Spare parts manual

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CMO 20–30 and TCMO 20–30
Reciprocating compressor unit



SABROE

Johnson Controls

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Manual for CMO 20-30 and TCMO 20-30

Compressor type	☐ CMO 24	☐ CMO 26	☐ CMO 28	☐ TCMO 28
	☐ CMO 34	☐ CMO 36	☐ CMO 38	☐ TCMO 38
Compressor no.				
Refrigerant	☐ R717	☐ R22	☐ R134a	☐ R404A
	☐ R507	Other _____		
Control	☐ Unisab III	☐ None	Other _____	
Compressor cooling	☐ Thermopump			
	☐ Water-cooled top and side covers			
	☐ Air-cooled top and side covers			
	☐ Air-cooled top covers and water-cooled side covers			
	☐ Air-cooled top and side covers + oil cooling (refrigerant-cooled)			
Drive type	☐ Fixed speed		☐ Variable speed (VSD)	
☐ Ex-execution (ATEX)	☐ T3	☐ T4	Other _____	
☐ Additional suction filter				
☐ Oil return on parallel systems				
Oil separator	☐ SABROE OVUR		☐ SABROE OHUR	
Intermediate cooling system	☐ With internal intermediate cooling system			
	☐ With external intermediate cooling system			

The SABROE® reciprocating compressor and unit can be configured with various types of equipment depending on its function and requirements. Some of the equipment may be described in this manual even though it is not featured on your particular unit.

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1. Spare parts list CMO

1.1 How to use the part list

The key to identify a spare part is the pos. no. of the spare part.

By means of the pos. no., the position of the spare part can be found on the spare parts drawings.

Usually the spare part no. is stated next to the pos. no. If no spare part no. is stated, it may be because the part is not considered a spare part or because the part is not sold as a spare part.

Parts which are not sold individually are contained in spare parts kits.

The spare parts list contains single parts and components, complete main parts, e.g. cylinder liner with suction valve, kit assemblies which is a collection of spare parts, service kits and gasket kits.

Spare parts which are not available as single parts will be contained in complete main parts as sub parts, kit assemblies, service kits and gasket kits.

Example

Component:	Pos 19, part number 3112.077, designation: Cylinder liner Model I, T/CMO 20 w. cap. reg.
Kit assembly:	part number 3184.423, designation: Kit assembly oil pump
Service kit:	part number 3188.102, designation: Service kit oil pump
Gasket kit:	part number 3188.072, designation: Gasket kit pair of cylinder liners TCMO

The part list is divided into sections with the main components of the compressor as headlines.

For each main part, e.g. cylinder liner complete, the part no. of the main part is stated first and then the pos. nos. of all single parts contained in the main part.

Then all kits related to the main part - including the pos. nos. of all sub parts contained in these kits - are indicated.

In some cases a kit will be related to several main parts which is why the kit is not indicated until after the relevant main parts.

Example

A ring plate kit contains a discharge valve ring plate pos. 20C, a suction valve ring plate pos. 19F and valve springs. Therefore, the ring plate kit will be indicated after the discharge valve ring plate pos. 20.

1.2 Amendments

2017.06	Discharge valve selection according to Technical Information 2016/08 implemented, Stopvalve changes implemented
2017.10	Editorial changes, correction of minor errors

1.3 Parts list

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
		Compressor frame					
1 A-1	**3111.076**	Frame CMO 24/34		1			
1 A-2	**3111.077**	Frame CMO 26/36			1		
1 A-3	**3111.078**	Frame CMO 28/38				1	
1 A-4	**3111.079**	Frame TCMO 28/38 int. IP connection					1
1 A-5	**3111.088**	Frame TCMO 28/38 ext. IP connection					1
1 B-1	**2415.031**	Non-return valve		1	1	1	1
1 C-1	**1349.397**	Blanking Plug For Ports G3/4A		1	1	1	1
1 D-1		Gasket (Integrated in 1C-1)					
1 E-1	**1349.351**	Blanking Plug For Ports G1/2A		1	1	1	1
1 F-1		Gasket (Integrated in 1E-1)					
		Top cover air cooled T/CMO20					
2 A-1	**3113.198**	Top cover, T/CMO20		2	3	4	4
2 B-1	**2343.241**	Gasket for top cover		2	3	4	4
2 C-2	**1424.060**	Hexagon head screw M12 x 70		24	36	48	48
2 D-1	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		24	36	48	48
		Top cover air cooled T/CMO30					
2 A-2	**3113.275**	Top cover, T/CMO30		2	3	4	4
2 B-1	**2353.241**	Gasket for top cover		2	3	4	4
2 C-2	**1424.061**	Hexagon head M12 x 75		24	36	48	48
2 D-1	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		24	36	48	48
		Top cover water cooled T/CMO20					
2 A-1	**3113.198**	Top cover, T/CMO20		2	3	4	4
2 B-1	**2353.241**	Gasket for top cover		2	3	4	4
2 C-3	**1424.066**	Hexagon head screw M12 x 90		24	36	48	48
2 D-3	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		24	36	48	48
2 K-3	**3113.166**	Water cover, T/CMO20		2	3	4	4
2 L-3	**2353.172**	Gasket for water cover		2	3	4	4
2 M-3	**1424.169**	Hexagon head screw M 8 x 30		4	6	8	8
2 N-3	**1436.034**	Washer dia. 17/8,4 x 1,6		4	6	8	8
		Top cover water cooled T/CMO30					
2 A-1	**3113.275**	Top cover, T/CMO30		2	3	4	4
2 B-1	**2353.241**	Gasket for top cover		2	3	4	4
2 C-3	**1424.066**	Hexagon head screw M12 x 90		24	36	48	48
2 D-3	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		24	36	48	48
2 K-3	**3113.166**	Water cover, T/CMO20		2	3	4	4
2 L-3	**2353.172**	Gasket for water cover		2	3	4	4
2 M-3	**1424.169**	Hexagon head screw M 8 x 30		4	6	8	8
2 N-3	**1436.034**	Washer dia. 17/8,4 x 1,6		4	6	8	8
		Side cover with oil level glass, air cooled					
3 A-1	**3113.099**	Side cover, - air cooled		1	1	1	1
3 B-1	**2353.241**	Gasket for top cover		1	1	1	1
3 C-1	**1424.059**	Hexagon head screw M12 x 65		12	12	12	12

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
3 D-3	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		12	12	12	12
3 G-1	**1226.015**	Oil level glass		1	1	1	1
3 H-1	**1331.543**	O-ring 52,07 x 2,62		1	1	1	1
3 J-1	**1424.148**	Hexagon head screw M6 x 18		4	4	4	4
		Side cover water cooled					
3 A-2	**3113.167**	Side cover, water cooled		1	1	1	1
3 B-2	**2353.172**	Gasket for side cover		1	1	1	1
3 C-2	**1424.219**	Hexagon head screw M12 x 50		12	12	12	12
3 D-2	**1436.075**	Washer dia. 24/13 x 2,5 (Included in 3184.285/286/287).		12	12	12	12
3 K-2	**3113.166**	Water cover, T/CMO20		1	1	1	1
3 L-2	**2353.172**	Gasket for water cover		1	1	1	1
3 M-2	**1424.168**	Hexagon head screw M8 x 25		2	2	2	2
3 N-2	**1436.034**	Washer for M8		2	2	2	2
3 P-2	**1323P077**	Rubber cord dia. 10 x 220		1	1	1	1
	3188.066	**Gasket kit top/side cover CMO 24/34**		1			
2 B-1/3 B-1	**2353.241**	Gasket top cover,	3				
2 L-3/3 B-2/3 L-2	**2353.172**	Gasket for water cover	4				
2 P-3/3 P-2	**1323P077**	Rubber cord dia. 10 x 220	3				
86 B-1	**2353.102**	Gasket for side cover	1				
	3188.067	**Gasket kit top/side cover CMO 26/36**			1		
2 B-1/ 3 B-1	**2353.241**	Gasket top cover,	4				
2 L-3/3 B-2/3 L-2	**2353.172**	Gasket for water cover	5				
2 P-3/3 P-2	**1323P077**	Rubber cord dia. 10 x 220	4				
86 B-1	**2353.102**	Gasket for side cover	1				
	3188.068	**Gasket kit top/side cover CMO 28/38**				1	1
2 B-1/ 3B-1	**2353.241**	Gasket top cover,	5				
2 L-3/3 B-2/3 L-2	**2353.172**	Gasket for water cover	6				
2 P-3/3 P-2	**1323P077**	Rubber cord dia. 10 x 220	5				
86 B-1	**2353.102**	Gasket for side cover	1				
	3184.285	**Set of washers for covers CMO 24/34**		1			
	3184.286	**Set of washers for covers CMO 26/36**			1		
	3184.287	**Set of washers for covers T/CMO 28/38**				1	1
		End cover at pump					
4 A-1	**3113.006**	End cover at pump - CMO		1	1	1	
4 A-2	**3113.112**	End cover at pump - TCMO int. IP					1
4 A-3	**3114.282**	End cover at pump - TCMO ext. IP					1
4 B-1	**2353.221**	Gasket for end cover - CMO		1	1	1	
4 B-2	**2353.142**	Gasket for end cover TCMO int. ip					1
4 B-3	**2353.182**	Gasket for end cover TCMO ext. ip					1
4 C-1	**1424.087**	Hexagon head screw M14 x 110		14	14	14	14

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
4 D-1	**1424.090**	Hexagon head screw M14 x 120		2	2	2	2
4 E-1	**1436.076**	Washer dia. 24/13 x 2.5 (Included in 3184.285/286/287).		16	16	16	16
		Bearing cover at pump					
5 A-1	**3113.168**	Bearing cover at pump		1	1	1	1
5 B-3	**2353.168**	Gasket 0.8, (alternatives, see 3188.069/ 3188.070)		1	1	1	1
5 C-1	**1424.194**	Hexagon head screw M14 x 90		8	8	8	8
		End cover at shaft end					
7 A-1	**3113.172**	End cover		1	1	1	1
7 B-1	**2353.104**	Gasket for end cover		1	1	1	1
7 C-1	**1331.608**	O-ring 132.72 x 6.99		1	1	1	1
7 D-1	**1424.083**	Hexagon head screw M14 x 90		14	14	14	14
7 E-1	**1424.095**	Hexagon head screw M14 x 160		2	2	2	2
7 F-1	**1436.076**	Washer dia. 26/15 x 2 (Included in 3184.285/ 286/287).		16	16	16	16
7 G-1	**3425.057**	Dust strainer		1	1	1	1
7 H-1	**2353.118**	Gasket for dust strainer		1	1	1	1
7 J-1	**1424.140**	Hexagon head screw M5 x 10		8	8	8	8
7 K-1	**1437.021**	Lock washer dia.9.2/5.1 x 1.2		8	8	8	8
		Bearing cover at shaft end					
6 A-1	**3113.169**	Bearing cover at shaft end		1	1	1	1
6 B-1	**2353.167**	Gasket 0.5mm		1	1	1	1
6 C-1	**1424.193**	Hexagon head screw M10 x 25		7	7	7	7
6 D-1	**1424.196**	Hexagon head screw M10 x 50		1	1	1	1
	3188.069	**Gasket kit end/bearing cover CMO**		1	1	1	
4 B-1	2353.221	Gasket for end cover - CMO int. IP	1				
5 B-1	2353.166	Gasket 0.3 mm	1				
5 B-2	2353.167	Gasket 0.5 mm	1				
5 B-3	2353.168	Gasket 0.8 mm	1				
5 B-4	2353.169	Gasket 1.0 mm	1				
6 B-1	2353.167	Gasket 0.5 mm	1				
7 B-1	2353.104	Gasket for end cover	1				
7 C-1	1331.608	O-ring 132.7 x 7	1				
7 H-1	2353.118	Gasket for dust strainer dia 326 x 8	1				
	3188.070	**Gasket kit end/bearing cover TCMO**					1
4 B-2	2353.142	Gasket for end cover dia. 410 x 1.0 TCMO	1				
4 B-3	2353.182	Gasket for end cover - TCMO int. IP	1				
5 B-1	2353.166	Gasket 0.3 mm	1				
5 B-2	2353.167	Gasket 0.5 mm	1				
5 B-3	2353.168	Gasket 0.8 mm	1				
5 B-4	2353.169	Gasket 1.0 mm	1				
6 B-1	2353.167	Gasket 0.5 mm	1				
7 B-1	2353.104	Gasket for end cover	1				
7 C-1	1331.608	O-ring 132,7 x 7	1				
7 H-1	2353.118	Gasket for dust strainer dia 326 x 8	1				
	3188.084	**Service kit main bearings CMO**		1	1	1	
5 E-1	2132.086	Bushing	1				
6 E-1	2132.086	Bushing	1				
	3188.069	Gasket kit end/bearing cover CMO	1				
	3188.086	**Service kit main bearings T/CMO**		1	1	1	
5 E-1	2132.086	Bushing	1				

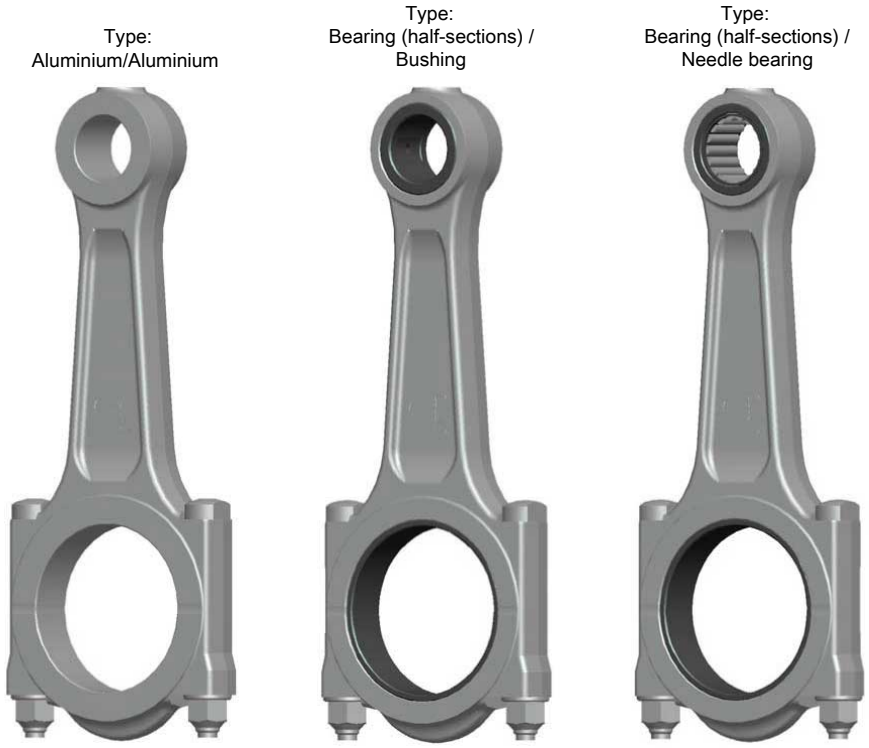
Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
6 E-1	2132.086	Bushing	1				
	3188.070	Gasket kit end/bearing cover T/CMO	1				
	3188.195	**Service kit main bearings undersize CMO**		1	1	1	
5 E-2	2132.088	Bushing - 0.5mm underside	1				
6 E-2	2132.088	Bushing - 0.5mm underside	1				
	3188.069	Gasket kit end/bearing cover CMO	1				
	3188.196	**Service kit main bearings undersize T/CMO**		1	1	1	
5 E-2	2132.088	Bushing	1				
6 E-2	2132.088	Bushing	1				
	3188.070	Gasket kit end/bearing cover T/CMO	1				
		Delivery oil pipe - internal					
9 A-1	**3141.148**	Oil pipe CMO 24/34		1			
9 A-2	**3141.149**	Oil pipe CMO 26			1		
9 A-2	**3141.182**	Oil pipe CMO 36			1		
9 A-3	**3141.150**	Oil pipe T/CMO 28/38				1	1
	3188.080	**Gasket kit/internal oil pipe**		1	1	1	1
9 B-1	1331.541	O-ring 18.5 x 2.62	4				
9 C-1	2351.020	Thrust ring	2				
9 D-1	1331.534	O-ring 7.65 x 1.78	3				
	3126.180	**Shaft seal complete**		1	1	1	1
8 A-1	3113.170	Cover, shaft seal	1				
8 B-1	1331.574	O-ring 98.02 x 3.53	1				
8 C-1	1424.169	Hexagon head screw M 8 x 30	5				
8 D-1	1437.023	Washer dia.14.8/8.8 x 2.0	5				
8 E-1	3126.164	Spring retainer	1				
8 H-1	1446.081	Grooved pin dia. 4.0 x 20	1				
10 A-1	3126.162	Slide ring	1				
10 B-1	3126.158	Slide ring	1				
10 C-1	1331.562	O-ring 53.57 x 3.53	1				
10 D-1	1331.565	O-ring 63.09 x 3.53	1				
10 F-1	3126.161	Retaining flange	1				
10 G-1	1413.329	Hex socket bolt M5 x 16	4				
10 H-1	3126.163	Locking ring	1				
10 K-1	2142.058	Spring retainer					
	3184.422	**Kit assembly shaft seal cover**		1	1	1	1
8 A-1	3113.170	Cover, shaft seal	1				
8 B-1	1331.574	O-ring 98.02 x 3.53	1				
8 C-1	1424.169	Hexagon head screw M 8 x 30	5				
8 D-1	1437.023	Washer dia.14.8/8.8 x 2.0	5				
8 H-1	1446.081	Grooved pin dia. 4.0 x 20	1				
	3188.083	**Service kit shaft seal**		1	1	1	1
	3126.165	Shaft seal kit T/CMO HPO2O	1				
8 E-1	3126.164	Spring retainer	1				
8 H-1	1446.081	Grooved pin dia. 4.0 x 20	1				
10 H-1	3126.163	Locking ring	1				
	3126.165	**Shaft seal kit T/CMO HPO2O**		1	1	1	1
8 B-1	1331.574	O-ring 98.02 x 3.53	1				
10 A-1	3126.162	Slide ring	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
10 B-1	3126.158	Slide ring	1				
10 C-1	1331.562	O-ring 53.57 x 3.53	1				
10 D-1	1331.565	O-ring 63.09 x 3.53	1				
10 G-1	1413.329	Hex socket bolt M5 x 16	4				
	3184.403	**Kit assembly / gaskets for shaft seal**		1	1	1	1
8 B-1	1331.574	O-ring 98.02 x 3.53	1				
10 C-1	1331.562	O-ring 53.57 x 3.53	1				
10 D-1	1331.565	O-ring 63.09 x 3.53	1				
11-1	**3141.154**	**Oil pump complete**		1	1	1	1
11 C-1	**3141.146**	Pump housing	1				
11 D-1	**3141.147**	Cover for pump	1				
11 F-1	**1413.340**	Socket Cap screw M6 x 16	4				
11 G-1	**1445.061**	Cylindrical pin dia. 6 x 36	2				
11 J-1	**3141.153**	Gear wheel	1				
11 K-1	**3141.152**	Gear wheel	1				
11 L-1	**1446.032**	Grooved pin dia. 6.0 x 24	1				
11 M-1	**2125.298**	Driving hub		1	1	1	1
	3184.423	**Kit assembly oil pump**		1	1	1	1
11-1	3141.154	Oil pump complete	1				
11 B-1	1413.364	Hex socket bolt M5 x 16	4				
	3188.102	Service kit oil pump	1				
	3188.102	**Service kit oil pump**		1	1	1	1
11 A-1	2353.170	Gasket pump housing/cover	1				
11 E-1	1331.568	O-ring 75.79 x 3.53	1				
11 N-1	2132.087	Bushing for dog clutch - nylon	2				
12-1	**3135.172**	**Unloading mechanism complete, T/CMO20**		4	6	8	4
12 C-1	3135.168	Bottom part	1				
12 D-1	3135.169	Piston, unloading, cap. System	1				
12 E-1	3135.170	Cylinder unloading	1				
12 F-1	2142.052	Spring	16				
12 G-1	1332.113	Sealing ring	1				
12 H-1	1332.114	Sealing ring	1				
12 J-1	3135.171	Locking ring	1				
12-2	**3135.203**	**Unloading mechanism complete, T/CMO30**		4	6	8	4
12 C-1	3135.168	Bottom part	1				
12 D-2	3135.202	Piston, unloading, Mk3	1				
12 E-1	3135.170	Cylinder unloading	1				
12 F-1	2142.052	Spring	16				
12 G-1	1332.113	Sealing ring	1				
12 H-1	1332.114	Sealing ring	1				
12 J-1	3135.171	Locking ring	1				
12 A-1	**1413.332**	Socket cap screw M5 x 20		8	12	16	8
12 B-1	**1437.061**	Spring washer		8	12	16	8
	3188.074	**Gasket kit unloading mechanism**		2	3	4	2
12 G-1	1332.113	Sealing ring	2				
12 H-1	1332.114	Sealing ring	2				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
12 J-1	3135.171	Locking ring	2				
62 H	1331.534	O-ring 7.65 x 1.78	2				
62 G	1331.535	O-ring 9.25 x 1.78	2				
		Crankshaft, T/CMO20 (Before 2005)					
16-1	**3121.195**	Crankshaft complete CMO 24 (w/o certificate)		1			
16-2	**3121.196**	Crankshaft complete CMO 26 (w/o certificate)			1		
16-3	**3121.197**	Crankshaft complete T/CMO 28 (w/o certificate)				1	1
		Crankshaft, T/CMO20 (After 2006)					
16-1	**3121.391**	Crankshaft complete CMO/HPO 24 (w/o certificate)		1			
16-2	**3121.392**	Crankshaft complete CMO/HPO 26 (w/o certificate)			1		
16-3	**3121.393**	Crankshaft complete T/CMO/HPO 28 (w/o certificate)				1	1
		Crankshaft, T/CMO30					
16-4	**3121.370**	Crankshaft complete CMO 34 (w/o certificate)		1			
16-5	**3121.371**	Crankshaft complete CMO 36 (w/o certificate)			1		
16-6	**3121.272**	Crankshaft complete T/CMO 38 (w/o certificate)				1	1
16 C-1	**2123.003**	Key 14 x 9 x 40		1	1	1	1
16 D-1	**2125.040**	Plain washer		1	1	1	1
16 E-1	**1424.217**	Hexagon head screw M12 x 40		1	1	1	1
16 F-1	**1437.081**	Spring washer 21.1/12.2 x 2.5		1	1	1	1
16 G-1	**1437.255**	Spray ring dia. 55		1	1	1	1
16 H-1	**1413.250**	Plug		3	3	3	3
16 J-1	**1446.031**	Grooved pin dia. 8.0 x 32		2	2	2	2
		Connecting rod, Aluminium/Aluminium					
17-1	**3123.076**	**Connecting rod complete**		4	6	8	6
17 C-1	2111.004	Connecting rod bolt	2				
17 H-1	1433.115	Self locking nut	2				
17 J-1	1436.034	Washer	2				
		Connecting rod, Bearing (half-sections) / Needle bearing					
17-2	**3123.120**	**Connecting rod complete**					2
17	3123.117	Connecting rod	1				
17 A-1	2133.023	Half section of bearing	2				
17 K-1	1511.272	Needle bearing	1				
17 C-2	2111.132	Connecting rod bolt (included in 3123.117)	2				
17 H-1	1433.115	Self locking nut (included in 3123.117)	2				
17 J-1	1436.034	Washer (included in 3123.117)	2				
		Connecting rod, Bearing (half-sections) / Bushing CMO-TCMO-HPO					
17-3	**3123.118**	**Connecting rod complete**		4	6	8	6

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
17	3123.117	Connecting rod	1				
17 A-1	2133.023	Half section of bearing	2				
17 B-2	2132.126	Bushing	1				
17 C-2	2111.132	Connecting rod bolt	2				
17 H-1	1433.115	Self locking nut	2				
17 J-1	1436.034	Washer	2				

Selection of connecting rod



Selection of connecting rod			
Compressor	**Refrigerant**	**Part number**	**Bearing configuration**
CMO20	All refrigerants	3123-076	Aluminium / Aluminium
TCMO20 (in LP-stage cylinders)	All refrigerants	3123-076	Aluminium / Aluminium
TCMO20 (in HP-stage cylinders)	All refrigerants	3123-120	Bearing (half-sections) / Needle bearing
CMO30	R404A, R507	3123-118	Bearing (half-sections) / Bushing
CMO30	Other refrigerants	3123-076	Aluminium / Aluminium
TCMO30 (in LP-stage cylinders)	R404A, R407C, R507	3123-118	Bearing (half-sections) / Bushing
TCMO30 (in HP-stage cylinders)		3123-120	Bearing (half-sections) / Needle bearing
TCMO30 (in LP-stage cylinders)	Other refrigerants	3123-076	Aluminium / Aluminium
TCMO30 (in HP-stage cylinders)		3123-120	Bearing (half-sections) / Needle bearing
HPO20	All refrigerants	3123-118	Bearing (half-sections) / Bushing

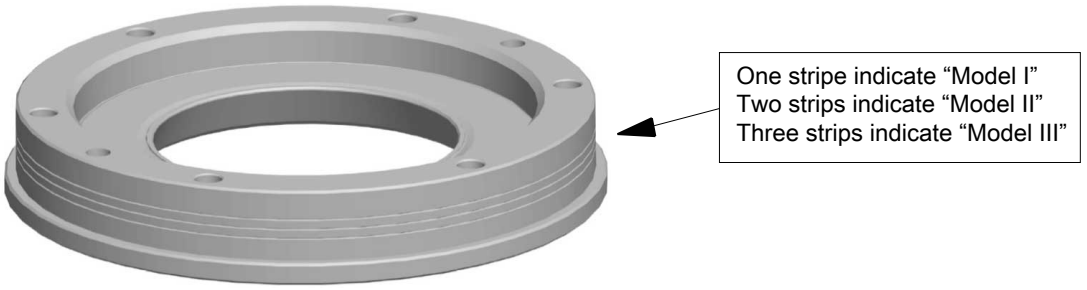
Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
		Connecting rod, Aluminium / Aluminium, undersize					
17-4	**3123.078**	Connecting rod complete undersize		4	6	8	6
	3188.085	**Service kit/connecting rod, Aluminium / Aluminium**		2	3	4	3
17 C-1	2111.004	Connecting rod bolt	4				
17 H-1	1433.115	Self locking nut (UNF 5/16")	4				
17 J-1	1436.034	Washer	4				
18 A-1	3125.122	Piston pin	2				
18 E-1	1437.138	Circlip	4				
	3188.239	**Service kit/connecting rod, Bearing/ Bushing, CMO-TCMO LP**		2	3	4	3
17 C-1	2111.132	Connecting rod bolt	4				
17 H-1	1433.115	Self locking nut (UNF 5/16")	4				
17 J-1	1436.034	Washer	4				
17 B-2	2132.126	Bushing for piston pin	2				
18 A-1	3125.122	Piston pin	2				
18 E-1	1437.138	Circlip	4				
	3188.087	**Service kit/connecting rod, Bearing/ Needle bearing, CMO-TCMO HP**					1
17 C-1	2111.132	Connecting rod bolt	4				
17 H-1	1433.115	Self locking nut (UNF 5/16")	4				
17 J-1	1436.034	Washer	4				
17 K-1	1511.272	Needle bearing	2				
18 A-1	3125.122	Piston pin	2				
18 E-1	1437.138	Circlip	4				
	3188.186	**Service kit/bolts for connecting rod w/o bearing (big end)**		4	6	8	8
17 C-1	2111.004	Connecting rod bolt	2				
17 H-1	1433.115	Self locking nut UNF 5/16"	2				
17 J-1	1436.034	Washer	2				
	3188.219	**Service kit/bolts for connecting rod with bearing (big end)**		4	6	8	8
17 C-2	2111.132	Connecting rod bolt	2				
17 H-1	1433.115	Self locking nut (UNF 5/16")	2				
17 J-1	1436.034	Washer	2				
	3188.184	**Service kit connecting rod CMO/TCMO LP**		2	3	4	3
	3188.204	Service kit half section bearings	1				
	3188.240	Service kit piston pin CMO/TCMO LP & HPO	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
	3188.204	**Service kit half section bearings**					
17 A-1	2133.023	Half section bearing	4				
17 H-1	1433.115	Self locking nut (UNF 5/16")	4				
17 J-1	1436.034	Washer	4				
	3188.240	**Service kit piston rings CMO/TCMO LP**					
17 C-2	2111.132	Connecting rod bolt	4				
17 K-1	2132.126	Bushing for piston pin	2				
18 A-1	3125.122	Piston pin	2				
18 E-1	1437.138	Circlip	4				
	3188.209	**Service kit piston rings CMO/TCMO HP**					1
	3188.204	Service kit half section bearings	1				
	3188.207	Service kit piston pins TCMO HP	1				
	3188.204	**Service kit half section bearings**					
17 A-1	2133.023	Half section bearing	4				
17 H-1	1433.115	Self locking nu (UNF 5/16”)	4				
17 J-1	1436.034	Washer	4				
	3188.207	**Service kit piston rings TCMO HP**					
17 C-2	2111.132	Connecting rod bolt	4				
17 K-1	1511.272	Needle bearing	2				
18 A-1	3125.122	Piston pin	2				
18 E-1	1437.138	Circlip	4				
	3188.192	**Service kit half section bearing TCMO HP undersize**					2
17 A-2	2133.002	Half section bearing (undersize)	2				
17 H-1	1433.115	Self locking nut(UNF 5/16")	2				
17 J-1	1436.034	Washer	2				
18	**3124.062**	**Piston with pin and rings, T/CMO20**		4	6	8	8
18	3124.063	Piston (included in 3124.062)	1				
18 A-1	3125.122	Piston pin (included in 3124.062)	1				
18 C-1	3125.129	Piston ring (included in 3124.062)	1				
18 D-1	3125.124	Oil scraper ring (included in 3124.062)	1				
18 E-1	1437.138	Circlip (included in 3124.062)	2				
18	**3124.082**	**Piston with pin and rings, T/CMO30**		4	6	8	8
18		Piston (included in 3124.082)	1				
18 A-1	3125.122	Piston pin (included in 3124.082)	1				
18 C-1	3125.129	Piston ring (included in 3124.082)	1				
18 D-1	3125.124	Oil scraper ring (included in 3124.082)	1				
18 E-1	1437.138	Circlip (included in 3124.082)	2				
	3188.082	**Service kit piston rings, T/CMO**		2	3	4	4
18 C-1	3125.129	Piston ring	2				
18 D-1	3125.124	Oil scraper ring	2				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
19	**3112.077**	**Cyl. Liner Model 1, T/CMO20 w.cap.reg.**		4	6	8	6
19 A-1	3112.075	Cylinder liner	1				
19 B-1	2122.023	Unloading pin	6				
19 C-1	2142.034	Spring for unloading pin	6				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-1	3132.075	Suction retaining plate Model I, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.079**	**Cyl.Liner Model 1, T/CMO20 w./o. cap.reg.**					2
19 A-1	3112.075	Cylinder liner	1				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-1	3132.075	Suction retaining plate Model I, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.104**	**Cyl.Liner Model 2, T/CMO20 w.cap.reg.**		4	6	8	6
19 A-1	3112.075	Cylinder liner	1				
19 B-1	2122.023	Unloading pin	6				
19 C-1	2142.034	Spring for unloading pin	6				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-3	3132.102	Suction retaining plate Model II, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.105**	**Cyl.Liner Model 2, T/CMO20 w./o. cap. reg.**					2
19 A-1	3112.075	Cylinder liner	1				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-3	3132.102	Suction retaining plate Model II, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				

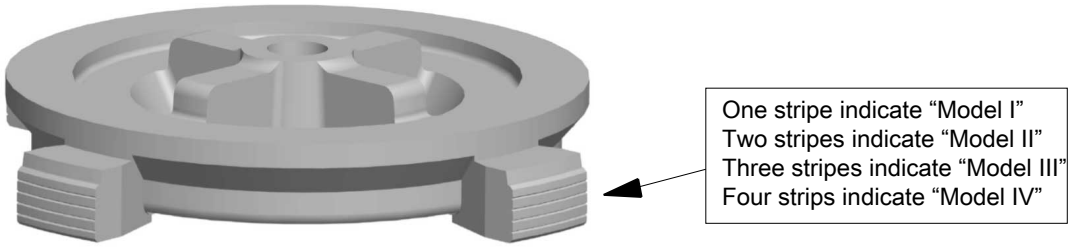
SELECTION OF SUCTION VALVE TYPE CMO20					
Refrigerant	**Conditions**	**Valve type**	**Complete Cylinder liner part no.**		**Suction valve retaining plate part no.**
R717	TE = All	Model 1	w/ cap. reg.	3112-077	3132-075
			w/o cap. reg.	3112-079	
R22, R134a, R407C	TE = All	Model 2	w/ cap. reg.	3112-104	3132-102
			w/o cap. reg.	3112-105	
R404A, R507	TE = All	Model 2	w/ cap. reg.	3112-104	3132-102
			w/o cap. reg.	3112-105	
R290, R600, R600a, R1270	TE = All	Model 2	w/ cap. reg.	3112-104	3132-102
			w/o cap. reg.	3112-105	

SELECTION OF SUCTION VALVE TYPE CMO30					
Refrigerant	**Conditions**	**Valve type**	**Complete Cylinder liner part no.**		**Suction valve retaining plate part no.**
R717	TE = All	Model 1	w/ cap. reg.	3112-100	3132-075
			w/o cap. reg.	3112-102	
R22, R134a, R407C	TE = All	Model 2	w/ cap. reg.	3112-106	3132-102
			w/o cap. reg.	3112-107	
R404A, R507	TE = All	Model 2	w/ cap. reg.	3112-106	3132-102
			w/o cap. reg.	3112-107	
R290, R600, R600a, R1270	TE = All	Model 2	w/ cap. reg.	3112-106	3132-102
			w/o cap. reg.	3112-107	



Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
19	**3112.100**	**Cyl.Liner Model 1, T/CMO30 w.cap.reg.**		4	6	8	6
19 A-2	3112.098	Cylinder liner	1				
19 B-1	2122.023	Unloading pin	6				
19 C-1	2142.034	Spring for unloading pin	6				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-1	3132.075	Suction retaining plate Model I, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.102**	**Cyl.Liner Model 1, T/CMO30 w./o. cap. reg.**					2
19 A-2	3112.098	Cylinder liner	1				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-1	3132.075	Suction retaining plate Model I, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.106**	**Cyl.Liner Model 2, T/CMO30 w.cap.reg.**		4	6	8	6
19 A-2	3112.098	Cylinder liner	1				
19 B-1	2122.023	Unloading pin	6				
19 C-1	2142.034	Spring for unloading pin (Cylinder pin)	6				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-3	3132.102	Suction retaining plate Model II, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
19	**3112.107**	**Cyl.Liner Model 2, T/CMO30 w./o. cap. reg.**					2
19 A-2	3112.098	Cylinder liner	1				
19 F-1	3131.072	Ring plate for suction valve	1				
19 G-1	2141.055	Helical spring	4				
19 H-3	3132.102	Suction retaining plate Model II, T/CMO	1				
19 J-1	1413.333	Cylinder screw M5x25	6				
20-1	**3136.080**	**Discharge valve Model 1, T/CMO**		4	6	8	8
20 A-1	3133.029	Valve seat	1				
20 B-1	3132.074	Disch. retaining plate Model I, T/CMO	1				
20 C-1	3131.006	Ring plate for discharge valve	1				
20 D-1	1413.074	Counter sunk screw M8x40	1				
20 E-1	1432.063	Nut M8	2				
20 F-1	2145.011	Spring guide	1				
20 H-1	2141.055	Helical spring	6				
20 J-1	1437.023	Spring washer	1				
20-2	**3136.079**	**Discharge valve Model 2, T/CMO**		4	6	8	6
20 A-1	3133.029	Valve seat	1				
20 B-2	3132.072	Disch. retaining plate Model II, T/CMO	1				
20 C-1	3131.006	Ring plate for discharge valve	1				
20 D-1	1413.074	Counter sunk screw M8x40	1				
20 E-1	1432.063	Nut M8	2				
20 F-1	2145.011	Spring guide	1				
20 H-1	2141.055	Helical spring	6				
20 J-1	1437.023	Spring washer	1				
20-4	**3136.107**	**Discharge valve Model 4, T/CMO**		4	6	8	2
20 A-1	3133.029	Valve seat	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
20 B-4	3132.107	Disch. retaining plate Model IV, T/CMO	1				
20 C-2	3131.073	Ring plate for discharge valve	1				
20 D-1	1413.074	Counter sunk screw M8x40	1				
20 E-1	1432.063	Nut M8	2				
20 H-1	2141.055	Helical spring	12				
20 J-1	1437.023	Spring washer	1				



SELECTION OF DISCHARGE VALVE TYPE CMO 20/30				
Refrigerant	**Conditions**	**Valve type**	**Complete discharge valve, part no.**	**Discharge valve retaining plate, part no.**
R717	TC = All	Model 1	3136-080	3132-074
R134a	TC < 40ºC	Model 2	3136-079	3132-072
	TC ≥ 40ºC	Model 4	3136-107	3132-107
R22	TC < 30ºC	Model 2	3136-079	3132-072
	TC ≥ 30ºC	Model 4	3136-107	3132-107
R407C	TC < 25ºC	Model 2	3136-079	3132-072
	TC ≥ 25ºC	Model 4	3136-107	3132-107
R404A, R507	TC < 15ºC	Model 2	3136-079	3132-072
	TC ≥ 15ºC	Model 4	3136-107	3132-107
R290	TC = All	Model 2	3136-079	3132-072
R600	TC < 105ºC	Model 2	3136-079	3132-072
	TC ≥ 105ºC	Model 4	3136-107	3132-107
R600a	TC < 90ºC	Model 2	3136-079	3132-072
	TC ≥ 90ºC	Model 4	3136-107	3132-107
R1270	TC = All	Model 2	3136-079	3132-072

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
	3188.071	**Gasket kit pair of cylinder liners CMO**		2	3	4	3
19 K-1	2356.288	Gasket cylinder liner - 0.5mm	2				
19 K-2	2356.289	Gasket cylinder liner - 0.8mm	2				
	3188.072	**Gasket kit pair of cylinder liners TCMO**					2
19 K-1	2356.288	Gasket cylinder liner - 0.5mm	2				
19 K-2	2356.289	Gasket cylinder liner - 0.8mm	2				
19 M-1	1331.546	O-ring 72.69 x 2.62	2				
	3188.081	**Service kit ring plates (for discharge valves model 1 and 2 and all suction valve models)**		2	3	4	3
19 F-1	3131.072	Ring plate for suction valve	2				
19 G-1	2141.055	Helical spring	8				
20 C-1	3131.006	Ring plate for discharge valve	2				
20 H-1	2141.055	Helical spring	12				
	3188.071	Gasket kit	1				
	3188.088	**Service kit ring plates TCMO HP**					1
19 F-1	3131.072	Ring plate for suction valve	2				
19 G-1	2141.055	Helical spring	8				
20 C-1	3131.006	Ring plate for discharge valve	2				
20 H-1	2141.055	Helical spring	12				
	3188.072	Gasket kit	1				
	3188.183	**Service kit ring plates (for discharge valves model III and all suction valve models)**		2	3	4	3
19 F-1	3131.072	Ring plate for suction valve	2				
19 G-1	2141.055	Helical spring	8				
20 C-1	3131.073	Ring plate for discharge valve	2				
20 H-1	2141.055	Helical spring	12				
	3188.071	Gasket kit	1				
	3188.713	**Service kit ring plates (for discharge valves model IV and all suction valve models)**		2	3	4	3
19 F-1	3131.072	Ring plate for suction valve	2				
19 G-1	2141.055	Helical spring	8				
20 C-1	3131.073	Ring plate for discharge valve	2				
20 H-1	2141.055	Helical spring	24				
	3188.071	Gasket kit	1				
	3188.220	**Set of helical valve springs**					
19 G-1/ 20 H-1	2141.055	Helical spring	20				
		Spring for safety head					
21	**2142.059**	Spring 50 x 42.5 x 7mm		4	6	8	8
		Oil pressure valve					
22-1	**3142.150**	Oil pressure valve complete		1	1	1	1
22A-1	**2354.075**	Gasket		1	1	1	1
23	**3119.465**	**Oil charging valve complete**		1	1	1	1
23 A-1	1361.118	Needle valve G1/2 - G1/2	1				
23 B-1	2311.073	Threaded reducing nipple G3/4 - BSW7/8	1				
23 C-1	2313.035	Reducing socket G1/2 - BSW7/8	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
23 G-1	2313.027	Cap nut G1/2	1				
23 F-1	2356.283	Gasket dia 19/14 x 4.0 - Gasket included in 3188.138	1				
23 D-1	2356.123	Gasket dia 18/10 x 1.5 - Gasket included in 3188.138	1				
23 E-1	2356.140	Gasket dia 34/27 x 1.5 - Gasket included in 3188.138	1				
	3188.138	**Gasket kit oil charging valve**		1	1	1	1
23 A-1	1377.463	Packing gland	1				
23 F-1	2356.283	Gasket dia 19/14 x 4.0	1				
23 D-1	2356.123	Gasket dia 18/10 x 1.5	1				
23 E-1	2356.140	Gasket dia 34/27 x 1.5	1				
		By-pass valve					
24-1	**3137.011**	By pass valve dia 20, 24 BAR		1	1	1	
24-2	**3137.012**	By pass valve dia 20, 22 BAR		1	1	1	
24-3	**3137.013**	By pass valve dia 10, 24 BAR					1
24-4	**3137.034**	By pass valve dia 10, 22 BAR					1
24-5	**3137.058**	By pass valve dia 10, 20 BAR					1
24-6	**3137.059**	By pass valve dia 10, 18 BAR					1
24-7	**3137.070**	By pass valve dia 20, 20 BAR		1	1	1	
24-8	**3137.071**	By pass valve dia 20, 18 BAR		1	1	1	
		By-pass valve kit					
	3188.020	**Gasket kit by pass valve ø 20**		1	1	1	1
24 C-1	1331.560	O-ring 44.04 x 3.53	1				
24 E-1	1331.563	O-ring 56.74 x 3.53	1				
	3188.064	**Gasket kit by pass valve ø 10**					1
24 C-1	1331.476	O-ring 25.07 x 2.62	1				
24 E-1	1331.477	O-ring 32.99 x 2.62	1				
24 G-1	**1424.153**	Hexagon head screw M6 x 25		5	5	5	
24 G-4	**1424.135**	Hexagon head screw M4 x 16					5
24 H-1	**1437.022**	Spring washer		5	5	5	
24 H-4	**1437.020**	Spring washer					5
		Stop valves					
25-1	**1361.175**	Complete stop valve DN50 - discharge	1				
25-2	**1361.176**	Complete stop valve DN65 - suction	1				
25 Z-1	1424.217	Hexagon head screw M12 x 40		4	4	4	4
25 Z-2	1424.241	Hexagon head screw M14 x 40		4	4	4	4
25 AG-1	2356.212	Gasket ring 100/62 x 1.5 DN50		1	1	1	1
25 AG-2	2356.213	Gasket ring 112/70 x 1.5 DN65		1	1	1	1
		Hand wheel					
25 S-1	**1365.091**	Hand wheel DN50/65 (Incl. Screw+washer)		1	1	1	1
		Spare Part kit stop valve DN50					
25-1	**1377.472**	Inspection Kit SVA DN 50		1	1	1	1
25-1	**1377.2013**	Repair Kit SVA DN 50		1	1	1	1
25-1	**1377.419**	Overhaul Kit SVA DN50		1	1	1	1
		Spare Parts kit stop valve DN65					
25-2	**1377.466**	Inspection Kit SVA DN 65		1	1	1	1

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
25-2	**1377.2014**	Repair Kit SVA DN 65		1	1	1	1
25-2	**1377.420**	Overhaul Kit SVA DN65		1	1	1	1
		Suction pressure gauge					
30-1	**1541.184**	R12/R22 Pressure gauge, Diff -1/12 bar		1	1	1	1
30-2	**1541.180**	R407C/R507 Pressure gauge, Diff -1/12 bar		1	1	1	1
30-3	**1541.182**	R717 Pressure gauge, Diff -1/12 bar		1	1	1	1
30-4	**1541.181**	R134A/R404A Pressure gauge, Diff -1/12 bar		1	1	1	1
		Discharge pressure gauge					
31-1	**1541.196**	R12/R22 Pressure gauge -1/25 bar		1	1	1	
31-2	**1541.187**	R12/R22 Pressure gauge, Duplex -1/25 bar					1
31-3	**1541.193**	R407C/R507 Pressure gauge -1/25 bar		1	1	1	
31-4	**1541.158**	R407C/R507 Pressure gauge, Duplex -1/25 bar					1
31-5	**1541.189**	R717 Pressure gauge -1/25 bar		1	1	1	
31-6	**1541.186**	R717 Pressure gauge, Duplex -1/25 bar					1
31-7	**1541.194**	R134A/R404A Pressure gauge -1/25 bar		1	1	1	
31-8	**1541.185**	R134A/R404A Pressure gauge, Duplex -1/25 bar					1
		Bracket for gauge					
39-1	**3146.015**	Bracket		1	1	1	1
39 A-1	**1424.140**	Hexagon head screw M5 x 10		4	4	4	4
39 B-1	**1437.061**	Spring washer		4	4	4	4
		Cooling water connections					
40 A-1	**3185.226**	Set of hoses for cooling water 4 cyl.		1			
40 A-2	**3185.227**	Set of hoses for cooling water 6 cyl.			1		
40 A-3	**3185.228**	Set of hoses for cooling water 8 cyl.				1	1
40 A-4	**3185.229**	Set of hoses for cooling water side covers only					
		Parts for instruments					
41 A-1	**2356.124**	Gasket dia. 19/14 x 1.5		6	6	6	8
41 B-1	**2333.012**	Connecting piece - 2 pipes		2	2	2	2
41 C-1	**2314.048**	Plug for connecting piece		3	3	3	4
41 D-1	**1376.010**	Union nut - R12/R22/R502		8	8	8	6
41 E-1	**1349.011**	Union nut - M10 x 0.75 - R717		5	5	5	6
41 F-1	**2356.117**	Gasket dia. 9/3 x 1.5		5	5	5	6
41H-1	**2356.120**	Gasket dia. 14.5/6 x 1.5		2	2	2	2
41 J-1	**2333.014**	Connecting piece - 1 pipes					1
41 Q-1	**1377.096**	Pipe holder		1	1	1	1
41 R-1	**1424.200**	Cylinder head screw M4 x 6		1	1	1	1
41T-1	**2333.016**	Pipe section with flare		8	8	8	8
41 U-1	**2333.013**	Connecting piece - 3 pipes		1	1	1	1
41 S-1	**1349.078**	Thread reducer		1	1	1	1
41 X-1	**1349.038**	Tee		1	1	1	1
	3188.078	**Gasket kit instruments CMO**		1	1	1	1
41 A-1	2356.124	Gasket dia. 19/14 x 1.5	8				
41 F-1	2356.117	Gasket dia. 9/3 x 1.5 - R717	6				
41 H-1	2356.120	Gasket dia. 14.5/6 x 1.5	6				
	3119.921	**Purge valve complete CMO-HPO**		1	1	1	1
42 A-1	1361.118	Needle valve G1/2 - G1/2	1				
42 C-1	1349.054	Malestud connector 12mm - G1/4	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
42 E-1	2313.045	Nut G1/2	1				
42 F-1	2334.027	Welding nipple ø12 with collar for G1/2	1				
42 G-1	2356.123	Gasket dia. 8/10 x 1.5	2				
42 H-1	2313.027	cap nut G1/2	1				
		Parts for mounting pressure control					
44 A-1	**2213.409**	Bracket for pressure controls		1	1	1	1
44 B-1	**1413.090**	Counter sunk screw M6 x 12		2	2	2	2
44 C-1	**2213.411**	Bracket for KP77 or KP1		1	1	1	1
44 D-1	**2213.410**	Bracket for KP98		1	1	1	1
44 E-1	**1413.339**	Socket cap screw M6 x 12		4	4	4	4
44 F-1	**1437.022**	Spring washer		4	4	4	4
44 G-1	**1412.200**	Cylinder head screw M4 x 6		8	8	8	8
44 H-1	**1437.020**	Spring washer dia. 7.1/4 x 1		8	8	8	8
		Pressure controls for HFC/HCFC					
45 A-1	**1373.135**	Pressure control KP15		1	1	1	1
45 B-1	**1373.159**	Differential pressure control MP55		1	1	1	1
45 C-1	**1373.103**	Pressure control KP1 PED		1	1	1	1
45 D-1	**1373.128**	High pressure cut out KP7BS PED		1	1	1	1or 2
		Pressure controls for R717					
45 A-2	**1373.142**	Pressure control KP15A		1	1	1	1
45 B-2	**1373.162**	Differential pressure control MP55 A		1	1	1	1
45 C-2	**1373.113**	Pressure control KP1A PED		1	1	1	1
45 D-2	**1373.127**	High pressure cut out KP7ABS PED		1	1	1	1or 2
		Temperature controls					
46 A-1	**1373.044**	Temperature control KP77		1	1	1	1
46 A-1	**1373.043**	Temperature control dual KP98		1	1	1	1
46 C-1	**1377.171**	Phial pocket for temperature control		3	3	3	3
46 D	**2356.133**	Gasket for Phial pocket dia.27/21 x 1.5		3	3	3	3
		Coupling AMR 225					
	2125.215	Compressor hub for coupling AMR 225		1	1	1	1
	3188.221	**Spare part set AMR 225 (After Oct. 2007)**		1	1	1	1
	1524.338	Disc pack (pair)	1				
	1524.342	Hardware kit AMR size 225	1				
	1524.338	**Disc pack (pair + thin washers)**					
48 A-1	1524.346	Disc pack size 225 single	2				
	1524.353	Ultra thin washer	16				
	1524.342	**Hardware kit AMR size 225**		1	1	1	1
48 B-1	1524.163	Coupling bolt AMR 225	16				
48 C-1	1524.179	Washer	16				
48 D-1	1524.171	Lock nut 225	16				
		Crankcase heater					
	3184.375	**Kit assembly crankcase heater - 270W, 115V**		1	1	1	1
57 A-4	3181.034.1	Crankcase heater 270W, 115V	1				
57 B-2	1331.403	Sealing ring dia.42.9/52.4 x 3.25	1				
	3184.376	**Kit assembly crankcase heater - 270W, 230V**		1	1	1	1
57 A-5	3181.035.1	Crankcase heater 270W, 230V	1				
57 B-2	1331.403	Sealing ring dia.42.9/52.4 x 3.25	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
	3184.377	**Kit assembly crankcase heater - 270W, 250V**		1	1	1	1
57 A-6	3181.036.1	Crankcase heater 270W, 250V	1				
57 B-2	1331.403	Sealing ring dia.42.9/52.4 x 3.25	1				
		Oil filter					
59	**4524.052**	**Oil filter complete**		1	1	1	1
59 A-1	3421.081	Bracket for oil filter	1				
60 A	1517.124	Oilfilter	1				
60 L	2112.156	Rod for magnets	1				
60 B	1334.025	Gasket for filter	1				
60 J	2114.038	Washer dia. 30/12 x 14	3				
60 K	1517.022	Magnets	3				
60 M	1334.012	Rubber ring	1				
60 N	1436.034	Washer	1				
60 P	1433..073	Locking nut	2				
59 D-1	1413.265	Plug M20 x 20	1				
	3184.425	**Kit assembly rod for magnets T/CMO**		1	1	1	1
60 H	2114.036	Washer dia. 19/8.2 x 6	1				
60 J	2114.038	Washer dia. 30/12 x 14	3				
60 K	1517.022	Magnets	3				
60 L	2112.156	Rod for magnets	1				
	3188.063	**Service kit oil filter**		1	1	1	1
60 A	1517.124	Filter element	1				
60 B	1334.025	Gasket for filter	1				
60 M	1334.012	Rubber ring	1				
60 N	1436.034	Washer	1				
59C-1	2353.171	Gasket for bracket	1				
60 P	1433..073	Locking nut	2				
59C-1	2353.102	Gasket for bracket	1				
3 H-1	1331.543	O-ring 52.07 x 2.62	1				
3 B-2	2353.241	Gasket	1				
		Oil pipes for unloading mechanism					
62 A-1	**3143.292**	Pipe set, CMO24, standard/extended capacity		1			
62 A-2	**3143.291**	Pipe set, CMO26, standard capacity			1		
62 A-3	**3143.1055**	Pipe set, CMO28, standard capacity				1	
62 A-4	**3143.293**	Pipe set, T MO28, standard capacity					1
62 A-5	**3143.439**	Pipe set, CMO26, extended capacity			1		
62 A-6	**3143.438**	Pipe set, CMO28, extended capacity				1	
		Joint for oil pipes					
	3184.426	**Kit assembly joint for oil pipes**		1	1	1	1
62 F	1437.275	Spirolox-ring RS50	4				
62 G	1331.535	O-ring 9.25 x 1.78	4				
62 H	1331.534	O-ring 7.65 x 1.78	4				
		Oil separator CMO - HFC/HCFC					
65-1	**4241.208**	Oil separator complete		1	1	1	
65 A-1	**4241.207**	Housing		1	1	1	
65 B-1	**1375.288**	Demister		1		1	
65 C-1	**3422.114**	End cover		1	1	1	
65 D-1	**1331.581**	O-ring 120.24 x 3.53		1	1	1	
65 E-1	**1424.102**	Hexagon head screw M16 x 45		4	4	4	

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
65 G-1	**2356.212**	Gasket, dia. 100/62 x 1.5		1	1	1	
65 H-1	**1424.217**	Hexagon head screw M12 x 40		4	4	4	
65 J-1	**1361.175**	Stop valve complete DN50		1	1	1	
65 K-1	**2356.212**	Gasket, dia. 100/62 x 1.5		1	1	1	
		Oil separator TCMO - R717 - HFC/HCFC					
65-3	**4241.233**	Oil separator complete					1
65 A-3	**4241.232**	Housing					1
65 B-3	**1375.295**	Demister					1
65 C-3	**3254.315**	End cover					1
65 D-3	**1331.573**	O-ring 91.97 x 3.53					1
65 E-3	**1424.216**	Hexagon head screw M12 x 35					4
65 F-3	**1437.081**	Spring washer					4
65 G-3	**2356.212**	Gasket, dia. 100/62 x 1.5					1
65 H-3	**1424.217**	Hexagon head screw M12 x 40					4
65 J-3	**1361.175**	Stop valve complete DN50					1
65 K-3	**2356.212**	Gasket, dia. 100/62 x 1.5					1
		Extra suction filter - only delivered on demand					
66 -1	**4521.030**	Extra suction filter -complete		1	1	1	1
66 A -1	**3421.063**	Filter house		1	1	1	1
66 B-1	**3422.103**	End cover		1	1	1	1
66 D-1	**1424.217**	Hexagon head screw M12 x 40		4	4	4	4
66 E-1	**1437.081**	Spring washer		4	4	4	4
66 F-1	**3425.082**	Strainer filter		1	1	1	1
66 K-1	**1424.242**	Hexagon head screw M14 x 45		4	4	4	4
	3188.197	**Gasket kit extra suction filter**		1	1	1	1
66 C-1	1331.573	O-ring 91.97 x 3.53	1				
66 J-1	1331.599	O-ring 75.56 x 3.53	1				
66 L-1	2356.213	Gasket against compr., dia. 112/70 x 1.5	1				1
	3184.427	**Kit assembly filter bag**		1	1	1	1
66 G-1	3425.083	Filter bag	1				
66 H-1	3424.058	Insert for filter bag	1				
		Oil cooler, R717					
76	**4242.080**	Oil cooler, T/CMO		1	1	1	1
76 A-1	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
76 B-1	**2312.022**	Bushing G 3/4 x G 3/8"		2	2	2	2
76 C-1	**2356.139**	Gasket dia. 32/27 x 1.5		2	2	2	2
76 D-1	**1349.053**	Male stud connector ø12-G3/8		2	2	2	2
76 E-1	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
76 F-1	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
		Oil cooler, HFC/HCFC					
76	**4242.080**	Oil cooler, T/CMO		1	1	1	1
76 A-2	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
76 B-2	**2312.022**	Bushing G 3/4 x G 3/8"		2	2	2	2
76 C-2	**2356.139**	Gasket dia. 32/27 x 1.5		2	2	2	2
76 D-2	**1349.053**	Male stud connector ø12-G3/8		2	2	2	2
76 E-2	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
76 F-2	**1349.325**	HP Banjo elbow ø12-G3/8		1	1	1	1
80	**1372.1002**	**Solenoid valve block EVRB complete**					
		with 0.6mm orifice for oil return, excl. coil		1	1	1	1 or 2

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
80-E/ 80-G	**1372.089**	**Strainer kit consists of; strainer, gasket**		1	1	1	1 or 2
	1372.086	**Service kit EVRB NC**		1	1	1	1 or 2
80 P		Armature tube					
80 H		Armature					
80 K, 80 M		O-ring					
80 L		Gasket					
80 N		Snap fastener					
	1372.091	**Gasket Set EVRB NC**		1	1	1	1 or 2
80 P		Gasket					
80 K, 80 M		O-ring					
80 L, 80 Q		Gasket					
	1371.034	**Orifice set 0.6 mm EVRB**		1	1	1	1 or 2
80 L, 80 Q		Gasket					
80 I		Orifice 0.6 mm					
	1371.035	**Orifice set 0.8mm EVRB**		1	1	1	1 or 2
80 L, 80 Q		Gasket					
80 I		Orifice 0.8 mm					
	1371.036	**Orifice set 1.0 mm EVRB**		1	1	1	1 or 2
80 L, 80 Q		Gasket					
80 I		Orifice 1.0 mm					
	1371.037	**Orifice set 3.3 mm EVRB (for thermopump only)**		1	1	1	1 or 2
80 L, 80 Q		Gasket					
80 I		Orifice 3.3 mm					
80 J-1	**1372.537**	Coil 220/230V, 50/60 HZ, 10 W		1	1	1	1 or 2
80 J-2	**1372.538**	Coil 110 V, 50/60 HZ, 10 W		1	1	1	1 or 2
80 J-3	**1372.539**	Coil 240 V, 50 HZ, 10 W		1	1	1	1 or 2
80 J-4	**1372.541**	Coil 24 V, 50 HZ, 10 W		1	1	1	1 or 2
		Injection system for TCMO					
		Only for TCMO with int. IP system					
83 A-1	**3116.048**	Guard					1
83 B-1	**3116.041**	Nipple					1
83 C-1	**1331.571**	O-ring 24.99 x 3.53 for 83B					1
83 D-1	**1331.548**	O-ring 20.22 x 3.53 for 83B					1
83 E-1	**1413.340**	Socket Cap screw M6 x 16					2
83 F-1	**1437.022**	Spring washer					2
83 G-1	**2412.016**	Stop valve DN 20 with oval flange					1
83 H-1	**2354.075**	Gasket. oil regulating valve					1
83 J-1	**1424.217**	Hexagon head screw M12 x 40					2
83 M-1	**1372.1002**	Solenoid valve block EVRB complete					1
83 M-2	**1371.037**	Orifice kit 3.3 mm					1

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
83 S-1	**1372.537**	Coil 220/230V, 50/60 HZ, 10 W					1
83 S-2	**1372.538**	Coil 110 V, 50/60 HZ, 10 W					1
83 S-3	**1372.539**	Coil 240 V, 50 HZ, 10 W					1
83 P-1	**1371.242**	Injection valve TEAT 20-5 - R22					1
	1523.070	Spec. Spring for 83 P-2					1
83 Q-1	**1372.423**	Solenoid valve for by-pass, without coil					1
83 T-1	**1372.537**	Coil 220/230V, 50/60 HZ, 10 W					
83 T-2	**1372.538**	Coil 110 V, 50/60 HZ, 10 W					
83 T-3	**1372.539**	Coil 240 V, 50 HZ, 10 W					
83 R-1	**1372.249**	Non-return valve for discharge pipe					1
		Side cover with solenoid valves for capacity control					
86 A-1	**3113.203**	Side cover with oil level glass		1	1	1	1
86 B-1	**2353.102**	Gasket for sidecover		1	1	1	1
86 C-1	**1424.059**	Hexagon head screw M12 x 65		10	10	10	10
86 D-1	**1424.061**	Hexagon head screw M12 x 75		2	2	2	2
86 E-1	**1226.015**	Oil level glass		1	1	1	1
86 F-1	**1331.543**	O-ring 52.07 x 2.62		1	1	1	1
86 G-1	**1424.148**	Hexagon head screw M6 x 18		4	4	4	4
86 J-1	**2353.185**	Gasket for valve body		1	1	1	1
86 K-1	**1424.042**	Hexagon head screw M8 x 70		2	2	2	2
86 L-1	**1424.172**	Hexagon head screw M8 x 45		2	2	2	2
86 N-1	**1436.075**	Washer dia. 24/13 x 2.5		12	12	12	12
86 V-1	**1554.159**	Gasket, plug connector		3	3	3	3
86 P-1	**1372.545**	Plug connector for coils		3	3	3	3
86 Q-1	**1361.118**	Stop needle valve		1	1	1	1
86 R-1	**2313.045**	Nut		1	1	1	1
86 S-1	**2334.027**	Special joint		1	1	1	1
86 T-1	**2313.027**	Cap		1	1	1	1
86 U-1	**1349.053**	(Joint 3/8") Coupling for screwing		1	1	1	1
86 H-1	**3143.382**	**Valve body with 3 solenoid valves w/o coils**		1	1	1	1
86 X-1	**1372.537**	Coil 220/230V, 50/60 HZ, 10 W		3	3	3	3
86 X-2	**1372.538**	Coil 110 V, 50/60 HZ, 10 W		3	3	3	3
86 X-3	**1372.539**	Coil 240 V, 50 HZ, 10 W		3	3	3	3
86 Y	**1372.424**	Service kit for one solenoid valve					
86 J-2	**2353.188**	Gasket for valve body for Ex-execution		1	1	1	1
	3188.077	**Gasket kit side cover with solenoid**		1	1	1	1
86 B-1	2353.102	Gasket for side cover	1				
86 F-1	1331.543	O-ring 52.07 x 2.62 (for oil level glass)	1				
86 J-1	2353.185	Gasket for valve body	1				
86 V-1	2356.123	Gasket dia. 18/10 x 1.5	1				
		Side cover for unloading start					
86 A-1	**3113.203**	Side cover with oil level glass		1	1	1	1
86 B-1	**2353.102**	Gasket for side cover		1	1	1	1
86 C-1	**1424.059**	Hexagon head screw M12 x 65		10	10	10	10
86 D-1	**1424.061**	Hexagon head screw M12 x 75		2	2	2	2
86 E-1	**1226.015**	Oil level glass		1	1	1	1
86 F-1	**1331.543**	O-ring 52.07 x 2.62		1	1	1	1
86 G-1	**1424.148**	Hexagon head screw M6 x 18		4	4	4	4

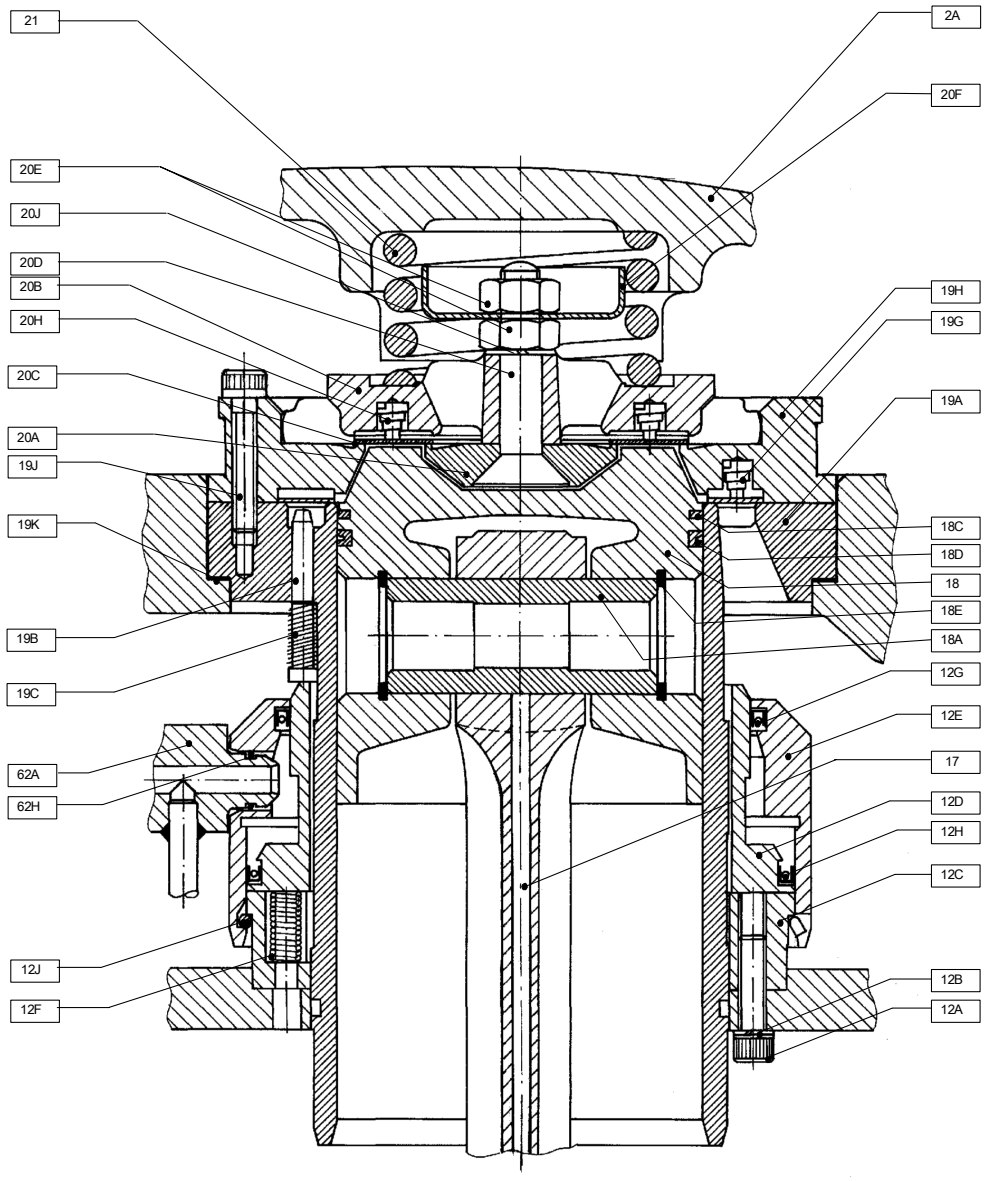
Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
87 K-1	**3143.187**	Cover for unloading start		1	1	1	1
87 L-1	**2353.149**	Gasket for connection plate		1	1	1	1
87 M-1	**1424.170**	Hexagon head screw M8 x 35		4	4	4	4
86 N-1	**1436.075**	Washer dia. 24/13 x 2.5		12	12	12	12
86 Q-1	**1361.118**	Stop needle valve		1	1	1	1
86 R-1	**2313.045**	Nut		1	1	1	1
86 S-1	**2334.027**	Special joint		1	1	1	1
86 T-1	**2313.027**	Cap		1	1	1	1
86 U-1	**1349.053**	(Joint 3/8") Coupling for screwing		1	1	1	1
	3188.076	**Gasket kit side cover unloaded start**		1	1	1	1
86 B-1	2353.102	Gasket for side cover	1				
86 F-1	1331.543	O-ring 52.07 x 2.62 (for oil level glass)	1				
87 L-1	2353.149	Gasket for connection plate	1				
86 V-1	2356.123	Gasket dia. 18/10 x 1.5	1				
		Intermediate pressure connection					
		Only for TCMO with ex. System					
	3114.103	Intermediate pipe complete TCMO 28 - R22					
	3142.134	Valve arrangement for intermediate pipe TCMO R22					
	3114.104	Intermediate pipe complete TCMO 28 - R717					
	3142.135	Valve arrangement for intermediate pipe TCMO R717					
		Thermopump					
98 A	**3185.085**	Side cover for thermopump (with valves)		1	1	1	1
98 AB-1	**1372.537**	Coil 220/230V, 50/60 HZ, 10 W		2	2	2	2
98 AB-2	**1372.538**	Coil 110 V, 50/60 HZ, 10 W		2	2	2	2
98 AB-3	**1372.539**	Coil 240 V, 50 HZ, 10 W		2	2	2	2
98 B-1	**1553.215**	Control box for thermo pumo		1	1	1	1
98 C-1	**3185.038**	Level feeler, complete		2	2	2	2
98 C-1	**2356.125**	Gasket ring dia. 20/13x1.5		2	2	2	2
98 D-1	**1372.1002**	Solenoid Valve Block EVRB		1	1	1	1
98 D-1	**1371.037**	Orifice kit 3.3mm		1	1	1	1
98 G-1	**1372.422**	Solenoid Valve 2/2, dia. 1.5mm		1	1	1	1
98 K-1	**1364.008**	Check valve, 10mm		1	1	1	1
98 P-1	**1361.117**	Stop valve		1	1	1	1
98 Q-1	**3113.171**	Cooling cover		1	1	1	1
98 R-1	**1436.075**	Washer dia. 24/13 x 2		12	12	12	12
98 S-1	**2353.241**	Gasket for side cover		2	2	2	2
98 T-1	**1424.061**	Hexagon head screw M12 x 75		12	12	12	12
98 X-1	**1373.324**	Temperature sensor PT 100		1	1	1	1
		Unisab					
	3184.008	**Support for T/CMO Unisab III (After Oct. 2007)**		1	1	1	1
	1424.152	Hexagon head M6 x 20	2				
	1424.176	Hexagon head M8 x 20	2				
	2215.121	Console Unisab III	1				
	2215.129	Duplicate plate console for T/CMO Unisab III	1				
	2215.130	Duplicate plate console CMO for Unisab III	1				
	3188.705	**Unisab III retrokit CMO**	1				
	3084.817	Kit assembly for all comp. Unisab III upgrade basic	1				

Pos.No.	Part No.	Description	Kit Qty.	Quantity per compressor			
				CMO			TCMO
				24-34	26-36	28-38	28-38
	3184.969	Kit assembly upgrade 1-stage recip.	1				
	3184.972	Unisab III upgrade T/CMO	1				
	3188.706	**Unisab III retrokit T/CMO**					
	3084.817	Kit assembly for all comp. Unisab III upgrade basic	1				
	3184.970	Kit assembly upgrade 2-stage recip.	1				
	3184.972	Unisab III upgrade T/CMO	1				
	2356.133	Gasket dia.27/21 x 1.5	4				
	2522.012	Welding connection 1/2" thread	4				
	2314.095	Fitting for Unisab	1				
	2356.056	Gasket	1				
		Pressure transmitters UNISAB III		1	1	1	1
PPT1/ PPT3	**1373.269**	Pressure transmitters AKS 3050 -1/25 bar		2	2	2	2
PPT2	**1373.371**	Pressure transmitters AKS 3000 -1/59 bar		1	1	1	1
PPT 1/2/ 3	**1349.137**	Male stud coupling		3	3	3	3
PPT3	**1349.233**	V-threaded connection		3	3	3	3
		Temperature sensors					
PPT5/7	**1373.319**	Temperature sensor PT 100,80mm w.cooling neck		2	2	2	2
PPT6	**1373.329**	Temperature sensor PT 100,80mm w/o.cooling neck		1	1	1	1
PPT 5/6/ 7	**1349.077**	Reducer		3	3	3	3
PPT 5/6/ 7	**2353.125**	Gasket		3	3	3	3

2. Drawings for spare parts list CMO/TCMO

2.1 Drawings

TCMO 20-30 and CMO 20-30



Cylinder Liner
CMO + TCMO (LP)

Fig. 1

TCMO 20-30

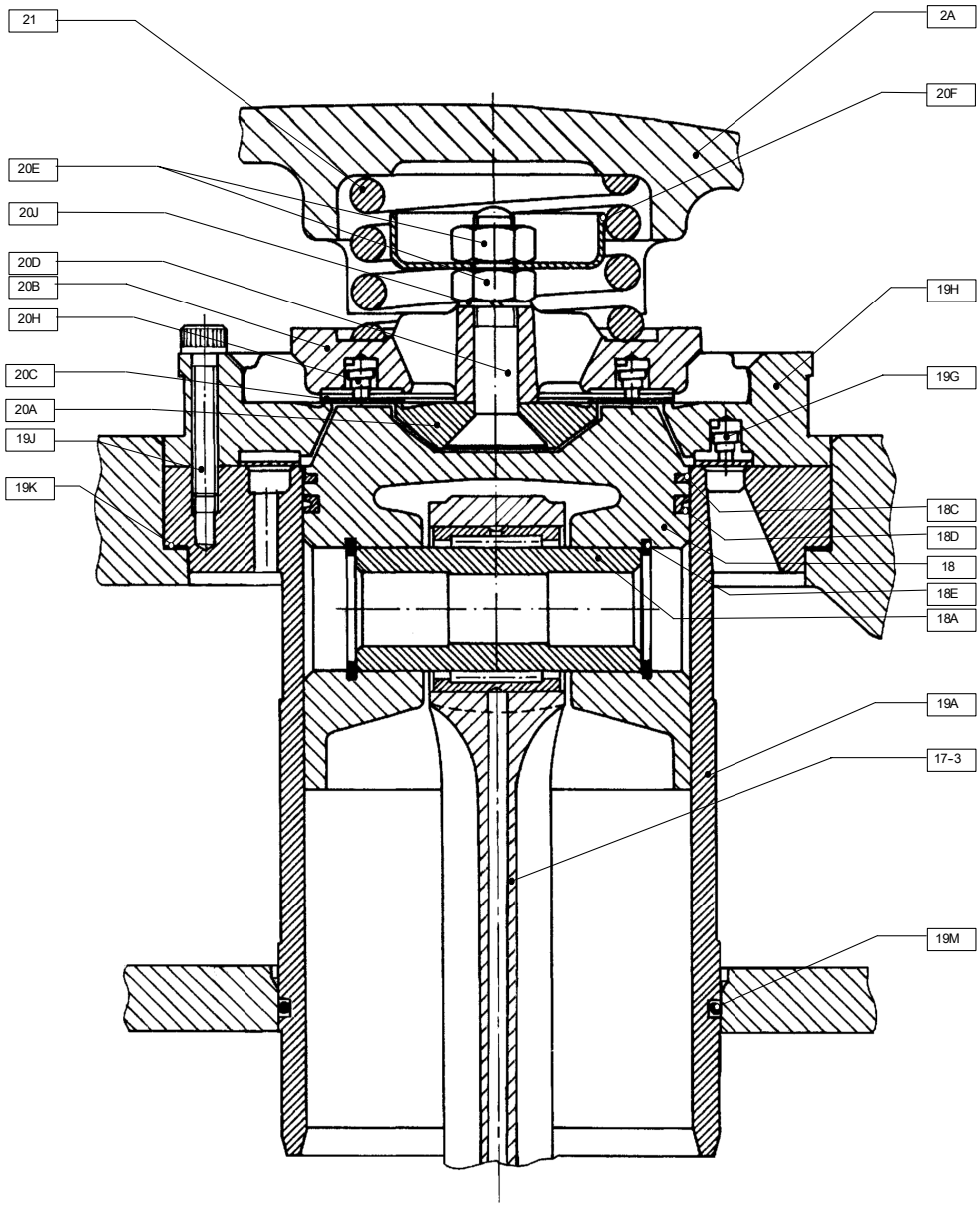


Fig. 2

TCMO 20-30 and CMO 20-30

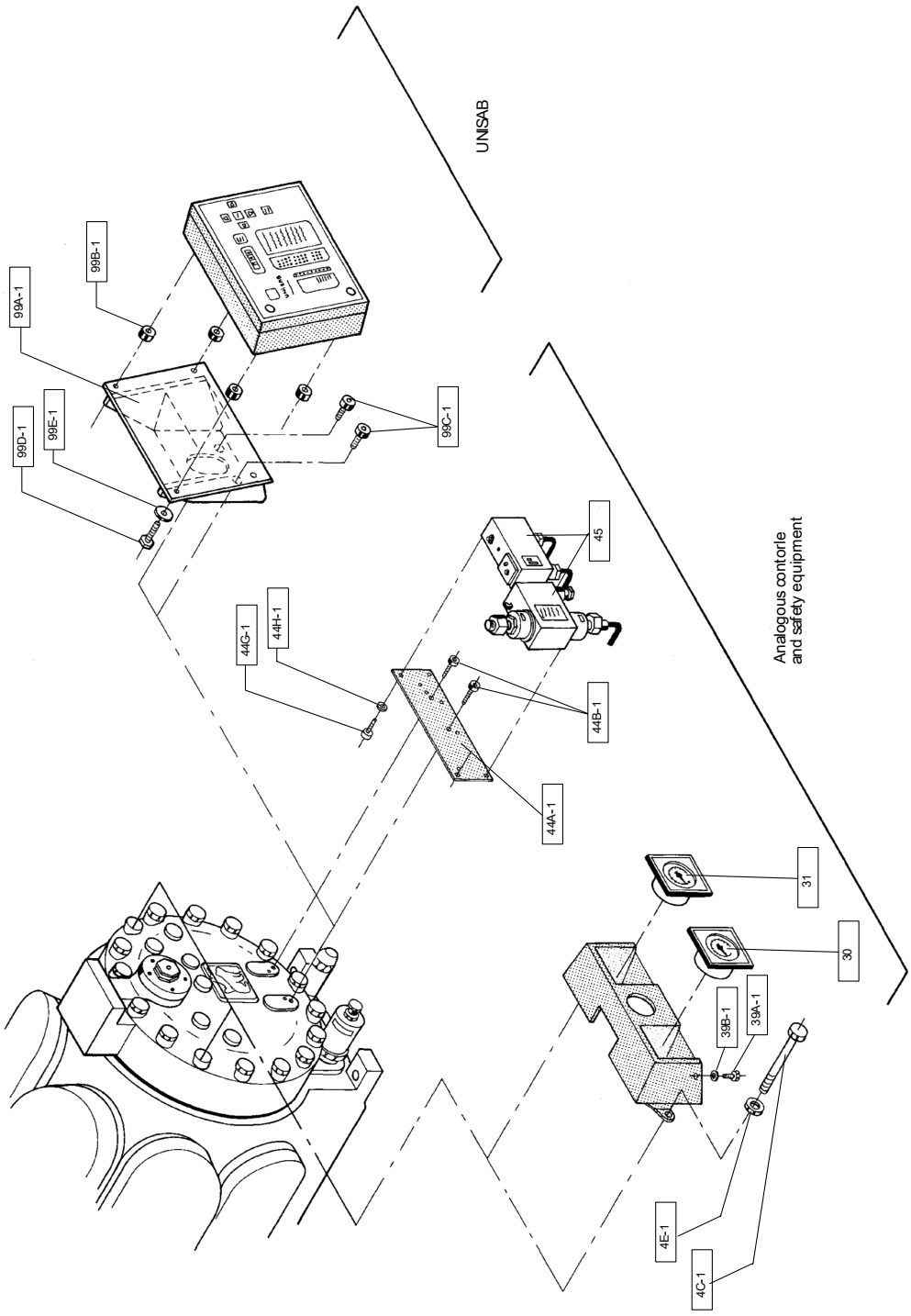
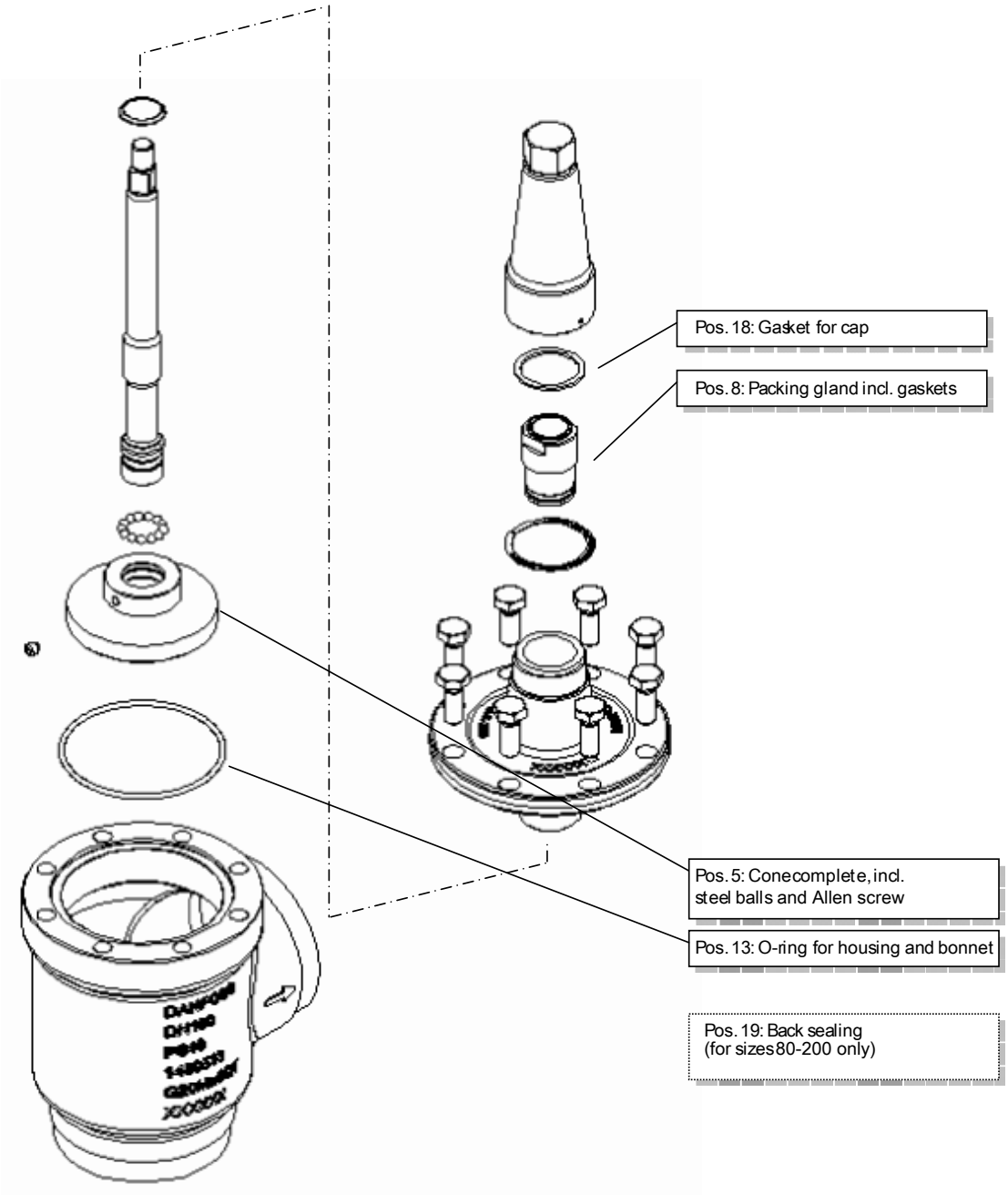


Fig. 3



The pos. numbers are included in the spare parts kits for SVA stop valve.

Fig. 4

CMO 20-30

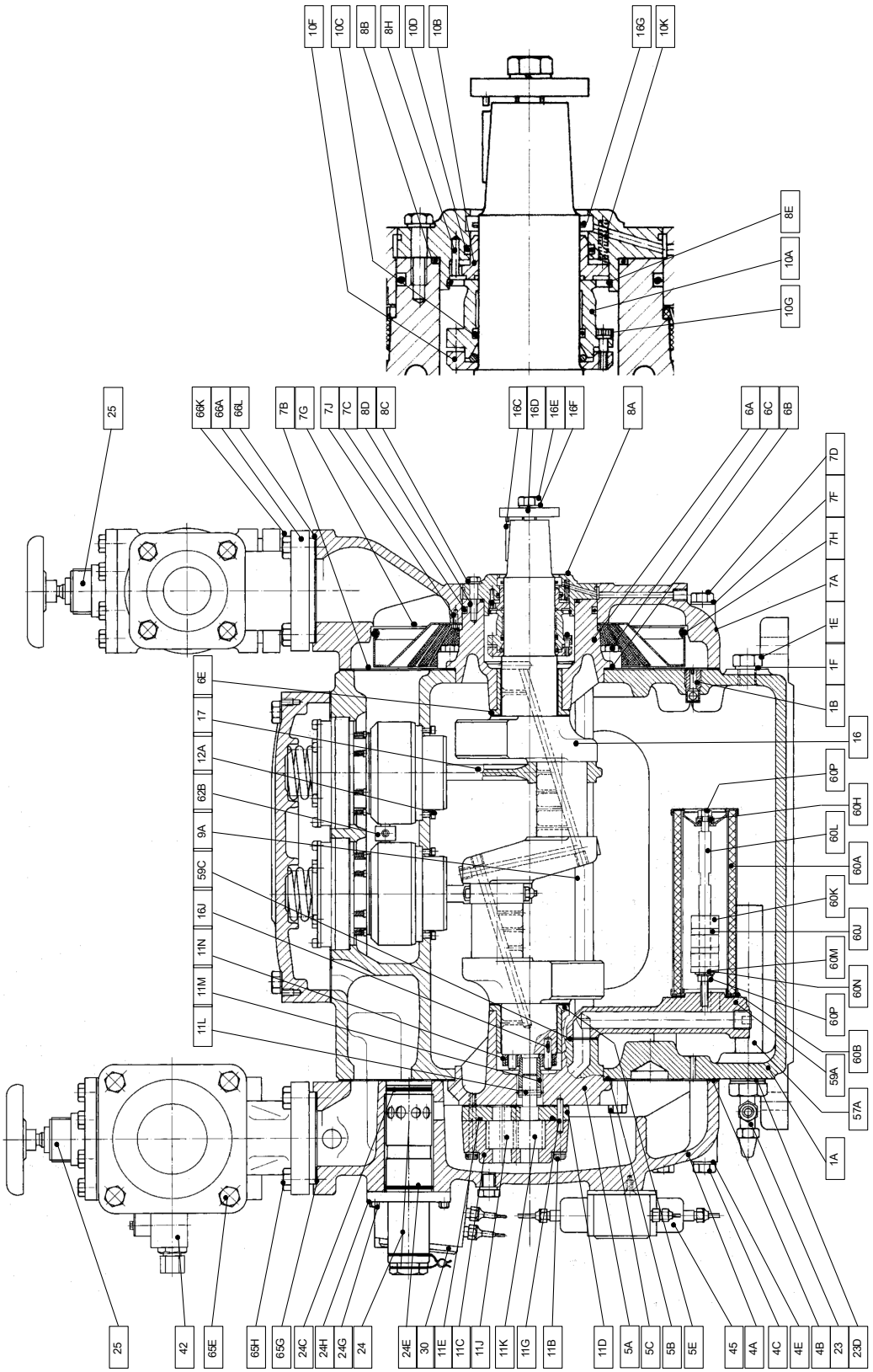


Fig. 5

CMO 20-30

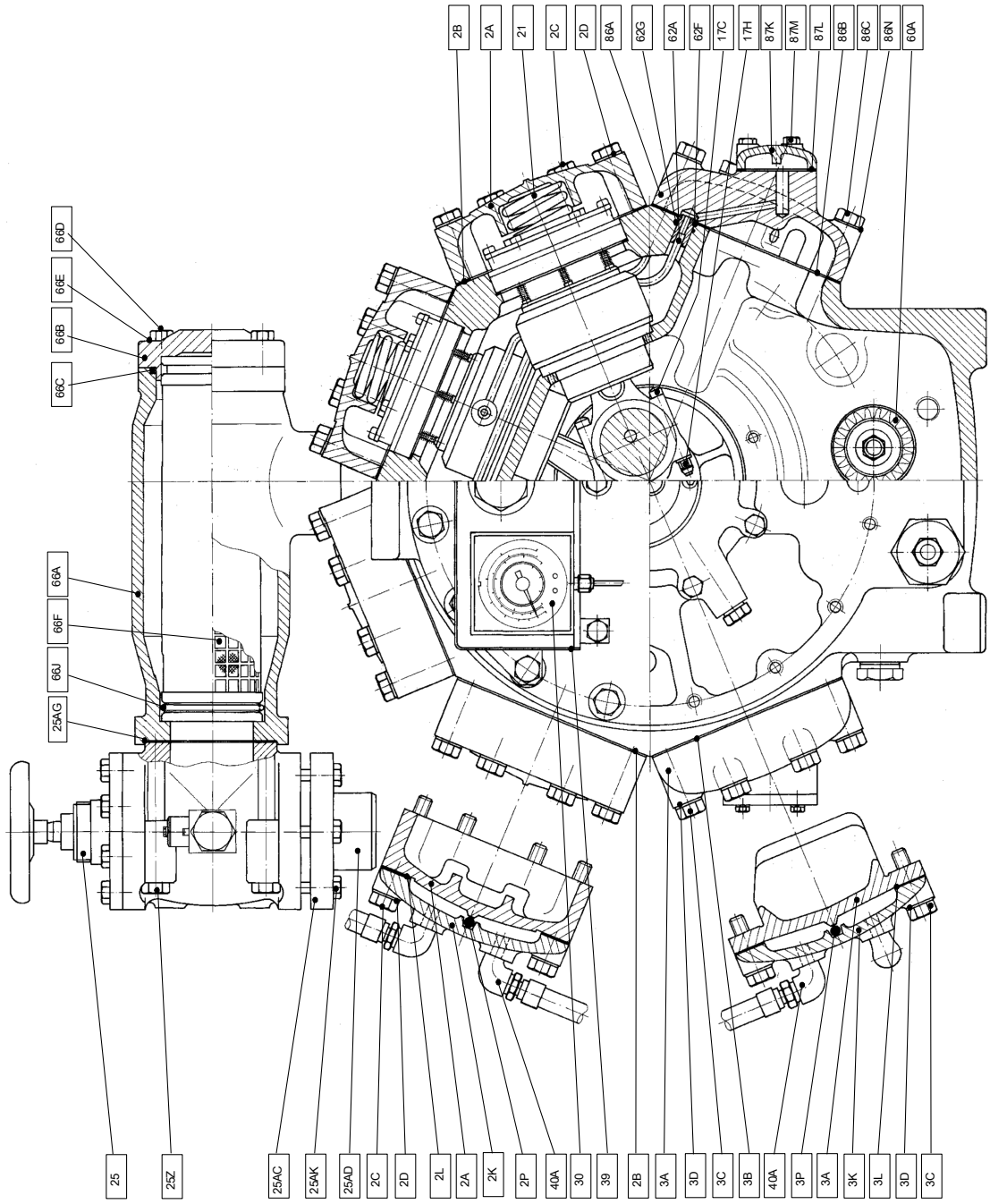


Fig. 6

CMO 20-30

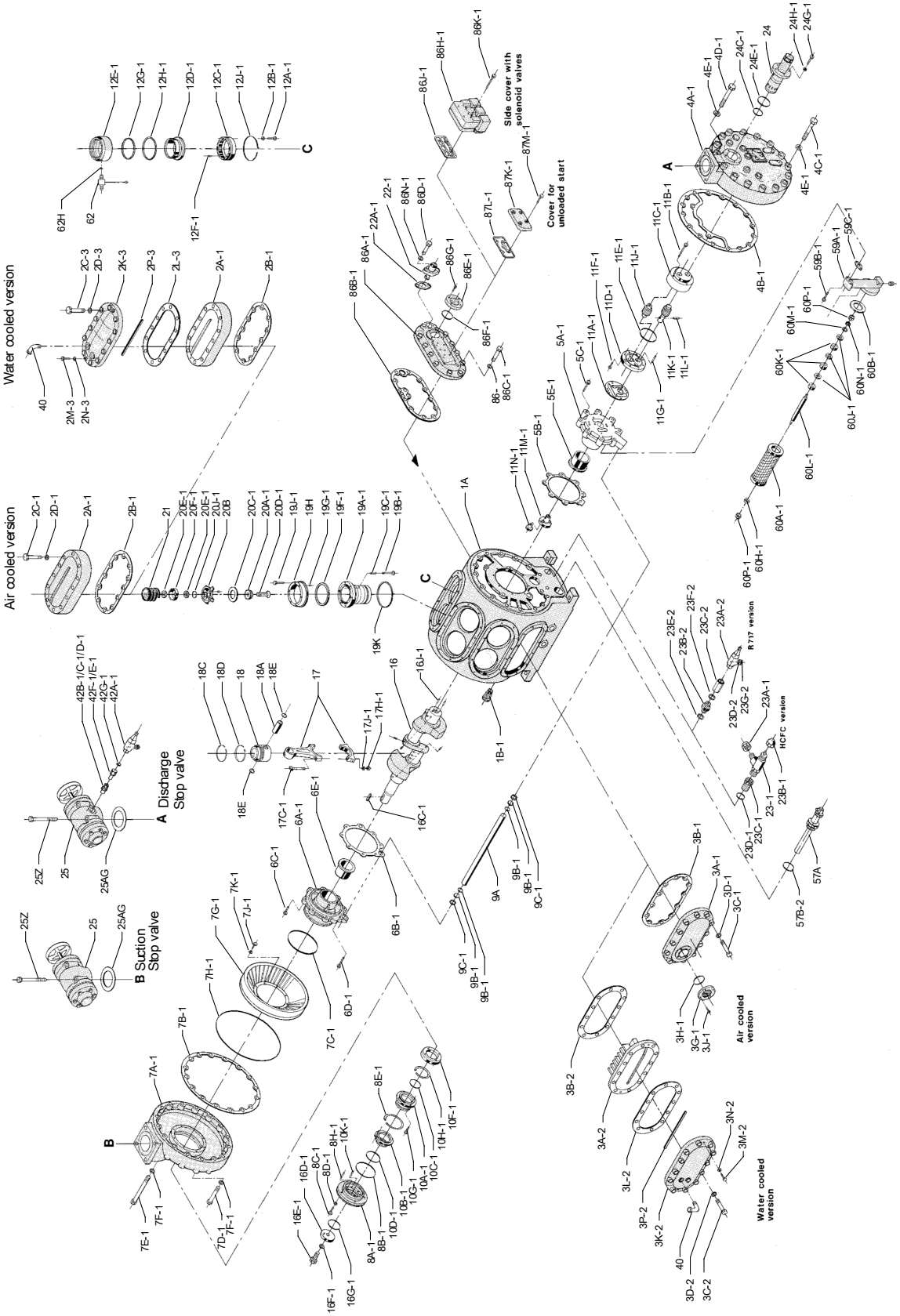


Fig. 7

TCMO 20-30

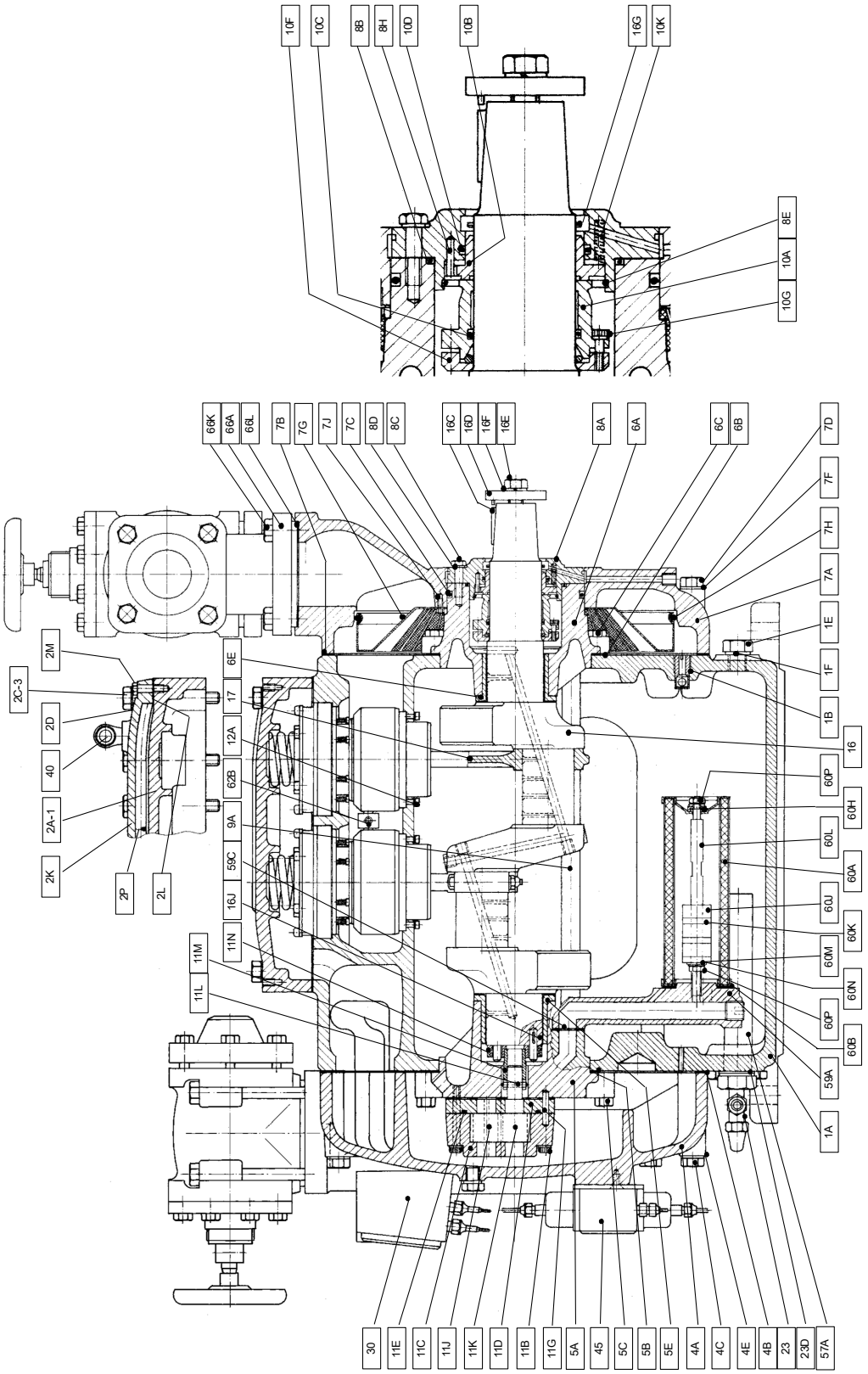


Fig. 8

TCMO 20-30

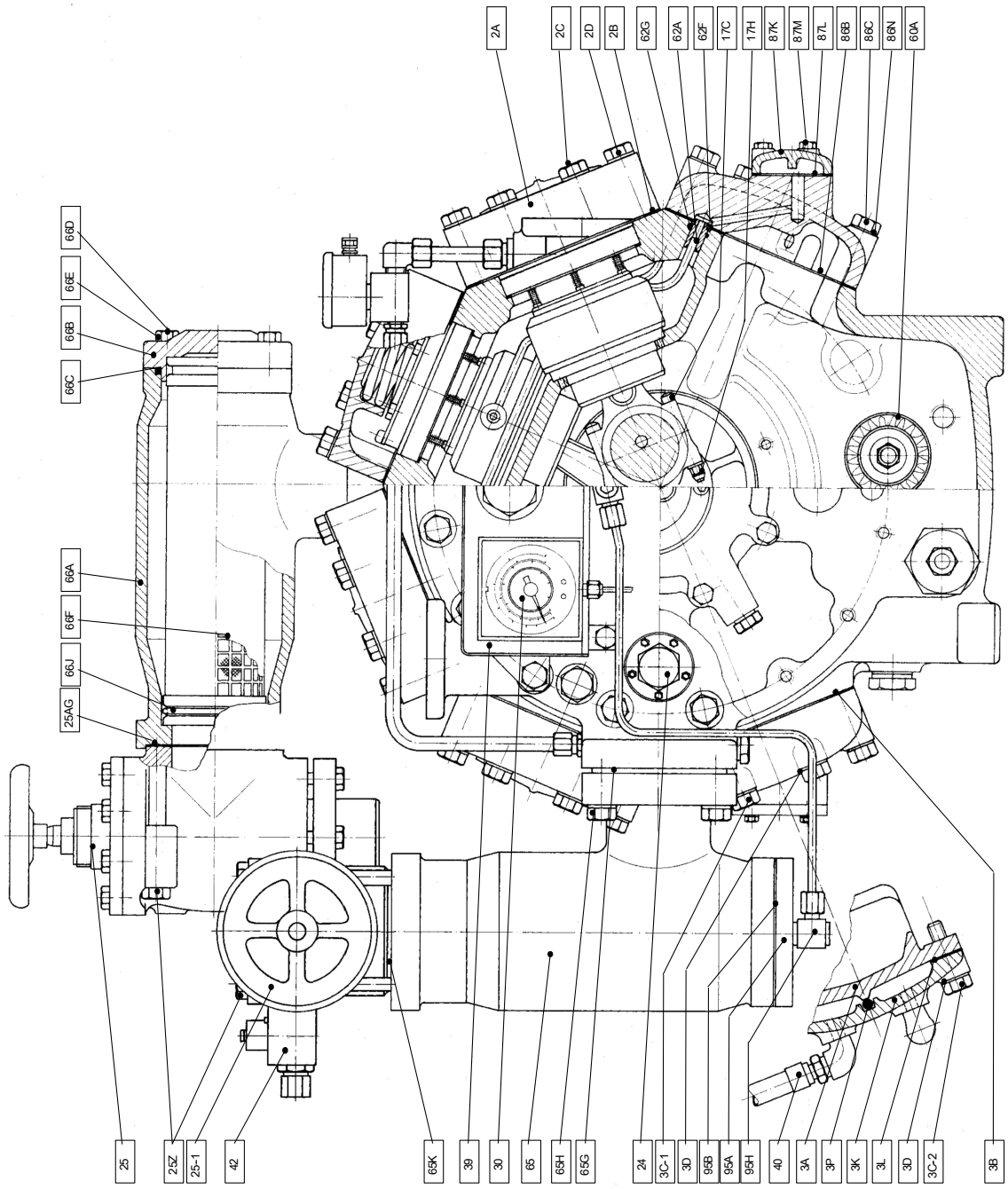


Fig. 9

TCMO 20-30

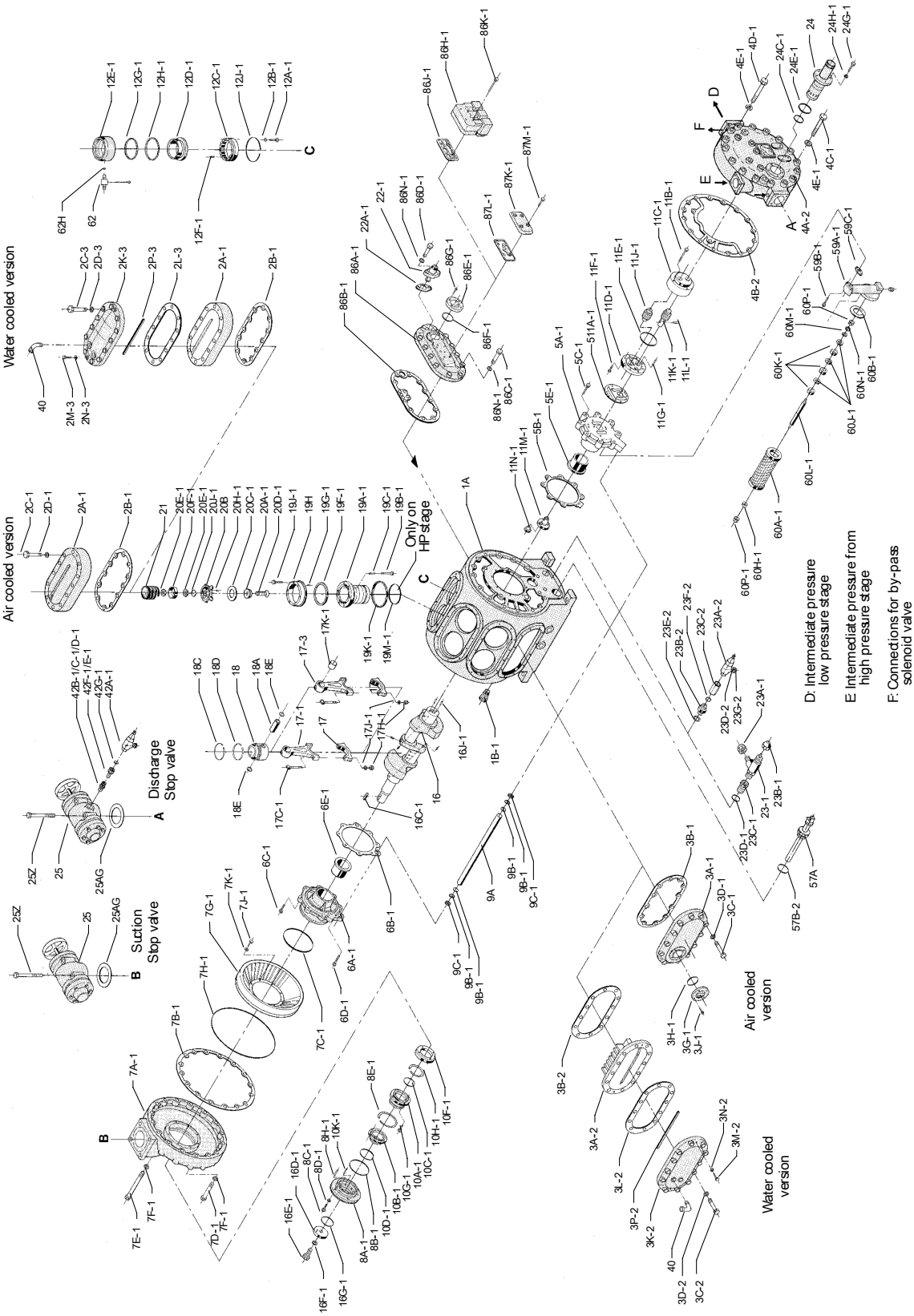


Fig. 10

2.2 Tool set for change of main bearings



Pos. no.	Designation	Part no.	Line no. A606
1	Tool set for change of CMO/HPO main bearings	3183.171	1

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