HEIMDAL
PROPULSION A-S

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TLX 40284 HEIMO N

CP PROPELLER

&

MARINE GEAR

SERVICE & PARTS
MANUAL

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

407-100

MAIN INDEX FOR HEIMDAL BUILD No. 0291

General Section

Drawings and Partlists

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

407-099

SPECIFICATIONS FOR HEIMDAL BUILD No. 0291

Marine Gear

Gear Model	HG342SSF. Drwg. 109-002.
Serial Number	36177.
Reduction Ratio	4.19:1. Drwg. 206-015.
Engine Make and Model	Caterpillar 3512 DITA.
Max Continuous Rating	1280hp @ 1800rpm.
Elastic Coupling	Engine Manufacturer's supply.
Main Oil-Pump	Dowty 3PL180 CPDSBE.
Oil-Filter Element	Caterpillar 3S3875.
Relief Valve Setting	40 Bar.
Clutch Pressure Setting	20 Bar.
Oil-Cooler Inlet Water Flow	Max 100 Ltrs/Min.
Oil-Cooler Inlet Water Temp	Max 25 Deg. Celsius.
Oil Pressure/Temperature Alarm	Amot 4140AK1E13CE2-EU.
Oil Pressure Shut-Down Switch	Amot 4140CK1E13AA0-EE.
Clutch Solenoid Valve	24v Vickers DG4V-3-2N-MU-H7-60
Pitch Meter Driver Card	24v Model JOS 8702a.
Linear Potentiometer	TWK-Recti RH28/100-AG-KV-KH-RK
Gear Weight	1500 kg.

Ancilliary Equipment

Bridge Panel	Model PT1.
Standby Lube-Oil Pump	Dowty 3PL180 CPDSBE
Electric Motor	Strømberg HXUR/C 265 A2 7.2kW, 415v, 50hz, 1500rpm.

Cp-Propeller

Propeller Model	K500. Drwg. 105-077.
Propeller Arrangement	Drwg. 108-096. H=6300 K=850.
Shaft Arrangement	Drwg. 108-097.
Propeller Blade Design	1850H HS Drwg. 305-053.
Propeller Diameter	1850mm.
Rotation-viewed from aft	Righthand. (Clockwise)
Propeller Shaft Diameter	170/160mm. Drwg. 206-021.
Sterntube Arrangement	Drwg. 108-095/301-015.
Inboard Sterntube Seal	DSS EJ-170.
Outboard Sterntube Seal	DSS EK-170.
Seawater flow for Inboard Seal	Min 170 Ltrs/Hour.
Sterntube Level Alarm Switch	Sika VH-600.
Propeller and Shaft weight	2100 kg.
Sterntube and Flanges weight	1250 kg.

Classification Society	A.B.S.
Other Authorities	Canadian Coastguard.
Service Manuals supplied	3 each English and French.

RECOMMENDED LUBRICANTS

Marine Gear

BP Energol GR/XP-150	CASTROL Alpha SP150	SHELL Omala 100
MOBIL Mobilgear 629	NOROL Vekselolje CC150	SHELL Omala 150
TEXACO Meropa 100	ESSO Spartan EP150	TOTAL Carter EP150

First oil change at 200 hours, regular oil change at 1000 to 2000 hours, dependent on operating conditions. Oil capacity (dry):-

HG200 Gear 35 litre HG300 Gear 60 litre HG400 Gear 130 litre

Propeller Hub (Except K600)

TEXACO Novatex EP2	MOBIL Grease 2	SHELL Alvania EP2/3
TEXACO Multifak EP2	CASTROL CL-Grease 1616	TOTAL Multis EP2/3
BP Energrease MM-EP2	NOROL Universal EP2	ESSO Beacon 2

The propeller hub must be greased with the blades set in the full ASTERN position to avoid over-filling and possible hub damage.

Sterntube (and K600 Hub)

Gol Seals fitted

SHELL Talona 30
ESSO Stermar 220
FINA Neptun 53
CHEVRON Marine Oil 38X
NOROL Marin Hylseolje L
MOBIL Voco Engine Oil No 1

Simplex Seals fitted

VICKERS Hydrox 550
CASTROL Perfecto T68
ESSO Tromar T66
MOBIL Mobilguard 312
TEXACO Taro XD 30

Deep Sea Seals fitted

VICKERS Hydrox 550
ESSO Tromar T77 or T78 EP
SHELL Turbo T78
BP Energol THB 77
MOBIL Mobilguard 312
TEXACO Taro XD 30
TEXACO Regal Marine 100
CASTROL Perfecto T68 or T100
TOTAL Preslia 68 or 100
GOLDEN FLEECE Circol 300 XT

Oil capacity of the gravity supply tank is approx. 30 litres.

The recommended oils for GOL Seals are NOT compatible with those recommended for SIMPLEX or DEEP SEA SEALS and use of an incorrect oil may lead to seal failure.

For operation in tropical regions, it may be necessary to use a higher viscosity oil of the same type. Please consult your local oil-company representative for confirmation of the correct grade

DESCRIPTION OF CP-PROPELLER

The Heimdal K-Series propeller is of three or four bladed design, with the the hub and blades manufactured in nial bronze.

On the three-bladed type, the hub is split radially at the blade centre-line, and the propeller blade journals each have a rubber seal ring fitted. The hub is grease packed and movement of the pitch control rod forces grease to the blade journals.

On the four-bladed type, the hub is manufactured as a single part and fitted with an end cover. The propeller blades are bolted to a carrier and each have a rubber seal ring fitted. The hub is oil lubricated from the sterntube gravity tank through borings in the propeller shaft.

The pitch control rod is manufactured in stainless steel and is supported in the hollow-bored propeller shaft by two bearings. Linear movement of the control rod is converted to a circular motion by a positioner slide and slide blocks that engage gudgeon pins fitted to the propeller blades.

The propeller shaft is manufactured in high-tensile steel and is secured at the hub (3-bladed models) by a key, taper and lock nut arrangement. The K600 (4-bladed model) hub is a shrink-fit on the propeller shaft. All models are mounted to the gear output flange by a split-type coupling.

The sterntube is manufactured in seamless steel tubing and is mounted to the hull in a way that allows for axial movement at the inboard end. Propeller shaft bearings are of iron-backed white metal and are oil-lubricated from a gravity supply tank mounted 2-3 metres above the waterline. The type of sterntube seals fitted are given in the equipment specification.

CP-PROPELLER DESIGN

The hull design and type of operation determine the blade shape while the propeller speed dictates the optimum diameter for the horsepower used. The propshaft and hub diameter are determined by the maximum torque to be transmitted.

The design pitch of a cp-propeller is identical to that which would be used for a fixed-pitch propeller operating in a vessel of the same specifications.

However the advantage with a cp-propeller is that the blades may be rotated to compensate for variations in operating conditions that are outside the original design concept.

With minor changes to the blade setting, it is possible to keep the engine at its most effective operating speed irrespective of vessel speed. Engine driven alternators and hydraulic pumps can run at the rpm consistent with best performance.

Manoeuvrability is greatly improved, and in an emergency the propeller can be moved to the astern position while the vessel is running ahead for a much reduced stopping time.

PROPELLER OPERATION

The propeller should be in the neutral position with the engine set at idle when the clutch is engaged.

Increase the engine speed to high idle after engaging the clutch and apply a few degrees of pitch to bring the vessel under way.

Then while moving the engine to maximum speed, progressively increase the pitch to obtain the required speed.

AVOID OVERLOAD - USE FULL PITCH ONLY WHEN THE VESSEL IS MOVING!

Maximum performance is obtained when the blade setting is such that it absorbs the power for which the propeller is specified.

DESCRIPTION OF MARINE GEAR

The HG-Series Marine Gears are of vertical-offset, single-stage design offered as a free-standing unit or with an SAE bellhousing for direct mounting to the engine.

Power is transmitted through a flexible coupling connected to the flywheel. The primary shaft has a hydraulic multi-disc clutch and a gear-type oil pump which is driven directly from the engine fly -wheel to provide oil-pressure immediately on starting-up.

The gear pinion is integral with the primary shaft and supported by one spherical and one cylindrical roller bearing. The secondary shaft is supported at the forward end by a iron-backed white metal bearing and at the aft end by a spherical roller bearing. The pitch servo cylinder and piston are mounted in the centre of the gear wheel and output shaft. The servo piston is connected to the pitch setting mechanism in the propeller hub by a control rod

Movement of the servo piston is controlled by oil fed to either side of the piston through oil-ways drilled in the piston shaft, via the servo slide valve. The servo slide valve is operated by a control lever and the position of the valve determines the pitch setting.

GEAR LUBRICATION SYSTEM

Oil is drawn by a pump from the gear sump via a filter element fitted with magnets to trap any steel particles and delivered through an oil-cooler to the oil distribution valve block. While the clutch is disengaged the oil is diverted to the propeller shaft-brake. When the clutch is engaged oil is directed to the clutch. When correct clutch working pressure has been reached a valve opens and oil is fed to the pitch servo cylinder through the slide valve. A bypass in the valve block provides oil to the slide bearing should there be insufficient oil-pressure to open the valve.

The valve block has a safety valve and oil-feed outlets for the lubrication of bearings and gear-wheels.

Oil flow from the distribution block to the clutch is adjustable and should clutch engagement be too sharp, then the regulator may be turned clockwise to reduce the flow and extend the engagement time. Correctly set, the clutch will fully engage in 2-5 seconds.

Should oil-pump failure or leakage in the oil system prevent the clutch engaging, it can be engaged mechanically by fitting the emergency bolts that are mounted on the gear top-cover. These are screwed into the clutch housing to lock the discs. The propeller must be wedged in ahead position by using a bar through the slots in the shaft coupling, and locked in this position to prevent the propeller going astern.

SERVO LUBRICATION SYSTEM

Oil is drawn by a pump from the servo sump via a filter element and delivered through an oil-cooler and safety valve to the oil distribution valve, and further to the oil inlet ring and servo cylinder.

Pipelines fitted to the main feed line between the cooler and the safety valve provide lubrication to the bearings.

Should an oil-pump or drive-chain failure prevent the pitch servo operating, the electric standby lubrication system (where fitted) may be brought into use. (AFTER first checking that no mechanical damage will result from the failure. E.g. A broken chain damaging the sprockets or shaft.)

Where there is no electric standby lubrication system fitted, and no spare parts are held onboard, the propeller must be wedged in the ahead position by using a bar through the slots in the shaft coupling, and locked in this position to prevent the propeller going astern.

INSTALLATION OF STERNTUBE

Wooden Vessel

The sterntube for a wooden vessel is installed from the engine room in seats bored in the sternboss and inner bulkhead. First bolt the sterntube to the inner bulkhead, ensuring that the mounting flange lies absolutely flat against it. Next, ensuring that the outer flange is absolutely flat against the sternpost, fit the stern nut with attached o-ring. Check that the o-ring is well seated in the groove, before tightening the nut. Finally, countersink the two set-screws into the sterntube and securely fasten.

Please refer to the installation drawing, and the data sheet for the sterntube seals included with this service manual.

Steel Vessel

The sterntube for steel vessels is installed from astern after the sternboss has been bored to in accordance with the dimensions shown on the installation drawing. This will give a press fit and will ensure a secure mounting in the stern. Next the sterntube mounting flange, with attached O-ring, is fitted.

The sterntube is supported radially at the inner bulkhead flange to allow for axial expansion. Two o-rings fitted to the oil inlet ring provide a seal between the flange and the sterntube.

Please refer to the installation drawing, and the attached data sheet for the sterntube seals.

PROPELLER SHAFT INSTALLATION

It is essential that the sterntube and propeller shaft are free of burrs and well cleaned and lubricated before fitting.

The propeller shaft, with the outer seal prefitted, is carefully pushed into the sterntube. Next the inner seal assembly is fitted loosely on the shaft and then the thrust-ring and shaft coupling are mounted on the forward end. The distance between the faces of the propeller coupling flange and gear output flange is measured and the gear and propeller shaft aligned.

The distance between the flanges must correspond to the preload specified by the manufacturer for the outer sterntube seal. Refer to propeller arrangement drawing. Failure to observe the correct clearance will lead to water entering the sterntube or cause overheating of the seal leading to premature failure.

If it is not possible to position the engine and marine gear at the specified distance then a shim should be inserted behind the outer seal seat or between the flange faces to obtain the correct clearance.

INSTALLATION OF MARINE GEAR

Where the marine gear is directly coupled to the engine, it is necessary to drill a 14mm hole in the engine flywheel housing to match the pre-drilled hole in the gearbox housing. This hole allows oil spray from the gear to be drained into the gear sump.

PLEASE NOTE THAT THE FLYWHEEL HOUSING MUST BE OF A SEALED TYPE UNLESS A SEALED GEAR HOUSING HAS BEEN SPECIFIED IN THE ORDER.

The drive ring of the flexible coupling is to be bolted to the flywheel and mounting bolts must be secured with spring-washers.

Where the gear is fitted with a HOLSET flexible coupling, which is mounted as a complete assembly, access is gained through the gearbox top and side covers.

A dial gauge should be used to ensure that the drive ring runs true.

The marine gear is bolted to the flywheel housing using Permatex or a similar sealant between the flange faces.

GEAR OIL-COOLER

The oil-cooler fitted to the marine gear is suitable for use with freshwater or sea-water cooled engines. It is designed to provide adequate cooling for the gear under normal working conditions, in any climate.

The inlet water flow, maximum heat dissapation, piping dimensions and fittings are shown on the relevant installation drawing.

Maximum inlet water temperature must be held to approximately 25 degrees Celsius to ensure that the gear working temperature stays between 45 and 55 degrees Celsius (measured at the oil-filter top cover).

It is suggested that a gate valve be fitted in the cooling water line, so that the flow may be regulated on sea trials to obtain the correct gear working temperature. In colder climates, this is essential to allow the gear to achieve the required temperature.

Operating the gear outside the specified temperature range could result in propeller pitch fluctuation, poor clutch engagement, or damage to the bearings and seals.

BRIDGE CONTROLS

The propeller pitch system is normally operated from the bridge position by mechanical controls, although hydraulic, pneumatic or electric systems are equally suitable.

A control head with a total stroke of 10cm (4 inches) through a 55 degree travel arc is required for correct pitch operation.

An operating torque of 5-10Nm is necessary to overcome friction in the servo system and cable runs should be of mimimum length and free of sharp bends. Maximum operating torque should not be more than 50Nm to prevent damage to the servo mechanism and the linkage between the pitch control lever and the actuator should incorporate a telescope that will absorb the full 10cm travel.

It is ESSENTIAL that there is no backlash in the control system as this will allow movement of the pitch operating lever which will give fluctuations in the pitch setting.

PITCH INDICATOR

The bridge panel offered as an option with the Gear/HPC Servo unit includes two gauges for monitoring the oil temperature and pressure, clutch buttons (gear only) and a pitch indicator.

Please refer to the drawing/wiring diagram at the back of this manual for installation data. All connections must be checked before electrical current is applied as the potentiometer may be damaged by voltage across the wrong terminals.

When the unit is installed, the vessel is run at high idle and with the shaft rotating, the true zero pitch is established by moving the pitch lever around the zero point until the vessel remains stationary. (No "creep" in either direction.)

The potentiometer should then be centralized on its mounting to obtain a zero reading on the pitch meter-there is a preset for fine adjustment. After the propeller travel has been correctly set on trials (see next page), the preset for scale deflection should be adjusted to give reading of 100% load at the maximum travel in the ahead position.

SETTING TO WORK

It is ESSENTIAL that the shaft alignment is re-checked within two to three days of the vessel being launched, and before it is taken to sea for trials.

Heimdal will not consider any claim for damage to the equipment where this is caused by mis-alignment.

The Marine Gear/HPC servo unit are fitted with mechanical stops on the pitch lever to limit the maximumum travel in both ahead and astern. The following proceedure should be adopted to set the pitch correctly:-

1) Check that the clearance between the propeller push-pull rod and the gear/servo shaft rod at the connector in the coupling flange is in accordance with the installation drawing.

2) Marine Gear fitted

With the engine set at high idle and the clutch DIS-ENGAGED operate the pitch from full ahead to full astern. Should the servo pressure gauge give a sudden increased reading in the full ahead or full astern positions, then the servo piston is butting against the cylinder end cover and the travel must be reduced by adjusting the mechanical stop.

HPC Servo Unit fitted

The same test is carried out with the engine switched off and the electric standby lubrication pump operating.

3) The engine is set at high idle and the propeller rotated with the pitch lever set in the zero position. The true neutral is established by moving the pitch lever round the zero position until the vessel does not "creep" ahead or astern.

4) The bridge control handle should now be reset to indicate the zero pitch position, and where the gear/servo is fitted with a pointer on the pitch lever, this may also be reset by using the allan key adjustment at it's base.

5) The vessel should be taken out to sea in its normal departure condition and the engine run up to maximum "no load" rpm. The propeller pitch is progessively increased until the engine speed sinks to the rpm consistent with specified power output

The mechanical stop for maximum ahead pitch should be locked-up at the point where the propeller loads the engine to the rpm/temperature/boost pressure specified by the manufacturer for maximum output. (Refer to the engine testbed report).

6) The mechanical stop for maximum astern pitch should be set at 60-65% of the maximum ahead pitch setting by reading from the scale on the side of the gear/servo unit.

PROPELLER MAINTENANCE

Daily Inspection

1) Check the oil level in the sterntube supply tank.

2) Check the sterntube for excessive heat and leakage through the inner sterntube seal. (Check shaft alignment and preload on inner seal if heat or leakage evident).

Vessel Slipped

1) Check propeller blades and hub for wear or damage and with the ropeguard removed inspect condition of the outer seal.

2) Try to twist and rock each blade, and if there is discernable movement contact HEIMDAL for advice.

(The folllowing ONLY applies to three-bladed propellers)

3) Remove the the seal plug in the hub nose-piece and the drain plug below and behind No 1 blade. With the propeller in FULL ASTERN POSITION ONLY, pack with grease until all the original grease/water mixture has been expelled.

IF THE HUB IS GREASED WITH THE PROPELLER BLADES IN OTHER THAN THE FULL ASTERN POSITION A HYDRAULIC LOCK CAN OCCUR AND THIS MAY DAMAGE THE HUB AND PREVENT THE VESSEL GOING ASTERN!

Regular greasing of the propeller hub is a major factor in the service life of the propeller and should be carried out at least once each year.

Five Year Inspection

1) Remove and check the propeller shaft and bearing surfaces for corrosion.

2) Inspect all sliding surfaces on the inner and outer sterntube seals for corrosion.

3) Check for excessive clearance in the inner/outer white-metal sterntube bearings.

GEAR MAINTENANCE

Daily Inspection

1) Run engine and check clutch pressure and gear temperature are as specified in the front of the Service Manual.

2) Check the oil level.

3) Inspect gear and pipework for oil or water leaks.

After 200 hours then at 1000-1500 hour intervals

1) Oil change (more frequently in severe operating conditions).

2) Check the old oil for water or abnormal metal particles.

3) Clean the oil filter and magnetic strips.

4) Check the condition of the zinc anodes in the oil-cooler.

Annual Inspection

1) Remove top cover and check gearwheel and pinion for damage or uneven tooth contact.

2) Check the condition of the flexible coupling and replace worn or damaged rubber elements.

3) Remove the oil-cooler end cover and check the tube-stack for leaks or excessive silt and replace erroded zinc anodes.

4) Remove oil pump and drive shaft and check splines for wear or damage.

5) Lubricate the output shaft seals through the grease nipple on the top of the gear end cover.

6) Check the propeller pitch control lever for smooth operation and absence of backlash.

It is recommended that the rubber elements in the coupling are replaced after 10 years service as they tend to harden in use.

TROUBLE-SHOOTING GUIDE-MARINE GEAR

Symptoms	Possible Cause
Water in the gear oil.	Leak in the oil cooler tubes. Water entry from bilge through the gear output flange seals.
Abnormal oil consumption.	Leak in the oil cooler tubes or at the gear output flange seals.
Noise in the gear at all rpm.	Damage or wear in the gearwheels flexible coupling or bearings.
Noise in the gear at one rpm.	Idle rpm set too low causes gear hammering or critical speed range in the driveline-AVOID THIS RPM!
No clutch pressure.	Oil-pump defective or pump drive shaft broken.
Low clutch pressure. (Clutch engaged)	Incorrect oil level or wrong oil type in use.Leakage at the inlet ring on the primary shaft.Broken or weak spring or sticking piston in the main valve block. Leak in the suction line between the sump and the oil-pump or worn oil-pump Flow regulator screw in the valve block or pressure regulator valve incorrectly set or leakage at the clutch piston.
High servo pressure reading.	Servo piston sticking or butting against the cylinder end cover. Propeller is damaged or hub and blades are worn. Water in the hub
Sluggish or no movement of the propeller pitch.	Wrong oil type. Worn servo slide. Wear in the white metal bearing (oil inlet for servo cylinder) or leakage in the pipes/hoses from the main valve block or sticking safety valve.
Gear temperature too high.	Oil level low.Slipping clutch.Oil cooler blockage or cooling water flow restricted. Damaged bearings
Propeller pitch unstable.	Backlash in the control cables or the pitch lever mechanism.
Oil leakage from the gear output flange.	Seal has been overgreased-remove grease nipple to evacuate excess.

TROUBLE-SHOOTING GUIDE-PROPELLER

Symptoms	Possible Cause
Abnormal hull vibration.	Propeller or shaft is misaligned bent or badly worn.The sterntube or shaft coupling flange bolts are loose. Outer bearing damaged
Sterntube temperature high.	Sterntube oil level is too low or the wrong oil grade is in use Sterntube bearings are damaged or propeller shaft is misaligned
High oil consumption.	An incorrect oil grade is in use Leakage from the inner or outer seal due to damage wear or dirt on sliding surfaces. Excessive throw in propshaft.(Max 0.05mm)

MOUNTING THE PROPELLER BLADES

Drawing 408-013 refers

The Cp-Propeller is normally supplied with the blades dismounted to reduce the possibility of damage in transit. Mounting of the propeller blades is carried out in accordance with the following step-by-step proceedure:-

1) Support the propeller hub and shaft so that it may be rotated after each blade is fitted in place. (Blade installation may be carried out after the shaft is fitted in the hull).

2) Remove the rear half of the propeller hub (Item 1) by undoing 6 allen-headed lockscrews (Item 2) and then by unscrewing the 5/8 inch "square-headed" bolts (Item 3). Observe the 1-1 mark that identifies the correct position for reassembly.

3) Locate the number 1 mark on the hub and turn this so that the journal for the number 1 blade is at the 12 O'clock position.

4) Liberally coat the hub journal with grease (Shell Alvania EP2 or an equivalent from the list of recommended lubricants).

5) Coat the O-ring (Item 6) with grease and fit to the number 1 propeller blade.

6) Fit the slide block stamped with number 1 (Item 11) onto the propeller blade root peg (marked) after coating with grease.

   THE SLIDE BLOCK MUST BE FITTED WITH THE NOSE (MARKED) FACING INWARDS AND DOWNWARDS, EXACTLY AS SHOWN AT ITEM 11.

7) Draw the positioner slide (Item 13) aft sufficiently to allow the slide block to enter the slot in the positioner slide that is marked number 1 then push/twist the blade into place.

   THIS PROCEEDURE IS BEST CARRIED OUT BEFORE THE ROD CONNECTOR CLAMP IN THE PROPELLER SHAFT COUPLING IS INSTALLED.

   To ensure that the gear and propeller stroke are synchronized it is absolutely ESSENTIAL that the clearance between the rod ends in the rod connector clamp is set in accordance with the installation drawing.

8) Refit two hub bolts and wrap with wire to hold the installed blade temporarily in position.

9) Turn the hub until the journal for the number 2 blade is at the 12 O'clock position, and repeat steps 4, 5, 6, 7 and 8.

10) Repeat the same proceedure for blade number 3.

11) After the third blade has been fitted, push the positioner slide forward as far as possible and remove the hub bolts and wire, checking that the blades remain in place.

NO. OF TEETH : PINION 21
WHEEL 88

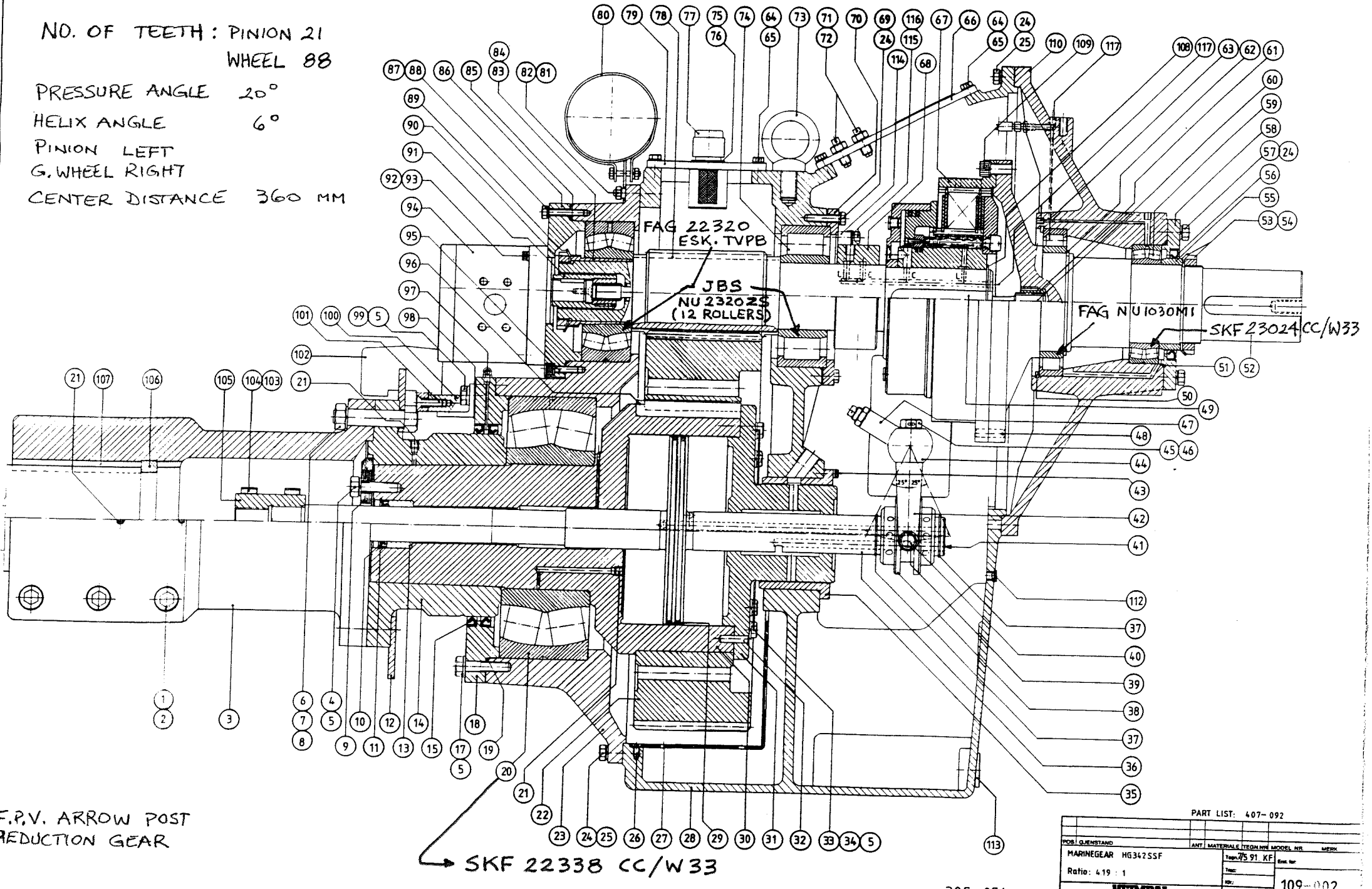
PRESSURE ANGLE 20°

HELIX ANGLE 6°

PINION LEFT

G. WHEEL RIGHT

CENTER DISTANCE 360 MM



F.P.V. ARROW POST
REDUCTION GEAR

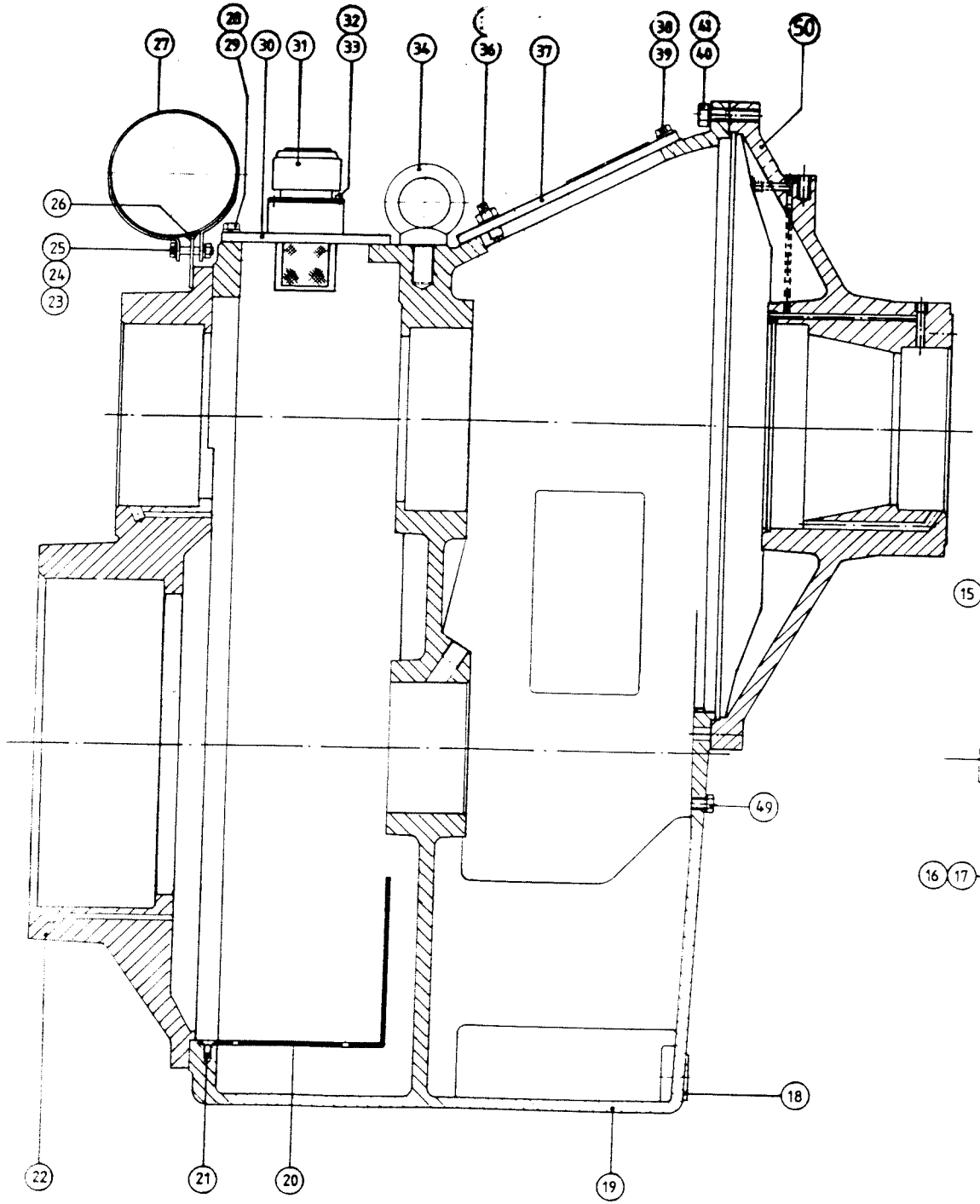
PART LIST: 407-092

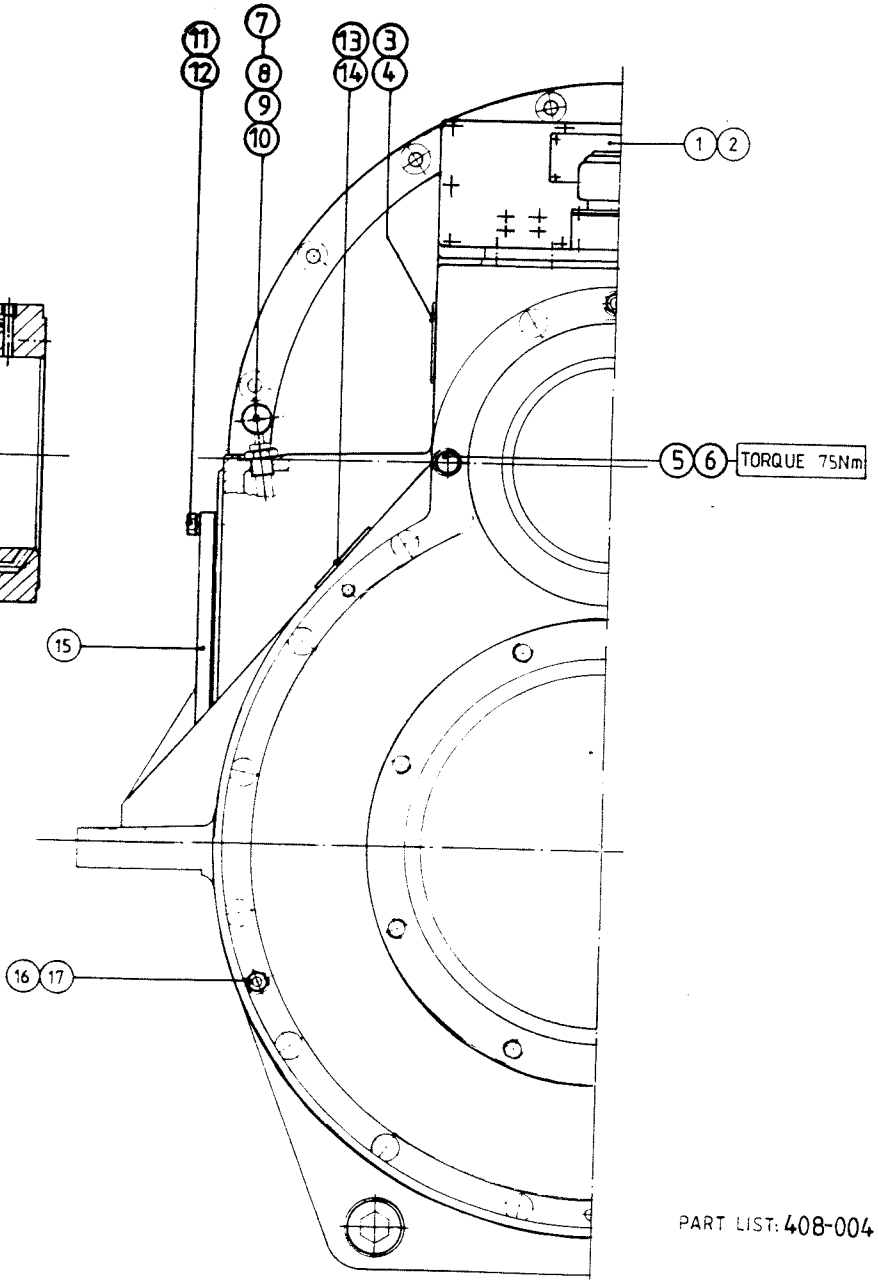
POS/ QUENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK
MARINEGEAR HG342SSF					
Ratio: 4.19 : 1					

Tegn. 75 91 KF
Ersat. for:
Trac:
109-002
1:25

HEIMDAL PROPULSION A/S

A3: 305-054





PART LIST: 408-004

FOR PROD. 408-003

HG 3SS F GROUP B GEAR HOUSING

305-051

GRUPPE P PARTLIST 407-087 DRAWING 108-096 PRODUCT K500

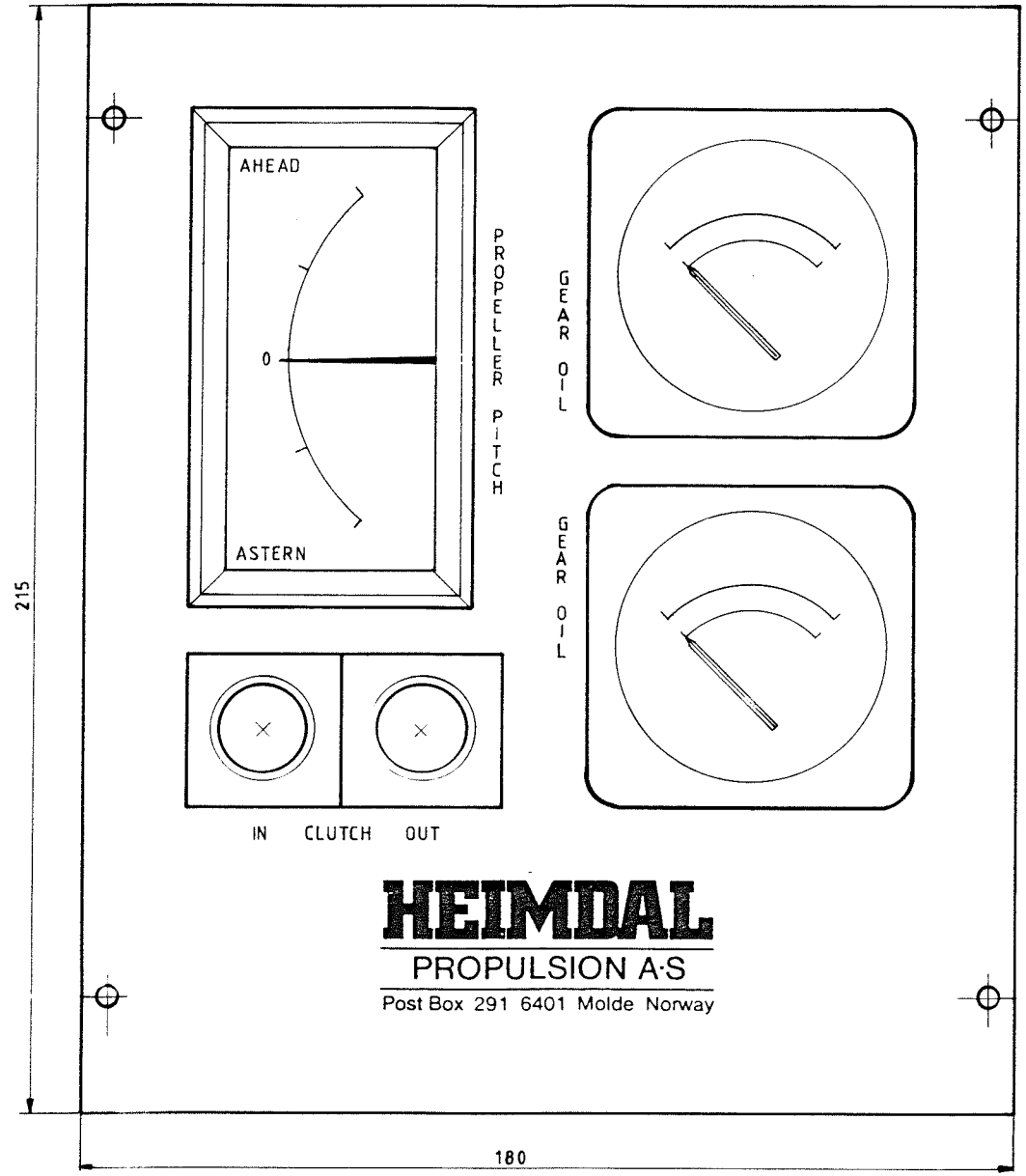
POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	PROPELLERBLAD	PROPELLER BLADE	3	PAGE 3
2	INDRE PROPELLERHODE	INNER PROPELLER HUB	1	1P0009
3	YTRE HODE (DEL AV 1P0009)	OUTER HUB(PART OF 1P0009)	1	-
4	SKYVESTYKKE	POSITIONER SLIDE	1	PAGE 3
5	GLIDEKLOSSER	SLIDE BLOCK	3	1P0715
6	MUTTER FOR PROPELLHODE	HUB NUT	1	1P0711
7	PROPELLERAKSEL	PROPELLER SHAFT	1	PAGE 3
8	TREKKSTANG	PUSH-PULL ROD	1	PAGE 3
9	INDRE GLIDELAGER	INNER PULL ROD BUSH	1	2P0017
10	YTRE GLIDELAGER	OUTER PULL ROD BUSH	1	2P0018
11	AKSELKOPLING-DEL AV GEAR	SHAFT COUPLING-WITH GEAR	1	-
12	THRUSTRING	THRUST RING	1	2P0056
13	KILE FOR AKSELKOPLING	KEY FOR SHAFT COUPLING	1	4P0019
14	KILE FOR HODE	KEY FOR HUB	1	4P0009
15	HYLSE	STERNTUBE	1	PAGE 3
16	SKJERM	ROPE GUARD	1	1P0119
18	OLJEINNFØRINGSRING	OIL INLET RING	1	2P0074
19	YTRE SETE (GML.NR 2P0082)	OUTER SEAT-OLD NO 2P0082	1	1P0729
20	YTRE HYLSEFORING	OUTER STERNTUBE BEARING	1	1P0713
21	INDRE HYLSEFORING	INNER STERNTUBE BEARING	2	1P0714
22	INDRE SETE	INNER SEAT	1	3P0250
23	INDRE HYLSETETNING	INNER STERNTUBE SEAL	1	3P0181
24	YTRE HYLSETETNING	OUTER STERNTUBE SEAL	1	3P0189
25	PAKNING	GASKET	1	8S0087
26	TETTESNOR	SEALING STRAP	3	8S0090
27	O-RING	O-RING	3	8S0026
28	O-RING	O-RING	1	8S0015
29	O-RING	O-RING	2	8S0028
30	O-RING	O-RING	1	8S0023
31	O-RING	O-RING	1	8S0024
33	TETNINGSRING	SEALING RING	1	8S0050
34	LÅSESKIVE	RETAINER	1	2P0331
35	LÅSERING	SNAP-RING	1	7S0028
36	HODE SKRUE	HUB BOLT	6	2P0036
37	GJENGESTIFT RUSTFRI	SET SCREW STAINLESS	6	5S0102
38	MUTTER FOR TREKKSTANG	NUT FOR PUSH-PULL ROD	1	PAGE 3
39	GJENGESTIFT RUSTFRI	SET SCREW STAINLESS	2	5S0102
40	UNBRAKOSKRUE RUSTFRI	UNBRAKO BOLT STAINLESS	4	5S0018
41	PLUGG RUSTFRI	PLUG STAINLESS	1	6S0109
43	GJENGESTIFT RUSTFRI	SET SCREW STAINLESS	1	5S0082
44	UNBRAKOSKRUE	UNBRAKO BOLT	2	5S0064
45	SKRUE RUSTFRI	BOLT STAINLESS	8	5S0104
46	UNBRAKOSKRUE RUSTFRI	UNBRAKO BOLT STAINLESS	12	5S0019
47	UNBRAKOSKRUE RUSTFRI	UNBRAKO BOLT STAINLESS	12	5S0221
48	GJENGESTIFT RUSTFRI	SET SCREW STAINLESS	4	5S0105
49	SKRUE	BOLT	6	5S0192
50	UNBRAKOSKRUE	UNBRAKO BOLT	8	5S0296
51	UNBRAKOSKRUE	UNBRAKO BOLT	2	5S0014
52	PLUGG	PLUG	1	6S0100
53	PLUGG	PLUG	1	6S0101
54	LUFTESKRUE	BLEED SCREW	1	5S0219
55	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0066
57	HYLSEOLJETANK	OIL SUPPLY TANK	1	4P0022
59	AKSELKLEMRING	SPLIT CLAMP RING	1	3P0258
60	UNBRAKOPLUGG RUSTFRI	UNBRAKO PLUG STAINLESS	1	6S0110
61	GJENGESTIFT	SET SCREV STAINLESS	1	6S0252
62	O-RING	O-RING	1	9S0187
63	NIVÅBRYTER	LEVEL SWITCH	1	9S0[illegible]

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

402-003

GRUPPE I PARTLIST 402-071 DRAWING 106-066 PRODUCT HG300

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	GJENGESTIFT	SET SCREW	2	5S0201
2	BREMSEHUS	BRAKE HOUSING	1	1G0255
3	FJÆR	SPRING	1	4G0098
4	STILLSKRUE	ADJUSTMENT SCREW	1	2G0253
5	LÅSEMUTTER	LOCKNUT	1	2G0289
6	FRIKSJONSTAPP	FRICTION PAD	1	2G0252
7	SPENNHYLSE	SPLIT SLEEVE	1	7S0054
8	SPLINT	SPLIT-PIN	1	7S0038
9	FLENSMUTTER	FLANGE NUT	1	5S0183
10	SKILT "PITCH READING"	NAMEPLATE	1	4G0100
11	RIFLENAGLE	GROOVED RIVET	2	5S0212
12	MUTTER	NUT	2	5S0206
13	SKRUE	BOLT	2	5S0203
14	BOSS FOR GAFFEL	HUB FOR YOKE	1	2G0305
15	TELEFLEXARM	TELEFLEX ARM	1	2G0290
16	LÅSERING	SNAP-RING	2	7S0022
17	GLIDESTYKKE	SLIDING SLEEVE	2	2G0195
18	GAFFEL	YOKE	1	1G0184
19	GLIDELAGER	SLEEVE BEARING	1	3G0150
20	SIDELUKE MED BRAKETT	SIDE COVER WITH BRACKET	1	2G0136
21	MANØVERAKSEL	MANOEUVRE SHAFT	1	2G0211
22	UNBRAKOSKRUE	UNBRAKO BOLT	1	5S0200
23	BOSS FOR MANØVERAKSEL	BOSS FOR HANDLE	1	2G0306
24	UNBRAKO SENKSKRUE	UNBRAKO BOLT COUNTERSUNK	2	5S0177
25	KONISK PINNE	TAPER PIN	1	7S0052
26	MANØVERHENDEL	MANOEUVRE HANDLE	1	2G0292
27	SLAGBEGRENSER	STROKE LIMITER	1	2G0293
28	GRIPEKULE	BALL FOR HANDLE	1	7S0005
29	SKRUE	BOLT	10	5S0213
30	SPRENGSKIVE	LOCKWASHER	10	5S0140
31	TELEFLEX/PITCH METER ARM	TELEFLEX/PITCH METER ARM	1	2G0413
32	BRAKETT FOR POTENSIOMETER	BRACKET FOR POTENTIOMETER	1	2G0447
33	SKRUE FOR POTENSIOMETER	BOLT FOR POTENTIOMETER	1	2G0445
34	SKRUE FOR MANØVER ARM	BOLT FOR MANOEUVRING ARM	1	2G0446
35	MUTTER	NUT	2	5S0307
36	MUTTER	NUT	2	5S0109
37	POTENSIOMETER	POTENTIOMETER	1	PAGE 3



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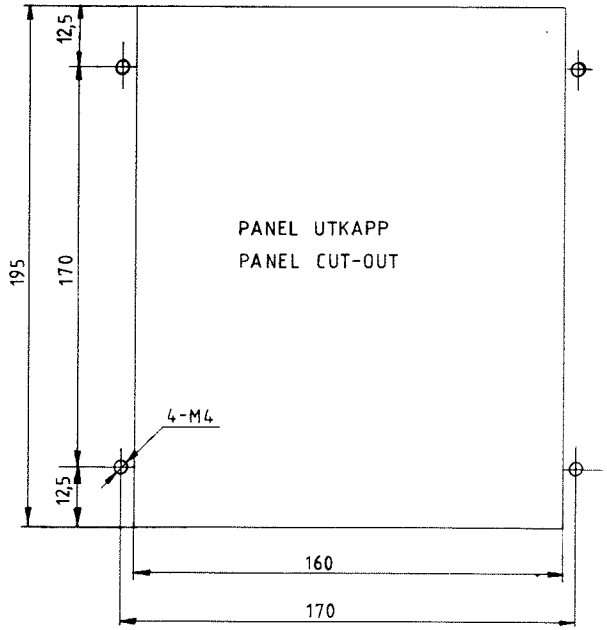
Post Box 291 6401 Molde Norway



PANEL UTKAPP
PANEL CUT-OUT

DYBDE:
DEEPTH:

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.

BROPANEL
BRIDGE PANEL

Tegn. 24.03.87
Trac:
Kfr.:
Målestokk:

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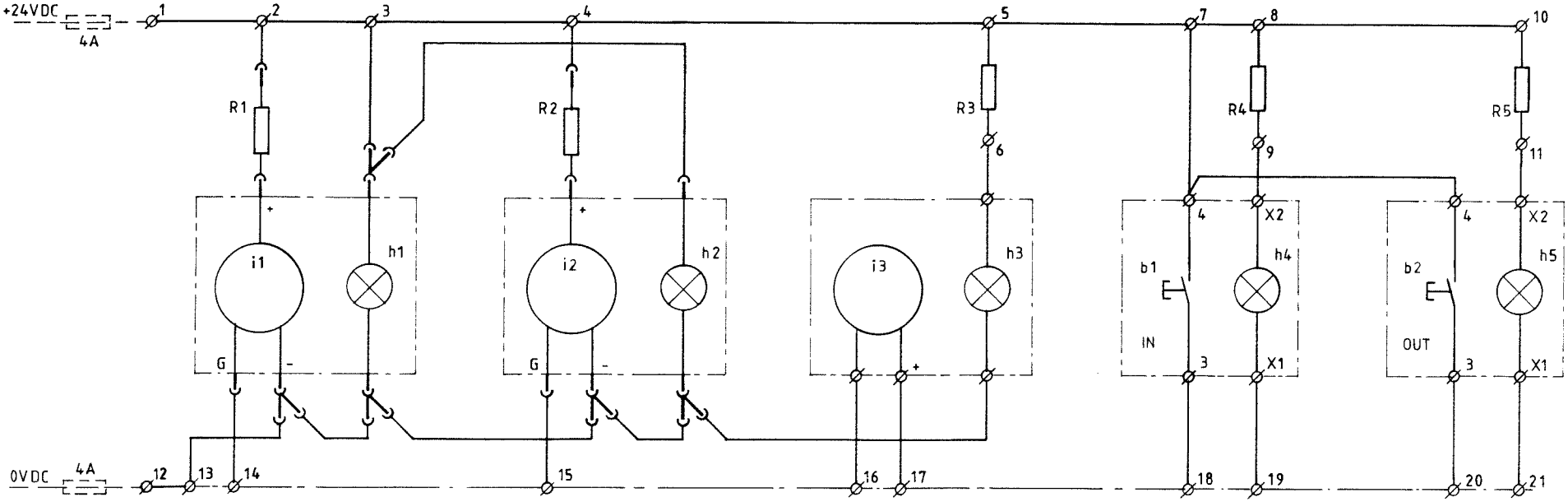
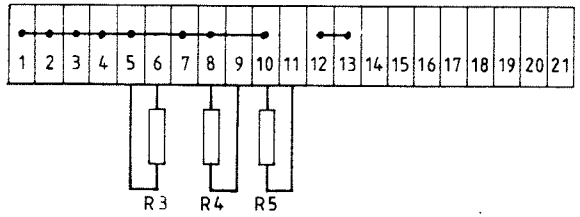
PROPULSION A·S
Post Box 291 6401 Molde Norway

Erst. for:
302-078
Erst. av:



b1	Pushbutton	Izumi	ALFW 29911G
b2	Pushbutton	Izumi	ALFW 29911R
h1,h2	Lamp		24V, 3W
h3	Lamp		24V, 3W
h4,h5	Lamp		Ba9s 24V, 1W
i1	Temp. indicator	VDO	313/274/8/1
i2	Press. indicator	VDO	352/271/5/15
i3	Pitch indicator	Sifam	-7-0-7
R1,R2	Resistor	VDO	V150 391.102/1/1
R3,R4,R5	Resistor		220 ohms, 2W



REF DRAW. NO. 302-082 WIRING DIAGRAM GEAR

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.

KOBLINGSSKJEMA BROPANEL
WIRING DIAGRAM BRIDGE PANEL

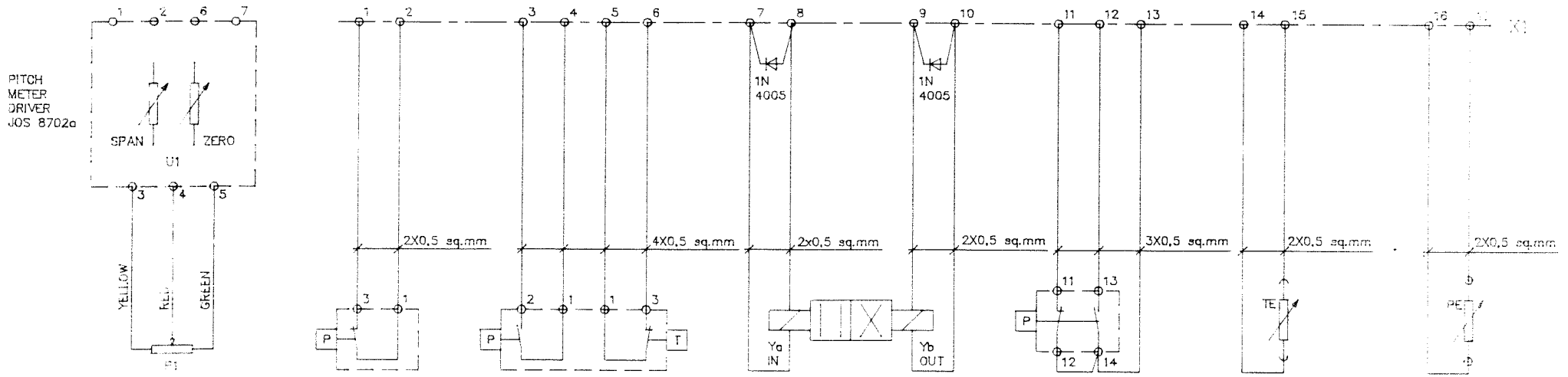
Tegn. 09.04.87
Trac:
Kfr.:
Målestokk:

HEIMDAL PROPULSION A.S
Post Box 291 6401 Molde Norway

Erst. for:

302-081

Erst. av:



PITCH SENSOR
TWK RECTI
H.25--100-KV-KH-AR
4,[illegible]

OIL PRESS. STOP SWITCH
AMOT MODEL
4140CK1E13AA0-EE
15 BAR

OIL PRESS./TEMP. ALARM SWITCH
AMOT MODEL
4140AK1E13CE2-EU
17 BAR/60°C

CLUTCH CONTROL SOLENOID VALVE
2X26W, 24 VDC

CLUTCH STATUS SWITCH
TELEMECANIQUE XMJ-0707
16 BAR

TEMPERATURE SENSOR
VDO
323/805/001/004

PRESSURE SENSOR
VDO
360/081/038/003

NOTE: THE EXTENT OF SUPPLY MAY NOT INCLUDE ALL THE ABOVE

POS.	ANT.	MATERIALE	TEGN. NR.	MODEL NR.	MERK.

REDRAWN 89.12.12 JO

WIRING DIAGRAM GEAR

Tegn.: 89.02.13 JO

Trace:

Kfr.:

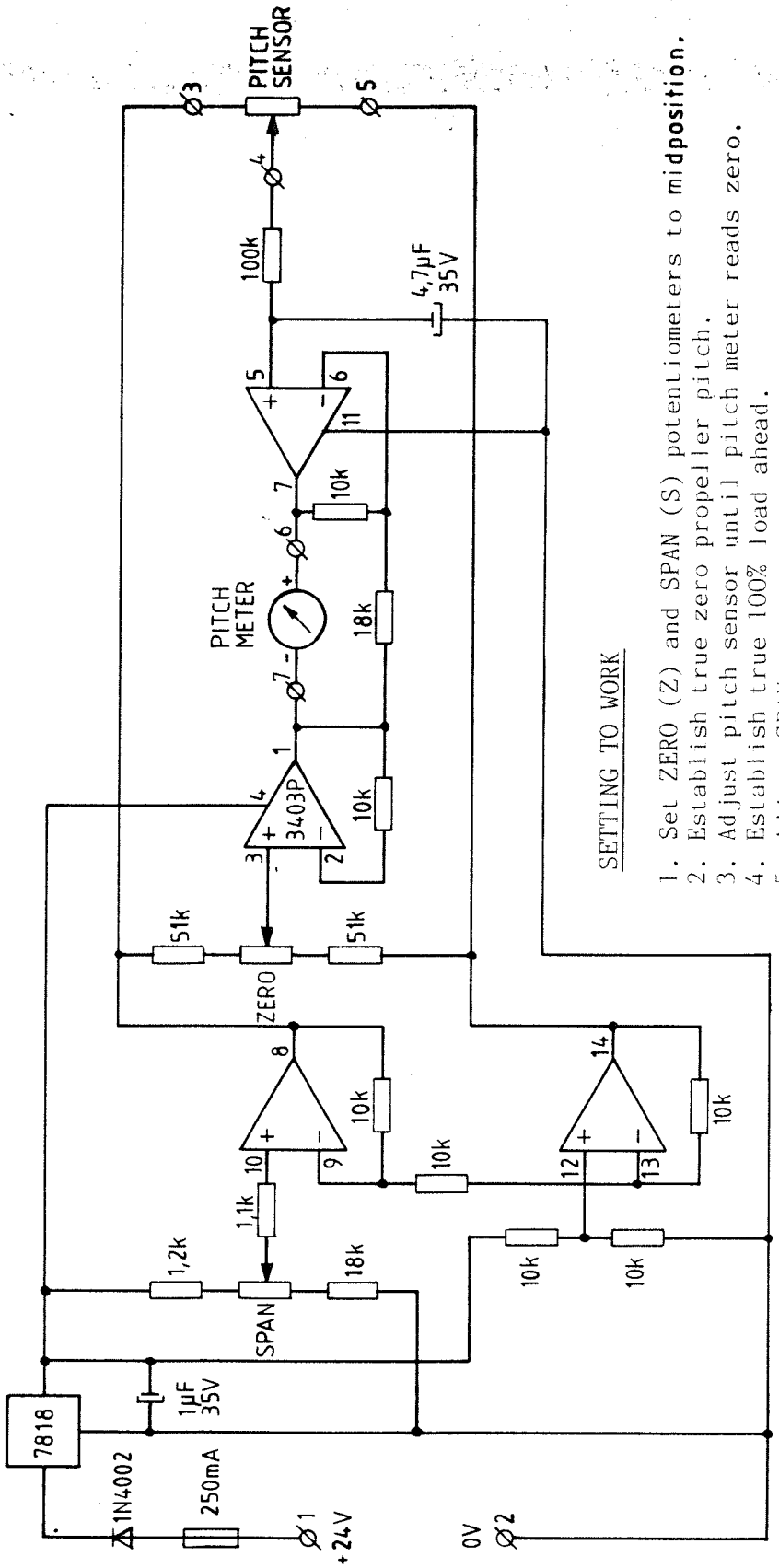
Målestokk:

Erst. for:

304-023

Erst. av:

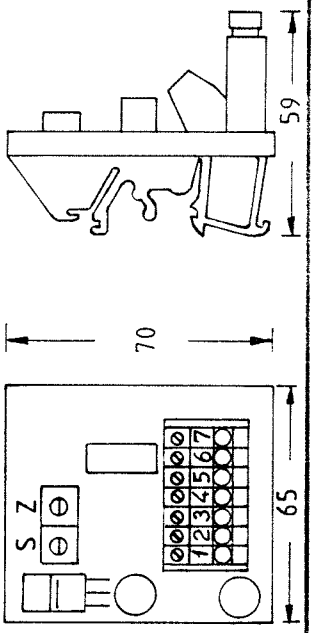
HEIMDAL
PROPULSION AS
Post Box 2091 Moldegård – 6401 Molde, Norway



SETTING TO WORK

1. Set ZERO (Z) and SPAN (S) potentiometers to midposition.
2. Establish true zero propeller pitch.
3. Adjust pitch sensor until pitch meter reads zero.
4. Establish true 100% load ahead.
5. Adjust SPAN potentiometer until pitch meter reads 100% ahead.
6. Repeat above if necessary.

NOTE. The ZERO potentiometer is used for ZERO fine-adjustment only.



Dato	Konstr./Tegnet	Godkjent	Målestokk
24.12.87. JO.			

J. OTERHALS
N-6420 AUKRA NORWAY
TEL. 072-74554
JOS

PITCH METER DRIVER

Erstatning for: DRAW. NO. 148
Erstattet av:

403-098

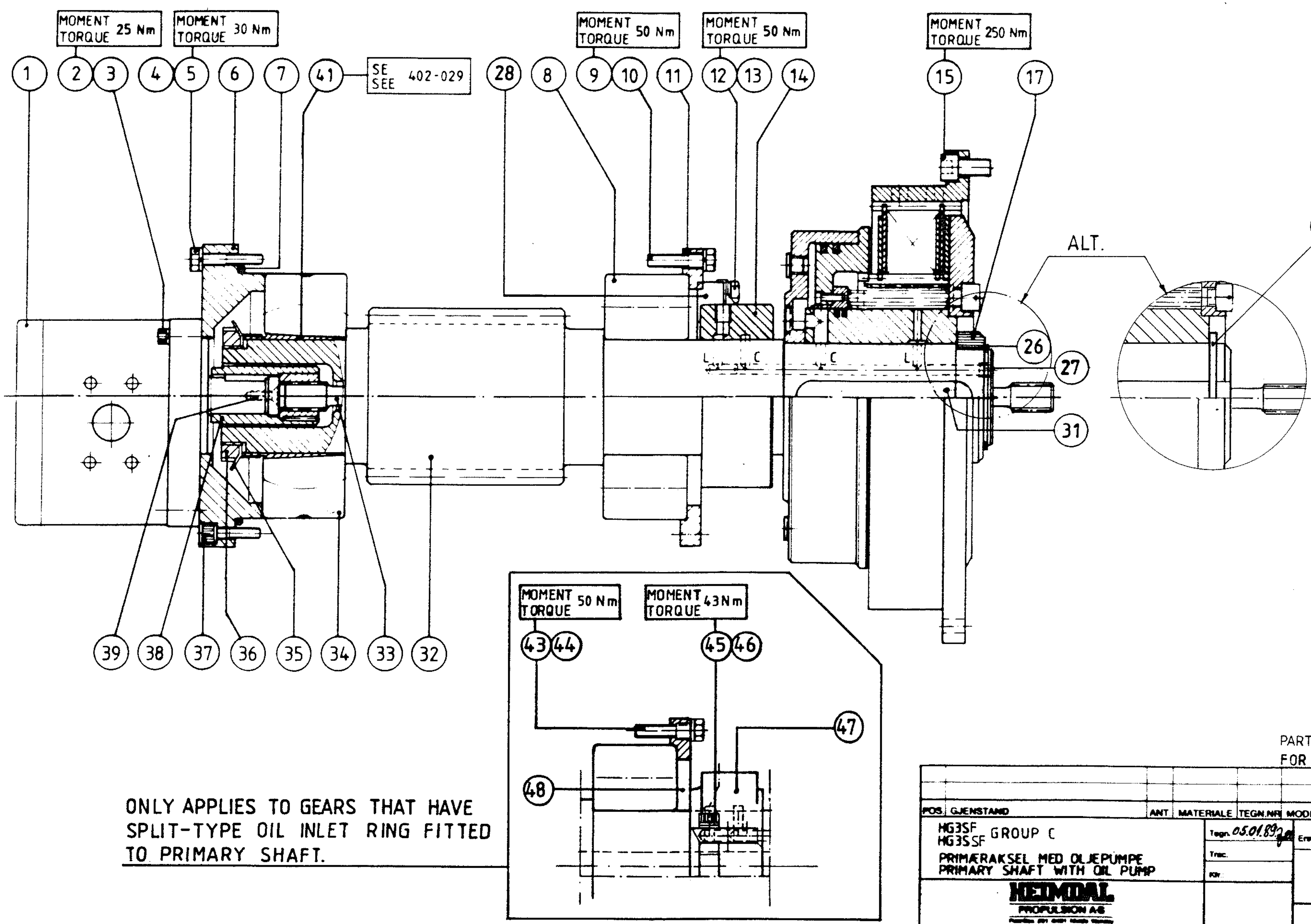
Henvisning:
Beregning:

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

408-004

GRUPPE B PARTLIST 408-003 DRAWING 305-051 PRODUCT HG300SSF

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	TYPESKILT	IDENTIFICATION PLATE	1	4G0076
2	RIFLENAGLE	GROOVED RIVET	4	5S0212
3	SKILT "ROTATION"	NAMEPLATE "ROTATION"	1	4G0077
4	RIFLENAGLE	GROOVED RIVET	4	5S0184
5	SKRUE	BOLT	18	5S0228
6	SPRENGSKIVE	LOCKWASHER	18	5S0141
7	PEILESTAV OG RØR KOMPLETT	DIPSTICK & PIPE COMPLETE	1	2G0259
8	GRIPEKULE	BALL FOR DIPSTICK	1	7S0003
9	PEILESTAV	DIPSTICK	1	2G0256
10	RØR	DIPSTICK PIPE	1	6S0077
11	SKRUE	BOLT	10	5S0214
12	SPRENGSKIVE	LOCKWASHER	10	5S0140
13	SKILT "ROTATION"	NAMEPLATE "ROTATION"	1	4G0077
14	RIFLENAGLE	GROOVED RIVET	4	5S0184
15	SIDELUKE	SIDE COVER	1	2G0141
16	KONISK PINNE-GJENGET	TAPER PIN-THREADED	3	7S0053
17	MUTTER	NUT	3	5S0110
18	PLUGG	PLUG	1	6S0099
19	GEARKASSE	GEARCASE	1	1G0265
20	OLJESKJERM	OIL SHIELD	1	4G0058
21	UNBRAKO SENKSKRUE	UNBRAKO BOLT COUNTERSUNK	5	5S0177
22	BAKLOKK GEARKASSE	REAR COVER FOR GEARCASE	1	1G0283
23	SKRUE	BOLT	1	5S0188
24	SPRENGSKIVE	LOCKWASHER	1	5S0139
25	MUTTER	NUT	1	5S0110
26	BRAKETT FOR KJØLER	BRACKET FOR COOLER	1	2G0146
27	BØYLE FOR KJØLER BRAKETT	CLAMP FOR COOLER BRACKET	1	2G0147
28	SKRUE	BOLT	8	5S0108
29	SPRENGSKIVE	LOCKWASHER	8	5S0140
30	BAKRE TOPPLUKE	REAR TOP COVER	1	2G0122
31	LUFTE FYLLEHETTE	BREATHER	1	3G0138
32	SKRUE	BOLT	6	5S0265
33	SPRENGSKIVE	LOCKWASHER	6	5S0294
34	ØYEBOLT	EYEBOLT	1	5S0171
35	NØDSKRUE ORTLINGHAUS	EMERGENCY BOLT ORTLINGH.	4	2G0194
35	NØDSKRUE PRODAN	EMERGENCY BOLT PRODAN	8	5S0305
36	MUTTER FOR NØDSKRUE	NUT FOR EMERGENCY BOLT	4	5S0178
37	FREMRE TOPPLUKE	FRONT TOP COVER	1	2G0127
38	SKRUE	BOLT	10	5S0108
39	SPRENGSKIVE	LOCKWASHER	10	5S0140
40	SKRUE	BOLT	16	5S0271
41	SPRENGSKIVE	LOCKWASHER	16	5S0141
49	SKRUE	BOLT	1	5S0268
50	FRONTLOKK	FRONT COVER	1	1G0195



ONLY APPLIES TO GEARS THAT HAVE SPLIT-TYPE OIL INLET RING FITTED TO PRIMARY SHAFT.

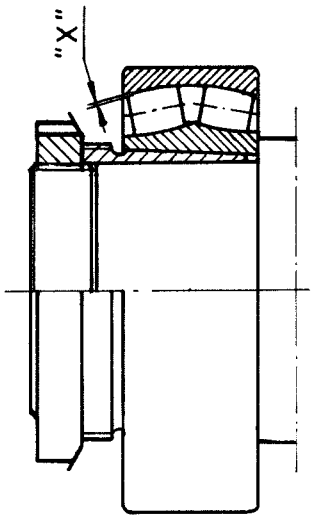
PART LIST 405-071
FOR PROD. 405-072

POS.	GJENSTAND	ANT	MATERIALE	TEGN.NR	MODEL NR	MERK
	HG3SF HG3SSF GROUP C PRIMÆRAKSEL MED OLJEPUMPE PRIMARY SHAFT WITH OIL PUMP			Tegn. 05.01.89 Trac. Kfr.	Erst. for 304-010	

HEIMDAL PROPULSION A/S

GRUPPE C PARTLIST 405-072 DRAWING 304-010 PRODUCT HG300SF

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	OLJEPUMPE MED AKSELKILE	OIL-PUMP WITH KEY	1	PAGE 3
2	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0069
3	SPRENGSKIVE	LOCKWASHER	4	5S0158
4	SKRUE	BOLT	7	5S0185
5	SPRENGSKIVE	LOCKWASHER	7	5S0139
6	PUMPE MONTERINGSFLENS	PUMP MOUNTING FLANGE	1	1G0198
7	O-RING	O-RING	1	8S0095
8	RULLELAGER	ROLLER-BEARING	1	3G0277
9	SKRUE	BOLT	5	5S0228
10	SPRENGSKIVE	LOCKWASHER	5	5S0141
11	THRUSTRING FOR RULLELAGER	THRUST RING FOR BEARING	1	2G0303
12	SKRUE	BOLT	1	5S0134
13	SIKRINGSSKIVE	TAP WASHER	1	5S0262
14	OLJEINNFØRINGSRING	OIL INLET RING	1	1G0240
15	UNBRAKOSKRUE	UNBRAKO BOLT	6	5S0107
17	DISTANSERING	SPACER	1	2G0173
26	LÅSERING	SNAP-RING	1	7S0024
27	UNBRAKOPLUGG	UNBRAKO PLUG	2	6S0065
28	DREIESIKRING	ANTI-ROTATION LOCK DEVICE	1	2G0355
31	KILE FOR CLUTCH	KEY FOR CLUTCH	1	4G0073
32	PRIMÆRAKSEL(MED TANNHJUL)	PINION (WITH GEARWHEEL)	1	PAGE 3
33	PUMPEAKSEL	PUMP SHAFT	1	4G0052
34	RULLELAGER	ROLLER-BEARING	1	3G0013
35	LÅSESKIVE	LOCK PLATE	1	3G0297
36	LÅSEMUTTER	LOCKNUT	1	3G0298
37	UNBRAKOSKRUE	UNBRAKO BOLT	1	5S0073
38	KOPLINGSTYKKE MED SPLINE	COUPLING SLEEVE FOR PUMP	1	4G0083
39	UNBRAKOSKRUE	UNBRAKO BOLT	1	5S0190
41	AVTREKKSHYLSE	EXTRACTION SLEEVE	1	3G0279
43	SKRUE	BOLT	6	5S0228
44	SPRENGSKIVE	LOCKWASHER	6	5S0141
45	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0077
46	SPRENGSKIVE	LOCKWASHER	4	5S0181
47	OLJEINNFØRINGSRING	OIL INLET RING	1	1G0167
48	THRUSTRING FOR RULLELAGER	THRUST RING FOR BEARING	1	2G0303
49	LÅSERING	SNAP-RING	1	7S0055



1. Aksel-, hylse- og lagerflater skal være velsmurt.
   Shaft, sleeve and bearing surfaces to be well oiled.

2. Skyv lager og hylse på plass.
   Slide the bearing and sleeve in place.

3. Mål lagerglappet "X".
   Measure the bearing gap "X".

4. Med et passende verktøy, f.eks. hydraulisk mutter, presses hylsen inn i lageret til den foreskrevne glappminskning er oppnådd.
   With a proper tool, e.g. hydraulic nut, the sleeve is forced into the bearing until the recommended gap reduction is obtained.

5. Kontroller at restglappet ikke er mindre enn foreskrevet.
   Check that the rest-gap is not less than recommended.

6. Hylsen sikres ved hjelp av låsbrikke og mutter.
   The sleeve is secured by means of lock-ring and nut.

Gear type **Gear type**	Glappminskning **Gap reduction**	Restglapp **Rest-gap**
HG 2..	45-60 µm	35 µm
HG 3..	45-60 µm	35 µm

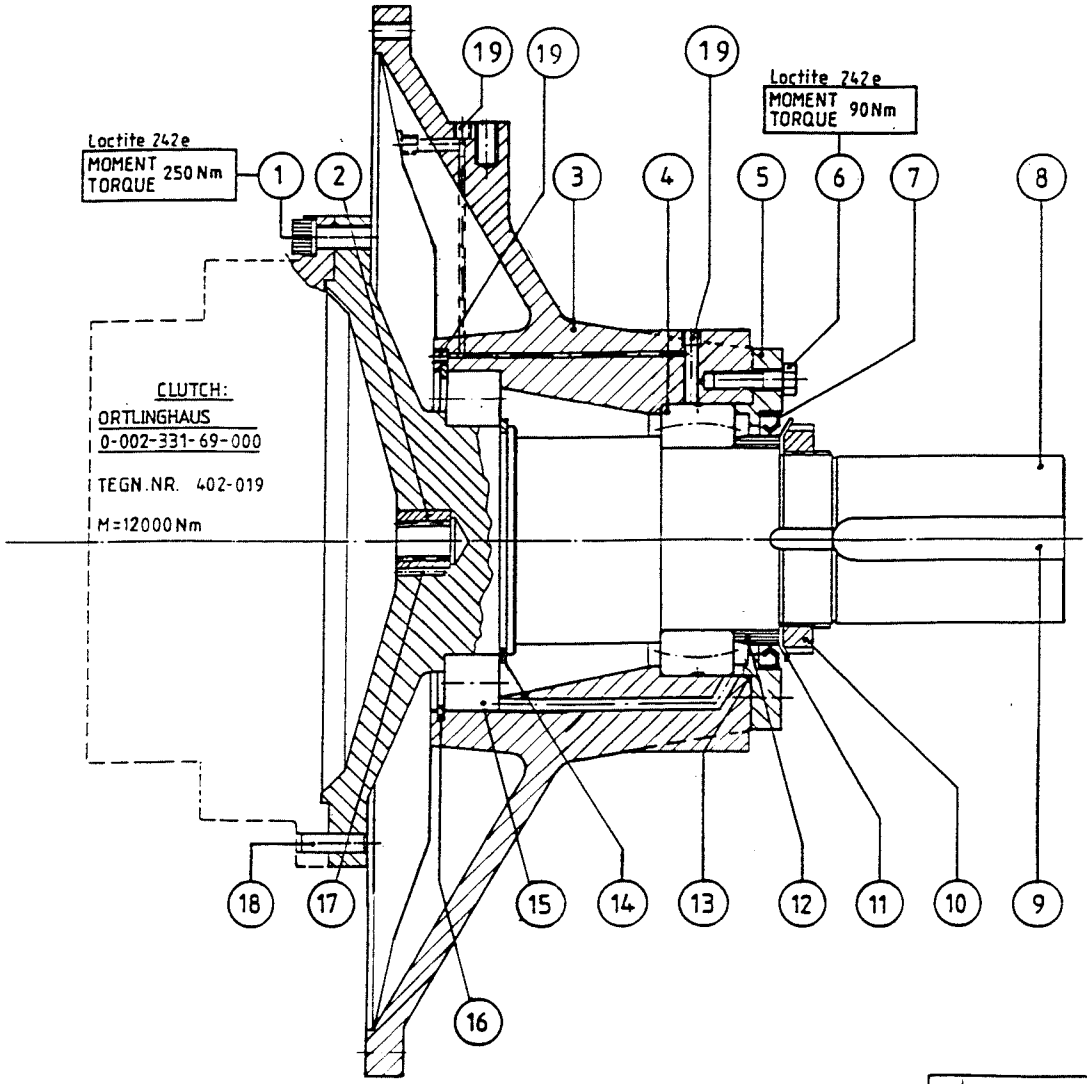
POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.

HG LAGER MED KONISK HYLSE
HG BEARING WITH TAPERED SLEEVE

Tegn. 20.02.87 JØ
Trac:
Kfr.:
Målestokk:

Erst. for:
402-029
Erst. av:

HEIMDAL
PROPULSION A·S
Post Box 291 6401 Molde Norway



PART LIST 406-095

PROD. 406-094

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.
HG3SF	GRUPPE C PRIMÆRAKSEL FORLENGELSE					
HG3SF	GROUP C PRIMARY SHAFT EXTENSION					

HEIMDAL PROPULSION A/S

Tegn. 20/9.88 KF

Trace:

Kon.: 14/5-90 KF

Målestokk: 1 : 25

Erst. for: 205-002

304-087

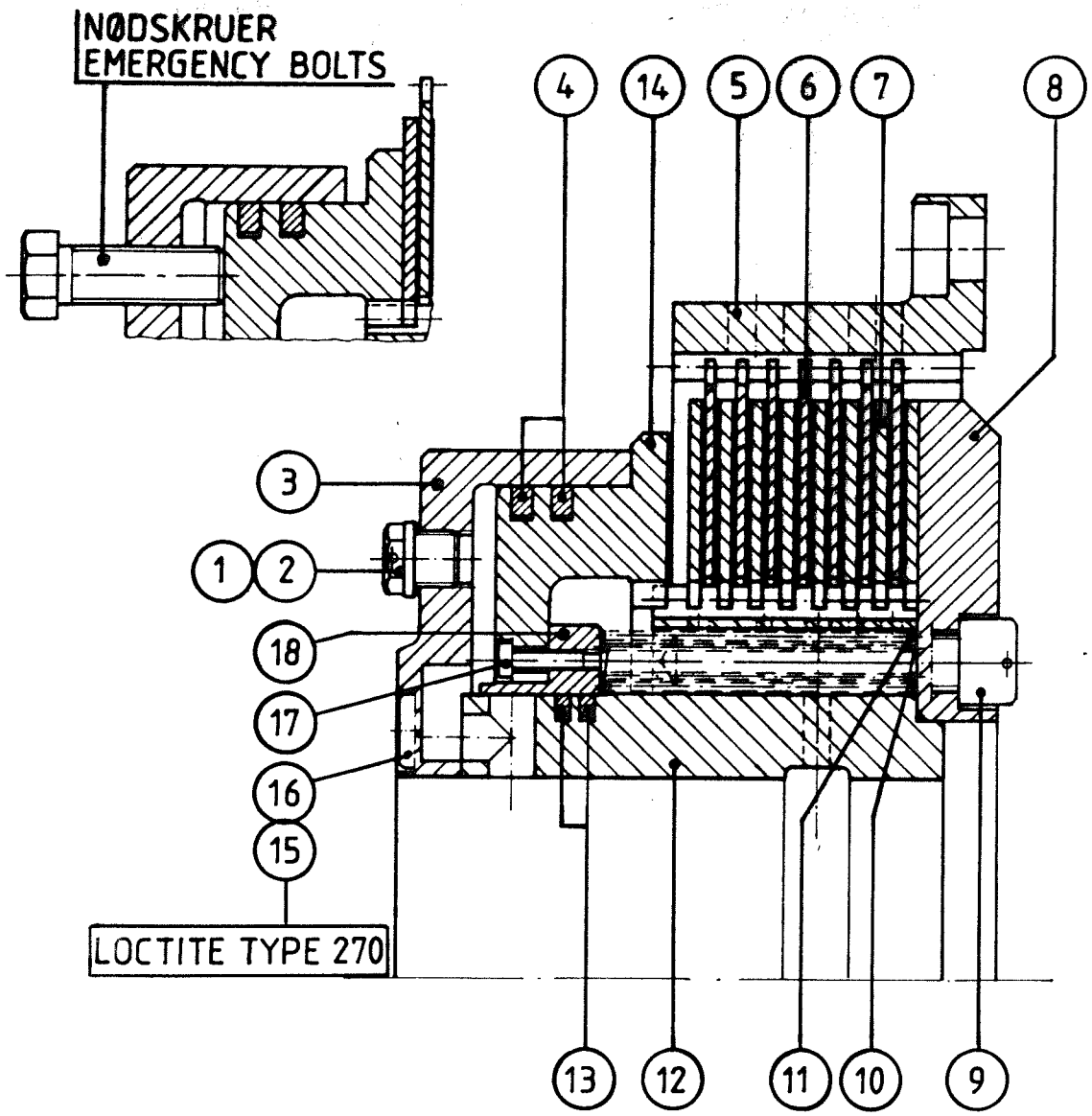
Erst. av:

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde. Norway

406-095

GRUPPE C PARTLIST 406-094 DRAWING 304-087 PRODUCT HG300SF

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	UNBRAKOSKRUE	UNBRAKO BOLT	6	5S0281
2	SPLINEMUFFE	SPLINED SLEEVE	1	4G0084
3	FRONTLOKK	FRONT COVER	1	1G0195
4	RULLELAGER	ROLLER-BEARING	1	3G0271
5	ENDELOKK	END COVER	1	1G0196
6	SKRUE	BOLT	6	5S0207
7	TETNINGSRING	SEALING RING	1	8S0036
8	AKSEL	SHAFT	1	1G0244
9	KILE	KEY	1	4G0073
10	LÅSEMUTTER	LOCKNUT	1	3G0058
11	LÅSESKIVE	LOCK PLATE	1	3G0285
12	DISTANSERING	SPACER	1	2G0243
13	O-RING	O-RING	1	8S0032
14	LÅSERING	SNAP-RING	1	7S0020
15	RULLELAGER	ROLLER-BEARING	1	3G0286
16	LÅSERING	SNAP-RING	1	7S0023
17	SPENNHYLSE	SPLIT SLEEVE	2	7S0030
18	SYLINDRISK PINNE	PARALLEL PIN	3	7S0039
19	UNBRAKOPLUGG	UNBRAKO PLUG	3	6S0065



DELELISTE 402-020
PART LIST 402-020

FOR PROD. 402-064

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.

HG3S GRUPPE D CLUTCH
HG3S GRUPPE D CLUTCH

Tegn: 21.01.87 JO

Trac:

Kfr.:

Målestokk:

Erst. for:

402-019

Erst. av:

HEIMDAL
PROPULSION A·S
Post Box 291 6401 Molde Norway

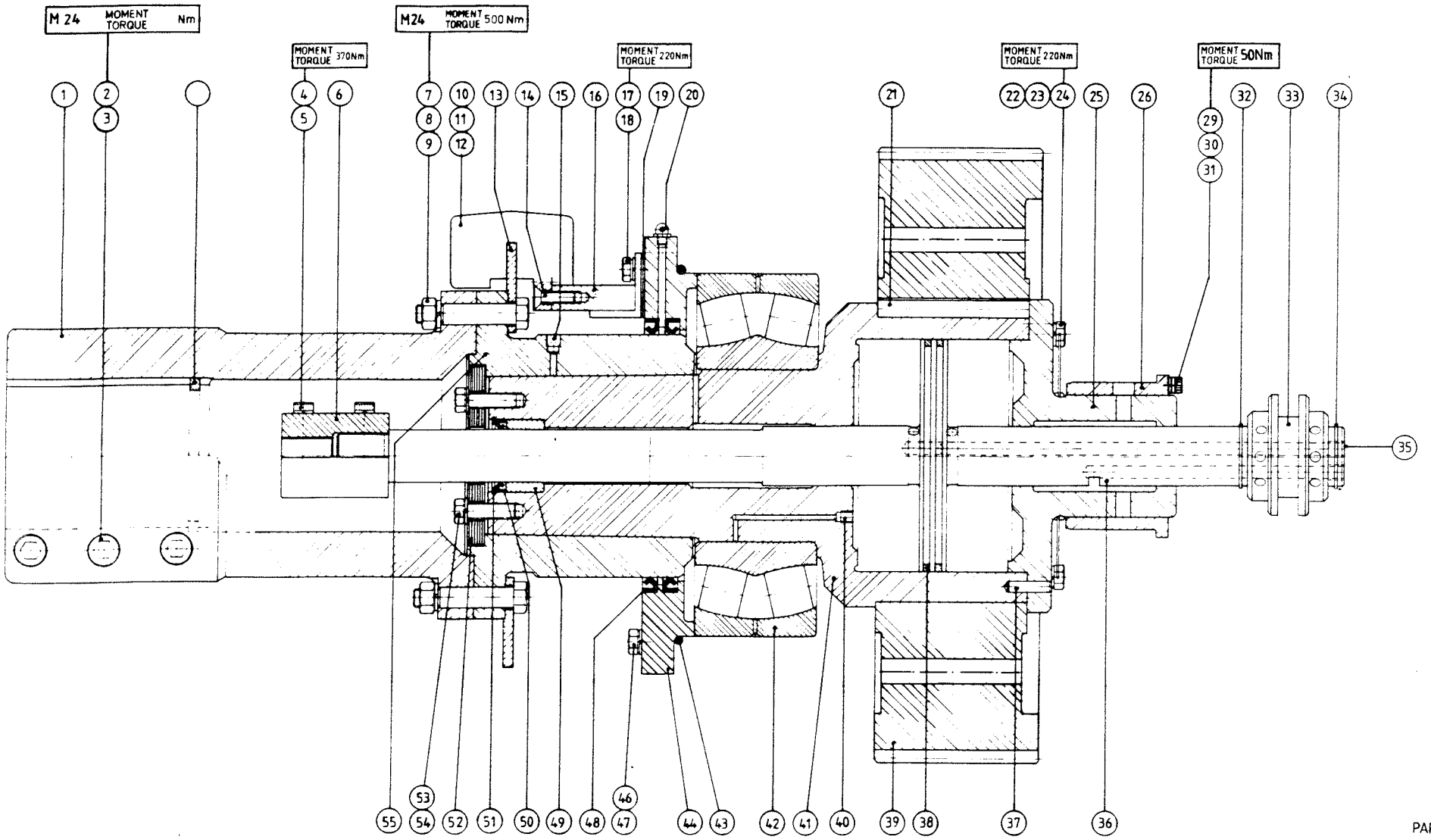
HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde. Norway

402-020

GRUPPE D PARTLIST 402-064 DRAWING 402-019 PRODUCT HG300S

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	PLUGG FOR NØDSKRUE	PLUG FOR EMERGENCY BOLT	4	3G0114
2	TETNINGSRING	SEALING RING	4	3G0115
3	SYLINDER	CYLINDER	1	3G0113
4	YTRE STEMPELFJÆR	OUTER PISTON RING	2	3G0122
5	MEDBRINGERRING	TRANSFER RING	1	3G0073
6	YTRE LAMELL	OUTER CLUTCH PLATE	7	3G0110
7	INDRE LAMELL	INNER CLUTCH PLATE	8	3G0111
8	ANSLAGSSKIVE	RETAINING DISC	1	3G0123
9	UNBRAKOSKRUE	UNBRAKO BOLT	6	3G0119
10	FJÆR	SPRING	15	3G0117
11	FJÆR	SPRING	15	3G0116
12	B[RER	CARRIER	1	3G0125
13	INDRE STEMPELFJÆR	INNER PISTON RING	2	3G0121
14	STEMPEL	PISTON	1	3G0124
15	UNBRAKOSKRUE	UNBRAKO BOLT	8	3G0118
16	SYLINDRISK PINNE	PARALLEL PIN	2	3G0126
17	UNBRAKOSKRUE	UNBRAKO BOLT	6	3G0109
18	OVERGANGSHYLSE	TRANSITION SLEEVE	1	3G0120
19	CLUTCH KOMPLETT	CLUTCH ASSEMBLY	1	3G0019

SEE PROP. ARRANGEMENT



PART LIST. 408-002

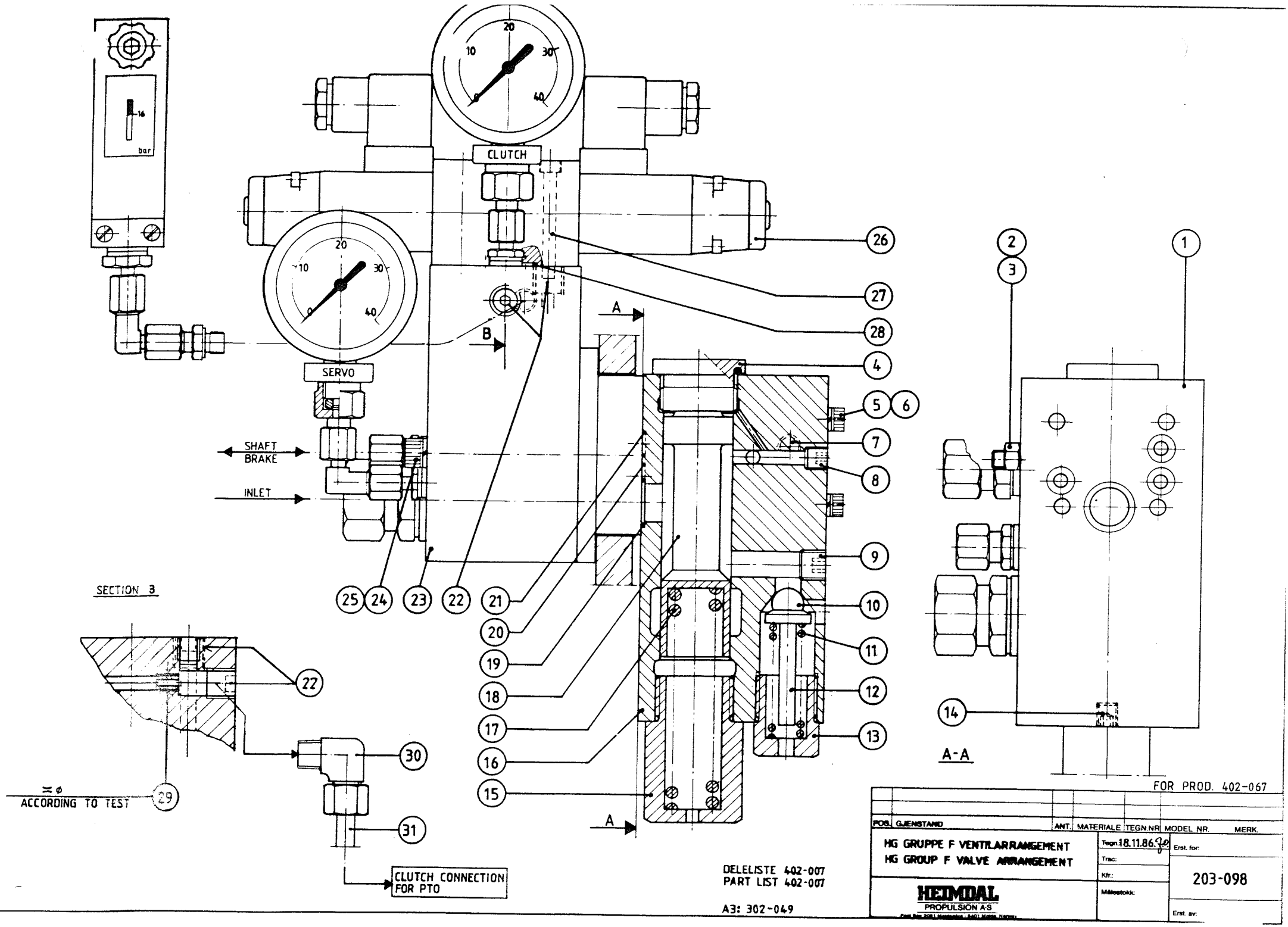
PROD.LIST. 408-001

POS. GJENSTAND	ANT.	MATERIALE	TEGN NR	MODELL NR	MERK
HG300 SS			27/0521 KE		
GROUP E SECONDARY SHAFT					305-050

HEIMDAL PROPULSION A.S

GRUPPE E PARTLIST 408-001 DRAWING 305-050 PRODUCT HG300SS

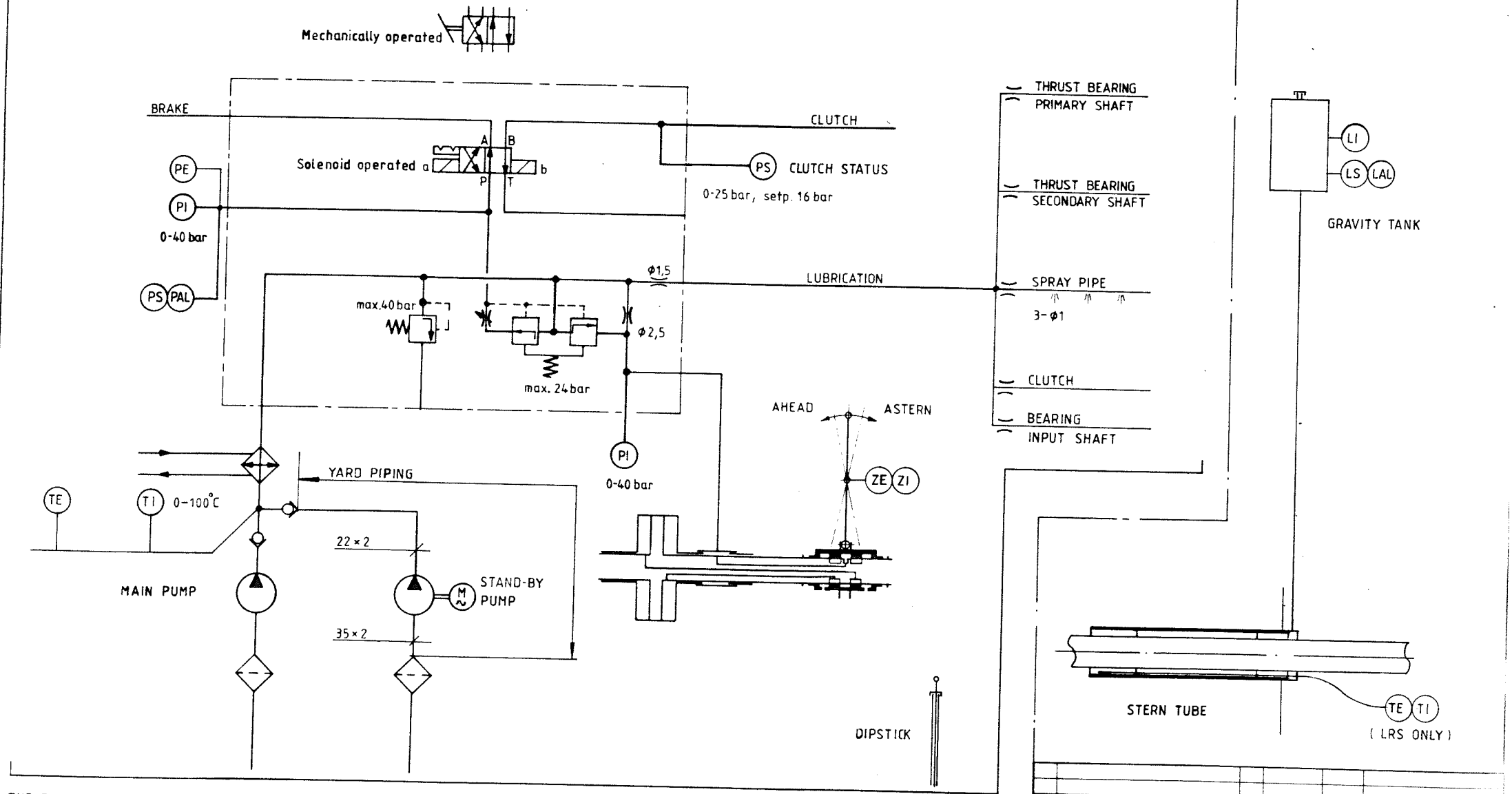
POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	AKSELKOPLING	SHAFT COUPLING	1	PAGE 3
2	UNBRAKOSKRUE	UNBRAKO BOLT	6	5S0074
3	SPRENGSKIVE	LOCKWASHER	6	5S0233
4	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0193
5	SPRENGSKIVE	LOCKWASHER	4	5S0241
6	KOPLINGSTYKKE	PUSH-PULL ROD CONNECTOR	1	2G0115
7	PASSBOLT	REAMED BOLT	8	2G0103
8	MUTTER	NUT	8	5S0113
9	SPRENGSKIVE	LOCKWASHER	8	5S0142
10	BREMSEKLAVE	BRAKE CALIPER	1	3G0029
11	BREMSEKLOSSER	BRAKE PAD SET	1	3G0034
12	PAKNINGSSETT	SEAL KIT	1	3G0160
13	BREMSESKIVE	BRAKE DISC	1	2G0246
14	UNBRAKO SENKSKRUE	UNBRAKO BOLT COUNTERSUNK	2	5S0191
15	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0066
16	BRAKETT FOR AKSELBREMSE	BRACKET FOR SHAFTBRAKE	1	2G0454
17	SKRUE	BOLT	2	5S0205
18	SPRENGSKIVE	LOCKWASHER	2	5S0144
19	SHIMSPAKKE	SHIM SET	1	2G0128
20	FETTNIPPEL	GREASE NIPPLE	1	6S0095
21	KILE FOR TANNHJUL	KEY FOR GEARWHEEL	1	4G0141
22	SKRUE	BOLT	12	5S0192
23	SPRENGSKIVE	LOCKWASHER	12	5S0144
24	LÅSETRÅD	LOCK WIRE	1	5S0182
25	ENDELOKK FOR SERVOAKSEL	END COVER FOR SERVO SHAFT	1	1G0281
26	GLIDELAGER	WHITE METAL BEARING	1	2G0426
29	SKRUE	BOLT	2	5S0272
30	UNDERLAGSSKIVE	COARSE WASHER	2	5S0288
31	LÅSETRÅD	LOCK WIRE	1	5S0182
32	LÅSERING	SNAP-RING	1	7S0019
33	SERVOSLEIDE	SERVO SLIDE	1	1G0154
34	LÅSERING	SNAP-RING	1	7S0019
35	UNBRAKOPLUGG	UNBRAKO PLUG	3	6S0067
36	SERVOSTEMPEL MED AKSEL	SERVO PISTON WITH SHAFT	1	2G0397
37	SYLINDRISK PINNE	PARALLEL PIN	1	7S0039
38	STEMPELFJÆR	PISTON-RING	2	3G0154
39	TANNHJUL OG PRIMÆRAKSEL	GEARWHEEL & PINION SET	1	PAGE 3
40	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0066
41	SERVOAKSEL	SERVO SHAFT	1	1G0280
42	RULLELAGER	ROLLER-BEARING	1	3G0396
43	O-RING	O-RING	1	8S0188
44	BAKRE BAKLOKK	REAR END COVER	1	1G0282
46	SKRUE	BOLT	6	5S0192
47	SPRENGSKIVE	LOCKWASHER	6	5S0144
48	TETNINGSRING	SEALING RING	2	8S0184
49	GLIDELAGER I SERVOAKSEL	BUSH FOR SERVO SHAFT	1	2G0271
50	TETNINGSRING	SEALING RING	1	8S0057
51	LÅSERING	SNAP-RING	1	7S0016
52	THRUSTSKIVE	THRUST DISC	1	2G0453
53	SKRUE	BOLT	8	5S0192
54	SPRENGSKIVE	LOCKWASHER	8	5S0144
55	GEARFLENS	GEAR FLANGE	1	2G0307


CLUTCH
SERVO
SHAFT BRAKE
INLET
SECTION B
ACCORDING TO TEST
CLUTCH CONNECTION FOR PTO
A-A
FOR PROD. 402-067
DELELISTE 402-007
PART LIST 402-007
A3: 302-049
HG GRUPPE F VENTILARRANGEMENT
HG GROUP F VALVE ARRANGEMENT
HEIMDAL PROPULSION A.S
203-098

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde. Norway

GRUPPE F PARTLIST 402-067 DRAWING 203-098 PRODUCT HG300

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	OLJEVENTIL KOMPLETT	OIL VALVE COMPLETE	1	0G0014
2	STRUPESKRUE	THROTTLE SCREW	1	5S0202
3	MUTTER	NUT	1	5S0109
4	PLUGG	PLUG	1	6S0100
5	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0211
6	SPRENGSKIVE	LOCKWASHER	4	5S0163
7	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0065
8	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0065
9	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0066
10	KULE	BALL	1	7S0002
11	FJÆR	SPRING FOR SAFETY VALVE	1	4G0090
12	FJÆR	SPRING GUIDE	1	2G0288
13	KAPSEL FOR SIKKERHETSVENT	CAP FOR SAFETY VALVE	1	2G0298
14	UNBRAKOPLUGG	UNBRAKO PLUG	1	6S0065
15	KAPSEL FOR KONTROLLVENTIL	CAP FOR CONTROL VALVE	1	2G0299
16	VENTILBLOKK	VALVE BLOCK	1	2G0294
17	FJÆR	SPRING FOR CONTROL VALVE	1	4G0089
18	STEMPEL I OLJEVENTIL	PISTON IN OIL-VALVE	1	2G0300
19	O-RING	O-RING	1	8S0093
20	O-RING	O-RING	2	8S0094
21	O-RING	O-RING	1	8S0094
22	UNBRAKOPLUGG	UNBRAKO PLUG	2	6S0066
23	MONTERINGSBLOKK	MOUNTING BLOCK	1	1G0256
24	UNBRAKOSKRUE	UNBRAKO BOLT	2	5S0197
25	SPRENGSKIVE	LOCKWASHER	2	5S0158
26	MAGNETVENTIL	SOLENOID VALVE	1	9S0005
27	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0196
28	O-RING	O-RING	4	8S0094
29	GJENGESTIFT *	SET SCREW *	1	5S0201
30	VINKELKOPLING	ELBOW COUPLING	1	6S0202
31	PRESISJONSTÅLRØR	STEEL PIPE	1	6S0203



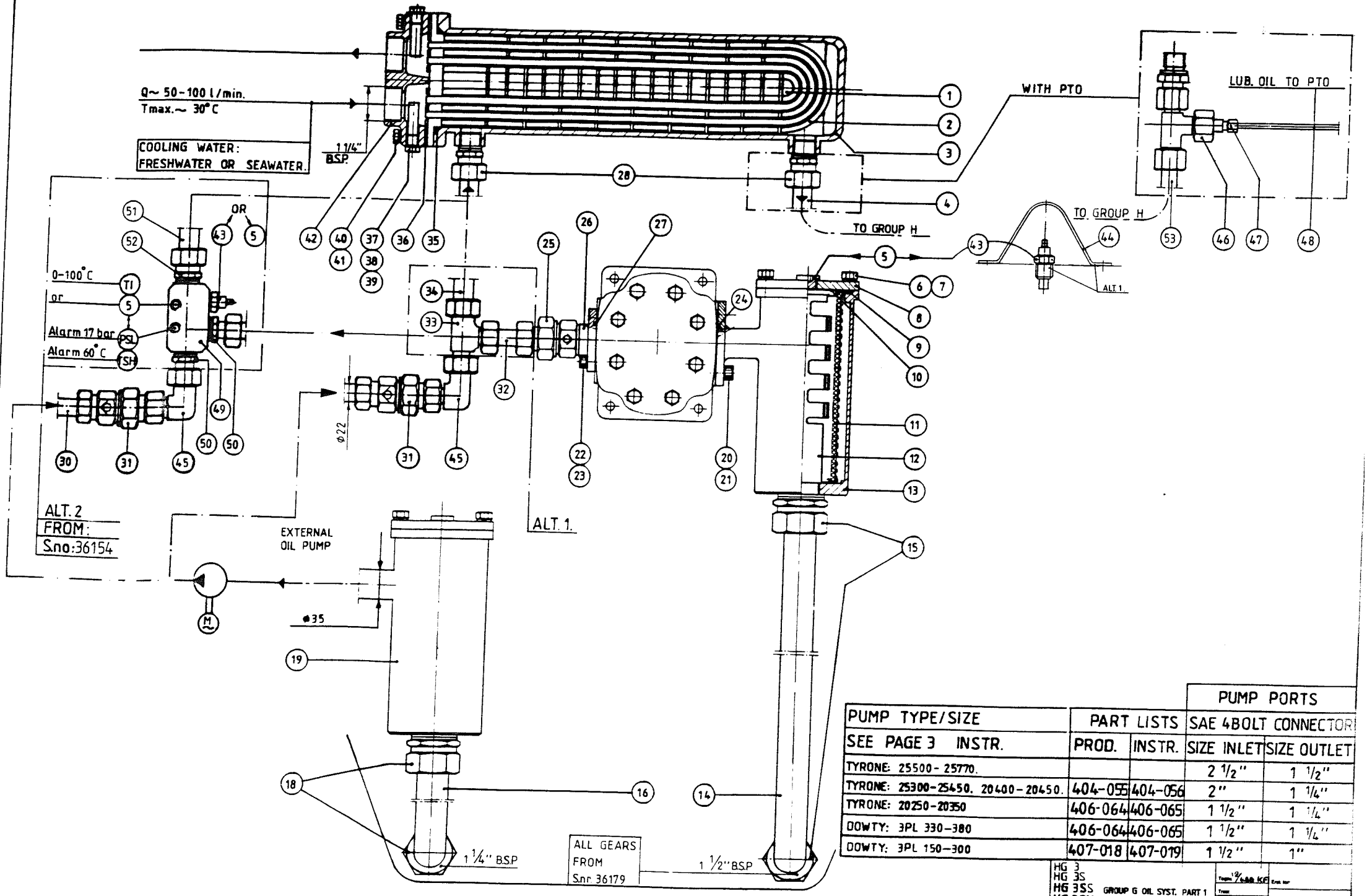
THE EXTENT OF SUPPLY MAY
NOT INCLUDE ALL THE ABOVE

ALARMS AND SAFETY ARRANGEMENTS
FOR UNATTENDED ENGINE ROOMS.
WITHOUT CLASS NOTATION.

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODEL NR.	MERK.
	HG 2-HG 3-HG3S OIL SYSTEM SCHEMATIC					

Tegn. 16.01.89.
Erst. for:
Trac:
Kfr.:
Målestokk:
304-017
Erst. av:

HEDEMORA PROPULSION A/S
Post Box 201 0401 Moss, Norway



PUMP TYPE/SIZE	PART LISTS		PUMP PORTS SAE 4BOLT CONNECTOR	
SEE PAGE 3 INSTR.	PROD.	INSTR.	SIZE INLET	SIZE OUTLET
TYRONE: 25500-25770.			2 1/2"	1 1/2"
TYRONE: 25300-25450. 20400-20450.	404-055	404-056	2"	1 1/4"
TYRONE: 20250-20350	406-064	406-065	1 1/2"	1 1/4"
DOWTY: 3PL 330-380	406-064	406-065	1 1/2"	1 1/4"
DOWTY: 3PL 150-300	407-018	407-019	1 1/2"	1"

HG 3
HG 3S
HG 3SS GROUP G OIL SYST. PART 1
HG 3SX

HEIMDAL PROPULSION A/S

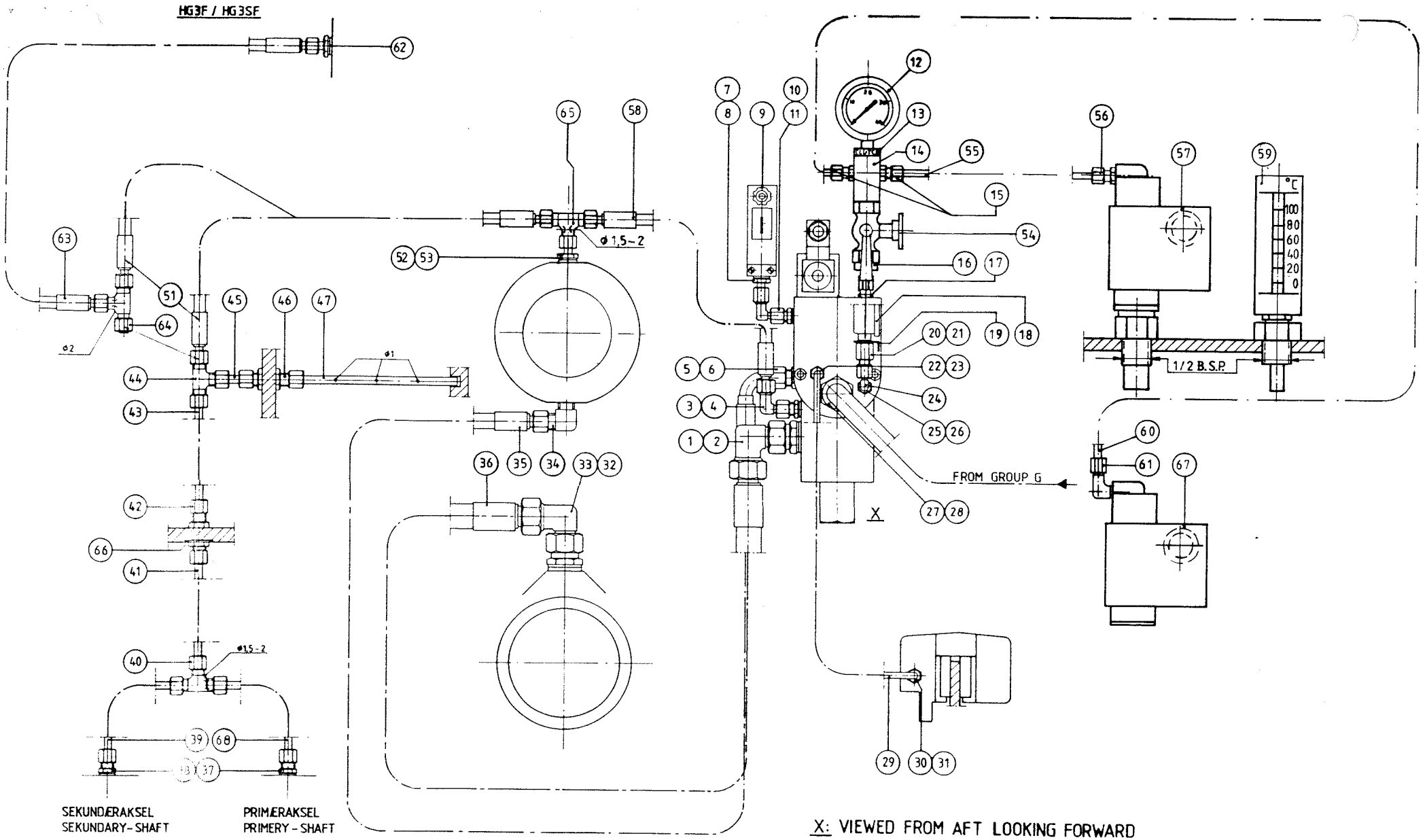
303-039

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

407-019

GRUPPE G PARTLIST 407-018 DRAWING 303-039 PRODUCT HG300

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	OLJEKJØLER KOMPLETT	OIL-COOLER COMPLETE	1	0G0005
2	RØR	TUBE STACK	1	2G0248
3	SKALL	COOLER BODY	1	2G0250
4	PRESISJONSTALRØR	STEEL PIPE	1	6S0082
5	PLUGG	PLUG	1	6S0101
6	SPRENGSKIVE	LOCKWASHER	4	5S0139
7	SKRUE	BOLT	4	5S0231
8	OLJEFILTER TOPPLUKE	OIL FILTER TOP COVER	1	2G0283
9	O-RING	O-RING	1	8S0044
10	FJÆR	SPRING	1	3G0139
11	FILTER	FILTER	1	3G0140
12	MAGNETINNSATS	MAGNETIC INSERT	1	3G0141
13	OLJEFILTERHUS	OIL FILTER BODY	1	2G0433
14	PRESISJONSTALRØR	STEEL PIPE	1	6S0072
15	RETT KOPLING	STRAIGHT COUPLING	2	6S0071
16	PRESISJONSTALRØR	STEEL PIPE	1	6S0084
18	RETT KOPLING	STRAIGHT COUPLING	2	6S0051
19	OLJEFILTER KOMPLETT	OIL FILTER COMPLETE	1	0G0011
20	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0232
21	SPRENGSKIVE	LOCKWASHER	4	5S0164
22	UNBRAKOSKRUE	UNBRAKO BOLT	4	5S0138
23	SPRENGSKIVE	LOCKWASHER	4	5S0164
24	O-RING	O-RING	1	8S0173
25	TILBAKESLAGSVENTIL	NON-RETURN VALVE	1	6S0031
26	PUMPE FLENS UTGAENDE 3/4"	PUMP FLANGE OUTLET 3/4"	1	2G0285
27	O-RING	O-RING	1	8S0043
28	RETT KOPLING	STRAIGHT COUPLING	2	6S0009
30	PRESISJONSTALRØR	STEEL PIPE	1	6S0085
31	TILBAKESLAGSVENTIL	NON-RETURN VALVE	1	6S0032
32	PRESISJONSTALRØR	STEEL PIPE	1	6S0124
33	T-KOPLING	T-COUPLING	1	6S0190
34	PRESISJONSTALRØR	STEEL PIPE	1	6S0125
35	O-RING	O-RING	1	8S0042
36	PAKNING	GASKET	1	8S0092
37	PLUGG	PLUG	2	6S0063
38	TETTESKIVE	BONDED SEAL	2	8S0072
39	SINK ANODE	ZINC ANODE	2	6S0094
40	SPRENGSKIVE	LOCKWASHER	10	5S0139
41	SKRUE	BOLT	10	5S0216
42	ENDELOKK	END COVER	1	1G0191
43	TEMPERATUR FØLER	TEMPERATURE SENSOR	1	9S0010
44	BØYLE OVER TEMP.FØLER	PROTECTOR FOR TEMP.SENSOR	1	2G0431
45	VINKELKOPLING	ELBOW COUPLING	1	6S0191
46	STILLBAR T-KOPLING	SWIVEL T-COUPLING	1	6S0199
47	REDUKSJONSKOPLING	REDUCTION COUPLING	1	6S0200
48	PRESISJONSTALRØR	STEEL PIPE	1	6S0201
49	MONTERINGSBLOKK	DISTRIBUTION BLOCK	1	2G0442
50	INSTILLINGSTAPP	SWIVEL TAP	2	6S0204
51	PRESISJONSTALRØR	STEEL PIPE	1	6S0207
52	RETT KOPLING	STRAIGHT COUPLING	1	6S0009
53	PRESISJONSTALRØR	STEEL PIPE	1	6S0213



X: VIEWED FROM AFT LOOKING FORWARD

DELELISTE HG3S 406–046
PART LIST HG3S

FOR HG3S PROD406-04

POS.	GJENSTAND	ANT.	MATERIALE	TEGN.NR	MODELL NR.	MERK

HG3S. GRUPPE H OLJESYST. DEL 2
HG3S GROUP H OIL SYST. PART 2

HEIMDAL PROPULSION A/S

304–065

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde, Norway

406-046

GRUPPE H PARTLIST 406-047 DRAWING 304-065 PRODUCT HG300S

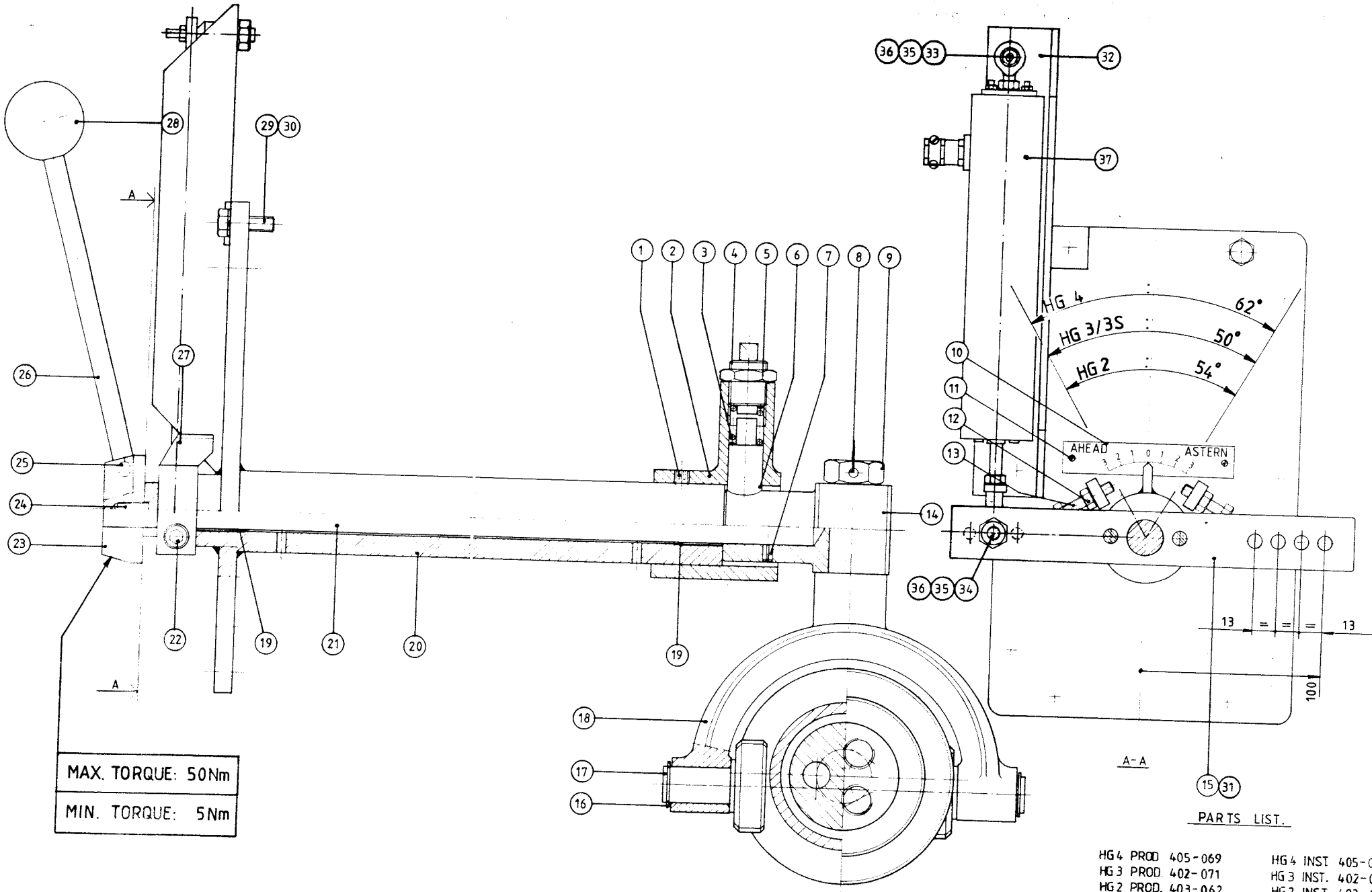
POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
1	TETTESKIVE	BONDED SEAL	1	8S0068
2	STILLBAR VINKELKOPLING	SWIVEL ELBOW COUPLING	1	6S0022
3	TETTESKIVE	BONDED SEAL	1	8S0071
4	STILLBAR VINKELKOPLING	SWIVEL ELBOW COUPLING	1	6S0025
5	TETTESKIVE	BONDED SEAL	1	8S0072
6	RETT KOPLING	STRAIGHT COUPLING	1	6S0010
7	KOPPERSKIVE-TELEMECANIQUE	COPPER DISC-TELEMECANIQUE	1	
8	INNSTILLINGSTAPP	SWIVEL TAP	1	6S0088
9	PRESSOSTAT	PRESSURE SWITCH	1	9S0004
10	TETTESKIVE	BONDED SEAL	1	8S0070
11	STILLBAR VINKELKOPLING	SWIVEL ELBOW COUPLING	1	6S0091
12	MANOMETER 0-40 BAR	PRESSURE GAUGE 0-40 BAR	1	9S0003
13	SKILT "CLUTCH"	NAME PLATE "CLUTCH"	1	4G0078
14	OLJEFORDELINGSBLOKK	OIL DISTRIBUTION BLOCK	1	2G0228
15	RETT KOPLING	STRAIGHT COUPLING	2	6S0002
16	INNSTILLINGSTAPP	SWIVEL TAP	1	6S0195
17	RETT KOPLING	STRAIGHT COUPLING	1	6S0107
18	MANOMETER 0-40 BAR	PRESSURE GAUGE 0-40 BAR	1	9S0003
19	SKILT "SERVO"	NAMEPLATE "SERVO"	1	4G0079
20	MANOMETERKOPLING	GAUGE COUPLING	1	6S0086
21	MANOMETERPAKNING	GAUGE SEAL RING	1	6S0093
22	RETT KOPLING	STRAIGHT COUPLING	1	6S0002
23	TETTESKIVE	BONDED SEAL	1	8S0070
24	STILLBAR VINKELKOPLING	SWIVEL ELBOW COUPLING	1	6S0091
25	INNSTILLINGSTAPP	SWIVEL TAP	1	6S0090
26	TETTESKIVE	BONDED SEAL	1	8S0070
27	RETT KOPLING	STRAIGHT COUPLING	1	6S0009
28	TETTESKIVE	BONDED SEAL	1	8S0068
29	PRESISJONSTALRØR	STEEL PIPE	1	6S0126
30	RETT KOPLING	STRAIGHT COUPLING	1	6S0002
31	TETTESKIVE	BONDED SEAL	1	8S0070
32	STILLBAR VINKELKOPLING	SWIVEL ELBOW COUPLING	1	6S0022
33	TETTESKIVE	BONDED SEAL	1	8S0068
34	VINKELKOPLING	ELBOW COUPLING	1	6S0092
35	SLANGE KOMPLETT	HOSE ASSEMBLY	1	6S0041
36	SLANGE KOMPLETT	HOSE ASSEMBLY	1	6S0042
37	RETT KOPLING	STRAIGHT COUPLING	1	6S0001
38	TETTESKIVE	BONDED SEAL	2	8S0071
39	PRESISJONSTALRØR	STEEL PIPE	1	6S0127
40	T-KOPLING *	T-COUPLING *	1	6S0062
41	PRESISJONSTALRØR	STEEL PIPE	1	6S0128
42	SKOTTGJENNOMGANG	BULKHEAD COUPLING	1	6S0019
43	PRESISJONSTALRØR	STEEL PIPE	1	6S0129
44	T-KOPLING	T-COUPLING	1	6S0062
45	PRESISJONSTALRØR	STEEL PIPE	1	6S0130
46	SKOTTGJENNOMGANG	BULKHEAD COUPLING	1	6S0019
47	SPREDERØR	SPRAY PIPE	1	6S0050
51	SLANGE KOMPLETT	HOSE ASSEMBLY	1	6S0043
52	INNSTILLINGSTAPP	SWIVEL TAP	1	6S0089
53	TETTESKIVE	BONDED SEAL	1	8S0071
54	TRE-VEIS PRØVEKRAN	THREE-WAY TEST COCK	1	6S0159
55	PRESISJONSTALRØR	STEEL PIPE	1	6S0196
56	RETT KOPLING	STRAIGHT COUPLING	1	6S0002
57	TRYKK/TEMP.BRYTER	PRESSURE/TEMP.SWITCH	1	9S0023
58	SLANGE KOMPLETT	HOSE ASSEMBLY	1	6S0044
59	TERMOMETER	THERMOMETER	1	9S0022
60	PRESISJONSTALRØR	STEEL PIPE	1	6S0197
61	VINKELKOPLING	ELBOW COUPLING	1	6S0122

HEIMDAL
PROPULSION A·S
Post Box 2091 Moldegård - 6401 Molde. Norway

406-046

GRUPPE H PARTLIST 406-047 DRAWING 304-065 PRODUCT HG300S

POS	BESKRIVELSE	DESCRIPTION	QTY	PARTNO
62	RETT KOPLING	STRAIGHT COUPLING	1	6S0001
63	SLANGE KOMPLETT	HOSE ASSEMBLY	1	6S0172
64	T-KOPLING *	T-COUPLING *	1	6S0198
65	T-KOPLING *	T-COUPLING *	1	6S0062
66	TETTESKIVE	BONDED SEAL	1	8S0071
67	TRYKK BRYTER	PRESSURE SWITCH	1	9S0024
68	PRESISJONSTÅLRØR	STEEL PIPE	1	6S0194



PARTS LIST.

HG 4 PROD 405-069	HG 4 INST 405-070
HG 3 PROD. 402-071	HG 3 INST. 402-003
HG 2 PROD. 403-062	HG 2 INST. 403-003

POS	GJENSTAND	ANT	MATERIALE	TEGN.NR	MODEL NR	MERK
HG	GRUPPE I SERVO KONTROLL					
HG	GROUP I SERVO CONTROLS					

Tegn 03.12.86 JH

KEIMDAL PROPULSION A/S

106-066

A3: 302-061