

GENERAL INFORMATION

CHARACTERISTICS

The pump drives allow the contemporary running of one or more hydraulic pumps from a single prime mover.

All models can be prepared for various applications:

- basic (B) for independent mounting
- with a overcenter industrial clutch (BD) (BDS)
- with housing and coupling connection for diesel engines.

Constructively the pump drives consist of:

- cast iron casing
- straight-tooth gears, case hardened
- hardened grinded (shaved in series AM 216 - AM 320)
- ball bearings
- shafts in case-hardening steel - case hardened - hardened
- viton seals on input shaft
- the kinematic diagram is identical for the various models: the primary gear, which transmits the drive to the secondary gears on whose axles the pumps are applied, is splined to the input shaft. The direction of rotation in output is the opposite of the rotation direction in input
- the transmission ratio is identical on all the outputs.

TECHNICAL DATA

- Ratio

It represents the ratio between the input speed (speed of the prime mover) and the output speed (speed of the pumps).

Ratios lower than 1 indicate a pump drive unit performing as speed increaser, higher than 1 as speed reducer.

- Max input torque M1 (Nm)

It is the maximum torque which may be transmitted on input, corresponding to a theoretically unlimited gear life and to a bearing life (L10) of 10.000 hours at least.

For clutch coupled units, or when RBD coupling is mounted, the max input torque may be limited by the clutch or the RBD torque capacity.

- Each output max torque M2 (Nm)

It represents the maximum torque which may be transmitted on each output.

- Max speed n1 (RPM)

It is the maximum rotation speed at the input shaft. In case of clutch coupled unit, test that working speed is not more than the maximum permitted for the clutch.

- Moment of inertia J (Kgm²)

It is referred to the input shaft and it is calculated in accordance with ISO standards.

SELECTION

The fundamental elements on which the choice of pump drive is based are:

- number and type of hydraulic pumps to be applied
- max torque absorbed by the pump (or by the group of pumps) on each output of the pump drive
- max power entering the pump drive
- Depending on the overall dimensions of the pumps, complete with pipes fittings, it is possible to establish the minimum distance between the pumps themselves.
Comparing these values foreseen in the catalogue for the output shafts, it is possible to make a choice of type.
- Verify that the torque value of each output is kept below the max. value shown in the catalogue for the chosen pump drive.
In cases of use in important industrial systems or in marine applications, it is necessary to bear in mind relevant safety factors.
Also verify that the rotation speed of input shaft isn't more than the max. indicated in the catalogue.
In the case of pump drives with clutch BD or BDS verify that the max. input torque is at least 20% below the max. transmittable from the clutch.
- Figure 1 shows the max input power advisable according to the pump drive model.

COOLING

Oil working temperature must not exceed 105°C.

Depending on the input power and on duty, a cooling system may be necessary.

It is advisable to check the oil temperature during the first hours of work, making sure that the oil doesn't exceed 105°C.

All pump drives, except for AM 216 and AM 320, can be equipped on request with a cooling system consisting of an oil circulating pump mounted on the input shaft, pumps side, an oil/water cooler and relevant pipe fittings.

DIESEL ENGINE CONNECTION

In cases of application to diesel engines, the pump drives can be supplied with housing and coupling suitable for engines with flywheel and flywheel housing dimensions according to SAE standards.

An example sketch of the dimensions to be checked is given in fig. 2.

The same dimensions are valid for connections with clutches.

The clutch pilot bearing (to assemble between the flywheel on the clutch shaft) is not included in the supply.

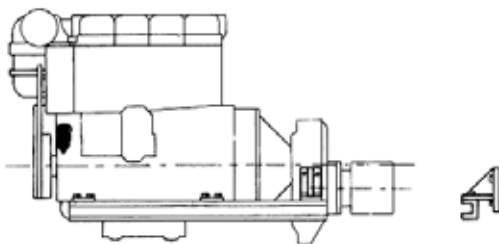
INSTALLATION

The working position of the pump drive is usually the one shown in the catalogue.

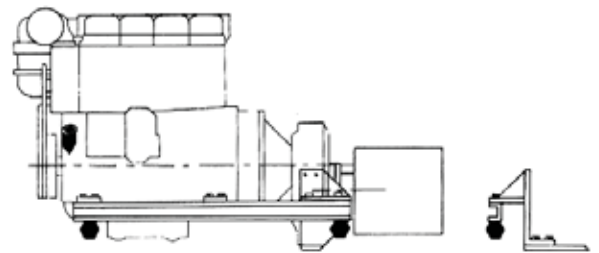
If other positions are requested it is necessary to contact our Tech. Dept.

Special care must be taken over the fixing of the pump drive.

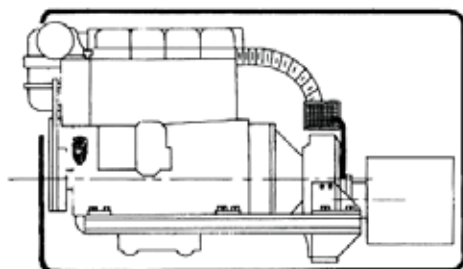
APPLICATION EXAMPLES



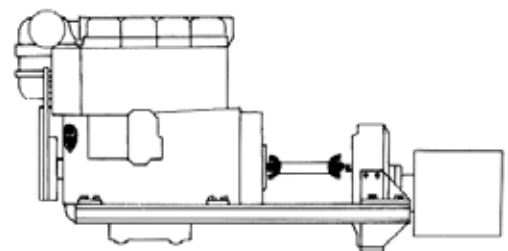
AM Pump Drive with pumps weight less than 100 kg.
Normal support bracket.



AM Pump Drive with total pumps weight more than 100 kg.
The support bracket must be close to pump drive/pumps center of gravity.



AM Pump Drive in closed surrounding without ventilation. A cooling system is needed.



AM Pump Drive with cardan joint.
The support bracket must be close to pump drive/pumps center of gravity.

LUBRIFICATION

Use gear lube with EP additive and minimum viscosity index of 95.

The oil choice may be made taking account of the ambient temperature, as per tab. 3.

The pump drives are supplied without oil.

Before use fill to the maximum level mark on dipstick.

The oil quantity indicated in the catalogue is approximate.

Oil must be replaced after the first 50 working hours.

Subsequent oil changes should be made every 1.000 hours or every 12 months, whichever is the sooner.

Check regularly the oil level.

Oil working temperature must not exceed the 105°C.

RECOMMENDED OIL TABLE

Ambient Temperature		Mineral Oil -15°C / +25°C	Mineral Oil -5°C / +40°C	Syntetic Oil -25°C / +80°C
Viscosity	ISO 3448	VG 100	VG 150	VG 150 - 220
	IV min.	95	95	165
MOBIL		MOBILGEAR 627	MOBILGEAR 629	MOBILGEAR SHC XMP 220
AGIP		BLASIA 100	BLASIA 150	BLASIA SX 220
BP		ENERGOL GR XP 100	GR XP 150	ENERSYNT HTX 220
CASTROL		ALPHA SP100	ALPHA SP150	ALPHASYNT 220
ELF		REDUCTELF SP100	REDUCTELF SP150	ORITIS 125 MS
ESSO		SPARTAN EP100	SPARTAN EP150	SPARTAN SYNT EP220
IP		MELLANA 100	MELLANA 150	TELESIA OIL 150
SHELL		OMALA OIL 100	OMALA OIL 150	OMALA OIL HD 200
TOTAL		CARTER EP100N	CARTER EP150	CARTER SH 220

LOAD CLASSIFICATION BASED UPON AGMA LOAD CHARACTERISTICS

PRIME MOVER	DURATION OF SERVICE	DRIVEN MACHINE LOAD CLASSIFICATION		
		UNIFORM	MODERATE SHOCK	HEAVY SHOCK
Electric motor	Up to 3 hours per day	1.00	1.25	1.50
	3-10 hours per day	1.00	1.25	1.75
	Over 10 hours per day	1.25	1.50	2.00
Multi-cylinder internal combustion engine	Up to 3 hours per day	1.00	1.25	1.75
	3-10 hours per day	1.25	1.50	2.00
	Over 10 hours per day	1.50	1.75	2.25
Multi-cylinder internal combustion engine with high torque rise	Up to 3 hours per day	1.50	1.75	2.25
	3-10 hours per day	1.75	2.00	2.50
	Over 10 hours per day	2.00	2.25	2.75
Single cylinder internal combustion engine	Up to 3 hours per day	1.25	1.50	2.00
	3-10 hours per day	1.50	1.75	2.25
	Over 10 hours per day	1.75	2.00	2.50

TO CALCULATE APPLICATION TORQUE:

$$\frac{5252 \times \text{HP}}{\text{Engine speed (n/min.)}} = \text{Torque}$$

Torque x load factor = Application Torque

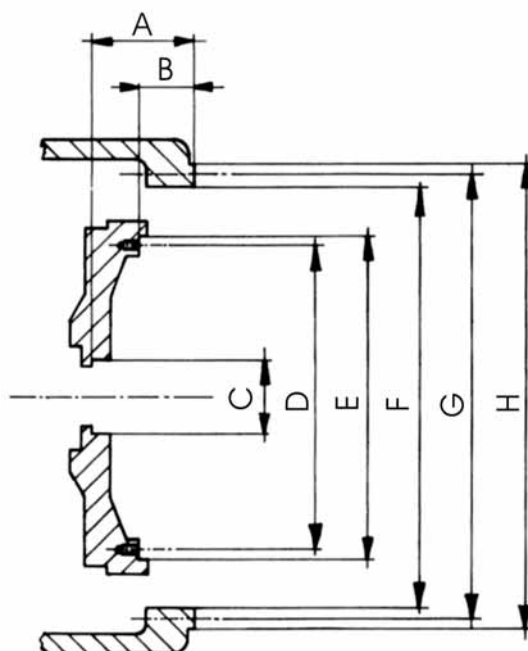
Use load factor from chart at left

All clutch engagements to be with prime mover below 1000 n/min.

High inertia loads may require use of larger clutch.

Contact our application engineering dept. for assistance.

FLYWHEEL / FLYWHEEL HUSING DIMENSIONS - SAE J620 D / SAE J617 C



Clutch size	A	B	C	D	E
6 ½	71.4	30.2	52	200	215.9
8	100.1	62.0	62	244.48	263.52
10	100.1	53.8	72	295.27	314.32
11 ½	100.1	39,6	72	333.37	352.42
14	100.1	25,4	80	438.15	466.72

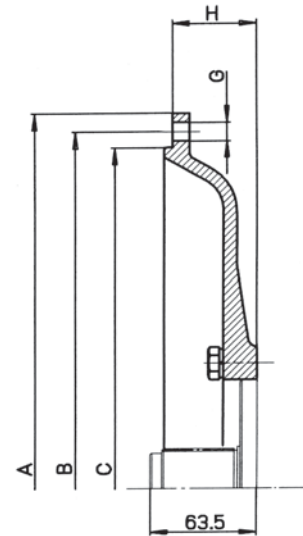
SAE n°.	F	G	H
1	511.17	530.22	552.4
2	447.67	466.72	489
3	409.57	428.62	450.8
4	361.95	381	403.2
5	314.32	333.38	356

INPUT CONFIGURATION

AM 110 - AM 216 - AM 220 - AM 320 - AM 330

SAE Housing

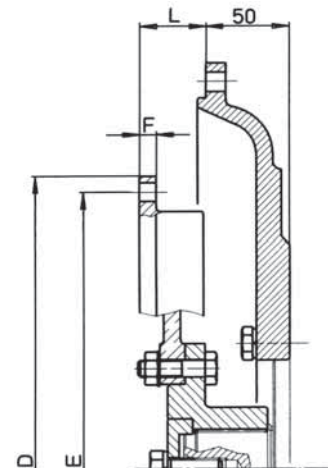
SAE	Dimensions				
	A	B	C	G	H
1	552	530,2	511,2	12	50
2	489	466,7	447,7	11	50
3	451	428,6	409,6	11	50
4	403	381	361,9	11	50
5	356	333,4	314,3	11	35,5



RBD Couplings

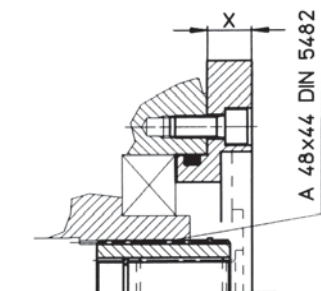
FLYWHEEL	D	E	F	L	Max Torque Nm
8"	263,5	244,5	9	61,9	310
10"	314,3	295,3	IO	53,8	560
11-1/2"	352,4	333,4	IO	39,6	860
14"	466,7	438,2	41	25,4	1400

For torsional vibration calculation, contact our Tech. Dpt.



Pump Pad Dimensions

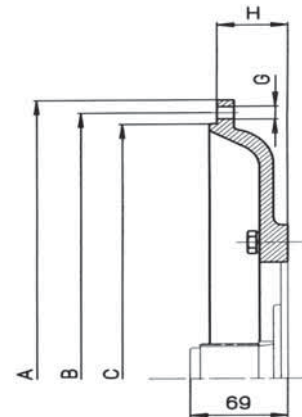
Pump	AM 110	AM 216 - 220 - 320 - 330
	x - mm	x - mm
SAE A	18,5	10
SAE B	23,5	20
SAE C	22,5	20
SAE D	-	80
Gr 2	-	18
Gr 3	-	18
Gr 3,5	-	15



INPUT CONFIGURATION AM 230 - AM 232 - AM 345 - AM 450

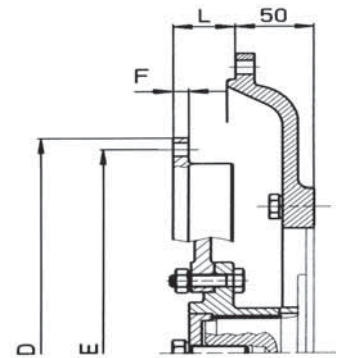
SAE Housing

SAE	Dimensions				
	A	B	C	G	H
1	552	530,2	511,2	12	50
2	489	466,7	447,7	11	50
3	451	428,6	409,6	11	50
4	403	381	361,9	11	50



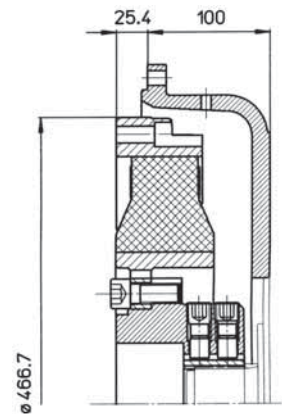
RBD Couplings

FLYWHEEL	D	E	F	L	Max Torque Nm
10"	314,3	295,3	10	53,8	560
11-1/2"	352,4	333,4	10	39,6	860
14"	466,7	438,2	41	25,4	1400



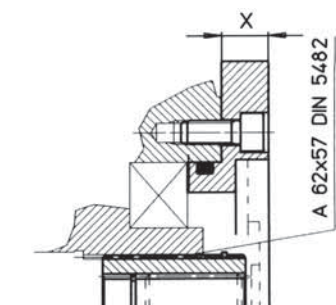
TORSIONAL Couplings

For a proper selection contact our Tech. Dept.



Pump Pad Dimensions

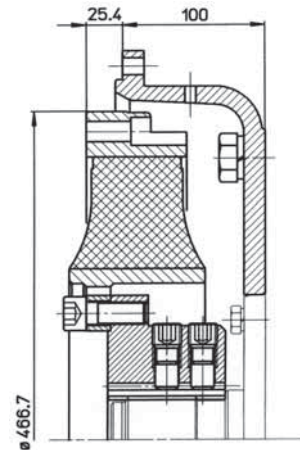
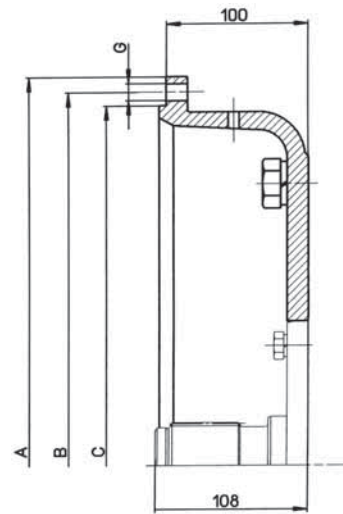
Pump	x - mm
SAE A	19
SAE B	20
SAE C	28
SAE D	37
SAE E	37



INPUT CONFIGURATION AM 365 - AM 480

SAE Housing

SAE	A	B	C	G
1	552	530,2	511,2	12
0	711	679,5	647,7	12,5



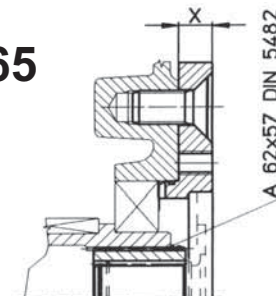
TORSIONAL Couplings

For a proper selection contact our Tech.Dpt.

Pump Pad Dimensions

Pump	AM 365 x - mm	AM 480 x - mm
SAE B	20	-
SAE C	28	28
SAE D	20	35
SAE E	30	35

AM 365



AM 480

