



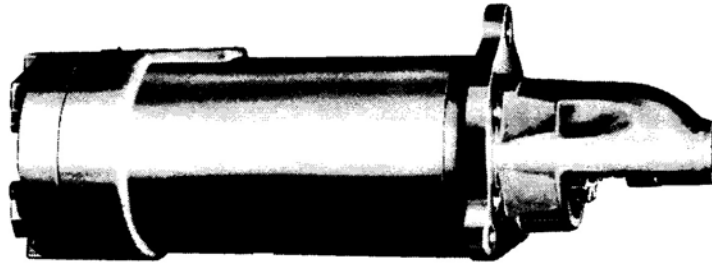
Engine Starting Systems

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Author: bs **Date:** 03-08-06
Approved: rs **Date:** 03-08-06
File: PC

CMD 3A 111

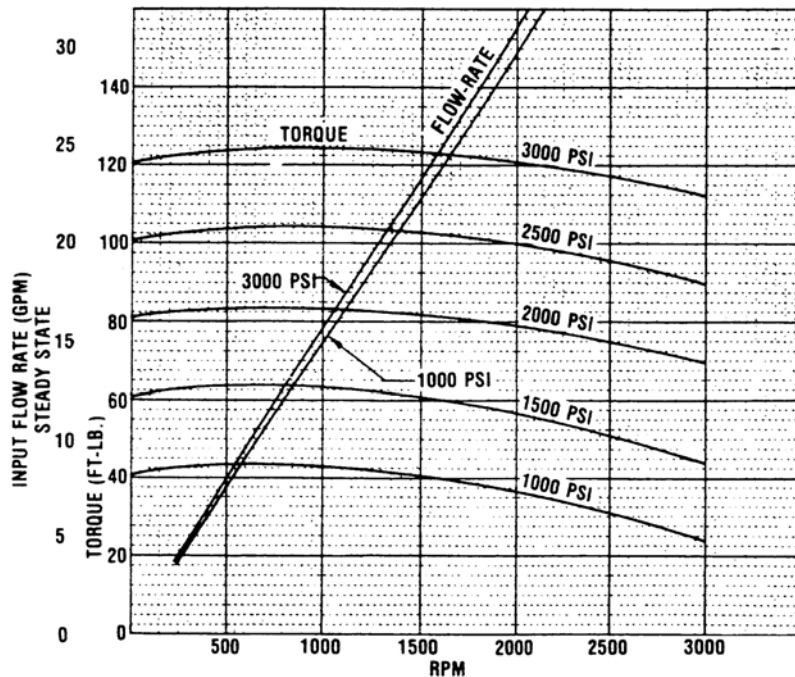
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CMD 3A Hydrotor Specifications

- Motor Housing Aluminum
- Pinion Housing Malleable Iron
- Cylinder Steel
- Piston Bronze
- Number of Pistons Seven
- Displacement 3.50 in³ (57.35 cm³)/Rev.
- Speed Range 0 to 4500 RPM
- Drive Type Inertia
- Maximum Working Pressure 3000 psi (207 bars)
- Rotation (Viewing Drive End) cw - standard, ccw - optional
- Duty Cycle Intermittent
- Weight 40.0 lbs (18.1 kgs)
- Overall Volumetric Efficiency 92 percent



Torque and Flow Rate vs Speed at Constant Inlet Pressure



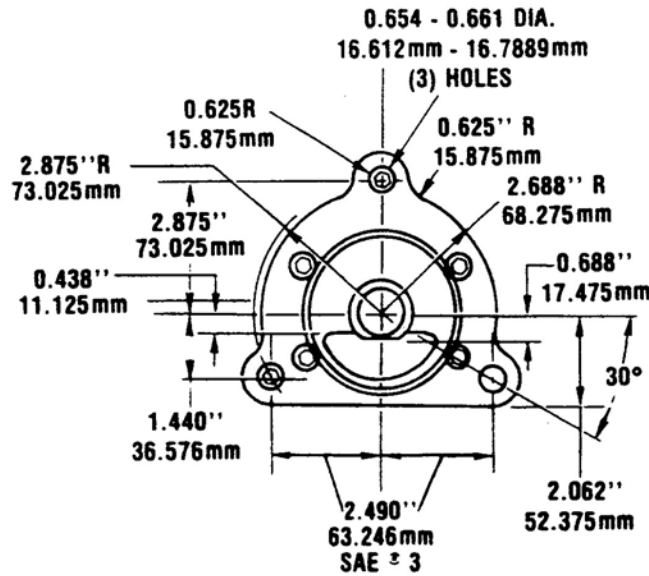
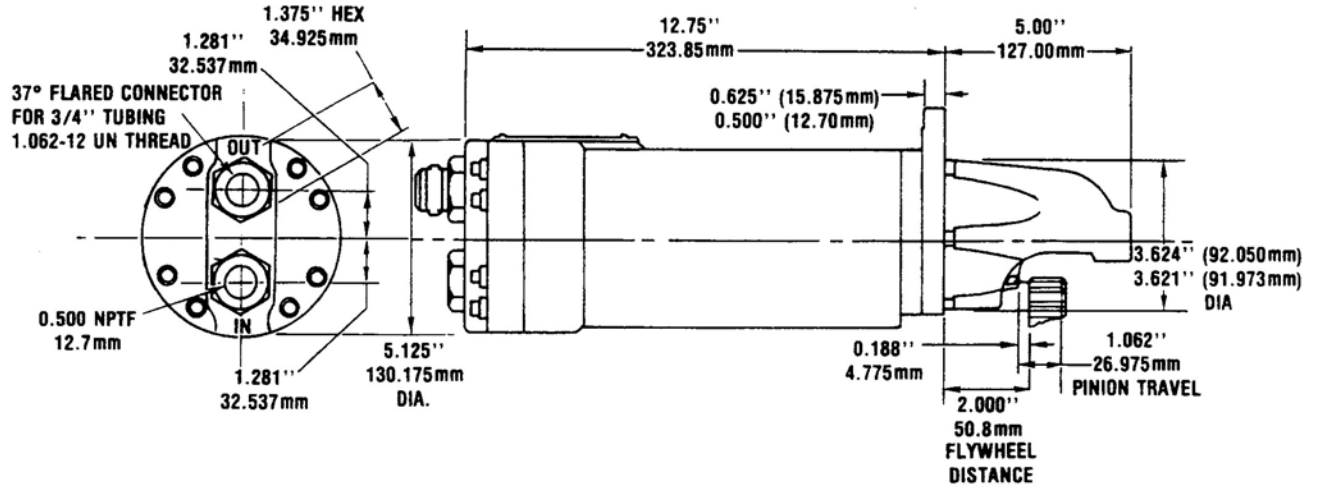
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Dimensions



Hydrotor Variations

MODEL TYPE	MOUNTING FLANGE TYPE	FLANGE TO RING GEAR DIMENSION INCHES (MM)	FLANGE MOUNTING HOLES INCH (MM)	NUMBER OF TEETH	DIAM-ETRAL PITCH	PINION O.D. INCHES (MM)	PRESSURE ANGLE	ROTA-TION	REMARKS
CMD 3A 111	SAE #3	2.00 (50.8)	.66 (16.8)	12	6/8	2.250 (57.150)	20°	CW	HELICAL PINION
CMD 3A 121	SAE #3	2.00 (50.8)	.66 (16.8)	11	6/8	2.325 (59.055)	20°	CW	
CMD 3A 231	SAE #3	2.00 (50.8)	.66 (16.8)	12	6/8	2.250 (57.150)	20°	CCW	
CMD 3A 8114	SAE #3	2.00 (50.8)	.66 (16.8)	12	6/8	2.250 (57.150)	20°	CW	CORROSION RESISTANT FIN
CMD 8A 8115	SAE #3	2.00 (50.8)	.66 (16.8)	12	6/8	2.250 (57.150)	20°	CCW	
CMD 3A 8142	SAE #3	2.00 (50.8)	.66 (16.8)	12	6/8	2.250 (57.150)	20°	CW	



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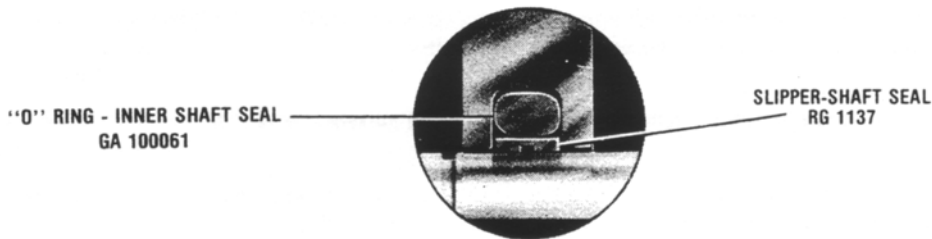
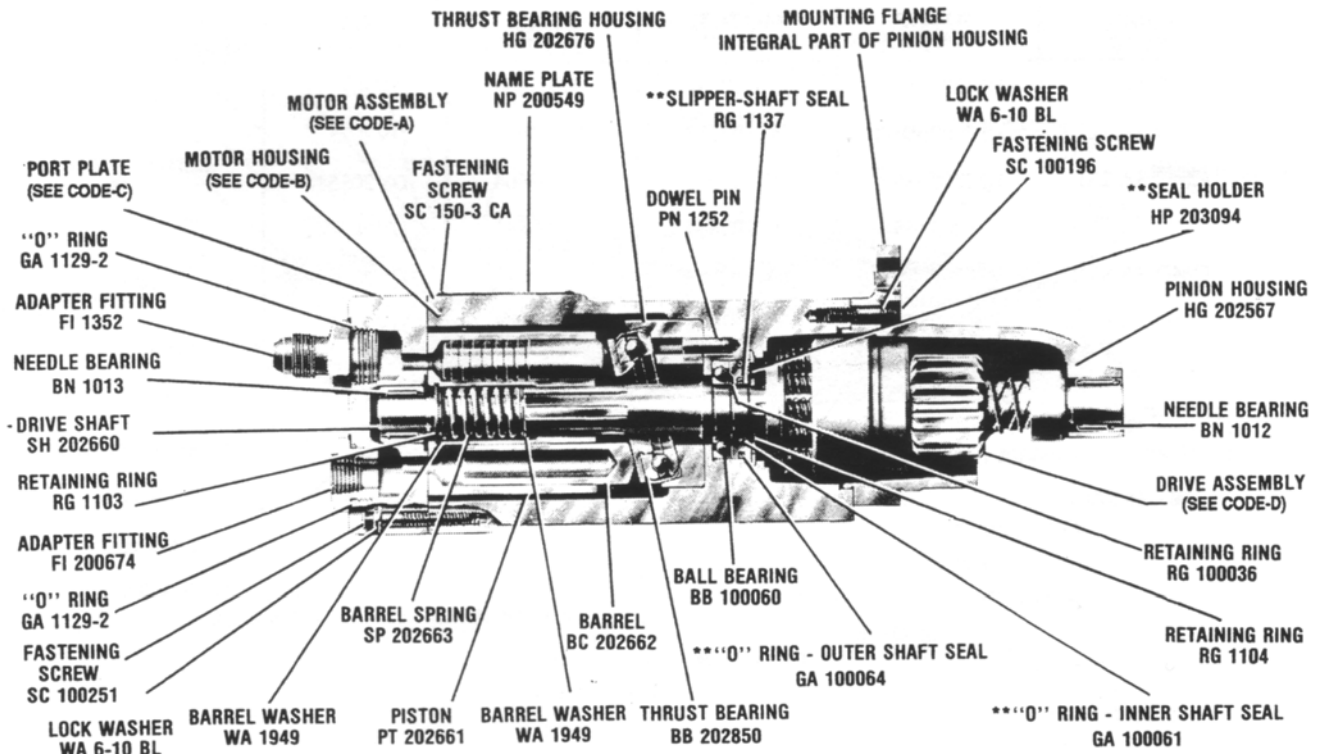
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Spare Parts



**The outer and inner 'O' ring seals, slipper shaft seal, and the seal holder have been replaced by a one piece seal; SE 403969.
 NOTE: 2 Woodruff keys KY 4-6 are not illustrated and are located on the drive shaft.

Code	Part Number
A	HM 202656-3
B	HG 202658
C	PL 202664
D	DV 202511