heavy duty hydraulic motors

more information

Heavy Duty Hydraulic Motors

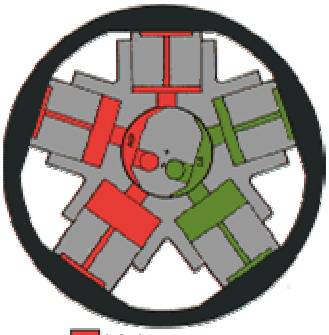
As exclusive producers of High Torque Low-speed (**HTL**) type hydraulic motors, our capabilities range from powering large industrial machines to professional lawn mowing machines to small winches. In addition, we manufacture a complementary range of safety brakes and special purpose valve assemblies.

OPERATION

In the **HTL** rotating shaft hydraulic motor, high pressure oil is fed to the crankshaft via the distributor housed in the end cover casing. The axial passages in the crankshaft connect with accurately machined timing slots in the eccentric, which carries the cylinder block.

This cylinder block carries five radially disposed pistons. The base of each cylinder bore has a port which connects with the machined slots in the crankshaft eccentric.

High pressure oil enters the base of the cylinder bore and exerts a force through the piston nearest the centre line of the motor and attempts to give the piston an outward motion as a result of the inbalance in the areas of the two piston ends.



The outer face of each piston is seated against the flat thrust face in the crankcase, so the reaction to this force is a thrust transmitted direct to the eccentric by a high pressure column of oil.

An Oldham plate and dogs maintain the correct angular relationship between the cylinder block and crankcase.

Because there are either two or three chambers exposed to high pressure at all times, total torque output is the vector sum of the torque outputs developed by the multiple columns of fluid. This results in very smooth rotation, virtually constant torque even at very low speeds, and very high starting torques.

WHEEL MOTOR SPECIALITY

The **HTL** wheel motor's shaft is held stationary and acts as an axle while the rotating housing serves as the wheel hub. High pressure fittings connect direct to the shaft end.

- Single-ended shaft designs allow for cantilever-type mountings.
- Eliminates axles, drive shafts, universals and gearbox transmissions.
- Lower centre of gravity and allows lower vehicular profiles yet maintains or improves ground clearance.
- Operates in adverse environments without special protection.
- Direct "internal" drive for winches, conveyors and other rotary drum type applications.
- Free wheeling capability allowing vehicle speed variation in multi-motor applications.

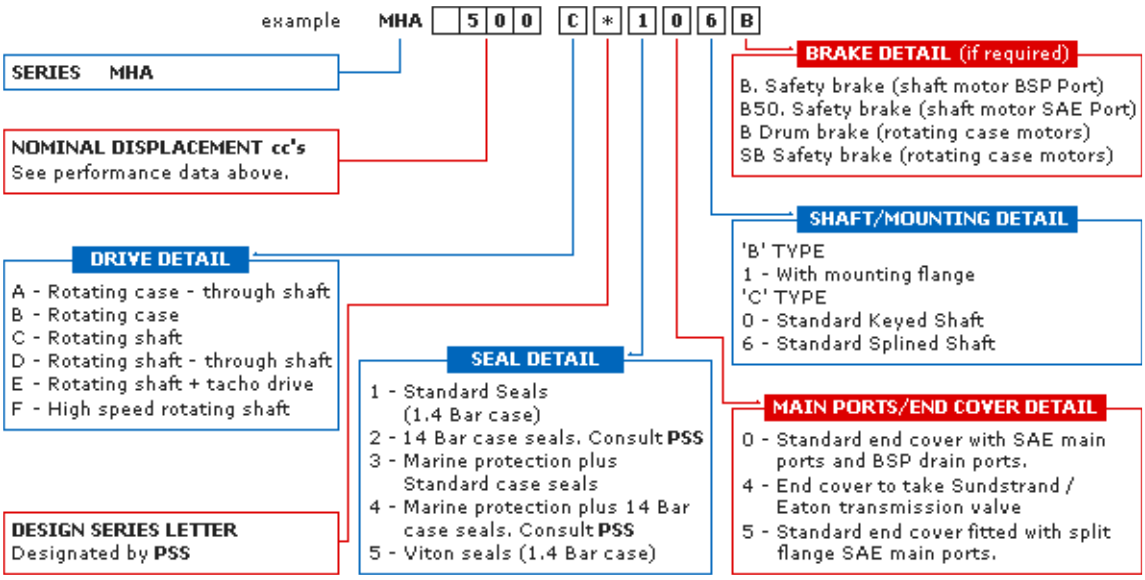
The compactness of the **HTL** wheel motor is demonstrated here, powering a wheel for a green keeping machine.

SUMMARY OF PERFORMANCE DATA

MODEL	TYPE	MAX. SPEED WHEEL MOTOR 'B' TYPE	MAX. SPEED SHAFT MOTOR 'C'TYPE	SWEPT VOLUME CC/REV	TYPICAL RUNNING TORQUE RATING Nm/BAR	CONT. PRESS., BAR	PEAK PRESS., BAR	MAX INT. POWER kW
MHA90	B&C	500	1000	90.7	1.30	175	300	15.0
MHA125	B	500	N/A	124.7	1.78	175	300	21.0
MHA180	B&C	500	500	183.2	2.6	210	350	29.0
MHA250	B&C	500	500	251.9	3.6	210	350	40.0
MHA300	B&C	500	500	300.0	4.25	210	350	40.0
MHA350	B&C	300	550	345.0	4.94	210	350	54.0

MHA500	B&C	300	550	508.4	7.30	210	350	72.0
MHA580	B&C	300	550	581.1	8.31	210	350	72.0
MHA750	B&C	200	550	751.0	10.75	210	350	100.0
MHA1400	C	N/A	300	1407.0	20.00	210	350	132.0

MODEL CODE



APPLICATION INFORMATION

Mounting:

Motors can be mounted in any plane preferably to a flat machined surface; in addition torque arm mounting may be employed with some units.

Fluids

A good quality mineral hydraulic fluid should be used compatible with operating temperature and viscosity. Operation with high water base and synthetic fluids is acceptable subject to approval.

Temperature

Normal operating temperature range is + 20°C to +50°C. Extremes of temperature are -20°C to + 100°C.

Viscosity

Best performance is generally achieved with relatively high viscosity.
Optimum viscosity range is within 25 to 90 centistokes.
Normal operating viscosity range is 12 to 150 centistokes.
Limiting operating range viscosity is 2 to 1500 centistokes.

Filtration

A filtration efficiency of ß10 = 75 and a fluid cleanliness in accordance with ISO 4406 contaminant code 18/15 is recommended.

Case Drain

The crankcase of the motor must be filled with oil before starting and the drain port independently connected to the reservoir so as to maintain a full crankcase.

Freewheeling

The motor can be freewheeled by connecting both the main ports directly to tank, with no pressure. At the same time the crankcase drain port must be pressurised to 1.4 Bar (20 psi). Under these conditions the pistons are withdrawn and no pumping action occurs, allowing minimal resistance to rotation. The case maximum pressure must not be exceeded or the shaft seal will be damaged.
PSS must approve all freewheeling applications and will advise on the appropriate hydraulic circuit.

Charge Pressure

A positive pressure must be maintained at both ports at all times during motor and pump modes of operation. Minimum boost pressure is the value expressed in the technical data.

PACKAGE OPTIONS

PSS also offer complete packages to suit your drive requirements including:-

For Rotating Shaft Motors	For Rotating Case Motors
• End covers to take Sundstrand or Eaton transmission valve. • Tachometer drive shaft to rear of motor. • Through shaft version. • High speed version (up to 1000 RPM in some sizes). • Higher case pressure capability 14 Bar (200 psi) - Consult **PSS**	• Through shaft version. • Higher case pressure capability 14 Bar (200 psi) - Consult **PSS** • Marine protection. • Viton seals for running on Phosphate Ester fluids. • Range of transmission, relief and load control valves.

- Marine protection.
- Viton seals for running on Phosphate Ester fluids.
- SAE Drain Port Alternative.
- Special output shafts.
- Range of transmission, relief and load control valves may be supplied assembled direct to the motor end covers.
- Spring applied, pressure released safety brakes.
- Motor / Gearbox combinations, extending the output torque range.
- Spring applied, pressure released safety brakes.
- Wheel studs available.
- Special mounting flanges.

Please contact us for all your steering & hydraulic enquiries.

PSS Steering & Hydraulics Division
Folgate Road, North Walsham, Norfolk NR28 0AJ, UK

Main Tel: +44 1692 406017 Fax: +44 1692 406957 Email: sales@pss.co.uk

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