YANMAR

YT7708-194E

SERVICE MANUAL

SVE

YANMAR

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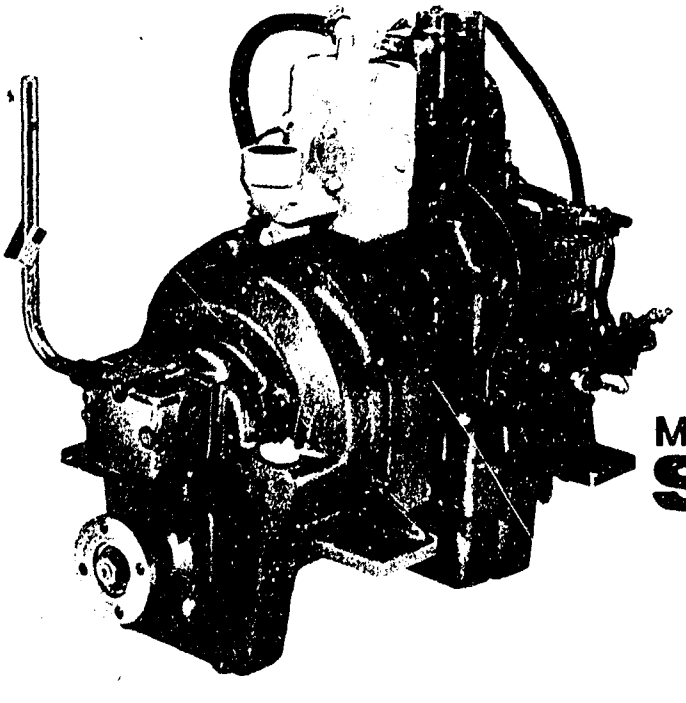
MARINE DIESEL ENGINE



MODEL
SVE series

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1. SUMMARY OF ENGINE

1–1. Engine Specifications

Model				SVE 8	SVE8G	SVE12	SVE12G
Type				Vertical, 4-cycle water-cooled diesel engine			
Combustion Chamber				Swirl type precombustion chamber			
Number of Cylinders				1			
Bore x stroke			mm	75 x 75		85 x 90	
Displacement			ℓ	0.331		0.510	
Continuous rating DIN. A	Output/engine speed		HP/rpm	7/3200		10/3000	
	Propeller shaft speed		rpm	1524	1051	1429	986
	BMEP		Kg/cm^2	5.95		5.88	
	Mean piston speed		m/s	8.0		9.0	
One hour rating DIN. B	Output/engine speed		HP/rpm	8/3200		12/3000	
	BMEP		Kg/cm^2	6.80		7.06	
	Mean piston speed		m/s	8.0		9.0	
Compression ratio				23.1		20.9	
Dry weight (chain starting)				130 (125)		160 (155)	
Direction of rotation	Propeller shaft			Clockwise viewed from clutch side			
	P.T.O.s shaft			Clockwise viewed from P.T.O. shaft			
Cooling system				Forced cooling by rotary rubber pump			
Lubricating system				Forced lubrication by trochoid pump			
Starting system				Electric with manual starters or chain starter			
Reduction gear system				Spur gear single reduction type			
Clutch system				Mechnical clutch (wet, single disk plate type)			
Reduction ratio	Ahead			2.10:1	3.04:1	2.10:1	3.04:1
	Astern			1.80:1	2.48:1	1.80:1	2.48:1
Engine size	Overall length		mm	629		662	
	Overall width (chain starting)		mm	Max. 495 (443)		Max. 520 (471)	
	Overall height		mm	607		678	
Lube oil capacity (Rake angle 8 degree)	Engine side	Total	ℓ	2.8		3.5	
		Effective	ℓ	1.2		2.1	
	Clutch side	Total	ℓ	0.5		0.5	
		Effective	ℓ	0.2		0.2	

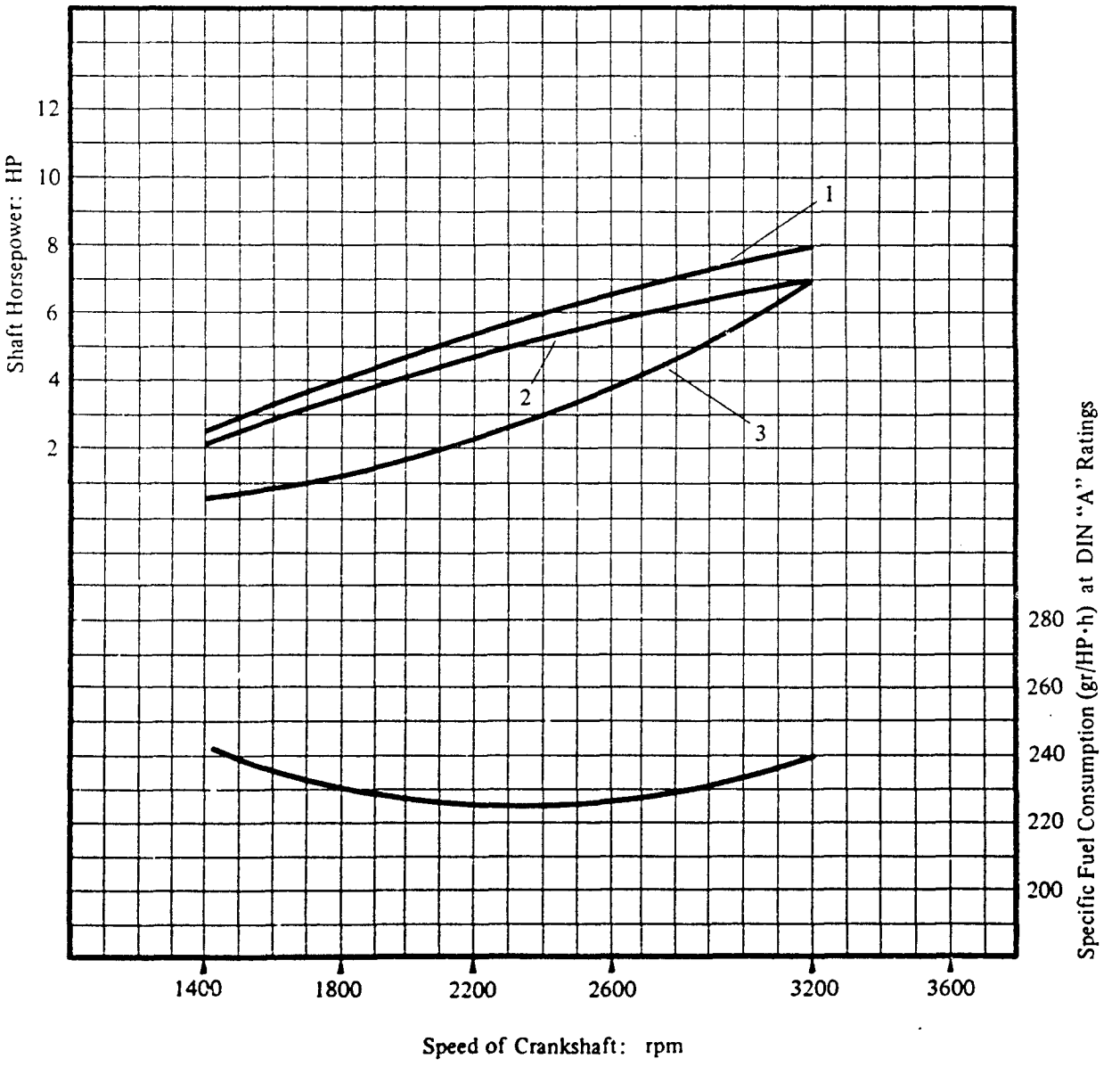
1–2. Performance Curves

Model SVE8(G)

1 Continuous output "B" DIN 6270

2 Continuous output "A" DIN 6270

3 Propeller power

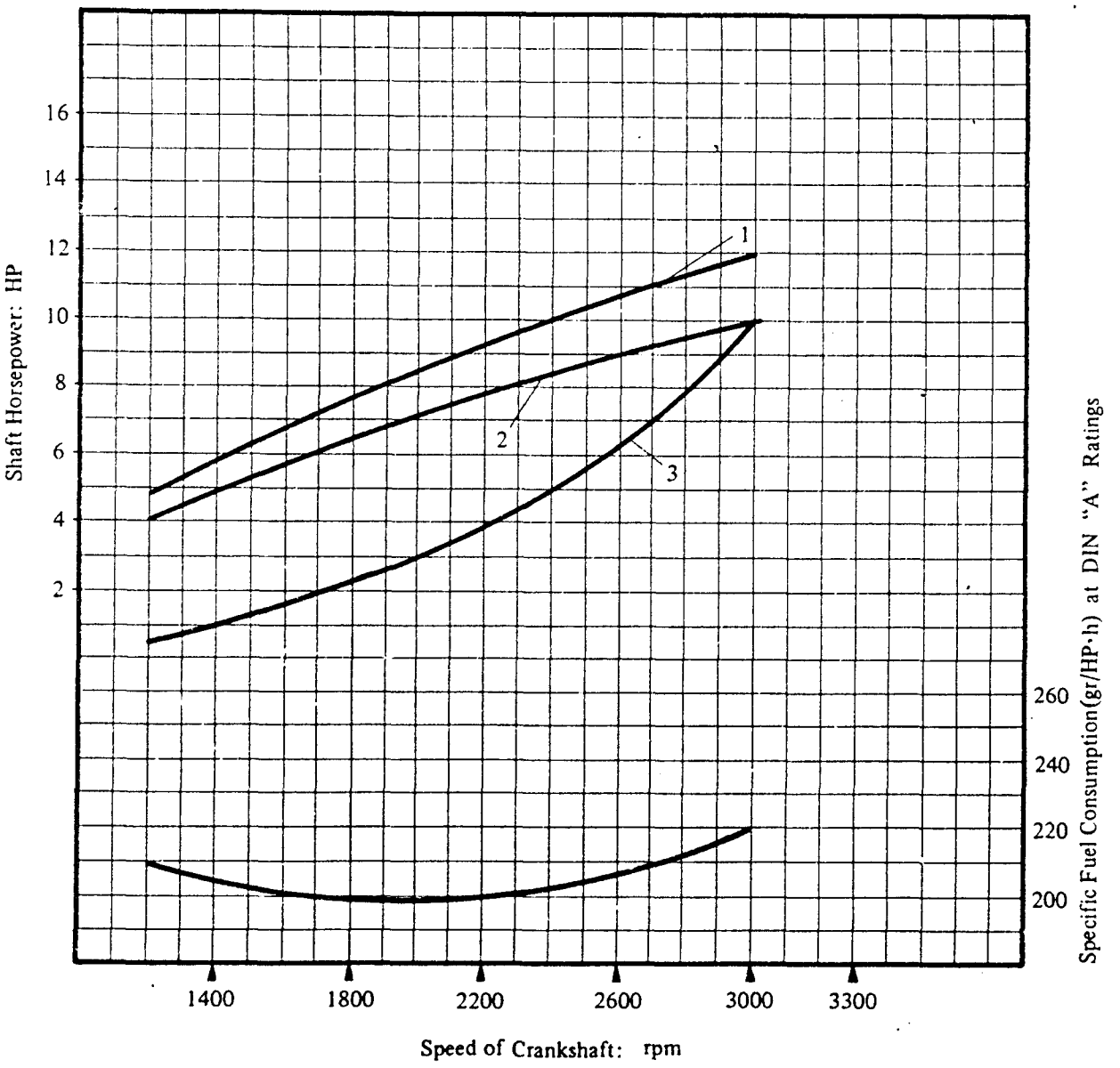


Model SVE12(G)

1 Continuous output "B" DIN 6270

2 Continuous output "A" DIN 6270

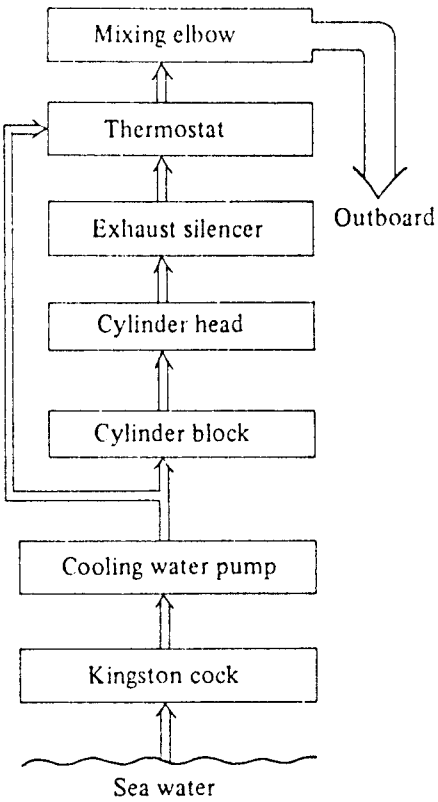
3 Propeller power



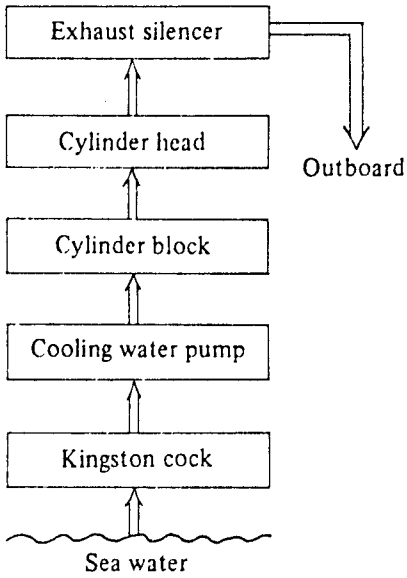
1–3. Flow Diagrams

1–3–1. Cooling Water Diagram

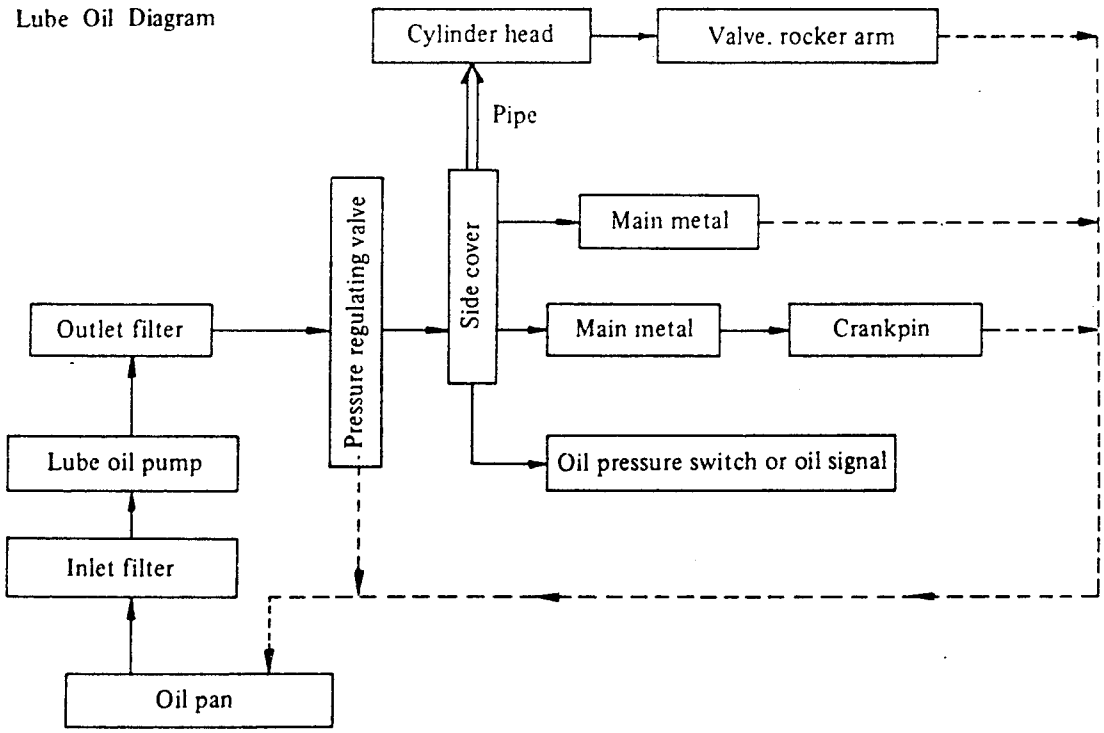
"X" type



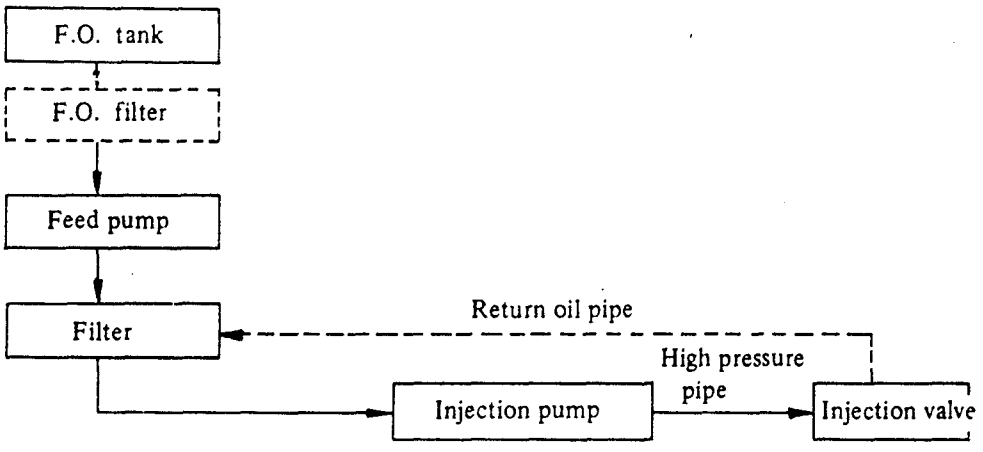
"Y" type



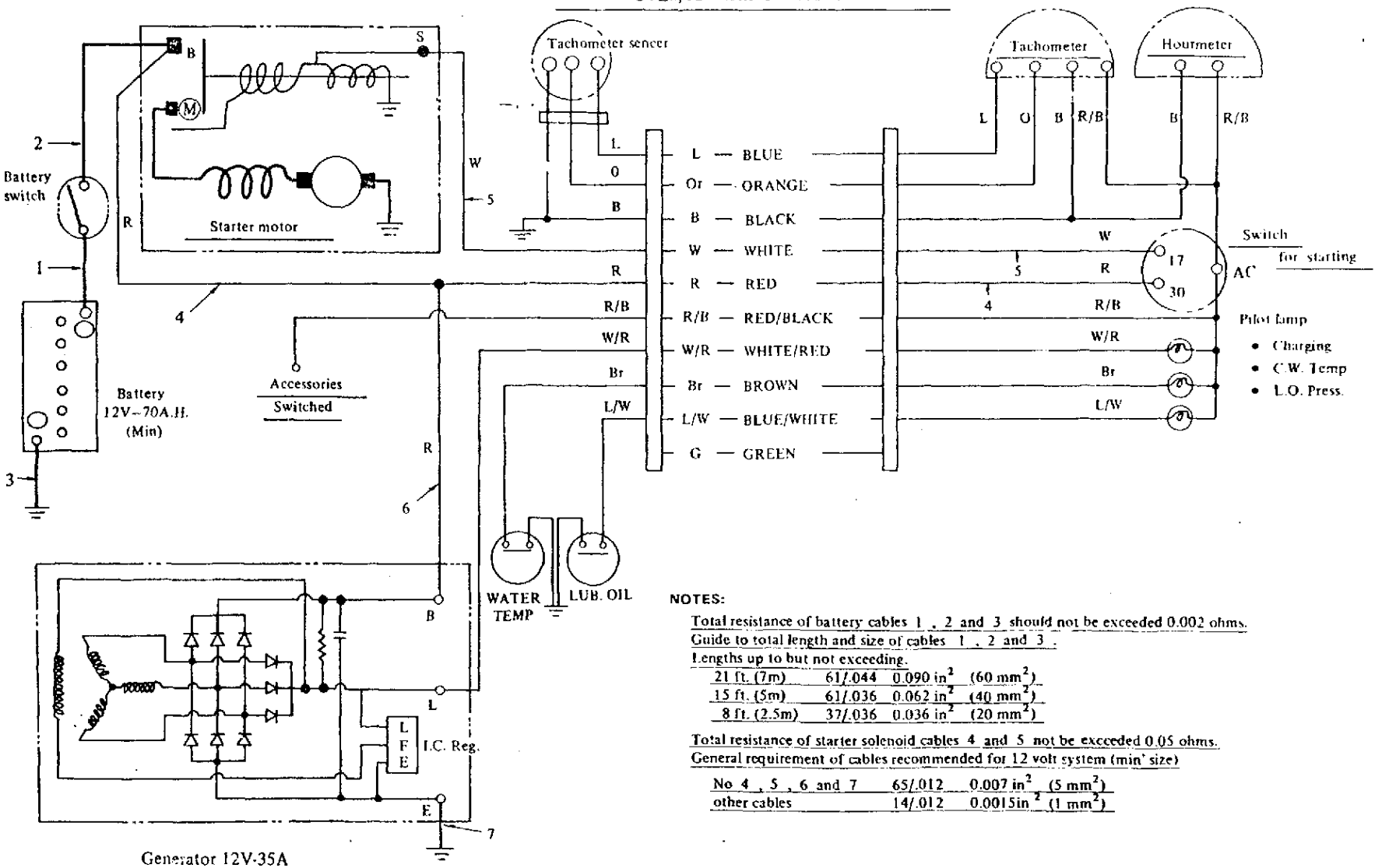
1–3–2. Lube Oil Diagram



1–3–3. Fuel Diagram



SVE8/12 WIRING DIAGRAM



NOTES:

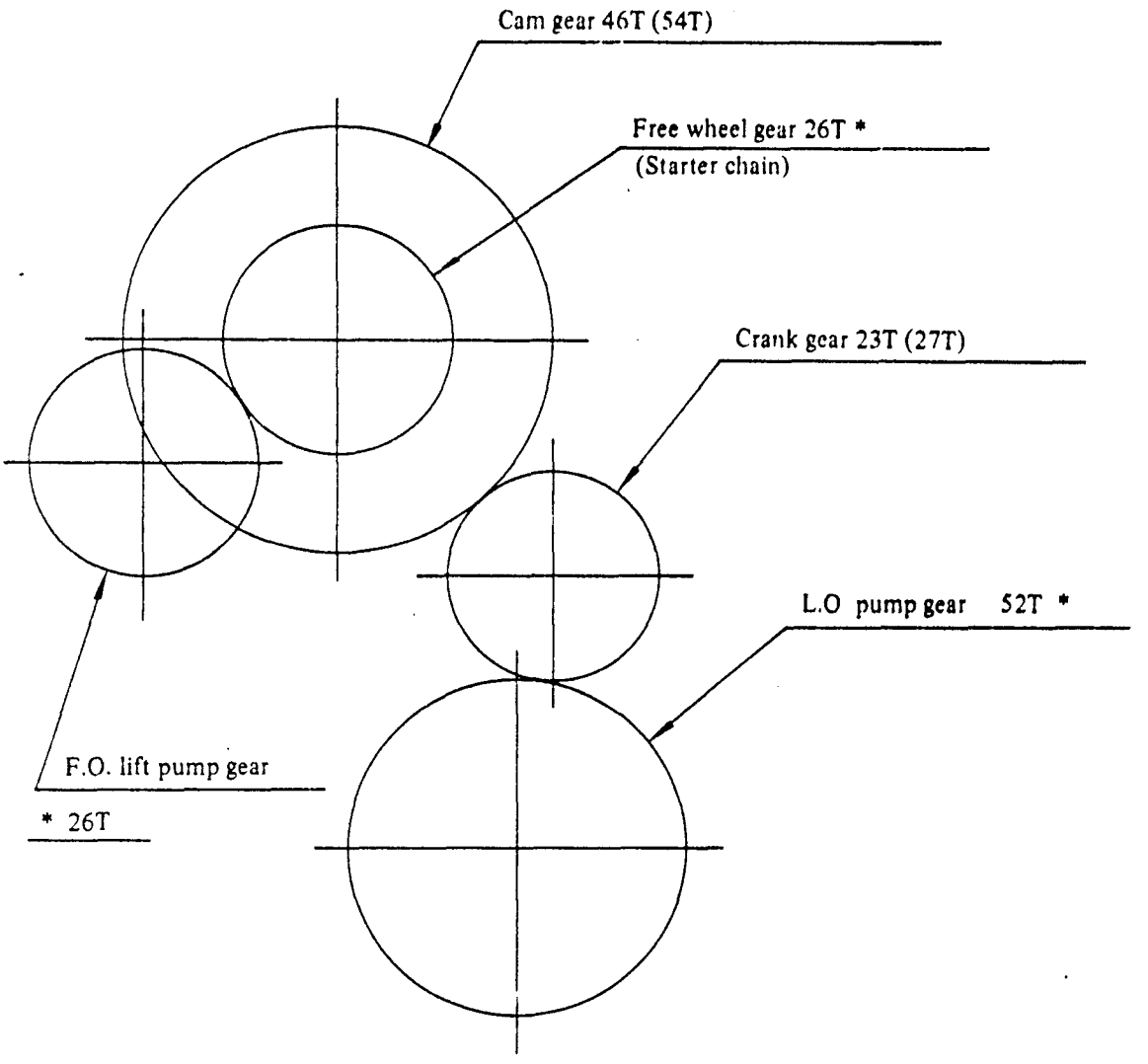
Total resistance of battery cables 1 , 2 and 3 should not be exceeded 0.002 ohms.
Guide to total length and size of cables 1 , 2 and 3 .
Lengths up to but not exceeding.

21 ft. (7m)	61/.044	0.090 in^2	(60 mm^2)
15 ft. (5m)	61/.036	0.062 in^2	(40 mm^2)
8 ft. (2.5m)	37/.036	0.036 in^2	(20 mm^2)

Total resistance of starter solenoid cables 4 and 5 not be exceeded 0.05 ohms.
General requirement of cables recommended for 12 volt system (min' size)

No 4 , 5 , 6 and 7	65/.012	0.007 in^2	(5 mm^2)
other cables	14/.012	0.0015 in^2	(1 mm^2)

1–3–5. GEAR TRAIN



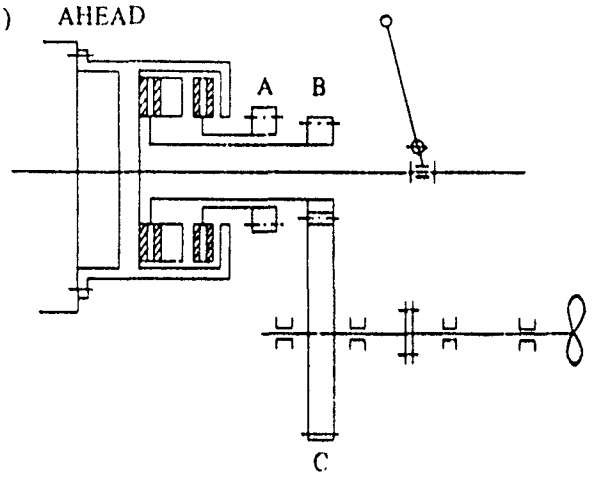
Figures without parentheses = Model SVE8

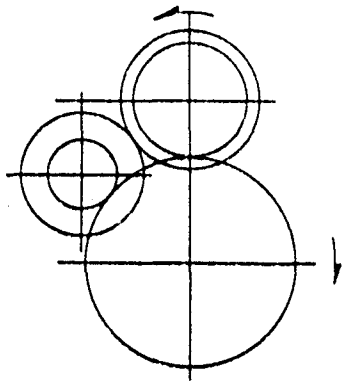
Figures in parentheses = Model SVE12

Mark with * = COMMON in each Model (SVE8 SVE12)

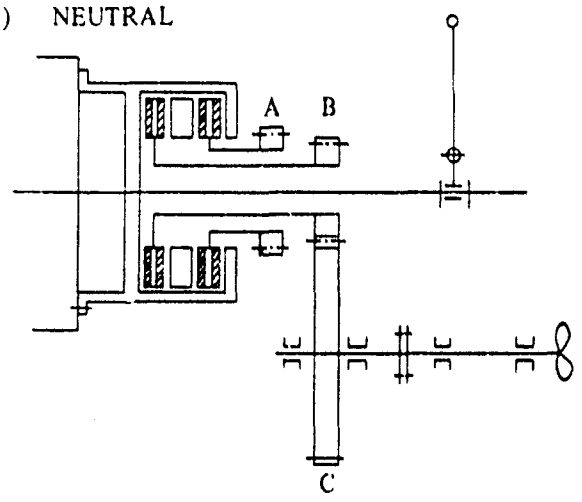
1–3–6. MARINE GEAR

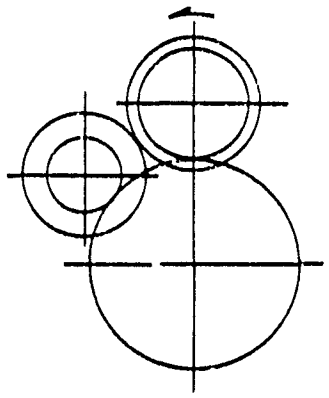
1) AHEAD



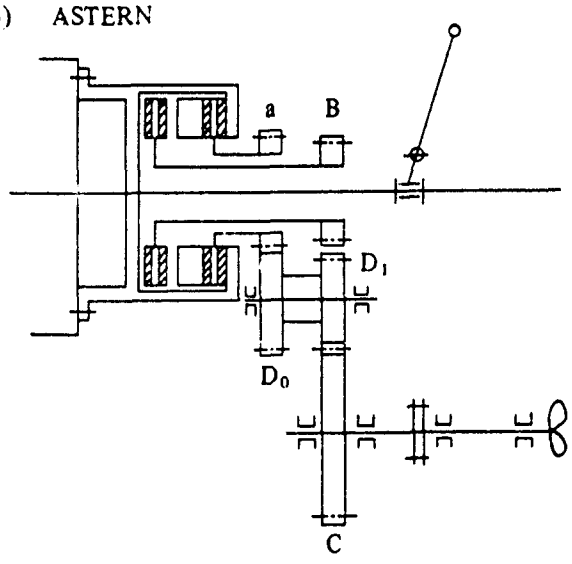


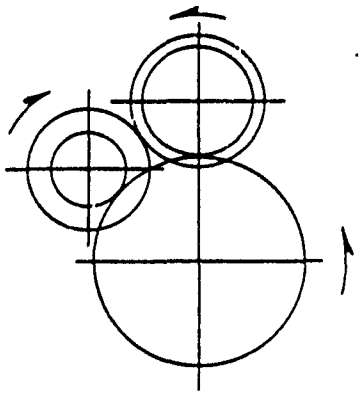
2) NEUTRAL





3) ASTERN





Description of mechanism

The four gears in the reduction reversing gear (one of which is a monoblock large and small gear) are usually meshed with each other and turning whenever the engine is operating.

(1) When moving ahead:

There are two friction discs. The power is transmitted to the left friction disc, then from gear A to gear C to drive the propeller shaft.

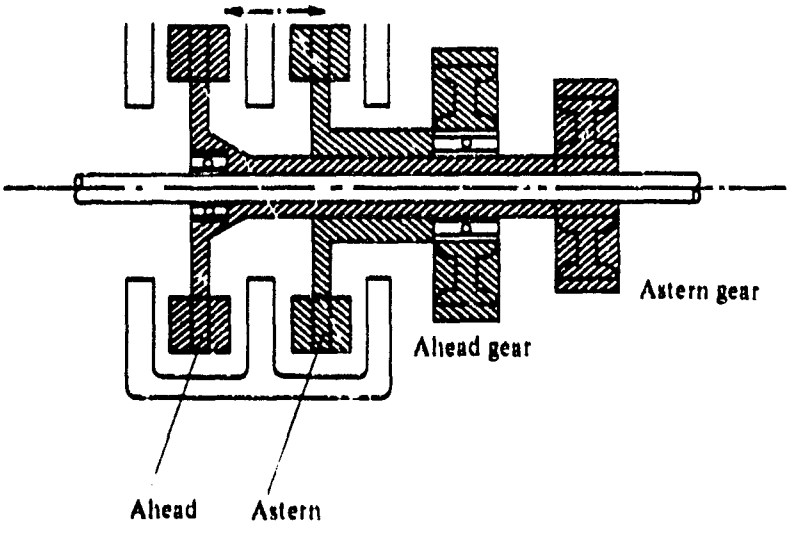
(2) When moving astern:

The power is transmitted to the right friction disc, and in turn to gear A, gear D (gears D_0 & D_1) and gear C, and drives the propeller shaft.

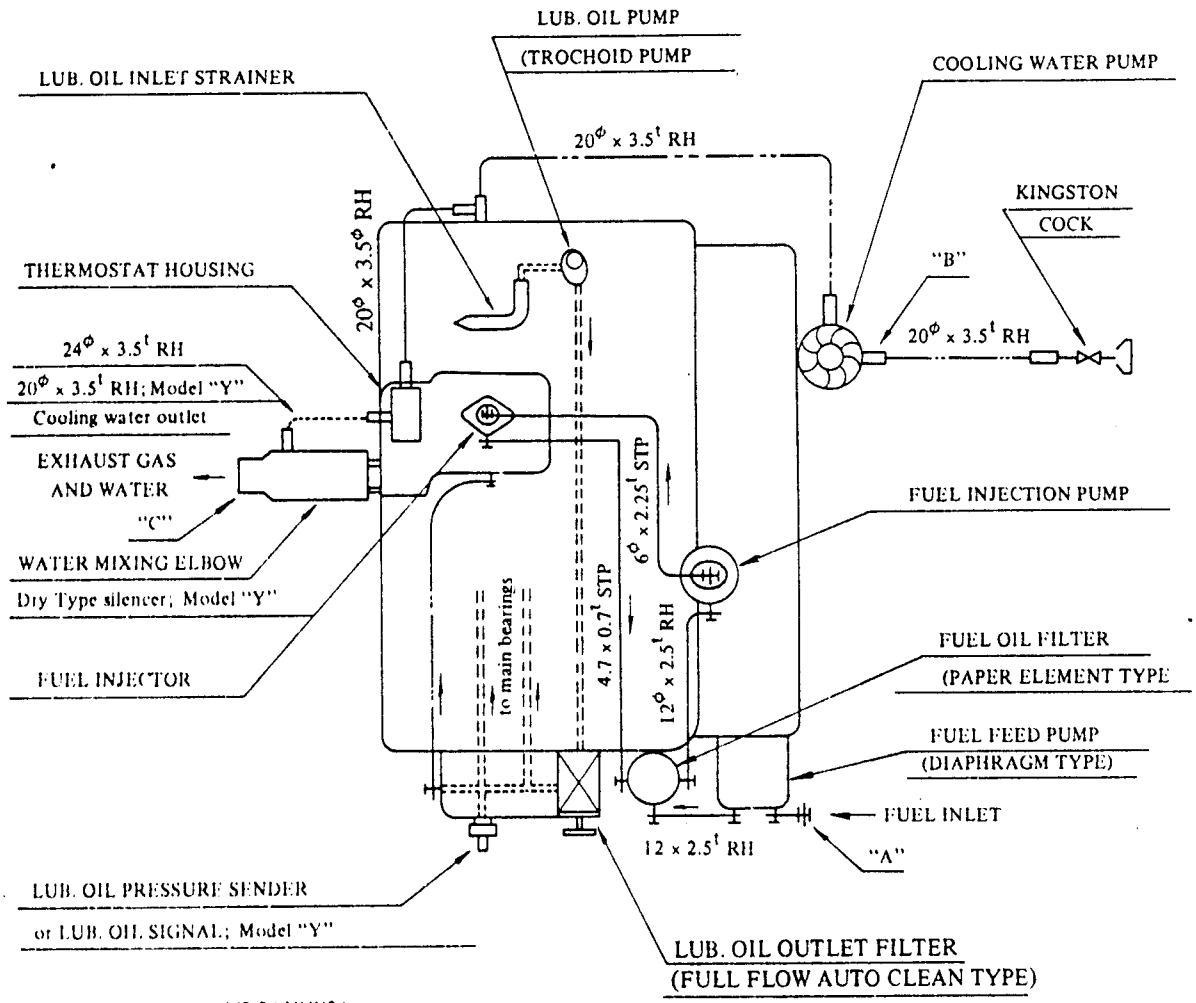
Thus, by operating, a gear lever, the right and left friction discs are used as appropriate, depending upon the transmission mode of ahead or astern. All gears are constant meshed type, and the friction discs are normally turning in opposite directions except in their neutral position.

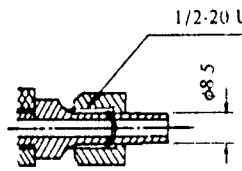
(3) When in neutral position:

The two friction discs are free from the friction plate, and gears A, B, C and D are all stationary even when the engine is running. A neutral positioning piece is furnished so as not to transmit power to between the friction plate and the friction discs. Therefore, "accompaniment" does not occur with the propeller shaft while the mechanism is in its neutral position.

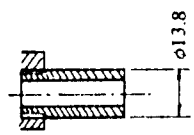


1–4. PIPING DIAGRAM

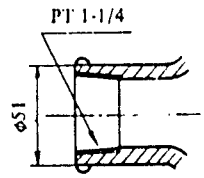




Detail of "A"



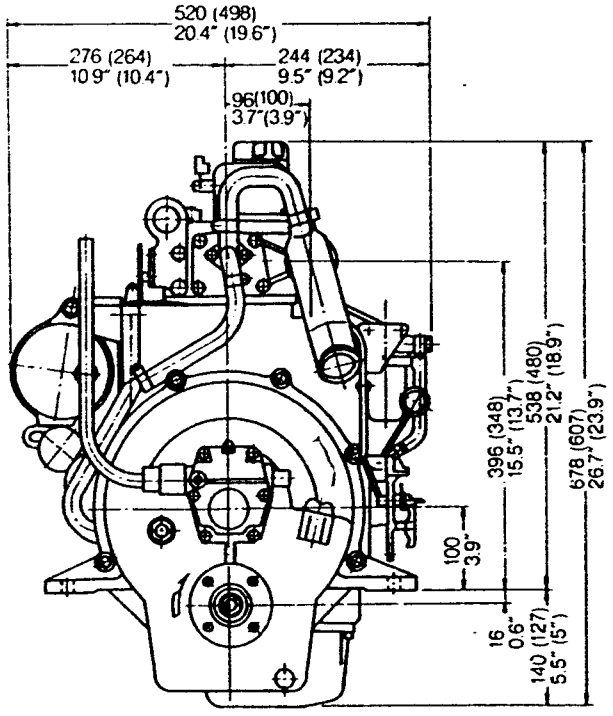
Detail of "B"

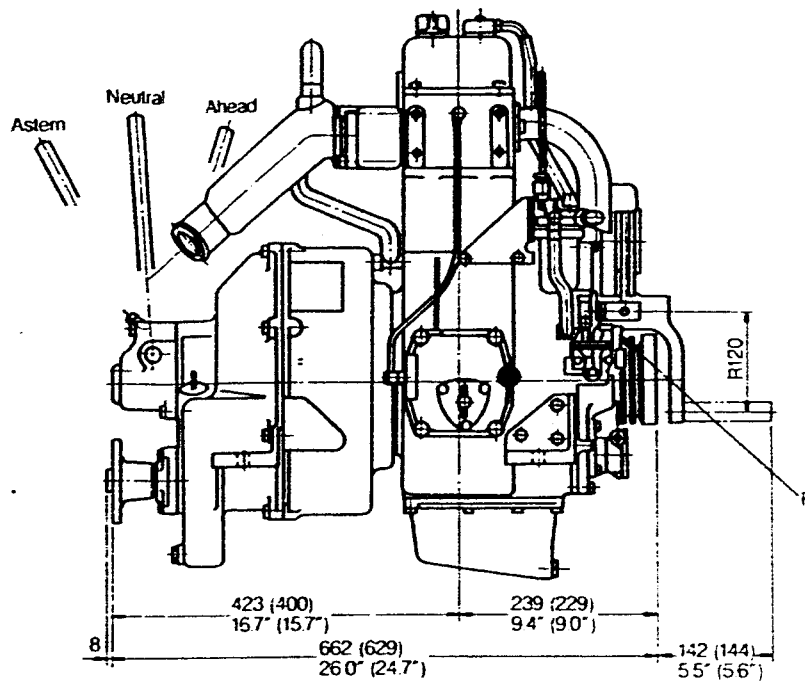


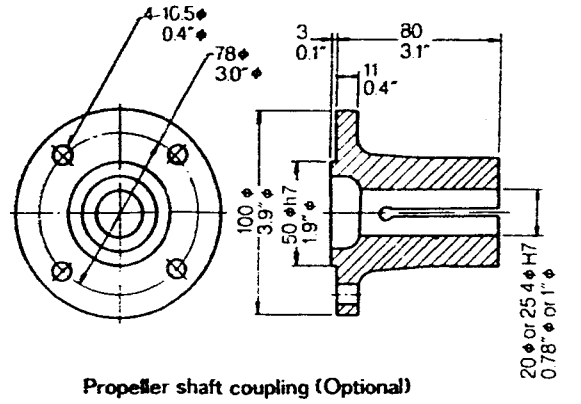
Detail of "C"

Marks of Piping	
———	Fuel oil piping
—·—	Lub. oil piping
—··—	Cooling water piping
=========	Drilling hole
———	Ball type joint
———	Screw type joint
———	Rubber hose Insertion type joint
STP	Steel pipe
RH	Rubber hose

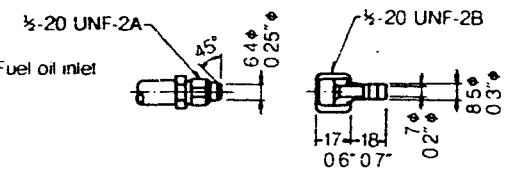
(Unit = mm) Note: Figures in parentheses = Model SVE8(G) only

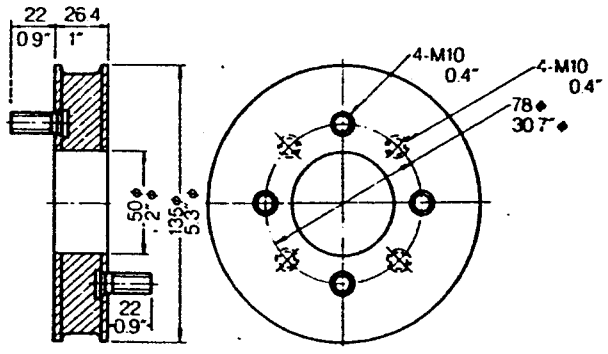




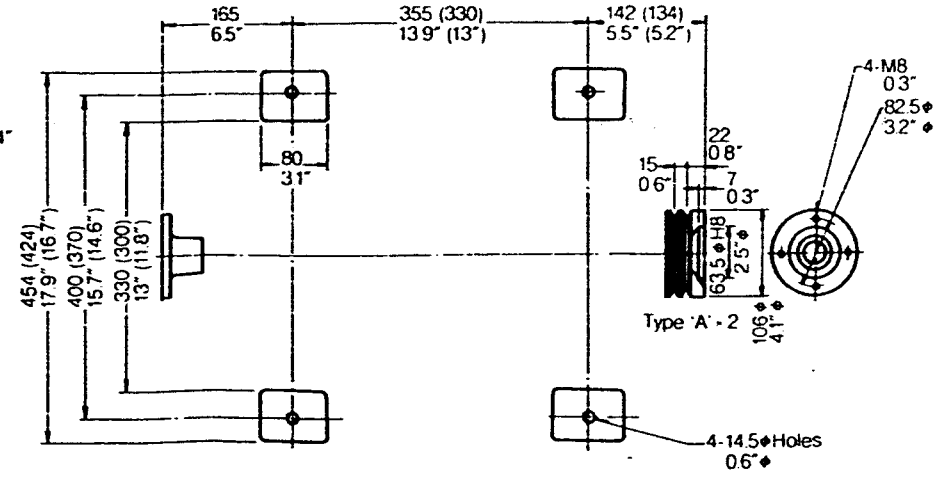


Propeller shaft coupling (Optional)

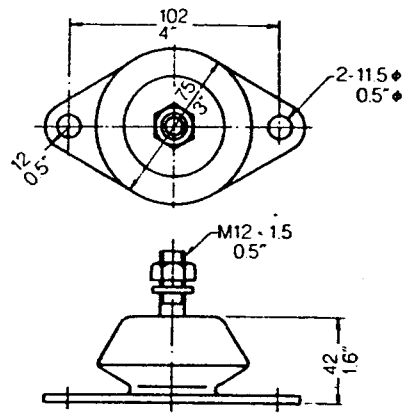




Detail of flexible coupling (Optional)



Detail of engine mount



Detail of flexible mounting (Optional)

1–6. Use of Front PTO Device

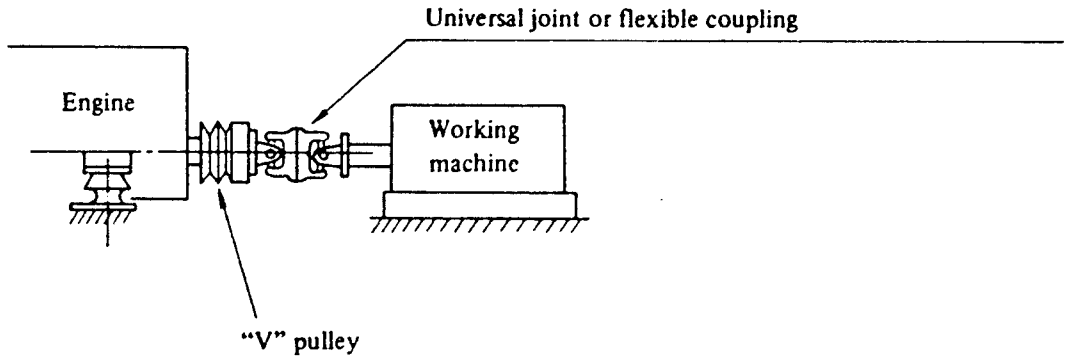
Due to the installation and structure of the engine, caution should be excercised regarding the following points when using the front PTO device.

1) If the engine is installed without flexible engine mounts, V-belts can be applied.

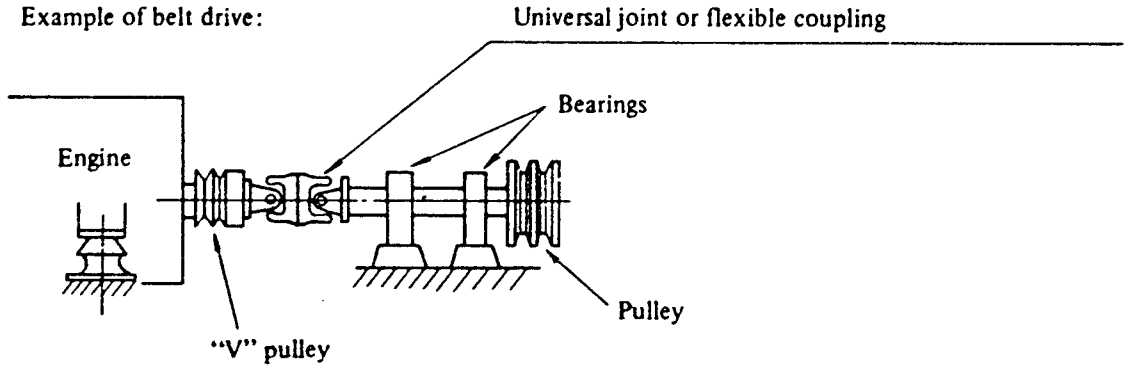
2) If the engine is mounted on flexible engine mounts, be sure to use a flexible coupling or a universal joint.

3) Refer to the graph for pullout output.

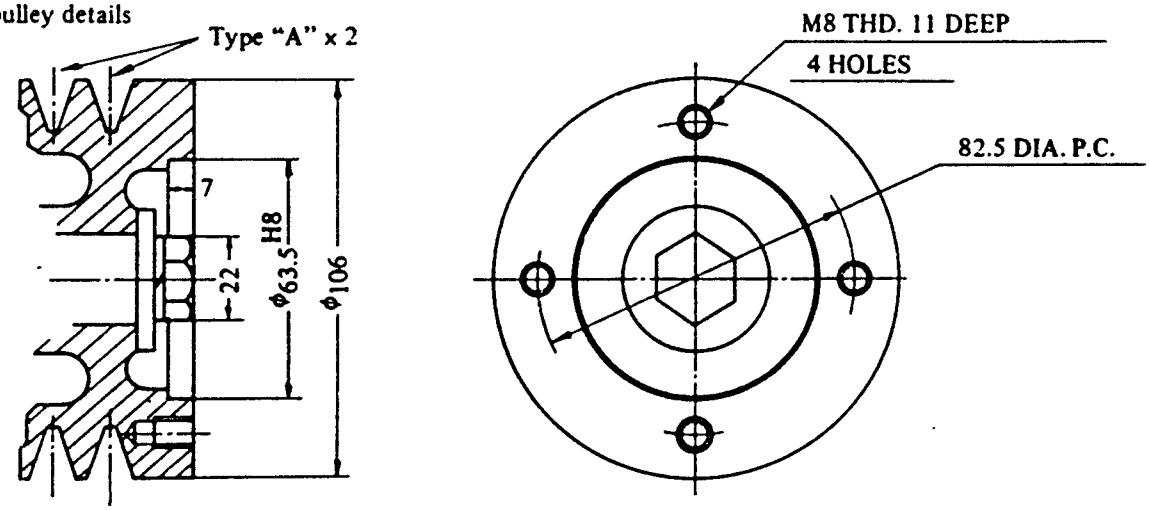
(1) Example of direct coupling to a working machine:



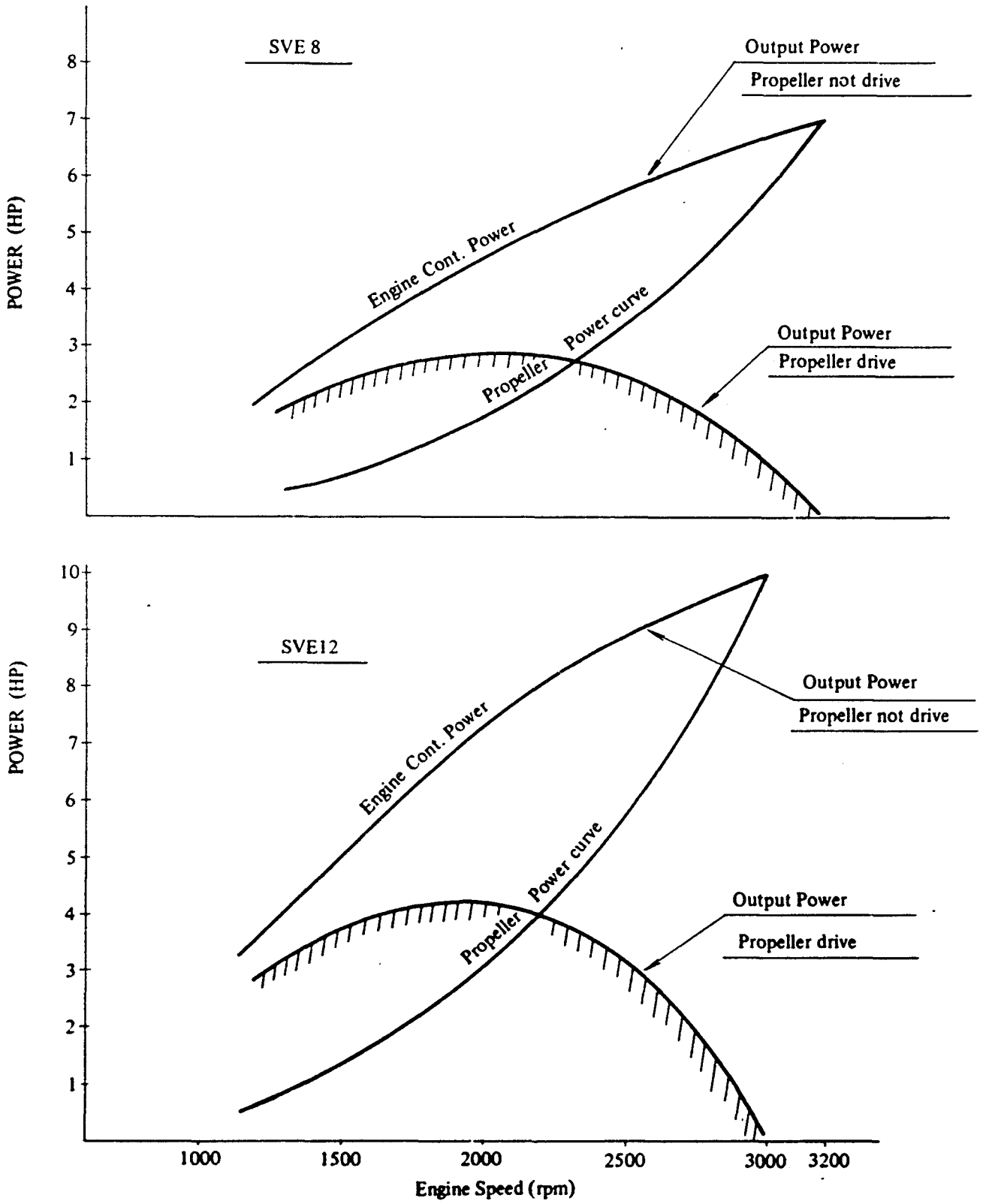
(2) Example of belt drive:



* V-pulley details

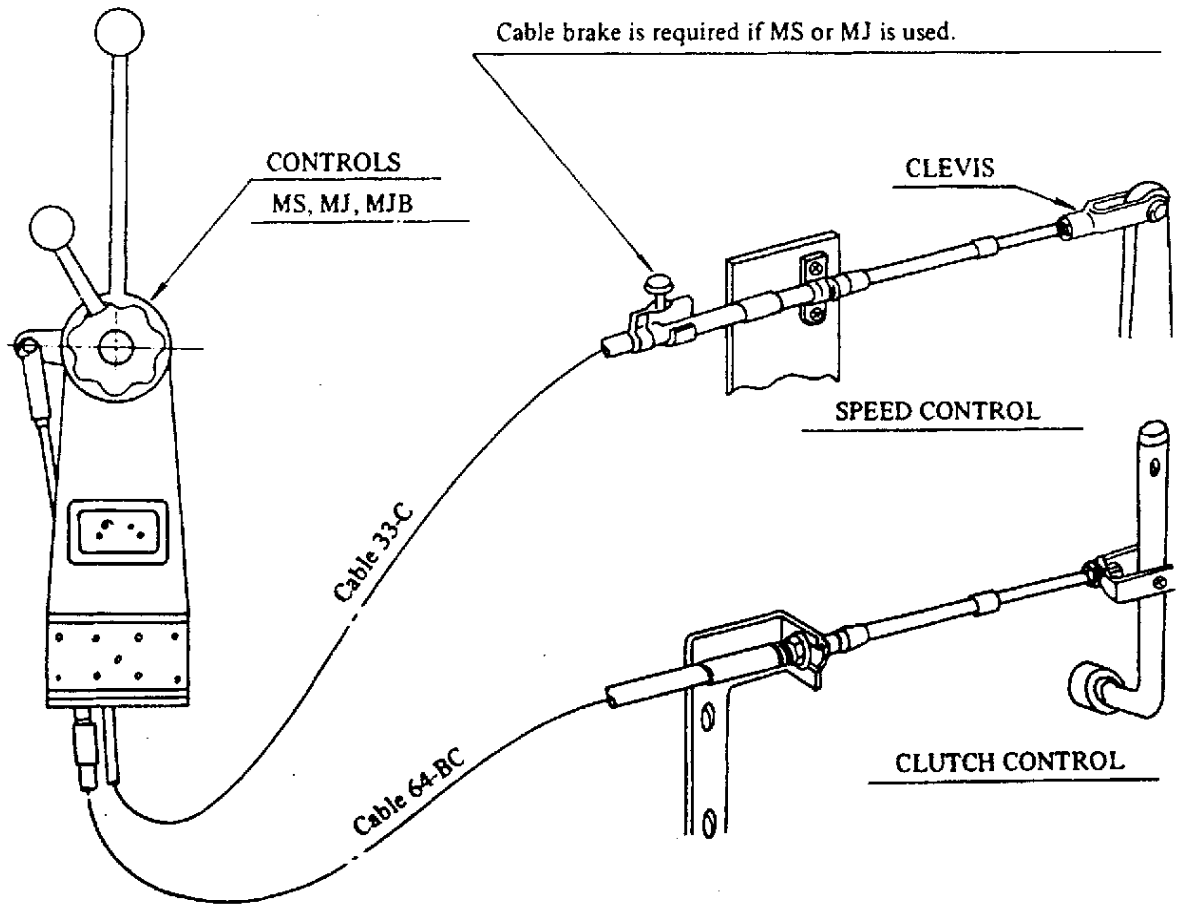


Front P.T.O. Output Power



1–7. Remote Control

DE COMPRESSION CONTROL	YANMAR ORIGINAL CABLES (3 m) No. 104214-03700
ENGINE SPEED CONTROL	MORSE CABLE 33-C CABLE CLAMP and SHIM A31804 CLEVIS A31800
CLUTCH CONTROL	MORSE CABLE 64-BC
CONTROLS	MORSE Two Lever Type MS MJ MJB



1–8. Accessories

○ : Standard

△ : Optional Extra

No.	System	Description	Type "X"	Type "Y"	Remarks
	Fuel system	F.O. tank assembly (20 ℓ) with piping	–	○	
		F.O. strainer	○	○	
		F.O. feed pump (mechanical)	○	–	
	Lubricating system	L.O. evacuation pump	△	△	
		Oil pressure switch	○	–	
	Cooling system	C.W. pump	○	○	
		C.W. temperature switch	○	–	
		Thermostat	○	–	
		Kingston cock and pipe	△	○	
		Bilge pump and strainer	△	–	
	Intake and exhaust system	Exhaust silencer assembly (small size)	○	–	
		Exhaust silencer assembly (large size)	–	○	
		Exhaust pipe	–	○	
		Elbow	○	○	
		U-type mixing elbow	○	–	
		Straight type mixing elbow	△	–	
		Intake pipe	○	○	
	Starting system	Manual starting system (camshaft starting)	○	–	
		Manual starting system (chain staring)	–	○	
		Electric starting device (Starting motor 12V – 1KW) (Alternator 12V– 35A)	○	–	
	Gauge board	Gauge board (with 3 m wire)	○	–	
		Extension cord (3 m)	△	–	
		Battery switch	△	–	
		Tachometer and tachometer sensor	△	–	

No.	System	Description	Type "X"	Type "Y"	Remarks
	Control system	Speed control bracket	○	○	
		Clutch control bracket	○	–	
		Decompression bracket	○	–	
		Decompression control cable	△	–	
		Speed control cable	–	○	With accele-lerator-lever
	Installation	Flexible mounting	△	–	
		Flexible coupling	△	–	
		Taper type solid coupling	△	○	
		Slit type coupling	△	–	
		Foundation bolt assembly	–	○	
		Foundation plate	△	–	
	Others	Standard tools for overhauling	○	○	
		Special tools for overhauling	△	△	
		Operation manual	○	○	
		Propeller	–	△	
		Keel type stern arrangement	△	△	
		* Spare parts kit	△	△	
		Packing kit	△	△	

* Spare parts kit (for one unit)

	Description	Quantity
1	Piston ring set	1 set
2	Gasket packing (cylinder head)	1
3	Gasket packing (exhaust silencer)	1
4	F.O. strainer element	1
*5	Oil pressure switch	1
*6	Water temperature switch	1
*7	Thermostat	1
8	F.O. injection nozzle	1 set
9	Anticorrosive zinc	1
*10	Lamp 12V – 3.4 W	3
11	C.W. pump impeller	1
12	V-belt (alternator)	1

"Y" type does not include * parts