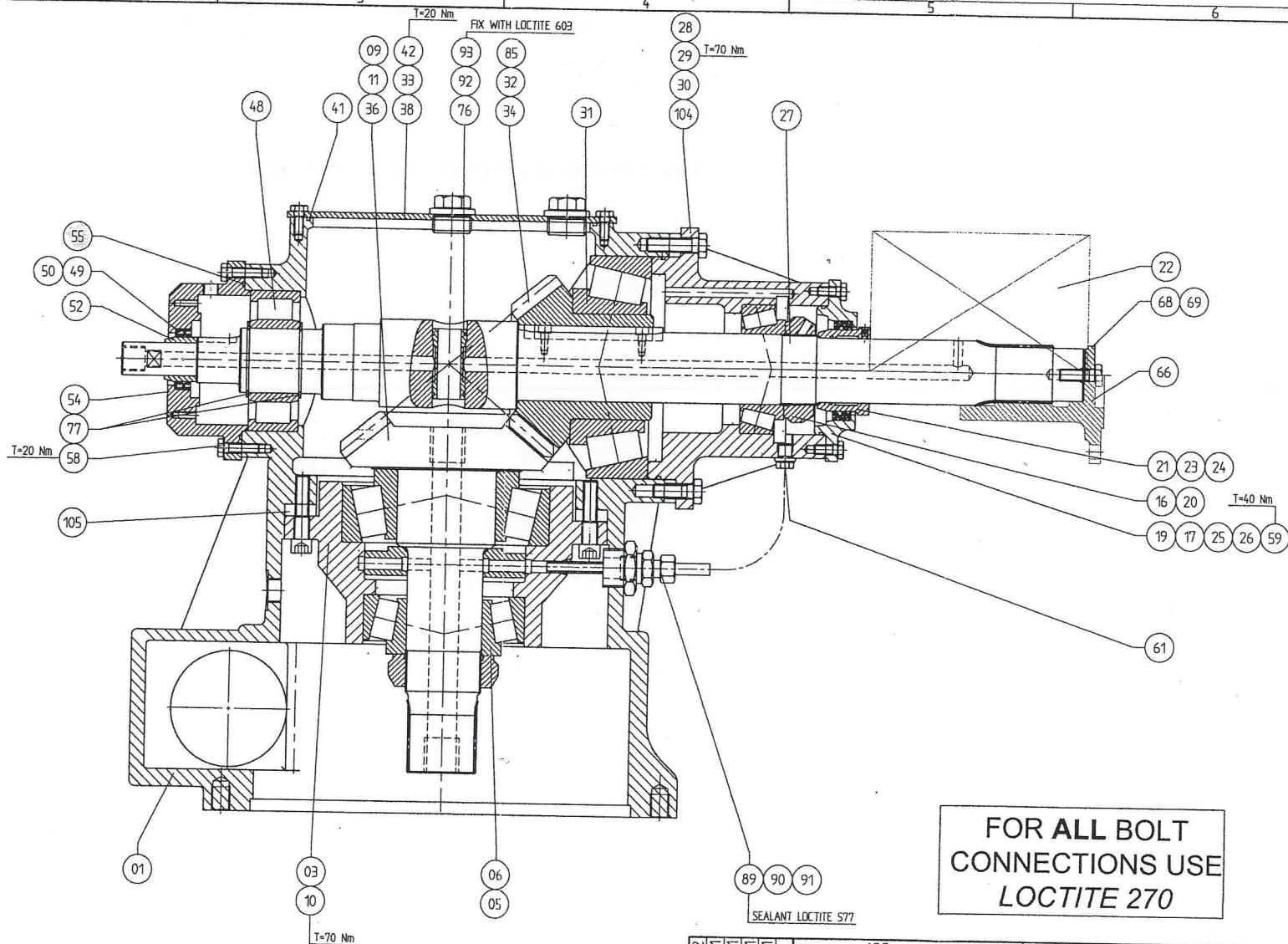


01-07-2003 13:59:03, 1:3.66051, Jeroen van Ammel



Oil Content FULL GEARBOX with wormgears	20 Liter
Oil Content FULL GEARBOX /wormgears	23.5 Liter
Bearing Clearance NU 2311 E	0.04 - 0.07 mm
Bearing Margins Pinion Shaft	0.00 mm
Bearing Margins Vertical Shaft	0.00 mm
Tooth Clearance	0.14 - 0.25 mm

5 * OUTSIDE SPACERS REBUILD 150102	SCALE: 1:2.5	REMARKS:
4 * DIFF. OIL LEVEL GLASS 1221001	DATE: 30-11-2000	Weight is excl. oil, excl. clutch or cardan flange
3 * RADIAL RINGS ADDED BOLTS 210901	NAME: WLeenes	
2 * RADIAL PMP-CHANNEL CHG 1210201	CHECKED:	
1 * PS 3/28 CHG PS 11.61 ADD 120201	MATERIAL: -	CLASSIFICATION:
REV. SUBJECT	WEIGHT: ±211 kg	PANT SYSTEM:
	TITLE	
	HRP 3000 UPPER GEARBOX	
	APPROVED IN HOLLAND	APPROVED IN HOLLAND
	2000 AA Kruipen aan de Lek	2000 AA Kruipen aan de Lek
	HRP	HRP
	THRUSTER SYSTEMS	THRUSTER SYSTEMS
	0600z30005	0600z30005
	A2	A2
	ORDERPART	ORDERPART

HRP Thruster Systems

Drawing No. 06002300
 HRP order No.
 Description Upper Gearbox
 Total qty of systems
 Type of Unit HRP 3000
 Shipyards Hull Number
 End User
 Class.
 Revision
 5

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No.	Part code
01	1	Upper gearbox	510x475x410		GG 25	07012300	
02							
03	1	Vertical bearing pipe	Ø280x140		GG 25	07032300	80 3400 1001 00
04							80 3000 0010 00
05	1	Lock nut	K1M1 13				
06	1	Bearing	32313				
07							
08							
09	1	Bearing	32317				80 3000 0050 00
10	10	Socket bolts	M12x55	DIN 912	8.8		80 0000 1691 00
11	1	Radial pump wheel	Ø139.8x25		St.37.2	07112300	
12							
13							
14							
15							
16	1	Bearing	33212				80 3000 0057 00
17	1	O-ring	Ø105x2.5	DIN 3770	NBR 70		80 1000 0111 00
18							
19	1	Seal cover	Ø155x35		GG 25	07192300	
20	1	Lock nut	K1M1 12				80 3400 1006 00
21	3	Insert	M6x8	DIN 914	A4-70		80 0000 4000 00
22	1	Clutch	750-63	REXNORD BSD			
23	1	Liner	Ø75x45	Plasma Service	St.52	07232300	
24	1	O-ring	D55x2	DIN 3770	NBR 70		80 1000 0121 00
25	1	Lip seal	RP 70x85x8	DIN 3760	NBR 70		80 1200 0147 00
26	1	Lip seal	R 70x85x8	DIN 3760	NBR 70		80 1200 0148 00
27	1	Pinion shaft	Ø75x835		42CrNiMo4		
28	1	Bearing pipe	Ø240x149		GG 25	07272300	
29	8	Hexagon bolts	M12x45	DIN 931	8.8	07282300	80 0000 2591 00
30	1	O-ring	Ø184x3	DIN 3770	NBR 70		80 1000 0117 00
31	1	Bearing	32318				80 3000 0052 00
32	1	Key	18x11x120	NEN 2432	C45	07322300	
33	2	Plug	G 1"	DIN 910	St.		80 0000 3872 00
34	1	Pinion	Ø155x123		17CrNiMo6	07342300	
35							
36	1	Crown wheel	Ø185x310		17CrNiMo6	07362300	

HRP Thruster Systems

Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0600z300
Upper Gearbox
HRP 3000

Shipyards
Hull Number
End User
Class.
Revision

5

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No	Part code
37							
38	1	Top plate	Ø285x8		St.37.2	0738z300	
39							
40							
41	1	O-ring	Ø245x3	DIN 3770	NBR 70		80 1000 0126 00
42	6	Hexagon bolts	M8x20	DIN 933	8.8		80 0000 0036 00
43							
44							
45							
46							
47							
48	1	Bearing	NU 2311				
49	1	Lip seal	RP38x52x7	DIN 3760	NBR 70		80 1200 0148 00
50	1	Lip seal	R38x52x8	DIN 3760	NBR 70		80 1200 0150 00
51							
52	1	Liner	Ø38x28		CA5	0752z300	
53							
54	1	Seal cover (left side)	Ø170x70	DIN 3770	GG 25	0754z300	
55	1	O-ring	Ø128x2.5		NBR 70		80 1000 0127 00
56							
57							
58	6	Socket bolts	M8x35	DIN 912	8.8		80 0000 1629 00
59	4	Hexagon bolts	M8x30	DIN 933	8.8		80 0000 0038 00
60							
61	1	Plug	G1/4"	DIN 910	St.		80 0000 3800 00
62							
63	1	Plug	G 1/2"	DIN 910	St.		80 0000 3850 00
64	1	Oil level glass	G 1/2"		Al.		80 5000 1183 00
65							
66	1	Cardan flange	Ø150x110		CA5	0766z300	
67							
68	1	Lock plate	Ø50x8		St.37.2		
69	1	Hexagon bolts	M10x30	DIN 933	8.8	0768z300	
70							80 0000 0067 00
71							
72							

HRP Thruster Systems

Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0600x300
Upper Gearbox
HRP 3000

Shipyard
Hull Number
End User
Class.
Revision

5

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No	Part code
73							
74							
75							
76	1	Suction tube	Ø30x60		St.37-2	0776x300	80 0000 1204 00
77	2	Circlip	A55	DIN 471	Spr.St.		
78							
79							
80							
81							
82							
83							
84							
85	2	Socket bolts	M6x12	DIN 912	8.8		80 0000 1602 00
86							
87							
88							
89	1	Reducing adapter	1069-16-08		St.		80 5000 1364 00
90	1	Male stud coupling	1013-10SR1/2		St.		80 5000 1365 00
91	1	Lubrication pipe	Ø10x1.5x140		St.	0791x300	80 1000 0174 00
92	1	O-ring	Ø26x2		NBR 70		80 1000 0175 00
93	1	O-ring	Ø24x2		NBR 70		
94							
95	1	Oil level glass	G 3/4"		Al.		80 5000 1184 00
96							
97							
98							
99							
100							
101							
102							
103							
104	2	Split spacer	Ø230x10		St.37-2	0710x300	
105	2	Split spacer	Ø280x10		St.37-2	0710x300	

HRP Thruster Systems

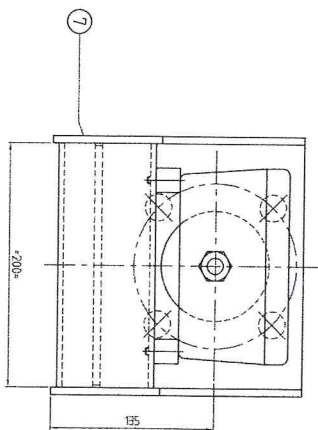
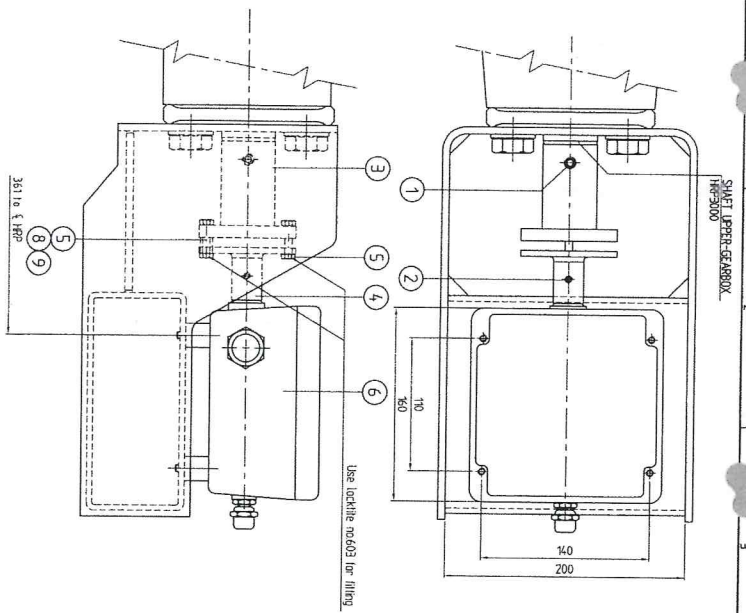
Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0650z300
Steering section
HRP 3000

Shipyard
Hull Number
End User
Class.
Revision

3

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No.	Part code
01	1	Hyd. Motor	195 E	PARKER TG			80 5500 0012 00
02	2	Socket bolt	M12x30	DIN 912	8.8		80 0000 1686 00
03	4	Washer	M20	DIN 125 - A	St.		80 0000 0848 00
04	4	Hexagon bolt	M20x65	DIN 933	8.8		80 0000 0228 00
05	2	Lip seal	45x62x10	RP	NBR 70		80 1200 0102 00
06	2	Lip seal	45x62x10	R	NBR 70		80 1200 0002 00
07	2	O-ring	Ø94x3		NBR 70		80 1000 0128 00
08	2	Bearing	32309				80 3000 0008 00
09	1	Stud	M16x95	DIN 975	8.8		80 0000 3209 00
10	1	RRB-assembly				1958z300	
74	1	Worm shaft	Ø85x428		17CrNiMo6	0774z300	
75	1	Worm wheel	Ø315x68		GZ CuSn12 Ni	0775z300	
84	1	Worm gear cover plate	146x140x55		GG25	0784z300	
112	1	Worm gear cover plate	146x140x55		GG25	0711z300	
113	4	Socket bolt	M20x50	DIN 7984	8.8		80 0000 2437 00

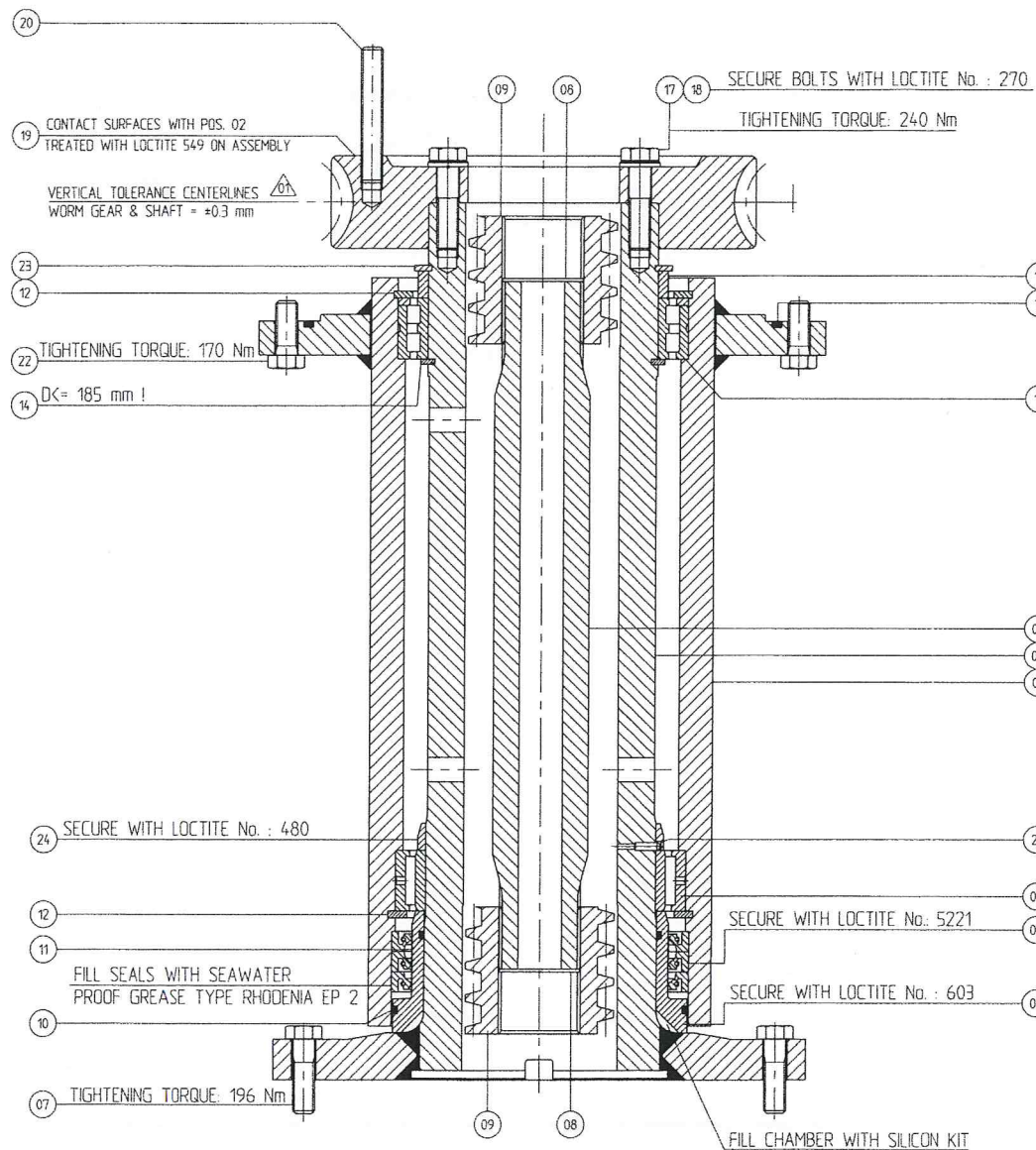


03	Dimension changed	070102
02	Add bolt	121101
01	Hole pattern changed	050201
REV	SUBJECT	DATE
1	Rudder repeat back assembly HRP 3000	
THRUSTER SYSTEMS	SCALE: 1:2	DATE: 26-07-2001
	DESIGNED BY: BV	
	CHECKED BY: BV	
	MATERIAL: FG	
	CLASSIFICATION	
	PART SYSTEM	
	THICKNESS	
	FINISH	
	PAINT SYSTEM	
	MARKS	
	1958X-300003	
	A2	

HOLLAND ROERPROPELLER

PROPULSION SYSTEMS AND TUNNELTHRUSTERS

	Drawing No.	1958x300003	Shipyard		
	HRP order No.	Standard	Hull Number		
	Description	Assembly rudder repeat back	End User		
	Total qty of systems	1	Class.		
	Type of Unit	HRP 3000	Revision		
Pos	Qty/ Parts description	Size	Type	Material	HRP sub-drawing No Part code
01	2 Hexagon socked screw	M10x10	DIN 916	St. 45H	80 0000 3635 00
02	2 Hexagon socked screw	M6x10	DIN 916	St. 45H	80 0000 3614 00
03	1 Coupling hub	Dia. 80/45x80		1957x0000	
04	1 Coupling hub	Dia. 80/12x43		St.37-2	1956x0000
05	2 Hexagon bolt	M6x40	DIN 933	8.8	80 0000 0010 00
06	1 Rudder repeat back box				
07	1 Support frame			St.	
08	1 Bush L=15	Dia. 10/6		POM	1955x3000
09	2 Hexagon nut	M6	DIN 934	8	80 0000 0801 00



FILL WITH LUB. OIL TYPE: SHELL OMALA 150
 CONTENTS: 0.0176*H.O.H.-19.2 L
 WEIGHT: 0.264*H.O.H.-151 Kg
 SEAL ALL BOLTS WITH LOCTITE No.: 270

02 Seal guide added	01 Note added	12/2002 160902	DATE	SCALE: 1:2.5	REMARKS:
			DATE	17-10-2000	
			NAME	BV	
			CHECKED		
			MATERIAL	CLASSIFICATION	PAIN SYSTEM
			WEIGHT	Kg	
TITLE					
Stemsection assembly HRP 3000					
HRP THRUSTER SYSTEMS			2000 77 P.O. Box 2020 2930 AA Krijpken aan de Lek Holland E-mail: D info@hrp.nl Site: HTTP://www.hrp.nl Phone: +31 (0)180 - 519658 Fax: +31 (0)180 - 519656		
0.5 HRP 1905z300002			1905z300002 A2 Standard		

HRP THRUSTER SYSTEMS

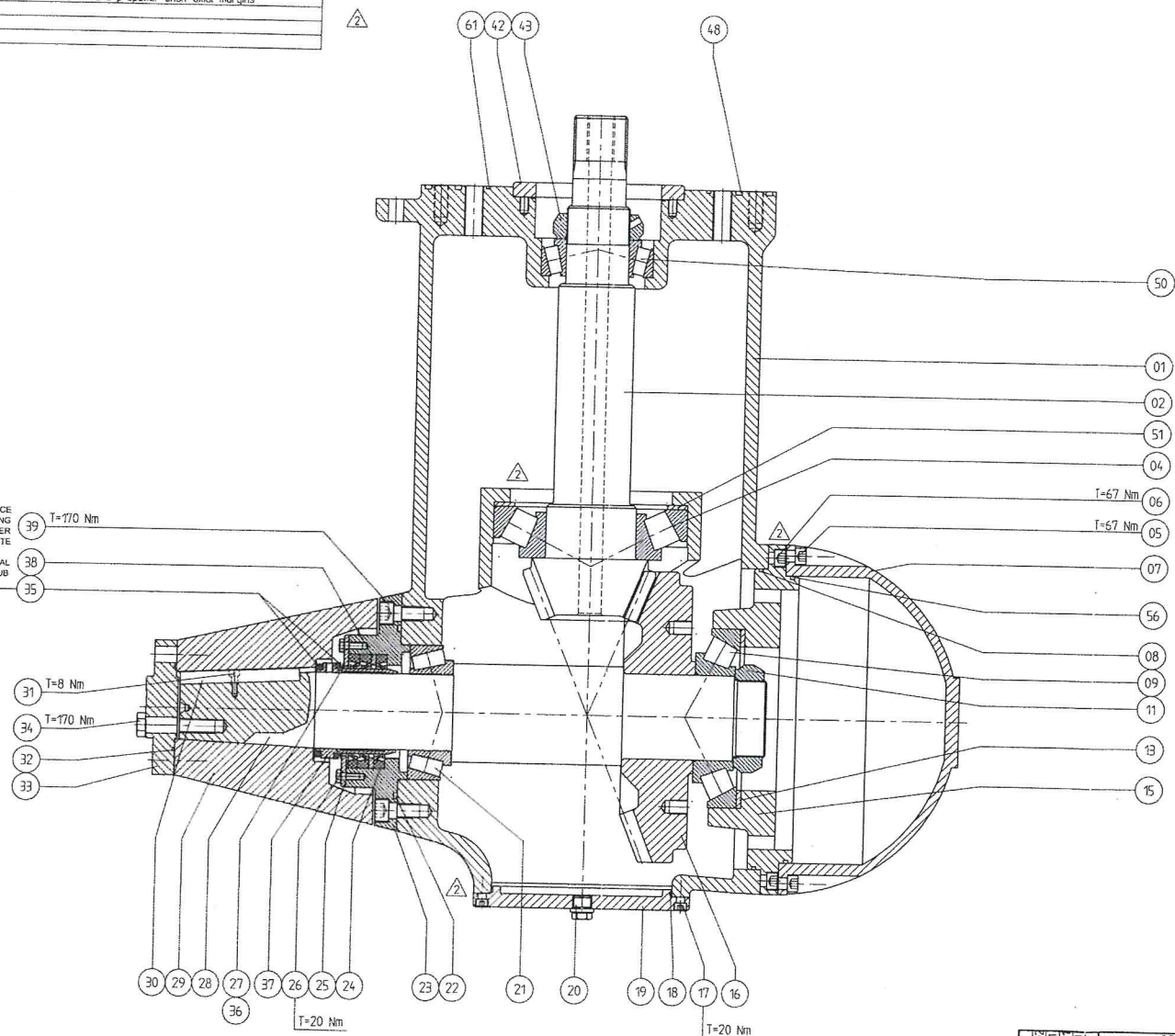
	Drawing No.	19052300002		Shipyard			
	HRP order No.	Standard		Hull Number			
	Description	Stem section assembly		End User			
	Total qty of systems	1		Class.			
	Type of Unit	HRP 3000					
Pos	Qty/ Parts description	Size	Type	Material	HRP sub-drawing No	Part code	
01	1 Support pipe				1907x3000		
02	1 Steering pipe				1915x3000		
03	1 Vertical drive shaft				1901x3000		
04	1 Bearing	NA 4834				80 3300 0001 00	
05	1 Wear bush				1925x3000		
06	3 Lip seal	190x220x15	M6/D6	NBR		80 1200 0127 00	
	- Stainless steel spring						
07	12 Hexagon bolt	M16x55	DIN 931	St.10.9		80 0000 2680 00	
08	2 Circlip	J56	DIN 472	Spr.St.		80 0000 0968 00	
09	2 Coupling box				1903x3000		
10	1 O-Ring	ID 210x5		NBR 70		80 1000 0145 00	
11	1 O-ring	ID 172x4	Erks	NBR 70		80 1000 0114 00	
12	2 Circlip	J215	DIN 472	Spr.St.		80 0000 1023 00	
13	1 O-Ring	ID 340x5		NBR 70		80 1000 0131 00	
14	1 Circlip	A165	DIN 471	Spr.St.		80 0000 1242 00	
15	1 Bearing	NNC 4834 V				80 3400 0016 00	
16	1 Spacer				1917x3000		
17	12 Hexagon bolt	M16x65	DIN 931	St.10.9		80 0000 2680 00	
18	12 Washer	17/30x4	DIN 6916	C45 HV		80 0000 0863 00	
19	1 Worm wheel				07/523000		
20	1 Threaded rod	M16x100	DIN 939	St.8.8		80 0000 3461 00	
21	1 Spring type straight pin	Ø6x18	DIN1481	St.		80 0000 3248 00	
22	10 Hexagon bolt	M16x40	DIN 933	St.8.8		80 0000 0165 00	

HRP THRUSTER SYSTEMS

	Drawing No.	1905z300002		Shipyard			
	HRP order No.	Standard		Hull Number			
	Description	Stem section assembly		End User			
	Total qty of systems	1		Class.			
	Type of Unit	HRP 3000					
Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No.	Part code
23	1	Circlip	A170	DIN 471	Spr.St.		80 0000 1243 00
24	1	Seal guide	Ø182x20		St.37	1918x3000	

Oil Content	43 Liter	Remarks
ALL BOLTS WITH LOCTITE 270		
Bearing Margins Pinion POS 50	(see remark)	In combination with POS 04 -> take pinion axial margins
Bearing Margins Pinion POS 04	(see remark)	In combination with POS 50 -> take pinion axial margins
Bearing Margins Pr. Sh. POS 21	(see remark)	In combination with POS 09 -> take propeller shaft axial margins
Bearing Margins Pr. Sh. POS 09	(see remark)	In combination with POS 21 -> take propeller shaft axial margins
Bearing Margins Pinion	0.00 mm	
Bearing Margins Prop Shaft	0.13 mm	
Tooth Clearance	0.16 - 0.29 mm	

CLEAN SURFACE
 BEFORE MOUNTING
 AND FILL CHAMBER
 WITH CLEAR SILICON PASTE
 CHECK WIPER SEAL
 ON BLUE FIT TO PROPELLER HUB



080202	SCALE 1:2.5	REMARKS
03 Note added	DATE 30-10-2000	
02 CHAMP-FLE-PAVARD CH 09070	NAME W. Leenes	
01 CHAMP-FLE-PAVARD CH 09070	CHECKED	
REV. 01	MATERIAL -	CLASSIFICATION
	WEIGHT = 363 kg	PIANT SYSTEM
	TITLE	
	HRP 300 LOWER GEARBOX	
	0800x30004 A1	

01-07-2003 13:43:00, 1:5.17692, Jeroen van Ammers

HRP Thruster Systems

Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0800x300
Lower Gearbox
HRP 300

Shipyard
Hull Number
End User
Class.
Revision

4

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No.	Part code
01	1	Gear house	786x400x350		GGG50	0901x300	
02	1	Pinion	Ø147x560		17CrNiMo6	0902x300	
03							
04	1	Bearing	31320X				80 3000 0046 00
05	4	Socket bolts	M12x25	DIN 912			80 0000 1685 00
06	10	Socket bolts	M12x25	DIN 912			80 0000 1685 00
07	1	Cap	Ø390x200		GGG50	0907x300	
08	1	O-ring	Ø3.5	L = 1034 mm	NBR		80 1099 4110 34
09	1	Bearing	31319				80 3000 0002 00
10							
11	1	Lock nut	KMT 17				80 3400 1002 00
12							
13	1	Spacer (thrust bearing)	Ø210/160x5		St.37-2	0913x300	
14							
15	1	Bearing flange	Ø390x95		GGG50	0915x300	
16	1	Wheel	Ø324x80		17CrNiMo6	0916x300	
17	6	Socket bolts	M8x20	DIN 912			80 0000 1625 00
18	1	O-ring	Ø195x2.5		NBR		80 1000 0115 00
19	1	Cover	Ø240x23		GGG50	0919x300	
20	1	Oil plug	G 1/2"	DIN 910 PM	St.		80 5100 0001 00
21	1	Bearing	33217		NBR		80 3000 0016 00
22	1	O-ring	Ø180x5		GGG50		80 1000 0069 00
23	1	Shield	Ø265x68.5				
24	3	Lip seal	Ø95x12.5	JW 57-95 M1/D6	NBR	0923x300	80 1200 0124 00

HRP Thruster Systems

Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0800x300
Lower Gearbox
HRP 300

Shipyard
Hull Number
End User
Class.
Revision

4

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No	Part code
25	1	Shield	Ø170x5		Bronze	0925x300	
26	6	Hexagon bolts	M8x20	DIN 933	A4-70		80 0000 0436 00
27	1	O-ring (Liner)	Ø85x3		NBR		80 1000 0070 00
28	1	Propeller shaft	Ø110x652		42CrMo4	0928x300	
29	1	Propeller hub				0929x300	
30	1	Key (propeller)	22x14x140	L=132 (D6885A)	C45		80 0000 1535 00
31	1	Socket bolts	M6x12	DIN 912	NBR		80 0000 1602 00
32	1	O-ring (lock plate)	Ø89x2.62		C60	0933x300	80 1000 0116 00
33	1	Lockplate	Ø150x35.5				
34	3	Hexagon bolts	M16x70	DIN 931	NBR		80 0000 2705 00
35	2	V-seal	Ø95	JW EFVA 95	A4		80 1300 0007 00
36	3	Insert	M8x10	DIN 914	316L	0937x300	80 0000 4025 00
37	1	Liner	Ø106x90		St.37-2	0938x300	
38	1	Spacer	Ø127x5.5				
39	8	Socket bolts	M16x30	DIN 912		8,8	80 0000 1732 00
40							
41							
42	1	Lagerpot	Ø190x23		St.37-2		
43	1	Lock nut	KMT 14			0942x300	80 3400 1005 00
44							
45							
46							
47							
48	1	O-ring	Ø5.33	D=304.17 no. 381 NBR			80 1000 0037 00

HRP Thruster Systems

Drawing No.
HRP order No.
Description
Total qty of systems
Type of Unit

0800x300
Lower Gearbox
HRP 300

Shipyard
Hull Number
End User
Class.
Revision

4

Pos	Qty	Parts description	Size	Type	Material	HRP sub-drawing No.	Part code
49							
50	1	Bearing	332 14				
51	1	Spacer	Ø215/170x5		St.37-2	0951x300	80 3000 0047 00
52							
53							
54							
55							
56	1	O-ring	Ø4	L = 984 mm	NBR		80 1099 4409 84
57							
58							
59							
60							
61	1	O-ring	Ø240x3.5		NBR		80 1000 0062 00