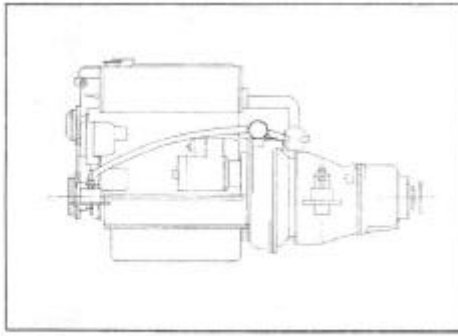
Operating Instructions for the PISCES 27, 40 and 60



FISKAR...INC...
759 West 16th Street
Costa Mesa, California 92627

Technical Data

Engine Model	27	40	60
Engine Type	Fresh-Water Cooled, 4 Cycle, Overhead Valve		
Output			
Horsepower (SAE) @ RPM	27 @ 2800	40 @ 2800	60 @ 3000
Maximum Torque, ft/lb (m-kg) @ 2000 RPM	51.6 (7.0)	76 (10.5)	98.3 (13.6)
Number of Cylinders	2	3	4
Displacement, Cubic Inches (C.C.)	72.3 (1184)	108.5 (1777)	144.5 (2369)
Bore x Stroke, Inches (mm)	3.39 x 4.02 (86 x 102)		
Compression Ratio	20:1		
Idle Speed, RPM	700		
Engine Rotation, Front of Engine	Clockwise		
Engine Wet Weight incl. ZF Reverse Gear lbs. (kg)	477	591	605
Engine Dimensions, LxWxH Inches	ZF—30.2x20.6x25.3	34.7x20.6x25.3	N/A
	B.W.—38.2x20.6x25.3	42.5x20.6x25.3	45.6x20.6x25.3
Maximum Engine Inclination	15°		
Fuel System			
Fuel Injection Timing @ 1000 RPM	18°	18°	14°
Firing Order	1-2	1-3-2	1-3-4-2
Fuel Injection Pump, Type	NP-PES-2A 65B	NP-PES-3A 65B	NP-PES 4A 65B
Fuel Injection Nozzle			
Type	NP-ONOSD211		
Opening Pressure P.S.I. (kg/cm²)	1706 (120)		

Technical Data

Engine Model	27	40	60
Fuel Requirements	#2, Amber Diesel Fuel		
Governor			
Type	Mechanical		
Setting RPM	2800	2800	3000
Cooling System			
Type	Thermostatically Controlled Fresh Water Cooling		
Capacity, Quarts (Liters)	5 (4.7)	7 (6.6)	8 (7.6)
Thermostat			
Begins To Open, °F (°C)	176° (80°)		
Is Fully Open, °F (°C)	190° (88°)		
Antifreeze			
Type	Permanent		
Required Amount, Quarts (Liters)	2.5 (2.4)	3.5 (3.3)	4.0 (3.8)
Pump, Raw Water			
Type	⅜" Neoprene Impeller		
Capacity, Gals./Min. (Liters)	8.5 (32) @ 2800 RPM		
Pump, Fresh Water			
Type, Centrifugal	6 Blade		
Capacity, Gals./Min. (Liters)	16 (60) @ 2800 RPM		
Lubrication System			
Capacity, Including Filter, Qts (Liters)	3.5 (3.3)	5.0 (4.8)	5.8 (5.5)
Quality (Diesel Service)	Series 3 API Spec CD		
Viscosity			
Above 80°F. (26.7°C)	SAE 40		
Below 80°F. (26.7°C)	SAE 30		
Pressure, Warm Engine, PSI (kg/cm)			
Idle	25-50 (1.75-3.51)		
Full Speed	40-60 (2.81-4.21)		

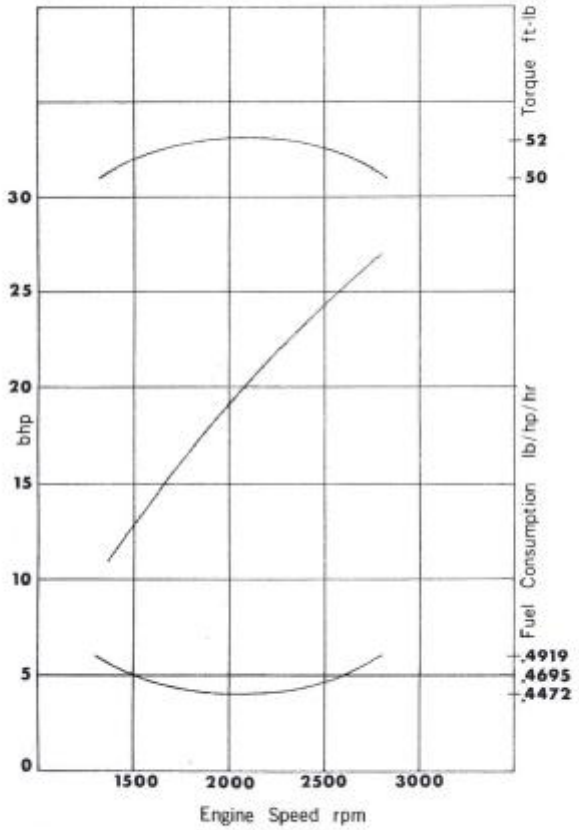
Technical Data

Engine Model	27	40	60
Valve Train			
Valve Clearance, Cold, Inches (mm) Intake and Exhaust		.018 (0.45)	
Electrical System			
Type (Negative Ground)		12V D. C.	
Battery, Recommended Rating, min. AH		120	
Alternator (Standard)			
Type — Motorola		MR 12 N 450 D	
Output, Amps (w)		35 (500)	
Alternator (Optional)			
Type — Motorola		MR 12 N 600 D	
Output, Amps (w)		55 (786)	
Starter Motor			
Type	Nikko MM 2		Hitachi S13-06
Output H.P. (w)	1.6 (1200)	2.4 (1800)	3.0 (2200)
Tightening Torques ft/lbs (m-kg)			
Cylinder Head Bolts		58 (8)	
Rocker Shaft Bolts		21-22 (2.9-3.1)	
Connecting Rod Bolts		56-59 (7.8-8.7)	
Main Bearing Cap Bolts		115-130 (16-18)	
Injector Sleeve		54 (7.5)	
Flywheel Bolts		56-59 (7.8-8.2)	
Crankcase Bolts		15 (2.1)	
Oil Pan Bolts		6 (.8)	

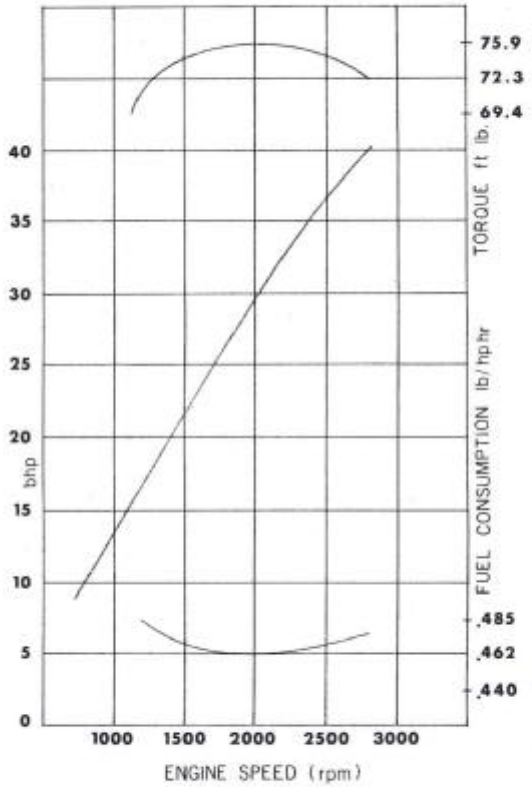
Technical Data

Engine Model	27	40	60
Crank Shaft Nut		108 (15)	
Reverse Gear			
Type, ZF			
Ratio, Forward	2.0:1	2.0:1	N/A
Ratio, Reverse	1.76:1	1.76:1	N/A
Fluid: Type API	SAE 90	SAE 90	N/A
Capacity, Pints (Liters)	.85 (.4)	.85 (.4)	N/A
Type, Borg Warner Model 70 C			
AS3-70 CR Ratio, Forward & Reverse		2.10:1	
AS14-70 CR Ratio, Forward & Reverse		2.57:1	
AS15-70 CR Ratio, Forward & Reverse		2.91:1	
AS7-70 CR Ratio, Forward & Reverse		1.9:1	
Fluid Capacity, Qts. (Liters)			
Level		2.5 (2.4)	
15° Inclination		2.7 (2.6)	
Type		ATF or 30 Wt. DS	

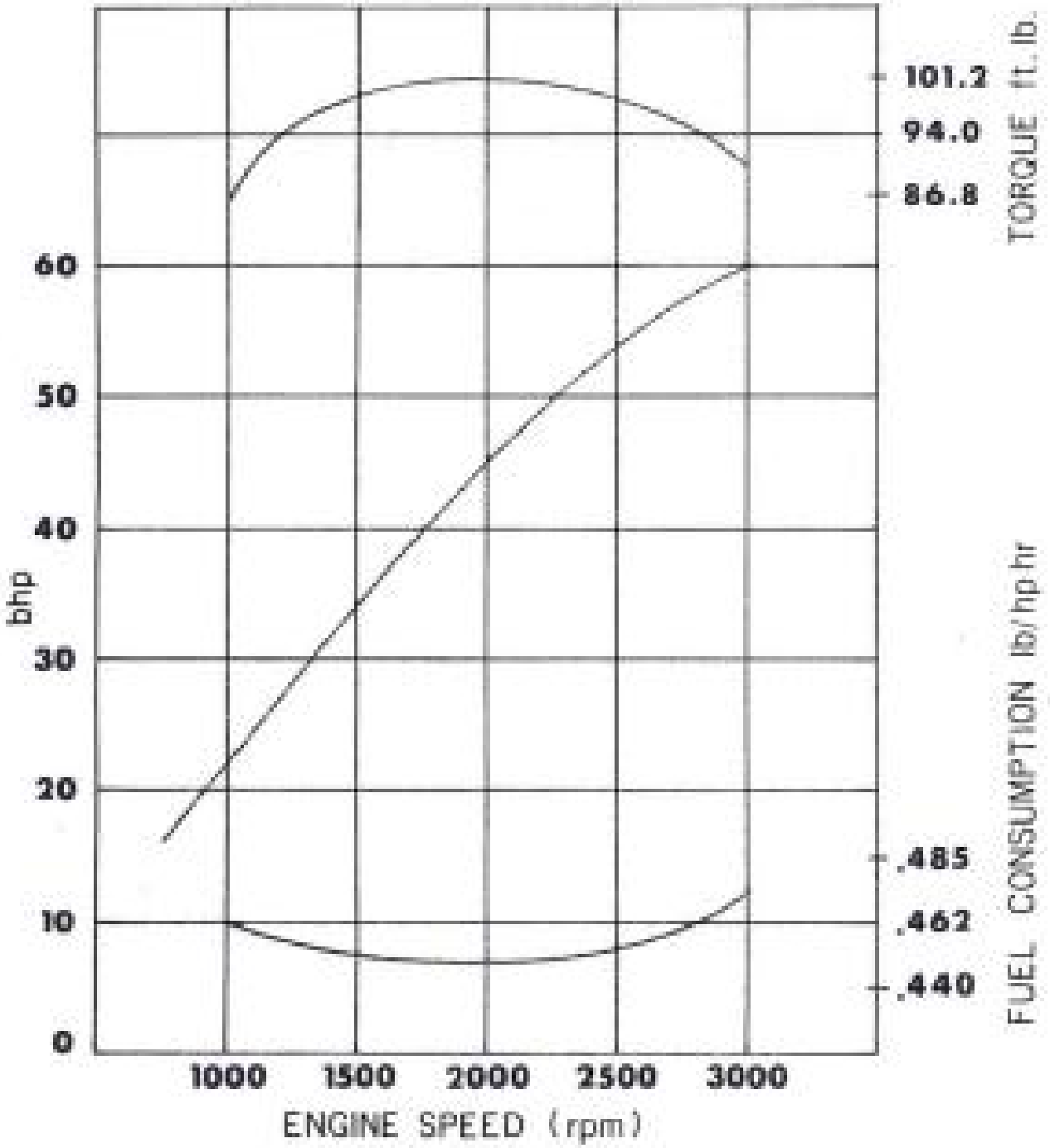
PISCES 27



PISCES 40



PISCES 60


101.2
94.0
86.8
TORQUE ft. lb.
60
50
40
30
20
10
0
bhp
.485
.462
.440
FUEL CONSUMPTION lb/hp hr
1000
1500
2000
2500
3000
ENGINE SPEED (rpm)