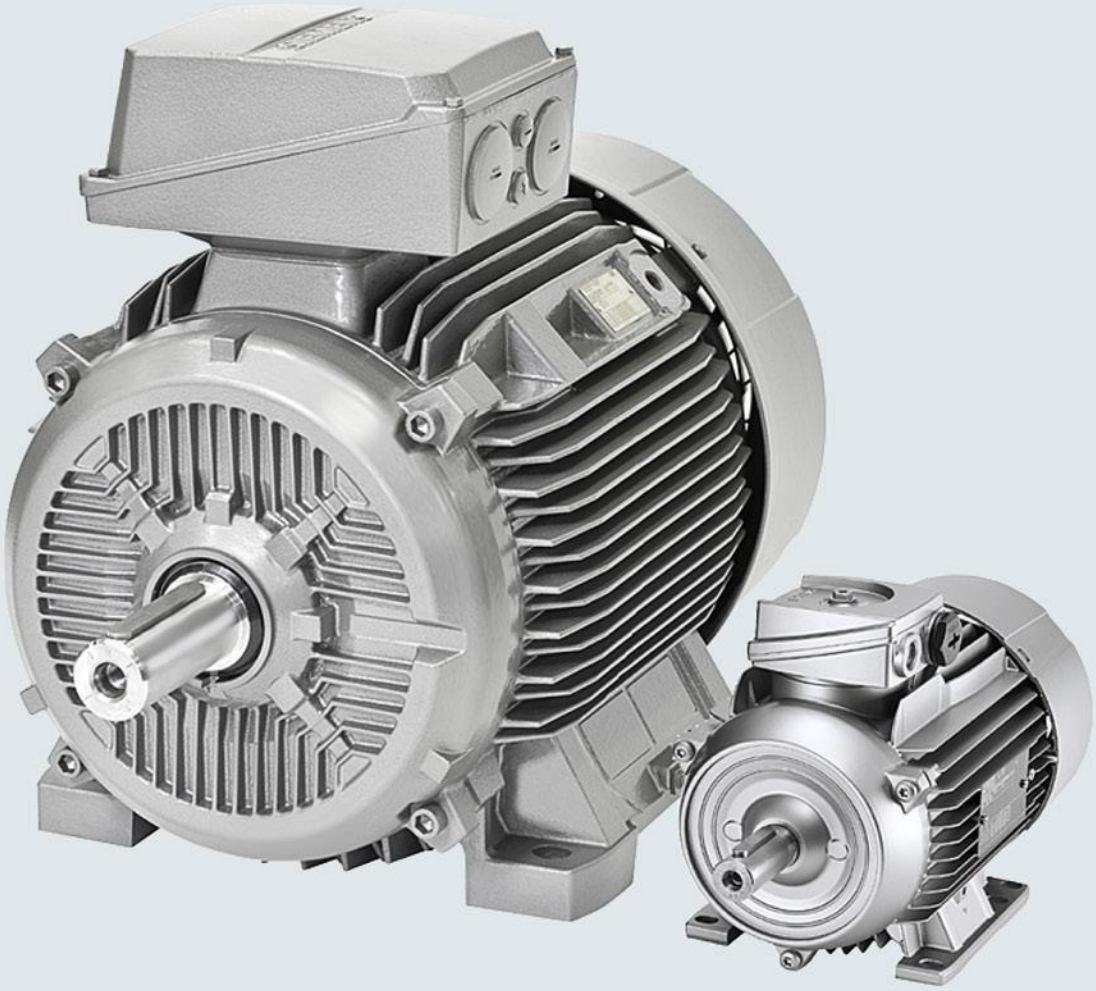

SIMOTICS GP, SD, DP, XP

Low-voltage motors

1LA5 6 7 9, 1LE1, 1LG4 6, 1LP7 9, 1MA6 7, 1MB1, 1MF6 7, 1MJ6, 1PC1 3, 1PP6 7 9

Operating instructions

Edition 05 2014

Answers for industry.

SIEMENS

SIMOTICS GP, SD, DP, XP

Low-Voltage Motors
Low-voltage motors

Operating Instructions

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05/2014
5 610 00000 02 000

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction 1

1.1 About these instructions

These instructions describe the machine and explain how to handle it, from initial delivery to final disposal of the equipment. Keep these instructions for later use.

Read these operating instructions before you handle the machine and follow the instructions to become familiar with its design and operating principles and thus ensure safe, problem-free machine operation and long service life.

If you have suggestions for improving the document, please contact the Service Center.

Text format features

The warning notice system is explained on the rear of the inside front. Always follow the safety instructions and notices in these instructions.

In addition to the safety-related warning notices which you must read, you will find the text in these instructions is formatted in the following way:

1. Handling instructions are always formatted as a numbered list. Always perform the steps in the order given.

- Lists are formatted as bulleted lists.
  - Lists on the second level are hyphenated.

Note

A Note is an important item of information about the product, handling of the product or the relevant section of the document. Notes provide you with help or further suggestions/ideas.

1.2 Information for the reader

Explanation of the icons

Note for 1LE1, 1MB1, 1PC1, 1PC3 machines

Note for 1LE1, 1PC1 and 1PC3 machines, frame sizes 80 and 90 with central terminal box locking

Information about explosion-protected machines

Safety information 2

2.1 Information for those responsible for the plant or system

This electric machine has been designed and built in accordance with the specifications contained in Directive 2006/95/EC ("Low-Voltage Directive") and is intended for use in industrial plants. Please observe the country-specific regulations when using the electric machine outside the European Community. Follow the local and industry-specific safety and setup regulations.

The persons responsible for the plant must ensure the following:

- Planning and configuration work and all work carried out on and with the machine is only to be done by qualified personnel.
- The operating instructions must always be available for all work.
- The technical data as well as the specifications relating to the permissible installation, connection, ambient and operating conditions are taken into account at all times.
- The specific setup and safety regulations as well as regulations on the use of personal protective equipment are observed.

Note

Use the services and support provided by the appropriate Service Center for planning, installation, commissioning, and servicing work.

You will find safety instructions in the individual sections of this document. Follow the safety instructions for your own safety, to protect other people and to avoid damage to property.

Observe the following safety instructions for all activities on and with the machine.

2.2 The five safety rules

For your personal safety and to prevent material damage when carrying out any work, always observe the safety instructions and the following five safety rules, according to EN 50110-1 "Dead working". Apply the five safety rules in the sequence stated before starting work.

Five safety rules

1. Disconnect completely.

   Disconnect the auxiliary circuits, for example anti-condensation heating.
2. Secure against reconnection.
3. Verify absence of operating voltage.
4. Carry out earthing and short-short-circuiting.
5. Provide protection against adjacent live parts.

To energize the system, apply the measures in reverse order.

2.3 Qualified personnel

All work at the machine must be carried out by qualified personnel only. For the purpose of this documentation, qualified personnel is taken to mean people who fulfill the following requirements:

- Through appropriate training and experience, they are able to recognize and avoid risks and potential dangers in their particular field of activity.
- They have been instructed to carry out work on the machine by the appropriate person responsible.

2.4 The safe use of electrical machines

⚠ WARNING

High voltages

Electrical machines contain live parts. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly.

- Only remove covers in compliance with the applicable regulations.
- Operate the machines properly.
- Perform regular maintenance on the machine.

⚠ WARNING

Rotating parts

Electrical machines contain dangerous rotating parts. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly.

- Only remove covers in compliance with the applicable regulations.
- Operate the machines properly.
- Perform regular maintenance on the machine.
- Secure free-standing shaft extensions.

⚠ WARNING

Risk of burning

Electrical machines have hot surfaces. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly.

- Allow the machine to cool down before starting any work on it.
- Only remove covers in compliance with the applicable regulations.
- Operate the machines properly.

2.5 Safety instructions: Explosion-proof machines

Note

The increased level of danger in hazardous areas demands that you pay particular attention to the notes marked with Ex.

2.6 Special designs and construction versions

Note

Before carry out any work on the machine, determine the machine version.

If any deviations or uncertainties arise, contact the manufacturer specifying the type designation and serial number (see rating plate) or have the equipment repaired by a Siemens Service Center.

2.7 Special conditions for explosion-proof machines

Special conditions for the safe application of explosion-protected machines marked with X (excerpt from the EC type-examination certificate, point 17)

Flameproof enclosure "d"

Flameproof joints may only be repaired strictly in accordance with the manufacturer's design specifications. Repair in accordance with the values in Tables 1 and 2 of EN / IEC 60079-1 is not permitted.

Zone 21

- Do not operate the motors with excessively thick deposits of dust.
- When the motors are mounted with the free shaft end pointing upwards, prevent foreign bodies from dropping into the ventilation openings using an appropriate mechanical design.
- For motors with a fixed connecting cable: The free end of the cable must be connected according to valid regulations for electrical installations.

Description 3

3.1 Area of application

Overview

The three-phase machines of this series are used as industrial drives. They are designed for a wide range of drive applications both for line operation as well as in conjunction with frequency converters.
They are characterized by their high power density, extreme robustness, long service life and outstanding reliability.

Intended use of the machines

These machines are intended for industrial installations. They comply with the harmonized standards of the series EN / IEC 60034 (VDE 0530). Their use in hazardous areas is forbidden unless the marking on the rating plate expressly permits this operation. If other/more wide-ranging demands (e.g. protection so that they cannot be touched by children) are made in special cases – i.e. use in non-industrial installations – these conditions must have been complied with in the plant or system itself when the motors are installed.

Note

Machine directive

Low-voltage motors are components designed for installation in machines in accordance with the current Machinery Directive. They must not be commissioned until it has been verified that the end product complies with this directive (refer to EN 60204-1).

3.1.1 CE marking

Note

Use of machines without CE identification

Machines without CE marking are intended for operation outside the European Economic Area (EEA). Do not use any machines without CE mark within of the EEA!

3.2 Rating plates

Rating plate

The rating plate shows the identification data and the most important technical data. The data on the rating plate and the contractual agreements define the limits of proper usage.

Data on the rating plate

Item	Description	Item	Description
General data		Electrical data	
1	Type of machine	31	Electrical data
2	Machine type	32	-
3	Serial number (incl. date of manufacture YY.MM)	33	Rated voltage [V]
4	Standards	34	Winding connections
5	Additional details (optional)	35	Frequency [Hz]
6	Customer data (optional)	36	Rated power [kW]
7	Country of origin	37	Rated current [A]
8	Production location	38	Power factor [cosφ]
9	Identification number of testing agency (optional)	39	Rated speed [rpm]
10	Regulations (optional)	40	Efficiency class
Mechanical data		41	Efficiency
11	Frame size	42	Torque [Nm] (optional)
12	Type of construction	43	Rated power [hp] (optional)
13	Degree of protection	44	Service factor (optional)
14	Machine weight [kg]	45	Starting current ratio (optional)
15	Temperature class	46	Operating mode (optional)
16	Ambient temperature range (optional)	47	NEMA data (optional)
17	Installation altitude (only if higher than 1000 m)	48	Anti-condensation heating (optional)
18	Vibration severity grade	49	Company logo
19	Bearing sizes		
20	Relubrication data/specifications (optional)		
21	Brake data (optional)		

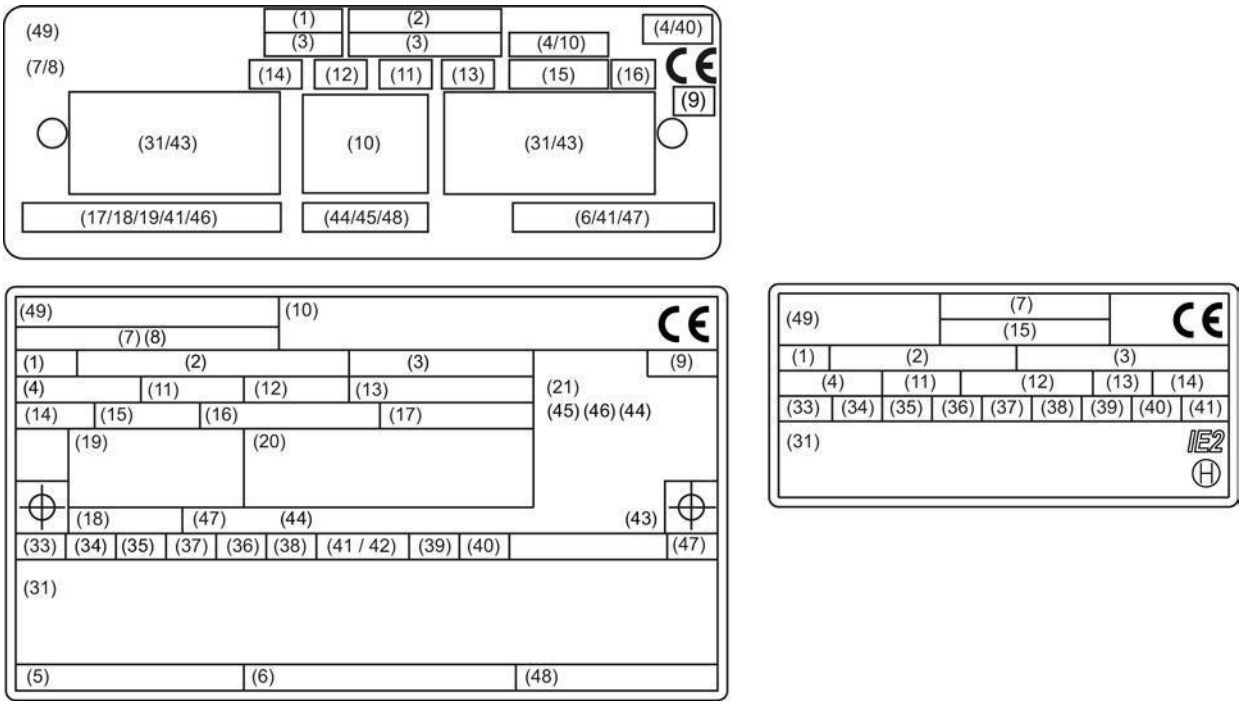


Figure 3-1 Examples of rating plates

3.3 Installation

3.3.1 Machine design

Machines of this series are low-voltage three-phase asynchronous drives with a cylindrical shaft end and featherkey way. They can be supplied as single-speed machines with different efficiency classes or as pole changing machines for several speeds.

In the case of machines with feet (IM B3 type of construction), the feet are cast or bolted on.

It is possible to change the feet bolted on the housing of the machine, e.g. to change the position of the terminal box; however, only have this performed by an authorized retrofit partner.
With the appropriate post working, ensure that the feet mounting surfaces are again on one plane and parallel to the machine shaft, and shim when required. Professionally touch up damaged painted surfaces.

3.3.2 Regulations

Standard motors

The regulations and standards used as basis to design and test this machine are stamped on the rating plate. The machine design basically complies with the following standards:

Table 3- 1 Applicable general regulations

Feature	Standard
Dimensioning and operating behavior	EN / IEC 60034-1
Procedure for determining the losses and the efficiency of rotating electrical machines and inspections	EN / IEC 60034-2-1 EN / IEC 60034-2-2 EN / IEC 60034-2-3
Degree of protection	EN / IEC 60034-5
Cooling	EN / IEC 60034-6
Type of construction	EN / IEC 60034-7
Terminal designations and direction of rotation	EN / IEC 60034-8
Noise emission	EN / IEC 60034-9
Starting characteristics of rotating electrical machines	EN / IEC 60034-12
Vibration severity grades	EN / IEC 60034-14
Efficiency classification of three-phase squirrel-cage induction motors	EN / IEC 60034-30
IEC standard voltages	IEC 60038

Supplementary regulations for explosion-proof machines

Table 3- 2 Regulations applied for explosion-protected machines

Feature	Standard
Electrical equipment for hazardous gas atmospheres, Part 0: General requirements	EN / IEC 60079-0
Electrical equipment for hazardous gas atmospheres, Part 1: Flameproof enclosure "d"	EN / IEC 60079-1
Electrical equipment for hazardous gas atmospheres, Part 7: Increased safety "e"	EN / IEC 60079-7
Electrical equipment for hazardous gas atmospheres, Part 14: Electric installations for endangered atmospheres (except underground excavation)	EN / IEC 60079-14
Electrical equipment for hazardous gas atmospheres, Part 15: Type of protection "n"	EN / IEC 60079-15
Electrical equipment for hazardous gas atmospheres, Part 19: Repairs and overhauls	EN / IEC 60079-19
Potentially explosive atmosphere - Part 31: Device dust explosion protection by enclosure "t"	EN / IEC 60079-31
Electrical equipment for use in the presence of combustible dust - Part 17: Inspection and maintenance of electrical systems in hazardous areas (except underground excavation)	EN / IEC 60079-17
Directive on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in hazardous areas.	RL94/9/EC

3.3.3 Cooling and ventilation

3.3.3.1 General

The machines of this series are three-phase asynchronous machines with a closed primary (internal) cooling circuit and an open secondary cooling circuit (surface cooling). The surface cooling varies depending on the version.

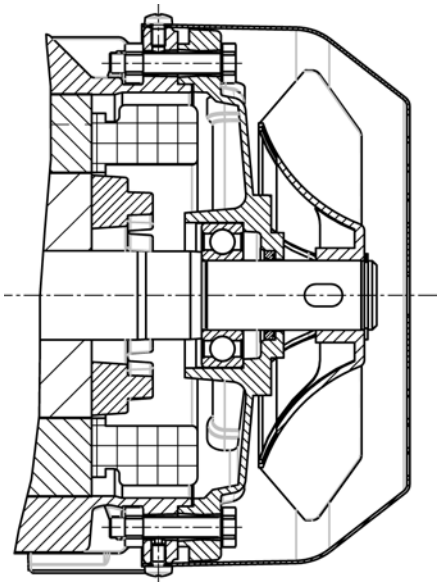
3.3.3.2 Machines with a fan

Self-ventilation (standard): Cooling IC 411 in accordance with EN / IEC 60034-6

Located at the ND end of the stator housing is an air intake cowl that guides the external air on its way to the motor. The external air is drawn in through openings in the air intake cowl and flows axially across the outer cooling ribs of the motor frame. The fan wheel for the external flow of cooling air is attached to the machine shaft.
The fan wheels are bidirectional.
Check the cooling effect below rated speed in the case of frequent switching or braking – or if the speed is controlled continually below the rated speed.

Note explosion-protected machines

Machines for use in Zone 21 and Zone 22 have a metal fan.

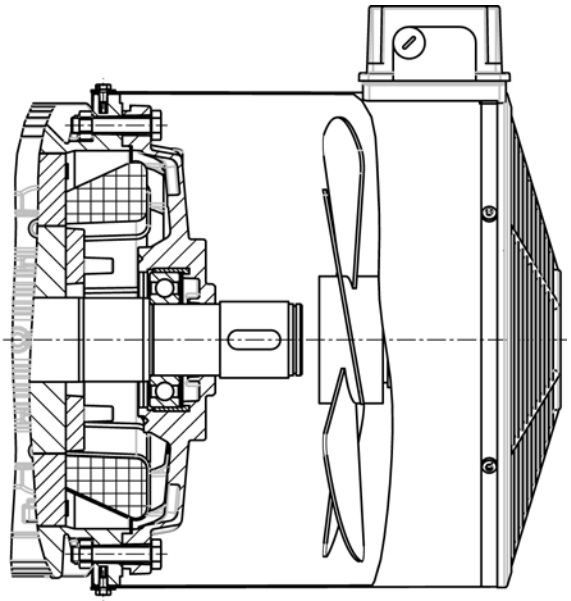


Forced ventilation (optional): Type of cooling IC 416 in accordance with EN / IEC 60034-6

⚠ WARNING
Risk of burning Operating the machine without external fan results in overheating. This may result in personal injury and material damage. Never commission the machine without an external fan.

Cooling that does not depend on the speed is achieved by means of a separately driven fan wheel (forced ventilation). Forced ventilation does not depend on the operating state of the machine.

The fan wheel for the external flow of cooling air is powered by an independent module and is enclosed by the fan cover.



3.3.3.3 Machines without a fan (optional)

Surface cooling by free convection: Cooling IC 410 in accordance with EN / IEC 60034-6

IC410 IC4A1A0

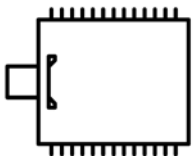


Figure 3-2 IC410

Surface cooling by relative movement of cooling air: Type of cooling IC 418 in accordance with EN / IEC 60034-6

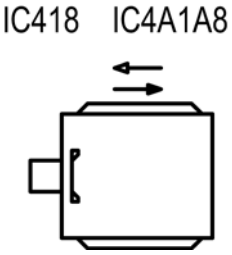


Figure 3-3 IC418

3.3.4 Bearings

In order to support the machine shaft and maintain its position in the non-moving part of the machine, only 2 rolling-contact bearings are used. One roller bearing performs the function of a location bearing that transfers axial and radial forces from the rotating machine shaft to the non-moving part of the machine. The second roller bearing is implemented as floating and support bearing in order to allow thermal expansion inside the machine and transfer radial forces.
The nominal (calculated) useful life of the bearings according to ISO 281 is at least 20,000 hours with utilization of the permissible radial/axial forces. However, the achievable useful life of the bearings can be significantly longer in the case of lower forces (e.g. operation with self-aligning couplings).
Avoid rigid couplings.

Roller bearings with permanent lubrication are maintenance-free. For bearings that can be relubricated, observe the data on the rating plate or lubricant plate.

3.3.5 Balancing

As standard, the motor is balanced dynamically with a half featherkey (code "H") in accordance with ISO 8821.
The balance quality corresponds to vibration level "A". Vibration level "B" is optional or possible on request.

3.3.6 Types of construction/method of installation

⚠ WARNING

Damage caused by small parts falling in

Material damage and injury can occur if the fan is destroyed and therefore the motor overheats.

- For types of construction with a shaft extension facing downwards, a suitable cover must be fitted to prevent small parts from falling into the fan cover (see also standard IEC / EN 60079-0).
- Prevent the cooling airflow from being reduced as a result of covers that might be in place.

Further possible fields of application

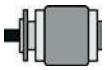
The type of construction of the machine is stated on the rating plate.

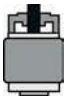
Note

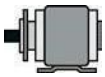
When lifting the machines for transport, only lift them in a position that corresponds to their basic construction type.

Table 3- 3 Type of construction

Basic type of construction code	Diagram	Other methods of installation	Diagram
IM B3 (IM 1001)		IM V5 (IM 1011)	
		IM V6 (IM 1031)	
		IM B6 (IM 1051)	
		IM B7 (IM 1061)	
		IM B8 (IM 1071)	

Basic type of construction code	Diagram	Other methods of installation	Diagram
IM B5 (IM 3001)		IM V1 (IM 3011)	
		IM V3 (IM 3031)	

Basic type of construction code	Diagram	Other methods of installation	Diagram
IM B14 (IM 3601)		IM V18 (IM 3611)	
		IM V19 (IM 3631)	

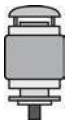
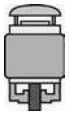
Basic type of construction code	Diagram
IM B35 (IM 2001)	
IM B34 (IM 2101)	

Types of construction/Installation conditions for explosion-proof machines

The type of construction of the machine is stated on the rating plate.

In the case of explosion-proof machines where the shaft extensions point downwards (types of construction IM V5, IM V1 or IM V18) a protective top cover is mandatory. Explosion-proof machines with IM V5, IM V1 and IM V18 types of construction are fitted with a canopy at the factory.

Table 3- 4 Construction type with protective top cover

Conditions of installation	Graphics-Based Representation
IM V5 (IM 1011)	
IM V1 (IM 3011)	
IM V18 (IM 3611)	

3.3.7 Degree of protection

The motor degree of protection is stamped on the rating plate. They can be installed in dusty or humid environments.

⚠ WARNING

Dangerous voltage

The winding can be damaged if objects are introduced into the condensation holes (optional). This can lead to death, serious injury or material damage.

Note the following to maintain the degree of protection:

- Switch off the machine so that it is in a no-voltage condition, before you open the condensation drain holes.
- Close the condensation drain holes, e.g. using T-plugs, before commissioning the machine.

NOTICE

Storage

The motor can be damaged if you use it or store it unprotected outdoors.

- Protect the motor against intensive solar radiation, rain, snow, ice and dust. Use a superstructure or additional cover, for example.
- If required, contact the Siemens Service Center, or technically coordinate outdoors use.

Environmental requirements

The machine is suitable for tropical climates.

Guide value for the standard version 60 % relative humidity at an ambient temperature of (T_{amb}) 40 °C.

Ambient temperature: -20 °C to +40 °C

Installation altitude: ≤ 1000 m

Air with normal oxygen content, usually 21 % (V/V)

If the environmental requirements are different from the details listed here, then the values on the rating plate will apply.

Machines intended for use in Zone 1 (type of protection Flameproof Enclosure "d" or Increased Safety "e") or in Zone 2 (type of protection "n") are designed with IP 55 degree of protection.

Machines intended for use in Zone 21 have IP 65 degree of protection. Machines intended for use in Zone 22 have IP 55 degree of protection and can be used in dusty environments such as grinders, silos, animal feed plants, and malthouses, as well as in certain areas of the chemical industry.

3.3.8 Optional built-on and built-in accessories

In addition to the current-dependent overload protective device located in the connecting leads, we recommend that you use temperature sensors embedded in the stator winding in order to monitor the temperature and protect the stator winding from overheating.

Machines whose winding is exposed to the danger of condensation due to the climate, e.g. machines at a standstill in a damp environment or machines which are exposed to large temperature fluctuations, can be equipped with an anti-condensation heater.
As an option, the machines can be fitted with additional built-on accessories on the ventilation side (e.g. brake, rotary pulse encoder).

Optional built-on and built-in accessories for explosion-proof machines

Investigate the influence of sources of heat and cold on the finished installation when it includes built-on accessories compliant with EN 60079-14!

Table 3- 5 Recommended maximum interface temperatures for flange motors

Type of protection	Ex d		Ex e, Ex nA	
Supply voltage	Line	Converter	Line	
Control range	-	10 Hz to f_{rated} (≤ 60 Hz)	-	
Cooling method	Self-ventilated			
Frame size	63 ... 200			
Mechanical design	EN 50347			
Ambient temperature	-20° C ... +60° C		-20 °C ... +40 °C	
Temperature class	T3, T4		T3	
Number of poles	2, 4		2	4
Max. shaft temperature	100 °C		60 °C	75 °C
Max. flange temperature	100 °C		60 °C	75 °C

Select mounted equipment such as brakes, forced ventilation or incremental encoders according to the requirements of the Directive 94/9/EC.

Preparing for use

4

4.1 Delivery

Checking the delivery for completeness

The drive systems are put together on an individual basis. When you take receipt of the delivery, please check immediately whether the items delivered are in accordance with the accompanying documents. Siemens will not accept any claims relating to items missing from the delivery and which are submitted at a later date.

- Report any apparent transport damage to the delivery agent immediately.
- Report any apparent defects/missing components to the appropriate SIEMENS office immediately.

Archive the safety and commissioning notes provided in the scope of delivery as well as the optionally available operating instructions so that these documents are always easily accessible.

The rating plate optionally enclosed as a loose item with the delivery is provided to enable the motor data to be attached on or near the machine or installation.

4.2 Transport

⚠ WARNING

Risk of dropping and swinging when transported suspended

If you transport the motor suspended from cables or ropes, the cables or ropes can break, e.g. as result of damage. Further, if not adequately attached, the motor can swing. This can result in death, serious injury, or material damage.

- Use additional, suitable lifting equipment for transport and during installation.
- Two cables alone must be able to carry the complete load.
- Prevent the lifting equipment from sliding by appropriately securing it.

WARNING
Toppling over or slipping of the motor The motor can slide or topple over if it is not correctly lifted or transported. This can result in death, serious injury, or material damage. • Use all the lifting eyes on the machine. • Any eyes that are screwed in must be tightly fastened. • Eyebolts must be screwed in right up to their supporting surface. • If necessary, use suitable, sufficiently-sized transport equipment such as lifting straps (EN1492-1) and lashing straps (EN12195-2).

If any transport locks are in place, remove them before commissioning. Store the transport locks or disable them. Use the transport locks when transporting the motors again or reactivate the transport locks.

The machines are packed in different ways depending on how they are transported and their size. If not otherwise contractually agreed, the packaging corresponds to the packing guidelines according to ISPM (International Standards for Phytosanitary Measures).

Comply with the images shown on the packaging. Their meaning is as follows:

Up | Fragile goods | Protect against moisture | Protect against heat | Center of gravity | Hand hooks forbidden | Attach here

4.3 Storage

Storing outdoors

NOTICE
Damage to the motor Damage can occur if incorrectly stored. Take all precautions to protect the motor under extreme climatic conditions, e.g. salt-laden and/or dusty, moist/humid atmospheres.

Choose a dry storage location which is safe from flooding and free from vibration. Repair any damage to the packaging before putting the equipment into storage if this is necessary to ensure proper storage conditions. In order to ensure protection against ground moisture,

locate machines, equipment and crates on pallets, wooden beams or foundations. Prevent equipment from sinking into the ground. Do not impede air circulation under the stored items.

Covers or tarpaulins used to protect the equipment against the weather must not come into contact with the surfaces of the equipment. Use wooden spacer elements to ensure that air can circulate freely around the equipment.

Storing indoors

The storage rooms must provide protection against extreme weather conditions. They must be dry, free from dust, frost and vibration and well ventilated.

Bare metal surfaces

For transport, the bare surfaces (shaft ends, flange surfaces, centering edges) should be coated with an anti-corrosion agent which will last for a limited amount of time (<6 months). Apply suitable anti-corrosion measures for longer storage times.

Condensation drain hole

Open any condensation drain holes to drain the condensation depending on the environmental conditions, every six months at the latest.

Storage time

Turn the shafts 1x every year to avoid bearing brinelling. Prolonged storage periods reduce the useful life of the bearing grease (aging).

Open bearings

- For open bearings e.g. 1Z, check the state of the bearing grease over 12 months.
- Replace the grease if it is identified that the grease has lost its lubricating properties or is polluted. The consistency of the grease will change if condensation is allowed to enter.

Closed bearings

- For sealed bearings, replace the DE and NDE bearings after a storage time of 48 months.

4.4 Electromagnetic compatibility

Note

If the torque levels are very unequal (e.g. when a reciprocating compressor is being driven), a non-sinusoidal machine current will be induced whose harmonics can have an impermissible effect on the supply system and cause impermissible interference emissions as a result.

Note

Converter

- If operated with a frequency converter, the emitted interference varies in strength, depending on the design of the converter (type, interference suppression measures, manufacturer).
- Avoid that the specified limit values stipulated for the drive system (consisting of the motor and converter) are exceeded.
- You must observe the EMC information from the manufacturer of the converter.
- The most effective method of shielding is to conductively connect a shielded machine supply cable to the metal terminal box of the machine (with a metal screw connection) over a large surface area.
- On machines with integrated sensors (e.g. PTC thermistors), disturbance voltages caused by the converter may occur on the sensor cable.

When used in accordance with their intended purpose and operated on an electrical supply system with characteristics according to EN 50160, the enclosed machines comply with the requirements of the EC Directive concerning electromagnetic compatibility.

Immunity to interference

The machines in principle fulfill the requirements of interference immunity in conformity with EN / IEC 61000-6-2 . If machines with integrated sensors (e.g. PTC thermistors) are used, the operating company must ensure sufficient interference immunity by selecting a suitable sensor signal lead (possibly with shielding, connected in the same way as the machine feeder cable) and a suitable evaluation unit.
When operating the machines from a converter at speeds higher than the rated speed, then the mechanical speed limits must be carefully observed (safe operating speed EN / IEC 60034-1).

Assembly 5

5.1 Installation

5.1.1 Safety instructions

⚠ WARNING
Risk of burning Electrical machines have hot surfaces. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly. • Allow the machine to cool down before starting any work on it. • Only remove covers in compliance with the applicable regulations. • Operate the machines properly. • Prevent parts (cables, etc.) from coming into contact with the machine enclosure.

NOTICE
Damage to the motor In order to avoid material damage, check the following points before commissioning the motor. • Using appropriate measures, check whether the correct direction of rotation of the motor has been set by the customer, e.g. by decoupling from the driven load. • Ensure that temperature-sensitive parts (cables, etc.) are not in contact with the machine enclosure. • Ensure that the condensation drain holes are always located at the lowest part of the motor.

Note

Observe the technical data on the rating plates attached to the motor enclosure.

5.1.2 Safety instructions: Explosion-proof machines

Note

The increased level of danger in hazardous areas demands that you pay particular attention to the notes marked with .

5.1.3 Machine installation

General

Note

In order to prevent the eyebolts loosening, after mounting, tighten these or remove them.

NOTICE
Damage to mounted components Material damage can occur if you use the mounted components to help lift the motor. Do not use the mounted components to help lift the motor.

- For vertical installation, use all of the eyebolts provided and when necessary, hoisting straps (DIN EN 1492-1) and/or lashing straps (DIN EN 12195-2) to stabilize the position of the motor.
- Prevent foreign bodies from falling into the fan cover. For vertical machine installation with the shaft end facing downwards, attach a protective canopy.
- If the shaft extension is facing upwards, the user must prevent liquid from moving along the shaft and entering the motor.
- Clean bare metal surfaces with anti-corrosion agent using white spirit to ensure proper installation and / or machine mounting.
- Do not obstruct the ventilation! Do not draw in the discharged air directly – also from adjacent equipment.
- Avoid exposing them to direct, intense solar radiation, rain, snow, ice, or also dust for extended periods. Attach a covering structure or an additional cover when using or storing outdoors.
- Do not exceed the permissible axial and radial forces.

- Only use explosion-protected machines in appropriate areas in accordance with directive 1999/92/EG .
  If the certificate is supplemented by an X, observe the special conditions listed in the EC type examination certificate. Special conditions for explosion-proof machines (Page 13)
- When installing electrical systems in hazardous zones, observe EN / IEC 60079-14 and the corresponding country regulations.
- The machine temperature class specified on the rating plate must be equal to or greater than the temperature class of any combustible gases that may develop.

5.1.4 Cooling

5.1.4.1 Ventilation

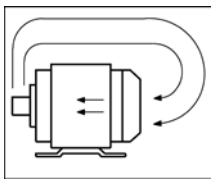
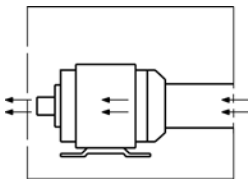
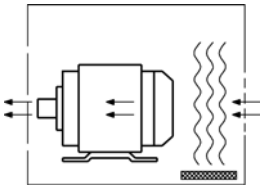
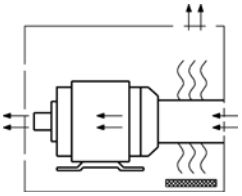
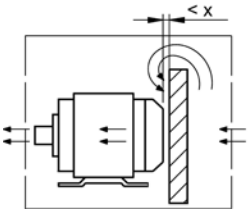
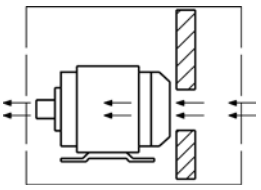
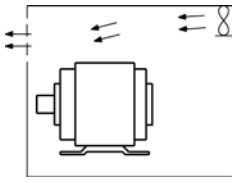
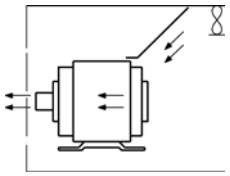
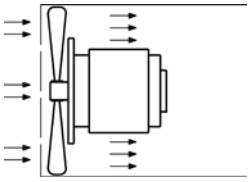
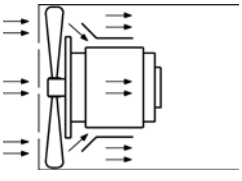
CAUTION

Overheating and failure of the motor

Material damage or slight injury can occur if you do not observe the following points:

- Do not obstruct ventilation.
- Prevent the air expelled by neighboring equipment from being immediately sucked in again.
- On the vertical type of machine construction with air intake from above, protect the air inlets from the ingress of foreign bodies and water.
- If the shaft extension is facing upwards, liquid must be prevented from entering by moving along the shaft.

Table 5- 1 Air guidance

Incorrect	Correct
	
	
	
	
	

Minimum dimension "x" for the distance between neighboring modules and the air intake of the machine

Table 5- 2 Minimum dimension "X" for the distance between neighboring modules and the air intake of the machine

Frame size	X [mm]
63 ... 71	15
80 ... 100	20
112	25
132	30
160	40
180 ... 225	45
180 ... 200 (1LG)	90
225 ... 250 (1LG, 1MA6)	100
280 ... 315	110

5.1.5 Machines with type of construction IM B15, IM B9, IM V8 and IM V9

Special types of construction

NOTICE
Damage to the motor Material damage can occur if the following notes are not observed: • The IM B3 bearing shield with built-in distance ring mounted at the DE is only used as transport lock. A warning label is attached to this bearing shield. • The spacer ring is not a roller bearing. • Remove the bearing shield and the spacer ring. • Remove the transport lock before commissioning.

These machines do not have their own bearing system for the machine shaft at the drive end (DE). The machine shaft is accepted by the (hollow) shaft or coupling of the plant or driven machine.
Using the centering flange, the machine is aligned with respect to enclosures, flanges or driven machines.
Note that the temperature of the motor and motor shaft increases during operation. The thermal expansion of the machine shaft must be compensated by the customer in the form of suitable measures.
Use the spring washers provided to locate the NDE bearing without any play.

5.1.6 Balancing

CAUTION
Incorrect mounting or removal To avoid injury and material damage, carefully observe general touch protection measures for output transmission elements. • The general touch protection measures for drive output elements must be observed. • Output elements may only be attached or withdrawn using the correct equipment. • The feather keys are only secured against falling out during shipping. If you commission a machine without an output element, the feather keys must be secured to prevent them from being thrown out.

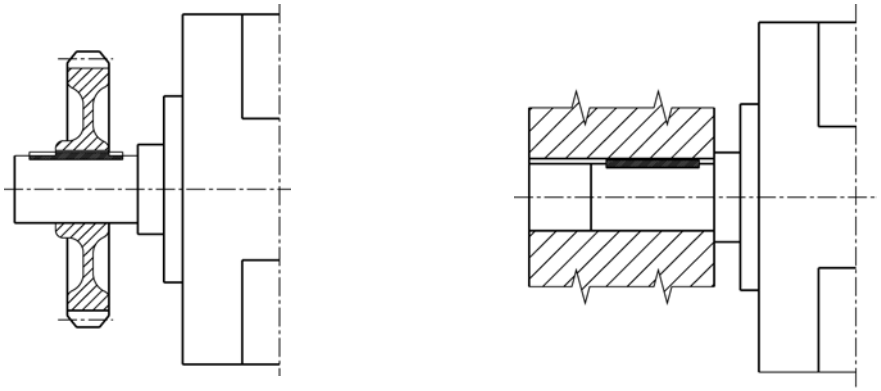
The rotor is dynamically balanced. The balancing quality corresponds to vibration severity grade "A" for the complete machine as standard. The optional vibration severity grade "B" is indicated on the rating plate.

The declaration regarding the type of featherkey for balancing is generally marked on the rating plate and optionally on the face of the shaft end.

Designation:

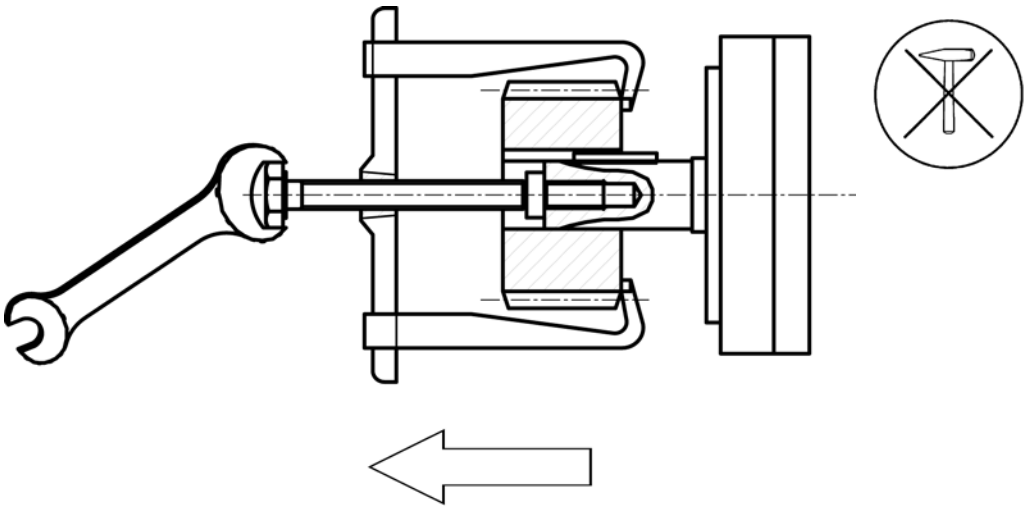
- As a standard measure, balancing is carried out dynamically with a half featherkey (code "H") in accordance with ISO 8821.
- "F" means balancing with a whole featherkey (optional version).
- "N" means balancing without a featherkey (optional version).

The featherkey data on the shaft and transmission element must indicate the correct type of balancing in each case and must be correctly mounted.
The balancing quality corresponds to vibration severity grade "A" for the complete machine; vibration severity grade "B" is possible as an option, i.e. in order to ensure the desired balancing quality, it must be ensured that the featherkey data on the hub and machine shaft complement each other in the case of a shorter or longer output transmission element.

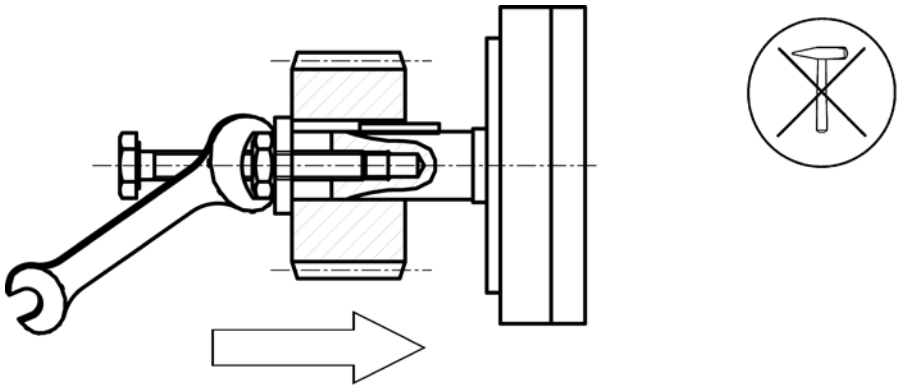


Measures conforming to ISO 10816 must be taken in order to compensate any offset between electrical machines and driven machines.
The foundation must be designed according to DIN 4024.

5.1.6.1 Mounting and withdrawing output transmission elements



Withdrawing output transmission elements



Mounting output transmission elements

- When mounting output transmission elements (coupling, gear wheel, belt pulley etc.) use the thread at the shaft end.
  If possible, heat up the output transmission elements as required.
- Use a suitable device when withdrawing output elements.
- When mounting or withdrawing, do not apply any blows, for example with a hammer or similar tool, to the parts to be mounted or withdrawn.
- Only transfer radial or axial forces specified in the catalog to the motor bearings via the shaft extension.

5.1.7 Noise emission

CAUTION
Hearing damage when operating three-phase motors If you exceed the permissible sound pressure level, hearing damage can occur when operating three-phase motors at their rated power. Observe the maximum permissible sound pressure level according to the ISO 1680 standard. The maximum permissible sound pressure level is 70 dB (A).

5.2 Alignment and fastening

When aligning and mounting, please observe the following:

- Uniform mounting surface
- Mounting feet and flanges are securely fixed.
- Precise alignment for a direct coupling
- Mounting surfaces must be clean
- Repair any damage to the paint, this must be done immediately and correctly.
- Remove any anti-corrosion protection using white spirit.
- Avoid installation-related resonances with the rotating frequency and twice the line frequency.
- Listen for unusual noises when turning the rotor manually.
- Check the direction of rotation with the machine decoupled.
- Avoid rigid couplings.

Measures

The following measures are required in order to compensate any radial offset at the coupling and to horizontally adjust the electrical machine with respect to the driven load:

- Vertical positioning.
  When vertically positioning the machine, place thin metal shins under the mounting feet in order to avoid tensioning and deforming the motor. The number of shims should be kept as low as possible i.e. only stack a few shims.
- Horizontal positioning
  To position the machine horizontally, shift it sideways on the foundation and ensure that the axial position is maintained (angularity error).
- When positioning the motor, ensure that a uniform axial gap is maintained around the coupling.
- Smooth running
  Stable, vibration-free design of the foundations in accordance with DIN 4024 and precise

alignment of the coupling, as well as a well-balanced transmission element (coupling, belt pulleys, fans, etc.), are prerequisites for smooth running with low vibration.

Maximum permissible vibration in operation according to ISO 10816 must be complied with.
Inadmissible vibration caused for example, by imbalance (drive output element), external vibration or any resonance in the complete speed range must be avoided.
It may be necessary to completely balance the machine with the drive output element or the system resonance frequency must be shifted.

- Foot/flange mounting
  Use thread sizes specified in EN 50347 for mounting the motor to foundations or to machine flanges. Attach the machine at four foot or flange holes in a rectangular configuration with respect to one another. The customer is responsible for selecting the strength of the fixing elements.
  For the fixing elements up to and including frame size 160, property class 5.6 or higher is recommended, from frame size 180, property class 8.8 or higher.
  For IM B14 flanges, select the correct screw length.

Note

Only authorized retrofit partners must be employed to relocate the bolted on mounting feet at the machine enclosure.

In order to avoid stressing and deforming the motor, ensure that the foot mounting surfaces are aligned in one plane and are parallel to the machine shaft. Post-machine the foot mounting surfaces or use thin shims, for example.

5.2.1 Flatness of supporting surfaces

Flatness of the supporting surfaces for conventional motors

Frame size	Flatness [mm]
≤ 132	0,10
160	0,15
≥ 180	0,20

5.2.2 Machine frame mounting feet (special design)

Note

For terminal boxes mounted at the NDE (option H08), dimension C can deviate from EN 50347.
For motors with double or triple holes at the NDE, maintain the foot mounting dimensions as specified in standard EN 50347 .

Electrical connection 6

6.1 Connecting the machine

6.1.1 General

⚠ DANGER

Hazardous voltages

Death, injury or material damage can occur. Note the following safety information before connecting-up the machine:

- Only qualified and trained personnel should carry out work on the machine while it is stationary.
- Disconnect the machine from the power supply and take measures to prevent it being reconnected. This also applies to auxiliary circuits.
- Check that the machine really is in a no-voltage condition.
- Establish a safe protective conductor connection before starting any work.
- If the incoming power supply system displays any deviations from the rated values in terms of voltage, frequency, curve form or symmetry, such deviations will increase the temperature and influence electromagnetic compatibility.

⚠ DANGER

Hazardous voltages

Death, injury or material damage can occur. Operating the machine on a line supply system with a non-grounded neutral point is only permitted over short time intervals that occur rarely, e.g. the time leading to a fault being eliminated (ground fault of a cable, EN 60034-1).

Observe the information in EN / IEC 60034-1 (VDE 0530-1) regarding operation at the limits of the A zones (±5 % voltage difference and ±2 % frequency difference) and the B zones, especially in respect of temperature increase and deviation of the operating data from the rated data on the rating plate. Never exceed the specified limits!

Connect up so that a permanently safe electrical connection is guaranteed (no protruding wire ends); use the assigned cable-end fittings (e.g. cable lugs, end sleeves).
Connect up the line supply voltage and arranged the disconnecting link in accordance with the circuit diagram provided in the terminal box.

Select connecting cables according to DIN VDE 0100 taking into account the rated current and the system-dependent conditions (e.g. ambient temperature, routing type etc. according to DIN VDE 0298 or EN / IEC 60204-1).

The technical specifications stipulate the following that have to be taken into account with respect to the motor connection:

- Direction of rotation.
- The number and arrangement of the terminal boxes.
- The circuit and connection of the machine winding.

The following features make this type of electrical connection different from that for standard machines:

- Maintain the area A in EN / IEC 60034-1 (VDE 0530-1) (±5 % voltage or ±2 % frequency deviation, waveform, line supply symmetry) so that the temperature rise remains within the permissible limits.
- Larger deviations from the rated data may result in electrical machines heating up to impermissible levels. This information must be specified on the rating plate. Under no circumstances exceed the limits!
- Protect every machine with type of protection increased safety "e" in accordance with EN / IEC 60079-14 against an inadmissible temperature rise using a current-dependent, delayed circuit breaker with phase failure protection and asymmetry detection corresponding to EN / IEC 60947 or using an equivalent device in all phases.
- For machines with type of protection increased safety "e", select the overcurrent device with current-dependent delayed trip so that the tripping time, which should be taken from the characteristic of the switch for the ratio I_A / I_N of the machine to be protected, is no longer than the safe-locked rotor time t_E. Take the ratio I_A / I_N as well as the safe-locked rotor time t_E from the rating plate. Set the protective device to the rated current. Use a certified tripping unit in accordance with RL 94/9/EC.
- For machines with increased safety "e" type of protection, in the event of a locked rotor the protective device must disconnect within the t_E time specified for the relevant temperature class. Protect electrical machines for heavy duty starting (acceleration time > 1.7 x t_E time) according to the specifications of the EC-type examination certificate using a starting monitoring function.
  Direct monitoring of the winding temperature is permissible as a means of thermal machine protection, provided that this is certified and specified on the rating plate.
- With pole-changing machines, separate, interlocked protective devices are required for each speed step. Devices with an EC-type examination certificate are recommended.

6.1.2 Terminal designations

With the terminal designations according to DIN VDE 0530 Part 8 or EN / IEC 60034-8 for three-phase machines, the following principle definitions apply:

Table 6- 1 Terminal designations (with the 1U1-1 as an example)

1	U	1	-	1	Designation
x					Index showing the pole assignment for pole-changing machines (where applicable, a lower number indicates a lower speed) or, in special cases, for a subdivided winding.
	x				Phase designation (U, V, W)
		x			Index showing the start (1) / end (2) or tapping point of the winding (if there is more than one connection per winding)
				x	Additional index for cases in which it is obligatory to connect parallel power feed cables to several terminals with otherwise identical designations

6.1.3 Direction of rotation

The standard motors are suitable for clockwise and counter-clockwise rotation.

Connection of the power cables in the phase sequence L1, L2, L3 to U1, V1, W1 results in clockwise rotation (looking at the DE shaft end on the drive side). If two of the connections are interchanged, then the resulting direction of rotation is counter-clockwise (e.g. L1, L2, L3 to V1, U1, W1).
In the case of machines intended for only one direction of rotation, the defined direction of rotation e.g. for machines with an axial fan, is marked by a direction arrow on the machine.

6.1.4 Connection with/without cable lugs

In the case of terminals with terminal clamps, distribute the conductors in such a way that the clamping heights on both sides of the fillet are about the same. This method of connection requires that you must bend a single conductor in a U shape or use a cable lug. The same applies to the inner and outer terminals of the ground conductor.

When connecting up using cable lugs, select their size corresponding to the required cable cross-section and the stud size. An inclined arrangement is only permitted provided the required air clearances and creepage distances are carefully maintained.
Remove the insulation from the conductor ends so that the remaining insulation is almost long enough to reach the cable lug.

Note

The direct contact between the cable lug surfaces and the contact nuts or contact screws ensure that the connection can conduct current.

6.1.5 Connection with cable lug for explosion-protected machines

WARNING
Short-circuit hazard Live conductors released from the terminal board can cause short circuits. Death or serious physical injury can result. • You must bend single-core line conductors into a U shape in order to prevent the contact force being transferred at just one side. • In order to prevent the cable lug from rotating, for a line connection using a cable lug, angle single- or multi-core cables downwards through an angle of approx. 40°.

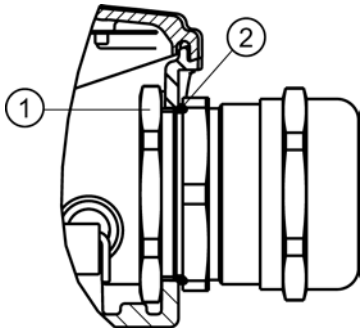
6.1.6 Connecting protruding cables

In the case of connection cables brought out of the machine, no terminal board is installed on the terminal base of the machine housing. The connection cables are directly connected to stator winding terminals at the factory.

The connection cables are color-coded or labeled. The customer directly connects individual cables in the control cabinet for their system in accordance with the labeling.

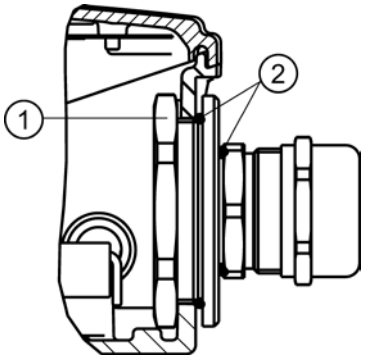
6.1.7 Cable glands

Cable glands with (sheet metal) nuts (EN 50262)



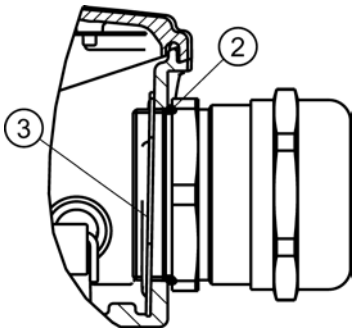
① Nut
② O ring

Cable glands with reductions and (sheet metal) nuts (EN 50262)



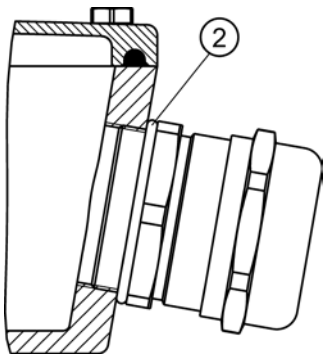
① Nut
② O ring

6.1.7.1 Mounting position of sheet metal nuts in screw-type connections



② O ring
③ Mounting position of metal-sheet nuts

Cable glands with connecting thread in the terminal box (EN 50262)



② O ring

6.1.8 Terminal box

6.1.8.1 General

⚠ DANGER

Hazardous voltage

Electric motors have high voltages. When incorrectly handled, this can result in death or severe injury.

Switch off the machine so that it is in a no-voltage condition before you open the terminal box.

NOTICE

Damage to the terminal box

If you incorrectly carry out work on or in the terminal box, this can result in material damage. You must observe the following to avoid damaging the terminal box:

- Ensure that the components inside the terminal box are not damaged.
- It must be ensured that there are no foreign bodies, dirt or moisture in the terminal box.
- Close the terminal box using the original seal so that it is dust tight and water tight.
- Use O-rings or suitable flat gaskets to seal entries in the terminal box (DIN 42925) and other open entries.
- Please observe the tightening torques for cable glands and other screws.
- When performing a test run, secure the feather keys without output elements.

Terminal box- terminal board versions, 1LE 80...90

Machines, frame sizes 80 … 90, are supplied with different terminal boards depending on the winding as well as the type and number of installed parts.

⚠ WARNING
Hazardous voltage Loosening the safety torx screw can result in death, serious injury or material damage. Do not loosen the safety torx screw with respect to the center terminal, as this ensures a conductive connection between the grounding conductor and frame!

NOTICE
Serious damage to the machine Failure to observe these measures will destroy the motor. • Only rotate the terminal box if the connection cables have still not been laid. • If you release the safety torx screw at both sides of the outer connecting terminals, this can destroy the machine. • Remove the three large snap hooks on the terminal board before rotating the the terminal box. Keep the snap hooks pressed while rotating the terminal box and use a screwdriver to re-engage when finished.

6.1.8.2 Versions

Standard design

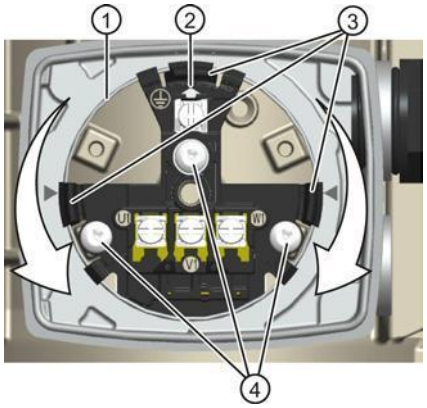
It is possible to turn the top side of a machine terminal box 4 x 90 degrees (if screwed on).

The terminal box can be turned 4x90 degrees on the terminal base of the machine's housing in the case of a terminal board with 6 terminal studs (standard design).

For machines with frame sizes 80 ... 90, with central terminal box locking (basic or optional terminal board), the terminal box can be rotated continuously through 360 degrees.

Installation instructions

1. Press the three large snap hooks ③ over the flange ① of the terminal box towards the inside.
2. Hold the snap hooks ③ pressed inwards, detach the terminal box, raise it slightly and rotate it to the required POSITION. Observe the arrow for the position of the terminal box ②.
3. Press the terminal box lightly towards the machine housing. Use a screwdriver to allow the large snap hooks ③ to engage over the flange ① of the terminal box.



① Flange
② Terminal box positioner
③ Snap hooks
④ Safety Torx screws

Optional terminal board (star or delta circuit)

NOTICE
Arcing at the optional terminal board can destroy the machine In order to prevent destroying the machine, it is absolutely essential that you comply with the following note: To change the operating mode, always press the jumper fully into the base of the slot and use the red locking lever to ensure that it is engaged.

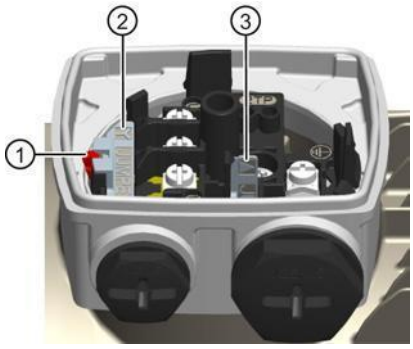
Connection system for the optional terminal board

Optional terminal board (star or delta circuit)

You can use the jumpers to set the operating mode for machines that have an optional terminal board.

Installation instructions

1. Open the red locking lever ① and remove the jumper ② from the slot.
2. Release the snap hook on the compartment and remove the jumper ③.
3. Press the jumper ③ fully into the base of the slot and engage the locking lever at its end position.
4. Press the jumper ② into the compartment and allow the snap hooks to re-engage at the compartment.



Explosion-protected machines (with the exception of machines for Zone 22) are equipped with terminal boxes with type of protection increased safety "e".

For 1MJ machines, terminal boxes with type of protection flameproof enclosure "d" with explosion group IIC are available as an option.

Please note in this regard design, connection options and spare parts.

Note the explosion protection information designated with Ex in the operating instructions!

Have authorized Siemens workshops perform any repairs.

6.1.8.3 Protruding connection cables

WARNING
Risk of short-circuit and voltage hazard A short-circuit can occur if the connecting cables are clamped between the enclosure parts and cover plate. This can result in death, severe injury and material damage. During disassembly and particularly when installing the cover plate, make sure that the connecting cables are not clamped between enclosure parts and the cover plate.

CAUTION
Damage to connecting cables that are freely led out You must observe the following note to avoid damaging connecting cables that are freely led out: • It must be ensured that there are no foreign bodies, dirt, or moisture in the terminal base of the machine enclosure. • Use O-rings or suitable flat gaskets to seal entries in cover plates (DIN 42925) and other open entries. • Seal the terminal base of the machine enclosure using the original seal of the cover plate to prevent dust and water from entering. • Please observe the tightening torques for cable glands and other screws.

6.1.8.4 Connecting the temperature sensor/anti-condensation heater

Auxiliary circuits are connected in the terminal box.

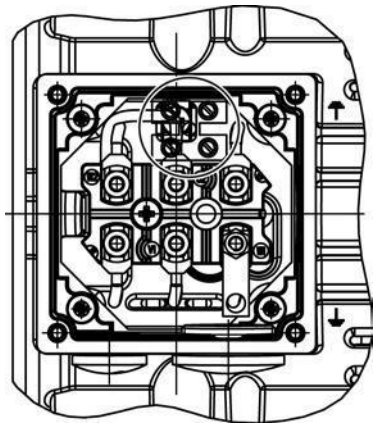


Figure 6-1 Connection to terminal strip

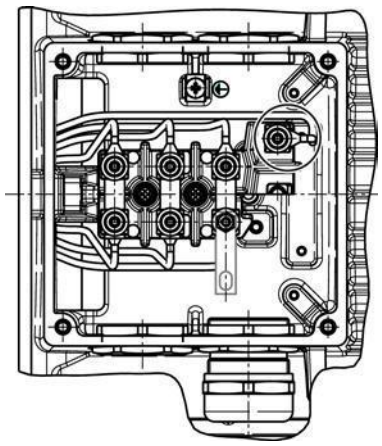
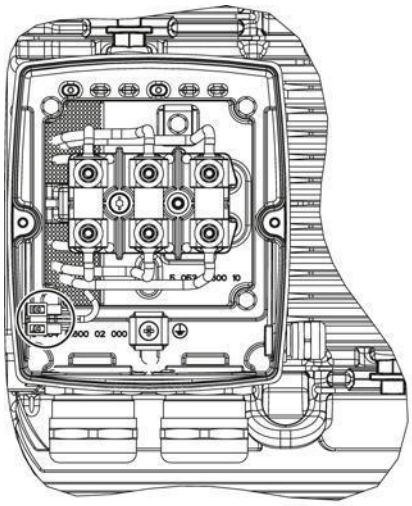


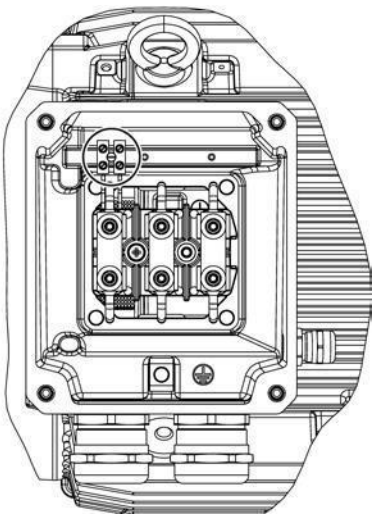
Figure 6-2 Connection to terminal board

The temperature sensor / anti-condensation heater is connected in the terminal box.

Table 6- 2 Connection to terminal strip

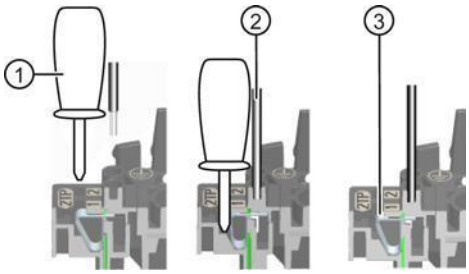


Aluminum



Cast iron

Connection at the temperature sensor using a spring-loaded connection system

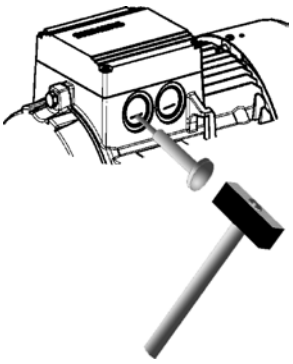


① Flat-head screwdriver
② Sensor cable
③ Tension spring

6.1.8.5 Cable entry

Knockout openings

NOTICE
Damage to the terminal box You must observe the following notes to avoid damaging the terminal box: • Knockout openings in the terminal box must be knocked out using appropriate methods. • Take care not to damage the terminal box or its interior components (the terminal board, cable connections, and so on).



Assembly and laying of cables

Screw the screw-type connection into the housing or fasten with a nut.

Note

The screw-type connections must have been matched to the connecting cables used (armoring, braid, shield).

NOTICE
Damage to terminal board The terminal board can be damaged for incorrect installation and routing. You must apply the following measures to avoid damaging the terminal board: • Remove the screw-type connections (EN 50262) only when the terminal box is closed. • Tighten the screw-type connections to rated torque value only when the terminal box is closed. • Tighten the screw-type connections only finger tight when the terminal box is open. • Make sure that the three large snap hooks are engaged when tightening the screw connections.

Cable entries for explosion-proof machines

The cable glands must have an EC-type examination certificate and be certified for the respective hazardous zone.

- Any openings that are not being used must be sealed using the corresponding certified plugs.
- Please observe the manufacturer's specifications when fitting cable entries.
- Before installing the cable, remove the dust protection element or plug from the cable gland.

6.1.8.6 Thread sizes in terminal box

Table 6- 3 Thread sizes in the cast iron terminal box

Frame size	Type	Type of protection / Zone	Standard thread		Additional thread with mounting parts	
			Size	Number	Size	Number
71 ... 90	1MJ6	Increased safety "e" Zone 21	M 25x1.5 M 16x1.5	2 1	-	-
71 ... 90	1MJ6	Flameproof enclosure "d" Zone 21	M 25x1.5	1	M 20x1.5	1
100 ... 132	1LA6 1MA6	Increased safety "e" Non sparking "n" Zone 22	M 32x1.5	2	M 16x1.5	1
100 ... 132	1MJ6	Increased safety "e" Zone 21	M 32x1.5 M 16x1.5	2 1	-	-
100 ... 132	1MJ6	Flameproof enclosure "d" Zone 21	M 32x1.5	1	M 20x1.5	1
160	1LA6 1MA6	Increased safety "e"	M 40x1.5	2	M 16x1.5	1
160M/L	1MJ6	Increased safety "e" Zone 21	M 40x1.5	2	M 16x1.5	2
160	1MJ6	Flameproof enclosure "d" Zone 21	M 40x1.5	1	M 20x1.5	1
180	1MA6 1MJ6	Increased safety "e" Zone 21	M 40x1.5	2	M 16x1.5	2
180	1MJ6	Flameproof enclosure "d" Zone 21	M 40x1.5	1	M 20x1.5	1
180	1LG4 1LG6	Non sparking "n" Zone 21 Zone 22	M 40x1.5	2	M 20x1.5	2

Frame size	Type	Type of protection / Zone	Standard thread		Additional thread with mounting parts	
200	1MA6 1MJ6	Increased safety "e" Zone 21	M 50x1.5	2	M 16x1.5	2
200	1MJ6	Flameproof enclosure "d" Zone 21	M 50x1.5	1	M 20x1.5	1
200	1LG4 1LG6	Non sparking "n" Zone 21 Zone 22	M 50x1.5	2	M 20x1.5	2
225	1LG4 1LG6 1MA6	Increased safety "e" Non sparking "n" Zone 21 Zone 22	M 50x1.5	2	M 20x1.5	2
250 ... 315	1LG4 1LG6 1MA6	Increased safety "e" Non sparking "n" Zone 21 Zone 22	M63 x 1.5	2	M 20x1.5	2

Table 6- 4 Thread sizes in the aluminum terminal box

Frame size	Type	Type of protection / Zone	Standard thread		Additional thread with mounting parts	
			Size	Number	Size	Number
63 ... 90	1LA7 1LA9 1MA7	Increased safety "e" Non sparking "n" Zone 21 Zone 22	M 16 x 1.5 M 25 x 1.5	1 1	-	-
71 ... 90	1MJ6	Increased safety "e" Zone 21	M 25x1.5	2	M 16x1.5	1
100 ... 132	1LA7 1LA9 1MA7	Increased safety "e" Non sparking "n" Zone 21 Zone 22	M 32x1.5	4	-	-
100 ... 132	1MB1	Non sparking "n" Zone 21 Zone 22	M 32x1.5	2	M 16x1.5	1
100 ... 132	1MJ6	Increased safety "e" Zone 21	M 32x1.5	2	M 16x1.5	1

Frame size	Type	Type of protection / Zone	Standard thread		Additional thread with mounting parts	
160	1LA7 1LA9 1MA7	Increased safety "e"	M 40x1.5	4	-	-
		Non sparking "n"				
		Zone 21				
		Zone 22				
160	1MB1	Non sparking "n"	M 40x1.5	2	M 16x1.5	1
		Zone 21				
		Zone 22				
160M	1MJ6	Increased safety "e"	M 40x1.5	2	M 16x1.5	1
		Zone 21				
180	1LA5	Zone 21	M 40x1.5	2	M 16x1.5	1
		Zone 22				
180	1LG4 1LG6	Non sparking "n"	M 40x1.5	2	M 20x1.5	2
		Zone 21				
		Zone 22				
180	1MA6 1MJ6	Increased safety "e"	M 40x1.5	2	M 16x1.5	2
		Zone 21				
200 ... 225	1LA5	Zone 21	M 50x1.5	2	M 16x1.5	1
		Zone 22				
200	1MA6 1MJ6	Increased safety "e"	M 50x1.5	2	M 16x1.5	2
		Zone 21				
200	1LG4 1LG6	Non sparking "n"	M 50x1.5	2	M 20x1.5	2
		Zone 21				
		Zone 22				
225	1LG4 1LG6 1MA6	Increased safety "e"	M 50x1.5	2	M 20x1.5	2
		Non sparking "n"				
		Zone 21				
		Zone 22				

6.2 Tightening torques

6.2.1 Electrical connections - Termincal board connections

Table 6- 5 Tightening torques for electrical connections on the terminal board

	Thread ∅		M 3,5	M 4	M 5	M 6	M 8	M 10	M 12	M 16
	Nm	min	0,8	0,8	1,8	2,7	5,5	9	14	27
		Max.	1,2	1,2	2,5	4	8	13	20	40

6.2.2 Cable glands

Note

Avoid damaging the cable jacket.

Adapt the tightening torques to the cable jacket materials.

You should refer to the table in order to find the correct tightening torque for any metal and plastic cable glands that are to be mounted directly on the machine, as well as for any other screw-type connections (such as adapters).

Table 6- 6 Tightening torques for cable glands

	Metal ± 10% [Nm]	Plastic ± 10% [Nm]	Clamping range [mm]		O ring Cord dia. [mm]
			Standard -30 °C ... 100 °C Ex -30 °C ... 90 °C	Ex -60 °C ... 105 °C	
M 12 x 1.5	8	1,5	3,0 ... 7,0	-	2
M 16 x 1.5	10	2	4,5 ... 10,0	6,0 ... 10,0	
M 20 x 1.5	12	4	7,0 ... 13,0	6,0 ... 12,0	
M 25 x 1.5			9,0 ... 17,0	10,0 ... 16,0	
M 32 x 1.5	18	6	11,0 ... 21,0	13,0 ... 20,0	
M 40 x 1.5			19,0 ... 28,0	20,0 ... 26,0	
M 50 x 1.5	20		26,0 ... 35,0	25,0 ... 31,0	
M 63 x 1.5			34,0 ... 45,0	-	

The cable glands must have an EC-type examination certificate and be certified for the respective hazardous zone.

- Any openings that are not being used must be sealed using using the appropriate certified plugs.
- Please observe the manufacturer's specifications when fitting cable glands.

6.2.3 Terminal boxes, end shields, grounding conductors, sheet metal fan covers

If no other tightening torques are specified, then the values in the following table apply.

Table 6- 7 Tightening torques for screws on the terminal box, end shields, screw-type grounding conductor connections

Thread ∅		M 4	M 5	M 6	M 8	M 10	M 12	M 16	M20
Nm	min	2	3.5	6	16	28	46	110	225
	max	3	5	9	24	42	70	165	340

Table 6- 8 Tightening torques for self-tapping screws on the terminal box, end shields, screw-type grounding conductor connections, sheet metal fan covers

	Thread ∅		M 4	M 5	M 6
	Nm	min	4	7,5	12,5
		max	5	9,5	15,5

6.3 Conductor connection

6.3.1 General information on conductor connection

Cross-sections that can be connected depending on the size of the terminal (possibly reduced due to size of cable entries)

⚠ WARNING

Short-circuit hazard

Connection and installation errors at connecting cables and cover washers can result in a short-circuit. Death or serious physical injury can result.

Note the following precautionary measures:

- Do not lay connection cables over the central dome of the terminal board.
- Observe the opening direction and the mounting position of the cover washers on the terminal board.

Table 6- 9 Max. conductor connection for standard machines and Zone 22

Frame size	Max. connectable conductor cross-section [mm²]
56 ... 90	1,5 2.5 with cable lug
100 ... 112	4,0
132	6,0
160 ... 180	16,0
200	25,0
225	35.0 with cable lug
250 ... 280	120,0
315	240,0

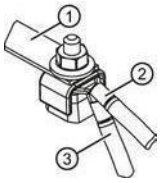
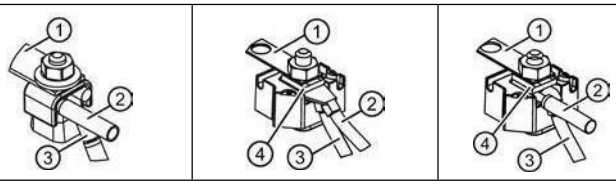
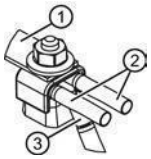
Table 6- 10 Max. conductor connection for explosion-proof machines (with the exception of Zone 22 and 1MJ) and VIK standard version

Frame size	Max. connectable conductor cross-section [mm²]
56 ... 112	4,0
132	6,0
160	16,0
180	10,0
180 (1LG4, 1LG6)	16,0
200 ... 225	50,0
250 ... 280	120,0
315	240,0

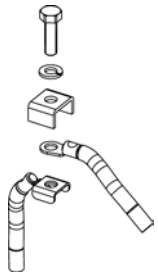
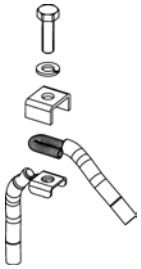
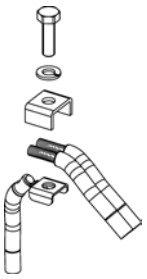
Table 6- 11 Max. conductor connection for standard 1MJ machines

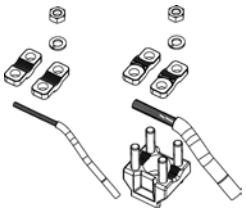
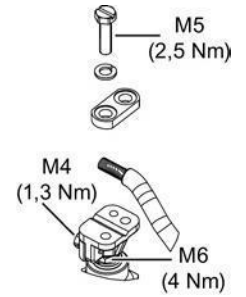
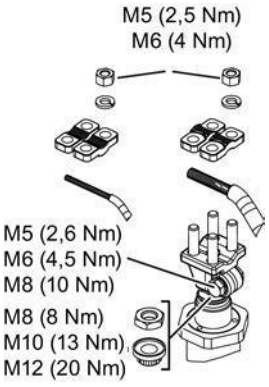
Frame size	Max. connectable conductor cross-section [mm²]
71 ... 80	4,0
90 ... 160 M	6,0
160 L	16,0
180	25,0
200 ... 225	50,0
250 ... 280	120,0
315	240,0

6.3.2 Type of conductor connection

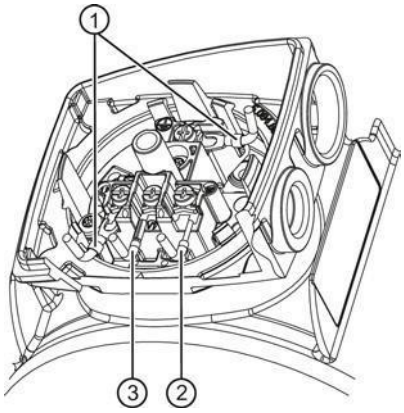
Terminal board		Conductor crosssection [mm²]
Connection with cable lug DIN 46 234 Bend down the cable lug for the connection!		... 25
Connection of an individual conductor with terminal clamp		... 10
Connection of two conductors of approximately the same thickness with terminal clamp		... 25

① Link rail
② Power supply cord
③ Motor connection cable
④ Cover washer

Terminal plate			Conductor cross-section [mm²]
Bend down the cable lug for the connection!	1MA618.		… 10
	1MA620.		… 35
Connection of an individual conductor with terminal clamp	1MA618. ... 20.		… 25
Connection of two conductors of the same thickness with terminal clamp	1MA618. ... 20.		… 25

<table>
<tr><th colspan="3">Connecting terminal</th><th>Conductor cross-section [mm²]</th></tr>
<tr><td rowspan="12">  </td><td>1MA618. ... 22.</td><td rowspan="4"> </td><td>2,5 … 25</td></tr>
<tr><td>1MA625. ... 28.</td><td>10 … 95</td></tr>
<tr><td>1MA631.</td><td>25 … 135</td></tr>
<tr><td>1MA631. + L00</td><td>50 … 300</td></tr>
<tr><td>1MA618. ... 22.</td><td rowspan="4"> </td><td rowspan="4"> </td><td>… 16</td></tr>
<tr><td>1MA625. ... 28.</td><td>… 35</td></tr>
<tr><td>1MA631.</td><td>… 70</td></tr>
<tr><td>1MA631. + L00</td><td>… 120</td></tr>
<tr><td>1MA618. ... 22.</td><td rowspan="4"> </td><td>16 … 50</td></tr>
<tr><td>1MA625. ... 28.</td><td>50 … 120</td></tr>
<tr><td>1MA631.</td><td>95 … 240</td></tr>
<tr><td>1MA631. + L00</td><td>120 … 400</td></tr>
<tr><td>  </td><td>1MJ618.</td><td> </td><td>2,5 ... 25</td></tr>
<tr><td>  </td><td rowspan="3">1MJ62</td><td> </td><td>2,5 ... 25</td></tr>
<tr><td> </td><td> </td><td>16</td></tr>
<tr><td> </td><td>16 ... 50</td></tr>
</table>

Recommended connection variants



① Cable lugs DIN 46237 with insulating sleeve (round and open)
② Rigid cable (insulation removed at ends ≤ 8 mm)
③ End sleeves DIN 46228 ≤ 8 mm

If air gaps ≥ 5.5 mm (up to 690 V) are observed between non-insulated components, you can also use alternative connection elements without insulating sleeve, for example cable lugs acc. to DIN 46234 .

6.4 Connecting the grounding conductor

6.4.1 General information on connecting the grounding conductor

Note

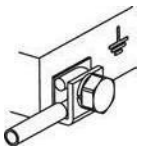
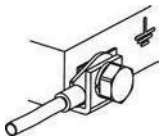
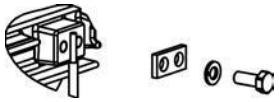
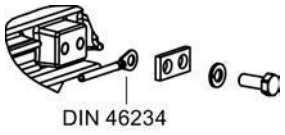
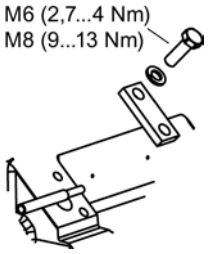
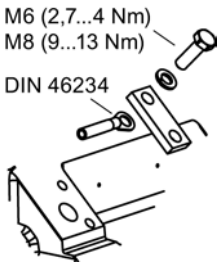
The machine's grounding conductor cross-section must comply with EN / IEC 60034-1.

Please also observe installation regulations such as those specified in EN / IEC 60204-1.

Basically, there are two ways of connecting a grounding conductor to the machine.

- Internal grounding with a connection in terminal box at the location intended for this purpose and marked accordingly.
- External grounding with connection at the stator housing at the locations intended for this purpose and marked accordingly.

6.4.2 Grounding connection type

Enclosure grounding method			Conductor cross-section [mm²]
Connection of an individual conductor under the external grounding bracket.			… 10
Connection is made using a DIN cable lug under the external grounding bracket. DIN 46 234			… 25
External grounding	1MJ6071 ... 132		... 25
	1MJ618.		... 35
	1MJ6160 L		.. 35
	1MJ620.		... 50

6.4.3 Minimum surface area of grounding conductor

Table 6- 12 Minimum cross-sectional area of grounding conductor

Minimum cross-sectional area of phase conductor for installation S [mm²]	Minimum surface area of associated grounding connection [mm²]
S ≤ 16	S
16 < S ≤ 35	16
S > 35	0.5 S

Internal ground terminal

When making connections, ensure the following:

- connecting surface is bare and is protected against corrosion using a suitable substance, e.g. acid-free Vaseline.
- Locate the cable lug between the terminal clamps.
- Place a spring washer below the screw head.

External ground terminal

When making connections, ensure the following:

- connecting surface is bare and is protected against corrosion using a suitable substance, e.g. acid-free Vaseline.
- Position the cable lug between the contact bracket and the grounding bracket; do not remove the contact bracket pressed into the enclosure!
- Place a spring washer below the screw head.
- Maintain the tightening torque of the terminal screw as specified in the table.

6.4.4 Size of grounding conductor screw

Table 6- 13 Size of grounding conductor screw external grounding (except for 1MJ machines)

Frame size	Thread size for the grounding conductor
63 ... 90	M3.5 / M4
100 ... 112	M5
132 ... 180	M6
200 ... 225	M8
200 1LG4/6, 1LE1	2x M6
200 ... 315 1LG, 1LE1, 1MA	2x M8

For machines of size 80 ... 90 with central terminal-box locking, the ground conductor can also be connected with a cable lug in accordance with DIN46237, size M4.

Table 6- 14 Size of grounding conductor screw external grounding for 1MJ machines

Frame size	Thread size for the grounding conductor
71 ... 180	2x M6
200 ... 315	2x M8

6.5 Final measures

Before closing the terminal box/terminal base of the machine enclosure, check the following:

- Establish the electrical connections in the terminal box in accordance with the details in the sections above and tighten with the correct torque.
- The clearances between non-insulated parts have been maintained:
  ≥ 5.5 mm to 690 V, ≥ 8 mm to 1000 V.
- Avoid protruding wire ends!
- In order not to damage the cable insulation, freely arrange the connecting cables.
- Connect the machine corresponding to the specified direction of rotation.
- Keep the inside of the terminal box clean and free from trimmed-off ends of wire.
- Ensure that all seals and sealing surfaces are undamaged and clean.
- Correctly and professionally close unused openings in the terminal boxes.

Before closing the terminal box, check that

- the air clearances for explosion-protected machines (with the exception of machines for Zone 22) between non-insulated parts are maintained: ≥ 10 mm to 690 V.
- the minimum creepage distance for explosion-protected machines (with the exception of machines for Zone 22) between non-insulated parts is maintained: ≥ 12 mm to 690 V.

6.6 Connecting optional mounted components

6.6.1 External fan, incremental encoder, brake

See the list of additional operating instructions: Further documents (Page 116)

Select mounted components such as external fans, incremental encoders or brakes according to the requirements of the directive 94/9/EG .

6.6.1.1 Mounting a brake

Table 6- 15 Assigning standard brakes for 1LE1 machines

Frame size (BG)	Brake type	Size assignment of the brakes	Tightening torque of manual lifting lever Nm
80	2LM8 010–3NA10 1)	08	2.8
90	2LM8 020–4NA10 1)	10	4.8
100	2LM8 040–5NA10 1)	12	4.8
112	2LM8 060–6NA10 1)	14	12
132	2LM8 100–7NA10 1)	16	12
160	2LM8 260–8NA10 1)	20	23
180	2LM8 315–0NA10 1)	20	23
200	2LM8 400–0NA10 1)	25	40
225	2LM8 400–0NA10 1)	25	40
250	KFB 63 2)	63	40
280	KFB 100 2)	100	40
315	KFB 160 2)	160	40

1) INTORQ Corp.

2) PINTSCH BUBENZER Corp.

6.6.1.2 Mounted external fan

Tightening torque applied to the fastening screws used for attaching external fans to the housing, see Terminal boxes, end shields, grounding conductors, sheet metal fan covers (Page 54)

6.7 Connecting converters

NOTICE
Excessively high supply voltage Material damage can occur if the supply voltage is too high for the insulation system. The standard insulation system is designed so that converter operation is possible for line voltages up to $U_N \leq 500$ V. Maintain the following limit values in all operating states (voltage values are peak values): $\hat{U}_{conductor\text{-}conductor} \leq 1500$ V, $\hat{U}_{conductor\text{-}ground} \leq 1100$ V, voltage rise times of ts > 0.1 µs.

NOTICE
Missing shielding • Machines must always be connected to converters using shielded machine feeder cables. • The most effective method of shielding is to conductively connect the cable to the metal terminal box of the machine (with a metal screw connections) through a large surface area. • Please observe the section containing instructions on ensuring electromagnetic compatibility (EMC).

See the list of additional operating instructions: Further documents (Page 116)

⚠ WARNING
Machine overheating Operating explosion-protected machines at the converter without using the appropriate protective equipment can result in death or severe injury. Always use PTC thermistor monitoring when operating explosion-protected machines at the converter. Tripping units according to directive 94/9/EC are always necessary when using PTC thermistor monitoring.

Machines with increased safety "e" type of protection

Converter operation for these machines must be expressly certified. It is essential that you observe the separate manufacturer's information and instructions. Converter and protective devices must be marked as belonging together and the permitted operating data must be defined in the common EC-type examination certificate.

Machines operated from a converter for Zone 21 and Zone 22

These machines are generally equipped with three PTC thermistors in accordance with DIN 44082 with a rated response temperature that depends on the maximum possible surface temperature. Select the PTC thermistors in accordance with this standard. The maximum

temperature at the cable entries is 120° C. Use suitable cables for this temperature. Do not exceed the maximum frequency dependent on the number of poles, which is stamped on the rating plate.

System, converter-cable-electrical machine

Please observe the information in accordance with EN / IEC 60034-17 and EN / IEC 60034-25 regarding winding stress. For line supplies with operating voltages up to 690 V, the maximum value of the voltage peaks at the end of the cable must not exceed twice the value of the converter's DC-link voltage.

Machines with type of protection flameproof enclosure "d" or "de"

Temperature sensors for tripping

These machines are equipped with three temperature sensors in the winding and one temperature sensor in the gland plate in order that the temperature class is maintained. Connect the temperature sensors in series according to the circuit diagram.

Temperature sensors for alarm and trip

These machines have for warning and shutdown three temperature sensors in the winding and one temperature sensor in the gland plate. Connect the temperature sensors in series according to the circuit diagram.

Mechanical limit speeds for converter operation

Table 6- 16 Explosion-protected motors in Zone 1 with type of protection "de" (motor series 1MJ)

Motor-frame size	Motor type	2-pole [1]		4-pole		6-pole		8-pole	
		n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz
1MJ6									
71 M	1MJ6 07.	6000	100	3000	100	2000	100	1500	100
80 M	1MJ6 08 .	6000	100	3000	100	2000	100	1500	100
90 L	1MJ6 09 .	6000	100	3000	100	2000	100	1500	100
100 L	1MJ6 10 .	5400	90	3000	100	2000	100	1500	100
112 M	1MJ6 11 .	5400	90	3000	100	2000	100	1500	100
132 S/M	1MJ6 13 .	4800	80	3000	100	2000	100	1500	100
160 M/L	1MJ6 16 .	4500	75	3000	100	2000	100	1500	100
180 M/L	1MJ6 18 .	5100	85	3000	100	2000	100	1500	100
200 L	1MJ6 20 .	5100	85	3000	100	2000	100	1500	100

Table 6- 17 Explosion-proof motors in Zones 2, 21 and 22 with type of protection "n" or protection against dust explosions (motor series 1LA, 1LG)

Motor-frame size	Motor type		2-pole [1] n_{max} rpm	f_{max} Hz	4-pole n_{max} rpm	f_{max} Hz	6-pole n_{max} rpm	f_{max} Hz	8-pole n_{max} rpm	f_{max} Hz
1LA5, 1LA6, 1LA7, 1LA9										
56 M	1LA7/1LA9	05.	6000	100	3000	100	2000	100	1500	100
63 M	1LA7/1LA9	06.	6000	100	3000	100	2000	100	1500	100
71 M	1LA7/1LA9	07.	6000	100	3000	100	2000	100	1500	100
80 M	1LA7/1LA9	08.	6000	100	3000	100	2000	100	1500	100
90 L	1LA7/1LA9	09.	6000	100	3000	100	2000	100	1500	100
100 L	1LA6/1LA7/1LA9	10.	5400	90	3000	100	2000	100	1500	100
112 M	1LA6/1LA7/1LA9	11.	5400	90	3000	100	2000	100	1500	100
132 S/M	1LA6/1LA7/1LA9	13.	4800	80	3000	100	2000	100	1500	100
160 M/L	1LA6/1LA7/1LA9	16.	4500	75	3000	100	2000	100	1500	100
180 M/L	1LA5/1LA9	18.	5100 [3) 4)]	85 [3) 4)]	3000	100	2000	100	1500	100
200 L	1LA5/1LA9	20.	5100 [3) 4)]	85 [3) 4)]	3000	100	2000	100	1500	100
225 S/M	1LA5	22.	5100 [4)]	85 [4)]	3000	100	2000	100	1500	100
1LG4, 1LG6										
180 M/L	1LG4/1LG6	18.	4500	75	3000	100	2000	100	1500	100
200 L	1LG4/1LG6	20.	4500	75	3000	100	2000	100	1500	100
225 S/M	1LG4/1LG6	22.	4500	75	3000	100	2000	100	1500	100
250 M	1LG4/1LG6	25.	3900	65	3000	100	2000	100	1500	100
280 S/M	1LG4/1LG6	28.	3600	60	3000	100	2000	100	1500	100
315 S/M/L	1LG4/1LG6	31.	3600 [1)]	60 [1)]	2600	87	2000	87	1500	100

1) For continuous operation in the range f_{max} (n_{max}), an inquiry is required.

2) For vertical mounting n_{max} = 3000 rpm, f_{max} = 50 Hz.

3) For 1LA9 motors, frame sizes 180 M/L and 200 L, n_{max} = 4500 min^{-1} and f_{max} = 75 Hz.

4) The values in the following table are used for explosion-protected motors with option D19

Frame size	N_{max} rpm	f_{max} Hz
180 M/L	3300	55
200 L	3100	51
225 S/M	3000	50

Commissioning 7

7.1 Insulation resistance

7.1.1 Testing the insulation resistance

⚠ WARNING

Hazardous voltage at the terminals

Only appropriately trained personnel may carry out this work.

Hazardous voltages are sometimes present at the terminals during and immediately after measurement of the winding insulation resistance. If you touch the terminals, this can result in death, serious injury or material damage.

If any power cables are connected, check to make sure line supply voltage cannot be connected. To discharge the winding, after measuring the insulation resistance, connect the winding to ground potential.

NOTICE

Short-circuit

Material damage can occur if you do not apply the following measures:

- Check the insulation resistance before commissioning and after any extended periods of storage or periods during which the equipment is not operational.
- Before measuring the insulation resistance, read the operating manual for the insulation resistance meter you are going to use.
- Disconnect any connected main-circuit cables from the terminals before measuring the insulation resistance.

Note

If the critical insulation resistance is less than or equal to this value, the windings must be dried or, if the fan is removed, cleaned thoroughly and dried.

Please note that the insulation resistance of dried, clean windings is lower than that of warm windings. The insulation resistance can only be properly assessed after conversion to the reference temperature of 25 °C.

Note

If the measured value is close to the critical value, you must check the insulation resistance at suitably frequent intervals.

Measuring the insulation resistance

1. Before you begin measuring the insulation resistance, please read the operating manual for the insulation resistance meter you are going to use.
2. Disconnect any connected main-circuit cables from the terminals before measuring the insulation resistance.
3. Where possible, measure the insulation resistance of the winding with respect to the motor enclosure when the winding temperature is between 20 ... 30 °C. Different insulation resistance values apply for other temperatures.
4. When measuring, wait until the final resistance value is reached. This is reached after approximately one minute. Then read off the insulation resistance.

Limit values of the stator winding insulation resistance

The following table indicates the measuring circuit voltage and the limit values for the minimum insulation resistance and the critical insulation resistance of the stator winding.

Table 7- 1 Insulation resistance of the stator unwinding at 25 °C

Measuring circuit voltage	500 V
Minimum insulation resistance for new, cleaned or repaired windings	10 MΩ
Critical specific insulation resistance after a long operating time	0,5 MΩ / kV

Note the following:

- If the measurements are performed at winding temperatures ≠ 25 °C, convert the measured value to the reference temperature of 25 °C in order to be able to compare the values with the table above.
  - The insulation resistance halves every time the temperature rises by 10 K.
  - The resistance doubles every time the temperature falls by 10 K.
- Dry, new windings have a typical insulation resistance of more than 100 ... 2000 MΩ depending on the winding size, design and rated voltage. An insulation resistance value close to the minimum value could be due to moisture and/or dirt accumulation.
- During operation, the insulation resistance of the windings can fall to the critical insulation resistance due to ambient and operational influences. The critical insulation resistance value for a winding temperature of 25 °C can be calculated by multiplying the rated voltage (kV) by the specific critical resistance value (0,5 MΩ / kV).

Example:

Critical resistance for U_N = 690 V rated voltage:

690 V x 0,5 MΩ / kV = 0,345 MΩ

NOTICE
Critical insulation resistance reached or fallen below If the critical insulation resistance is reached or fallen below, this can result in damage to the insulation or voltage flashovers. • Contact your Siemens Service Center. • If the measured value is close to the critical value, you must check the insulation resistance at suitably frequent intervals.

See also

SIEMENS Service Center (Page 115)

7.2 Measures before start-up

⚠ WARNING
Rotating parts Electrical machines contain dangerous rotating parts. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly. Before commissioning, attach the covers that prevent inadvertently touching active and rotating components.

NOTICE
Damage caused by insufficient cooling Effective cooling is no longer possible if air guidance of the machine is not provided as intended. This can damage the machine. Before commissioning, attach the covers in order to guarantee the required air guidance.

Measures

Once the system has been correctly installed, you should check the following prior to commissioning:

- The machine has been assembled and aligned correctly.
- The machine has been connected so that it rotates in the direction specified.
- The operating conditions match the data specified on the rating plate.
- The bearings have been lubricated as appropriate for the version used. Rolling-contact bearing machines which have been in storage for more than 24 months have been relubricated.
- Any supplementary machine monitoring equipment has been connected correctly and is functioning as it should.
- For versions with bearing thermometers, the bearing temperatures must be checked during the machine's first period of operation. The warning and shutdown values are set on the monitoring device.
- Appropriately configured control and speed monitoring functions ensure that the machine cannot exceed the permissible speeds specified on the rating plate.
- The output elements have the correct settings for their type (e.g. alignment and balancing of couplings, belt forces in the case of a belt drive, tooth forces and tooth face clearance in the case of toothed-wheel power output, radial and axial clearance in the case of coupled shafts).
- The minimum insulation resistance and minimum clearance values have been adhered to.
- The grounding and equipotential bonding connections have been established correctly.
- All fixing screws, connection elements, and electrical connections have been tightened to the specified torques.
- Lifting eyes that were screwed in have been removed following installation or secured to prevent them becoming loose.
- The rotor can turn without coming into contact with the stator.
- All touch protection measures for both moving and live parts have been implemented.
- In cases where the shaft extension is not being used and is, therefore, exposed, it has been covered and the feather key has been secured to prevent it from being thrown out.
- If being used, the external fan is ready for operation and connected so that it rotates in the direction specified.
- The flow of cooling air is not obstructed.
- If a brake is being used, it is functioning correctly.
- The specified mechanical limit speed n_{max} is adhered to.

If the design of the machine requires the converter to be assigned in a particular way, the relevant information will be provided on the rating plate or an additional label.

Note

It may be necessary to perform additional checks and tests in accordance with the specific situation on site.

7.3 Switching on

Measures for start-up

After installation or inspections, the following measures are recommended for normal start-up of the machines:

- Start the machine without a load; to do this, close the motor starter protector and do not switch the machine off prematurely. You should limit how often you switch the machine off while it is starting up and still running at a slow speed, for checking the direction of rotation or the required dimensions, for example. Allow the machine to run to a standstill before switching it back on again.
- Check the mechanical operation for noises or vibrations at the bearings and bearing end shields.
- If the motor does not run smoothly and/or there are any abnormal noises, switch it off and determine the cause as it slows down.
- If mechanical operation improves immediately after the machine is switched off, then the cause is magnetic or electrical. If mechanical operation does not improve immediately after switching the machine off, then the cause is mechanical, such as an imbalance in the electrical machines or in the driven machine, inadequate alignment of the machine set, operation of the machine with the system resonating (system = machine + base frame + foundation, etc.).
- If there are no problems with the machine's mechanical operation, switch on any cooling devices that are being used and continue to monitor the machine for a while during no-load operation.

- If it runs perfectly, connect a load. Check that it runs smoothly, and read off and document the values for voltage, current and power. As far as possible, read off and document the corresponding values for the driven machine as well.

NOTICE
Damage to the motor If you do not maintain the permissible vibration values, this can either damage or destroy the motor. In operation, maintain the permissible vibration values according to ISO 10816.

- Monitor and document the temperatures of the bearings, windings, etc. until the system reaches a steady state, in as much as this is possible with the available measuring instruments.

Measures to take when commissioning explosion-proof machines

After installation or inspections, the following measures are recommended for normal start-up of the machines:

- Start the machine without a load; to do this, close the motor starter protector and do not switch the machine off prematurely.
- You should limit how often you switch the machine off while it is starting up and still running at a slow speed, for checking the direction of rotation or the required dimensions, for example.
- Allow machines to reach a standstill before switching them back on.

Operation 8

8.1 Safety instructions

8.1.1 Safety instructions during operation

Switching on the machine with anti-condensation heating (optional)

⚠ CAUTION
Machine overheating Slight injury or material damage can occur if you do not observe the following: Switch off the (optional) anti-condensation heating before switching on.

Machine operation

⚠ DANGER
Hazardous voltages Operating the machine on a line supply system with a non-grounded neutral point is only permitted over short time intervals that occur rarely, e.g. the time leading to a fault being eliminated (ground fault of a cable, EN / IEC 60034-1).

⚠ WARNING
Rotating or live parts Rotating or live parts are dangerous. Death, serious injury, or material damage can result if the required covers are removed. • De-energize the machine and bring it into a no voltage condition before removing any covers. • Ensure that the following covers are closed in operation: – Covers that prevent coming into contact with active or rotating parts – Covers that are required for the correct air guidance, and therefore for effective cooling – Covers required to maintain the degree of protection of the machine.

⚠ WARNING

Risk of burning

Electrical machines have hot surfaces. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly.

Do not touch the machine in operation and wait until the machine has completely cooled down.

NOTICE

Premature bearing failure

The bearings can be damaged if the following is not observed.

Be sure to comply with the minimum radial load of 30% of the cylindrical roller bearings in accordance with catalog data.

⚠ WARNING

Faults during operation

Changes with respect to normal operation indicate that there is an impaired function. This can cause faults which can result in eventual or immediate death, severe injury or material damage.

For instance, observe the following signs that could indicate a malfunction:

- Higher power drawn than usual
- Higher temperatures than usual
- Unusual noises
- Unusual smells
- Activation of monitoring equipment

Immediately contact the maintenance personnel if you identify any irregularities If you are in doubt, immediately switch off the machine, being sure to observe the system-specific safety conditions.

NOTICE

Risk of corrosion due to condensation

When changing machines and/or ambient temperatures, air humidity can condense within the machines.

- If available, remove the screw plugs to drain the water depending on the ambient and operating conditions.
- Reinsert them afterwards.

If the motor is equipped with drain plugs, then the water can drain away automatically.

⚠ CAUTION

Risk of injury when touching the fan

There is a risk of injury at machines equipped with a fan cover for the textile industry, as the fan is not completely touch protected.

- Do not touch the rotating fan.
- Do not put your fingers into the larger air discharge openings.
- Manual intervention must be prevented on the customer's side by using suitable measures, e.g. appropriate housings or a protective grating.

8.1.2 Safety information for explosion-protected machines in operation

⚠ WARNING

Explosion hazard

⟨Ex⟩ These explosion-protected machines are not suitable for hybrid explosive environments.

This can result in death, serious injury or material damage.

Use in atmospheres where there is a risk of explosion caused by both gas and dust simultaneously is absolutely prohibited.

Only install machines with type of protection flameproof enclosure "d", increased safety "e", and machines for Zone 2 in hazardous areas, according to the regulations laid down by the responsible supervisory authority. They are responsible for determining the hazard level of each area (division into zones). Layers of dust on machines for Zone 21 and Zone 22 must – under no circumstances – be higher than 5 mm.

- If there are no other specifications in the EC-type examination certificate or on the rating plate regarding operating mode and tolerance, electrical machines are designed for continuous duty and normal startup procedures that are performed infrequently and do not result in excessive temperature rise. Only use these machines for the operating mode specified on the rating plate.
- Measures for maintaining the temperature class:
  For S1 line supply operation, a function-tested, current-dependent protective device that monitors all three phase conductors provides sufficient protection for the machine. This protective device is set to the rated current and must switch off machines with 1.2x the rated current within 2 hours or less. Do not switchoff for 1.05-fold or smaller rated current. Pole-changing machines require a separate switch for each number of poles. If an anti-condensation heating system is available, it may only be switched on when the machines are not in operation.
  For S2 to S9 line supply operation, machines with type of protection Flameproof Enclosure "d" must be equipped with at least three temperature sensors (one per phase), a temperature sensor in the gland plate and with a suitable electronic switchoff device with a temperature sensor.

8.1.3 Safety instructions for cleaning

Cleaning

To ensure problem-free machine cooling, the air ducts (ventilation grilles, channels, cooling fins, tubes) must be free of pollution.

⚠ WARNING
Explosion hazard It is forbidden to clean the machine in an explosive atmosphere. This can result in death, serious injury or material damage. Surfaces can become statically charged and discharge to ignite potentially explosive atmospheres.

8.1.4 Machines with textile fan covers

In order to guarantee an essentially unobstructed flow of cooling air containing fluff, remains of materials or similar dirt, machines with a fan cover for textile applications have a larger air discharge cross-section between the edge of the cover and the cooling ribs of the machine frame.

These machines have a warning sticker on the fan cover.

8.2 Stoppages

Overview

If the machine remains out of service for an extended period of time (> 1 month), it should be commissioned regularly (around once a month) or, at the very least, the rotor should be turned. Please refer to the instructions in the section titled "Switching on" before recommissioning the machine. If a rotor locking device has been fitted to the machine, you must remove it before the rotor starts to turn.

NOTICE
Restricted motor function If not used for longer periods of time, material damage or complete motor failure can occur. If the motor is out of service for a period of more than 12 months, then environmental effects can damage the motor. Apply suitable corrosion protection, preservation, packing and drying measures.

Switching on the anti-condensation heater

If an anti-condensation heater is provided, switch it on during the machine stoppages.

Taking the machine out of service

For details of measures that need to be implemented, please refer to Section Preparing for use (Page 27).

Lubricating before recommissioning

NOTICE
Dry running bearings Bearings can be damaged if they do not have sufficient grease. Re-grease the bearings if they have been out of service for more than one year. The shaft must rotate so that the grease can be distributed in the bearings. Observe the data on the lubricant plate. See also Chapter, Maintenance - bearing service life.

8.3 Fault tables

Note

Before removing any faults, please read the information in Chapter Safety information (Page 11).

Note

If you operate the motor with a converter, and an electrical fault occurs, then also observe the information in the converter operating instructions.

The tables below list general faults caused by mechanical and electrical influences.

Table 8- 1 Electrical influences

								Electrical fault characteristics	
↓								Machine will not start up	
	↓							Machine starts up reluctantly	
		↓						Rumbling noise during startup	
			↓					Rumbling noise during operation	
					↓			Overheating during no-load operation	
						↓		Overheating when under load	
							↓	Overheating of individual winding sections	
								Possible causes of faults	Remedial measures[1)]
X	X		X			X		Overload	Reduce load
X								Interruption of a phase in the supply line	Check switches and supply lines
	X	X	X			X	X	Interruption of a phase in the supply line after switching on	Check switches and supply lines
X	X							Supply voltage too low, frequency too high	Check power supply conditions
					X			Supply voltage too high, frequency too low	Check power supply conditions
X	X	X	X				X	Stator winding incorrectly connected	Check winding connections
	X	X	X				X	Winding short circuit or phase short circuit in stator winding	Measure the winding resistances and insulation resistances, repair after consultation with manufacturer
						X		Incorrect direction of rotation of axial fan	Check connections

(1) As well as eliminating the cause of the fault (as described under "Remedial measures"), you must also rectify any damage the machine may have suffered.

Table 8- 2 Mechanical effects

				Mechanical fault characteristics	
↓				Grinding noise	
	↓			Overheating	
		↓		Radial vibrations	
			↓	Axial vibrations	
				Possible causes of faults	Remedial measures[1)]
X				Rotating parts are grinding	Determine cause and adjust parts concerned
	X			Reduced air supply, fan possibly rotating in the wrong direction	Check airways, clean machine
		X		Rotor not balanced.	Check feather key declaration (H, F, N)
		X		Rotor out of true, shaft bent	Please consult the manufacturer.
		X	X	Poor alignment	Align machine set, check coupling. [2)]
		X		Coupled machine not balanced	Re-balance coupled machine
			X	Surges from coupled machine	Inspect coupled machine
		X	X	Imbalance originating from gearing	Adjust/repair gearing
		X	X	Resonance in the overall system (comprising machine and foundation)	Reinforce foundation following consultation
		X	X	Changes in foundation	Determine cause of changes; eliminate if necessary; realign machine

1) As well as eliminating the cause of the fault (as described under "Remedial measures"), you must also rectify any damage the machine may have suffered.
2) Note any changes that take place while the temperature is rising.

8.4 Deactivating

Commission any devices provided for protection against condensation after switching off the machine.

8.5 Class

8.5.1 Zone 1 with type of protection Ex de IIC Gb (flameproof enclosure "d" for the machine and increased safety "e" for the terminal box)

CE	158		II	2	G	Ex	d	e	IIC	T4	Gb
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

EAC	ГБ 05		1	Ex	d	e	IIC	T4	Gb	X
①	②	③	⑬	⑦	⑧	⑨	⑩	⑪	⑫	⑭

① CE - or EAC marking
② Identification number or name of nominated testing agency
③ Code for prevention of explosions
④ Device group: II not for mining, but other hazardous zones
⑤ Device category: 2 for occasional danger and for use in Zone 1
⑥ Atmosphere: G for gas
⑦ Explosion protection: International
⑧ Type of protection: "d" Flameproof Enclosure of machine
⑨ Type of protection: "e" Increased Safety of terminal box
⑩ Explosion group: IIC for acetylene
⑪ Temperature class: T4 for maximum surface temperature of 135° C
⑫ Device protection level: Gb for a high level of protection in hazardous zones with explosive gas mixtures
⑬ Zone 1
⑭ "X" special conditions

8.5.2 Zone 1 with Ex e IIC Gb type of protection (increased safety "e")

CE	158		II	2	G	Ex	e	IIC	T3	Gb
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

EAC	ГБ 05		1	Ex	e	IIC	T3	Gb	X
①	②	③	⑫	⑦	⑧	⑨	⑩	⑪	⑬

① CE - or EAC marking
② Identification number or name of nominated testing agency
③ Code for prevention of explosions
④ Device group: II not for mining, but other hazardous zones
⑤ Device category: 2 for occasional danger
⑥ Atmosphere: G for gas
⑦ Explosion protection: International
⑧ Type of protection: "e" Increased Safety
⑨ Explosion group: IIC for acetylene
⑩ Temperature class: T3 for maximum surface temperature of 200° C
⑪ Device protection level: Gb for a high level of protection in hazardous zones with explosive gas mixtures
⑫ Zone 1
⑬ "X" special conditions

8.5.3 Zone 1 with Ex e IIB Gb type of protection (increased safety "e")

CE	158		II	2	G	Ex	e	IIB	T3	Gb
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

EAC	ГБ 05		1	Ex	e	IIB	T3	Gb	X
①	②	③	⑫	⑦	⑧	⑨	⑩	⑪	⑬

① CE - or EAC marking
② Identification number or name of nominated testing agency
③ Code for prevention of explosions
④ Device group: II not for mining, but other hazardous zones
⑤ Device category: 2 for occasional danger
⑥ Atmosphere: G for gas
⑦ Explosion protection: International
⑧ Type of protection: "e" Increased Safety
⑨ Explosion group: IIB for ethylene
⑩ Temperature Class: T3 for maximum surface temperature of 200° C
⑪ Device protection level: Gb for a high level of protection in hazardous zones with explosive gas mixtures
⑫ Zone 1
⑬ "X" special conditions

8.5.4 Zone 2 with type of protection Ex nA IIC Gc, non sparking

CE		II	3	G	Ex	nA	IIC	T3	Gc
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

EAC	ГБ 05		2	Ex	nA	IIC	T3	Gc	X
①	⑪	②	⑫	⑥	⑦	⑧	⑨	⑩	⑬

① CE - or EAC marking
② Code for prevention of explosions
③ Device group: II not for mining, but other hazardous zones
④ Device category: 3 for infrequent, short-term danger
⑤ Atmosphere: G for gas
⑥ Explosion protection: International
⑦ Type of protection: "nA" for non-sparking
⑧ Explosion group: IIC for acetylene
⑨ Temperature Class: T3 for maximum surface temperature of 200° C
⑩ Device protection level: Gc for an extended level of protection in hazardous zones with explosive gas mixtures
⑪ Identification number or name of nominated testing agency
⑫ Zone 2
⑬ "X" special conditions

8.5.5 Zone 2 with type of protection Ex nA IIB Gc, non sparking

CE		II	3	G	Ex	nA	IIB	T3	Gc
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

EAC	ГБ 05		2	Ex	nA	IIB	T3	Gc	X
①	⑪	②	⑫	⑥	⑦	⑧	⑨	⑩	⑬

① CE - or EAC marking
② Code for prevention of explosions
③ Device group: II not for mining, but other hazardous zones
④ Device category: 3 for infrequent, short-term danger
⑤ Atmosphere: G for gas
⑥ Explosion protection: International
⑦ Type of protection: "nA" for non-sparking
⑧ Explosion group: IIB for ethylene
⑨ Temperature Class: T3 for maximum surface temperature of 200° C
⑩ Device protection level: Gc for an extended level of protection in hazardous zones with explosive gas mixtures
⑪ Identification number or name of nominated testing agency
⑫ Zone 2
⑬ "X" special conditions

8.5.6 Zone 21

CE	158	Ex	II	2	D	Ex	tb	IIIC	T125°C	Db
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

EAC	ГБ 05	Ex	Ex	tb	IIIC	T125°C	Db	X
①	②	③	⑦	⑧	⑨	⑩	⑪	⑫

① CE - or EAC marking
② Identification number or name of nominated testing agency
③ Code for prevention of explosions
④ Device group: II not for mining, but other hazardous zones
⑤ Device category: 2 for occasional danger
⑥ Atmosphere: D for dust
⑦ Explosion protection: International
⑧ Type of protection: "tb" for protection by enclosure
⑨ Explosion group: IIIC for conductive dust
⑩ Maximum surface temperature: T 125° C
⑪ Device protection level: Db for a high level of protection level in flammable dust atmospheres
⑫ "X" special conditions

8.5.7 Zone 22

CE	Ex	II	3	D	Ex	tc	IIIB	T125°C	Dc
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

EAC	ГБ 05	Ex	Ex	tc	IIIB	T125°C	Dc	X
①	⑪	②	⑥	⑦	⑧	⑨	⑩	⑫

① CE - or EAC marking
② Code for prevention of explosions
③ Device group: II not for mining, but other hazardous zones
④ Device category: 3 for infrequent, short-term danger
⑤ Atmosphere: D for dust
⑥ Explosion protection: International
⑦ Type of protection: "tc" for protection by enclosure
⑧ Explosion group: IIIB for non-conductive dust
⑨ Maximum surface temperature: T 125° C
⑩ Device protection level: Dc for an extended protection level in flammable dust atmospheres
⑪ Identification number or name of nominated testing agency
⑫ "X" special conditions

Maintenance 9

9.1 Preparation and notes

WARNING

Hazards when carrying out maintenance work

You must observe the following safety instructions to prevent death, injury or material damage:

- Before starting work on the machines, make sure that the plant or system has been disconnected in a manner that is compliant with the appropriate specifications and regulations.
- In addition to the main circuits, make sure that supplementary and auxiliary circuits, particularly in heating devices, are also disconnected.
- Certain parts of the motor may reach temperatures above 50° C. Physical contact with the machine could result in burn injuries! Check the temperature of parts before touching them.
- When using compressed air for cleaning, make sure that appropriate methods of extraction systems are in place and that personal protective gear is worn (protective goggles, face mask and similar).
- If you are using chemical cleaning agents, observe the instructions and any warnings provided in the relevant safety data sheet. Chemical agents must be compatible with the machine's components, especially if these contain plastics.

Note

For operating conditions, which deviate from the conditions specified on the rating plate, the general maintenance intervals specified up until now can change.

Preparation and notes for explosion-protected machines

- Only have the machines repaired in authorized Siemens workshops!
- For machines intended for use in hazardous areas, only have modifications, repairs and overhaul work carried out by appropriately qualified personnel.
  It is imperative that you observe the regulations according to EN / IEC 60079-19 !
- When making changes or performing repair or overhauling work on machines intended for use with combustible dust, please observe the regulations laid down by EN / IEC 60079-17!

9.1.1 North American market

Machines for the North American market (optional)

When making changes or repairs, maintain the corresponding design standards! These machines are labeled on the rating plate with the following markings.

Table 9- 1 Markings for the North American market

	Underwriters Laboratories
	Canadian Standard Association
	Canadian Standard Association Energy Efficiency Verification

9.1.2 Customs union Eurasia

Machines Eurasian market (optional)

When making changes or repairs, maintain the corresponding design standards! These machines are labeled on the rating plate with the following markings.

	Customs union Eurasia Eurasian customs union
	Explosion-protected

Table 9- 2 Applicable general regulations

Feature	Standard	EAC
Dimensioning and operating behavior	EN / IEC 60034-1	GOST R IEC 60034-1
Procedure for determining the losses and the efficiency of rotating electrical machines and inspections	EN / IEC 60034-2-1 EN / IEC 60034-2-2 EN / IEC 60034-2-3	GOST R IEC 60034-2-1 GOST R IEC 60034-2-2 GOST RIEC 60034-2-3
Degree of protection	EN / IEC 60034-5	GOST R IEC 60034-5
Cooling	EN / IEC 60034-6	GOST R IEC 60034-6
Type of construction	EN / IEC 60034-7	GOST R IEC 60034-7
Terminal designations and direction of rotation	EN / IEC 60034-8	GOST R IEC 60034-8
Noise emission	EN / IEC 60034-9	GOST R IEC 60034-9
Starting characteristics of rotating electrical machines	EN / IEC 60034-12	GOST R IEC 60034-12
Vibration severity grades	EN / IEC 60034-14	GOST R IEC 60034-14
Efficiency classification of three-phase squirrel-cage induction motors	EN / IEC 60034-30	GOST R IEC 60034-30
IEC standard voltages	IEC 60038	GOST R IEC 60038

Table 9- 3 Regulations applied for explosion-protected machines

Feature	Standard	EAC
Electrical equipment for hazardous gas atmospheres, Part 0: General requirements	EN / IEC 60079-0	GOST 30852 0 - 2002
Electrical equipment for hazardous gas atmospheres, Part 1: Flameproof enclosure "d"	EN / IEC 60079-1	GOST 30852 1 - 2002
Electrical equipment for hazardous gas atmospheres, Part 7: Increased safety "e"	EN / IEC 60079-7	GOST 30852 8 - 2002
Electrical equipment for hazardous gas atmospheres, Part 14: Electric installations for endangered atmospheres (except underground excavation)	EN / IEC 60079-14	GOST 30852 13 - 2002
Electrical equipment for hazardous gas atmospheres, Part 15: Type of protection "n"	EN / IEC 60079-15	GOST 30852 14 - 2002
Electrical equipment for hazardous gas atmospheres, Part 19: Repairs and overhauls	EN / IEC 60079-19	GOST 30852 18 - 2002
Potentially explosive atmosphere - Part 31: Device dust explosion protection by enclosure "t"	EN / IEC 60079-31	GOST R IEC 60079-31
Electrical equipment for use in the presence of combustible dust - Part 17: Inspection and maintenance of electrical systems in hazardous areas (except underground excavation)	EN / IEC 60079-17	GOST 30852 16 - 2002
Directive on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in hazardous areas.	RL94/9/EC	TR CU

9.1.3 Touch up any damaged paintwork

If the paint is damaged, it must be repaired in order to protect the unit against corrosion.

Note

Paint system

Contact the Service Center before you repair any paint damage. They will provide you with more information about the correct paint system and methods of repairing paint damage.

9.1.4 Repainting

WARNING

Explosion danger caused by incorrect painting

If the paint coat thickness exceeds the permissible thickness, then electrostatic discharge can occur and associated discharge. At this instant, if there is any explosive mixture that can be easily ignited, then an explosion can occur resulting in death, severe injury and material damage.

When repainting/touching up, avoid excessively thick paint coatings. You can determine the permissible coating thickness of the paint depending on the explosion group and the surface resistance of the paint.

You must comply with one of the following requirements when you repaint painted surfaces:

- Limit the total paint coating thickness in accordance with the explosion protection group:
  - IIA, IIB: Total paint coating thickness ≤ 2 mm
  - IIC: Total paint coating thickness ≤ 0.330 mm for motors of group II (gas)
- Limit the surface resistance of the paint used:
  - IIA, IIB, IIC, III: Surface resistance ≤ 1 GΩ for machines of groups II and III (gas and dust)
- Breakdown voltage ≤ 4 kV for explosion group III (dust only)
- An overall coating thickness of > 120 µm is inadmissible for processes which generate strong charges.

9.2 Inspection

9.2.1 General inspection specifications

Notes

Note

Pay particular attention to the relubrication intervals for rolling bearings that deviate from the inspection intervals.

Note

When servicing a three-phase machine, it is generally not necessary to dismantle it. The machine only has to be dismantled if the bearings are to be replaced.

9.2.2 Optional built-on accessories

See the list of additional operating instructions: Auto-Hotspot

See also

Further documents (Page 116)

9.2.3 Initial inspection

Inspection interval

The first inspection after installation or repair of the three-phase machine is, under normal circumstances, conducted after approx. 500 operating hours, but at the latest after 1/2 year.

Procedure

Check the following points while the motor is operational:

- Maintain the electrical parameters.
- Comply with the permissible bearing temperatures.
- The smooth running characteristics and noise of the three-phase machine must not deteriorate.

Check the following points while the motor is at a standstill:

- The motor foundation must have no indentations or cracks.

Note

Additional checks and tests may be required. Observe the associated supplementary instructions and special plant/system-specific conditions

Note

Rectify any impermissible deviations immediately.

9.2.4 Main inspection

Inspection interval

Inspect the machine once a year.

Procedure

Check the following points while the motor is operational:

- Maintain the electrical parameters.
- Comply with the permissible bearing temperatures.
- The smooth running characteristics and noise of the three-phase machine must not deteriorate.

Check the following points while the motor is at a standstill:

- The motor foundation must have no indentations or cracks.
- The three-phase machine must be aligned within the permissible tolerances.
- All of the mounting bolts for the mechanical and electrical connections must be securely tightened.
- The winding isolation resistances must be sufficiently high.
- Cables and insulating parts and components must be in a good condition and must not be discolored.

Note

Rectify any impermissible deviations immediately.

9.3 Maintenance

9.3.1 Maintenance intervals

⚠ CAUTION
Skin irritations and eye inflammations Many greases can cause skin irritations and eye inflammations. Follow all safety instructions of the manufacturer.

The machines are equipped with permanently lubricated roller bearings. A regreasing device is optional.

Carry out careful and regular maintenance, inspections, and revisions to detect faults at an early stage and eliminate them before they can cause further damage.

Operating situations and characteristics can vary widely. For this reason, only general maintenance intervals can be specified here. Maintenance intervals should therefore be scheduled to suit the local conditions (dirt, starting frequency, load, etc.).

NOTICE
Motor failure Material damage can occur if the motor develops faults or is overloaded. If faults occur, immediately carry out an inspection. An immediate inspection is especially necessary, if the three-phase motor is excessively stressed, either electrically or mechanically (e.g. overload or short-circuit).

Measures, intervals

Measures after operating period intervals have elapsed:

Table 9- 4 Operating period intervals

Measures	Operating period intervals	Intervals
Initial inspection	After 500 operating hours	After 1/2 year at the latest
Relubrication (optional)	See the lubricant plate	
Clean	Depending on the degree of pollution	
Main inspection	Approximately every 16000 operating hours	After two years at the latest
Drain condensate	Depending on the climatic conditions	

9.3.2 Regreasing (optional)

For machines with regreasing system, relubrication intervals, grease quantity and grease grade are provided on the lubricant plate. Additional data can be taken from the main machine rating plate.

Grade of grease for standard motors (IP55) UNIREX N3 - ESSO).

Note

It is not permissible to mix different types of grease.

Prolonged storage periods reduce the useful lifetime of the bearing grease. Check the condition of the grease if the equipment has been in storage for more than 12 months. If the grease is found to have lost oil content or to be contaminated, the machine must be immediately relubricated before commissioning. For information on permanently-greased bearings, please refer to the section titled Storage (Page 96).

Procedure

To relubricate the roller bearings, proceed as follows:

1. Clean the grease nipples at the drive end and non-drive end.
2. Press in the type and quantity of grease specified (see rating/lubricant plate data).
   - Please observe the information on the rating and lubricant plates.
   - Regreasing should be carried out when the motor is running (max. 3600 rpm).

The bearing temperature rises sharply at first, then drops to the normal value again when the excess grease is displaced out of the bearing.

9.3.3 Cleaning

Cleaning the greasing channels and used grease chambers

The used grease collects outside each bearing in the used grease chamber of the outer bearing cap. When replacing bearings, remove the used grease.

Note

You have to separate the active parts of the bearings to replace the grease that is in the greasing channel.

Cleaning the cooling air passages

Regularly clean the cooling air passages through which the ambient air flows, e.g. using dry compressed air.

Note

Never direct compressed air in the direction of the shaft outlet or machine openings.

In the case of machines with textile fan covers, regularly remove fluff balls, fabric remnants, and similar types of contamination (particularly at the air passage opening between the fan cover and cooling fins of the machine enclosure) to ensure that the cooling air can flow without obstruction.

Note

The frequency of the cleaning intervals depends on the local degree of contamination.

⚠ WARNING
Damage to the motor Material damage can occur if you direct compressed air towards the shaft outlet or openings in the motor. Avoid directly pointing compressed air onto shaft sealing rings or labyrinth seals of the motor.

See also

Safety instructions for cleaning (Page 76)

9.3.4 Drain condensate

If there are condensate drain holes present, these must be opened at regular intervals, depending on climatic conditions.

NOTICE
Reduction of the degree of protection If condensation drain holes are not closed, then this can result in material damage to the motor. In order to maintain the degree of protection, after the condensation has been drained, all of the drain holes must be closed again.

9.4 Corrective maintenance

9.4.1 Instructions for repair

Qualified personnel

Only appropriately qualified persons should be deployed to commission and operate equipment. Qualified persons, as far as the safety instructions specified in this manual are concerned, are those who have the necessary authorization to commission, ground and identify/tag equipment, systems and circuits in accordance with the relevant safety standards.

Instructions relevant to safety

⚠ WARNING

High voltages

Electrical machines contain live parts. Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the machines are not handled, operated, or maintained properly.

Before starting to work on the motor, bring it into a no voltage condition, and only open the covers of active parts once this has been done.

Note

Observe the information in Chapter Preparing for use.

See also

Preparing for use (Page 27)

9.4.2 Storage

Take the bearing used up to frame size 90 only for special versions, and generally for frame size 100 and higher from the rating plate.

Bearing lifetime

Prolonged storage periods reduce the useful lifetime of the bearing grease. In the case of permanently lubricated bearings, this leads to a shorter bearing lifetime.
Bearing or grease replacement is recommended after a storage time of 12 months, for longer than four years, replace the bearings or grease.

Replacing bearings

Recommended interval after which bearings are to be replaced under normal operating conditions:

Table 9- 5 Bearing replacement intervals

Ambient temperature	Principle of operation	Bearing replacement intervals
40° C	Horizontal coupling operation	40 000 h
40° C	With axial and radial forces	20 000 h

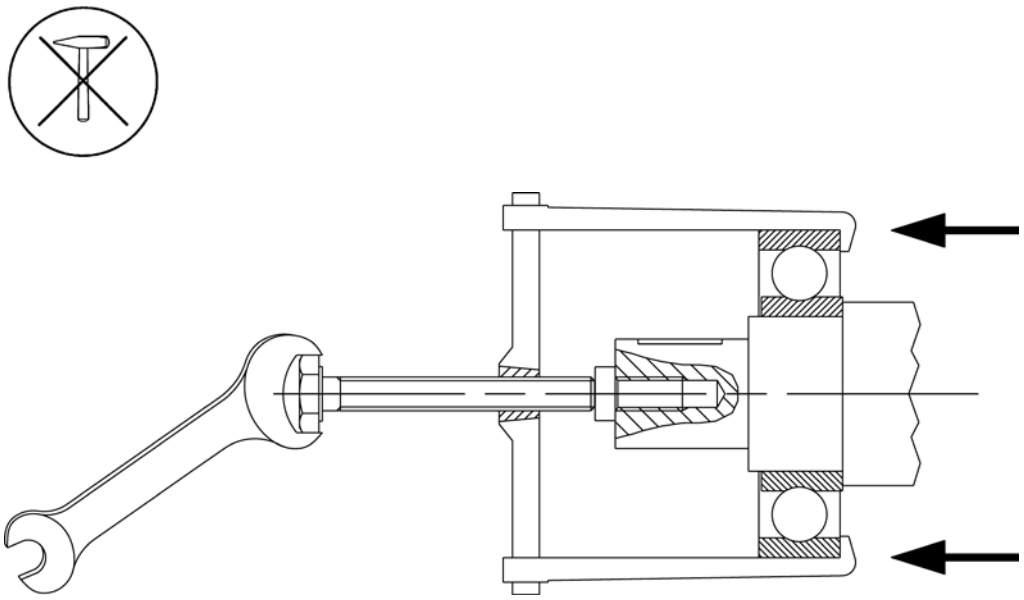
Note

Special operating conditions

Examples of factors that can reduce operating hours are vertical machine installation, high vibrational and impact loads, frequent reversing, higher ambient temperature, higher speeds, etc.

- Do not reuse bearings that have been removed.
- Remove any polluted old grease from the bearing shield.
- Replace old grease with new grease.
- Replace the shaft seals when the bearings are replaced.
- Lightly grease the contact surfaces of the sealing lips!

9.4.2.1 Changing bearings



Replacing bearings

9.4.2.2 Replacing bearings in explosion-proof machines

- When changing the bearings, renew the sealing rings and only use original Siemens spare parts.
- When installing the sealing rings for the motor series 1LA., 1MA.06. to 20., 1MJ6., fill completely the space in the sealing ring and in the end shield hub with a suitable type of grease.

9.4.3 Dismantling

Note

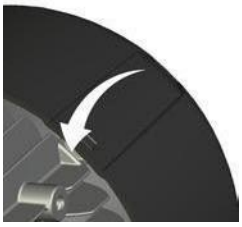
Before commencing disassembly, you should mark how each of the fastening elements has been assigned, as well as how internal connections are arranged. This simplifies subsequent reassembly.

Fan

Take care not to damage the snapping mechanisms on fans that are equipped with these. To ensure this, the fans should be heated to a temperature of approximately 50 °C around the area of the hub. If any damage is caused, request new parts.

Fan cover

- Carefully lever the snap openings on the cover out of the snap-in lugs one after the other; do not apply the lever directly under the web (risk of breakage).
- Do not damage the snap mechanisms. If any damage is caused, request new parts.



Canopy; incremental encoder under the canopy

Loosen the fixing screws on the external surface of the protective cover.

Under no circumstances should the spacing bolts or the mounting bracket be disassembled or forcibly separated from each other or the cover. Forcibly removing or separating can destroy the distance bolts, the connecting elements of the mounting bracket or the fan cover.

9.4.3.1 Bearing bushes

Protect the bearings against the ingress of dirt and moisture.

9.4.3.2 Links

- Replace any corroded screws.
- Take care not to damage the insulation of live parts.
- Document the position of any rating and supplementary plates that have been removed.
- Avoid damaging the centering edges.

9.4.4 Assembly

If possible, assemble the machine on and alignment plate. This ensures that the mounting feet surfaces are all on the same plane.

Avoid damaging the windings protruding out of the stator enclosure when fitting the end shield.

9.4.4.1 Assemly

- Apply Fluid-D to the centering edge.
- Check the terminal box seals, and if required, replace these.
- Repair any damage to the paint, also to screws/bolts.
- Take the necessary measures to ensure compliance with the applicable degree of protection.
- Do not forget the foam rubber cover in the cable entry. Completely seal the holes, and ensure that cables do not come into contact with sharp edges.

See also

Terminal boxes, end shields, grounding conductors, sheet metal fan covers (Page 103)

For flameproof machines, apply just a small amount of acid-free, non-resinous grease to the centering edges (e.g. Renolit H 442 supplied by Fuchs). Do not use any sealing agents.

9.4.4.2 Fitting the bearing cartridges

When fitting the bearing cartridges, observe the specified screw tightening torques.

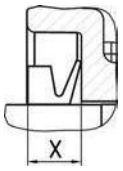
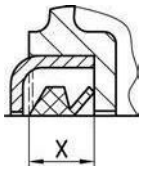
9.4.4.3 Fitting bearings

Sealing the bearings

Note the following details:

- Shaft sealing rings are used to seal machines at the rotor shaft. For V rings, comply with the assembly dimension.
- Use the specified bearings.
- Ensure that the bearing sealing disks are in the correct position.
- Insert the elements for bearing preloading at the correct end.
- Fixed bearings can have a locking ring or bearing cover.

Mounting dimension "x" of V rings

Frame size	X [mm]	
100 ... 112	6 ±0.8	
132 ... 225	7 ±1	
180 ... 225 (1LG, 1MA622.)	11 ±1	
225 (1LG, 1LE; 4 ... 8-pole)		
250 ... 315 (1LG, 1LE; 4 ... 8-pole)	13.5 ±1.2	
225 (1LG, 1LE; 2-pole)	11 ±1	
250 ... 315 (1LG, 1LE; 2-pole)	13.5 ±1.2	

9.4.4.4 Mounting fans

Fans

Take care not to damage the snapping mechanisms on fans that are equipped with these. To ensure this, the fans should be heated to a temperature of approximately 50 °C around the area of the hub.
If any damage is caused, request new parts.

9.4.4.5 Mounting the fan cover

Fan cover

- When fitting the cover, do not overstretch it (risk of breakage).
- First engage two snap openings positioned next to one other, then carefully press the cover into position with the two openings situated opposite these using the snap-in lugs, and snap it into place.
- Latch all snap openings cleanly into the snap-in lugs.

9.4.4.6 Canopy; mounting a rotary pulse encoder under the canopy

Canopy; incremental encoder under the canopy

Guide the fixing screws through the holes on the external surface of the canopy and tighten to a torque of 3 Nm ±10%.

9.4.4.7 Reassembly: Miscellaneous information

Miscellaneous

- Number and position of rating plates and additional labels as in original condition
- If necessary, fix cables in place.
- Check tightening torques of all screws, as well as those of screws which have not been unscrewed.

The number on the EC-type examination certificate for machines with flameproof enclosure "d" type of protection is represented by an X, since the flameproof joints deviate from EN / IEC 60079-1, Table 2. Only perform repairs following consultation with the manufacturer and be sure to use original parts.

9.4.5 Screw lock washers

Nuts or bolts that are mounted together with locking, resilient and/or force-distributing elements (e.g., safety plates, spring-lock washers, etc.) must be refitted together with identical, fully functional elements.

Always replace locking elements.

9.4.6 Electrical connections - Termincal board connections

Table 9- 6 Tightening torques for electrical connections on the terminal board

	Thread ∅		M 3,5	M 4	M 5	M 6	M 8	M 10	M 12	M 16
	Nm	min	0,8	0,8	1,8	2,7	5,5	9	14	27
		Max.	1,2	1,2	2,5	4	8	13	20	40

9.4.7 Cable glands

Note

Avoid damaging the cable jacket.

Adapt the tightening torques to the cable jacket materials.

You should refer to the table in order to find the correct tightening torque for any metal and plastic cable glands that are to be mounted directly on the machine, as well as for any other screw-type connections (such as adapters).

Table 9- 7 Tightening torques for cable glands

	Metal ± 10% [Nm]	Plastic ± 10% [Nm]	Clamping range [mm]		O ring Cord dia. [mm]
			Standard -30 °C ... 100 °C Ex -30 °C ... 90 °C	Ex -60 °C ... 105 °C	
M 12 x 1.5	8	1,5	3,0 ... 7,0	-	2
M 16 x 1.5	10	2	4,5 ... 10,0	6,0 ... 10,0	
M 20 x 1.5	12	4	7,0 ... 13,0	6,0 ... 12,0	
M 25 x 1.5			9,0 ... 17,0	10,0 ... 16,0	
M 32 x 1.5	18	6	11,0 ... 21,0	13,0 ... 20,0	
M 40 x 1.5			19,0 ... 28,0	20,0 ... 26,0	
M 50 x 1.5	20		26,0 ... 35,0	25,0 ... 31,0	
M 63 x 1.5			34,0 ... 45,0	-	

The cable glands must have an EC-type examination certificate and be certified for the respective hazardous zone.

- Any openings that are not being used must be sealed using using the appropriate certified plugs.
- Please observe the manufacturer's specifications when fitting cable glands.

9.4.8 Terminal boxes, end shields, grounding conductors, sheet metal fan covers

If no other tightening torques are specified, then the values in the following table apply.

Table 9- 8 Tightening torques for screws on the terminal box, end shields, screw-type grounding conductor connections

	Thread ∅		M 4	M 5	M 6	M 8	M 10	M 12	M 16	M20
	Nm	min	2	3.5	6	16	28	46	110	225
		max	3	5	9	24	42	70	165	340

Table 9- 9 Tightening torques for self-tapping screws on the terminal box, end shields, screw-type grounding conductor connections, sheet metal fan covers

	Thread ∅		M 4	M 5	M 6
	Nm	min	4	7,5	12,5
		max	5	9,5	15,5

9.4.9 Optional add-on units

See the list of additional operating instructions: Appendix (Page 115)

Table 9- 10 Assigning standard brakes for 1LE1 machines

Frame size (BG)	Brake type	Size assignment of the brakes	Tightening torque of manual lifting lever Nm
80	2LM8 010–3NA10 1)	08	2.8
90	2LM8 020–4NA10 1)	10	4.8
100	2LM8 040–5NA10 1)	12	4.8
112	2LM8 060–6NA10 1)	14	12
132	2LM8 100–7NA10 1)	16	12
160	2LM8 260–8NA10 1)	20	23
180	2LM8 315–0NA10 1)	20	23
200	2LM8 400–0NA10 1)	25	40
225	2LM8 400–0NA10 1)	25	40
250	KFB 63 2)	63	40
280	KFB 100 2)	100	40
315	KFB 160 2)	160	40

1) INTORQ Corp.

2) PINTSCH BUBENZER Corp.

Tightening torque applied to the fastening screws used for attaching external fans to the housing, see Terminal boxes, end shields, grounding conductors, sheet metal fan covers (Page 54)

Spare parts 10

10.1 Parts order

In addition to the exact part designation, please specify the machine type and the serial number in all orders for spare parts and repair parts. The part designation must be identical to the designation stated in the list of parts and specified together with the appropriate part number.

When spare and repair parts are ordered, the following details must be provided:

- Designation and part number
- Order number and serial number of the machine

Spare parts information and database

Using the Siemens order number and the associated serial number, you can download spare parts information from a database for almost all current motors → Spares On Web (https://b2b-extern.automation.siemens.com/spares_on_web)

10.2 Parts groups definition

The following parts groups are differentiated:

Spare parts

Spare parts are machine parts that can be ordered during the production time and for a further five years after discontinuation of production. These parts should be replaced only by authorized service or modification partners.

Repair parts

Repair parts are machine parts that can be supplied during the active production of the machine (until the product discontinuation).
Repair parts are parts used for the repair or modification of the current products. These parts should be replaced only by authorized service or modification partners.

Standardized parts

Standardized parts are machine parts obtained from free trade outlets in accordance with their necessary dimensions, materials and surface finish. A detailed list can be found in the "Standardized parts" section.

Other parts

Other parts are small parts required to complete the exploded drawing. They cannot, however, be supplied as individual spare or repair parts. The delivery in assembly units (e.g. complete terminal box) is possible on request.

The following supply commitment apply to replacement machines and spare parts following delivery of the motor:

- For up to five years, in the event of total machine failure, Siemens will supply a comparable machine with regard to the mounting dimensions and functions.
- Spare parts will be available for up to five years.
- After the time period of up to five years, Siemens provides information about spare parts and will supply documents when required.
- Spare machine deliveries after the active production of the machine series are also identified as "Spare motor" on the nameplate. Spare parts are offered only on request for these machines.

Ordering example

Table 10- 1 Ordering example

End shield, drive end	1.40 End shield
Machine type *	1LA7163-4AA60
ID no. *	E0705/1234567 01 001

* corresponding to the rating plate

Table 10- 2 Ordering example

End shield, drive end	1.40 End shield
Machine type *	1LE1002-1DB43-4AA0
ID no. *	E0605/0496382 02 001

* corresponding to the rating plate

Take the type and serial number from the rating plate and the machine documentation.

When replacing rolling-contact bearings, in addition to the bearing identification code, the replacement code for the bearing version is required. Both of these codes are specified on the rating plate and in the machine documentation. They are also shown on the installed bearings.

The graphical representations in this chapter show schematic diagrams of the basic versions. They are used for spare part definitions. The supplied version may differ in details from these representations.

10.3 Machine parts

Part	Description	Part	Description
1.00	DE bearings		Terminal box, complete
1.30	Bolt	5.30	Rubber stopper (1MA618.-20.)
1.31	Spring lock washer according to SN 60727	5.31	Terminal clamp (1MA618.-20.)
1.32	Bolt	5.32	Angle (1MA618.-20.)
1.33	Nut	5.33	Washer (1MA618.-20.)
1.40	End shield	5.36	Spring lock washer according to SN 60727
1.43	Shaft sealing ring	5.37	Spring lock washer according to SN 60727
1.44	Bearing cover	5.42	Terminal box housing, including seal
1.45	Bolt	5.43	Entry plate
1.46	Cover ring	5.44	Terminal box top side
1.47	O ring	5.45	Enclosure
1.48	Self-tapping screw	5.46	Bolt
1.49	Bolt	5.47	Bolt
1.50	Flanged nut	5.48	Spring lock washer according to SN 60727
1.56	Spacer washer	5.49	Self-tapping screw
1.58	Spring washer	5.51	Nut
1.60	Roller bearing	5.52	Cable gland
1.61	Spring band for end shield hub	5.53	Sealing plug
1.62	Sealing plug 1LG	5.54	O ring
1.63	T plug 1LE GG 100..315	5.55	Nut
1.64	DE bearing cover, inner	5.60	Connecting terminal plate screw
1.65	Grease nipple	5.61	Bolt
1.67	Outer bearing cover	5.62	Spring lock washer according to SN 60727
1.68	Grease slinger (optional)	5.63	Mounting rail
1.69	Compression spring	5.64	Spring washer
3.00	Rotor, complete	5.65	Bolt
3.02	Locking ring	5.68	O ring
3.38	Featherkey	5.69	Sealing plug
3.88	Featherkey for fan	5.70	Terminal clamp
4.00	Stator, complete	5.72	Contact bracket
4.04	Eyebolt	5.76	Terminal plate / contact bracket
4.05	Disk	5.78	Spring lock washer according to SN 60727
4.07	Housing foot	5.79	Bolt
4.08	Housing foot, left	5.80	Self-tapping screw 1LE + 1LE GG 100..315
4.09	Housing foot, right	5.81	Self-tapping screw
4.10	Spring lock washer according to SN 60727	5.82	O ring
4.11	Bolt	5.83	Seal
4.12	Nut	5.84	Terminal box cover

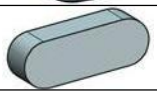
Part	Description	Part	Description
4.14	Nut	5.85	Terminal box cover including seal (optional screw)
4.18	Rating plate	5.86	Protection mark
4.19	Self-tapping screw	5.87	Bolt
4.20	Cover	5.88	Spring lock washer according to SN 60727
4.30	Contact bracket	5.89	Bolt
4.31	Grounding bracket	5.90	The top side of the terminal box can be rotated 4 x 90 degrees, complete (for subsequent mounting)
4.35	Disk	5.91	Bolt
4.37	Terminal board	5.92	Terminal box cover
4.38	Spring lock washer according to SN 60727	5.93	Seal
4.39	Grounding screw (self-tapping screw)	5.94	Bolt
4.40	Disk	5.95	Terminal box top side
4.41	Grounding lug	5.96	Sealing plug
5.00	Terminal box, complete	5.97	Nut
5.02	spacer	5.98	Metal-sheet nut
5.03	Seal	5.99	Adapter plate
5.04	Seal	6.00	NDE bearings
5.06	Mounting rail	6.02	Locking ring
5.08	Spacer sleeve	6.03	Bearing cover NDE, inner
5.09	Bolt	6.10	Roller bearing
5.10	Complete terminal board	6.11	Spring band for end shield hub
5.11	Terminal block	6.20	End shield
5.12	Ex d terminal box (1MJ6) (star point connection)	6.23	Shaft sealing ring
5.13	Link rail	6.24	Bearing cover NDE, outer
5.14	Terminal box underside	6.25	Lubrication sleeve
5.15	Plug	6.26	Cover
5.16	Spring lock washer according to SN 60727	6.27	Outer bearing cover
5.17	Bolt	6.28	Bolt
5.18	Spring lock washer according to SN 60727	6.29	Self-tapping screw
5.19	Self-tapping screw	6.30	Bearing cover NDE, inner
5.20	Cable entry, complete	6.31	Nut
5.21	Screw (drilled)	6.45	Bolt
5.22	Connection terminal, complete	6.64	Nut
5.23	Cable entry, complete	6.65	Grease nipple
5.24	Bolt	6.67	Rubber bush
5.25	Combination screws M3.5	6.72	Grease slinger
5.26	Set: Jumper plug Y, jumper plug Δ	7.00	Complete ventilation
5.27	Clamp	7.04	Fan
5.28	High saddle terminal	7.12	Locking ring
5.29	Lower saddle terminal	7.19	Bolt
		7.40	Fan cover

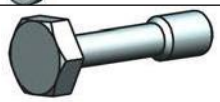
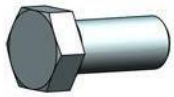
Part	Description	Part	Description
		7.41	bracket
		7.47	Sleeve
		7.48	Spring lock washer according to SN 60727
		7.49	Bolt

Tools for mounting and withdrawing roller bearings; fans and output transmission elements cannot be supplied.

10.4 Standardized parts

Table 10- 3 Purchase commercially available standard parts according to the dimensions, materials and surface.

No	Standard	Picture
3.02 6.02 7.12	DIN 471	
	DIN 472	
4.04	DIN 580	
	DIN 582	
1.60 6.10	DIN 625	
3.38	DIN 6885	
1.33 1.50 4.12 4.14 5.55 6.30	EN ISO 4032	

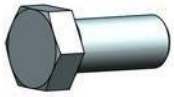
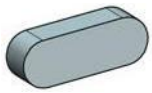
No	Standard	Picture
1.30 1.31 1.32 1.45 1.49 4.11 4.19 5.09 5.17 5.19 5.24 5.47 5.46 5.49 5.60 5.61 5.65 5.79 5.87 5.89 5.91 5.94 6.29 6.45 7.49	DIN 939	
	DIN 6912	
	DIN 7964	
	EN ISO 4014	
	EN ISO 4017	
	EN ISO 4762	
	EN ISO 7045	
	EN ISO 7049	
4.05 7.48	EN ISO 7089 EN ISO 7090	

Note

1MJ spare parts

Use screws with property class ≥ 8.8 and nuts with property class ≥ 8.

Table 10- 4 Purchase commercially available standard parts according to the dimensions, materials and surface.

No	Standard	Picture	No	Standard	Picture
6.02	DIN 472 (FS 160)		1.49 (frame size 132/160) 4.11 6.29 (frame size 132/160)	EN ISO 4014	
				EN ISO 4017	
4.04	DIN 580			EN ISO 4762	
3.38	DIN 6885		4.05	EN ISO 7089 EN ISO 7090 Purchase commercially available standard parts according to the dimensions, materials and surface.	

Disposal 11

11.1 Introduction

Protecting the environment and preserving its resources are corporate goals of the highest priority for us. Our worldwide environmental management system to ISO 14001 ensures compliance with legislation and sets high standards in this regard. Environmentally friendly design, technical safety and health protection are always firm goals even at the product development stage.

Recommendations for the environmentally friendly disposal of the machine and its components are given in the following section. Be sure to comply with local disposal regulations.

11.2 Preparing for disassembly

Disassembly of the machine must be carried out and/or supervised by qualified personnel with appropriate expert knowledge.

1. Contact a certified waste disposal organization in your vicinity. Clarify what is expected in terms of the quality of dismantling the machine and provision of the components.
2. Follow the five safety rules (Page 11).
3. Disconnect all electrical connections and remove all cables.
4. Remove all liquids such as oil and cooling liquids. Collect the liquids separately and dispose of them in a professional manner.
5. Detach the machine fixings.
6. Transport the machine to a suitable location for disassembly.

See also

Corrective maintenance (Page 96)

11.3 Dismantling the machine

Dismantle the machine using the general procedures commonly used in mechanical engineering.

⚠ WARNING
Machine parts can fall The machine is made up of heavy parts. These parts are liable to fall during dismantling. This can result in death, serious injury or material damage. Before you release any machine parts, secure them so that they cannot fall.

11.4 Disposal of components

Components

The machines consist mainly of steel and various proportions of copper and aluminum. Metals are generally considered to be unlimitedly recyclable.

Sort the components for recycling according to whether they are:

- Iron and steel
- Aluminum
- Non-ferrous metal, e.g. windings

  The winding insulation is incinerated during copper recycling.
- Insulating materials
- Cables and wires
- Electronic waste

Process materials and chemicals

Sort the process materials and chemicals for recycling according to whether they are for example:

- Oil
- Grease
- Cleaning substances and solvents
- Paint residues
- Anti-corrosion agent
- Coolant additives such as inhibitors, antifreeze or biocides

Dispose of the separated components according to local regulations or via a specialist disposal company. The same applies for cloths and cleaning substances which have been used while working on the machine.

Packaging material

- If necessary, contact a suitable specialist disposal company.
- Wooden packaging for sea transport consists of impregnated wood. Observe the local regulations.
- The foil used for water-proof packaging is an aluminum composite foil. It can be recycled thermally. Dirty foil must be disposed of via waste incineration.

Appendix A

A.1 SIEMENS Service Center

Details regarding the design of this electrical machine and the permissible operating conditions are described in these instructions.

On-site service calls and spare parts

If you wish to request on-site service calls or order spare parts, please contact your local Siemens sales office. This office will contact the responsible service center on your behalf. You can find your local contact partner here.

Technical queries or additional information

If you have any technical queries or you require additional information, please contact the Siemens Service Center.

Please have the following machine data ready:

- Machine type
- Serial number

You can find this data on the rating plate of the machine.

Service numbers

Table A- 1 Siemens Service Center contact details

Time zone	Telephone	Fax	Internet
Europe / Africa	+49 911 895 7222	+49 911 895 7223	http://www.siemens.com/automation/support-request (http://www.siemens.de/automation/support-request)
Americas	+1 423 262 5710	+1 423 262 2231	mailto:techsupport.sea@siemens.com
Asia / Pacific	+86 10 6475 7575	+86 10 6474 7474	mailto:support.asia.automation@siemens.com

A.2 Languages of operating instructions available in the Internet

Additional languages in the Internet

You can find the operating instructions in other languages on the Internet page: http://www.siemens.com/motors (http://www.siemens.com/motors)

If you require additional language versions, please contact the Siemens Service Center.

A.3 Further documents

These operating instructions can also be obtained at the following Internet site:

http://www.siemens.com/motors

General Documentation

1.517.30777.30.000	1XP8001 encoder
5 610 00000 02 000	Operating_Instructions_Simotics GP, SD, DP, XP
5 610 00000 02 001	Operating_Instructions_Compact_Simotics GP, SD, DP
5 610 00000 02 002	Operating_Instructions_Compact_Simotics XP
5 610 00002 09 000	Incremental encoder 1XP8012-1x
5 610 00002 09 001	Incremental encoder 1XP8012-2x
5 610 70000 02 015	External fan
5 610 70000 10 020	Spring-loaded brake

See also

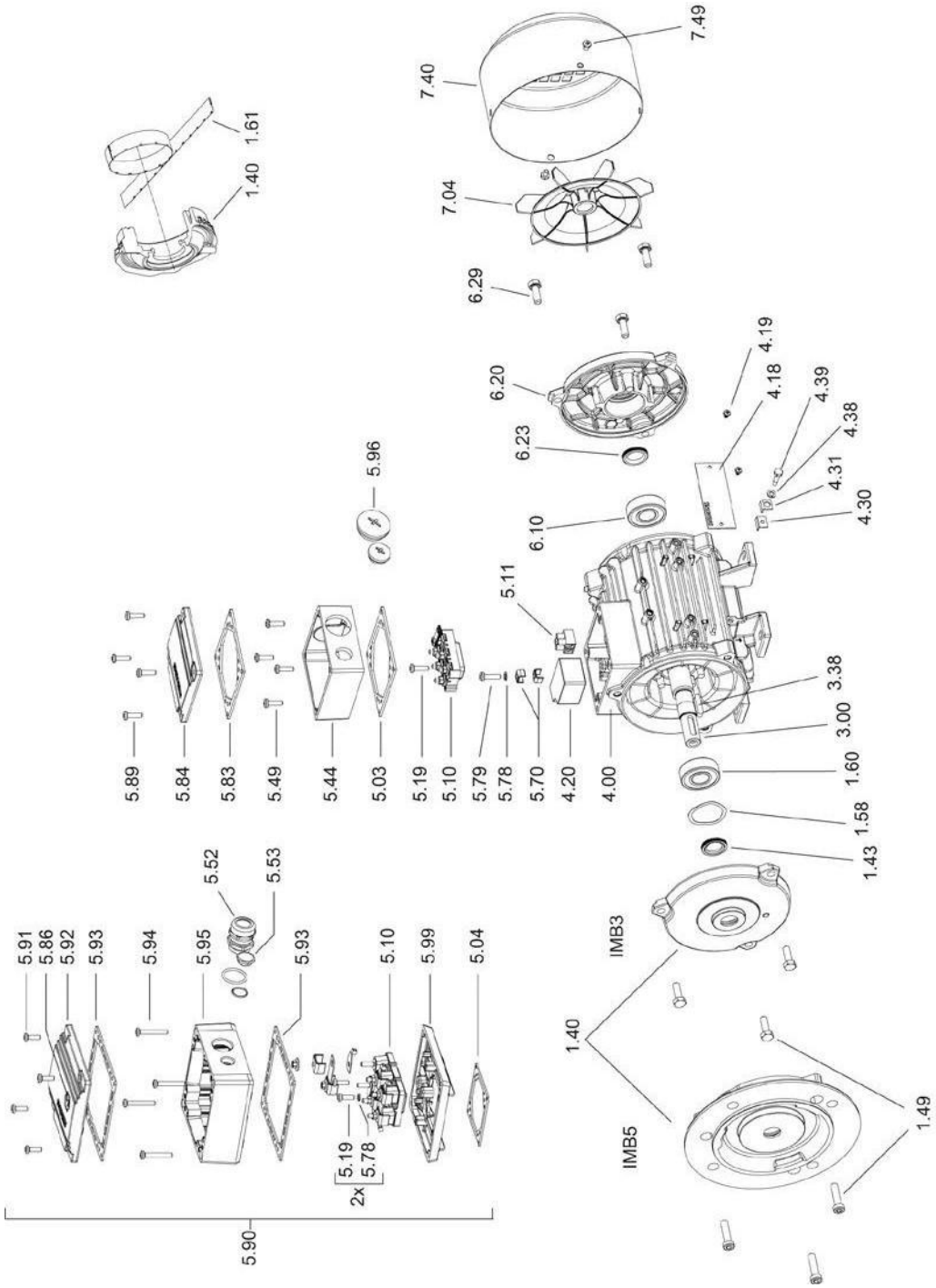
Optional built-on accessories (Page 91)

Technical data and drawings

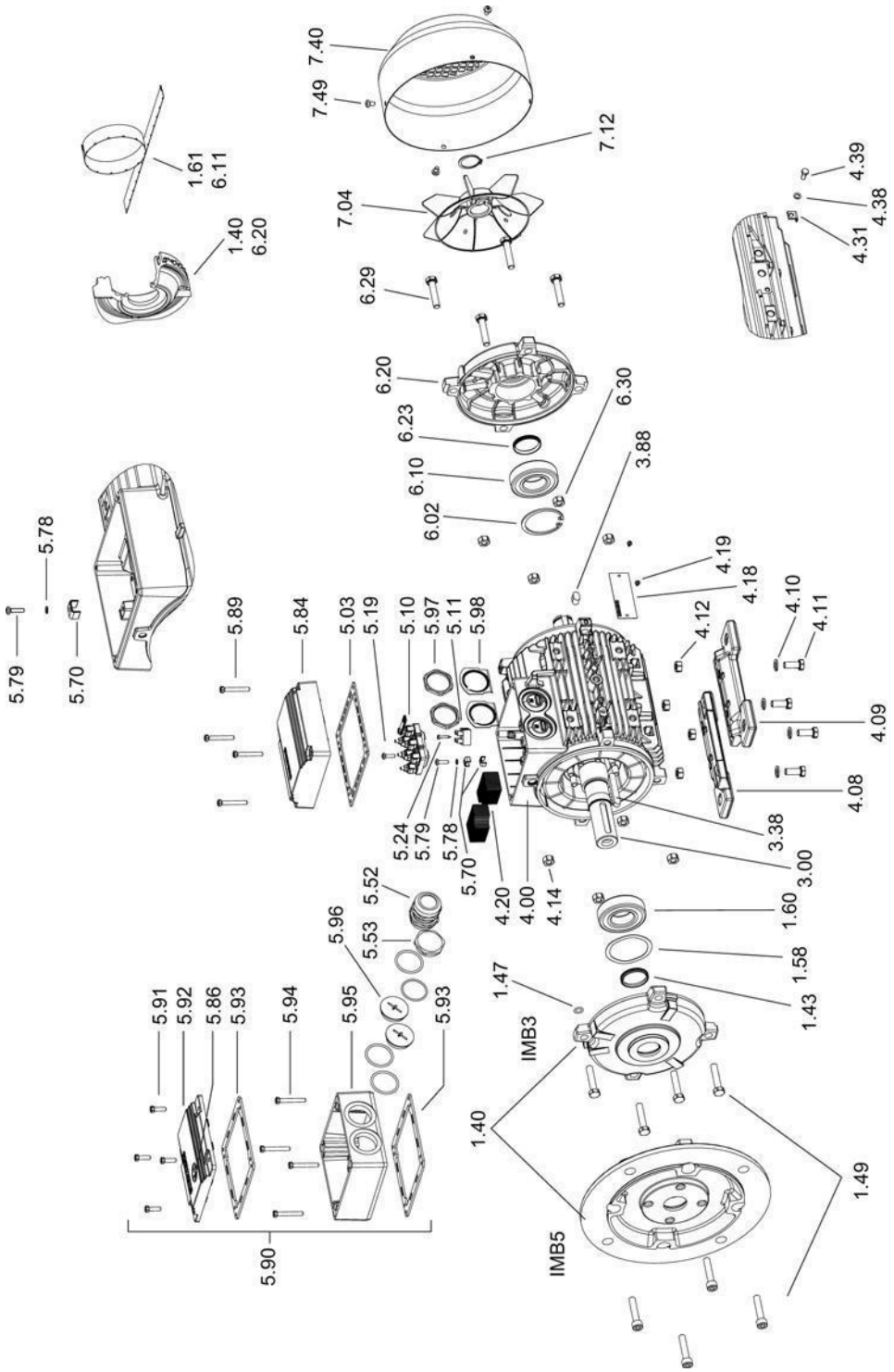
B

B.1 Exploded drawings

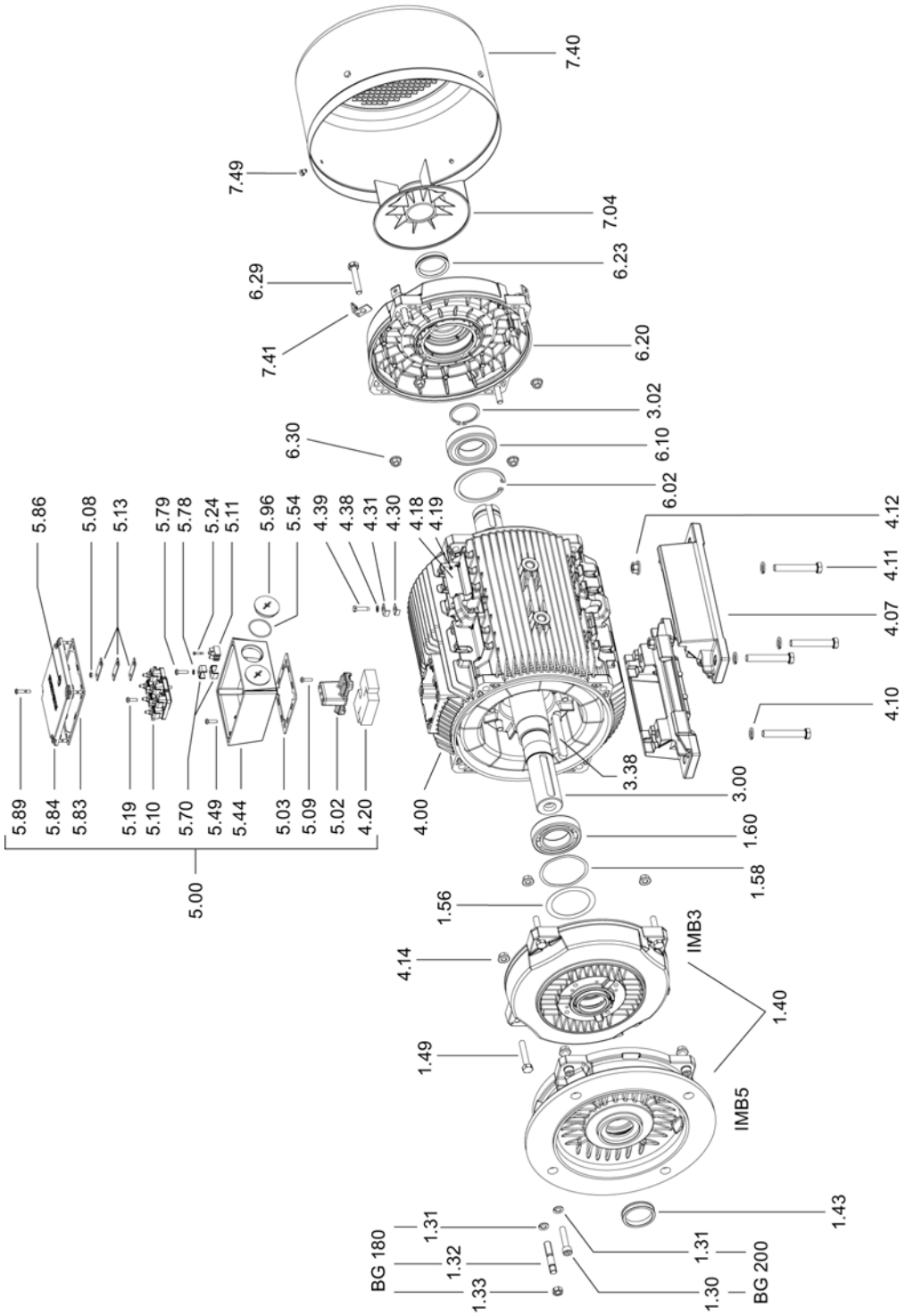
B.1.1 1LA,1LP,1MA,1MF,1PP6/7/9 FS 56 ... 90L



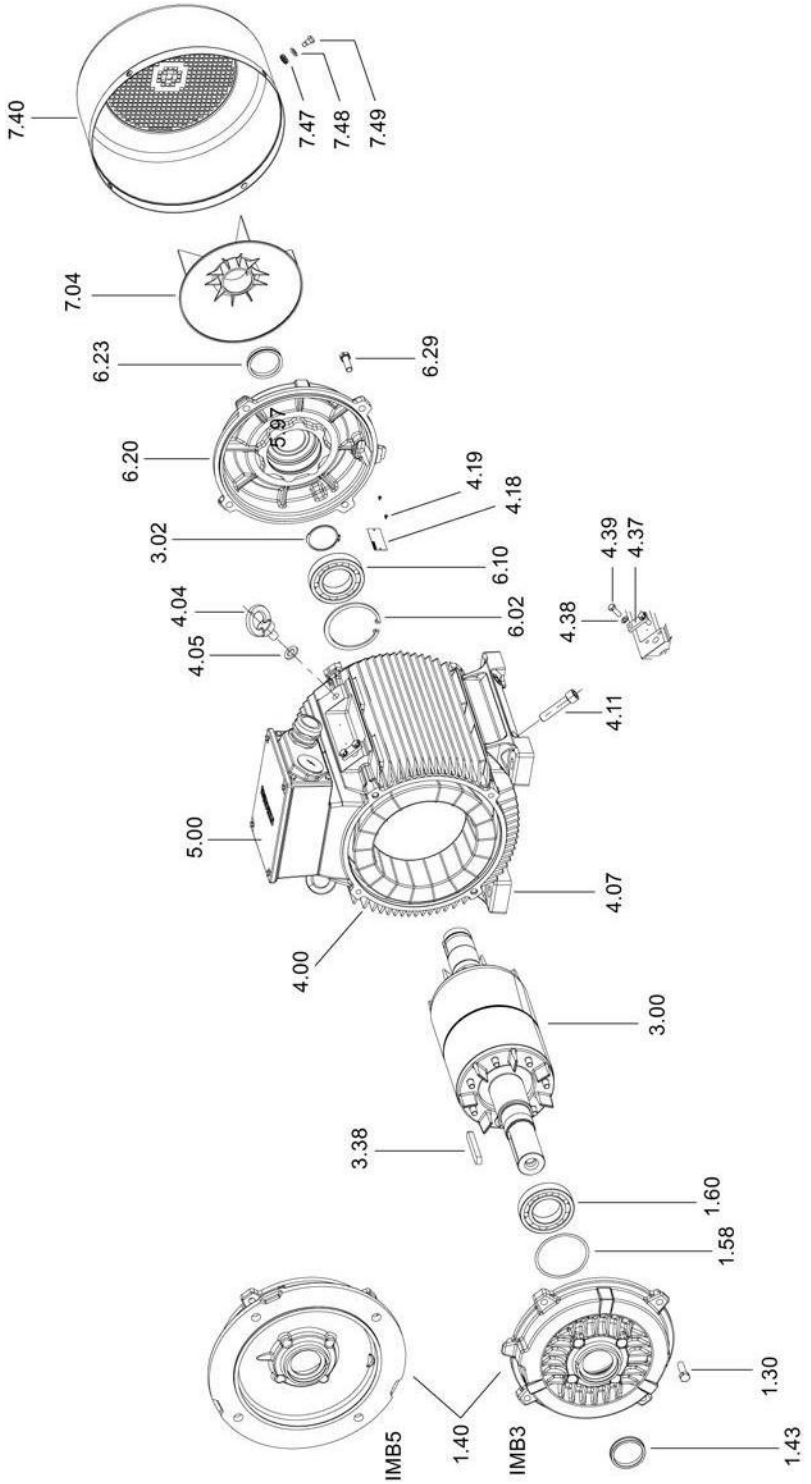
B.1.2 1LA,1LP,1MA,1MF,1PP6/7/9 FS 100 ... 160



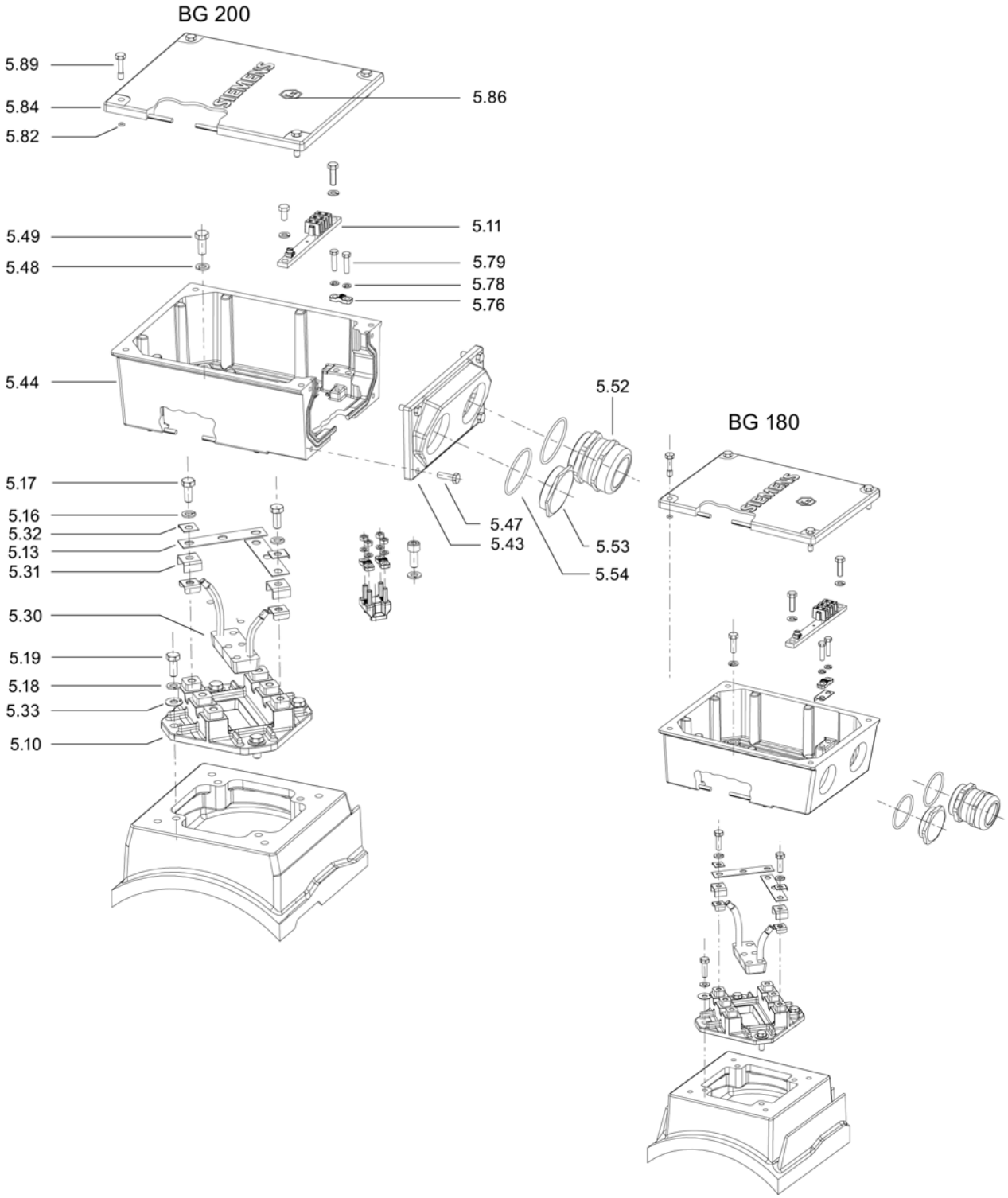
B.1.3 1LA5180 ... 225



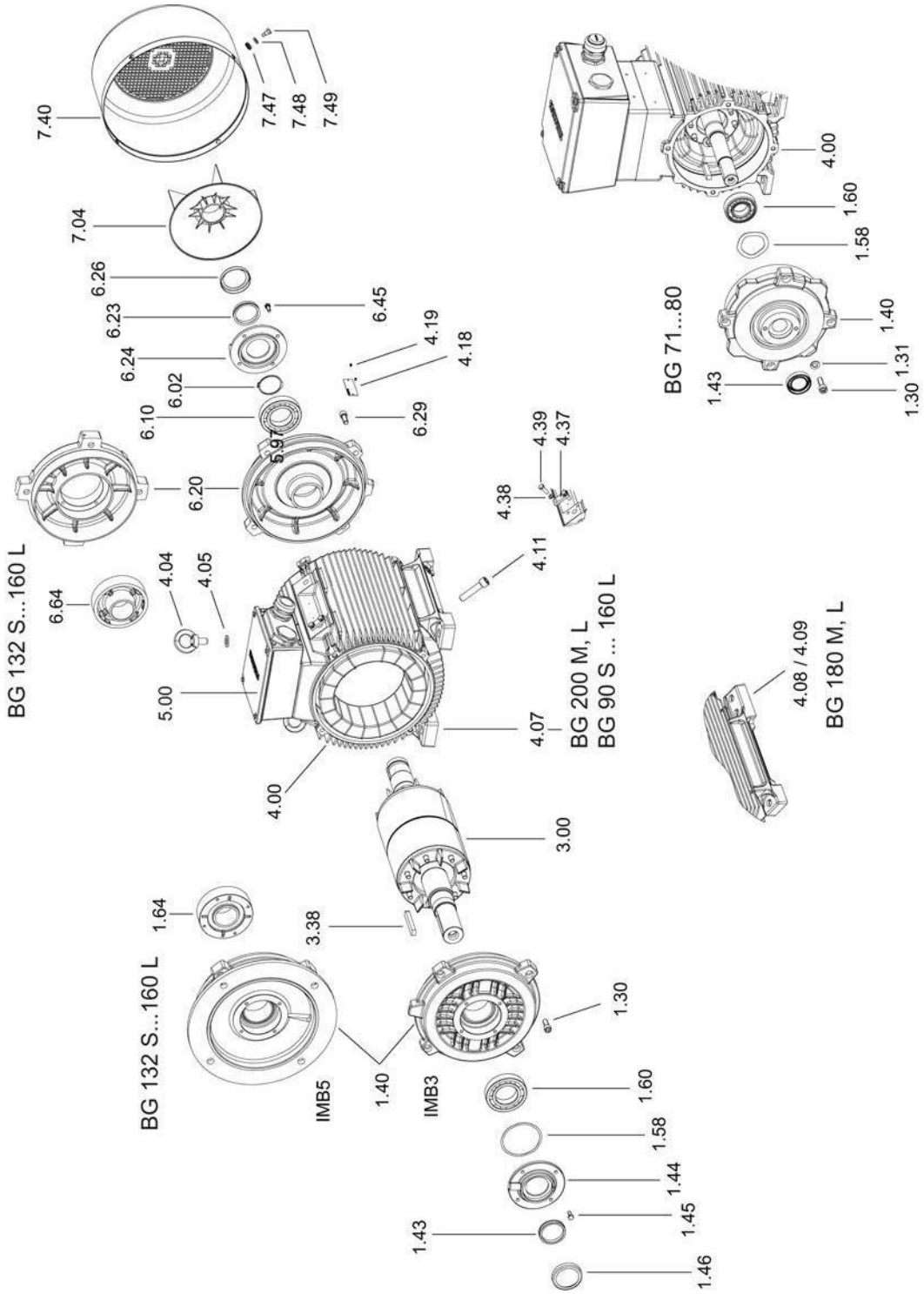
B.1.4 1MA6180 ... 200



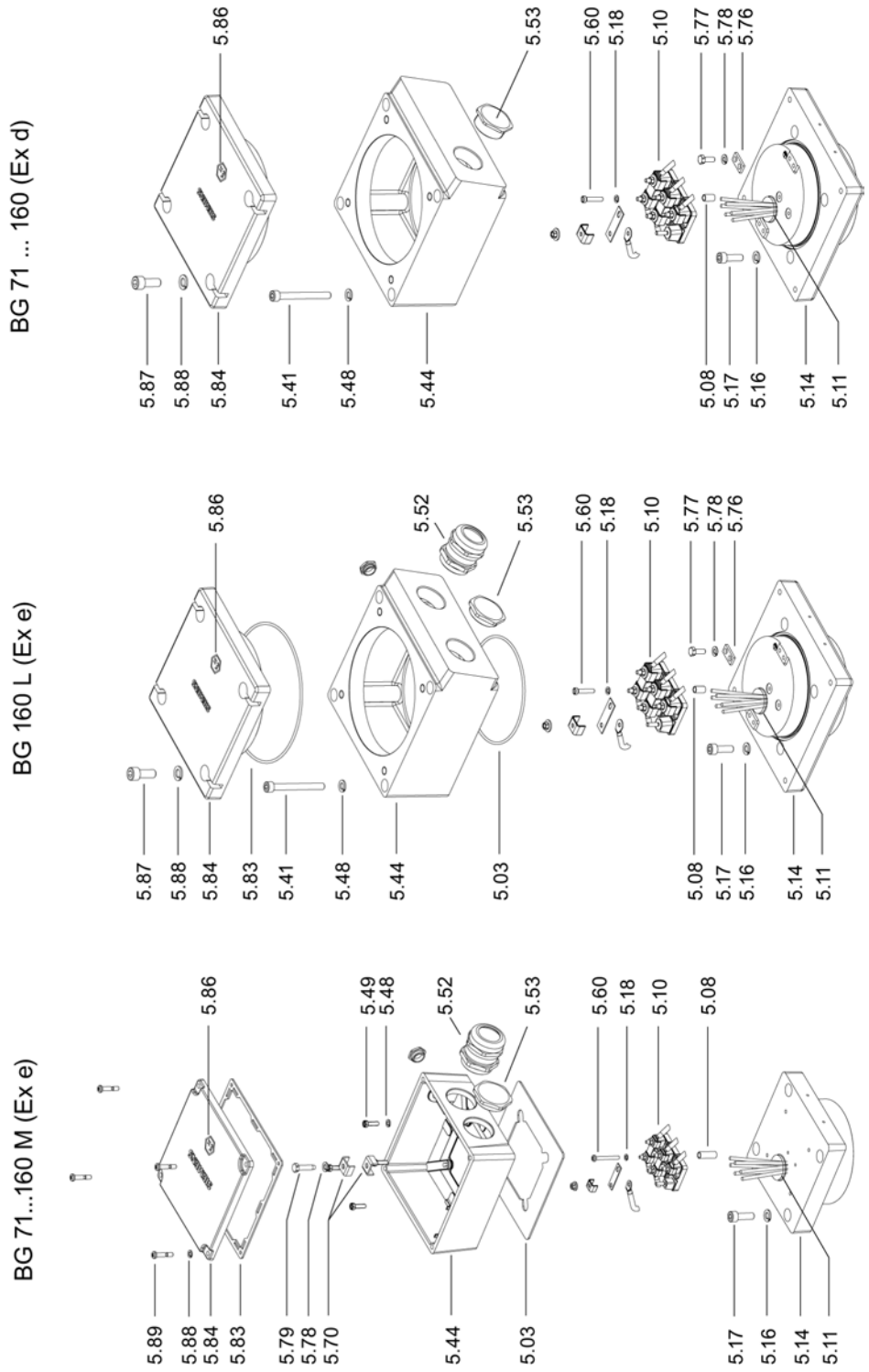
B.1.5 Terminal boxes 1MA6180 ... 200



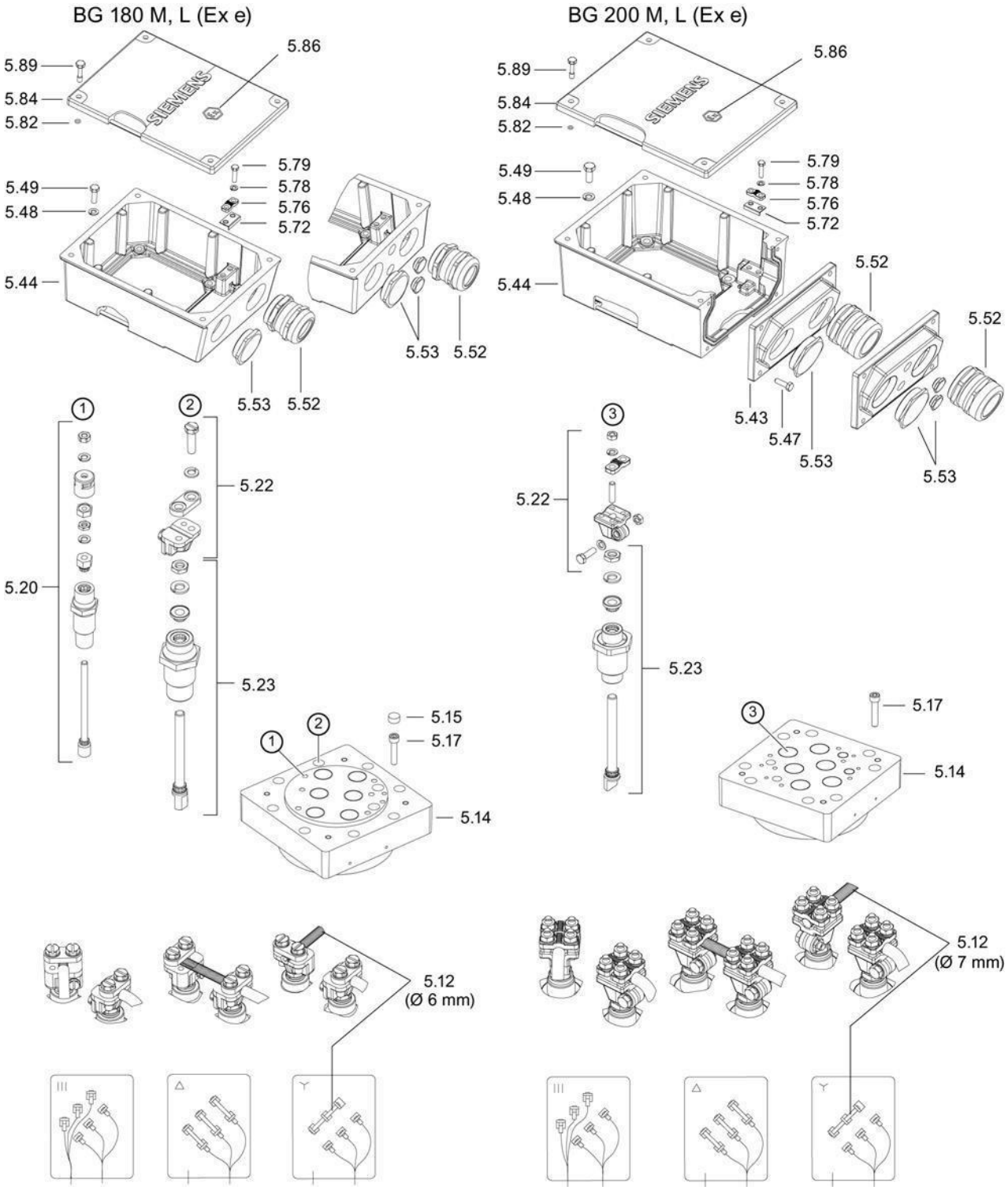
B.1.6 1MJ6070 ... 200



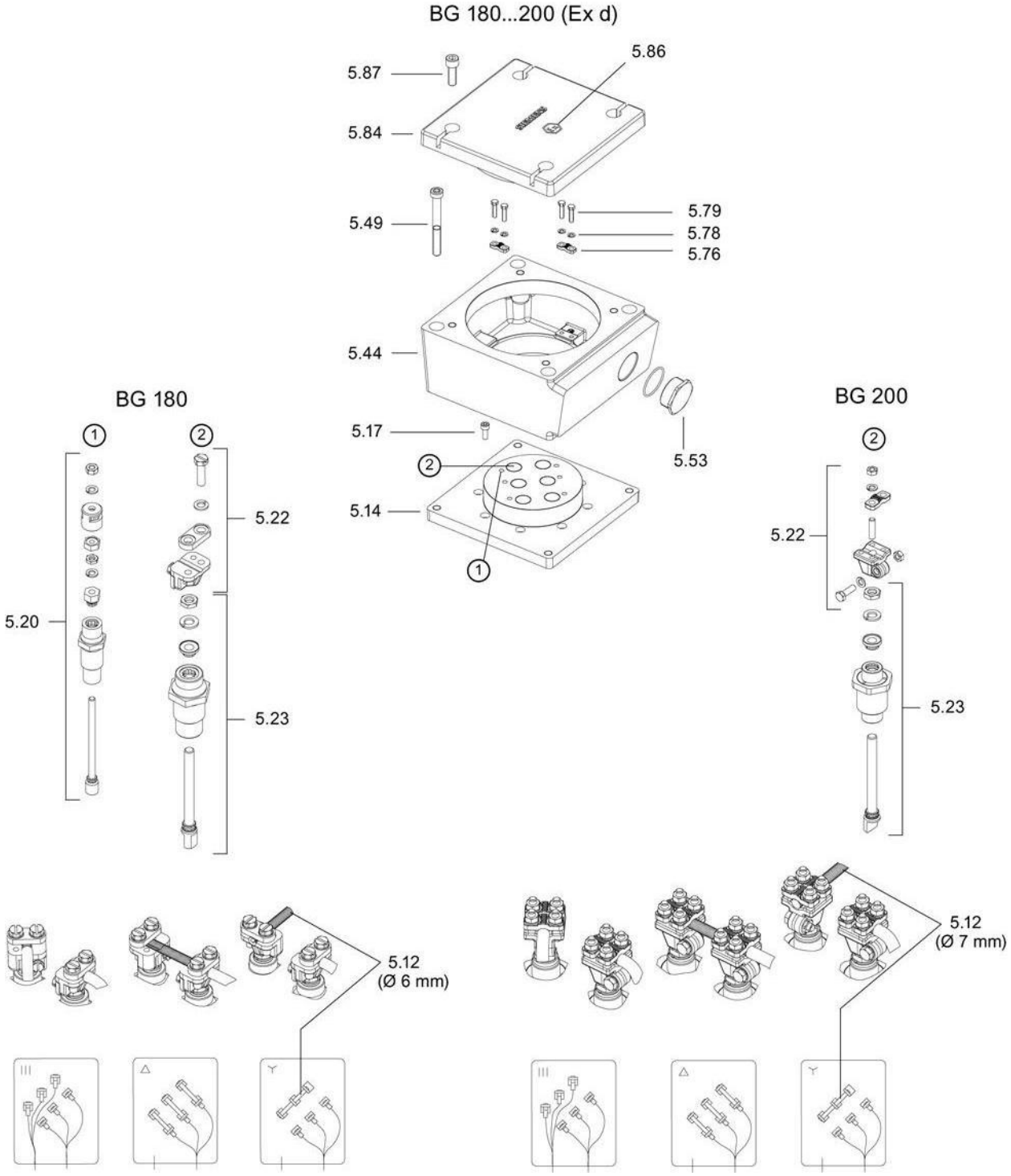
B.1.7 Terminal boxes 1MJ6070 ... 160



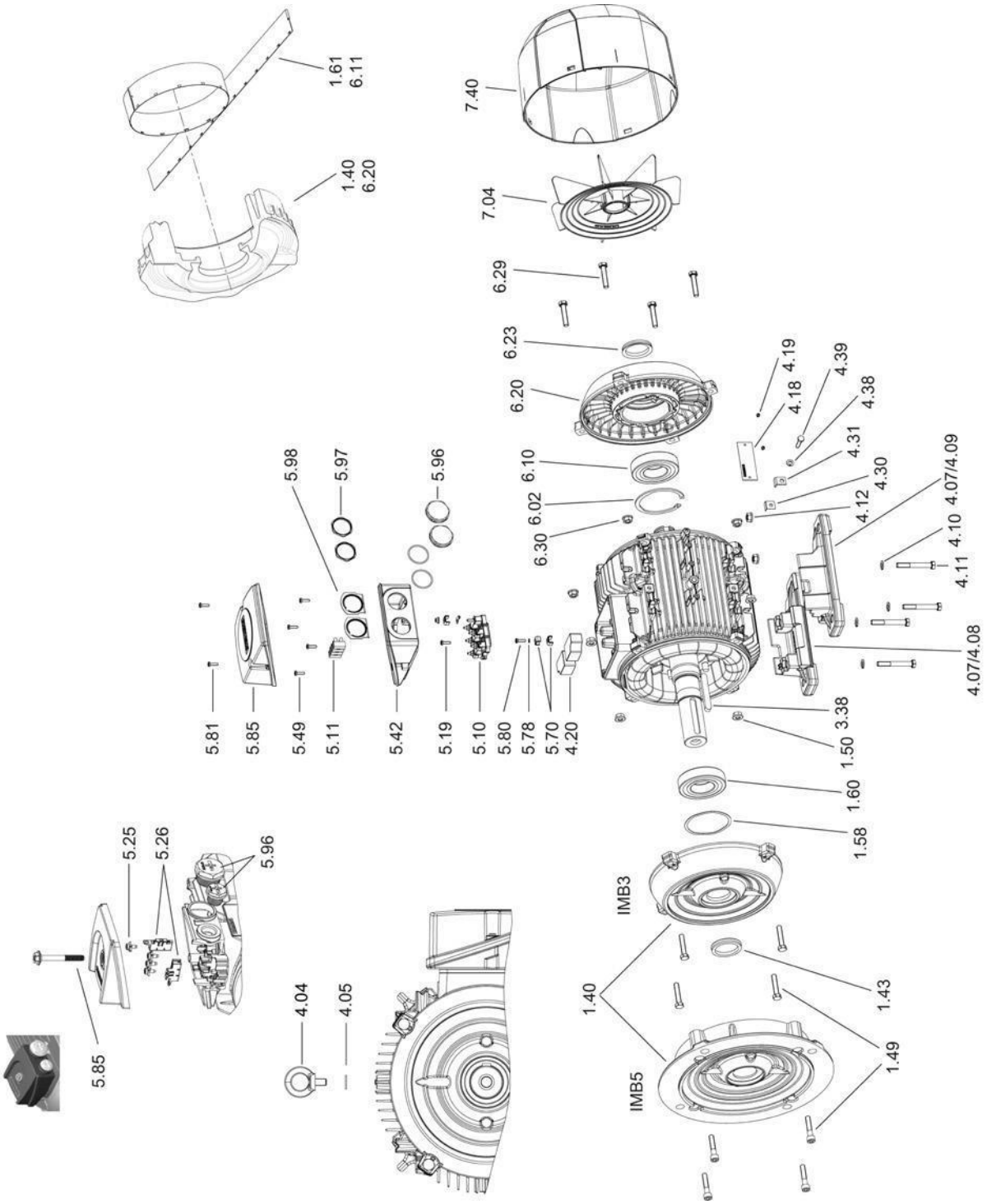
B.1.8 Terminal boxes 1MJ6180 ... 200 (Ex e)



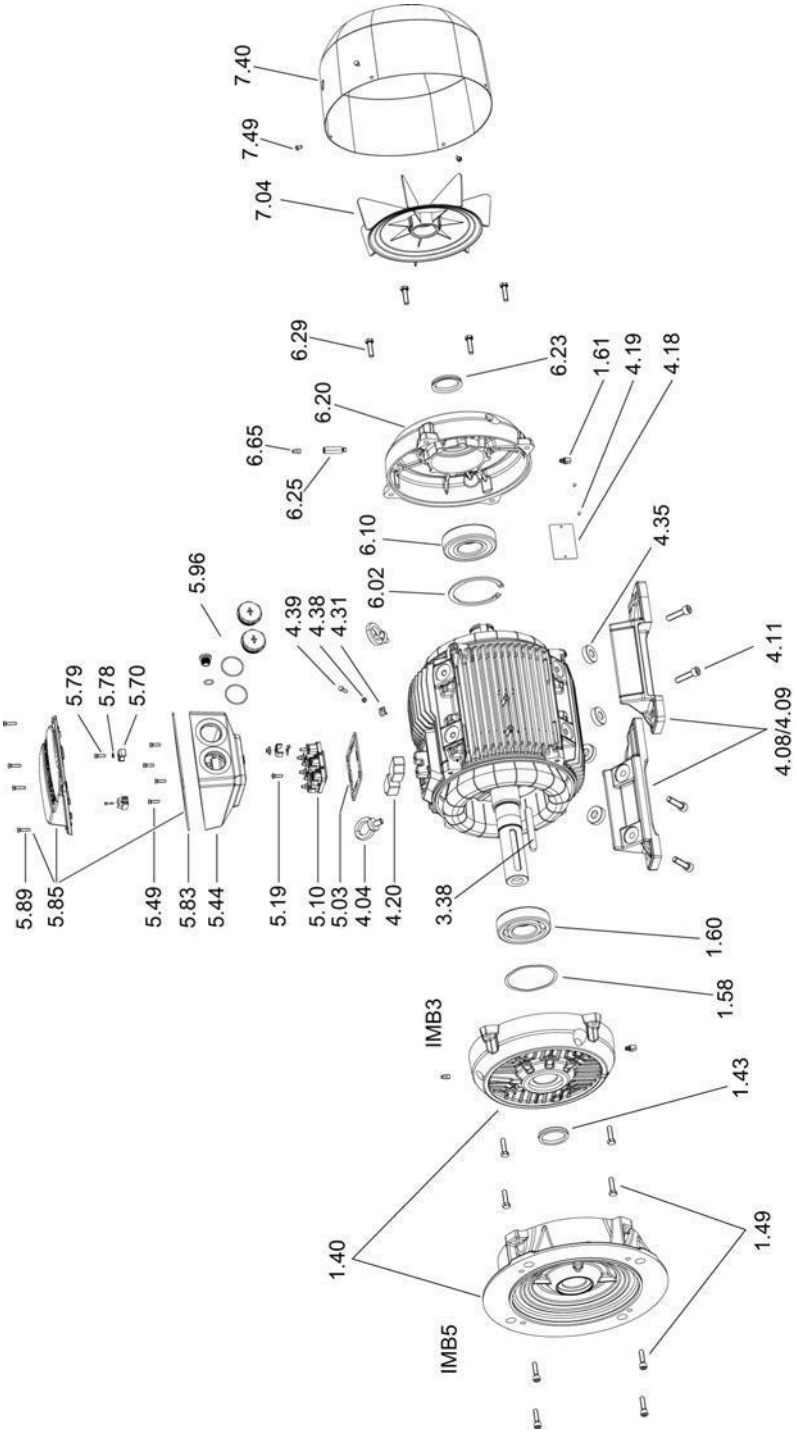
B.1.9 Terminal boxes 1MJ6180 ... 200 (Ex d)



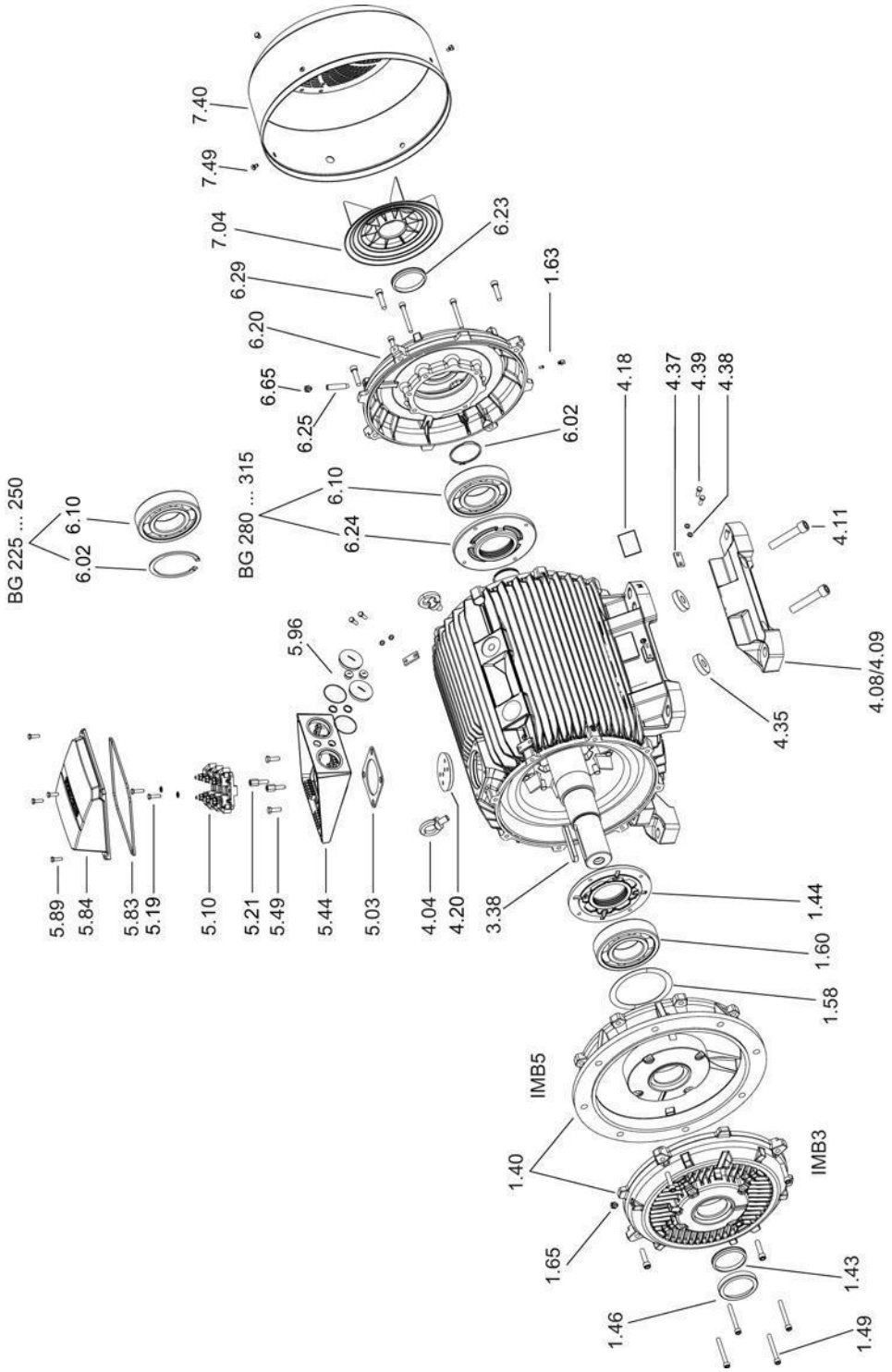
B.1.10 1LE1/ 1MB1 BG 80 ... 160 aluminum



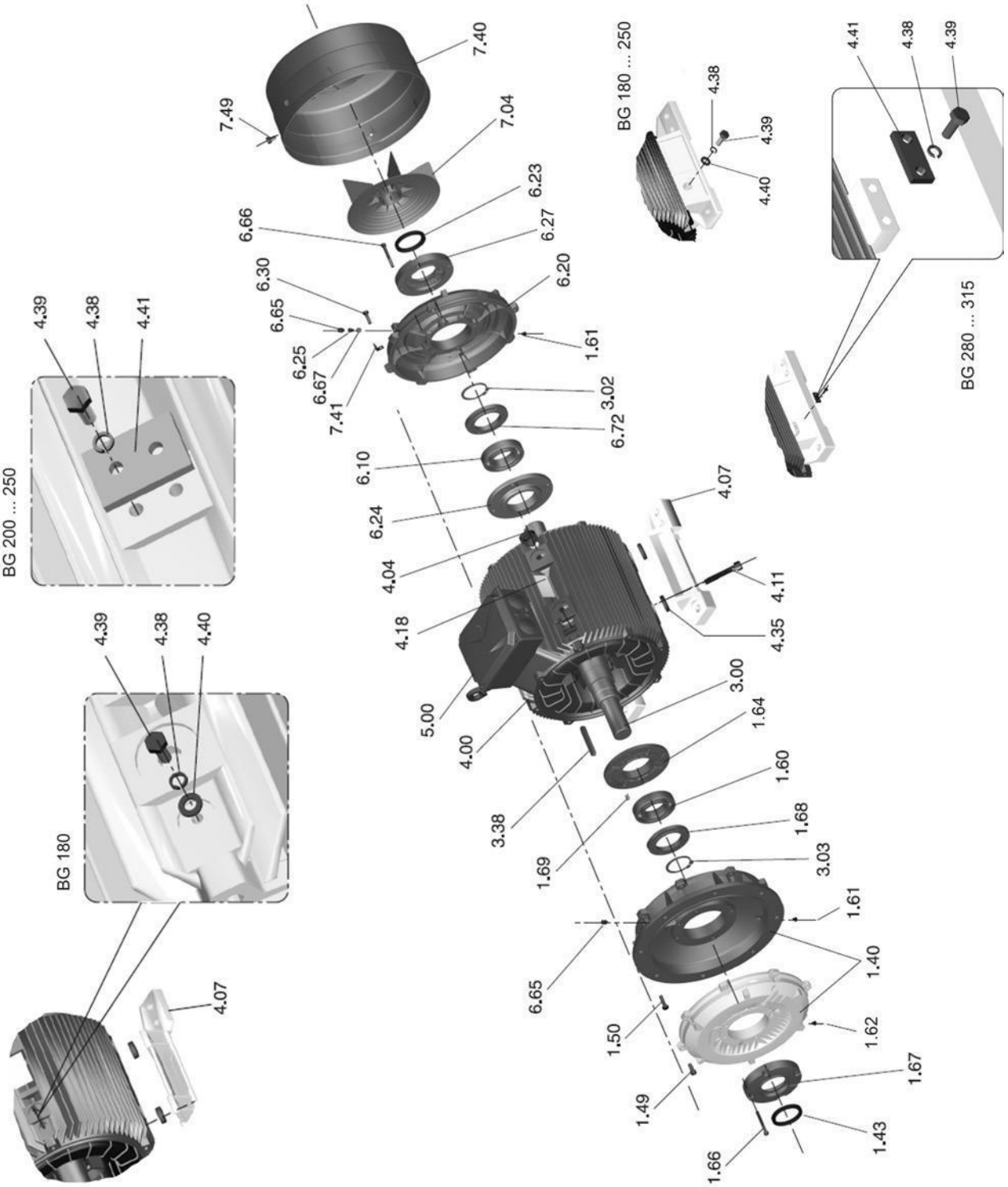
B.1.11 1LE1 / 1MB1 BG 100 ... 200 cast iron



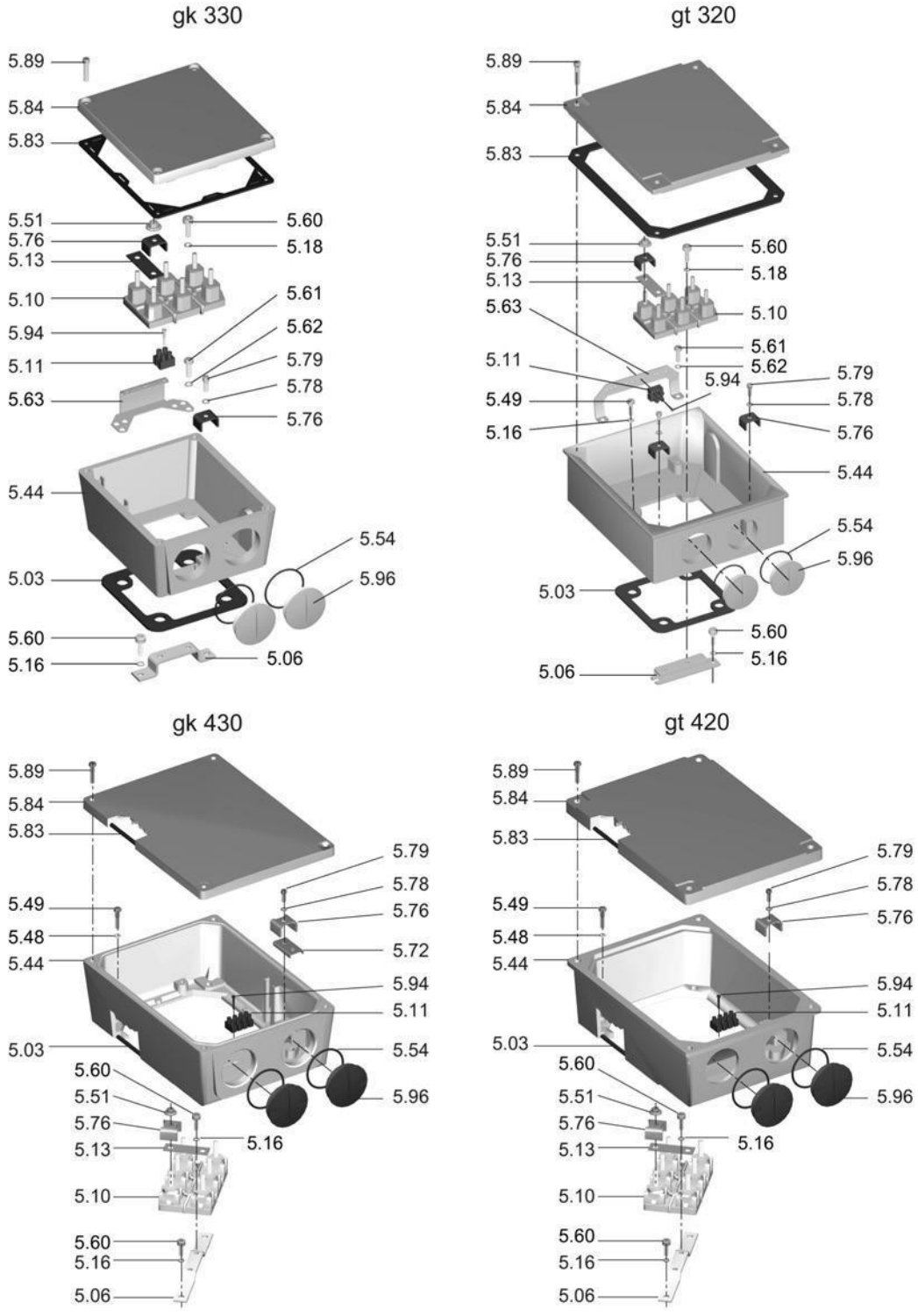
B.1.12 1LE1 / 1MB1 BG 225 ... 315 cast iron



B.1.13 1LG4/6 FS 180 ... 315

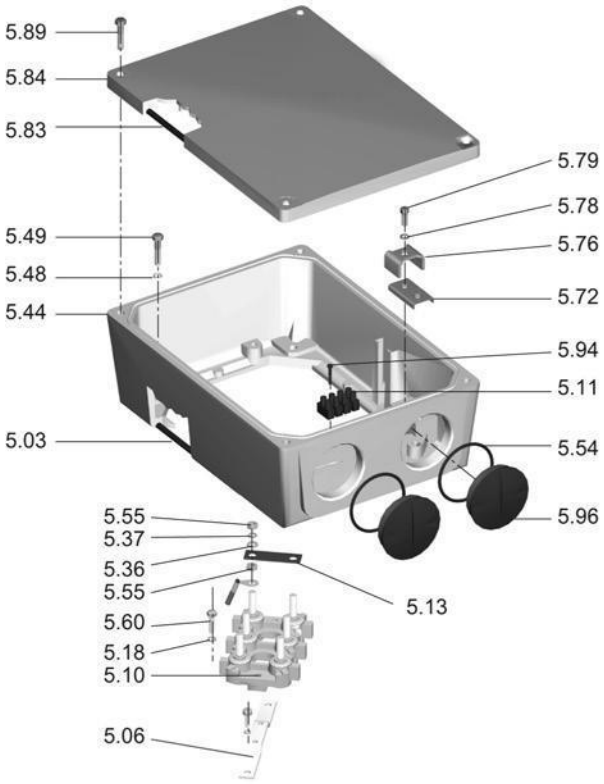


B.1.14 Terminal box gk330, gt320, gk430, gt420

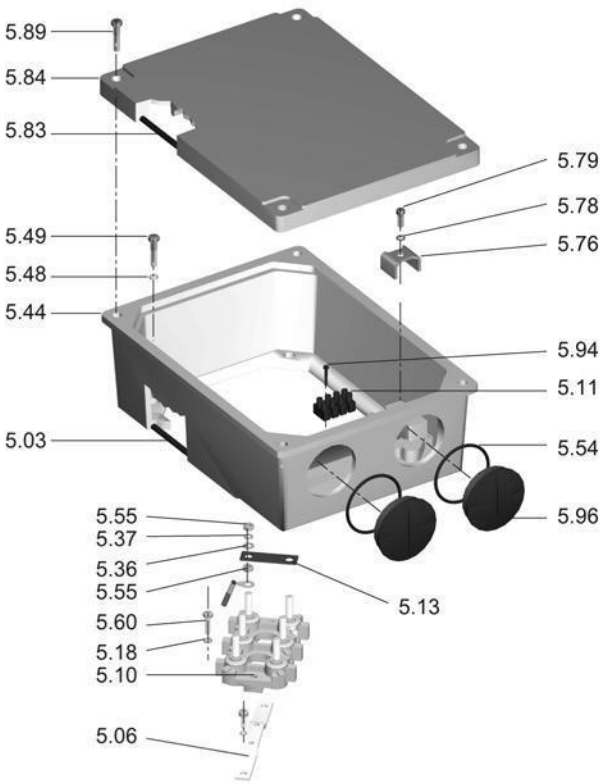


B.1.15 Terminal box gk431, gt421, gt520, gt540

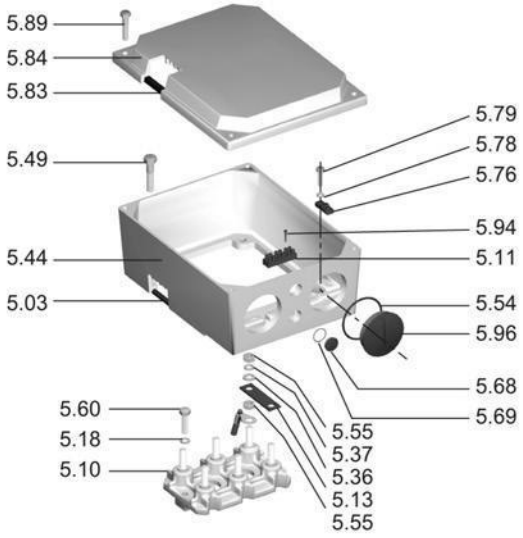
gt 431



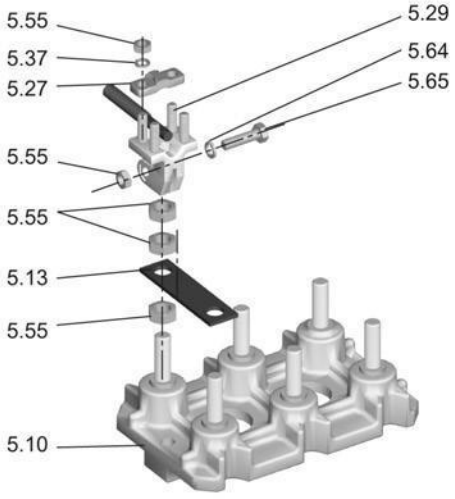
gt 421



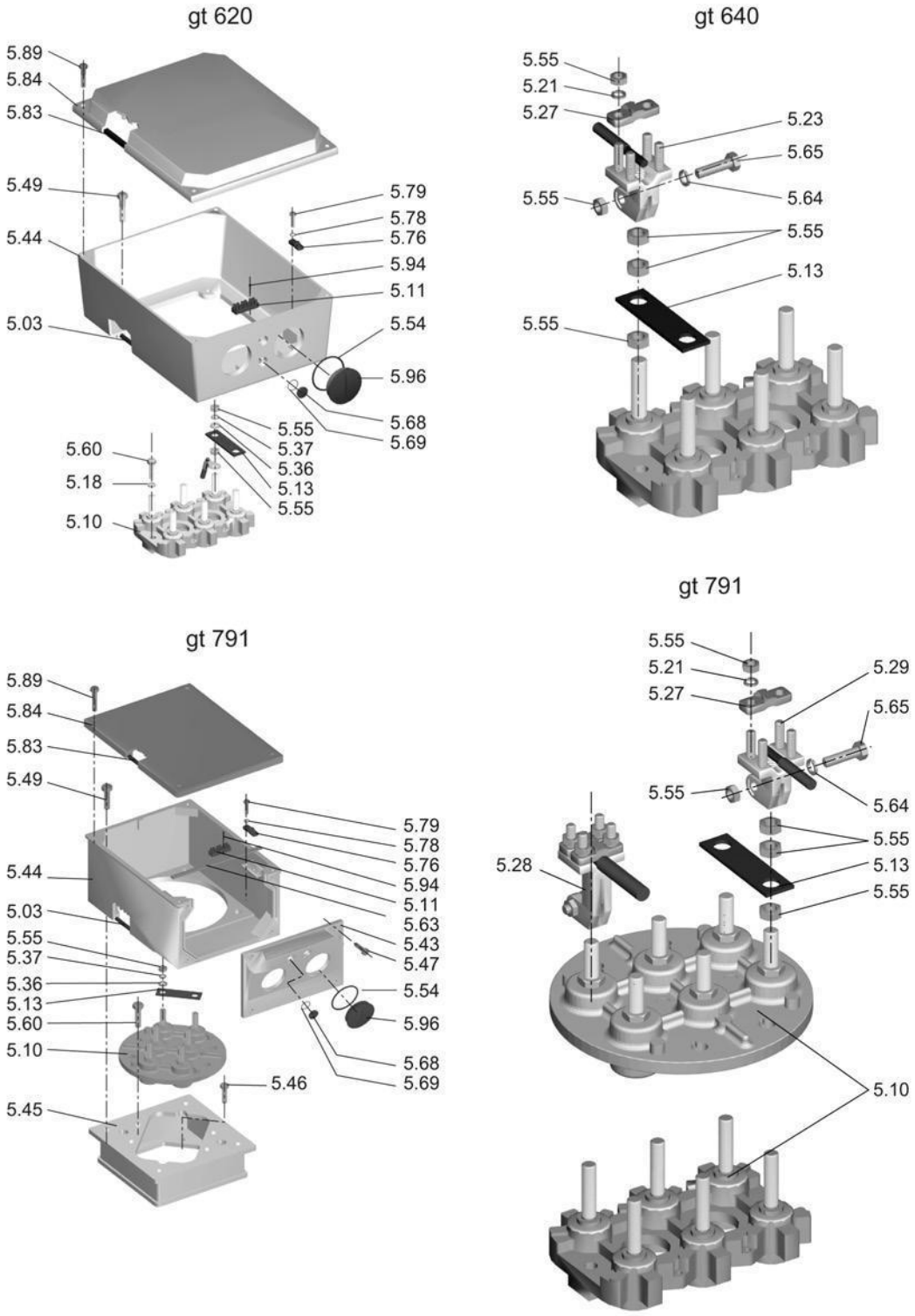
gt 520



gt 540



B.1.16 Terminal box 1LG4/6 gt620, gt640, gt791



Glossary

AS

Drive end (DE)

BA

Operating instructions

CE

CE marking

Code F

Balanced with whole featherkey (full)

Code H

Balanced with half featherkey (half)

CSA

Canadian Standard Association

CSA E

Canadian Standard Association Energie Efficiency Verification

CT

Coolant temperature

DE

Drive end (D end of shaft)

EAC

Zollunion Eurasien - Eurasian Customs Union

EC type examination certificate

Evidence of a machine certified by an inspection body

EMC

Electromagnetic compatibility

Ex

Codes for explosion-protected equipment

GOST

Gosudarstwenny Standart

IC

International Cooling (standard)

IM

International mounting standard design

Internet

www.siemens.com/motors

IP

Degree of protection

ISPM

International Standards for Phytosanitary Measures

N code

Balanced without featherkey (non2)

NDE

Non-drive end

NE/NDE

Non-drive end

SH

Shaft height

UL

Underwriters Laboratories

VIK

Verband der industriellen Energie- und Kraftwirtschaft e.V. (German Association of Industrial Energy Users and Self-Generators)

Zone 1

Atmosphere: Gas; Danger level: Occasional danger; Type of protection: Increased Safety "e" + Flameproof Enclosure "d"

Zone 2

Atmosphere: Gas; Danger level: Infrequent and short-term danger; Type of protection: Non-sparking "n"

Zone 21

Atmosphere: Dust; Danger level: Occasional danger; Type of protection: Protection by enclosure "t"; device protection level "Db"

Zone 22

Atmosphere: Dust; Danger level: Infrequent and short-term danger; Type of protection: Protection by enclosure "t"; device protection level "Dc"

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P.O. Box 48 48
90026 NUREMBERG
GERMANY

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SIEMENS

Data sheet for three-phase Squirrel-Cage-Motors

MLFB-Ordering data: **1MB1021-0EB42-2KA4-Z** **II 3D Ex tc IIIB T 120°C Dc**
S03

Motor type: **1AV2094B**
Client order no.:
Order no.:
Offer no.:
Remarks:

Item no.:
Consignment no.:
Project:

TELESCOPIC CHUTE:
M.SP-5612A
M.SP-5612B

U [V]	Δ / Y	f [Hz]	P [kW]	P [hp]	I [A]	n [1/min]	M [Nm]	NOM. EFF at ... load [%] 4/4	3/4	2/4	Power factor at ... load 4/4	3/4	2/4	I_A/I_N I_I/I_N	M_A/M_N T_I/T_N	M_K/M_N T_B/T_N	IE-CL
230	Δ	50	1.50	- / -	5.80	1435	10.0	82.8	83.5	82.2	0.79	0.71	0.58	6.4	2.6	3.4	IE2
400	Y	50	1.50	- / -	3.30	1435	10.0	82.8	83.5	82.2	0.79	0.71	0.58	6.4	2.6	3.4	IE2
460	Y	60	1.75	- / -	3.30	1730	9.7	84.0	85.0	84.0	0.79	0.73	0.61	6.7	2.5	3.4	IE2
460	Y	60	1.50	- / -	3.00	1745	8.2	84.0	84.0	81.9	0.75	0.67	0.54	7.5	2.9	4.0	IE2
IM B14 / IM 3601			FS 90 L		16 kg	IP55	CC032A	IEC/EN 60034			IEC, DIN, ISO, VDE, EN						

Mechanical data

Sound pressure level 50Hz/60Hz (load)	56 dB(A)	58 dB(A)
Moment of inertia	0.0036 kg m²	
Bearing DE | NDE	6205 2Z C3	6004 2Z C3
Bearing lifetime	40000 h	
Lubricants	Esso Unirex N3	
Regreasing device	No	
Grease nipple	- / -	
Type of bearing	Preloaded bearing DE	
Condensate drainage holes	No	
External earthing terminal	Yes (standard)	
Vibration class	A	
Insulation	155(F) to 130(B)	
Duty type	S1	
Direction of rotation	bidirectional	
Frame material	aluminum	
Data of anti condensation heating	-/-	
Coating (paint finish)	Special paint finish, resistant to salt-laden air C4	
Color, paint shade	RAL7030	
Motor protection	(A) without (Standard)	
Method of cooling	IC411 - self ventilated, surface cooled	

Environmental conditions

Ambient temperature	-20 °C - +40 °C
Altitude above sea level	1000 m

Terminal box

Terminal box position	top
Material of terminal box	Aluminium
Type of terminal box	TB1 E00

1LE10/1MB10/1PC1					
80 and 90 [5]	TB1D00/TB1D10	3	M3.5	1.5/2.5 with cable lug	M16 x 1.5: 4.5 ... 10; M25 x 1.5: 9 ... 17 / 1 x M25 x 1.5/ 1 x M16 x 1.5 + 1 x M25 x 1.5
80 and 90	TB1E00/TB1E10	6	M4	1.5/2.5 with cable lug	M16 x 1.5: 4.5 ... 10; M25 x 1.5: 9 ... 17 / 1 x M25 x 1.5/ 1 x M16 x 1.5 + 1 x M25 x 1.5

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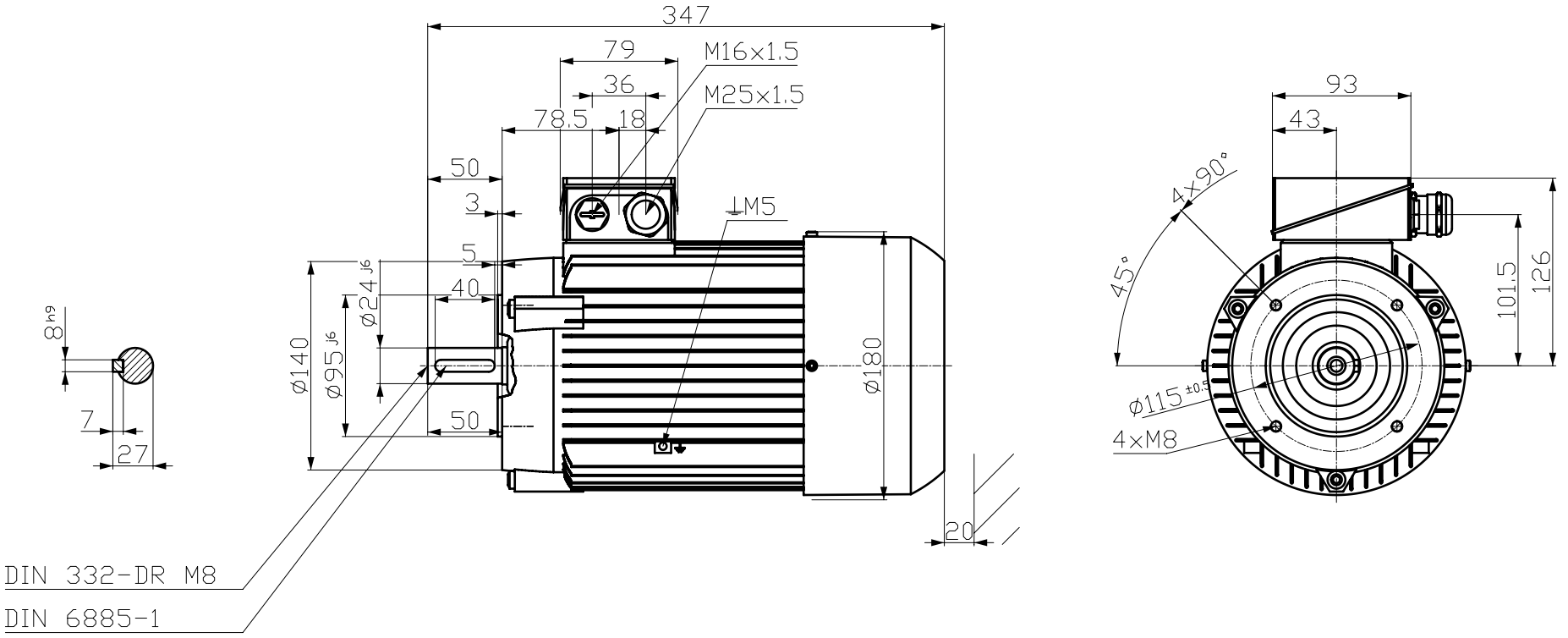

Tolerance	Surface	Material	Weight: -	Scale: mm
1MB1021-0EB42-2KA4-Z S03	Author Creator: DTK Approval Department Change Order	Dimensional drawing Maßzeichnung		
SIEMENS	Doc State: 15.2.18 Revision: Index: RS	MLFB	Doc Type	
		Item No	Paper Size: A3	
		Doc No	1st Language: en 2nd Language: de	
© Siemens AG 2018	Project No: -	Ref No: -	Sheet: 1 of 1	

SIEMENS

Data sheet for three-phase Squirrel-Cage-Motors

MLFB-Ordering data: **1MB1513-0EA02-2FA4-Z** **S04+Y56**

II 2D Ex tb IIIC T 120°C Db

TELESCOPIC CHUTE:
M.FC-5602A
M.FC-5602B

Motor type: **1CV3090A**

Client order no.:
Order no.:
Offer no.:
Remarks:

Item no.:
Consignment no.:
Project:

U [V]	Δ / Y	f [Hz]	P [kW]	P [hp]	I [A]	n [1/min]	M [Nm]	NOM. EFF at ... load [%] 4/4	3/4	2/4	Power factor at ... load 4/4	3/4	2/4	I_A/I_N I_I/I_N	M_A/M_N T_I/T_N	M_K/M_N T_B/T_N	IE-CL
230	Δ	50	1.50	- / -	5.20	2910	4.9	84.2	84.6	83.2	0.86	0.80	0.69	8.1	2.7	4.2	IE3
400	Y	50	1.50	- / -	3.00	2910	4.9	84.2	84.6	83.2	0.86	0.80	0.69	8.1	2.7	4.2	IE3
460	Y	60	1.75	- / -	2.95	3510	4.8	85.5	85.6	84.0	0.87	0.82	0.72	8.7	2.6	4.2	IE3
460	Y	60	1.50	- / -	2.60	3525	4.1	85.5	84.8	82.3	0.84	0.77	0.66	9.8	3.1	4.9	IE3
IM B5 / IM 3001			FS 90 S		26 kg	IP65	CC032A	IEC/EN 60034			IEC, DIN, ISO, VDE, EN						

Mechanical data

Sound pressure level 50Hz/60Hz (load)	65 dB(A)	69 dB(A)
Moment of inertia	0.0021 kg m²	
Bearing DE | NDE	6205 2Z C3	6204 2Z C3
Bearing lifetime	40000 h	
Lubricants	Esso Unirex N3	
Regreasing device	No	
Grease nipple	- / -	
Type of bearing	Preloaded bearing DE	
Condensate drainage holes	No	
External earthing terminal	Yes (standard)	
Vibration severity grade	A	
Insulation	155(F) to 130(B)	
Duty type	S1	
Direction of rotation	bidirectional	
Frame material	cast iron	
Data of anti condensation heating	-/-	
Coating (paint finish)	Special paint finish for offshore applications C5	
Color, paint shade	RAL6029	
Motor protection	(A) without (Standard)	
Method of cooling	IC411 - self ventilated, surface cooled	

Terminal box

Terminal box position	top
Material of terminal box	cast iron
Type of terminal box	TB1 D01

Terminal box type TB1D00

71 ... 90	TB1D01	6	M4	1.5/2.5 with cable lug	M16 x 1.5: 4.5 ... 10 M25 x 1.5: 9 ... 17	1 x M16 x 1.5 + 1 x M25 x 1.5 –

Environmental conditions

Ambient temperature	-20 °C - +40 °C
Altitude above sea level	1000 m

1LE15/1LE16/1MB15/1MB16					
1LE15	71 ... 90	TB1D01	2 entries complete with sealing plugs, thread in terminal box, terminal box mounted and screwed in place	Cast iron	• Cable lug • Rigid cable, no cable lug

Technical data are subject to change! There may be discrepancies between calculated and rating plate values.

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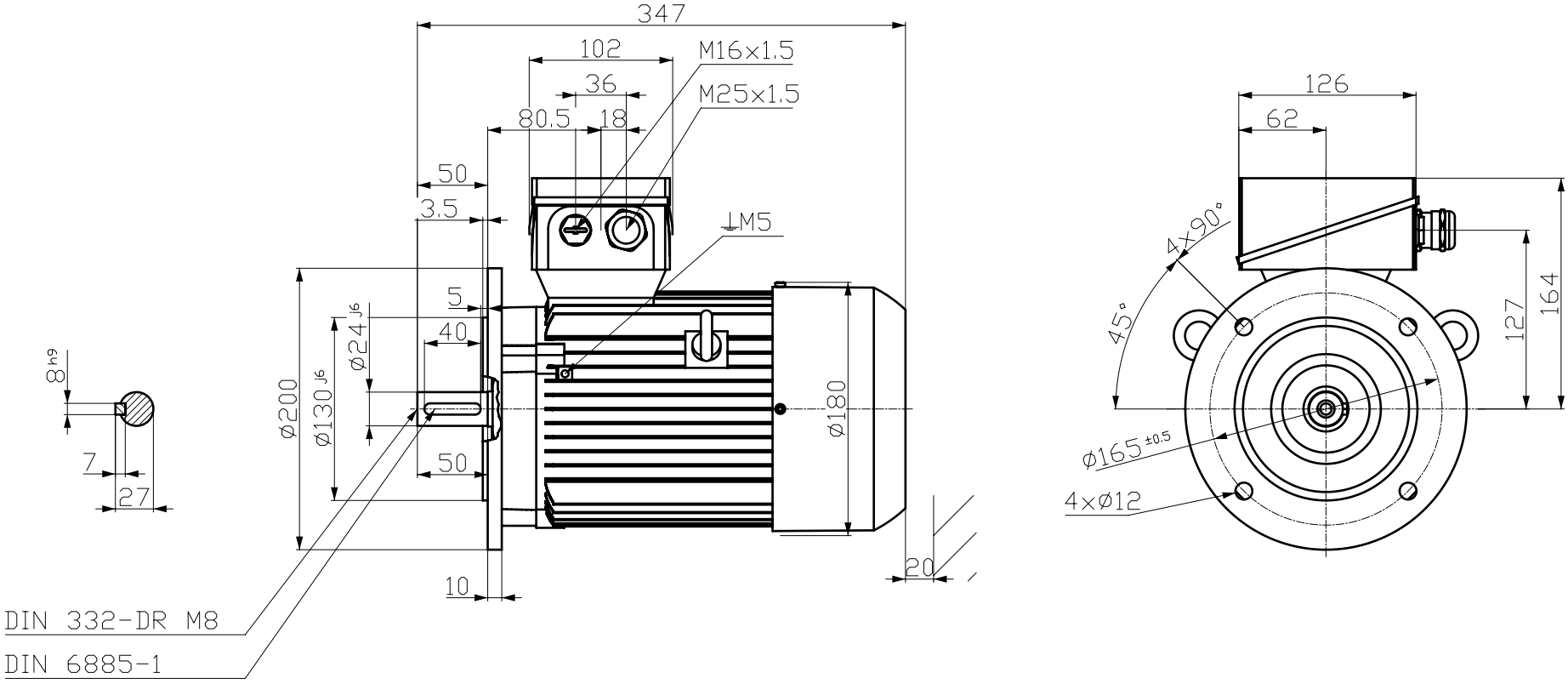

Tolerance	Surface	Material	Weight: -	Scale: mm
1MB1513-0EA02-2FA4-Z S04+Y56	Author Creator: DTK Approval Department Change Order	Dimensional drawing Maßzeichnung		
SIEMENS	Doc State: 1.3.18 Revision / Index / RS	MLFB	Doc Type	
		Item No	Paper Size: A3	
		Doc No	1st Language: en 2nd Language: de	
© Siemens AG 2018	Project No: -	Ref No: -	Sheet: 1 of 1	

CHIARAVALLI
TRASMISSIONI S.p.A.

CHM WORM GEARED MOTORS AND WORM GEAR UNITS

ACCESSORIES FOR GEAR BOXES AND ELECTRIC MOTORS

01.06

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WORM GEARED MOTORS AND WORM GEAR UNITS

CHME

CHM

CHMR

CHMRE

CHIARAVALLI TRASMISSIONI S.p.A.

INTRODUCTION

The worm gears made by Chiaravalli Trasmissioni SpA are square and are considerably versatile for mounting. The machining of the components, carried out using numeric control machines, guarantees maximum precision for the restricted tolerances, producing a product that will remain reliable over time. The groups are constructed with aluminium housings from sizes 025 to 090, while the sizes 110 and 130 are made from cast iron.
All of the bodies are painted with RAL 9022 aluminium colour to protect the parts from aging and to give better protection against micro-blowholes that may be present in the aluminium.
The gears are supplied with at least one filling plug that is also used during testing to check for possible leaks. A connection flange allows two gears to be combined in order to obtain high gear ratios.
Four sizes of CHTPC pre-stage gears are available to pair with the gears; these are also constructed in aluminium and are painted like the worm gears.
All of the groups are supplied with a lubricant whose characteristics are described in the following table.

LUBRICATION

	CHM 025/090	CHM 110/130			CHTPC
Lubricant	Synthetic	Mineral	Mineral	Mineral	Synthetic
°C Ambient	-25°C/+50°C	-25°C/+50°C	-5°C/+40°C	-15°C/+25°C	-25°C/+50°C
ISO	VG320	VG320	VG460	VG220	VG320
AGIP	TELIUM VSF 320	BLASIA 320	BLASIA 460	BLASIA 220	TELIUM VSF 320
SHELL	TIVELA OIL SC 320	OMALA OIL 320	OMALA OIL 460	OMALA OIL 220	TIVELA OIL SC 320
IP	TELIUM VSF	MELLANA OIL 320	MELLANA OIL 460	MELLANA OIL 220	TELIUM VSF

LUBRICATION

The size 025 to 090 gears are supplied complete with synthetic oil and therefore do not require any maintenance. The size 110 and 130 gears are supplied with the quantity of mineral oil foreseen for the B3 assembly position. It is the client's responsibility to adapt the quantity of oil to the assembly position and in addition, to substitute the filling plug, supplied closed for transport reasons, with the one equipped with a bleed attached to the gear. If the bleed plug is not installed it may create internal pressure with a consequent leakage of oil from the gasket rings. For the sizes 110 and 130 we recommend that the oil is changed after the running in period, approx. 300 working hours.

QUANTITY OF OIL IN LITRES

CHM	025	030	040	050	063	075	090	110	130	CHTPC	63	71	80	90
B3	0.02	0.04	0.08	0.15	0.30	0.55	1	3	4.5		0.05	0.07	0.15	0.16
B8	0.02	0.04	0.08	0.15	0.30	0.55	1	2.2	3.3		0.05	0.07	0.15	0.16
B6/B7	0.02	0.04	0.08	0.15	0.30	0.55	1	2.5	3.5		0.05	0.07	0.15	0.16
V5	0.02	0.04	0.08	0.15	0.30	0.55	1	3	4.5		0.05	0.07	0.15	0.16
V6	0.02	0.04	0.08	0.15	0.30	0.55	1	2.2	3.3		0.05	0.07	0.15	0.16

MOTOR MOUNTING FLANGES

Gears that are supplied with mounting flanges must be coupled with motors whose shaft and flange tolerances correspond to a "normal class" of quality in order to avoid vibration and forcing of the input bearing. Motors supplied by Chiaravalli guarantee that this requirement is fulfilled. For ease of consultation, the correspondence of the size of the B5 and B14 motor with the sizes of the shaft and the motor connection flange are shown in the following table.
Remember that, as the motor connection flanges are separate from the body it is also possible to have a shaft / flange combination that does not correspond to the table, e.g. 19/140, thereby offering adaptability for other non-unified models such as the brushless or direct current types.

PAM	056	063	071	080	090	100	112	132
B5	9/120	11/140	14/160	19/200	24/200	28/250	28/250	38/300
B14	9/80	11/90	14/105	19/120	24/140	28/160	28/160	38/200

MODELS CHM - CHMR - CHME - CHMRE

TYPE (1)	SIZE (2)	VERSION (3)	FLANGE POS. (4)	i	M.M.F.	MOUNT. POS. (4)
CHM	025	FA	1	7.5		U UNIVERSAL
	030	FB	2	10		B3
CHMR	040	FC		15		B8
	050	FD		20		B6
CHME	063	FE		25		B7
	075			30		V5
CHMRE	090			40		V6
	110			50		
	130			60		
				80		
				100		

See page 4

EXAMPLE ORDER

CHM	090	FA (5)	2 (5)	30	90 B14	V5

If the motor is also required, please specify:

Size es. 90 L4

Power es. Kw 1.5

Poles es. 4

Voltage es. V230/400

Frequency es. 50 Hz

Flange es. B 14

N.B. From size 25 to 63 the gears are always supplied in the Universal position and can therefore be mounted in any position, from size 75 to size 130 if the position required differs from B3 it must be specified.
In particular, in the event that a gear in position B3 is to be mounted in positions V5 or V6, the bearing positioned in the upper side must be lubricated using suitable grease that ensures proper lubrication.
We have tested Tecnolubeseal POLYMER 400/2 grease.

1) see page 1
2) see pages 6 and 7
3) see page 9
4) see page 5
5) lack of instructions indicates that the gear is not equipped with an output flange.

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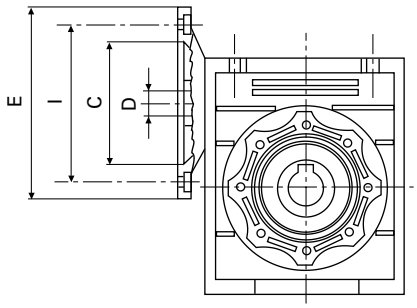
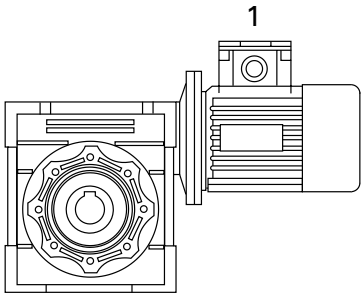
MOTOR MOUNTING FLANGES AVAILABLE



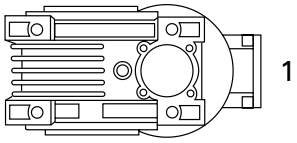
	MMF	C	I	E	7,5	10	15	20	25	30	40	50	60	80	100
					D										
CHM 025	56B14	50	65	80	9	9	9	9	9	9	9	9	9		
CHM 030	63B5	95	115	140	11	11	11	11	11	11	11	11			
	63B14	60	75	90											
	56B5	80	100	120	9	9	9	9	9	9	9	9	9	9	
	56B14	50	65	80											
CHM 040	71B5	110	130	160	14	14	14	14	14	14	14				
	71B14	70	85	105											
	63B5	95	115	140	11	11	11	11	11	11	11	11	11	11	11
	63B14	60	75	90											
	56B5	80	100	120								9	9	9	9
CHM 050	80B5	130	165	200	19	19	19	19	19	19					
	80B14	80	100	120											
	71B5	110	130	160	14	14	14	14	14	14	14	14	14	14	14
	71B14	70	85	105											
	63B5	95	115	140							11	11	11	11	11
CHM 063	90B5	130	165	200	24	24	24	24	24	24					
	90B14	95	115	140											
	80B5	130	165	200	19	19	19	19	19	19	19	19	19		
	80B14	80	100	120											
	71B5	110	130	160							14	14	14	14	14
	71B14	70	85	105											
CHM 075	100/112B5	180	215	250	28	28	28								
	100/112B14	110	130	160											
	90B5	130	165	200	24	24	24	24	24	24	24				
	90B14	95	115	140											
	80B5	130	165	200				19	19	19	19	19	19	19	19
	80B14	80	100	120											
	71B5	110	130	160								14	14	14	14
CHM 090	100/112B5	180	215	250	28	28	28	28	28	28					
	100/112B14	110	130	160											
	90B5	130	165	200	24	24	24	24	24	24	24	24	24		
	90B14	95	115	140											
	80B5	130	165	200							19	19	19	19	19
	80B14	80	100	120											
CHM 110	132B5	230	265	300	38	38	38	38							
	100/112B5	180	215	250	28	28	28	28	28	28	28	28	28		
	110/112B14	110	130	160											
	90B5	130	165	200					24	24	24	24	24	24	24
	80B5	130	165	200										19	19
CHM 130	132B5	230	265	300	38	38	38	38	38	38	38				
	100/112B5	180	215	250					28	28	28	28	28	28	28
	100/112B14	110	130	160											
	90B5	130	165	200										24	24

MOUNTING POSITION

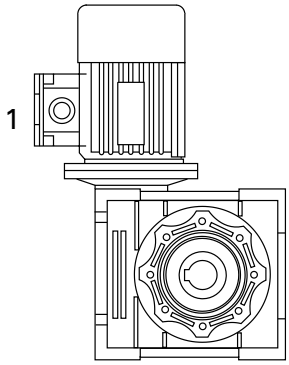
B3



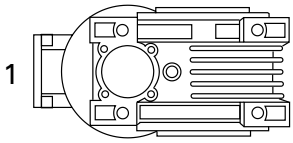
B6



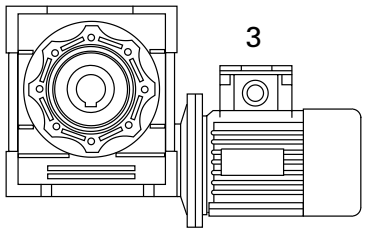
V5



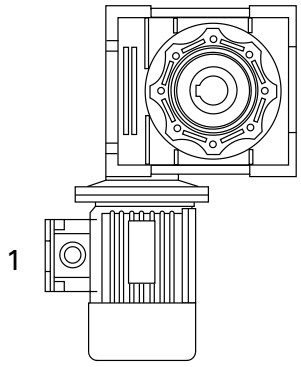
B7



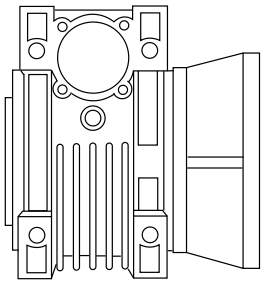
B8



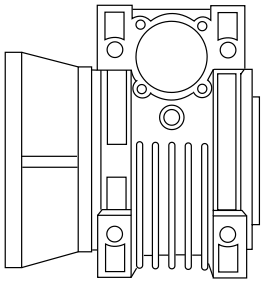
V6

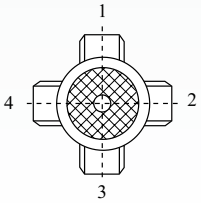


F...1

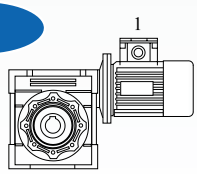


F...2





B3



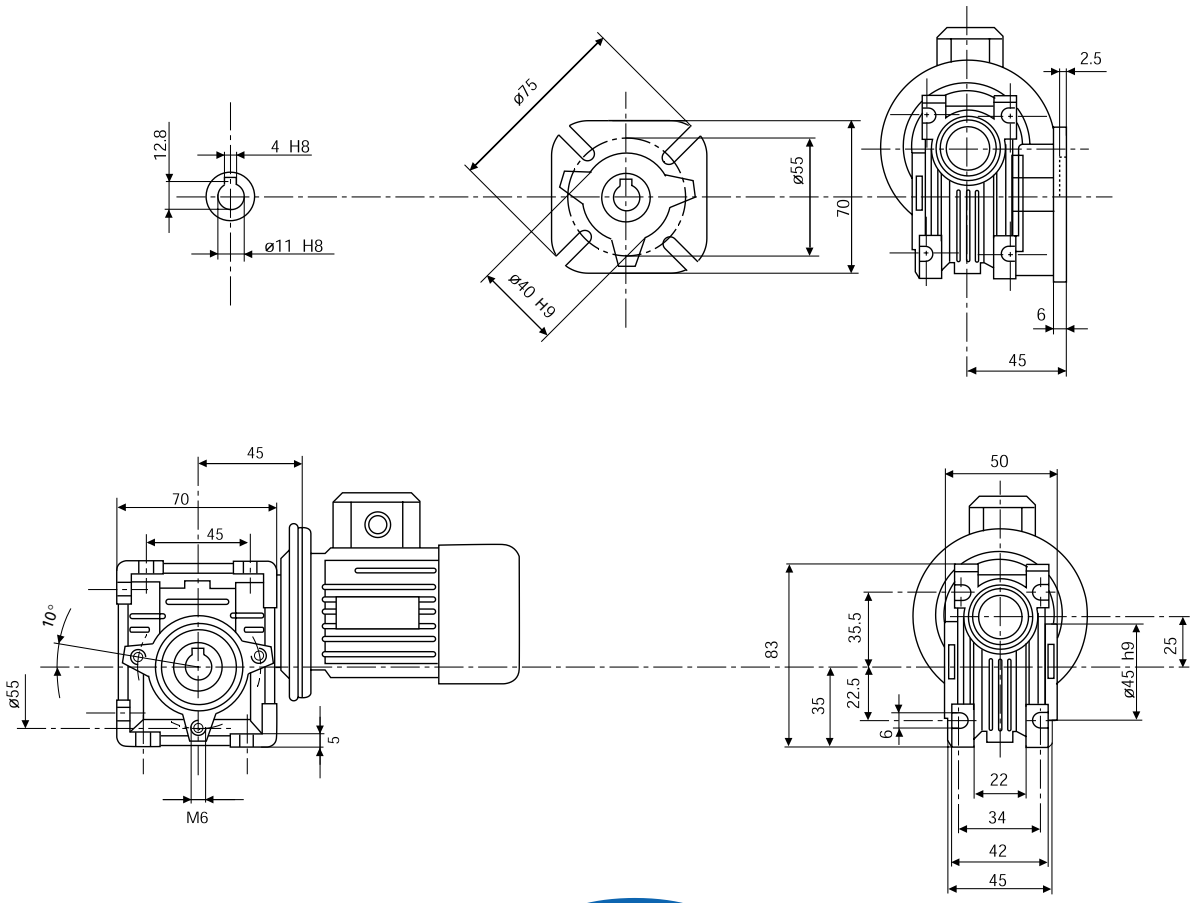
POSITION OF TERMINAL BOX

N.B. The position of the terminal box always refers to the B3 position.

CHM 025 PERFORMANCE WITH 4-POLE MOTORS – 1400 REVS. INPUT

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 025	7.5	186.7	0.09	3.8	2.8
	10	140.0	0.09	5	2.4
	15	93.3	0.09	7.2	1.6
	20	70.0	0.09	9	1.3
	25	56.0	0.09	10	1.0
	30	46.7	0.09	12.3	1.1
	40	35.0	0.09	13	1.0
	50	28.0	0.09	14	0.7
	60	23.3	0.09	14	0.6

CHM 025 DIMENSIONS



CHM 025

Weight 0.7 Kg. excluding motor

CHM PERFORMANCE WITH 4-POLE MOTORS – 1400 REVS. INPUT

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 030	7.5	186.7	0.22	9	2.1
	10	140.0	0.22	11	1.6
	15	93.3	0.22	16	1.0
	20	70.0	0.22	20	0.9
	25	56.0	0.18	20	1.0
	30	46.7	0.18	22	0.9
	40	35.0	0.18	21	0.8
	50	28.0	0.18	19	0.8
	60	23.3	0.09	18	0.9
	80	17.5	0.09	13	0.9

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 075	7.5	186.7	4.00	180	1.0
	10	140.0	4.00	237	0.8
	15	93.3	3.00	260	0.8
	20	70.0	1.50	167	1.2
	25	56.0	1.50	204	1.0
	30	46.7	1.50	232	1.0
	40	35.0	1.10	214	1.0
	50	28.0	0.75	176	1.2
	60	23.3	0.75	199	1.0
	80	17.5	0.55	178	1.1
	100	14.0	0.55	203	0.9

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 040	7.5	186.7	0.55*	22	1.6
	10	140.0	0.55*	30	1.4
	15	93.3	0.55*	44	0.9
	20	70.0	0.55*	38	1.0
	25	56.0	0.37	45	0.9
	30	46.7	0.37	52	0.8
	40	35.0	0.25	43	0.9
	50	28.0	0.22	44	0.9
	60	23.3	0.18	42	0.8
	80	17.5	0.18	36	0.8
	100	14.0	0.18	35	0.8

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 090	7.5	186.7	4.00	184	1.5
	10	140.0	4.00	242	1.3
	15	93.3	4.00	351	1.1
	20	70.0	4.00	456	0.8
	25	56.0	3.00	417	0.8
	30	46.7	3.00	478	0.9
	40	35.0	1.50	306	1.2
	50	28.0	1.50	367	1.0
	60	23.3	1.50	421	0.8
	80	17.5	0.75	257	1.1
	100	14.0	0.75	300	0.9

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 050	7.5	186.7	0.75	33.3	2.0
	10	140.0	0.75	43.9	1.6
	15	93.3	0.75	62.6	1.2
	20	70.0	0.75	80	0.9
	25	56.0	0.55	70	1.0
	30	46.7	0.55	80	1.0
	40	35.0	0.37	67	1.1
	50	28.0	0.37	78	0.9
	60	23.3	0.37	87	0.8
	80	17.5	0.25	70	0.9
	100	14.0	0.18	59	0.9

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 110	7.5	186.7	7.50	344	1.6
	10	140.0	7.50	453	1.3
	15	93.3	7.50	659	1.0
	20	70.0	5.50	635	1.0
	25	56.0	4.00	573	1.2
	30	46.7	4.00	645	1.1
	40	35.0	3.00	636	1.1
	50	28.0	3.00	764	0.9
	60	23.3	2.20	645	1.0
	80	17.5	1.50	546	0.9
	100	14.0	1.10	470	1.0

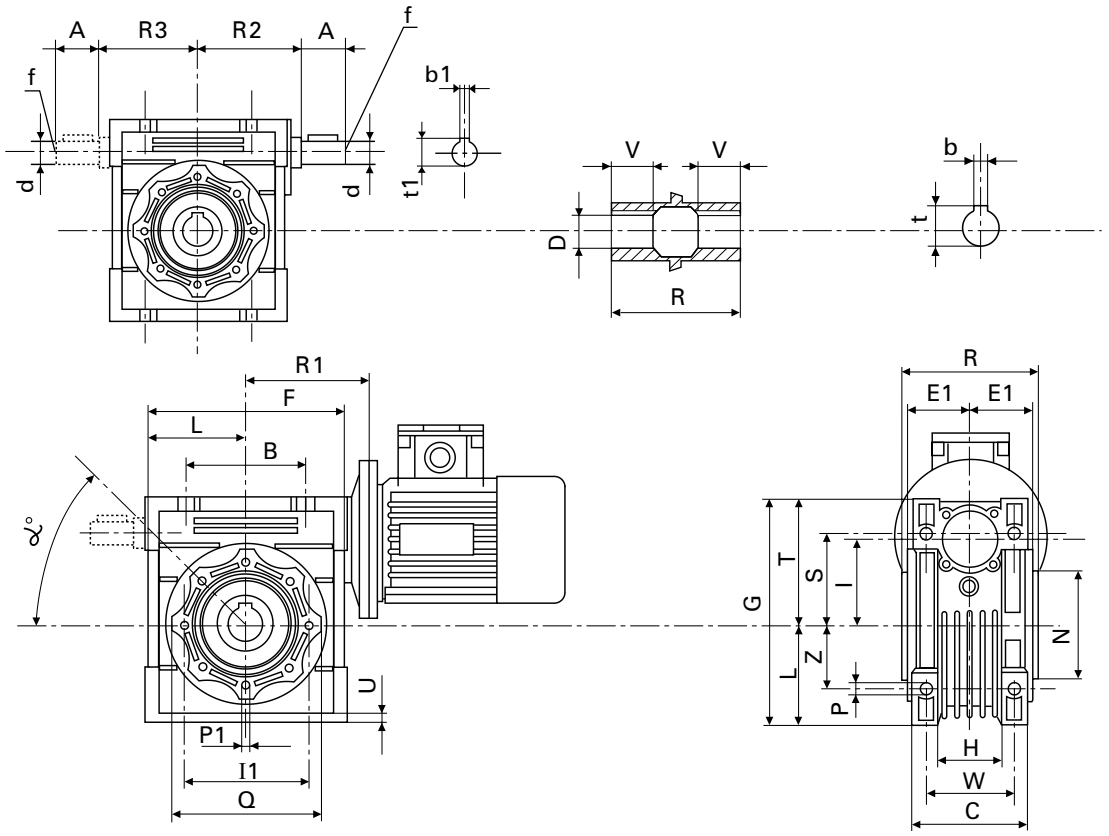
TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 063	7.5	186.7	1.50	67.4	1.8
	10	140.0	1.50	88.6	1.4
	15	93.3	1.50	126	1.1
	20	70.0	1.50	164	0.8
	25	56.0	1.10	145	0.9
	30	46.7	1.10	165	1.0
	40	35.0	0.75	143	1.0
	50	28.0	0.55	122	1.1
	60	23.3	0.55	138	0.9
	80	17.5	0.37	114	1.1
	100	14.0	0.37	127	0.9

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2	f.s.
CHM 130	7.5	186.7	7.50	348	2.2
	10	140.0	7.50	455	1.8
	15	93.3	7.50	660	1.2
	20	70.0	7.50	877	1.0
	25	56.0	7.50	1071	0.9
	30	46.7	7.50	1225	0.8
	40	35.0	5.50	1173	0.9
	50	28.0	4.00	1023	0.9
	60	23.3	3.00	886	1.1
	80	17.5	3.00	1112	0.8
	100	14.0	1.50	652	1.1

It is also possible to couple motors that are less powerful than those shown in the table. It is possible to couple 2800 or 900 rev. motors by adapting the power and verifying the application. For any clarification, please contact our technical office.

* Size 71 Motors

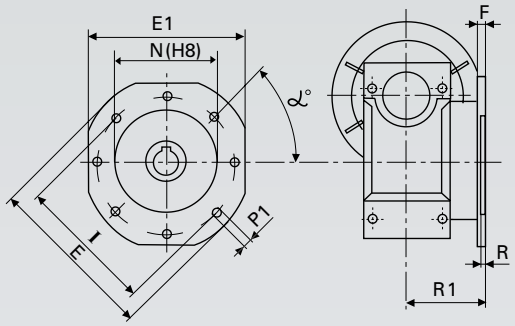
CHM - CHMR - CHME - CHMRE 030 ÷ 130 DIMENSIONS



	B	A	F	D(H7)	d(j6)	G	H	R1	R	R2	R3	L	I	C	I1	N(h8)	E1	P	Q
030	54	20	80	14	9	97	32	55	63	51	45	40	30	56	65	55	29	6.5	75
040	70	23	100	18	11	121.5	43	70	78	60	53	50	40	71	75	60	36.5	6.5	87
050	80	30	120	25	14	144	49	80	92	74	64	60	50	85	85	70	43.5	8.5	100
063	100	40	144	25	19	174	67	95	112	90	75	72	63	103	95	80	53	8.5	110
075	120	50	172	28	24	205	72	112.5	120	105	90	86	75	112	115	95	57	11	140
090	140	50	208	35	24	238	74	129.5	140	125	108	103	90	130	130	110	67	13	160
110	170	60	252.5	42	28	295	-	160	155	142	135	127.5	110	144	165	130	74	14	200
130	200	80	292.5	45	30	335	-	180	170	162	155	147.5	130	155	215	180	81	16	250

	S	T	U	V		ZW	P1	α	b	b1	f	t	t1	Weight in kg. excluding motor
030	44	57	5.5	21	27	44	M6x11(n.4)	0°	5	3	-	16.3	10.2	1.2
040	55	71.5	6.5	26	35	60	M6x8(n.4)	45°	6	4	-	20.8	12.5	2.3
050	64	84	7	30	40	70	M8x10(n.4)	45°	8	5	M6	28.3	16.0	3.5
063	80	102	8	36	50	85	M8x14(n.4)	45°	8	6	M6	28.3	21.5	6.2
075	93	119	10	40	60	90	M8x14(n.4)	45°	8	8	M8	31.3	27.0	8.5
090	102	135	11	45	70	100	M10x18(n.4)	45°	10	8	M8	38.3	27.0	12
110	125	167.5	14	50	85	115	M10x18(n.4)	45°	12	8	M10	45.3	31.0	35
130	140	187.5	15	60	100	120	M12x21(n.4)	45°	14	8	M10	48.8	33.0	53

CHM - CHMR - CHME - CHMRE 030 ÷ 130 DIMENSIONS



		030	040	050	063	075	090	110	130
FA	R1	54.5	67	90	82	111	111	131	140
	F	6	7	9	10	13	13	15	15
	R	4	4	5	6	6	6	6	6
	N	50	60	70	115	130	152	170	180
	I	68/72*	75/95*	85/110*	150/165*	165/185*	175/195*	230	255
	P1	6.5(n°4)	9(n°4)	11(n°4)	11(n°4)	14(n°4)	14(n°4)	14(n°8)	16(n°8)
	E	80	110	125	180	200	210	280	320
	E1	70	95	110	142	170	200	260	290
	α°	45°	45°	45°	45°	45°	45°	45°	22.5°
FB	R1	-	97	120	112	90	122	180	-
	F	-	7	9	10	13	18	15	-
	R	-	4	5	6	6	6	6	-
	N	-	60	70	115	110	180	170	-
	I	-	75/95*	85/110*	150/165*	130/145*	215/230*	230	-
	P1	-	9(n°4)	11(n°4)	11(n°4)	14(n°4)	14(n°4)	14(n°8)	-
	E	-	110	125	180	160	250	280	-
	E1	-	95	110	142	-	-	260	-
	α°	-	45°	45°	45°	45°	45°	45°	-
FC	R1	-	80	89	98	-	110	-	-
	F	-	9	10	10	-	17	-	-
	R	-	5	5	5	-	6	-	-
	N	-	95	110	130	-	130	-	-
	I	-	115	130	165	-	165/185*	-	-
	P1	-	9.5(n°4)	9.5(n°4)	11(n°4)	-	11(n°4)	-	-
	E	-	140	160	200	-	200	-	-
	α°	-	45°	45°	45°	-	45°	-	-
FD	R1	-	58	72	107	-	151	-	-
	F	-	12	14.5	10	-	13	-	-
	R	-	5	5	5	-	6	-	-
	N	-	80	95	130	-	152	-	-
	I	-	100/110*	115/125*	165	-	175/195*	-	-
	P1	-	9(n°4)	11(n°4)	11(n°4)	-	14(n°4)	-	-
	E	-	120	140	200	-	210	-	-
	α°	-	45°	45°	45°	-	45°	-	-
FE	R1	-	-	-	80.5	-	-	-	-
	F	-	-	-	16.5	-	-	-	-
	R	-	-	-	5	-	-	-	-
	N	-	-	-	110	-	-	-	-
	I	-	-	-	130/145*	-	-	-	-
	P1	-	-	-	11(n°4)	-	-	-	-
	F	-	-	-	160	-	-	-	-
	α°	-	-	-	45°	-	-	-	-

* The values marked have a slot instead of a hole, therefore the fixing centreline, value, may be within the range indicated, an intermediate value is recommended.

CHTPC WORM GEAR WITH PRE-STAGE MODULE

DESIGNATION CHTPC / CHM - CHME

TYPE	SIZE	i =	P.A.M.	MOUNT. POS
CHTPC	63	3	63B5	If supplied coupled with CHM or CHME types specify
	71	3	71B5	the position of these, when the pre-stage module
	80	3	80B5	is supplied by itself it is prepared for universal assembly.
	90	2.42	90B5	

EXAMPLE ORDER FOR A CHTPC COUPLED TO A CHM OR CHME GEAR

CHTPC	90	CHM	110	i=242 (2.42x100)	PAM 90B5	POS.B3

If the motor is also required, please specify:

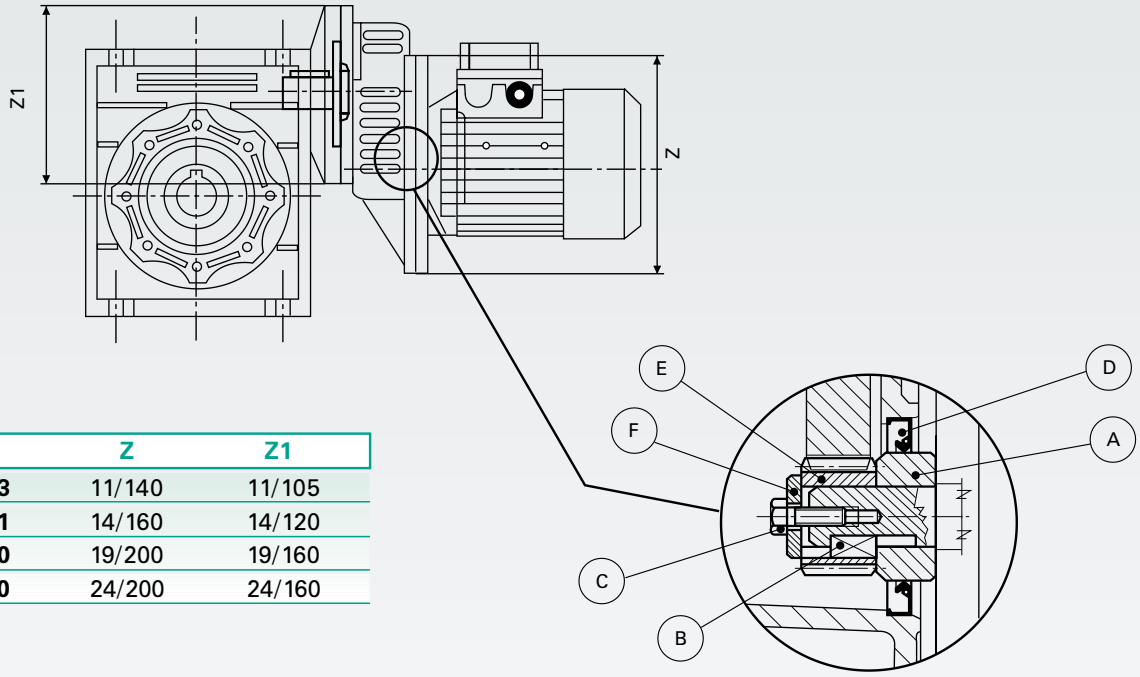
Size	es. 90 L4
Power	es. Kw 1.5
Poles	es. 4
Voltage	es. V230/400
Frequency	es. 50 Hz
Flange	sempre B 5

N.B. From size 25 to 63 the gears are always supplied in the Universal position and can therefore be mounted in any position, from size 75 to size 130 if the position required differs from B3 it must be specified.
In particular, in the event that a gear in position B3 is to be mounted in positions V5 or V6, the bearing positioned in the upper side must be lubricated using suitable grease that ensures proper lubrication.
We have tested Tecnolubeseal POLYMER 400/2 grease.

CHIARAVALLI TRASMISSIONI S.p.A.

POSSIBLE COUPLINGS FOR CHTPC / CHM – CHME

CHM - CHME	i	CHTPC 63	CHTPC 71	CHTPC 80	CHTPC 90
40	all	#			
40	da 7.5 a 40	#			
50	da 40 a 100	#			
50	da 7.5 a 50		#		
63	da 50 a 100	#			
63	da 30 a 100		#		
75	da 30 a 100		#		
75	da 30 a 100			#	
90	da 30 a 100		#		
90	da 30 a 100			#	
110	da 40 a 100			#	
110	da 30 a 100				#
130	da 30 a 100				#



	Z	Z1
CHTPC 63	11/140	11/105
CHTPC 71	14/160	14/120
CHTPC 80	19/200	19/160
CHTPC 90	24/200	24/160

PINION ASSEMBLY INSTRUCTIONS

1) Assemble the distancer A (if necessary heating it to between 80° and 100° C) onto the driving shaft and block it with Loctite 638 for coaxial blocking
2) Insert the key B included in the kit
3) Assemble the pinion E (if necessary heating it to between 80° and 100° C) onto the driving shaft
4) Fix the washer F using the screw C *
5) Assemble the gasket ring D in the direction shown in the drawing
6) Insert the motor with the pinion, taking care not to damage the gasket ring

* The size CHTPC 90 is fixed using a ring and dowel

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CHTPC/CHM PERFORMANCE WITH 4-POLE MOTORS – 1400 REVS. INPUT

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC63 CHM040	90	15.6	0.18	61
	120	11.7	0.18	52
	150	9.3	0.18	46
	180	7.8	0.18	46
	240	5.8	0.18	40
	300	4.7	0.18	36

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC71 CHM075	90	15.6	0.37	153
	120	11.7	0.37	190
	150	9.3	0.37	220
	180	7.8	0.37	236
	180	7.8	0.25	159
	240	5.8	0.25	208
	300	4.7	0.25	210

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC63 CHM050	90	15.6	0.18	69
	120	11.7	0.18	85
	150	9.3	0.18	89
	180	7.8	0.18	88
	240	5.8	0.18	76
	300	4.7	0.18	65

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC80 CHM075	90	15.6	0.75	307
	120	11.7	0.55	278
	150	9.3	0.55	260

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC71 CHM050	90	15.6	0.25	97
	120	11.7	0.25	110
	150	9.3	0.25	112

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC71 CHM090	180	7.8	0.37	260
	240	5.8	0.37	320
	300	4.7	0.37	345

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC63 CHM063	150	9.3	0.18	101
	180	7.8	0.18	115
	240	5.8	0.18	136
	300	4.7	0.18	121

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC80 CHM090	90	15.6	0.75	320
	120	11.7	0.75	397
	150	9.3	0.75	426
	180	7.8	0.75	425
	240	5.8	0.55	374

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC71 CHM063	90	15.6	0.37	145
	90	15.6	0.25	98
	120	11.7	0.37	184
	120	11.7	0.25	124
	150	9.3	0.37	192
	150	9.3	0.25	129
	180	7.8	0.25	164
	240	5.8	0.25	139
	300	4.7	0.25	128

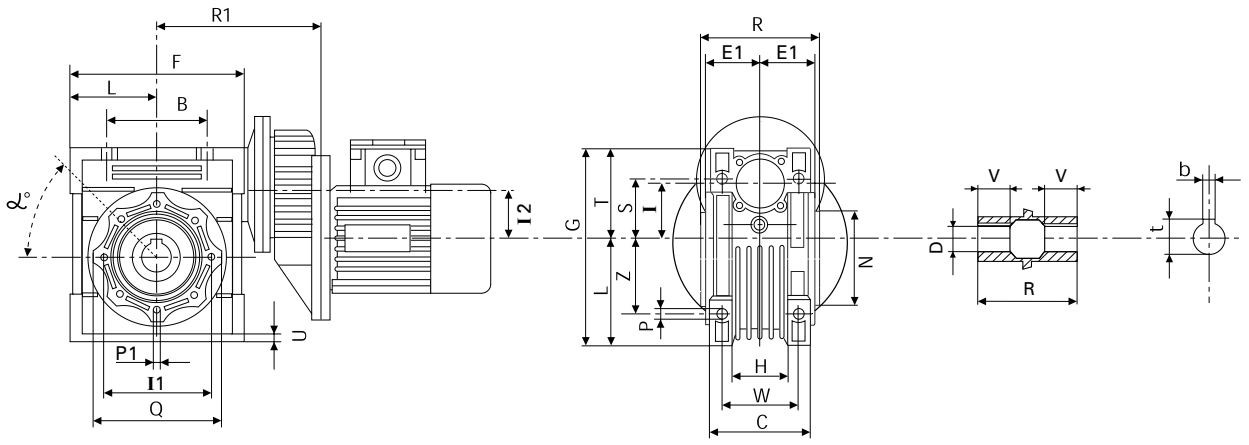
TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC80 CHM110	120	11.7	0.75	421
	150	9.3	0.75	496
	180	7.8	0.75	569
	240	5.8	0.75	617
	300	4.7	0.55	585

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC90 CHM110	96.8	14.5	1.50	679
	121	11.6	1.50	801
	145.2	9.6	1.50	810
	145.2	9.6	1.10	595
	193.6	7.2	1.10	660

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHTPC90 CHM130	96.8	14.5	1.50	679
	121	11.6	1.50	813
	145.2	9.6	1.50	917
	193.6	7.2	1.50	1013
	242	5.8	1.10	848

The choice of power installed is tied to the unification of the motors, therefore it is sometimes in exuberance compared to the gear; always verify the maximum torque indicated when making the selection and if in doubt please contact our technical office.

CHTPC – CHM DIMENSIONS

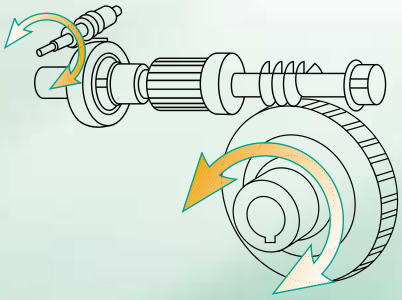


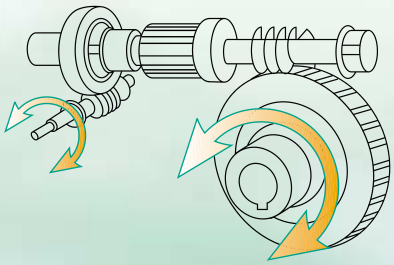
CHTPC CHM	B	F	D(H7)	G	H	R1	R	L	I	I2	C	I1	N(H8)	E1	P	Q	S	T
63+040	70	100	18	121.5	43	123	78	50	40	40	71	75	60	36.5	6.5	87	55	71.5
63+050	80	120	25	144	49	133	92	60	50	40	85	85	70	43.5	8.5	100	64	84
71+050	80	120	25	144	49	143	92	60	50	50	85	85	70	43.5	8.5	100	64	84
63+063	100	144	25	174	67	148	112	72	63	40	103	95	80	53	8.5	110	80	102
71+063	100	144	25	174	67	158	112	72	63	50	103	95	80	53	8.5	110	80	102
71+075	120	172	28	205	72	176	120	86	75	50	112	115	95	57	11	140	93	119
80+075	120	172	28	205	72	186	120	86	75	63	112	115	95	57	11	140	93	119
71+090	140	208	35	238	74	193	140	103	90	50	130	130	110	67	13	160	102	135
80+090	140	208	35	238	74	203	140	103	90	63	130	130	110	67	13	160	102	135
80(90)+110	170	252.5	42	295	-	233	155	127.5	110	63	144	165	130	74	14	200	125	167.5
80(90)+130	200	292.5	45	335	-	253	170	147.5	130	63	155	215	180	81	16	250	140	187.5

CHTPC CHM	U	V	Z	W	P1	α°	b	t	Weight in Kg. excluding motor
63+040	6.5	26	35	60	M6x8n.4	45°	6	20.8	3.9
63+050	7	30	40	70	M8x10n.4	45°	8	28.3	5.2
71+050	7	30	40	70	M8x10n.4	45°	8	28.3	5.8
63+063	8	36	50	85	M8x14n.8	45°	8	28.3	7.9
71+063	8	36	50	85	M8x14n.8	45°	8	28.3	8.5
71+075	10	40	60	90	M8x14n.8	45°	8	31.3	11
80+075	10	40	60	90	M8x14n.8	45°	8	31.3	12.6
71+090	11	45	70	100	M10x18n.8	45°	10	38.3	14.3
80+090	11	45	70	100	M10x18n.8	45°	10	38.3	16.2
80(90)+110	14	50	85	115	M10x18n.8	45°	12	45.3	39
80(90)+130	15	60	100	120	M12x21n.8	45°	14	48.8	67.2

N.B. For the side flange and double extended input worm dimensions see the corresponding size of the CHM series. See pages 8 and 9.

DIRECTION OF ROTATION





CHIARAVALLI TRASMISSIONI S.p.A.

DESIGNATION CHM/CHM - CHME E CHMR/CHM - CHME

TYPE	SIZE(1)	VERSION(2)	FLANGE POS.(3)	i	EXEC.(4)	M.M.F.	MOUNT. POS.(3)
CHM/CHM	030/040	FA	1	300	OAD		U
CHM/CHME	030/050	FB	2	400	OAS		B3
CHMR/CHM	030/063	FC		500	OBD		B8
CHMR/CHME	040/075	FD		600	OBS		B6
	040/090	FE		750	VAD		B7
	050/110			900	VAS		V5
	063/130			1200	VBD		V6
				1500	VBS		
				1800			
				2400			

See page 4

For the motor mounting flanges (M.M.F.) see the table showing the types available.
For the executions see the table with drawings, if not specified OBS would be supplied.
The mounting position refers to the second gear.

EXAMPLE ORDER

CHM/CHM	040/090	FA(5)	2(5)	500	OAD	63 B14	V5

If the motor is also required, please specify:

Size	es. 63 B4
Power	es. Kw 0.18
Poles	es. 4
Voltage	es. V230/400
Frequency	es. 50 Hz
Flange	es. B 14

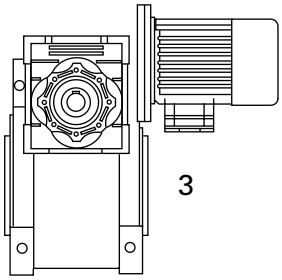
N.B. From size 25 to 63 the gears are always supplied in the Universal position and can therefore be mounted in any position, from size 75 to size 130 if the position required differs from B3 it must be specified.
In particular, in the event that a gear in position B3 is to be mounted in positions V5 or V6, the bearing positioned in the upper side must be lubricated using suitable grease that ensures proper lubrication.
We have tested Tecnolubeseal POLYMER 400/2 grease.

1) see page 17
2) see page 9
3) see page 5
4) see page 16
5) lack of instructions indicates that the gear is not equipped with an output flange.

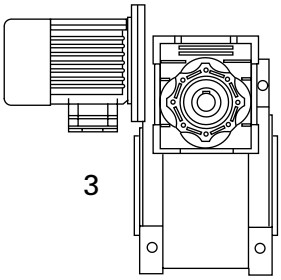
CHIARAVALLI TRASMISSIONI S.p.A.

EXECUTION

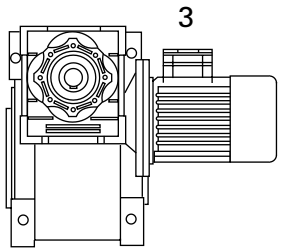
OAD



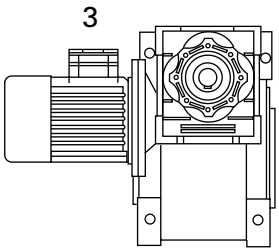
OAS



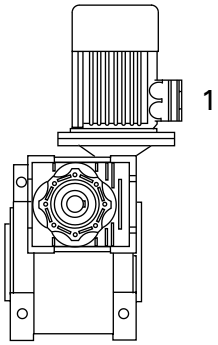
OBD



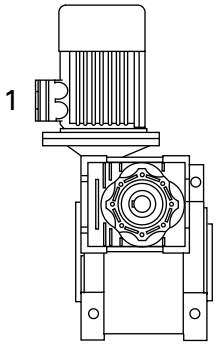
OBS



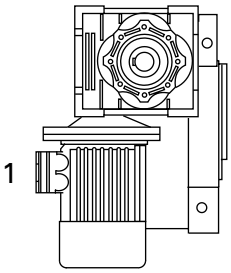
VAD



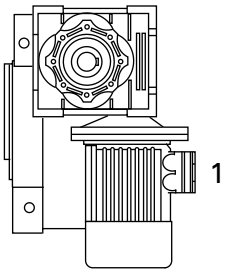
VAS



VBS



VBD



The execution determines the mounting position of the first gear in relation to the second gear. If not otherwise specified at the time of order, the group will be supplied in the OBS execution. The placing position refers to the second gear.

CHM/CHMP PERFORMANCE WITH 4-POLE MOTORS – 1400 REVS. INPUT

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 030/040	300	4.7	0.09*	70
	400	3.5	0.09*	63
	500	2.8	0.09*	57
	600	2.3	0.09*	72
	750	1.9	0.09*	72
	900	1.6	0.09*	73
	1200	1.2	0.09*	65
	1500	0.9	0.09*	73
	1800	0.8	0.09*	73
	2400	0.6	0.09*	65

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 040/090	300	4.7	0.37	405
	400	3.5	0.37	523
	500	2.8	0.37	550
	600	2.3	0.37	605
	750	1.9	0.25	538
	900	1.6	0.25	533
	1200	1.2	0.18	629
	1500	0.9	0.18	588
	1800	0.8	0.18*	492
	2400	0.6	0.18*	625

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 030/050	300	4.7	0.18	142
	400	3.5	0.18	127
	500	2.8	0.09	123
	600	2.3	0.09	143
	750	1.9	0.09	148
	900	1.6	0.09*	141
	1200	1.2	0.09*	118
	1500	0.9	0.09*	139
	1800	0.8	0.09*	155
	2400	0.6	0.09*	124

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 050/110	300	4.7	0.75	871
	400	3.5	0.75	1013
	500	2.8	0.55	984
	600	2.3	0.55	1062
	750	1.9	0.55	1128
	900	1.6	0.37	1079
	1200	1.2	0.25	943
	1500	0.9	0.25	1064
	1800	0.8	0.25	1075
	2400	0.6	0.18	1001

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 030/063	300	4.7	0.22	210
	400	3.5	0.18	222
	500	2.8	0.18	205
	600	2.3	0.18*	208
	750	1.9	0.18*	216
	900	1.6	0.09	200
	1200	1.2	0.09	236
	1500	0.9	0.09*	204
	1800	0.8	0.09*	202
	2400	0.6	0.09*	220

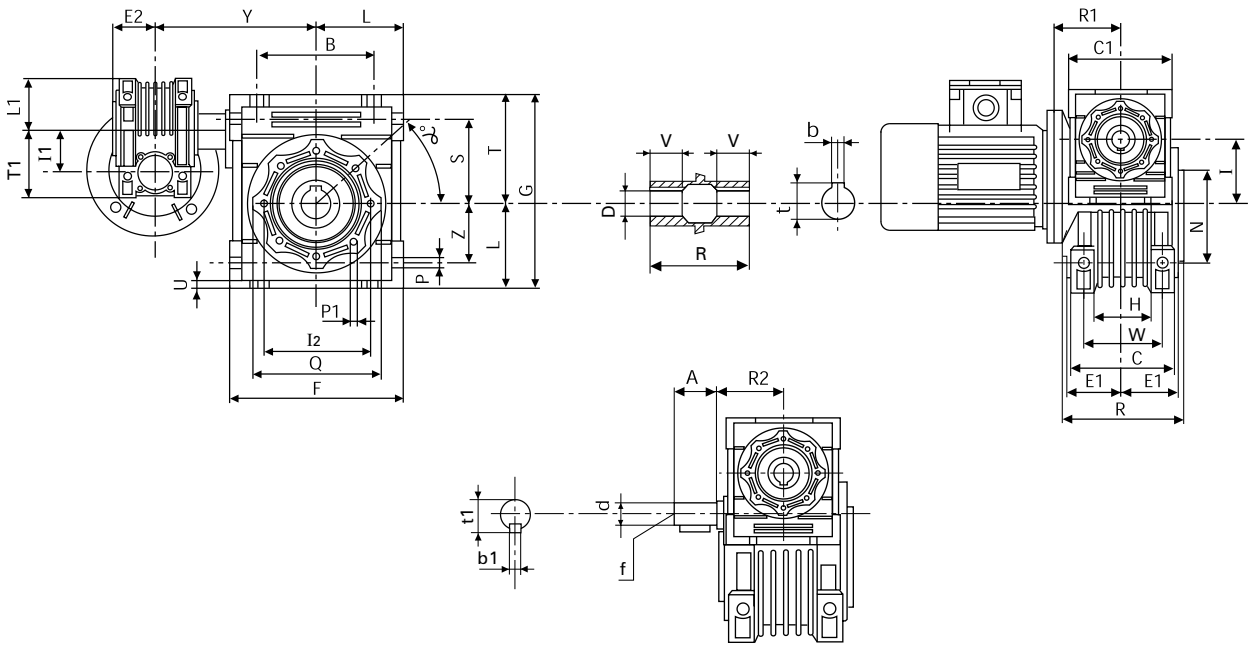
TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 063/130	300	4.7	1.50	1789
	400	3.5	1.10	1519
	500	2.8	1.10	1629
	600	2.3	0.75	1631
	750	1.9	0.75	1804
	900	1.6	0.75	1826
	1200	1.2	0.55	1705
	1500	0.9	0.37	1674
	1800	0.8	0.37	1698
	2400	0.6	0.25	1624

TYPE	i=ratio	n2 r/min	Kw=P1	Nm=T2
CHM 040/075	300	4.7	0.37	405
	400	3.5	0.25	336
	500	2.8	0.25	307
	600	2.3	0.18	362
	750	1.9	0.18	391
	900	1.6	0.18*	325
	1200	1.2	0.18*	359
	1500	0.9	0.09	360
	1800	0.8	0.09	404
	2400	0.6	0.09*	330

N.B. The powers marked with an asterisk are higher than those that the gear allows, therefore the applicative choice must be made in accordance with the torque and not the power.

The gear ratios are those most frequently requested. It is possible to obtain multiple combinations using the various ratios of the two single gears.

DIMENSIONS OF COMBINED GEARS CHM – CHM / CHMR – CHM



CHM-CHM	B	A	F	C1	D(H7)	d(j6)	G	H	R1	R	R2	L	L1	I	I1	C	I2	N(H8)	E1	E2	P
030/040	70	20	100	80	18	9	121.5	43	55	78	51	50	40	40	30	71	75	60	36.5	29	6.5
030/050	80	20	120	80	25	9	144	49	55	92	51	60	40	50	30	85	85	70	43.5	29	8.5
030/063	100	20	144	80	25	9	174	67	55	112	51	72	40	63	30	103	95	80	53	29	8.5
040/075	120	23	172	100	28	11	205	72	70	120	60	86	50	75	40	112	115	95	57	36.5	11
040/090	140	23	208	100	35	11	238	74	70	140	60	103	50	90	40	130	130	110	67	36.5	13
050/110	170	30	252.5	120	42	14	295	-	80	155	74	127.5	60	110	50	144	165	130	74	43.5	14
063/130	200	40	292.5	144	45	19	335	-	95	170	90	147.5	72	130	63	155	215	180	81	53	16

CHM-CHM	Q	S	T	T1	U	V	Z	Y	W	P1	a	b	b1	f	t	t1	Weight in Kg. excluding motor
030/040	87	55	71.5	57	6.5	26	35	120	60	M6x8(n.4)	45°	6	3	-	20.8	10.2	3.9
030/050	100	64	84	57	7	30	40	130	70	M8x10(n.4)	45°	8	3	-	28.3	10.2	5.0
030/063	110	80	102	57	8	36	50	145	85	M8x14(n.8)	45°	8	3	-	28.3	10.2	7.8
040/075	140	93	119	71.5	10	40	60	165	90	M8x14(n.8)	45°	8	4	-	31.3	12.5	11.5
040/090	160	102	135	71.5	11	45	70	182	100	M10x18(n.8)	45°	10	4	-	38.3	12.5	15
050/110	200	125	167.5	84	14	50	85	225	115	M10x18(n.8)	45°	12	5	M6	45.3	16.0	39.2
063/130	250	140	187.5	102	15	60	100	245	120	M12x21(n.4)	45°	14	6	M6	48.8	21.5	70

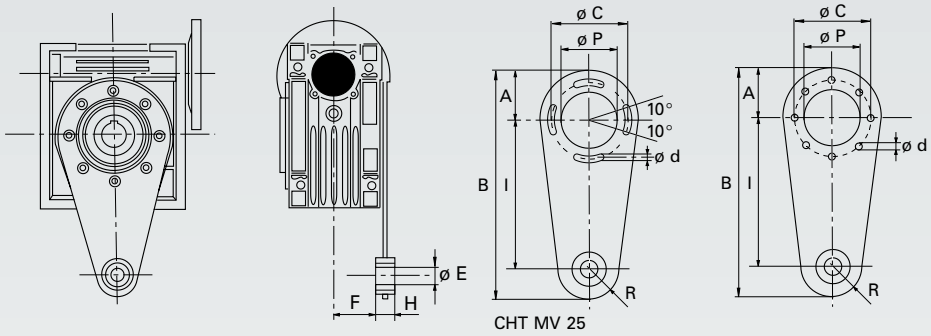
N.B. For the side flange and double extended input worm dimensions see the corresponding size of the CHM models. See pages 8 and 9.

TORQUE ARM

TYPE	I	R	F	H	Ø E	A	B	Ø C	Ø d	Ø P	N °	Weight per kit kg.
CHT MV 25*	70	15	17.5	14	8	33.5	118.5	55	7	45	4	0.17
CHT MV 30*	85	15	24	14	8	38	138	65	7	55	8	0.18
CHT MV 40	100	18	31.5	14	10	44	162	75	7	60	8	0.24
CHT MV 50	100	18	38.5	14	10	50	168	85	9	70	8	0.27
CHT MV 63	150	18	49	14	10	55	223	95	9	80	8	0.57
CHT MV 75	200	30	47.5	25	20	70	300	115	9	95	8	1.10
CHT MV 90	200	30	57.5	25	20	80	310	130	11	110	8	1.26
CHT MV 110	250	35	62	30	25	100	385	165	11	130	8	1.92
CHT MV 130/150	250	35	69	30	25	125	410	215	14	180	8	2.23

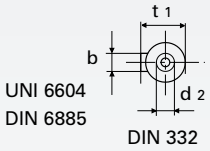
* Without vibration resistant bushing

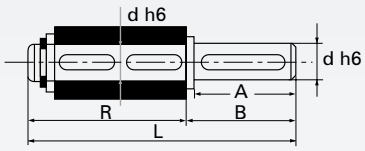
The anchoring point of the torque arm is equipped with a vibration resistant bushing.



SINGLE OUTPUT SHAFT KIT

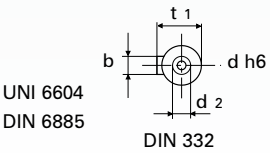
TYPE	A	Ø d	B	b	t 1	R	L	d 2	Weight per kit kg.
CHT MVS 25	23	11	25.5	4	12.5	55.5	81	-	0.07
CHT MVS 30	30	14	32.5	5	16	69.5	102	M6x16	0.14
CHT MVS 40	40	18	43	6	20.5	85	128	M6x16	0.27
CHT MVS 50	50	25	53.5	8	28	99.5	153	M10x22	0.60
CHT MVS 63	50	25	53.5	8	28	119.5	173	M10x22	0.67
CHT MVS 75	60	28	63.5	8	31	128.5	192	M10x22	0.94
CHT MVS 90	80	35	84.5	10	38	149.5	234	M12x28	1.79
CHT MVS 110	80	42	84.5	12	45	164.5	249	M16x35	2.70
CHT MVS 130	80	45	85	14	48.5	180	265	M16x35	3.60

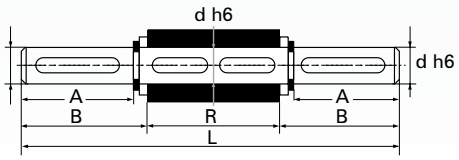




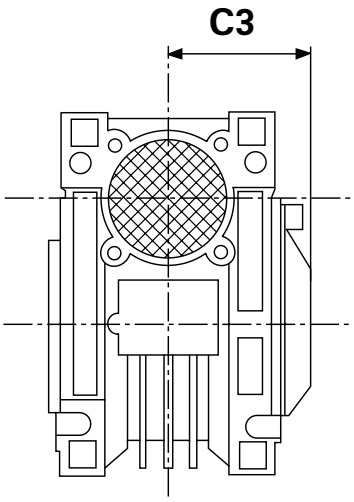
DOUBLE OUTPUT SHAFT KIT

TYPE	A	Ø d	B	R	b	t 1	L	d 2	Weight per kit kg.
CHT MVD 25	23	11	25.5	50	4	12.5	101	-	0.11
CHT MVD 30	30	14	32.5	63	5	16	128	M6x16	0.16
CHT MVD 40	40	18	43	78	6	20.5	164	M6x16	0.34
CHT MVD 50	50	25	53.5	92	8	28	199	M10x22	0.75
CHT MVD 63	50	25	53.5	112	8	28	219	M10x22	0.84
CHT MVD 75	60	28	63.5	120	8	31	247	M10x22	1.20
CHT MVD 90	80	35	84.5	140	10	38	309	M12x28	2.50
CHT MVD 110	80	42	84.5	155	12	45	324	M16x35	3.44
CHT MVD 130	80	45	85	170	14	48.5	340	M16x35	4.25





COVER



TYPE	C3
030	43
040	50
050	59
063	70
075	75
090	87
110	95
130	103

REDUCTION BUSHINGS KIT

SINGLE

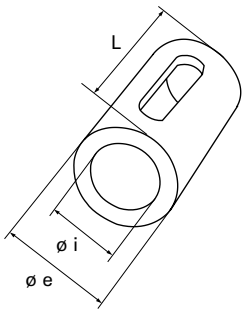
TYPE	ø i/ø e	L	Key	Weight per kit kg
CHT BRM-S	9/11	20	4/3 x 4 x 11 RB*	0.006
CHT BRM-S	11/14	30	5/4 x 6 x 10 RB*	0.015
CHT BRM-S	14/19	40	6 x 5 x 30 *	0.045
CHT BRM-S	19/24	50	6 x 5.5 x 20 * 8 x 5.5 x 40 *	0.07
CHT BRM-S	24/28	60	8 x 9 x 40 *	0.08
CHT BRM-S	28/38	80	10 x 7 x 60 *	0.33
CHT BRM-S	38/42	110	12/10 x 10 x 48 RB*	0.22

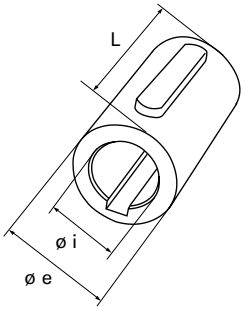
DOUBLE

TYPE	ø i/ø e	L	Key	Weight per kit kg
CHT BRM-D	11/19	40	6 x 6 x 30 *	0.06
CHT BRM-D	14/24	50	8 x 7 x 40 A	0.12
CHT BRM-D	19/28	60	8 x 7 x 50 A	0.16
CHT BRM-D	24/38	80	10 x 8 x 60 A	0.44

* to drawing

Tongue acc. to UNI 6604 – DIN 6885
Quenched



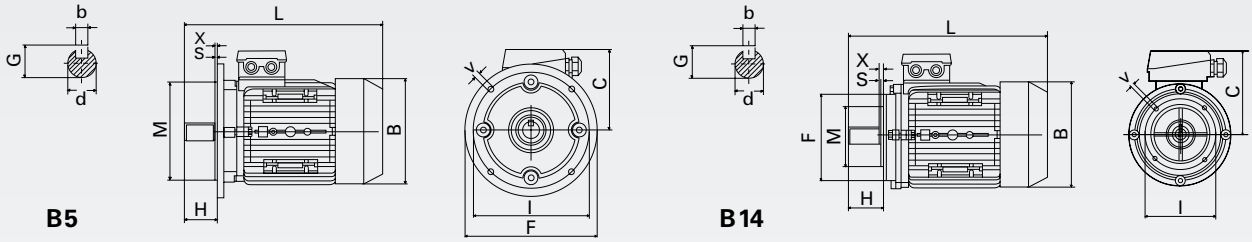


THREE-PHASE ELECTRIC MOTORS

TECHNICAL DATA FOR 4-POLE MOTORS

(1400 RPM)

TYPE	POWER kW	VOLTAGE V	CURRENT 400 V	TORQUE N/m	EFFICIENCY %	POWER FACTOR Ø	WEIGHT Kg.
CHT 56 B4	0.09	230/400	0.43	0.64	50	0.61	3.2
CHT 63 A4	0.12	230/400	0.47	0.86	57	0.64	3.9
CHT 63 B4	0.18	230/400	0.70	1.27	57	0.65	4.5
CHT 63 C4	0.22	230/400	0.92	1.77	59	0.67	4.8
CHT 71 A4	0.25	230/400	0.84	1.77	60	0.72	5.6
CHT 71 B4	0.37	230/400	1.12	2.58	65	0.74	6.2
CHT 71 C4	0.55	230/400	1.61	3.81	66	0.75	7.0
CHT 80 A4	0.55	230/400	1.59	3.81	67	0.75	8.9
CHT 80 B4	0.75	230/400	1.94	5.20	72	0.78	10.0
CHT 80 D4	1.10	230/400	2.67	7.60	76.2	0.78	11.0
CHT 90 S4	1.10	230/400	2.64	7.50	76.2	0.79	12.1
CHT 90 L4	1.50	230/400	3.46	10.20	78.5	0.80	14.3
CHT 90 LL4	1.85	230/400	4.30	9.24	79	0.78	16.0
CHT 100 L A4	2.20	230/400	4.86	14.80	81.0	0.81	21.0
CHT 100 L B4	3.00	230/400	6.50	20.20	82.6	0.81	24.7
CHT 112 M4	4.00	230/400	8.26	26.70	84.2	0.83	30.1
CHT 132 S4	5.50	230/400	11.00	36.22	85.7	0.84	44.0
CHT 132 M4	7.50	230/400	14.64	49.40	87.0	0.85	52.0

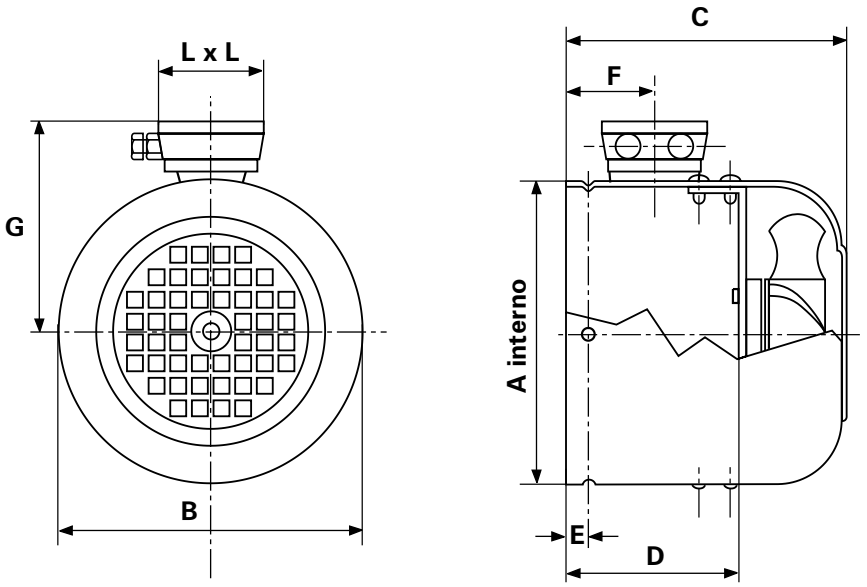


SIZES AND DIMENSIONS

Type	Mounting dimensions (mm)																Dimensions		
	B5										B14								
	d	H	b	G	I	M	F	X	V	S	I	M	F	X	V	S	B	C	L
56	9	20	3	10.2	98	80	120	0	7	3.0	65	50	80	0	M5	2.5	120	100	195
63	11	23	4	12.5	115	95	140	0	10	3.0	75	60	90	0	M5	2.5	130	110	215
71	14	30	5	16	130	110	160	0	10	3.5	85	70	105	0	M6	2.5	145	117	255
80	19	40	6	21.5	165	130	200	0	12	3.5	100	80	120	0	M6	3.0	165	137	290
90S	24	50	8	27	165	130	200	0	12	3.5	115	95	140	0	M8	3.0	185	145	310
90L/90LL	24	50	8	27	165	130	200	0	12	3.5	115	95	140	0	M8	3.0	185	145	335/365
100L	28	60	8	31	215	180	250	0	15	4.0	130	110	160	0	M8	3.5	205	152	386
112M	28	60	8	31	215	150	250	0	15	4.0	130	110	160	0	M8	3.5	230	180	395
132S	38	80	10	41	265	230	300	0	15	4.0	165	130	200	0	M10	4.0	270	195	436
132M	38	80	10	41	265	230	300	0	15	4.0	165	130	200	0	M10	4.0	270	195	475

- Motors with cage rotor, closed with external surface ventilation.
- Design, construction and testing in conformance with the standards CEI2-3, international standards IEC 34-1 and the main foreign standards.
-Power-sizes in accordance with the standards IEC 72, national standards UNEL-MEC.
- Insulation class F
-Protection IP55
-S1 Continuous service
-Efficiency class EFF2
-European Directive ROHS 2002/95/CE
-NSK or SKF Bearings
-Phase separators
-2-pole and 6-pole motors available
- Kit of feet available
-Forced ventilation kit available for single-phase and three-phase models

FORCED VENTILATION KIT* FOR SINGLE-PHASE MODELS



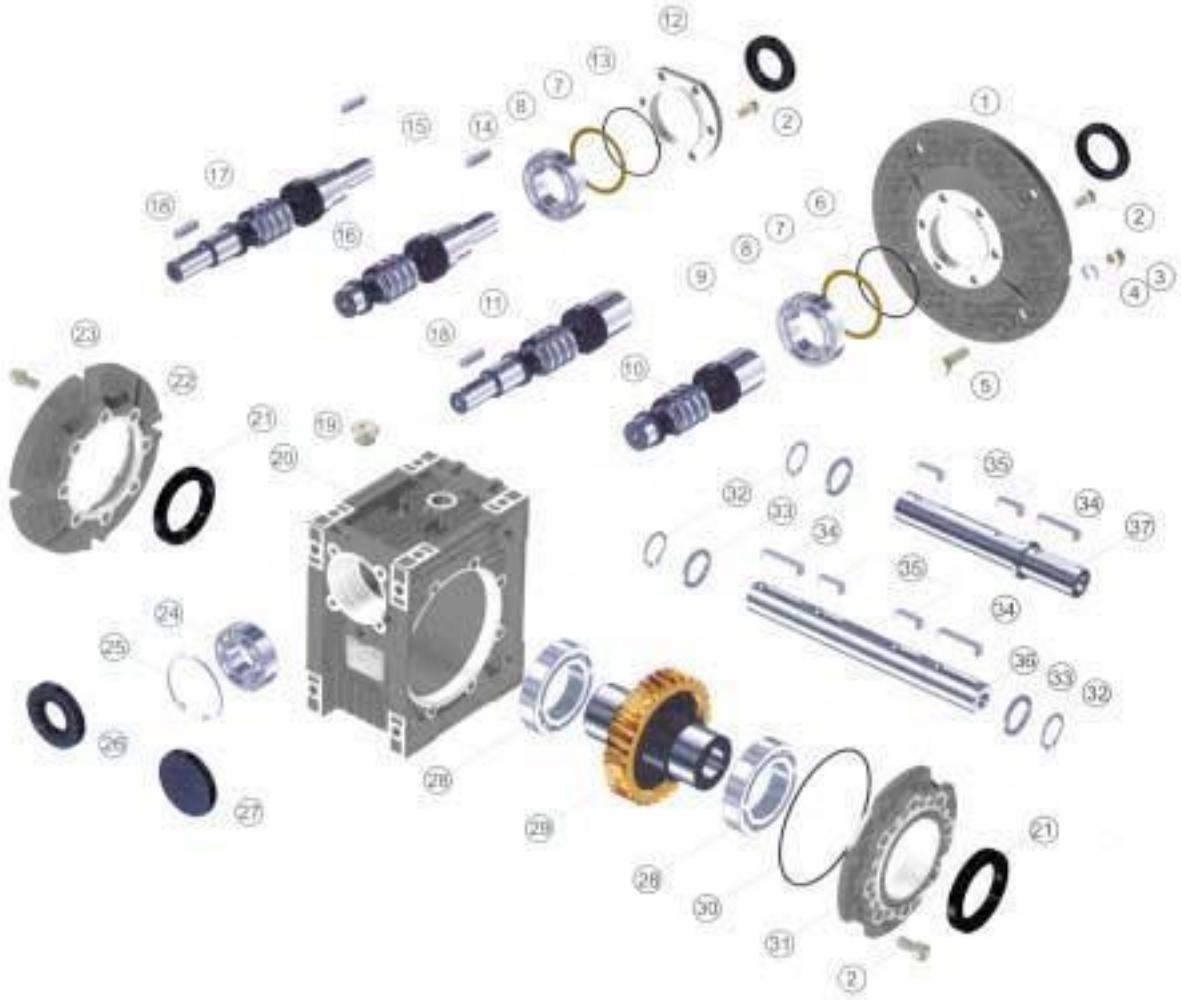
OVERALL DIMENSIONS WITH IP55 TERMINAL BOX

SIZE	VOLTAGE	HZ	SPEED NOM. MIN/1	ASSORB. WATT	CURRENT M.A.	AIR FLOW M 3/H
GR.63	230	50 / 60	2750	15 / 14	120 / 100	180
GR.71	230	50 / 60	2750	15 / 14	120 / 100	180
GR.80	230	50 / 60	2750	15 / 14	120 / 100	180
GR.90	230	50 / 60	2900	42 / 36	190 / 180	340
GR.100	230	50 / 60	2900	42 / 36	190 / 180	340
GR.112	230	50 / 60	2900	42 / 36	190 / 180	340
GR.132	230	50 / 60	2900	42 / 36	190 / 180	340

SIZE	COD. IP55	A	B	C	D	E	F	G	L x L
GR.63	AS063230	121	123	102	58	6	50	104	75
GR.71	AS071230	136	138	120	70	6	50	111	75
GR.80	AS080230	153	155	130	80	6	55	125	100
GR.90	AS090230	172	176	145	75	6	60	135	100
GR.100	AS100230	195	197	150	85	8	60	150	100
GR.112	AS112230	218	220	160	100	10	60	160	100
GR.132	AS132230	255	257	180	120	10	65	175	100

* FORCED VENTILATION KIT FOR THREE-PHASE MODELS AVAILABLE ON REQUEST

EXPLODED DRAWING AND SPARE PARTS LIST



1 • Oil seal
2 • Torque screw
3 • Nut
4 • Washer
5 • Hexagonal-head screw
6 • Motor connection flange
7 • O-Ring
8 • Shim
9 • Bearing
10 • Hole input worm
11 • Hole input and shaft output worm
12 • Oil seal
13 • Input cover
14 • Bearing
15 • Key
16 • Shaft input worm
17 • Double extended input shaft worm
18 • Key
19 • Oil plug
20 • Housing
21 • Oil seal
22 • Output flange
23 • Embedded hexagonal-head screw
24 • Bearing
25 • Seeger
26 • Oil seal
27 • Cap
28 • Bearing
29 • Worm wheel
30 • O-ring
31 • Output cover
32 • Seeger
33 • Spacer
34 • Key
35 • Key
36 • Double output shaft
37 • Single output shaft

Use and maintenance instructions

INSTALLATION

- The data shown on the identification name plate must correspond to the gear ordered
- The oil level, for the sizes 110 and 130 equipped with filling, draining and level plug, must correspond to the quantity foreseen for the assembly position requested (see catalogue), in addition, always for the sizes indicated, it will be the client's responsibility to substitute the blind plug, supplied for transport, with the corresponding plug equipped with a bleed hole included in the supply with the gear
- All of the other gears are supplied complete with permanent synthetic oil in a quantity that is sufficient for any assembly position
- The gear must be fixed on a flat surface that is sufficiently rigid in order to avoid any vibration
- The gear and the axis of the machine to be driven must be perfectly aligned o In the event that knocks, overloading or blockage of the machine are foreseen, the client must install a limiting device, joints, overload cut-out etc.
- Coupling with pinions, joints, pulleys and other parts must be done after the parts have been cleaned and knocks should be avoided while assembling as they could damage the bearings and other internal parts
- In the event that the motor is supplied by the client, he must check that the flange and shaft tolerances correspond to a "normal" class; our motors satisfy this requirement
- Check that the fixing screws for the gear and the related accessories are correctly tightened
- Take suitable measures to protect the groups from any aggressive atmospheric agents
- W here foreseen, protect rotating parts from any possible contact with the operators
- If the gears are painted, protect the gasket rings and the machined surfaces
- All of the gears are painted RAL 9022 grey

OPERATION AND RUNNING-IN

- To obtain the best performance the gears must first be run-in by gradually increasing the power in the first few hours of operation, in this phase an increase in temperature is considered normal
- In the event of defective operation, noise, oil leakage, etc. stop the gear immediately and, when possible, remove the cause. Alternatively, send the piece to our factory to be controlled.

MAINTENANCE

- The worm gears from size 25 to size 90 and the pre-stage modules are lubricated with permanent synthetic oil and therefore do not require any maintenance
- The gears size 110 and 130 are lubricated with mineral oil and are equipped with a bleed plug, therefore the oil level must be checked periodically and if necessary topped up with the same oil or one that is compatible with those indicated in our catalogue
- For the gears size 110 and 130 proceed with the substitution of the oil after the first 300 working hours, replacing it with the correct quantity in accordance with the assembly position, as detailed in our catalogue, after the inside of the gear has been thoroughly washed

WAREHOUSE STORAGE

- If the warehouse storage will be for a long time, more than 3 months, the shafts and machined surfaces should be protected using antioxidants and the oil seals should be greased

HANDLING

- Care must be taken not to damage the oil seals and the machined surfaces when handling the groups

DISPOSAL OF PACKAGING

- The packaging in which our gears are delivered should be sent to specialised companies for recycling if possible.

CHM

INSTRUKCE PRO UŽÍVÁNÍ A ÚDRŽBU ŠNEKOVÝCH PŘEVODOVEK A MODULŮ PŘEDŘAZENÝCH PŘEVODŮ

USE AND MAINTENANCE INSTRUCTIONS

INSTALACE

- Data na identifikačním štítku musí korespondovat s údaji Vámi objednané převodovky.
- Olejová náplň pro velikosti převodovek 110 a 130, které jsou osazeny plnící, výpustní a kontrolní zátkou, musí korespondovat s množstvím udávaným pro danou montážní polohu (viz. katalog). Dále pro tyto velikosti je vždy odpovědností zákazníka záslepnou zátku, dodávanou pro transport převodovky, nahradit odvzdušňovací zátkou dodávanou společně s převodovkou.
- Všechny ostatní velikosti převodovek jsou dodávány kompletně s permanentní syntetickou olejovou náplní, dostatečnou pro každou montážní polohu.
- Převodovka musí být připevněna na rovném podkladu, který je dostatečně tuhý pro předejití veškerých vibrací.
- Osa převodovky a poháněného zařízení musí být přesně vyrovnány, aby se předešlo případné blokaci stroje. Eventuelně je nutno nainstalovat omezovač kroutícího momentu, spojku, přetěžovací spínač, atd.
- Spojky s pastorky, spojovací klouby, řemenice a další díly musí být montovány vždy tak, aby nedošlo ke vzniku rázů, čímž by mohlo dojít k poškození vnitřních dílů převodovky, jako jsou ložiska, gufera a ostatní vnitřní díly.
- V případě, že elektromotor je dodáván klientem, musí být zajištěno, aby tolerance příruby a hřídele korespondovaly s normou IEC; námi dodávané motory těmto požadavkům odpovídají.
- Překontrolujte, zda-li jsou upevňovací šrouby převodovky, případně šrouby veškerého příslušenství pevně utaženy.
- Přesvědčte se, že prostředí, ve kterém bude zařízení instalováno, není agresivní pro materiály, ze kterých je převodovka vyrobena.
- Zabezpečte zamezení kontaktu veškerých rotujících částí zařízení od možného kontaktu s obsluhou zařízení.
- Pokud budete provádět lakování převodovky, ochraňte těsnění a opracované plochy převodovky.
- Všechny převodovky jsou opatřeny ochranným šedým nátěrem RAL 9022.

PROVOZ A ZÁBĚH

- Pro zajištění nejlepších výkonů převodovky by mělo docházet při záběhu v prvních hodinách provozu k nárůstu výkonu postupně. Během této fáze může docházet k vysokému nárůstu teploty (až 80 C).
- V případě vadného chodu, hlučnosti, prosakování oleje, atd. zastavte okamžitě převodovku a pokud možno odstraňte příčinu. Alternativně zašlete zpět daný kus do naší společnosti pro posouzení závady.

ÚDRŽBA

- Převodovky velikostí od 025 do 090 a předřadné moduly jsou mazány permanentní olejovou náplní a nevyžadují proto žádnou údržbu během celé své životnosti.
- Převodovky velikostí 110 a 130 jsou mazány minerálním olejem a jsou osazeny kontrolní zátkou, přičemž musí být hladina oleje pravidelně kontrolována a v případě nutnosti doplněna olejová náplň týmž olejem, případně kompatibilním uvedeným v tabulce olejů v tomto katalogu.
- U převodovek velikostí 110 a 130 proveďte výměnu olejové náplně po průběhu prvních 300 provozních hodin, náhradou odpovídajícího množství dle dané montážní polohy, jak uvedeno v katalogu. Toto teprvé poté co provedete výplach vnitřku převodovky.

KONZERVACE A SKLADOVÁNÍ

- Pokud bude převodovka skladována delší čas, tzn. 3 a více měsíců, je zapotřebí hřídel a opracované plochy ochránit antioxidantním prostředkem a olejová těsnění musí být taktéž namazány.

MANIPULACE

- Dbejte pozornosti, aby nedošlo k poškození olejových těsnění a vnějších ploch převodovky při manipulaci s výrobkem.

NAKLÁDÁNÍ S BALÍCÍM MATERIÁLEM

- Balící materiál, ve kterém jsou naše převodovky dodávány, odevzdejte, prosíme, na specializovaném místě určeném pro likvidaci odpadů.

INSTALLATION

- *The data shown on the identification name plate must correspond to the gear ordered.*
- *The oil level, for the sizes 110 and 130 equipped with filling, draining and level plug, must correspond to the quantity foreseen for the assembly position requested (see catalogue), in addition, always for the sizes indicated, it will be the client's responsibility to substitute the blind plug, supplied for transport, with the corresponding plug equipped with a bleed hole included in the supply with the gear.*
- *All of the other gears are supplied complete with permanent synthetic oil in a quantity that is sufficient for any assembly position.*
- *The gear must be fixed on a flat surface that is sufficiently rigid in order to avoid any vibration.*
- *The gear and the axis of the machine to be driven must be perfectly aligned.*
- *In the event that knocks, overloading or blockage of the machine are foreseen, the client must install a limiting device, joints, overload cut-out etc.*
- *Coupling with pinions, joints, pulleys and other parts must be done after the parts have been cleaned and knocks should be avoided while assembling as they could damage the bearings and other internal parts.*
- *In the event that the motor is supplied by the client, he must check that the flange and shaft tolerances correspond to a "normal" class; our motors satisfy this requirement.*
- *Check that the fixing screws for the gear and the related accessories are correctly tightened.*
- *Take suitable measures to protect the groups from any aggressive atmospheric agents.*
- *Where foreseen, protect rotating parts from any possible contact with the operators.*
- *If the gears are painted, protect the oil seals and the machined surfaces.*
- *All of the gears are painted RAL 9022 grey.*

OPERATION AND RUNNING-IN

- *To obtain the best performance the gears must first be run-in by gradually increasing the power in the first few hours of operation, in this phase an increase in temperature is considered normal.*
- *In the event of defective operation, noise, oil leakage, etc. stop the gear immediately and, when possible, remove the cause. Alternatively, send the piece to our factory to be controlled.*

MAINTENANCE

- *The worm gears from size 25 to size 90 and the pre-stage modules are lubricated with permanent synthetic oil and therefore do not require any maintenance.*
- *The gears size 110 and 130 are lubricated with mineral oil and are equipped with a breather plug, therefore the oil level must be checked periodically and if necessary topped up with the same oil or one that is compatible with those indicated in our catalogue.*
- *For the gears size 110 and 130 proceed with the substitution of the oil after the first 300 working hours, replacing it with the correct quantity in accordance with the assembly position, as detailed in our catalogue, after the inside of the gear has been thoroughly washed.*

WAREHOUSE STORAGE

- *If the warehouse storage will be for a long time, more than 3 months, the shafts and machined surfaces should be protected using antioxidants and the oil seals should be greased.*

HANDLING

- *Care must be taken not to damage the oil seals and the machined surfaces when handling the groups.*

DISPOSAL OF PACKAGING

- *The packaging in which our gears are delivered should be sent to specialised companies for recycling if possible.*

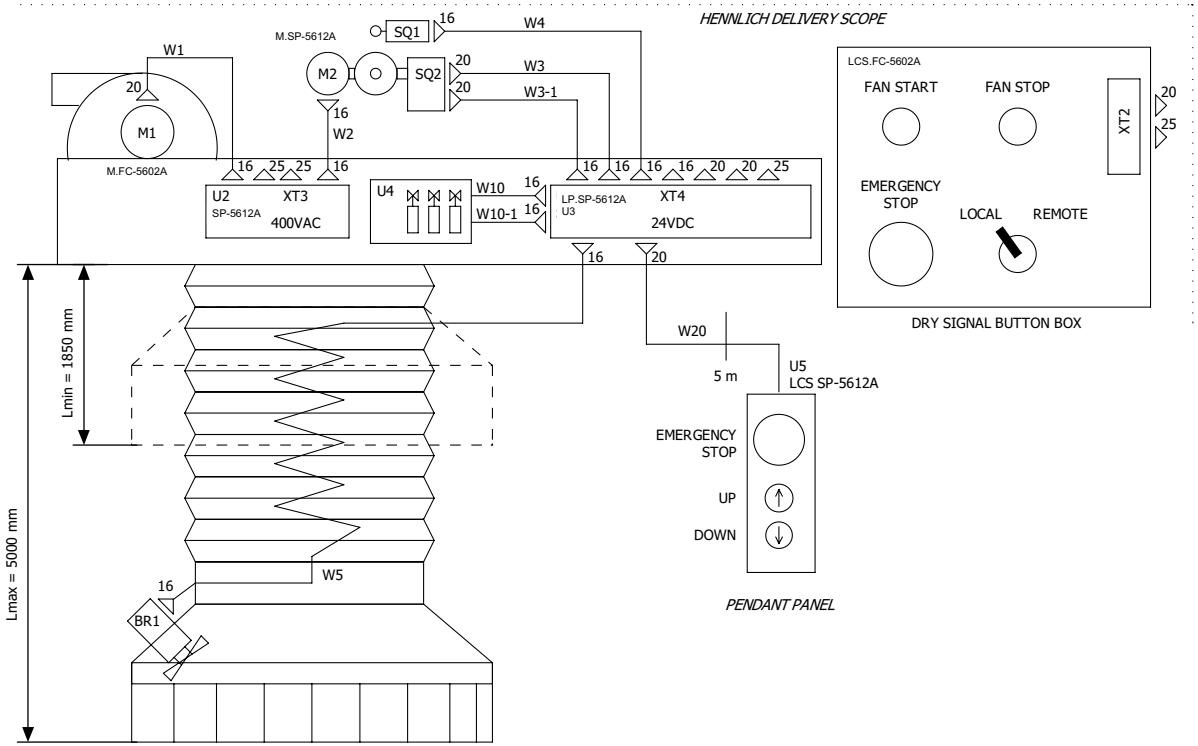
HENNLICH s.r.o.

o.z. HENNLICH ENGINEERING
Českolipská 9
412 01 Litoměřice
416 711 350, fax. 416 711 999, engineering@hennlich.cz

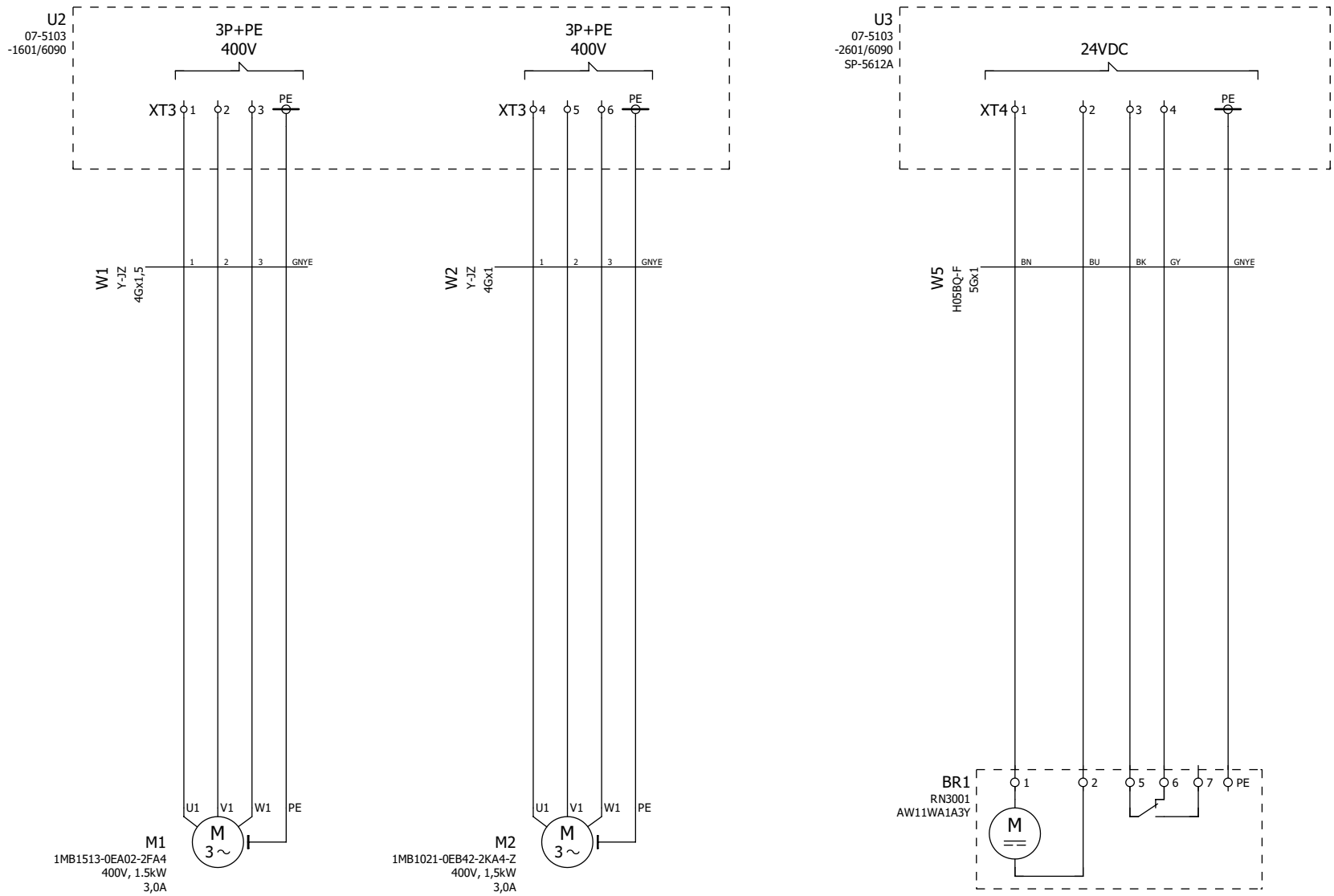
Customer	PHB Weserhütte
Order No.	40518004
Drawing number	HE-NZ-EL-013427-E11

Producer	HENNLICH s.r.o.
Product	Loading spout w/integrated filter
Type of Product	NZO-F-TM-4-3L-VE-R
Responsible person	PhD J.Kodet
Power connection	
Control voltage	24VDC
Special features	Inside: ATEX 21 / Outside: ATEX 22

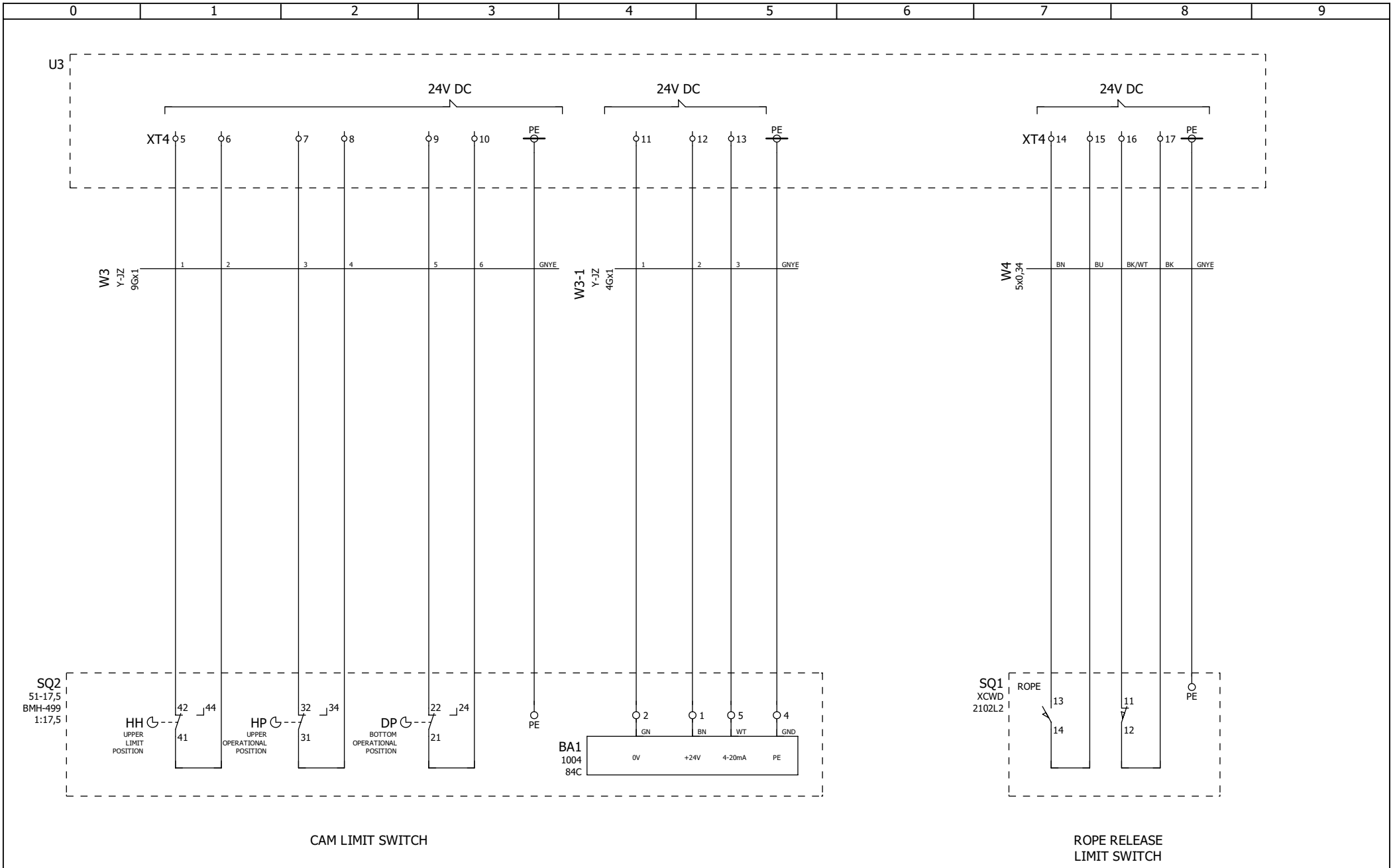
Date : 13.12.2018 Issued by : Ing. Demyanenko Pages : 8



HENNLICH s.r.o. o.z. HENNLICH ENGINEERING				Prepared	Ing. Demyanenko	CABLING	Name of Project		HE-NZ-EL-013427-E11	Page No. 2
				Date	26.02.2018		Order No.	40518004		
	11	13.12.2018		Checked	J.Řeřicha		Typ of drive			Total of pages 8
	Revision	Date of Revision	Name	Date		Title of page	Source of voltage		Drawing No.	



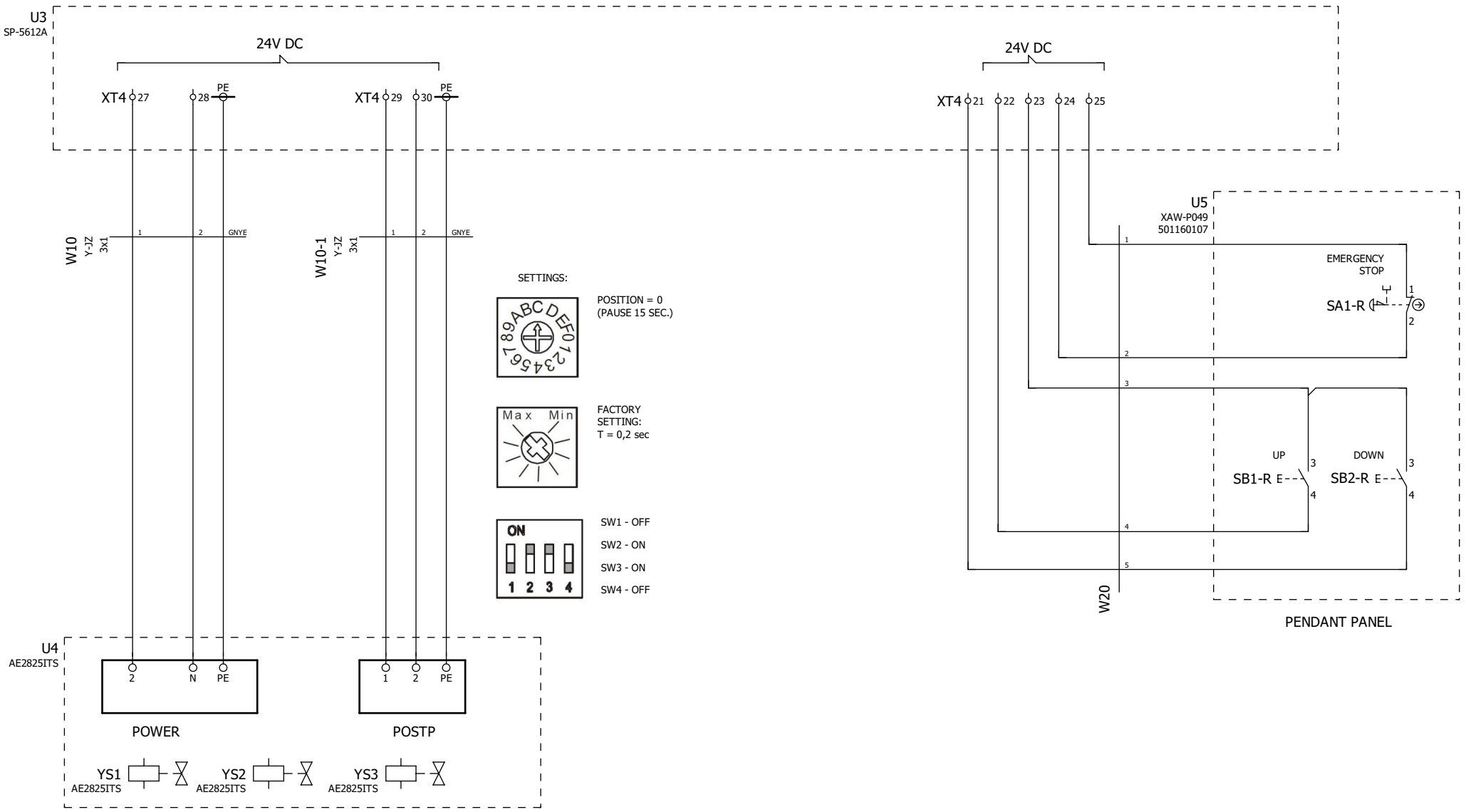
HENNLICH s.r.o. o.z. HENNLICH ENGINEERING				Prepared	Ing. Demyanenko	ELECTRIC CIRCUITS	Name of Project		HE-NZ-EL-013427-E11	Page No. 3
				Date	26.02.2018		Order No.	40518004		
	11	13.12.2018		Checked	J.Řeřicha		Typ of drive			Total of pages 8
	Revision	Date of Revision	Name	Date		Title of page	Source of voltage		Drawing No.	



CAM LIMIT SWITCH

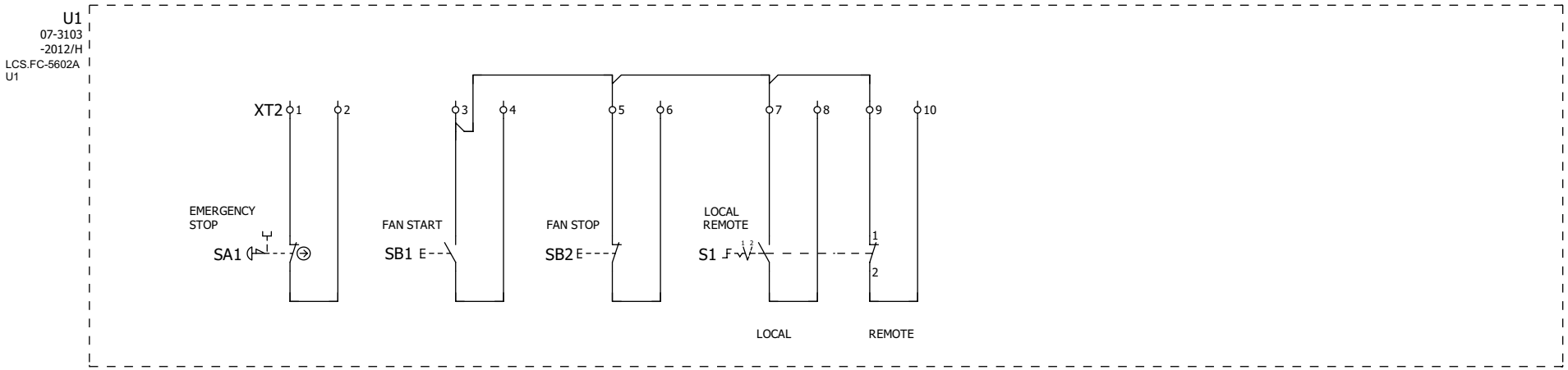
ROPE RELEASE
LIMIT SWITCH

HENNLICH s.r.o. o.z. HENNLICH ENGINEERING				Prepared	Ing. Demyanenko	ELECTRIC CIRCUITS	Name of Project		Page No. 4
				Date	26.02.2018		Order No.	40518004	
	11	13.12.2018		Checked	J.Řeřicha		Typ of drive		HE-NZ-EL-013427-E11
	Revision	Date of Revision	Name	Date		Title of page	Source of voltage		Drawing No. Total of pages 8



CARTRIGES RECOVERY VALVES CONTROL

HENNLICH s.r.o. o.z. HENNLICH ENGINEERING				Prepared	Ing. Demyanenko	ELECTRIC CIRCUITS	Name of Project		HE-NZ-EL-013427-E11	Page No. 5
				Date	26.02.2018		Order No.	40518004		
	11	13.12.2018		Checked	J.Řeřicha		Typ of drive			Total of pages 8
	Revision	Date of Revision	Name	Date		Title of page	Source of voltage		Drawing No.	



HENNLICH s.r.o. o.z. HENNLICH ENGINEERING				Prepared	Ing. Demyanenko	ELECTRIC CIRCUITS	Name of Project		HE-NZ-EL-013427-E11	Page No. 6
				Date	26.02.2018		Order No.	40518004		
	11	13.12.2018		Checked	J.Řeřicha		Typ of drive			Total of pages 8
	Revision	Date of Revision	Name	Date		Title of page	Source of voltage		Drawing No.	

Bill of material

F01_HENN_EN

Marking	Q-ty	Description	Type	Supplier	Article number
BR1	1	Rotation sensor, 24V DC, ATEX II 1/2D Ex t IIIC T! Da/Db	RN3001AW11WA1A3Y	UWT	HE-NZ-EM-000195-K00
BR1	1	Cable gland M20, II 2G/D Eex eb IIC Gd, tb IIIC Db	V-TEC-Ex-M20×1,5	GENERI	HE-NZ-EL-001630-K00
KP1	1	DIN-Rail 35x7,5	DIN-Lišta 35x7,5	WEIDMUELLER	HE-NZ-EL-000287-K00
KP4	1	Conduit M16, black	EW-M16/P11	MURRPLASTIK	HE-NZ-EL-000861-K00
KP5	6	Clamp for conduit M16	UH 11/M5	MURRPLASTIK	HE-NZ-EL-000867-K00
KP24	100	12mm plate adapter	KT2/12B	SCHNEIDER ELECTRIC	HE-NZ-EL-001167-K00
KP25	100	Cable marking plate	KS 4/12	SCHNEIDER ELECTRIC	HE-NZ-EL-000318-K00
KP26	64	Marking plate	KWI 5/10	SCHNEIDER ELECTRIC	HE-NZ-EL-000329-K00
M1	1	Fan motor 400V, 1.5kW, 3A, II 2D Ex tb IIIC T 120°C Db	CPS/R-2RD90	SAMA	HE-NZ-EM-000272-K02
M1	1	Adapter M25/M20, plastic, gray	3455.25.20	AGRO	HE-NZ-EL-001107-K00
M1	1	Cable gland M20, II 2G/D Eex eb IIC Gd, tb IIIC Db	V-TEC-Ex-M20×1,5	GENERI	HE-NZ-EL-001630-K00
M2	1	Motor gearbox 1,5kW, 400V, 3A, IP65, EX TB IIIC T120° DB	1MB1021-0EB42-2KA4-Z/CHM130	SIEMENS/CHIARAVALLI	HE-NZ-EM-000344-K00
M2	1	Adapter M25/M20, plastic, gray	3455.25.20	AGRO	HE-NZ-EL-001107-K00
M2	1	Cable gland M20, II 2G/D Eex eb IIC Gd, tb IIIC Db	V-TEC-Ex-M20×1,5	GENERI	HE-NZ-EL-001630-K00
SQ1	1	Limit switch w/cable 2m, Ex d IIC T6 Gb / Ex tb IIIC T85°C Db	XCWD2102L2	SCHNEIDER ELECTRIC	HE-NZ-EL-001844-K00
SQ2	1	Cam limit switch, rate 1:17.5, 4-20mA, EX II 2D tb IIIC T100°C Db	51-17,5 BMH-399 B3/B5	STROMAG	HE-NZ-EM-000347-K00
SQ2	1	Cable gland M20, II 2G/D Eex eb IIC Gd, tb IIIC Db	V-TEC-Ex-M20×1,5	GENERI	HE-NZ-EL-001630-K00
U1	1	Junction box 200x250x120mm, II 2D Ex db eb IIIC T6 Gb	07-3103-2012/H	BARTEC	07-3103-2012/H
U2	1	Junction box 160x160x90mm, II 2D Ex e IIIC T6 Gb	07-5103-1601/6090	BARTEC	07-5103-1601/6090
U3	1	Junction box 260x160x90mm, II 2D Ex e IIIC T6 Gb	07-5103-2601/6090	BARTEC	07-5103-2601/6090
U4	1	Air tank, 3 valves, 24VDC, II 3D Ex mc tc IIIC IP65 T90° Dc	AE2825ITS	AUTEL	HE-FJ-OS-000168-K00
U5	1	Pendant control 3xPBs, Ex de IIC T6 Gb / Ex tb IIIC Db	XAW-P049	GENERI	XAW-P049
W1	1	Cable 4Gx1,5	Y-JZ 4Gx1,5	FABER	HE-NZ-EL-000370-K00
W2	1	Cable 4Gx1	Y-JZ 4Gx1	FABER	HE-NZ-EL-000170-K00
W3	1	Cable 9Gx1	Y-JZ 9Gx1	FABER	HE-NZ-EL-000173-K00
W3-1	1	Cable 4Gx1	Y-JZ 4Gx1	FABER	HE-NZ-EL-000170-K00
W5	1	Cable 5Gx1	H05BQ-F 5Gx1	BAUDE	HE-NZ-EL-000043-K01
W10	1	Cable 3Gx1	Y-JZ 3Gx1	FABER	HE-NZ-EL-000107-K00
W10-1	1	Cable 3Gx1	Y-JZ 3Gx1	FABER	HE-NZ-EL-000107-K00
XT3	40	Terminal block 2,5mm2, gray	WT 2,5	WIELAND	HE-NZ-EL-000289-K00
XT3	2	Terminal block 4mm2, grounding	WK 4 SL/U	WIELAND	HE-NZ-EL-000313-K00
XT3	4	End plate	9708/2 S 35	WIELAND	HE-NZ-EL-001012-K00
XT3	1	Protective conductor terminals, 12-poles	60 S 12x16 GBGN	OBO BETTERMANN	HE-NZ-EL-001831-K00
XT3	4	Terminal block 2,5mm2, dark blue	WT 2,5 DU BL	WIELAND	HE-NZ-EL-001374-K00

General Bill of Material

F02_HENN_EN

Item	Quantity pcs	Quantity total, m	Description	Type	Supplier	HENNLICH Code Number	Comments
1	1	0,00	Rotation sensor, 24V DC, ATEX II 1/2D Ex t IIIC T! Da/Db	RN3001AW11WA1A3Y	UWT	HE-NZ-EM-000195-K00	
2	4	0,00	Cable gland M20, II 2G/D Eex eb IIC Gd, tb IIIC Db	V-TEC-Ex-M20×1,5	GENERI	HE-NZ-EL-001630-K00	
3	1	1,00	DIN-Rail 35x7,5	DIN-Lišta 35x7,5	WEIDMUELLER	HE-NZ-EL-000287-K00	
4	1	6,00	Conduit M16, black	EW-M16/P11	MURRPLASTIK	HE-NZ-EL-000861-K00	
5	6	0,00	Clamp for conduit M16	UH 11/M5	MURRPLASTIK	HE-NZ-EL-000867-K00	
6	100	0,00	12mm plate adapter	KT2/12B	SCHNEIDER ELECTRIC	HE-NZ-EL-001167-K00	
7	100	0,00	Cable marking plate	KS 4/12	SCHNEIDER ELECTRIC	HE-NZ-EL-000318-K00	
8	64	0,00	Marking plate	KWI 5/10	SCHNEIDER ELECTRIC	HE-NZ-EL-000329-K00	
9	1	0,00	Fan motor 400V, 1.5kW, 3A, II 2D Ex tb IIIC T 120°C Db	CPS/R-2RD90	SAMA	HE-NZ-EM-000272-K02	
10	2	0,00	Adapter M25/M20, plastic, gray	3455.25.20	AGRO	HE-NZ-EL-001107-K00	
11	1	0,00	Motor gearbox 1,5kW, 400V, 3A, IP65, EX TB IIIC T120° DB	1MB1021-0EB42-2KA4-Z/CHM130	SIEMENS/CHIARAVALLI	HE-NZ-EM-000344-K00	
12	1	0,00	Limit switch w/cable 2m, Ex d IIC T6 Gb / Ex tb IIIC T85°C Db	XCWD2102L2	SCHNEIDER ELECTRIC	HE-NZ-EL-001844-K00	
13	1	0,00	Cam limit switch, rate 1:17.5, 4-20mA, EX II 2D tb IIIC T100°C Db	1:17,5 BMH-399 B3/B5	STROMAG	HE-NZ-EM-000347-K00	
14	1	0,00	Junction box 200x250x120mm, II 2D Ex db eb IIIC T6 Gb	07-3103-2012/H	BARTEC	07-3103-2012/H	
15	1	0,00	Junction box 160x160x90mm, II 2D Ex e IIIC T6 Gb	07-5103-1601/6090	BARTEC	07-5103-1601/6090	
16	1	0,00	Junction box 260x160x90mm, II 2D Ex e IIIC T6 Gb	07-5103-2601/6090	BARTEC	07-5103-2601/6090	
17	1	0,00	Air tank, 3 valves, 24VDC, II 3D Ex mc tc IIIC IP65 T90° Dc	AE2825ITS	AUTEL	HE-FJ-OS-000168-K00	
18	1	0,00	Pendant control 3xPBs, Ex de IIC T6 Gb / Ex tb IIIC Db	XAW-P049	GENERI	XAW-P049	
19	1	3,00	Cable 4Gx1,5	Y-JZ 4Gx1,5	FABER	HE-NZ-EL-000370-K00	
20	2	4,00	Cable 4Gx1	Y-JZ 4Gx1	FABER	HE-NZ-EL-000170-K00	
21	1	2,00	Cable 9Gx1	Y-JZ 9Gx1	FABER	HE-NZ-EL-000173-K00	
22	1	12,00	Cable 5Gx1	H05BQ-F 5Gx1	BAUDE	HE-NZ-EL-000043-K01	
23	2	6,00	Cable 3Gx1	Y-JZ 3Gx1	FABER	HE-NZ-EL-000107-K00	
24	40	0,00	Terminal block 2,5mm2, gray	WT 2,5	WIELAND	HE-NZ-EL-000289-K00	
25	2	0,00	Terminal block 4mm2, grounding	WK 4 SL/U	WIELAND	HE-NZ-EL-000313-K00	
26	4	0,00	End plate	9708/2 S 35	WIELAND	HE-NZ-EL-001012-K00	
27	1	0,00	Protective conductor terminals, 12-poles	60 S 12x16 GBGN	OBO BETTERMANN	HE-NZ-EL-001831-K00	
28	4	0,00	Terminal block 2,5mm2, dark blue	WT 2,5 DU BL	WIELAND	HE-NZ-EL-001374-K00	

Ex-tech Solution

MODE D'EMPLOI – OPERATING INSTRUCTIONS

Interrupteurs de position - Modèles XCWD... , ZCWD...
Limit switches - XCWD... , ZCWD... series

Ex tech solution 22, impasse de la Volute - BP 20708 - 16430 Champniers – France - Tél. + 33 (0)5 45 93 01 10 - Fax. +33 (0)5 45 93 01 15
E-mail: salesolution@ex-tech.no.fr www.ex-tech.no Capital : 480 000 € RCS Angoulême 411 101 744 Identification CEE : FR 05 411 101 744 Code APE : 2712Z

1. General information

The operating instructions must always be preserved during the lifetime of the product. It summarizes the key safety measures.

It must be read by everyone working with the product so that they know to handle it properly.

The limit switch Ex d must be used only for the purposes for which it was intended.

EX-TECH SOLUTION shall not be held liable for damages resulting from incorrect or improper use or non-compliance with this manual.

Only authorized and trained persons are authorized to perform work on limit switch Ex d (installation, commissioning, maintenance, maintenance).

During installation and operation, it is imperious to follow the instructions (technical characteristics and operating conditions) written on the marking plate of the limit switch Ex d.

2. Manufacturer

Ex-tech Solution
22, impasse de la Volute – Z.A. les Montagnes
B.P. 20708 – 16430 Champniers – France
Tel: + 33 5 45 93 01 10 – Fax : + 33 5 45 93 01 15
E-mail: sales.solution@ex-tech.no – www.ex-tech.no

3. Storage and transport

- ⇨ Check that the product was not damaged during the transport. If necessary, make a complaint to the carrier
- ⇨ Never turn on damaged products
- ⇨ The product should be stored for a maximum of two years into a place dry (no condensation), enclosed, covered, protected from contact with external chemicals and to temperatures of -40 ° C ... + 70 ° C and vibration-free

4. Use

The limit switch Ex d described in this manual are certified II 2 GD and can operate into the classified zones 1 and 2 for gases or 21 and 22 for dusts.

5. Function

The limit switch certified for hazardous areas in protection mode Ex d are robust materials designed to meet the highest requirements for use especially in the oil and gas, chemical, pharmaceutical and food.

The limit switch are available with many different types of actuators.

These limit switch are designed to receive:

- To be installed in automated installations, is to transmit to the information system the information of presence or absence, positioning or end of travel.
- This range consists limit switches with different mechanical actuators, and electrical contact blocks including two to four contacts

6. Technical data

6.1. Certificates

Type of certificate	Certificate Nr.
Europe (ATEX)	INERIS 03ATEX0083X

6.2. Standards accordance

EX zones 1&2 due to gases, vapours and mist	EX zones 21&22 for dusts
EN / IEC 60079-0 EN / IEC 60079-1	EN / IEC 60079-31

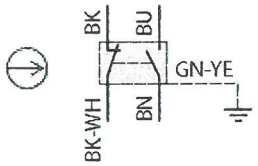
6.3. Marking

Ex d IIC T6 Gb
Ex tb IIIC T85°C Db

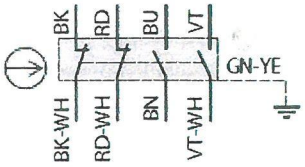
6.4. Characteristics

		XCWD¤¤10L..	XCWD..11L..	XCWD..02L...	XCWD..F0L...	XCWD..G0L...	XCWD..G1L...	XCWD..F2L...	XCWD..15L...	XCWD..16L...	XCWD..17L...	XCWD..45L...	XCWD..46L...	ZCWD..L...
Mechanical durability		10 000 000												
Response speed		0,5						0,1	1,5					0,1
Temperature range		- 20 °C à + 60° C												
Degree of protection		IP 66 et IP67												
Rated operational characteristics		AC15 ; C300 (Ue = 240 V, Ie = 0,75A) - DC13 ; R300 (Ue = 250 V , Ie =0,1 A)												
Short-circuit protection		6A gG (gl) cartridge fuse mounted outside Atex Zone												
Cable entry		Swivel cable exit L = 1-2-5-10m												
Contact	¤¤ = 21	Snap-action NO+NC												
	¤¤ = 41	Snap-action 2NO+2NC												

ZCWD21L.../ XCWD21...L...

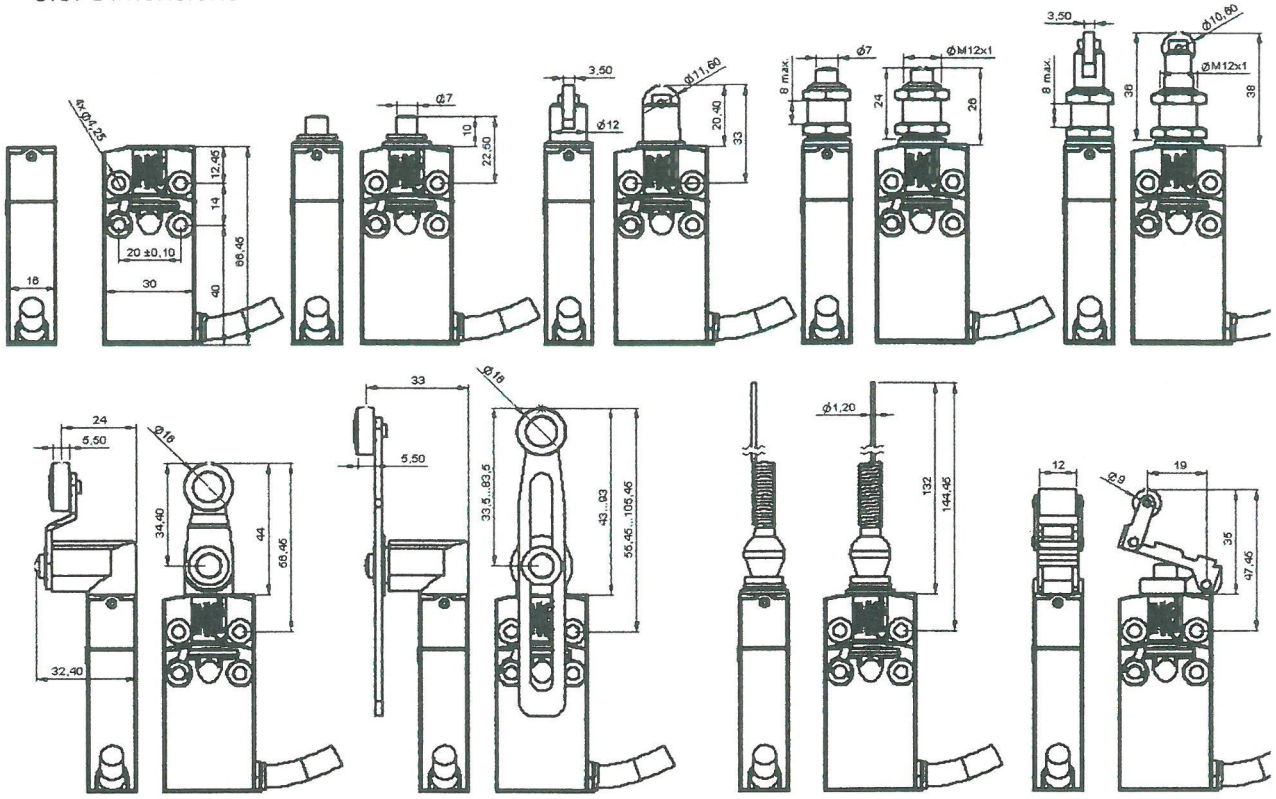


ZCWD41L... / XCWD41...L...



6.5. Orientation and mounting actuator

6.6. Dimensions



7. Safety instructions

⇨ The following safety instructions should be read in conjunction with the following standards:
- standard NF C 15 100
- IEC 60079-14 (Electrical installations design, selection and erection)
- standard IEC 60079-17 (Electrical installations inspection and maintenance)
- standard IEC 60079-31 (Equipment dust ignition protection by enclosure "t").
- decrees, laws, directives, circulars of application, standards, rules of art and any other documents concerning its place of installation

⚠	It is strictly forbidden to change anything on and in the enclosure without our prior agreement

⇨ Make sure the compatibility between the data on the nameplate of the enclosure with the existing explosive atmosphere, the area of use, the ambient temperature and surfaces temperatures

⇨ Any damage of the equipment can have for consequence to make ineffective the explosion-proof protection

⇨ The installation of the enclosure have to be performed in the state of the art in the technical domain and only by qualified, competent and authorized person.

⚠	A defective or abnormal use as well as the non-observance of the instructions of this document exclude any clause of of guarantee and do not engage our responsibility.
⚠	According to the standard IEC 60079-31, it is prohibited to operate the enclosure if the dust thickness on it is greater than 50 mm.
⚠	Ex-tech Solution ensures the traceability of the limit switch up the first place of delivery.
⚠	The limit switch are not in any case mechanical stops

8. Mounting and installation

- ⇨ Check if the data on the label of the enclosure are consistent with the permitted conditions for the explosive atmosphere of use (Group II: surface industries - Category 2: high level of protection - G: for Gas - D: for Dusts - IPxx: IP rating)
- ⇨ Before installing and commissioning, ensure that the limit switch Ex d is not damaged externally
- ⇨ Check if there is a specific position of mounting
- ⇨ The free extremity of the cable must be connected either in safety area or in an enclosure protected by a protection mode compatible with the considered use.
- ⇨ The wiring of the cable conductors must be made with a particular care
- ⇨ The conductor insulation must reach the terminal. The conductive soul must not be damaged
- ⇨ Not to exceed the authorized maximal temperature, it is advisable to choose the appropriate cables and take a particular care in installing them
- ⇨ Follow the instructions contained in the specifications

9. Before starting

- ⇨ Make sure the unit has been correctly settled and not damaged
- ⇨ The device may include any foreign body and no part is damaged

10. Maintenance

The maintenance and repairs works on devices must be made only by authorized and trained persons for that purpose.

⚠	Before any technical intervention the devices must be switched off.

- ⇨ Prevent and avoid any formation of layers of dusts: make a periodic cleaning with a wet cloth

The following checks must be made at least once a year:

- ⇨ The outdoor equipment and surfaces must not be damaged
- ⇨ The cable entries and blanking plugs must be threaded
- ⇨ Check tightness of the connections, rewiring if necessary

⚠	It is also necessary to observe the regulations in the country of use.

11. Special conditions for safe use when the intrinsically safe equipment is installed in the flameproof enclosure

The free extremity of the cable must be connected either in safety area or in an enclosure protected by a protection mode compatible with the considered use.

For use in dusties explosive atmospheres, the user shall carry out a regular cleaning in order to avoid dusts deposit on to surface of the apparatus.

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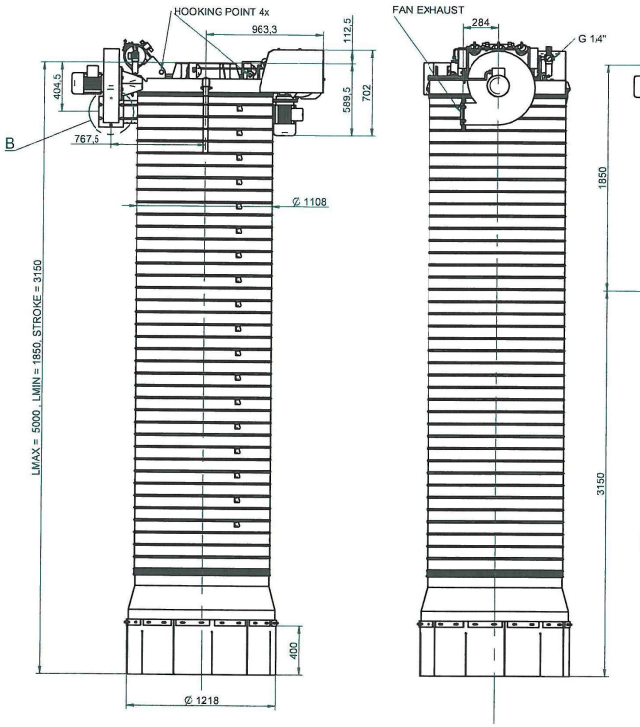
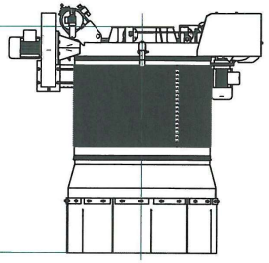
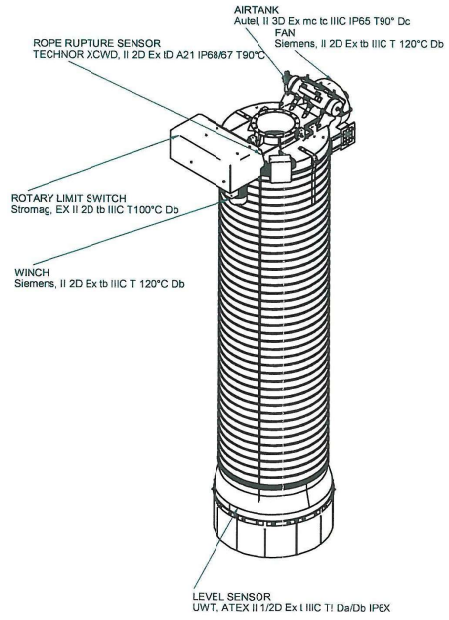
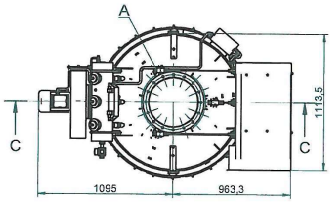
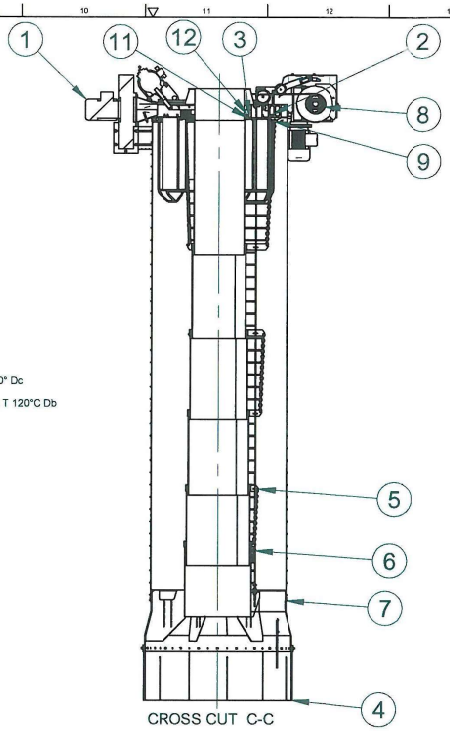
Intertek
Reviewed
Witnessed
Initial
Date 26 -09- 2018
CZ - 0114



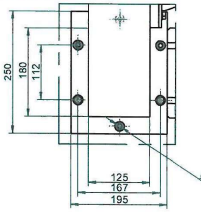


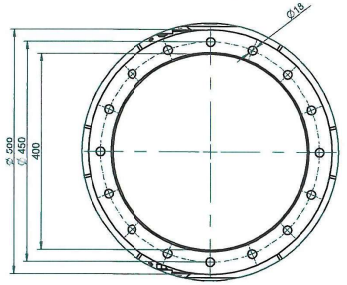






DETAIL B
FAN-EXHAUST FLANGE





DETAIL A
LOADING SPOUT FLANGE

STAINLESS STEEL FASTENERS

Item No.	Part No.	Quantity	Part name - description	Norm	Material	Weight
12	HE-NZ-SP-008578-K00	16	SCREW M12x35	ČSN EN 24017		0,047
11	HE-NZ-SP-007031-K00	16	WASHER 12	ČSN EN ISO 7089		0,0063
10*	HE-NZ-ME-014826-000	2	BELLOWS HINGE		S235JRG2	0,49
9	HE-NZ-OS-000340-K00	0 m	CHAIN 22x7 - 45pcs	DIN 763/5685C	STAINLESS STEEL	0,58
8	HE-NZ-ME-024210-000	1	ROPES		STAINLESS STEEL	4,01
7	HE-NZ-OS-024231-000	1	BELLOWS D1100/4200		1.4307 / VINYTOL	51,9
6		0 m	CHAIN 22x7 - 25pcs	DIN 763/5685C	STAINLESS STEEL	0,58
5	HE-NZ-OS-024180-000	1	TUBES D400		S235JRG2	135
4	HE-NZ-EM-024192-000	1	LOWER PART		S235/HARDOX 500	118
3	HE-NZ-OD-024200-000	1	INLET PART	SVAŘENEC	HARDOX 500	37,7
2	HE-NZ-EM-021233-000	1	FILTER CARTIDGES L=600			24,6
1	HE-NZ-EM-024202-000	1	BASE PLATTE NZF-4-3L-1500W			293
			NZO-F-TM-4-3L-VE-R			666

Change description

Scale	Drawn	ING. JAKUB SOBOTKA	Approved	ING. JAN KODET Ph.D.
1:20	Checked	MIROSLAV TOMICKÝ	Date	01.03.2018

HENNLICH s.r.o.
a.z. HENNLICH ENGINEERING
Českého typku 9
412 01 Litoměřice

The deviations of the linear sizes not specified especially carry out according to norm ISO 13715 – m

Not specified especially surfinish rounding carry out accordingly norm ISO 13715 – 0,5x45°

The drawing is our intellectual property and contents is a category of trade secrets
The drawing is forbidden for duplicating and passing to the third parties without our permit

Type NZO-I-TM-4-3L-VE-R | Group | –

Description: NZO-F-TM-4-3L-VE-R

Drawing No.: A21 HE-NZ-NZO-022927-000

Format: | Sheets: 1 | Sheet No.1 | Rev. Ind.

SPARE PARTS & INTERCHANGEABILITY RECORD (SPIR)

EQUIPMENT

ITEM	QTY	TAG NUMBER(S)	MODEL	SERIAL No.(s)	DESCRIPTION
2A	1	FC-5601B	FABRIPULSE-EV 12-10	118800-EV	DUST COLLECTOR B
2B	1	FE-5601A	KER 940x1440	1806049	EXPLOSION PANELS
2C	1	FE-5601B	KER 940x1440	1806049	EXPLOSION PANELS
2D	1	JD-5605A BELT	MTD-E 1245	50-V127070.A01	WEIGHING FEEDER
2E	1	JD-5605B BELT	MTD-E 1245	50-V127069.A01	WEIGHING FEEDER
2F	1	JD-5606A	JD-5606A	000951-TR-05	MOVEABLE CONVEYOR
2G	1	JD-5606B	JD-5606B	000951-TR-05	MOVEABLE CONVEYOR
2H	1	SP-5612A	NZO-F-TM-4-3L-VE-R	92/2018 - 40518004	TELESCOPIC CHUTE
2I	1	SP-5612B	NZO-F-TM-4-3L-VE-R	91/2018 - 40518004	TELESCOPIC CHUTE
2J	1	SP-5605	RC4.32TAS1RS	361.18	TRUCK WASHING BOX
2K	1	252PLC-221-222-223	300-17-003	30017003-001	PLC/CABLE
2L	1	SP-5614	SVP-3954-17	2018-10-28978	VULCANIZER

ALWAYS REFER TO THIS NUMBER :

172784 - I-SD-000006

(project number) (spir number)

Rev. :	4	Date :	13-ago-19
Plant :	RNP DCU Plant Project (WP1)		
Location :	Pancevo, Serbia		
Equipment :	.....		
Seller's Ref. :	000951-00-0CG-LT-0003		
Seller :	PHB WESERHÜTTE S.A.U		
Tel. number :	+34 984 49 56 71		

PARTS

237																		
238														**EXPLOSION PANELS**					
239		14											14	PC	EXPLOSION VENT KER 940X1440	000951-01-0SL-EM-0001	AISI 304 DIN 14301	ATEXPREVEN		
240		14											14	PC	SENSOR ATEX	000951-01-0SL-EM-0001	S3-HT	ATEXPREVEN		
241																				
242															**OTHER**					
243						1	1						2	PC	HORN&LAMP	-	D1XC1C10-AC230	PEPER&FUCHS		
244														Meter	15w/m HEAT TRACING CABLE	-				
245														PC	Weight cell 1000T	000951-01-0SL-EM-0001	C3 ATEX 22	SERVIPESA		
246														PC	Support weight cell with accesories	000951-01-0SL-EM-0001	HDG	SERVIPESA		
247														PC	Conection box	000951-01-0SL-EM-0001		SERVIPESA		
248														PC	Panel with ethernet comunication	000951-01-0SL-EM-0001	MOD 1700	SERVIPESA		
249														Kit	HILTI DRILL KIT DX 351 BT G + SF BT 22-A + B22/2.6	-	DX351 BT G	HILTI		
250														Kit	HILTI SCREWDRIVER KIT SBT 4-A22 + B22/3.0 + S-DG BT M	-	SBT 4-A22	HILTI		
251																				
252															**TELESCOPIC CHUTE**					
253								9	9				18	PC	Filter cartridge	000951-01-0CC-EM-0001	HE-FJ-OS-000164-K00	HENNLICH		
254								1	1				2	PC	Level switch	000951-01-0CC-EM-0001	HE-NZ-EM-000195-K00	HENNLICH		
255								1	1				2	PC	Inlet part	000951-01-0CC-EM-0001	HE-NZ-OD-024200-000	HENNLICH		
256								1	1				2	PC	Tube No. 1	000951-01-0CC-EM-0001	HE-NZ-OD-024170-000	HENNLICH		
257								1	1				2	PC	Tube No. 2	000951-01-0CC-EM-0001	HE-NZ-OD-024175-000	HENNLICH		
258								1	1				2	PC	Tube No. 3	000951-01-0CC-EM-0001	HE-NZ-OD-024181-000	HENNLICH		