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3.0 TECHNICAL DATA FOR THE SYSTEM

3.1 System data

Hydraulic oil consumers

	Design capacity			Hydraulic data		
Consumers	m³/h	mlc	kg/dm ³	cSt	l/min	bar
12 of Cargo pumps SD150	300	110	8.0	1.0	247	248
2 of Cargo pumps SD100	100	110	0.8	1.0	93	244
1 of Portable pump TK80	70	70	1.0	1.0	72	210
2 of Ballast pumps SB200	350	25	1.025	1.0	115	192
1 of TC pump MA200/150	100	110	1.025	1.0	183	210
	k\	W	rp	m		
1 of Thruster motor	40	00	15	50	1224	225

Hydraulic oil supply

3 of Electric hydraulic power packs

 $3 \times 415 \text{ l/min}$ = 1245 l/min / 268 bar

Power balance (design)

5 of Cargo pumps SD150 (1500 m³/h - 110 mlc - 0.8 kg/dm³ - 1.0 cSt)

= 1235 l/min / 248 bar

or

4 of Cargo pumps SD150 (1200 m³/h - 110 mlc - 0.8 kg/dm³ - 1.0 cSt)

³ - 1.0 cSt) = 988 l/min / 248 bar

2 of Ballast pumps SB200 (700 m³/h - 25 mlc - 1.025 kg/dm³ - 1.0 cSt)

= 230 l/min / 192 bar = 1218 l/min / 248 bar

or

1 of Thruster motor (400 kW - 1550 rpm)

= 1224 I/min / 225 bar

Simultaneous operation (examples)

Number and type of	Max. oil consumption	Number and type of	Max. oil supply
consumers	l/min	power packs	l/min
1 x SD150	247	1 x	415
2 x SD150	494	2 x	830
3 x SD150	741	2 x	830
5 x SD150	1235	3 x	1245
4 x SD150 + 2 x WBP	1218	3 x	1245
1 x Thruster motor	1224	3 x	1245



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3.2 Component data

Main electric hydraulic power packs

Number of power packs: 3

Hydraulic pump type: HA4VSO 250 DP / 30 R-PPB 25N00-SO585

Pump speed: 1785 rpm
Oil delivery (each power pack): 415 l/min
Hydraulic pressure (differential): 270 bar
Electric meter type: M2CA 315

Electric motor type: M2CA 315 LA4

Protection: IP55
Electric motor rating: 215 kW
Rated normal current: 339 A
Starting current (direct on-line): 2462 A

Power supply: 440V / 60Hz / 3Ph Heater element supply: 220V / 60Hz / 1Ph

Jockey pump

Number of power packs: 1

Hydraulic pump type: PG-KRAL NE 42

Hydraulic pressure (differential): 4.5 bar Electric motor type: M2AA 90 L2

Protection: IP55

Power supply: 440V / 60Hz / 3Ph

Pump speed: 3420 rpm
Oil delivery (each power pack): 97.5 l/min
Electric motor rating: 2.5 kW
Rated normal current: 4.7 A
Starting current (direct on-line): 29.6 A

Hydraulic oil cooler

Number of coolers: 1

Type: DPK219/2000
Heat transfer rate: 163 kW
Cooling water inlet temperature: 36 °C
Minimum required cooling water flow: 35 m³/h

Pressure drop at minimum required flow: 13.2 mwc (Δp measuring, $p_1 - p_2$)

Maximum cooling water flow: 35 m³/h

Pressure drop at maximum flow: 13.2 mwc (Δp measuring, $p_1 - p_2$)

Maximum cooling water inlet pressure: 40 mwc

For cooling water pressure drop curve (Δp measuring, $p_1 - p_2$), refer to the dimensional drawing of the cooling water accessories supplied by Framo.



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Hydraulic oil transfer unit

Number of transfer units: 1

Transfer pump type: PG-KRAL CKCR 15U

Hydraulic pressure (differential): 14 bar Electric motor type: M2VA 80 C2

Protection: IP55

Power supply: 440V / 60Hz / 3Ph

Pump speed: 3420 rpm
Oil delivery (each power pack): 36 l/min
Electric motor rating: 1.3 kW
Rated normal current: 2.5 A
Starting current (direct on-line): 15.3 A

Cargo pumps:

Type SD150-5 DTHH90-B325-S

Number of pumps: 12

Material against cargo: EN1.4432

Capacity - Head: 300 m³/h - 110 mlc Cargo specific gravity - Viscosity: 0.8 kg/dm³ - 1.0 cSt

Hydraulic motor type:

Motor speed:

Oil consumption:

Hydraulic pressure:

A2FM 90/61

2659 rpm

247 l/min

248 bar

Type SD100-5 DTHH23-B220-S

Number of pumps: 2

Material against cargo: EN1.4432

Capacity - Head: 100 m³/h - 110 mlc Cargo specific gravity - Viscosity: 0.8 kg/dm³ - 1.0 cSt

Hydraulic motor type:

Motor speed:
Oil consumption:
Hydraulic pressure:

A2FM 23/61
3880 rpm
93 l/min
244 bar

Portable pump:

Type TK80 DUHH16-A168-S

Number of pumps: 1

Material against cargo: EN1.4432
Capacity - Head: 70 m³/h - 70 mlc
Cargo specific gravity - Viscosity: 1.0 kg/dm³ - 1.0 cSt

Hydraulic motor type:

Motor speed:

Oil consumption:

Hydraulic pressure:

A2FM 16/61

4164 rpm

72 l/min

210 bar



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Ballast pumps:

Type SB200-T3 MHH90-A372-S/G

Number of pumps: 2

Material (water side): EN1.4432 / NS16570 Capacity - Head: 350 m³/h - 25 mlc Specific gravity - Viscosity: 1.025 kg/dm³ - 1.0 cSt

Hydraulic motor type:

Motor speed:

Oil consumption:

Hydraulic pressure:

A4FM 90

1231 rpm

115 l/min

192 bar

Tank cleaning pump:

Type MA200/150 MHH63-A300-F/G

Number of pumps: 1

Material (water side):

Capacity - Head:

Specific gravity - Viscosity:

NS16520 / NS16570

100 m³/h - 110 mlc

1.025 kg/dm³ - 1.0 cSt

Hydraulic motor type:

Motor speed:

Oil consumption:

Hydraulic pressure:

A2FM 63/61

2796 rpm

183 l/min

210 bar

Bow thruster motor:

Type A4V750

Number of motors: 1

Shaft power: 400 kW
Shaft speed: 1550 rpm
Motor speed: 1550 rpm
Oil consumption: 1224 l/min
Hydraulic pressure: 225 bar

Note! Technical data for other equipment, refer Framo Specification and other actual specifications.