TECHNICAL DATA - PRM MARINE GEARBOXES

GENERAL DESCRIPTION

All PRM marine gearboxes are purpose built for use in both commercial and pleasure applications. Their design employs twin countershafts each carrying identical clutch gears, pinions, bearings and multi - disc clutches (which need no adjustment) full rated power to be transmitted enabling continuously both ahead and astern. It also caters for left - hand or right - hand rotation in " ahead ", with identical reduction ratio, making PRM gearboxes particularly well suited to twin engine installations.

CONSTRUCTION

The gearcase of the PRM Delta is made from heavy duty aluminium alloy, all other models having gearcases in good quality cast iron, both materials are suitable for use in the marine environment. Gearcases are ribbed internally for added strength and rigidity, and are constructed in two halves to facilitate servicing.

MOUNTING TO ENGINE

Adaptor plates to various SAE and other patterns are available for fitting standard offset and down - angle transmissions to the engine; in - line transmissions have a BW adaptor incorporated in their design.

Drive is transmitted via a flexible drive coupling or spring drive plate bolted to the engine flywheel; these are available in various sizes and stiffnesses to suit a wide variety of engines.

Adaptors and couplings are listed on a separate leaflet.

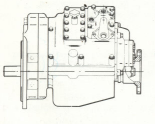
INPUT ROTATION

Most marine engines are left - hand (anti - clockwise) rotating as viewed looking on the flywheel from behind the engine, and PRM gearboxes are normally built for this. However, all models (except Delta) can accomodate right - hand (clockwise) rotating engines simply by turning the oil pump through 180°.

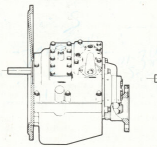
SHAFT CONFIGURATION

In their standard form all PRM gearboxes provide output shafts which are vertically offset relative to the input (crankshaft) centreline, but to cater for as many installation demands as possible the PRM160, PRM301 and PRM402 are available in in - line configuration, whilst PRM301, PRM402 and PRM601 are also offered with angle drives, providing a down - angle on the output shaft.

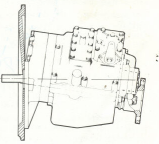
IN-LINE



DROP-CENTRE



ANGLE-DRIVE



ANGLE OF INSTALLATION

The maximum permissible fore and aft angle of installation, is 17° (Delta and PRM601: 15°)

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OPERATING SYSTEMS

The ahead and astern clutches are actuated by hydraulic pressure. Oil supply to both hydraulic and lubricating oil circuits is maintained by a gear type oil pump via a system of control valves which determines the direction of flow and operating oil pressure. The valves in turn are controlled by an actuating lever suitable for use with proprietary single lever remote control operating systems; this has a positive neutral to assist smooth shifting. The pump, valve block and operating lever are all accessibly mounted to facilitate maintenance and servicing.

The system will function well on most normal engine lubricating oils (approved list available); automatic transmission fluid is not necessary and oil additives must not be used.

A magnetic drain plug is provided to collect any particals of ferrous material which might otherwise contaminate the oil. Two tapped holes, respectively M18 and 1/8 in BSP, are provided to facilitate the fitment of the pressure gauge.

OPERATING PRESSURES AND OIL CAPACITIES

Oil Capacity	DELTA	160VR	160C	301VR	301C	301A	402D	402D 4:1	402C	402A	601VR	601VR 4:1	601A
Litres	1.75	1.00	1.50	2.50	3.00	3.00	2.50	3.50	3.00	3.00	3.00	4.00	3.50
Pints	3.08	1.76	2.64	4.40	5.28	5.28	4.40	6.16	5.28	5.28	5.28	7.04	6.16

Note: oil capacities quoted should be increased by an amount sufficient to fill the cooling circuit.

Operating Pressure	DELTA	160VR 160C	301VR 301C 301A	402D 402C 402A	601VR 601A
kpa	2275	1790	1790	2275	1790
lb/in²	330	260	260	330	260
kg/cm²	23.2	18.3	18.3	23.2	18.3

OIL COOLING

The normal operating temperature of the oil should be in the 50°C - 70°C range and should not exceed 80°C. The maintenance of correct operating temperatures is very important, and to ensure this an oil cooler must be used; two 3/8 in BSP connections are provided so that it can be fitted

The size of the cooler required depends on a number of factors including transmitted horsepower, operating speed, duty cycle, inlet water temperature and ambient temperature. Factory approved coolers are available from our distributors, whose advice should always be sought in case of doubt or uncertainty. Overcooling should always be preffered to undercooling.

SAFETY

All PRM marine gearboxes respond rapidly to movements of the operating lever for good boat handling. The hydraulic system is robust and reliable, but for added security a fail - safe " get - you - home " device is fitted as standard so that in the unlikely event of hydraulic failure, the transmission can be mechanically locked in " ahead ", enabling the boat to be brought safely back to port.

A neutral safety switch can also be provided as an optional extra (standard on the PRM601); this ensures that the engine can only be started when the gearbox is in neutral so reducing the possibility of inadvertant damage due to uncontrolled boat movement on start - up.

PROPELLER THRUST

Both ahead and astern thrust is carried by the output shaft bearings, which also withstand continuous rotation of the output shaft with the gearbox in neutral. This avoids the need to use a propshaft brake when running with the engine shut down, e.g. in motor sailers or in multi - engine installations.

All information contained in this leaflet is correct at time of going to press. However, design specifications may be changed without notice in the interests of technical progress, and the information given herein should not therefore be regarded as binding.

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