

HYDRAULIC PUMP DRIVES

Mobile equipment hydraulic pump drives engineered for the construction, forestry, petroleum, marine and agricultural markets.



Gear Products is a leading manufacturer of mechanical power transmission components for off-highway trucks, cranes and heavy equipment that serve the utility, petroleum, construction, agricultural, forestry, marine and mining industries. We distinguish ourselves by delivering *custom-engineered products quickly*—with the superior quality and long-lasting performance our customers have come to expect since 1957.

Gear Products offers one of the largest product ranges of its kind anywhere. Our planetary and worm gear winches, swing drives, auger drives, slewing ring bearings, rotators, gearboxes, and modular hydraulic pump drives are renowned for reliable operation and long-lasting performance, even under the toughest conditions. With the widest selection of gearboxes in the industry, Gear Products manufactures both single and multi-pump drives, giving our OEM customers added design flexibility to meet the needs of their customers.

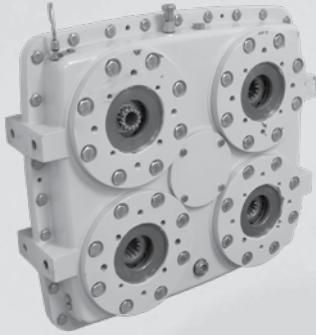
No matter how complex the requirements or application, Gear Products is dedicated to product excellence. Our attention to detail and customer responsiveness are quite simply unmatched. You might say the backbone of our success is a combination of the finest in man and machine— advanced technology, precision manufacturing, and a team of committed professionals all working in concert to keep world industry moving.

Now, as a part of TWG, Gear Products enters a new era of product excellence by expanding the breadth and depth of our product lines and making our components more available to dealer networks throughout the western hemisphere. With the strength, support and added capabilities we now enjoy, Gear Products is positioned to become an even greater force in engineering innovation.

Welcome to the next generation of Gear Products.



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IMPORTANT NOTICE

Disregarding system torsional compatibility can cause damage to components in the drive train, resulting in a loss of mobility for which the hydraulic pump drive is intended. At a minimum, system torsional incompatibility will result in undesirable noise and vibration at low speeds.

Gear Products, Inc. (GPI) recommends that a torsional vibration analysis of the pump drive/drive train system be performed on all new installations. Torsional vibration analysis can be made by the engine builder or by an independent consultant.

CAUTION!

Any user of enclosed gear drives should make certain they have the latest available data on the factors affecting the selection of a gear drive. When better load intensity information is available on drive or driven equipment, this should be considered when an application factor is selected. Reference AGMA 6010-F97 ANNEX A.

The factors to be considered are:

- 1. The driven equipment (cranes, blowers, etc.)***
- 2. The type of drive (turbines, gas or diesel engines)***
- 3. Load duration (duty cycle)***
- 4. A duty cycle should be submitted with your application data***

THERMAL CAPACITY

Gear Products strongly recommends that the gearbox be monitored for at least one hour after installation for noise levels and to assure no overheating occurs. When using SAE 90 wt. oil, the maximum allowable gear housing temperature is 220 degrees F (104 degrees C). It is suggested that the unit be monitored at normal operating conditions.

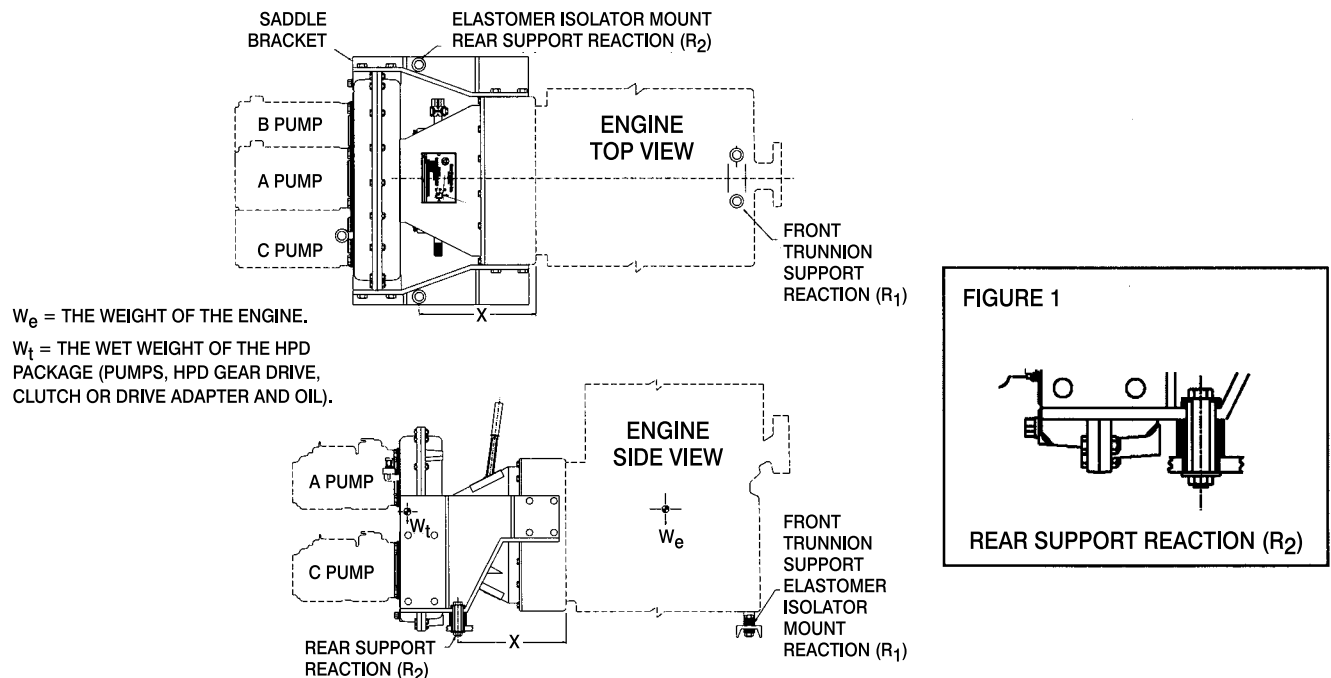
There are many factors that affect the thermal temperature ranging from ambient air and air flow, differential or adjoining member temperatures and cleanliness of the housing. Ratings may also be limited by the clutch ratings, line drives or pumps.

If overheating conditions occur, provisions should be considered for additional cooling. Contact Gear Products for recommendations.

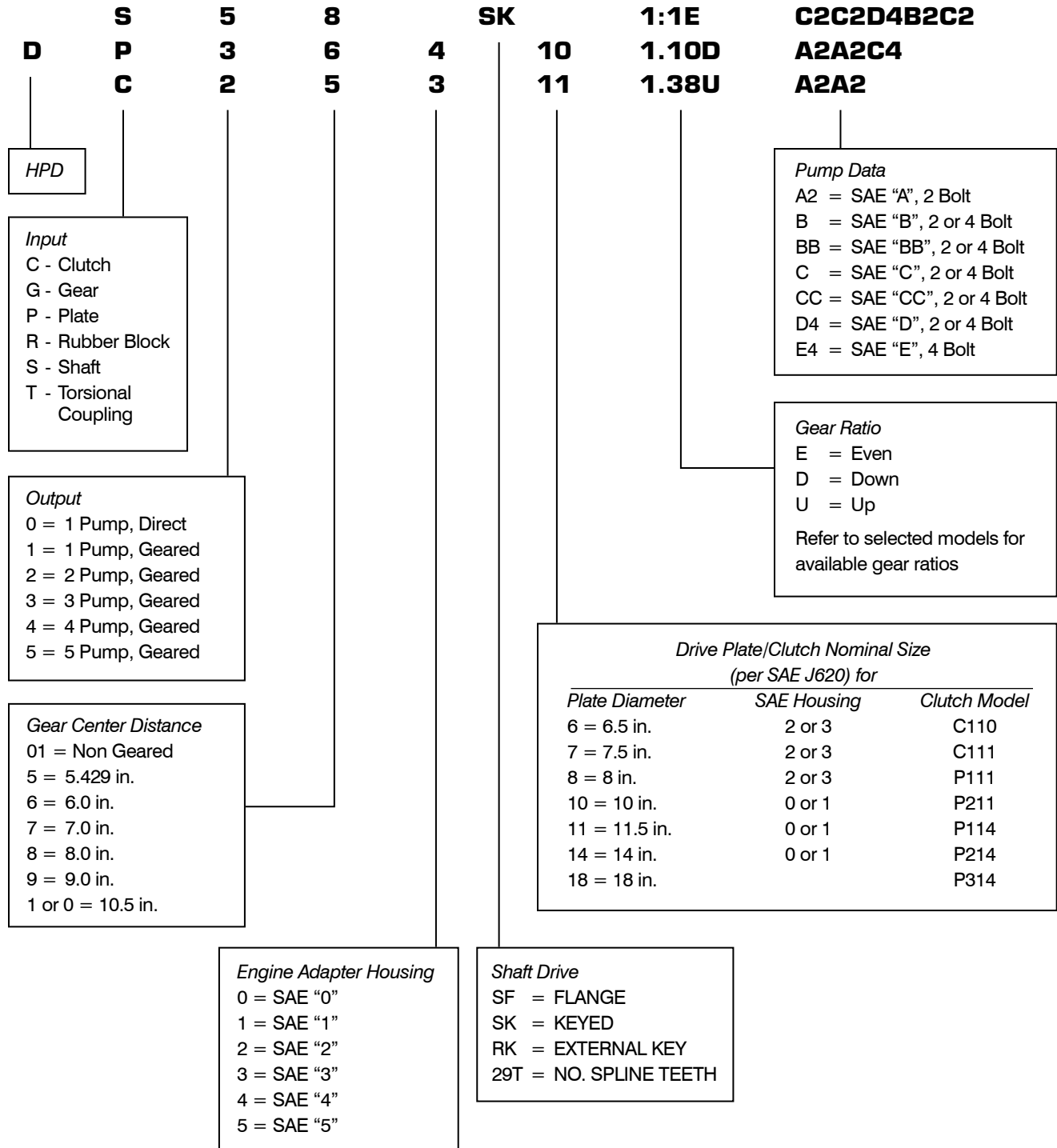
HYDRAULIC PUMP DRIVE ENGINE MOUNTING RECOMMENDATIONS

1. Obtain from the engine manufacturer a torsional vibration and bending fatigue analysis. Torsional vibration on the HPD will be furnished by GPI upon request.
2. A three (3) point elastomer isolator mount is recommended to prevent the engine and HPD from becoming a structural member of the equipment. For isolator selection and load analysis consult the isolator manufacturer.
3. Contact your engine manufacturer for flywheel housing bending moment data. A saddle mount bracket designed to accommodate the bending moment of the HPD package is suggested.
4. A one piece support bracket tying the HPD to the engine flywheel housing is recommended. The support bracket should be fabricated from 1/2" min. thick cold rolled plate, welded, stress relieved and machined. The support bracket bolt hole pattern should be established from approved drawings obtained from the engine manufacturer and GPI. The bolt hole diameters should not be greater than the attaching bolt diameter plus 1/32". The support bracket surfaces that mate to the flywheel housing and to the HPD housing must be milled flat and parallel.
5. The location of rear support isolators (R2) should be determined by calculation to produce a zero bending moment when the wet weight of the HPD and the hydraulic pumps are installed on the engine.
6. Please note, this type of installation procedure does not take into consideration dynamic shock loads or forces caused by very short hose lengths, etc.

Ref: Cummins Bul. 3382362. "Construction, Mining, Logging and Agricultural Installation Recommendation for Engine Mounting" (ref. fig. 5: determination of bending moment for saddle bracket transmission support).



MODEL CODE FOR HYDRAULIC PUMP DRIVES



Not all combinations can be built. Check with GPI Engineering for your requirements.

APPLICATION & INSTALLATION INFORMATION

Company Name _____

Address _____

Data Supplied By _____ Title _____ Date _____

Data Received By _____ Title _____ Date _____

Annual Production Requiring HPDs _____ Start-Up Date _____

Prototype Required Yes No Number _____ Required Date _____

Type of Equipment Industrial Marine Mobile

Engine Type and Manufacturer _____ Electric Motor _____ Other _____

Model No. _____ Horsepower _____ @ Full Load Gov. rpm _____

HPD Location Front Rear Remote

SAE Flywheel Housing Size (J620C) _____ SAE Flywheel Size (SAE J617) _____

Flywheel Offset ("G" Dimension SAE J617) _____

Pilot Bearing Size _____ HPD Input Drive _____

Clutch Size _____ Plate Size _____ Shaft Type _____ Rubber Block Size _____

Gear Ratio _____

Location A SAE Mount _____ Pump Make _____
Model _____ Shaft _____

B SAE Mount _____ Pump Make _____
Model _____ Shaft _____

C SAE Mount _____ Pump Make _____
Model _____ Shaft _____

D SAE Mount _____ Pump Make _____
Model _____ Shaft _____

E SAE Mount _____ Pump Make _____
Model _____ Shaft _____

DP01 SERIES

SPECIFICATIONS

Ratings may vary depending on duty cycle load and environment. Refer to SAE J744c information on page 43 or contact your pump supplier.

Gear Products Single Pump Direct Drives are available in three configurations.

Specifications are subject to change without notice.

FEATURES

- Drive Plate Pilots off O.D. of Flywheel Instead of Pilot Bore
- Hubs are Secured to the Flex Plate with Lock tited Capscrews Rather than Cold Rivets
- Heavy Duty Drive Plate

STANDARD DP01

Our standard model DP01, is available in a wide selection, 0-5 housings and A through F pump size.

ENGINE ADAPTER DIMENSIONS REF SAE J617							
SAE NO.	A	B	C	D	H	GG	UNIT WT
5	12.375	14.00	13.12	7/16	8	*	60
4	14.250	15.87	15.00	7/16	12	*	65
3	16.125	17.75	16.87	7/16	12	*	75
2	17.625	19.25	18.37	7/16	12	*	85
1	20.125	21.75	20.87	1/2	12	*	105
0	25.500	28.00	26.75	9/16	16	*	160

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	CC	E	F	G
6 1/2	8.500	7.875	5/16	6	1.18
7 1/2	9.500	8.75	3/8	8	1.18
8	10.375	9.62	7/16	6	2.43
10	12.375	11.62	7/16	8	2.12
11 1/2	13.875	13.12	7/16	8	1.56
14	18.375	17.25	9/16	8	1.00
18	22.500	21.37	11/16	6	.62

PUMP FLANGE DIMENSIONS REF SAE J744						30 DEG. INVOLUTE SPLINE	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	NO TEETH	PITCH
A	2	3.250	3/8-16	4.18	.62	9	16/32
B	2	4.000	1/2-13	5.75	.56	13	16/32
B	4	4.000	1/2-13	5.00	1.00	13	16/32
BB	2	4.000	1/2-13	5.75	.56	15	16/32
BB	4	4.000	1/2-13	5.00	1.00	15	16/32
C	2	5.000	5/8-11	7.12	.75	14	12/24
C	4	5.000	1/2-13	6.37	.75	14	12/24
CC	2	5.000	5/8-11	7.12	.75	17	12/24
CC	4	5.000	1/2-13	6.37	.75	17	12/24
D	2	6.000	3/4-10	9.00	1.00	13	8/16
D	4	6.000	3/4-10	9.00	1.00	13	8/16
E	4	6.500	3/4-10	12.50	.87	13	8/16
F	4	7.000	1-8	13.78	1.06	15	8/16

DP01 ZERO OFFSET

For tight fits GPI can put the pump face on the same plane as the bell housing face saving you as much as three inches over some competitors. Available in #3 housings, 10 or 11.5 inch flywheels and "C" pump adaption. Other sizes are available upon request.

ENGINE ADAPTER DIMENSIONS REF SAE J617							
SAE NO.	A	B	C	D	H	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	0	75

DRIVE PLATE/CLUTCH DRIVE RING					
NOMINAL CLUTCH AND DRIVE PLATE DIAMETER	BB	CC	E	F	G
10	12.375	11.62	7/16	8	2.12
11 1/2	13.875	13.12	7/16	8	1.56

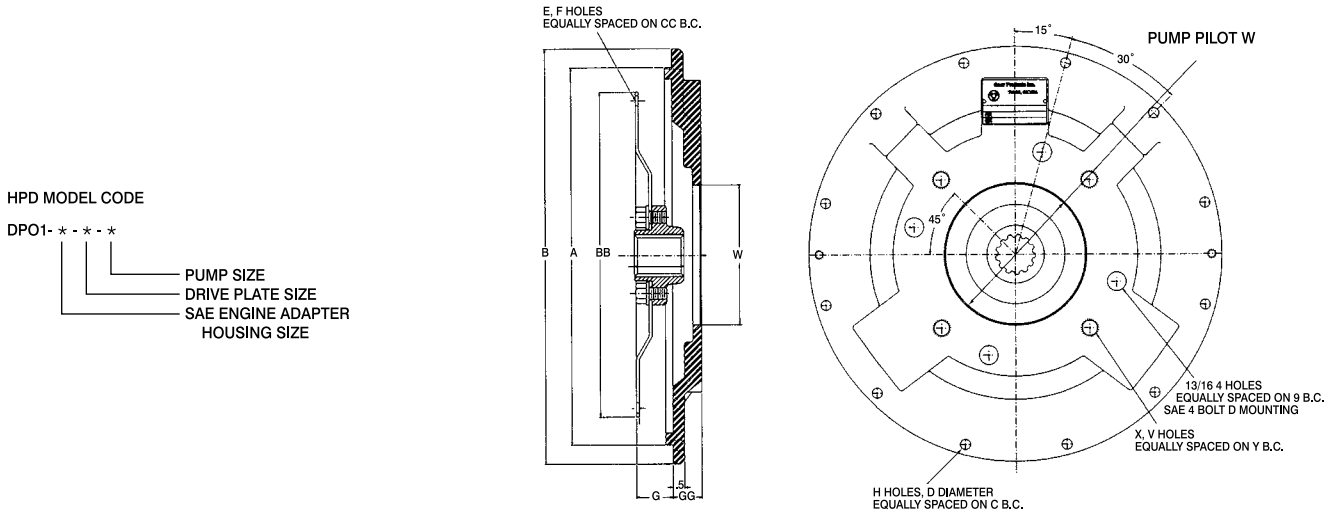
DP01 -5/8 NESTED OFFSET

Model DP01 (-5/8) allows the pump to be nested 5/8 inches inside the bell housing. this is very important when stacking pumps or in a confined engine compartment. Currently available in #3 housings, either 10 or 11.5 inch flywheel and B, BB, C and CC pump adaption. Other sizes are available upon request.

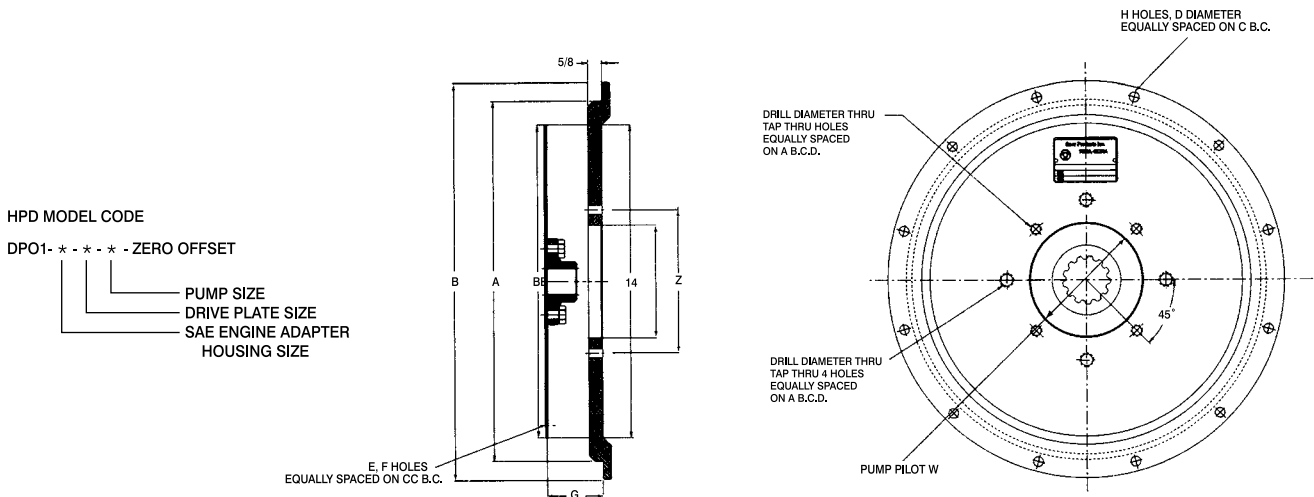
ENGINE ADAPTER DIMENSIONS REF SAE J617							
SAE NO.	A	B	C	D	H	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	-5/8	75

DRIVE PLATE/CLUTCH DRIVE RING					
NOMINAL CLUTCH AND DRIVE PLATE DIAMETER	BB	CC	E	F	G
10	12.375	11.62	7/16	8	1.56
11 1/2	13.875	13.12	7/16	8	1.56

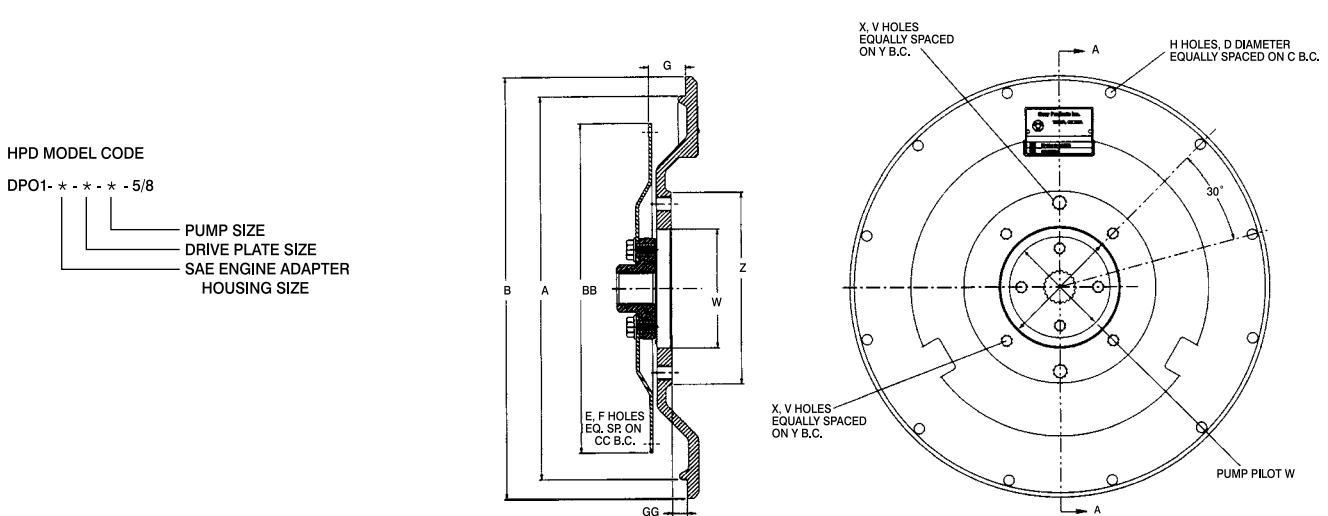
STANDARD MODEL DP01



ZERO OFFSET PUTS PUMP FACE AND BELL HOUSING FACE ON SAME PLANE



NESTED OFFSET PUTS PUMP 5/8 INCH INSIDE BELL HOUSING FACE



MODEL DC01

SPECIFICATIONS

Input Torque: Clutch Dependent

Input Speed: Clutch Dependent

Specifications are subject to change without notice.

FEATURES

- Engine Wise Rotation

MODEL DC01 FOR P111 AND LARGER CLUTCHES

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617							
SAE NO.	A	B	C	D	H	M	P
3	16.125	17.75	16.87	7/16	12	9.37	3/8
2	17.625	19.25	18.37	7/16	12	9.37	3/8
1	20.125	21.75	20.87	1/2	12	11.37	7/16
0	25.500	28.00	26.75	9/16	16	11.37	1/2

CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15	15.38	3	3 3/16	1540	175
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15	15.38	3 3/4	4 3/16	1930	185
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	305
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	315
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	330

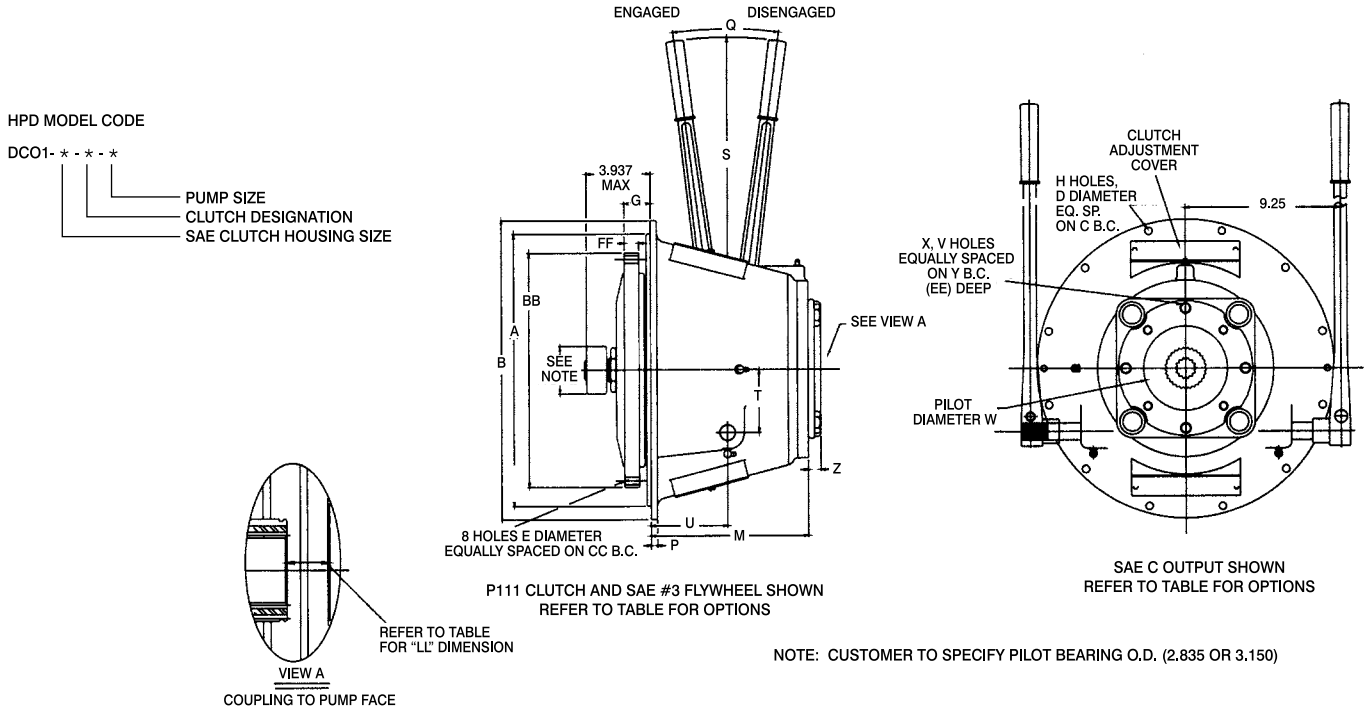
MODEL DC01 FOR C111 CLUTCH

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617							
SAE NO.	A	B	C	D	H	M	P
3	16.125	17.75	16.87	7/16	12	3/8	3/8

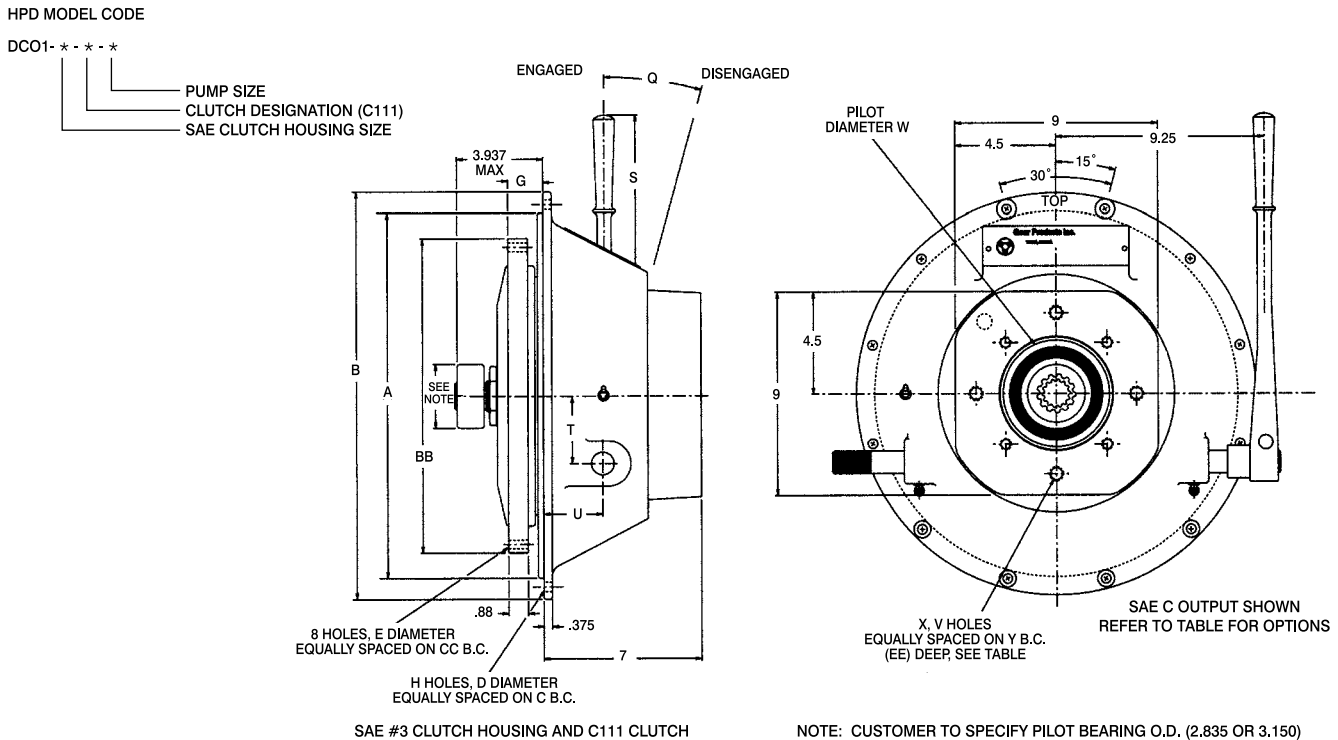
CLUTCH INSTALLATION DATA														
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	G	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)	
2 or 3	C111	2850	387	13.875	13.12	7/16	1.56	15	15.38	3.00	2.625	1270	160	

MODEL DC01 FOR P111 AND LARGER CLUTCH

HANDLE SHOWN IN STANDARD LOCATION
CAN BE REPOSITIONED IN 7 1/2 DEGREE INCREMENTS



MODEL DC01 WITH C111 CLUTCH



D*16 SERIES

SPECIFICATIONS

Input Torque: 689 ft-lb (max)

Horsepower: 328 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 175 lbs (gearbox only)

Oil Capacity Approximately 1.5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Output Can Be @ 3, 6, 9 or 12 o'clock (Standard is 12 o'clock as shown)**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3 (C110)	16.125	17.75	16.87	7/16	12	6.25	3/8	11.25
3 (C110)	16.125	17.75	16.87	7/16	12	6.25	3/8	11.25
3	16.125	17.75	16.87	7/16	12	10.62	3/8	15.62
2	17.625	19.25	18.37	7/16	12	10.62	3/8	15.62
1	20.125	21.75	20.87	1/2	12	12.62	7/16	17.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1 E	3000	3000
1.14 UD	2625	3000
1.40 UD	2140	3000
1.50 UD	2000	3000
1.73 UD	1735	3000
1.86 UD	1613	3000
2.00 U	1500	3000
2.16 U	1389	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
6 1/2	8.500	3/8	6	1.19	7.87
7 1/2	9.500	3/8	8	1.19	8.75
8	10.375	7/16	6	2.44	9.62
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
5	12.375	14.00	13.12	7/16	8	7.50	1/2	2.50	1 1/4	280
4	14.250	15.88	15.00	7/16	12	7.50	1/2	2.50	1 1/4	285
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.115	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320

CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
3	C110	2675	328	12.375	11.62	7/16	0.88	2.12	2.835	15 1/2	15.38	3	2	1270	275
3	C111	2325	387	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	2 5/8	1270	290
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	325
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	23.38	3 3/4	4 3/16	1930	350
1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	400
1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	450

MODEL DP16

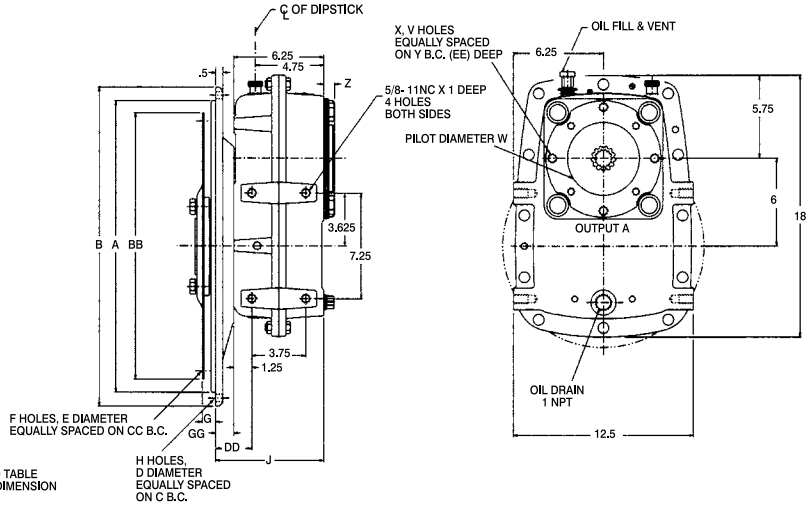
HPD MODEL CODE

DP16- * - * - * - *

OUTPUT POSITION
GEAR RATIO
DRIVE PLATE SIZE
SAE ENGINE ADAPTER HOUSING SIZE



VIEW A
COUPLING TO PUMP FACE

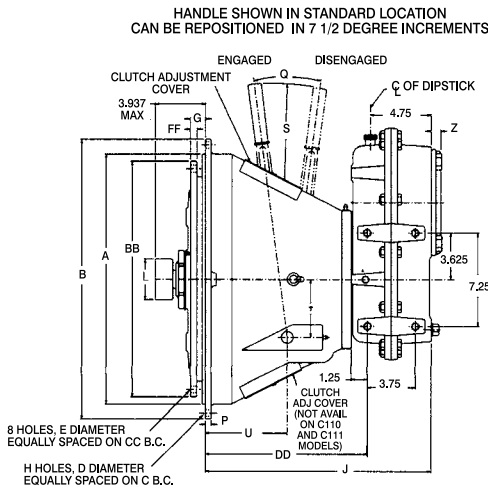


MODEL DC16

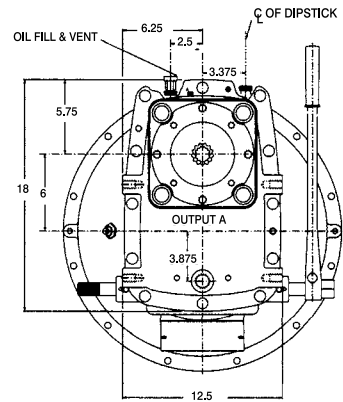
HPD MODEL CODE

DC16- * - * - * - *

OUTPUT POSITION
GEAR RATIO
CLUTCH DESIGNATION
SAE CLUTCH HOUSING SIZE



P114 CLUTCH AND SAE #1 FLYWHEEL HOUSING SHOWN
REFER TO TABLE FOR OPTIONS



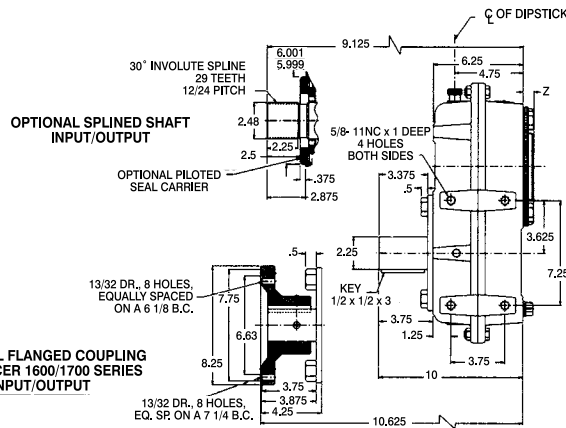
SAE C OUTPUT SHOWN AT 12 O'CLOCK

MODEL DS16

HPD MODEL CODE

DS16- * - * - *

OUTPUT POSITION
GEAR RATIO
INPUT TYPE



OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT

D*10 SERIES

SPECIFICATIONS

Input Torque: 1,960 ft-lb (max)

Horsepower: 933 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 350 lbs (gearbox only)

Oil Capacity Approximately 5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Output at @ 3, 6, 9 or 12 o'clock**
(Standard is 12 o'clock as shown)
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3	16.125	17.75	16.87	7/16	12	10.25	3/8	15.62
2	17.625	19.25	18.37	7/16	12	10.25	3/8	15.62
1	20.125	21.75	20.87	1/2	12	12.25	7/16	17.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.02 UD	2450	2500
1.14 UD	2190	2500
1.28 UD	1950	2500
1.39 UD	1800	2500
1.56 UD	1800	2800
1.69 U	1775	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	16.87	16.87	7/16	12	7.50	1/2	2.12	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.12	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.12	1 1/4	320

CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	325
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	23.38	3 3/4	4 3/16	1930	350
1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	400
1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	450
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP10

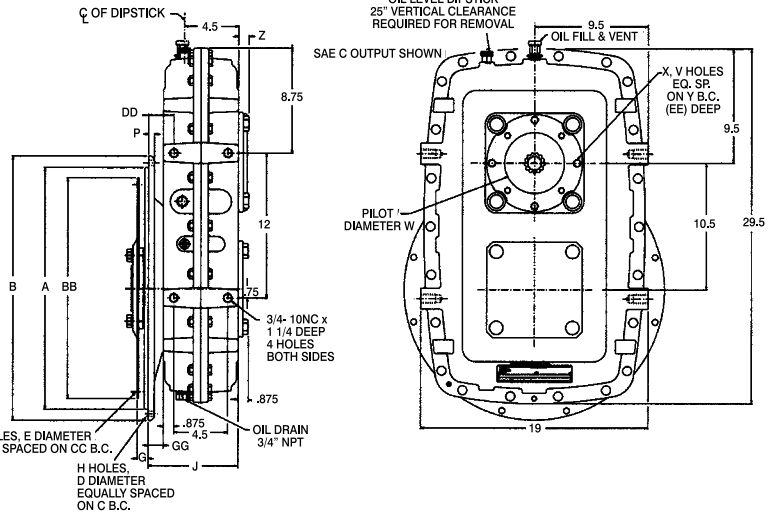
HPD MODEL CODE

DP10- * - * - * - *

- OUTPUT POSITION
- GEAR RATIO
- FLYWHEEL DESIGNATION
- SAE FLYWHEEL HOUSING SIZE



VIEW A
COUPLING TO PUMP FACE
REFER TO TABLE FOR "LL" DIMENSION



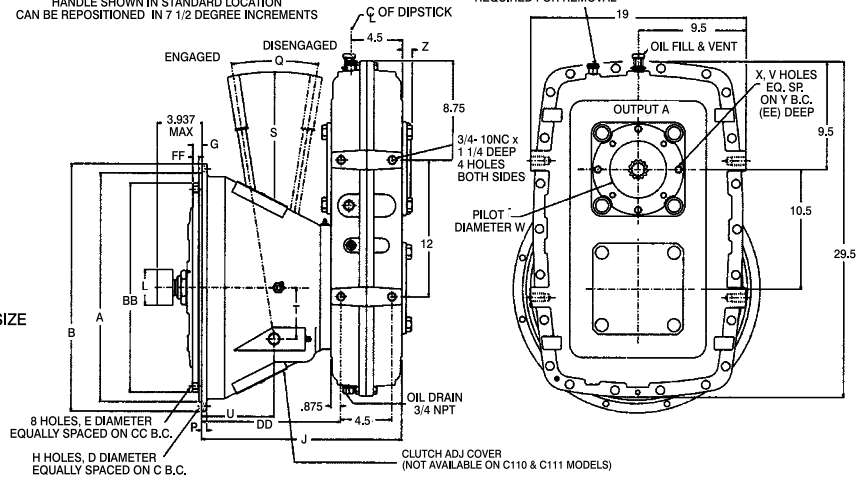
MODEL DC10

HPD MODEL CODE

DC10- * - * - * - *

- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE FLYWHEEL HOUSING SIZE

HANDLE SHOWN IN STANDARD LOCATION
CAN BE REPOSITIONED IN 7 1/2 DEGREE INCREMENTS



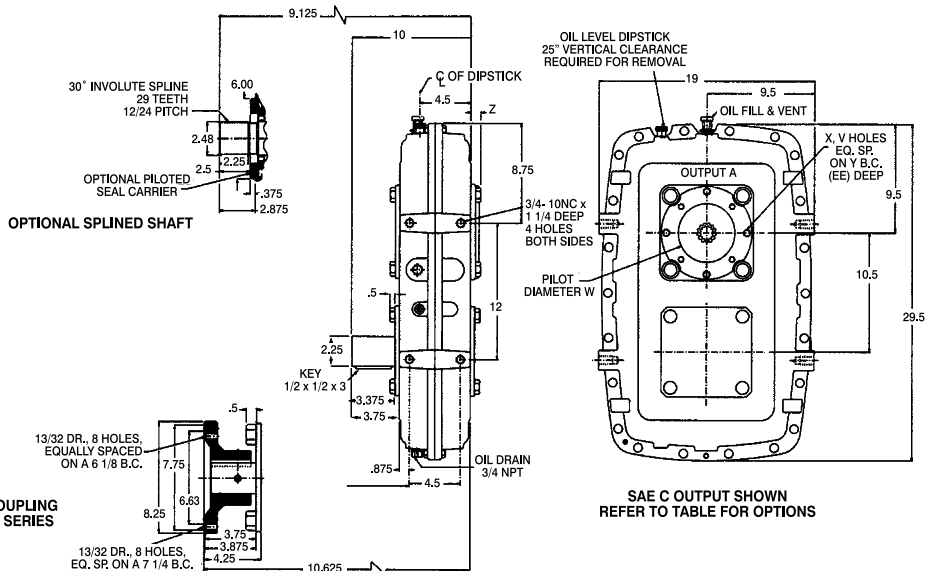
P114 CLUTCH AND SAE #1 FLYWHEEL HOUSING SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS10

HPD MODEL CODE

DS10- * - * - *

- PUMP DATA
- GEAR RATIO
- INPUT TYPE



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*25 SERIES

SPECIFICATIONS

Input Torque: 798 ft-lb (max)

Horsepower: 380 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 200 lbs (gearbox only)

Oil Capacity Approximately 4 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Internal Passive Lubrication System for Increased Life of Input & Pump Shaft Spline**
- **All Threaded Fittings have O-ring Seals**
- **Full Fillet Gears for Optimum Strength**
- **One Piece Drive Plate Hub and Input Shaft Eliminates Dry Spline**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617							
SAE NO.	A	B	C			DD	J
3 (C111)	16.125	17.75	16.87			5.75	10.62
3 (P211)	16.125	17.75	16.87			10.50	15.37
2 (C110)	17.625	19.25	18.37			5.75	10.62
2 (C111)	17.625	19.25	18.37			5.75	10.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1 E	3000	3000
1.11 UD	2700	3000
1.38 UD	2100	3000
1.62 UD	1800	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
8	10.375	7/16	6	2.44	9.62
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						30 DEG. INVOLUTE SPLINE	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	NO TEETH	PITCH
A	2	3.250	3/8-16	4.18	.75	9	16/32
B	2	4.000	1/2-13	5.75	.75	13	16/32
B	4	4.000	1/2-13	5.00	.75	13	16/32
BB	2	4.000	1/2-13	5.75	.75	15	16/32
BB	4	4.000	1/2-13	5.00	.75	15	16/32
C	2	5.000	5/8-11	7.12	.87	14	12/24
C	4	5.000	1/2-13	6.37	.87	14	12/24
CC	2	5.000	5/8-11	7.12	.87	17	12/24
CC	4	5.000	1/2-13	6.37	.87	17	12/24
D	4	6.000	3/4-10	9.00	STUD	13	8/16

ENGINE ADAPTER DIMENSIONS REF SAE J617									
SAE NO.	A	B	C	D	H	J	P	DD	GG
5	12.375	14.00	13.12	7/16	8	7.50	1/2	2.50	1 1/4
4	14.250	15.88	15.00	7/16	12	7.50	1/2	2.50	1 1/4
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.50	1 1/4
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.50	1 1/4
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.50	1 1/4

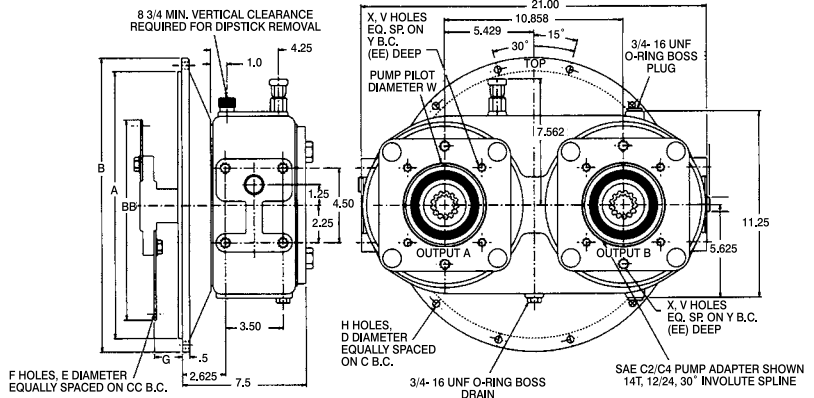
CLUTCH INSTALLATION DATA													
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC			G		T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	
3	C111	2325	387	13.875	13.12			1.56		1.56	1.56	1.56	
2 or 3	P111	2850	455	13.875	13.12			1.56		1.56	1.56	1.56	
2 or 3	P211	2850	910	13.875	13.12			1.56		1.56	1.56	1.56	

MODEL DP25

HPD MODEL CODE

DP25- * - * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE



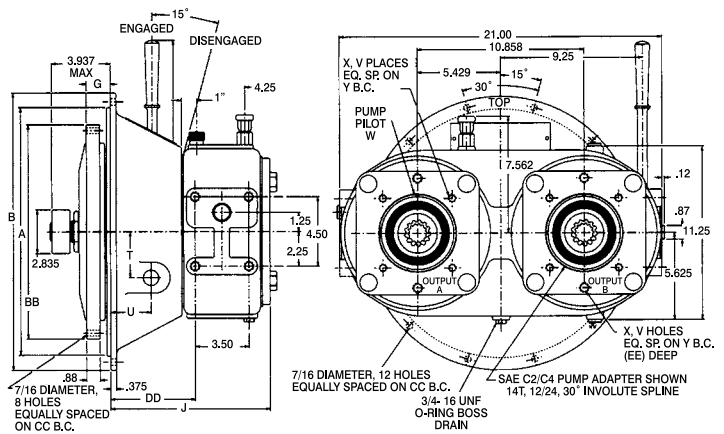
SAE #3 ENGINE ADAPTER SHOWN

MODEL DC25

HPD MODEL CODE

DC25- * - * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE

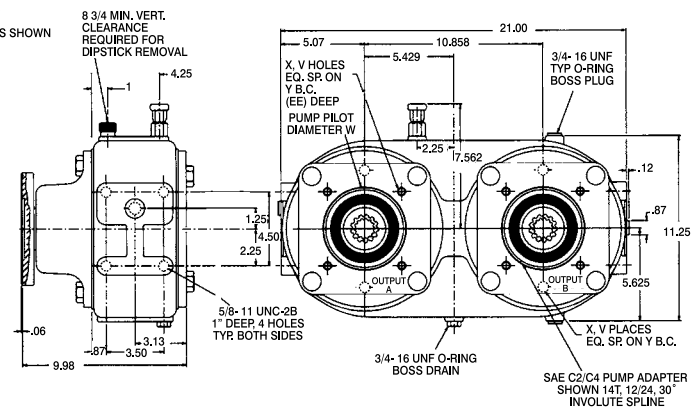
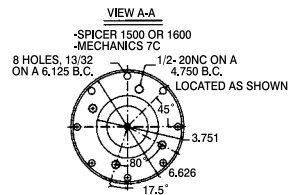


MODEL DS25

HPD MODEL CODE

DS25- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



D*26 SERIES

SPECIFICATIONS

Input Torque: 1,218 ft-lb (max)

Horsepower: 580 (max)

Maximum Speed: See Ratio Chart Below

Approximate Weight: 230 lbs (gearbox only)

Oil Capacity Approximately 2 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	P	J	DD
3 (C111)	16.125	28.00	16.87	7/16	12	3/8	11.25	6.25
3	16.125	28.00	16.67	7/16	12	3/8	15.62	10.62
2	17.625	21.75	18.37	7/16	12	3/8	15.62	10.62
1	20.125	19.25	20.87	1/2	12	7/16	17.62	12.62
0	25.500	17.75	26.75	9/16	16	1/2	17.62	12.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.00 E	3000	3000
1.14 UD	2625	3000
1.22 UD	2459	3000
1.30 UD	2308	3000
1.40 UD	2140	3000
1.50 UD	2000	3000
1.73 UD	1735	3000
1.86 UD	1615	3000
2.00 U	1500	3000
2.16 U	1389	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
6 1/2	8.500	3/8	8	1.19	7.87
7 1/2	9.500	3/8	8	1.19	8.75
8	10.375	7/16	8	2.44	9.62
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	115/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT.
5	12.375	14.00	13.12	7/16	8	7.50	1/2	2.50	1 1/4	280
4	14.250	15.87	15.00	7/16	12	7.50	1/2	2.50	1 1/4	285
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.50	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.50	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.50	1 1/4	320

CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	00	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
3	C111	2325	387	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	2 5/8	1270	N/A
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	405
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545

MODEL DP26

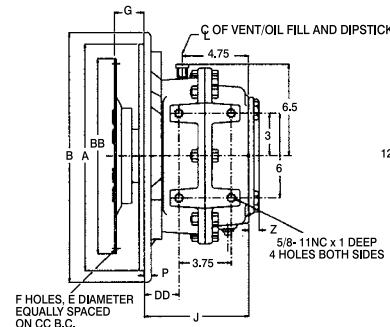
HPD MODEL CODE

DP26- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER
- HOUSING SIZE

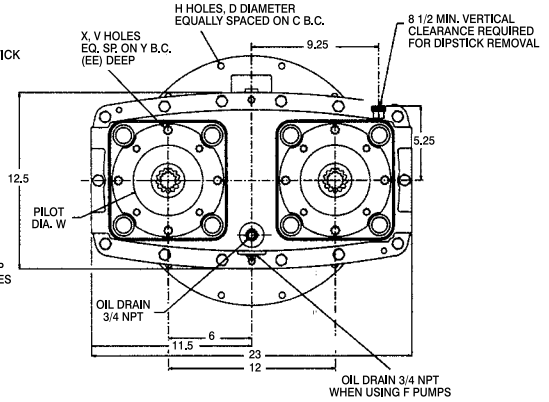


VIEW A
COUPLING TO PUMP FACE



SAE #3 ENGINE ADAPTER SHOWN
REFER TO TABLE FOR OPTIONS

REFER TO TABLE FOR "LL" DIMENSION



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

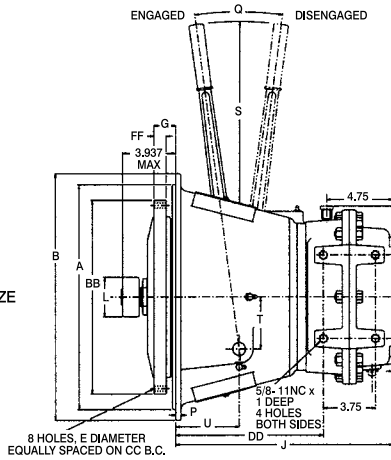
MODEL DC26

HPD MODEL CODE

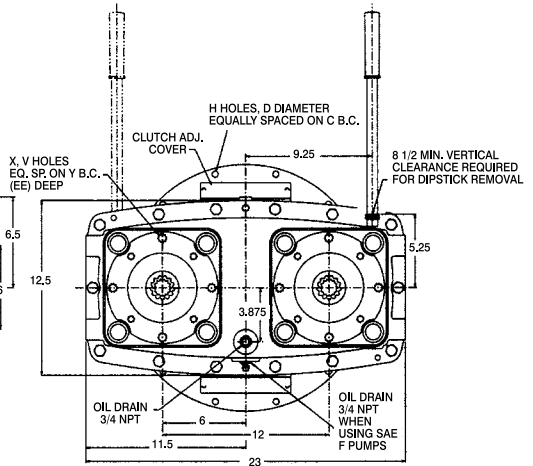
DC26- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE

HANDLE SHOWN IN STANDARD LOCATION
CAN BE REPOSITIONED IN 7 1/2 DEGREE INCREMENTS



P111 CLUTCH AND SAE #3 FLYWHEEL SHOWN
REFER TO TABLE FOR OPTIONS

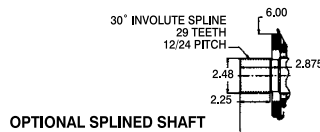


MODEL DS26

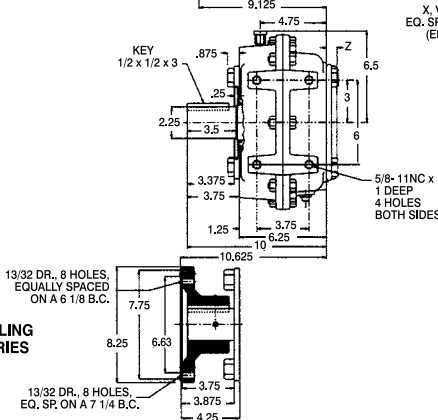
HPD MODEL CODE

DS26- * - * - * - *

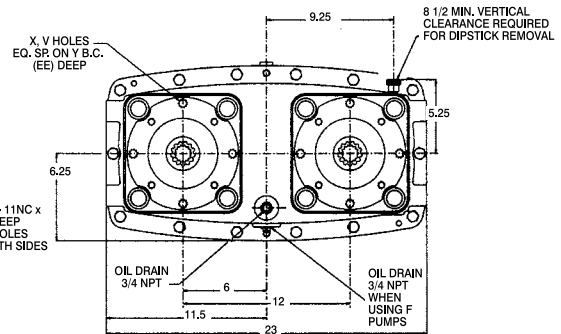
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



OPTIONAL SPLINED SHAFT



OPTIONAL FLANGED COUPLING
FOR SPICER 1600/1700 SERIES



D*28 SERIES

SPECIFICATIONS

Input Torque: 1,638 ft-lb (max)

Horsepower: 780 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 350 lbs (gearbox only)

Oil Capacity Approximately 5.5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	P	J	DD
3	16.125	17.75	16.87	7/16	12	3/8	15.62	10.25
2	17.625	19.25	18.37	7/16	12	3/8	15.62	10.25
1	20.125	21.75	20.87	1/2	12	7/16	17.62	12.25

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1E	2700	2700
1.16 UD	2500	2900
1.28 UD	2350	3000
1.34 UD	2250	3000
1.56 UD	1930	3000
1.93 U	1550	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320

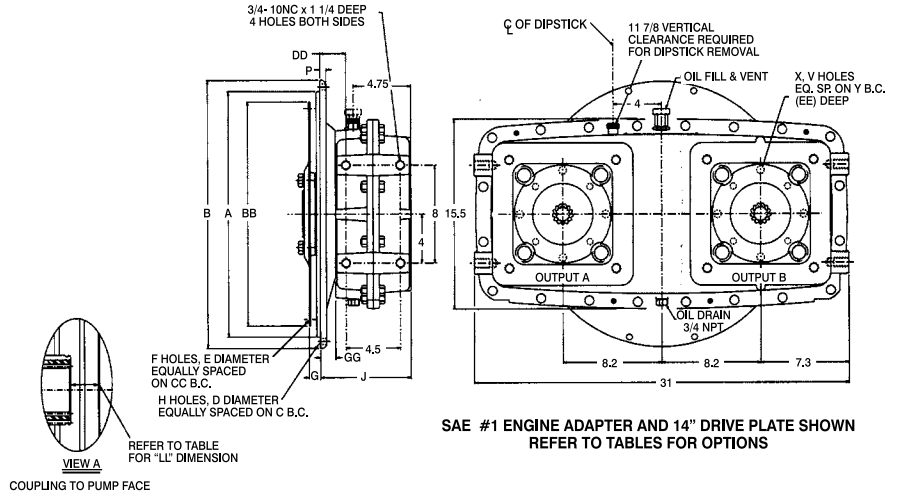
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	405
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545

MODEL DP28

HPD MODEL CODE

DP28- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE



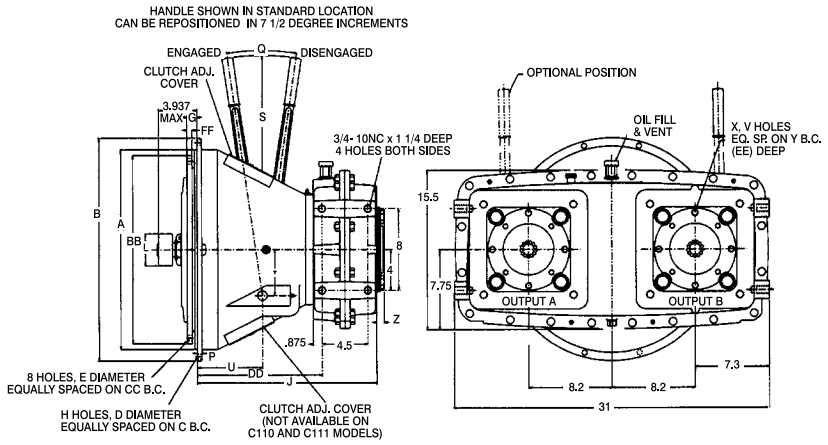
SAE #1 ENGINE ADAPTER AND 14" DRIVE PLATE SHOWN
REFER TO TABLES FOR OPTIONS

MODEL DC28

HPD MODEL CODE

DC28- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



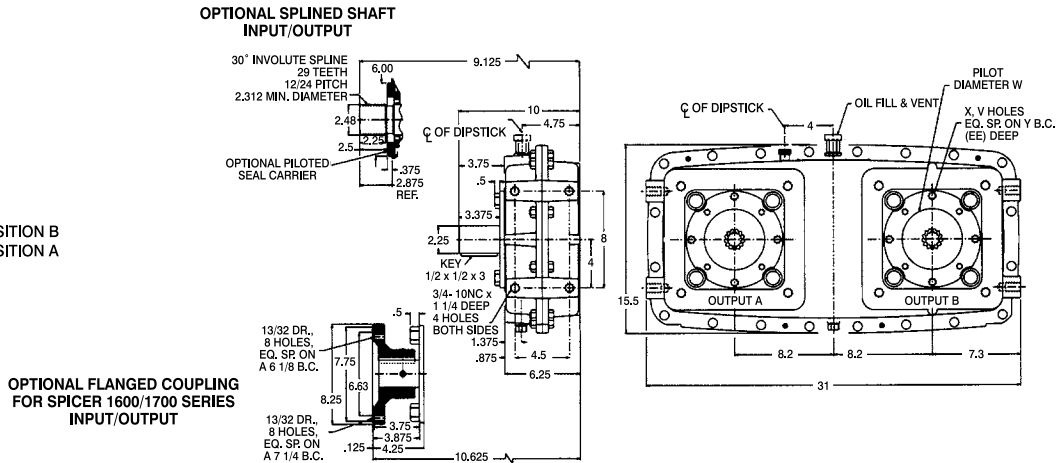
P114 CLUTCH AND SAE #1 FLYWHEEL HOUSING SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS28

HPD MODEL CODE

DS28- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT

D*20 SERIES

SPECIFICATIONS

Input Torque: 2.205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 460 lbs (gearbox only)

Oil Capacity Approximately 7 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3	16.125	17.75	16.87	7/16	12	10.25	3/8	15.62
2	17.625	19.25	18.37	7/16	12	10.25	3/8	15.62
1	20.125	21.75	20.87	1/2	12	12.25	7/16	17.62
0	25.500	28.00	26.75	9/16	16	12.25	1/2	17.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.01 UD	2450	2500
1.14 UD	2190	2500
1.28 UD	1989	2500
1.39 UD	1800	2500
1.56 UD	1800	2800
1.69 U	1775	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	1/2	8	1.00	17.25
18	22.500	11/16	6	.62	21.37

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320
0	25.500	28.00	26.75	9/16	16	8.00	1	2.625	1 3/4	390

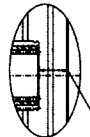
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	325
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	23.38	3 3/4	4 3/16	1930	350
1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	400
1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	450
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP20

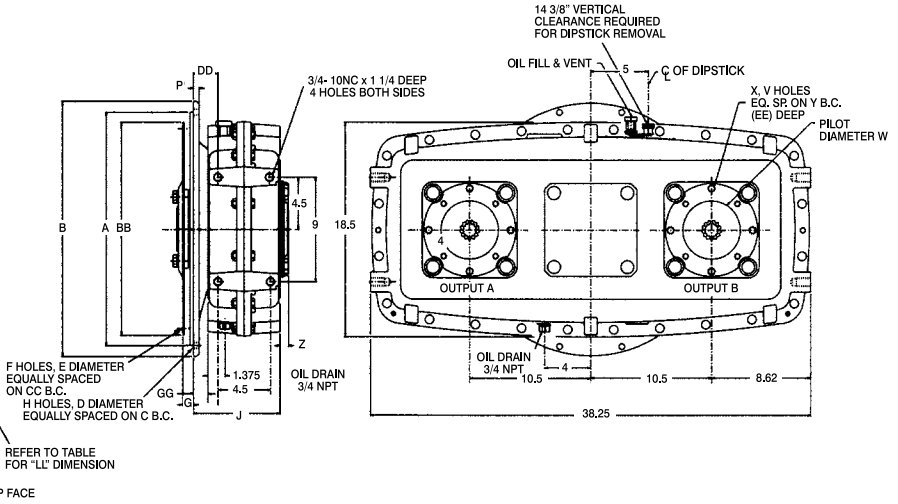
HPD MODEL CODE

DP20- * - * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER
- HOUSING SIZE



VIEW A
COUPLING TO PUMP FACE

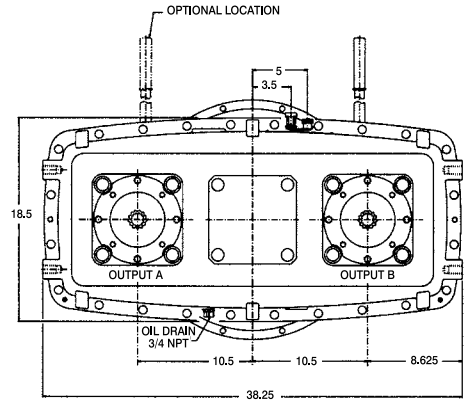
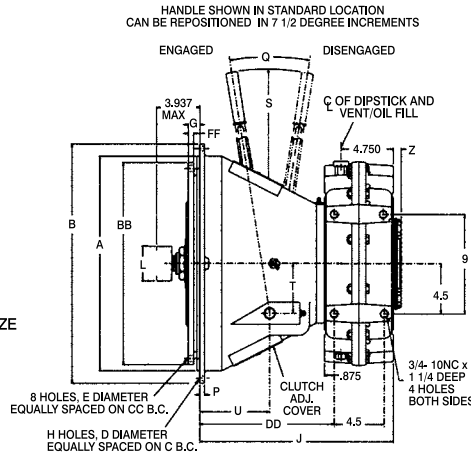


MODEL DC20

HPD MODEL CODE

DC20- * - * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



SAE C PUMP ADAPTERS SHOWN

MODEL DS20

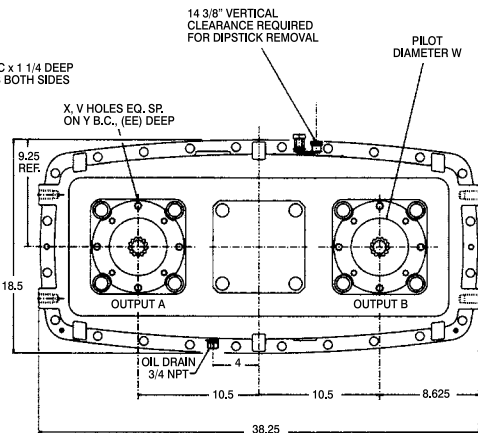
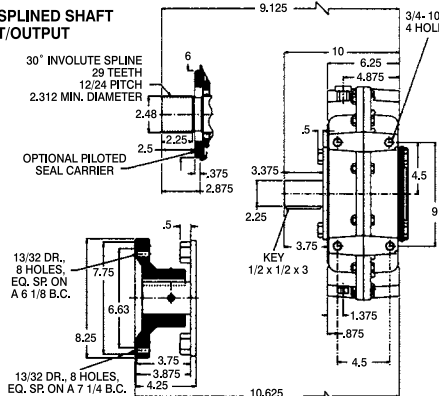
HPD MODEL CODE

DS20- * - * - * - *

- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE

OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT

OPTIONAL SPLINED SHAFT INPUT/OUTPUT



D*36 SERIES

SPECIFICATIONS

Input Torque: 1,250 ft-lb (max)

Horsepower: 595 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 242 lbs (gearbox only)

Oil Capacity Approximately 4.5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Internal Passive Lubrication System for Increased Life of Input & Pump Shaft Spline**
- **All Threaded Fittings have O-ring Seals**
- **Full Fillet Gears for Optimum Strength**
- **One Piece Drive Plate Hub and Input Shaft Eliminates Dry Spline**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3 (C111)	16.125	17.75	16.87	7/16	8	5.75	1/2	10.62
3 (P211)	16.125	17.75	16.87	7/16	12	10.50	1/2	15.37
2 (C110)	17.625	19.25	18.37	7/16	12	5.75	1/2	10.62
2 (C111)	17.625	19.25	18.37	7/16	12	5.75	1/2	10.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1E	3000	3000
1.05 UD	2850	3000
1.10 UD	2700	3000
1.27 UD	2350	3000
1.40 UD	2150	3000
1.54 UD	1950	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
8	10.375	7/16	6	2.44	9.62
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						30 DEG. INVOLUTE SPLINE	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	NO TEETH	PITCH
A	2	3.250	3/8-16	4.18	.62	9	16/32
B	2	4.000	1/2-13	5.75	.56	13	16/32
B	4	4.000	1/2-13	5.00	1.00	13	16/32
BB	2	4.000	1/2-13	5.75	.56	15	16/32
BB	4	4.000	1/2-13	5.00	1.00	15	16/32
C	2	5.000	5/8-11	7.12	.75	14	12/24
C	4	5.000	1/2-13	6.37	.75	14	12/24
CC	2	5.000	5/8-11	7.12	.75	17	12/24
CC	4	5.000	1/2-13	6.37	.75	17	12/24
D	4	6.000	3/4-10	9.00	STUD	13	8/16

ENGINE ADAPTER DIMENSIONS REF SAE J617									
SAE NO.	A	B	C	D	H	J	P	DD	GG
5	12.375	14.00	13.12	7/16	8	7.50	1/2	2.62	1.75
4	14.250	15.88	15.00	7/16	12	7.50	1/2	2.62	1.75
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.62	1.75
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.62	1.75
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.62	1.75

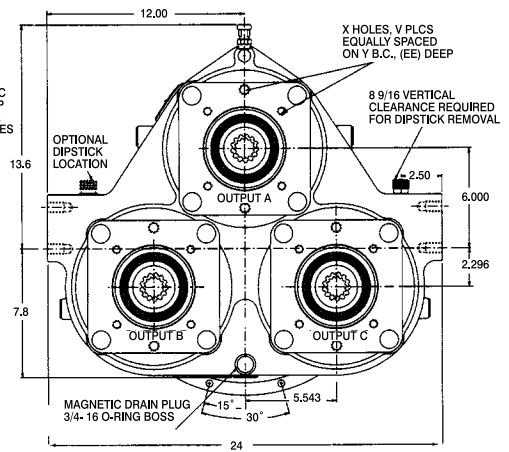
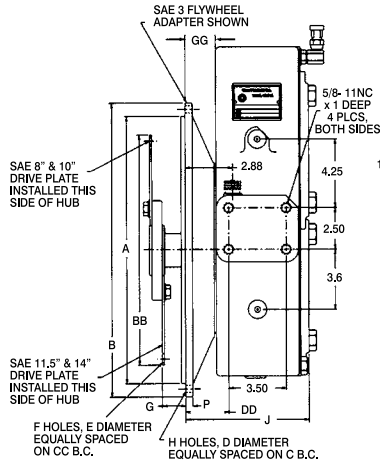
CLUTCH INSTALLATION DATA													
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC			G		S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH
3	C111	2325	387	13.875	13.12			1.56		15.38	3	2 5/8	1270
2 or 3	P111	2850	455	13.875	13.12			1.56		15.38	3	3 3/16	1540
2 or 3	P211	2850	910	13.875	13.12			1.56		15.38	3 3/4	4 3/16	1930

MODEL DP36

HPD MODEL CODE

DP36- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE

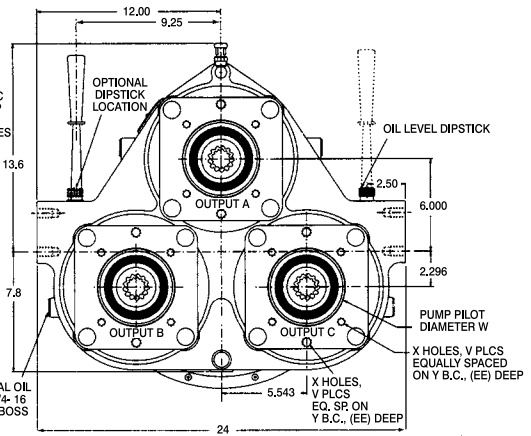
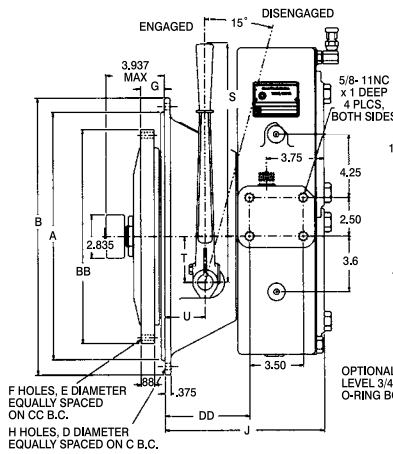


MODEL DC36

HPD MODEL CODE

DC36- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE

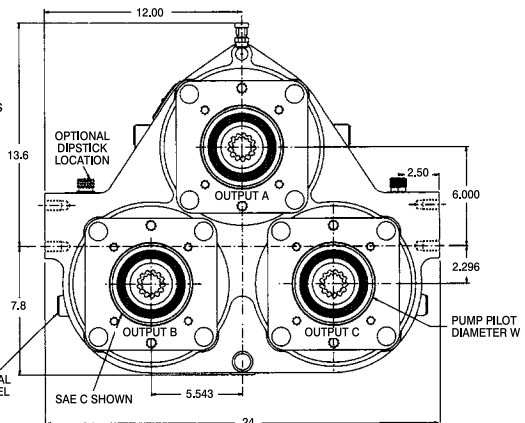
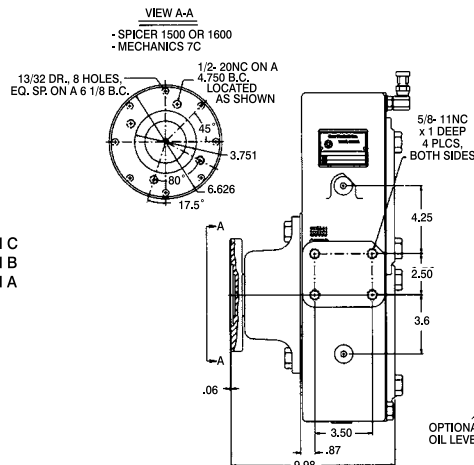


MODEL DS36

HPD MODEL CODE

DS36- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



D*38 SERIES

SPECIFICATIONS

Input Torque: 1,733 ft-lb (max)

Horsepower: 825 (max)

Maximum Speed: See Ratio Chart Below

Approximate Weight: 450 lbs (gearbox only)

Oil Capacity Approximately 6.5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3	16.125	17.75	16.87	7/16	12	10.25	318	15.62
2	17.625	19.25	18.37	7/16	12	10.25	318	15.62
1	20.125	21.75	20.87	1/2	12	12.25	7/16	17.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.00 E	2700	2700
1.16 UD	2500	2900
1.28 UD	2350	3000
1.34 UD	2230	3000
1.41 UD	2128	3000
1.56 UD	1930	3000
1.93 U	1550	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
6 1/2	8.500	3/8	8	1.19	7.87
7 1/2	9.500	3/8	8	1.19	8.75
8	10.375	7/16	8	2.44	9.62
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320

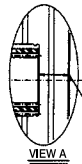
CLUTCH INSTALLATION DATA														
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15 3/8	3	3 3/16	1540
2 or 3	P211	2850	909	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15 3/8	3 3/4	4 3/16	1930
1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23 3/8	4 1/2	6 3/8	3150
1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23 3/8	4 1/2	6 3/8	3150

MODEL DP38

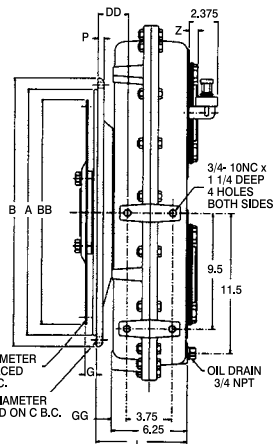
HPD MODEL CODE

DP38- * - * - * - * - *

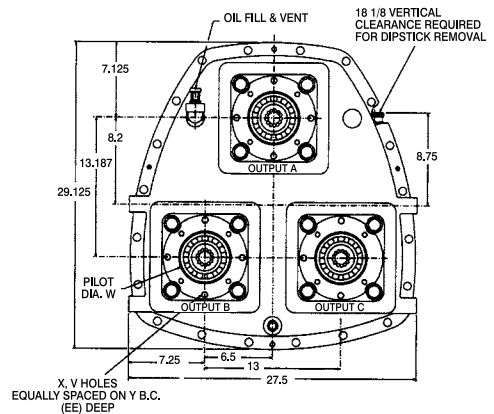
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER
- HOUSING SIZE



VIEW A
COUPLING TO PUMP FACE



SAE #1 ENGINE ADAPTER AND 14" DRIVE PLATE SHOWN
REFER TO TABLE FOR OPTIONS



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

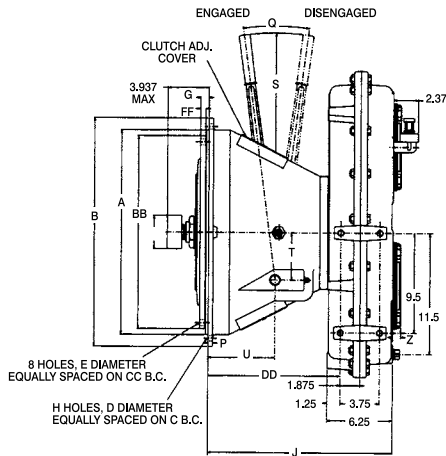
HANDLE SHOWN IN STANDARD LOCATION
CAN BE REPOSITIONED IN 7 1/2 DEGREE INCREMENTS

MODEL DC38

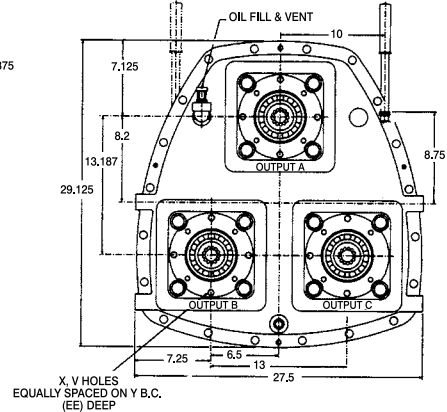
HPD MODEL CODE

DC38- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



SAE #1 CLUTCH HOUSING SHOWN WITH P214 AND SAE #1 FLYWHEEL
REFER TO TABLE FOR OPTIONS



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS38

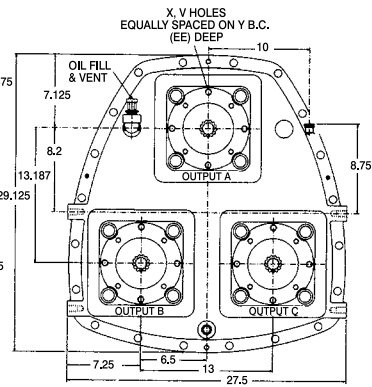
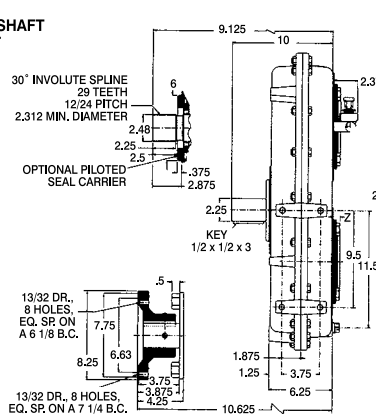
HPD MODEL CODE

DS38- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE

OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT

OPTIONAL SPLINED SHAFT INPUT/OUTPUT



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*30 SERIES

SPECIFICATIONS

Input Torque: 2,205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 600 lbs (gearbox only)

Oil Capacity Approximately 8 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	C	D	H	DD	P	J	
3	16.125	16.87	7/16	12	10.25	3/8	15.62	
2	17.625	18.37	7/16	12	10.25	3/8	15.62	
1	20.125	20.87	1/2	12	12.25	7/16	17.62	
0	25.500	26.75	9/16	16	12.25	1/2	17.62	

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.02 UD	2450	2500
1.14 UD	2190	2500
1.28 UD	1950	2500
1.39 UD	1800	2500
1.56 U	1800	2800
1.69 U	1775	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	1/2	8	1.00	17.25
18	22.500	11/16	6	.62	21.37

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320
0	25.500	28.00	26.75	9/16	16	8.00	1	2.625	1 3/4	390

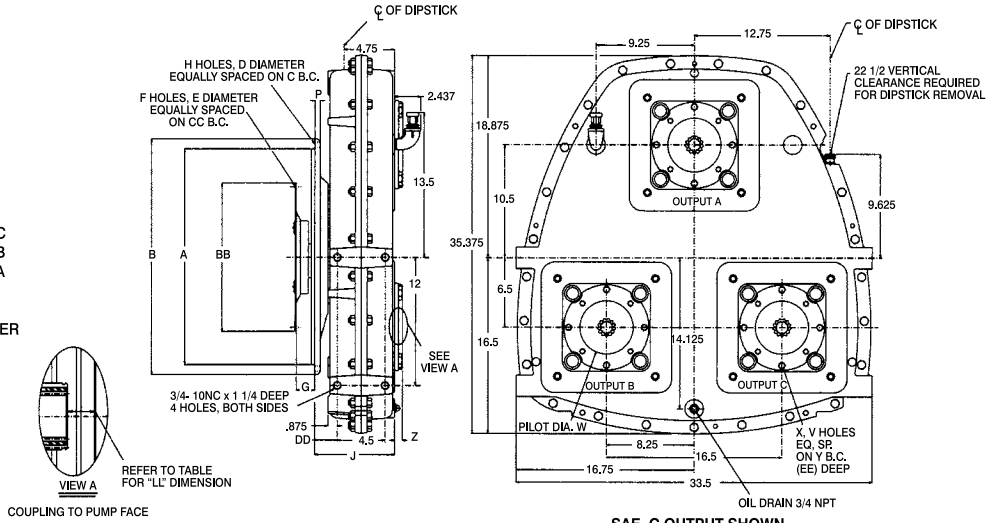
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	16 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP30

HPD MODEL CODE

DP30- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE



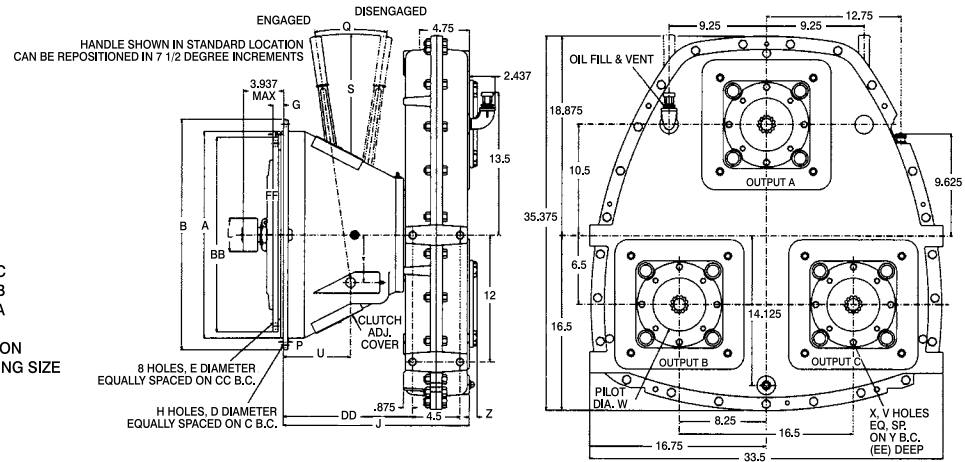
SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DC30

HPD MODEL CODE

DC30- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



P114 CLUTCH AND SAE #1 FLYWHEEL AND HOUSING SHOWN
REFER TO TABLE FOR OPTIONS

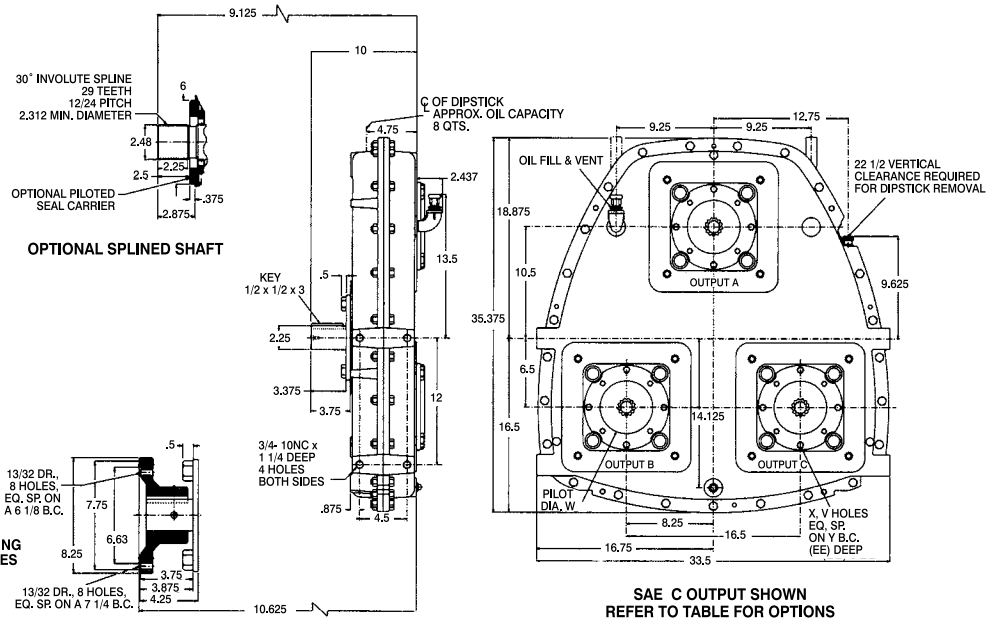
SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS30

HPD MODEL CODE

DS30- * - * - * - * - *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*31 SERIES

SPECIFICATIONS

Input Torque: 2,205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 460 lbs (gearbox only)

Oil Capacity Approximately 7 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	P	J	DD
3	16.125	17.75	16.87	7/16	12	3/8	15.62	10.62
2	17.625	19.25	18.37	7/16	12	3/8	15.62	10.62
1	20.125	21.75	20.87	1/2	12	7/16	17.62	12.62
0	25.500	28.00	26.75	9/16	16	1/2	17.62	12.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.02 UD	2450	2500
1.14 UD	2190	2500
1.28 UD	1950	2500
1.39 UD	1800	2500
1.56 UD	1800	2800
1.69 UD	1775	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
10	12.375	7/16	8	2.12	11.62
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25
18	22.500	11/16	6	.62	21.37

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.67	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320
0	25.500	28.00	26.75	9/16	16	8.00	1	2.625	1 3/4	390

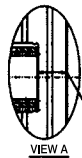
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	088	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	405
2 or 3	P211	2850	910	13.875	13.12	7/16	1.85	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.160	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP31

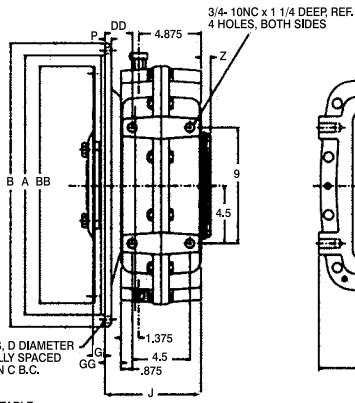
HPD MODEL CODE

DP31- * * * * *

- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER
- HOUSING SIZE

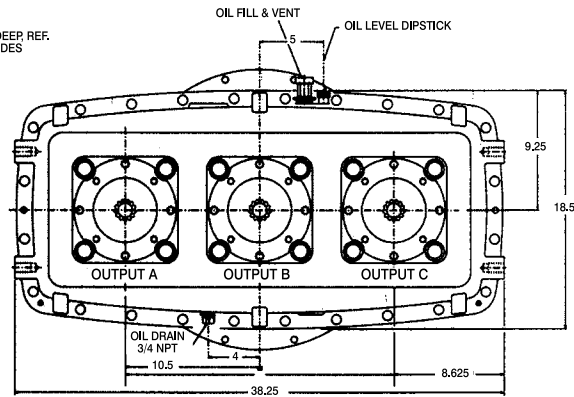


COUPLING TO PUMP FACE



H HOLES, D DIAMETER EQUALLY SPACED ON C B.C.
REFER TO TABLE FOR "L" DIMENSION

SAE #1 ENGINE ADAPTER AND 14" DRIVE PLATE SHOWN
REFER TO TABLES FOR OPTIONS



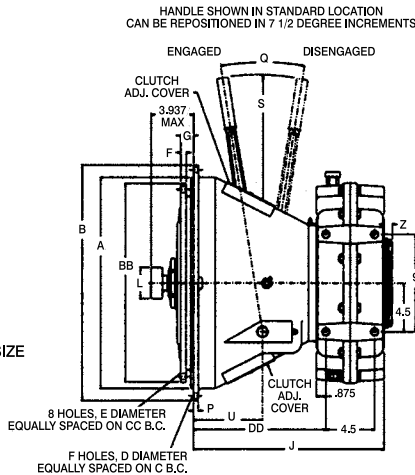
SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DC31

HPD MODEL CODE

DC31- * * * * *

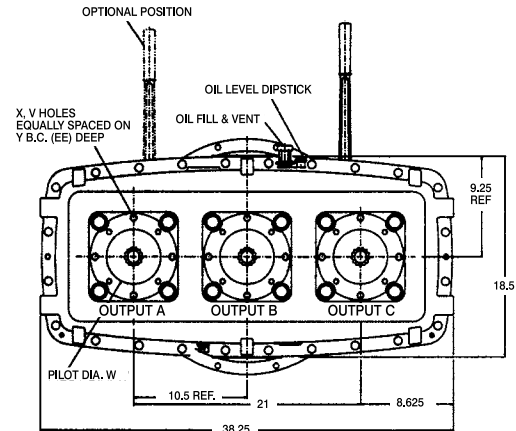
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



HANDLE SHOWN IN STANDARD LOCATION CAN BE REPOSITIONED IN 7 1/2 DEGREE INCREMENTS

8 HOLES, E DIAMETER EQUALLY SPACED ON CC B.C.
F HOLES, D DIAMETER EQUALLY SPACED ON C B.C.

P214 CLUTCH AND SAE #1 FLYWHEEL HOUSING SHOWN
REFER TO TABLE FOR OPTIONS



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

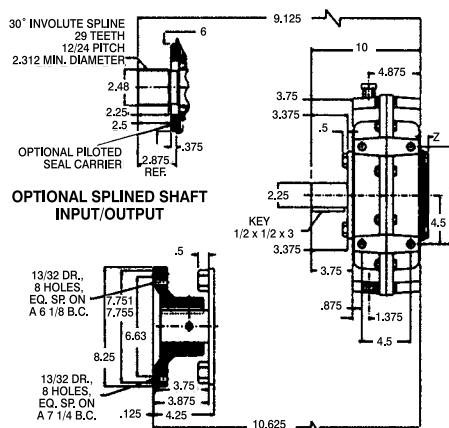
MODEL DS31

HPD MODEL CODE

DS31- * * * * *

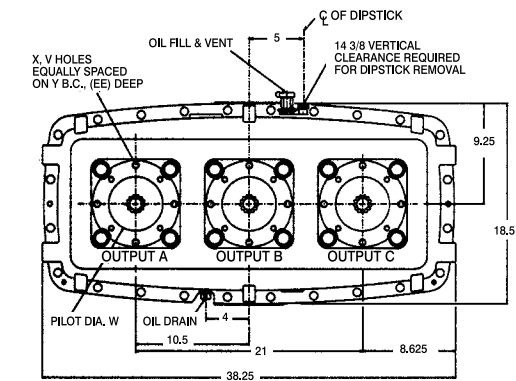
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE

OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT



OPTIONAL SPLINED SHAFT INPUT/OUTPUT

13/32 DR., 8 HOLES, EQ. SP. ON A 6 1/8 B.C.
13/32 DR., 8 HOLES, EQ. SP. ON A 7 1/4 B.C.



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*49 SERIES

SPECIFICATIONS

Input Torque: 2,100 ft-lb (max)

Horsepower: 1,000 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 550 lbs (gearbox only)

Oil Capacity Approximately 5.5 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	P	J	DD
3	16.125	17.75	16.87	7/16	12	3/8	14.37	10.12
2	17.625	19.25	18.37	7/16	12	3/8	14.37	10.12
1	20.125	21.75	20.87	1/2	12	7/16	16.37	12.12

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1 E	2500	2500
1.15 UD	2170	2500
1.21 UD	2060	2500
1.26 UD	1980	2500
1.39 UD	1800	2500
1.69 U	1479	2500

DRIVE PLATE/CLUTCH DRIVE REF SAE J620				
NOMINAL DRIVE PLATE DIA.	BB	E	G	CC
10	12.375	7/16	2.12	11.62
11 1/2	13.875	7/16	1.56	13.12
14	18.375	9/16	1.00	17.25

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320

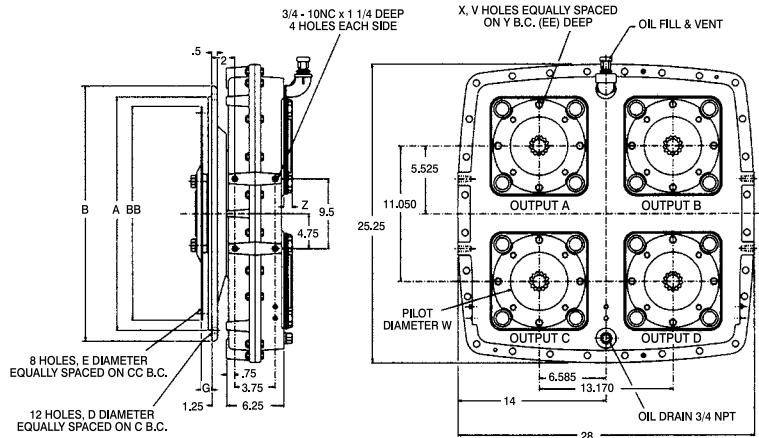
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P211	2850	909	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP49

HPD MODEL CODE

DP49- * * * * *

- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE



SAE #1 ENGINE ADAPTER AND 14" DRIVE PLATE SHOWN
REFER TO TABLES FOR OPTIONS

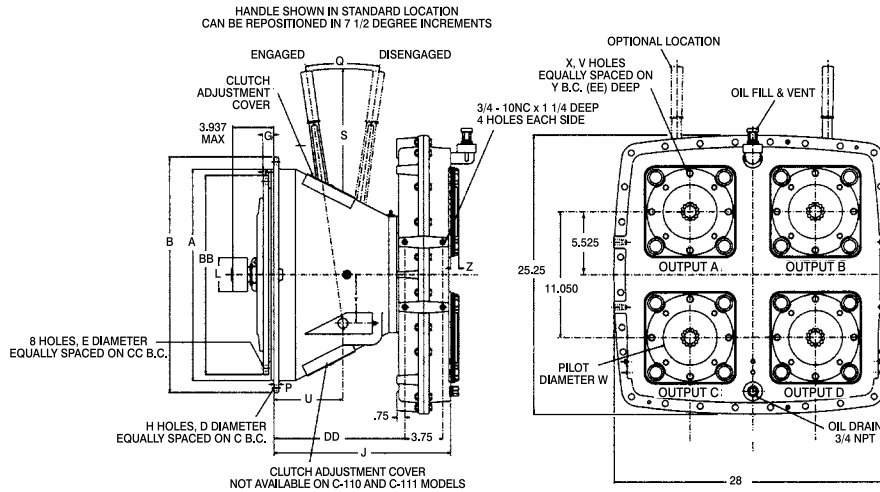
SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DC49

HPD MODEL CODE

DC49- * * * * *

- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



P114 CLUTCH AND SAE #1 FLYWHEEL HOUSING SHOWN
REFER TO TABLE FOR OPTIONS

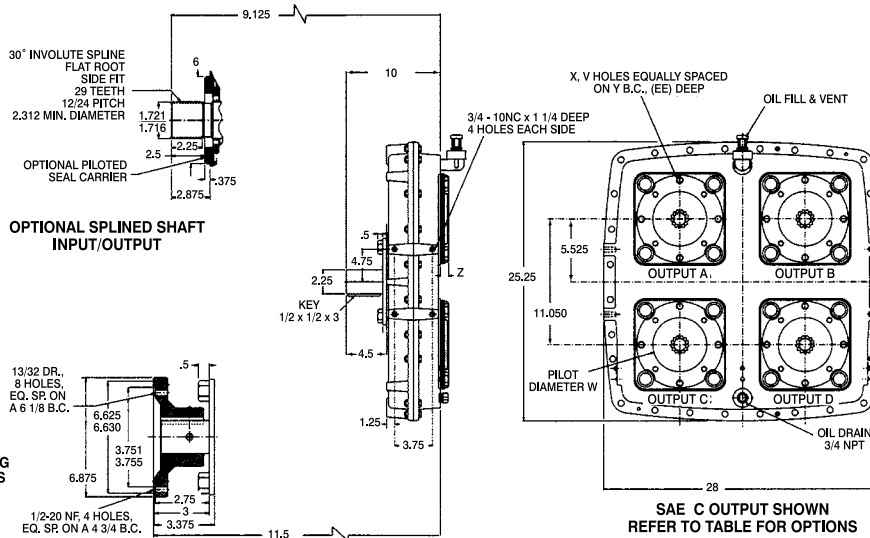
SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS49

HPD MODEL CODE

DS49- * * * * *

- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



OPTIONAL FLANGED COUPLING FOR SPICER 1550/1600 SERIES INPUT/OUTPUT

SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*41 SERIES

SPECIFICATIONS

Input Torque: 2,520 ft-lb (max)

Horsepower: 1,200 (max)

Maximum Speed: See Ratio Chart

Approximate Weight: 700 lbs (gearbox only)

Oil Capacity Approximately 8 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	P	J	DD
3	16.125	17.75	16.87	7/16	12	3/8	15.62	10.24
2	17.625	19.25	18.37	7/16	12	3/8	15.62	10.24
1	20.125	21.75	20.87	1/2	12	7/16	17.62	12.24
0	25.500	28.00	26.75	9/16	16	1/2	17.62	12.24

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.02 UD	2450	2500
1.14 UD	2190	2500
1.19 UD	2100	2500
1.28 UD	1950	2500
1.39 U	1800	2500
1.56 U	1800	2800
1.69 U	1775	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25
18	22.500	11/16	6	.62	21.37

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

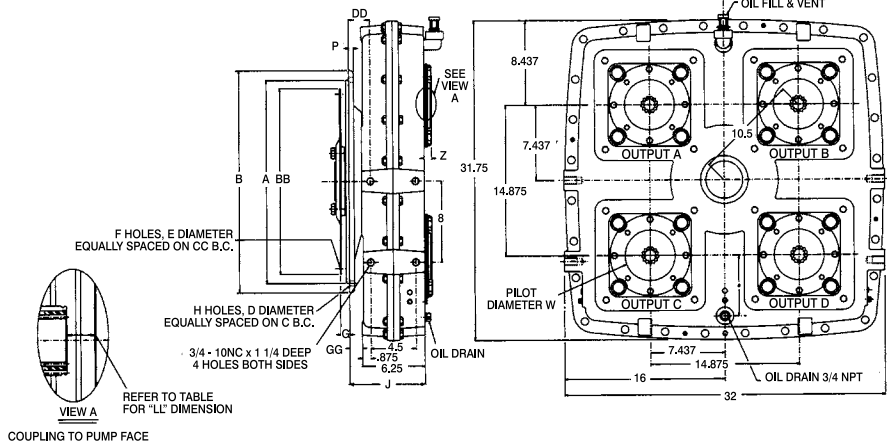
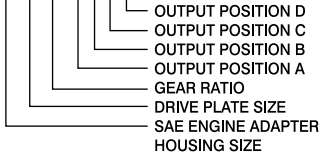
ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	17.75	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320
0	25.500	28.00	26.75	9/16	16	8.00	1	2.625	1 3/4	390

CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	405
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP41

HPD MODEL CODE

DP41- * - * - * - * - * - *



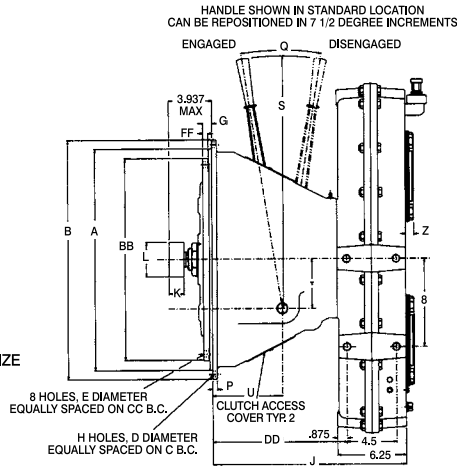
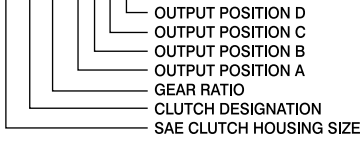
SAE #1 ENGINE ADAPTER AND 14" DRIVE PLATE SHOWN
REFER TO TABLES FOR OPTIONS

SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

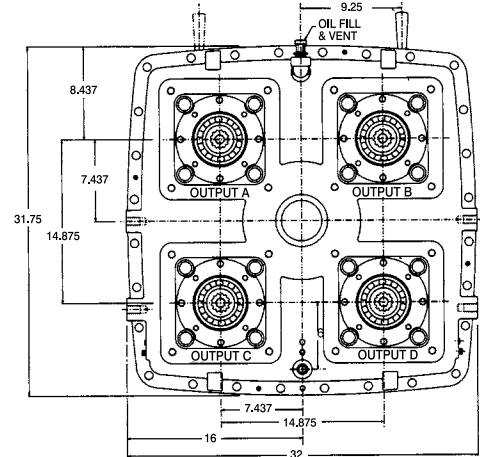
MODEL DC41

HPD MODEL CODE

DC41- * - * - * - * - * - *



SAE #1 CLUTCH HOUSING SHOWN WITH P114 CLUTCH
REFER TO TABLE FOR OPTIONS

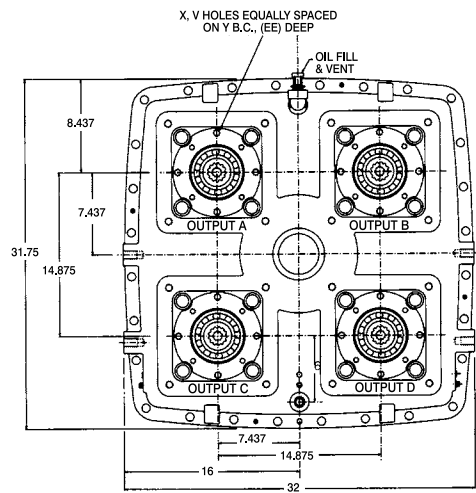
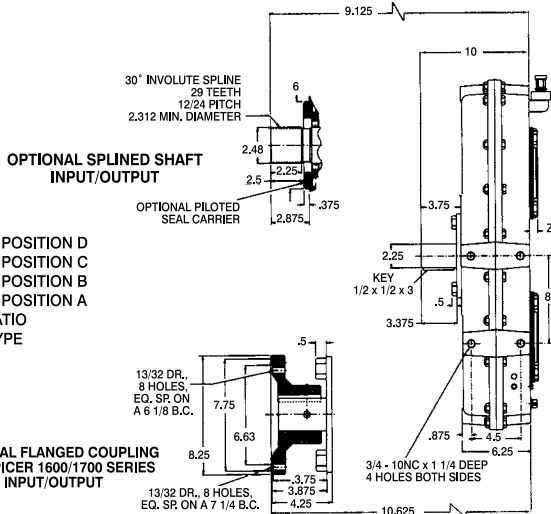
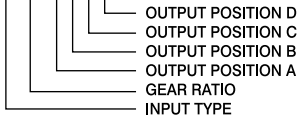


SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

MODEL DS41

HPD MODEL CODE

DS41- * - * - * - * - *



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

D*58 SERIES

SPECIFICATIONS

Input Torque: 2,205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart Below

Approximate Weight: 500 lbs (gearbox only)

Oil Capacity Approximately 10-12 qts
(may vary due to output orientation and gear ratio)

(Ratings Based on 1:1 Ratio, 2500 rpm and 2000 hrs B10 Life)

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Same as Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Output Options: Spline, Keyed, Flange**
- **Input Options: Torsional Coupling**

AVAILABLE OPTIONS

CLUTCH HOUSING DIMENSIONS REF SAE J620 AND SAE J617								
SAE NO.	A	B	C	D	H	DD	P	J
3	16.125	17.75	16.87	7/16	12	10.25	3/8	15.62
2	17.625	19.25	18.37	7/16	12	10.25	3/8	15.62
1	20.125	21.75	20.87	1/2	12	12.25	7/16	17.62
0	25.500	28.00	26.75	9/16	16	12.25	1/2	17.62

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.1 E	2750	2750
1.09 UD	2750	3000
1.19 UD	2500	3000
1.32 UD	2270	3000

DRIVE PLATE DIMENSIONS REF SAE J620					
NOMINAL DRIVE PLATE DIA.	BB	E	F	G	CC
11 1/2	13.875	7/16	8	1.56	13.12
14	18.375	9/16	8	1.00	17.25
18	22.500	11/16	6	.62	21.37

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	30 DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

ENGINE ADAPTER DIMENSIONS REF SAE J617										
SAE NO.	A	B	C	D	H	J	P	DD	GG	UNIT WT
3	16.125	16.87	16.87	7/16	12	7.50	1/2	2.125	1 1/4	295
2	17.625	19.25	18.37	7/16	12	7.50	1/2	2.125	1 1/4	310
1	20.125	21.75	20.87	1/2	12	7.50	1/2	2.125	1 1/4	320
0	25.500	28.00	26.75	9/16	16	8.00	1	2.625	1 3/4	390

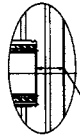
CLUTCH INSTALLATION DATA															
SAE HSG SIZE	CLUTCH MODEL	MAX CLUTCH SPEED (RPM)	WORKING TORQUE (LB-FT)	BB	CC	E	FF BOLT FLANGE THICKNESS	G	L	Q DEG.	S	T	U	TORQUE (LB-IN) ON OPERATING SHAFT REQ'D TO ENGAGE CLUTCH	UNIT WT. (LBS)
2 or 3	P111	2850	455	13.875	13.12	7/16	0.88	1.56	2.835	15 1/2	15.38	3	3 3/16	1540	405
2 or 3	P211	2850	910	13.875	13.12	7/16	1.88	1.56	2.835	15 1/2	15.38	3 3/4	4 3/16	1930	415
0 or 1	P114	2400	810	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	535
0 or 1	P214	2500	1620	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	6 3/8	3150	545
0 or 1	P314	2500	2430	18.375	17.25	9/16	0.50	1.00	3.150	18	23.38	4 1/2	7 3/4	3150	560

MODEL DP58

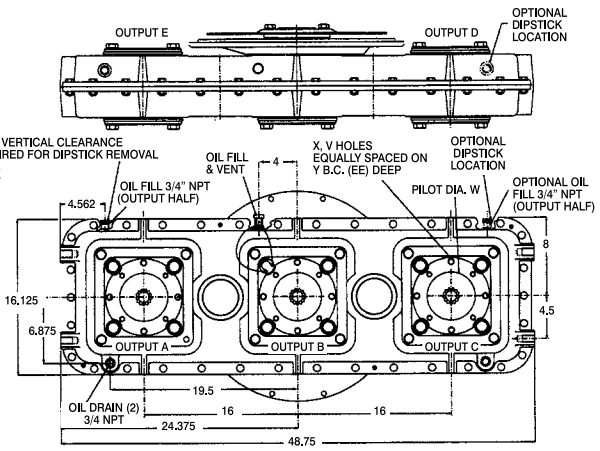
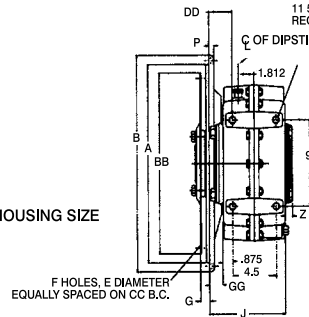
HPD MODEL CODE

DP58- * * * * *

- OUTPUT POSITION E
- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- DRIVE PLATE SIZE
- SAE ENGINE ADAPTER HOUSING SIZE



VIEW A



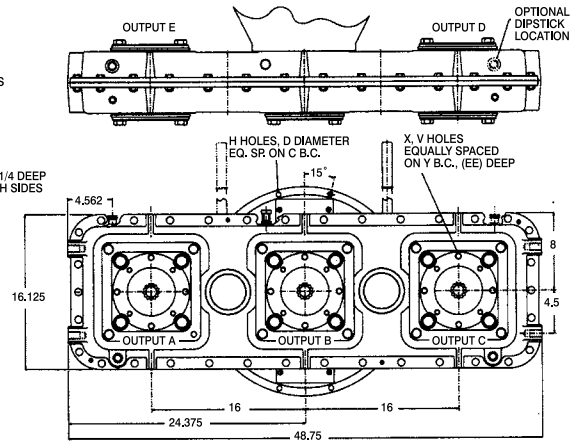
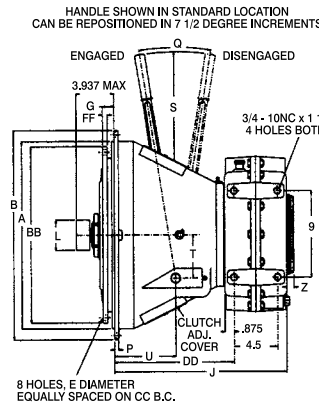
SAE #1 ENGINE ADAPTER AND 14\"/>

MODEL DC58

HPD MODEL CODE

DC58- * * * * *

- OUTPUT POSITION E
- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- CLUTCH DESIGNATION
- SAE CLUTCH HOUSING SIZE



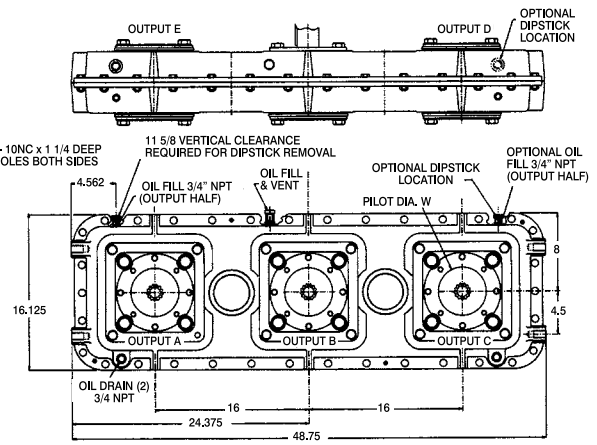
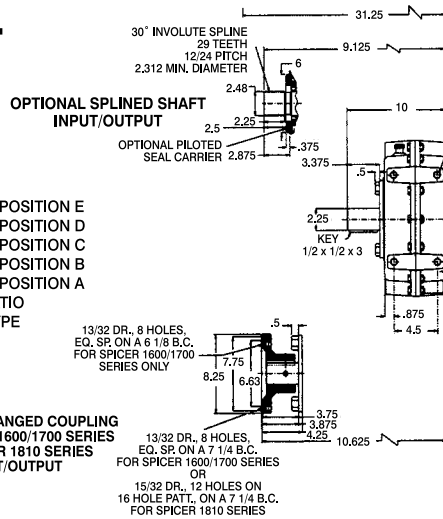
SAE #1 CLUTCH HOUSING SHOWN WITH P214 CLUTCH REFER TO TABLE FOR OPTIONS

MODEL DS58

HPD MODEL CODE

DS58- * * * * *

- OUTPUT POSITION E
- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



SAE C OUTPUT SHOWN REFER TO TABLE FOR OPTIONS

DS40 & DS50 SERIES

SPECIFICATIONS

Input Torque: 2,205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart Below

Approximate Weight: 460 lbs (DS-40)
(gearbox only) 525 lbs (DS-50)

Oil Capacity Approximately 7 qts
(may vary due to output orientation and gear ratio)

**(Ratings Based on 1:1 Ratio, 2500 rpm
and 2000 hrs B10 Life)**

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level**
- **Rotation Opposite Input Except DS50 Thru Shaft (Output B)**
- **Full Fillet Gears for Optimum Strength**
- **Heavy Duty Drive Plate**
- **Input Options: Spline, Keyed, Flange**
- **Output Options: Spline, Keyed, Flange**

AVAILABLE OPTIONS

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.01 E	2450	2500
1.14 UD	2190	2500
1.26 UD	1984	2500
1.39 UD	1800	2500
1.56 UD	1800	2800
1.69 U	1775	3000

MODEL DS40

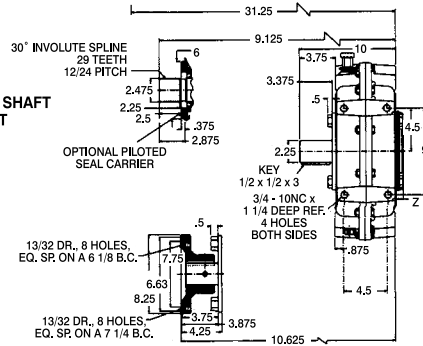
IN-LINE FOUR PUMP DRIVE

HPD MODEL CODE

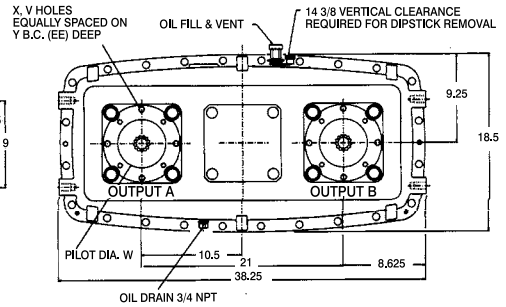
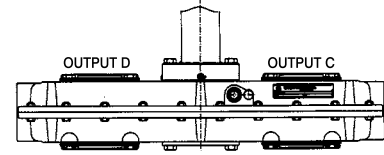
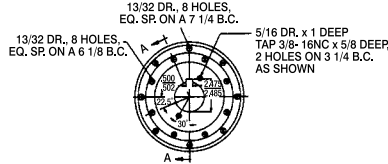
DS40- * - * - * - * - *

- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE

OPTIONAL SPLINED SHAFT INPUT/OUTPUT



OPTIONAL FLANGED COUPLING FOR SPICER 1600/1700 SERIES INPUT/OUTPUT



SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

CHECK THRUST OF INPUT AND OUTPUT SHAFTS FOR FREE MOVEMENT

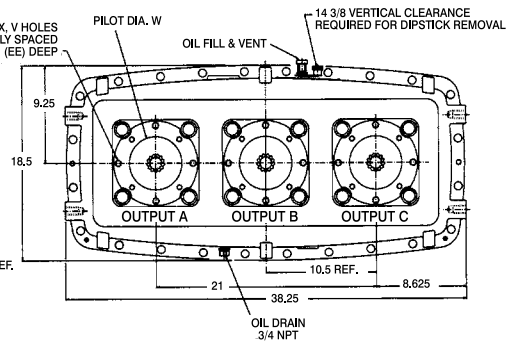
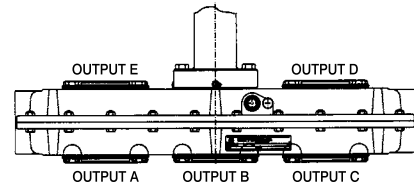
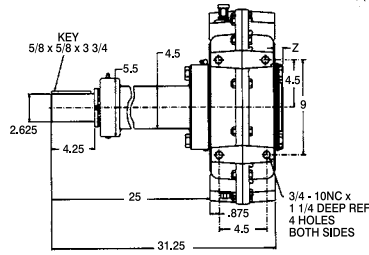
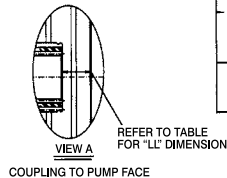
MODEL DS50

IN-LINE FIVE PUMP DRIVE

HPD MODEL CODE

DS50- * - * - * - * - *

- OUTPUT POSITION E
- OUTPUT POSITION D
- OUTPUT POSITION C
- OUTPUT POSITION B
- OUTPUT POSITION A
- GEAR RATIO
- INPUT TYPE



CHECK THRUST OF INPUT AND OUTPUT SHAFTS FOR FREE MOVEMENT

SAE C OUTPUT SHOWN
REFER TO TABLE FOR OPTIONS

DS60 & DS81 SERIES

SPECIFICATIONS

Input Torque: 2,205 ft-lb (max)

Horsepower: 1,050 (max)

Maximum Speed: See Ratio Chart Below

Approximate Weight: 600 lbs (DS-60)
(gearbox only) 700 lbs (DS-81)

Oil Capacity Approximately 8 qts
(may vary due to output orientation and gear ratio)

**(Ratings Based on 1:1 Ratio, 2500 rpm
and 2000 hrs B10 Life)**

Specifications are subject to change without notice.

FEATURES

- **Dipstick Included for Maintaining Proper Fluid Level on 660 Series**
- **Rotation Opposite Input**
- **Full Fillet Gears for Optimum Strength**
- **Large Diameter Ball Bearings for Higher Speeds and Longer Life**
- **Heavy Duty Drive Plate**
- **Input Options: Spline, Keyed, Flange**
- **Output Options: Spline, Keyed, Flange**

AVAILABLE OPTIONS

PUMP FLANGE DIMENSIONS REF SAE J744						*ADAPTER WIDTH	DEG. INVOLUTE SPLINE	DIST TO SHAFT END	
SAE SIZE	NO. BOLTS (V)	PILOT DIA. (W)	BOLT SIZE (X)	B.C. DIA. (Y)	HOLE DEPT (EE)	(Z)	NO TEETH	PITCH	(LL)
A	2	3.250	3/8-16	4.18	.62	.31	9	16/32	3/8
B	2	4.000	1/2-13	5.75	.56	.56	13	16/32	5/8
B	4	4.000	1/2-13	5.00	1.00	.56	13	16/32	5/8
BB	2	4.000	1/2-13	5.75	.56	.56	15	16/32	5/8
BB	4	4.000	1/2-13	5.00	1.00	.56	15	16/32	5/8
C	2	5.000	5/8-11	7.12	.75	.75	14	12/24	23/32
C	4	5.000	1/2-13	6.37	.75	.75	14	12/24	23/32
CC	2	5.000	5/8-11	7.12	.75	.75	17	12/24	23/32
CC	4	5.000	1/2-13	6.37	.75	.75	17	12/24	23/32
D	2	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
D	4	6.000	3/4-10	9.00	1.00	0.00	13	8/16	3/4
E	4	6.500	3/4-10	12.50	.87	.87	13	8/16	25/32
F	4	7.000	1-8	13.78	1.06	1.06	15	8/16	1 15/32

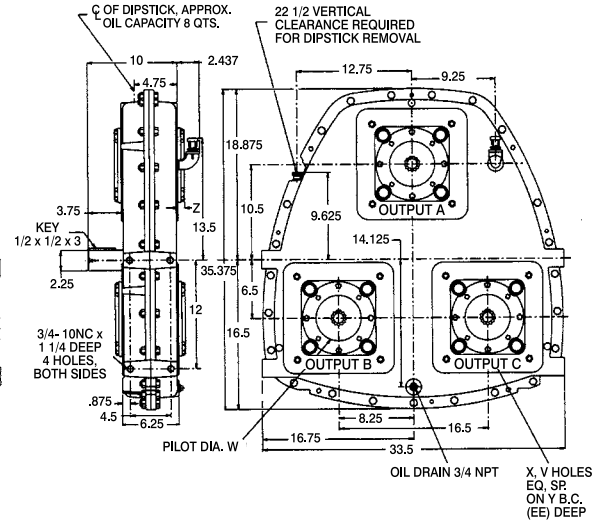
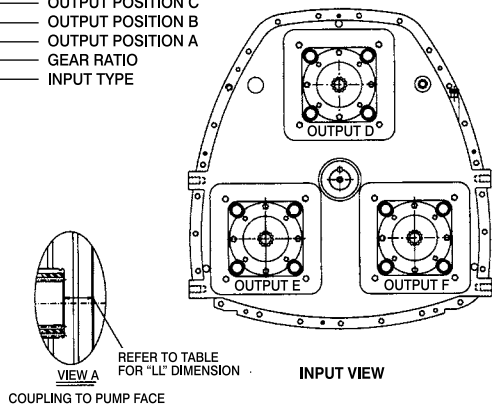
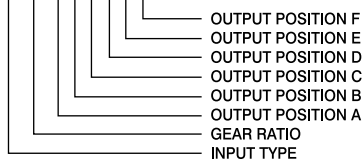
AVAILABLE GEAR RATIOS OUTPUT ROTATION OPPOSITE INPUT		
GEAR RATIO U-SPEED INCREASING D-SPEED DECREASING	MAX. INPUT SPEED (RPM)	
	U	D
1.02 E	2450	2500
1.14 UD	2190	2500
1.28 UD	1950	2500
1.39 UD	1800	2500
1.56 U	1800	2800
1.69 U	1775	3000

MODEL DS60

DS60 SERIES SIX PUMP DRIVE

HPD MODEL CODE

DS60- * - * - * - * - * - * - *

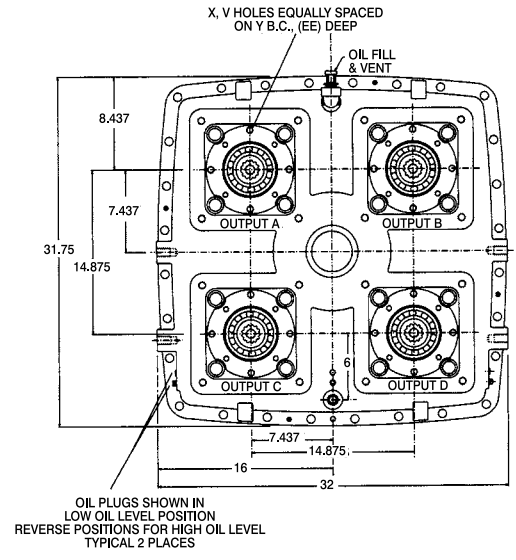
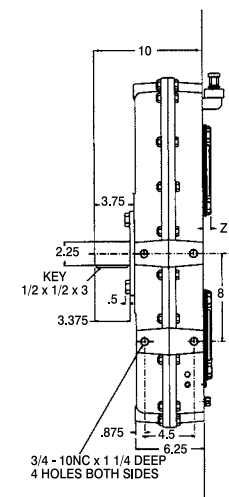
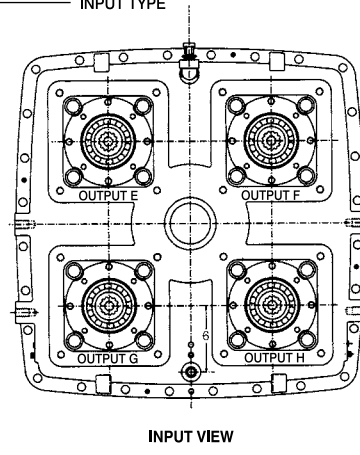
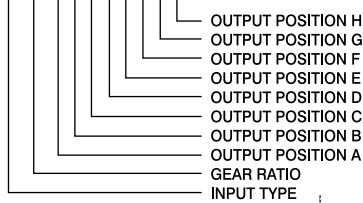


MODEL DS81

DS81 SERIES EIGHT PUMP DRIVE

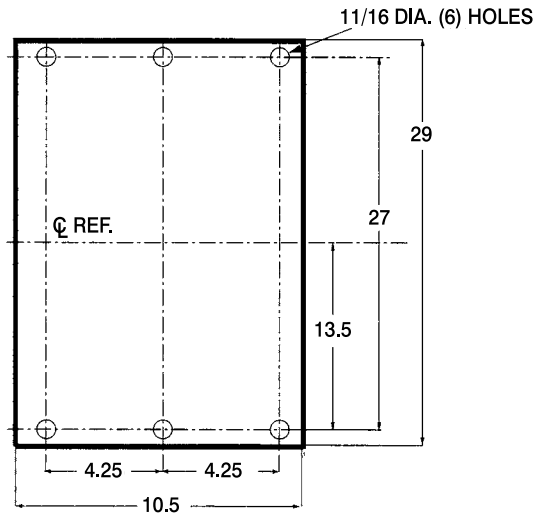
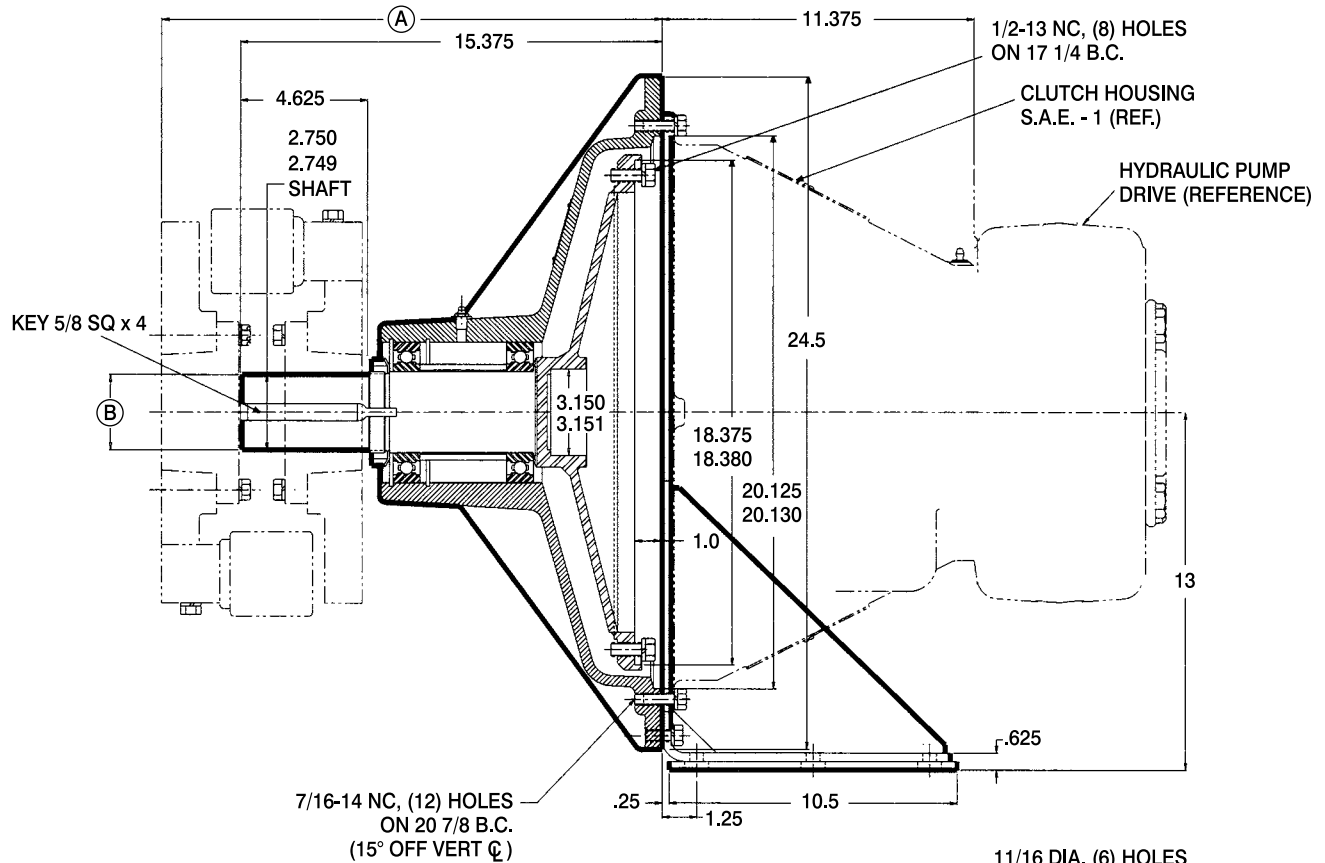
HPD MODEL CODE

DS81- * - * - * - * - * - * - *



POWER TAKE-OFF ADAPTER

The Gear Products E1400 Front Power Take-Off Drive Adapter is a specialized drive component for those diesel engines which do not offer SAE mounting arrangements. By means of this adapter, an over center industrial clutch can be attached to the front drive shaft so that power can be taken from either end of engine for further hydraulic or mechanical uses.



SUPPORT BASE
MOUNTING DIMENSION

SPECIFICATIONS

	#90 Coupling	#100
Coupling Rating	22.6 hp/100 rpm	42.0 hp/100 rpm
Coupling WR2	6.33 lb- ft Total	13.54 lb-ft2 Total
Coupling Stiffness	248,000 in-lb/Radian	557,000 in-lb/Radian
E1400-WR ²	10.97 ID-ft	10.97 lb-ft2
Apprommate Weight	340 lb	380 lb
A Over _{All} Dim. Min.	18 1/4	18 1/4
Over _{All} Dim. Max.	193/4	22 3/8
O Bore Dimension	3 7/16 Max. with 7/8 x 7/16 Keyway Max.	3 15/16 Max. with 1 x 1/2 Keyway Max.

NOTE: MOUNTING PROVIDED FOR SAE #1 CLUTCH HOUSING AND 14" OVER CENTER INDUSTRIAL CLUTCH.

ENGINE FLYWHEEL HOUSING DATA FOR CONSTRUCTION AND INDUSTRIAL EQUIPMENT

SAE J617C standard defines flywheel housing and mating flange configuration to assure industry standardization, interchangeability and compatibility with matching equipment. The following sketch and table provide dimensions for the flywheel housings.

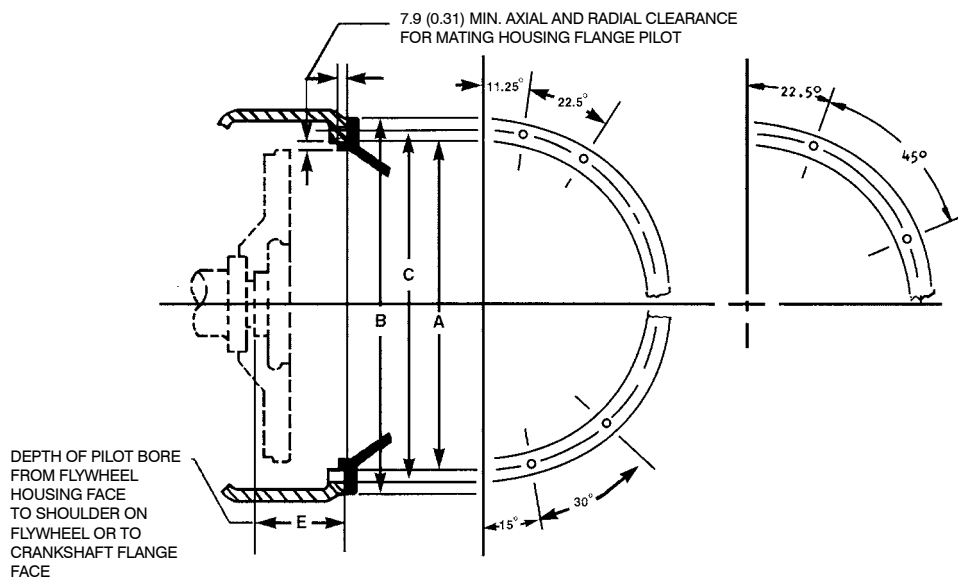
The sketch also illustrates spacing for 8, 12 and 16 bolt flange mounting patterns.

SAE J617C dimensions and tolerances are in millimeters and (inches).

The capscrew holes in the mating housing flanges shall be 1.19 mm (0.047) larger than the nominal diameter of the capscrews used on the flywheel housing. The diameter of the pilot on the flange of the mating housing shall be the same as the nominal diameter of the bore in the flywheel housing, the tolerances shall be +0.000 and -0.13 (0.005), the maximum eccentricity shall be 0.064 (0.0025) indicated runout 0.13 (0.005). The mating housing flange pilot diameter shall be 6.4 (0.25) long and its lead-in chamfer shall not

exceed 2.0 (0.08) in length. The fillet radius between the mounting flange face and the pilot diameter shall not exceed 1.0 (0.04R).

The maximum variation of the face of the mating housing flange from its true position when rotated about its axis shall be 0.064 (0.0025) indicated runout 0.13 (0.005).



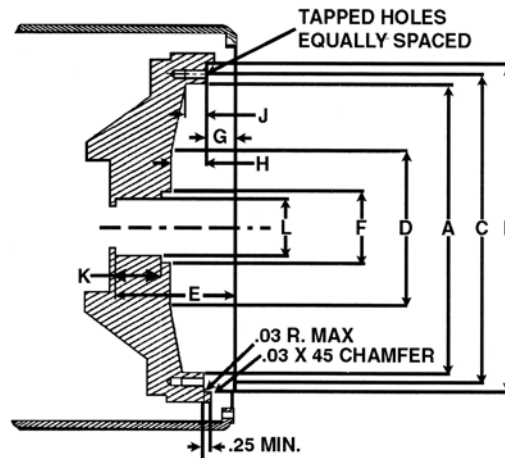
SAE No.	TOLERANCE							TAPPED HOLES
	A	Bore Dia. -0.00	Bore Eccen- tricity	Face Devi- ation	B	C	E	No. Size
0	647.70 (25.500)	+0.25 (0.010)	0.25	(0.010)	711.2 (28.00)	679.45 (26.750)	100.1 (3.94)	16 1/2-13
1	511.18 (20.125)	+0.13 (0.005)	0.20	(0.008)	552.4 (21.75)	530.22 (20.875)	100.1 (3.94)	12 7/16-14
2	447.68 (17.625)	+0.13 (0.005)	0.20	(0.008)	489.0 (19.25)	466.72 (18.375)	100.1 (3.94)	12 3/8-16
3	409.58 (16.125)	+0.13 (0.005)	0.20	(0.008)	450.8 (17.75)	428.62 (16.875)	100.1 (3.94)	12 3/8-16
4	361.95 (14.250)	+0.13 (0.005)	0.15	(0.006)	403.4 (15.88)	381.00 (15.000)	100.1 (3.94)	12 3/8-16
5	314.32 (12.375)	+0.13 (0.005)	0.15	(0.006)	355.6 (14.00)	333.38 (13.125)	71.4 (2.81)	8 3/8-16

NOTE: THE ABOVE DATA IS TAKEN FROM SAE J617C STANDARD. GPI URGES YOU TO MAKE CERTAIN YOUR ENGINE FLYWHEEL HOUSING MEETS THE SAE J617C STANDARD.

FLYWHEELS FOR INDUSTRIAL ENGINES USED WITH INDUSTRIAL PTOs EQUIPPED WITH DRIVE RING TYPE OVERCENTER CLUTCH

SAE J620d standard defined the flywheel configuration to assure industry standardization, compatibility and interchangeability. The following sketch and tables provide dimensional data for clutches and drive plate suitable for matching with GPI hydraulic pump drives.

For complete data and tolerances refer to SAE J620d.



DEPTH OF PILOT BORE FROM FLYWHEEL HOUSING FACE TO SHOULDER ON FLYWHEEL OR TO CRANKSHAFT FLANGE FACE

Clutch No.	A		B ^{ab}		C		D		E		F	
6 1/2	184.2	(7.25)	215.90	(8.500)	200.02	(7.875)	127.0	(5.00)	71.4	(2.81)	63.5	(2.50)
7 1/2	206.2	(8.12)	241.30	(9.500)	222.25	(8.750)	---		71.4	(2.81)	63.5	(2.50)
8	225.6	(8.88)	263.52	(10.375)	244.48	(9.625)	---		100.1	(3.94)	76.2	(3.00)
10	276.4	(10.88)	314.32	(12.375)	295.28	(11.625)	196.8	(7.75)	100.1	(3.94)	76.2	(3.00)
11 1/2	314.5	(12.38)	352.42	(13.875)	333.38	(13.125)	203.2	(8.00)	100.1	(3.94)	---	
14	409.4	(16.12)	466.72	(18.375)	438.15	(17.250)	222.2	(8.75)	100.1	(3.94)	101.6	(4.00)
16	460.2	(18.12)	517.52	(20.375)	488.95	(19.250)	254.0	(10.00)	100.1	(3.94)	104.6	(4.12)
18	498.3	(19.62)	571.50	(22.500)	542.92	(21.375)	---		100.1	(3.94)	104.6	(4.12)

Clutch No.	G	H	J	K ^c	L ^{bc}	"Tapped Holes" No. Size	
6 1/2	30.2 (1.19)	12.7 (0.50)	9.7 (0.38)	17.5 (0.69)	52.000 (2.0472)	6	5/16-18
7 1/2	30.2 (1.19)	12.7 (0.50)	12.7 (0.50)	17.5 (0.69)	52.000 (2.0472)	8	5/16-18
8	62.0 (2.44)	12.7 (0.50)	12.7 (0.50)	19.0 (0.75)	62.000 (2.4409)	6	3/8-16
10	53.8 (2.12)	15.7 (0.62)	12.7 (0.50)	28.4 (1.12)	72.000 (2.8346)	8	3/8-16
11 1/2	39.6 (1.59)	28.4 (1.12)	22.4 (0.88)	31.8 (1.25)	72.000 (2.8346)	8	3/8-16
14	25.4 (1.00)	28.4 (1.12)	22.4 (0.88)	38.1 (1.50)	80.000 (3.1495)	8	1/2-13
16	15.7 (0.62)	28.4 (1.12)	22.4 (0.88)	44.4 (1.75)	100.000 (3.9370)	8	1/2-13
18	15.7 (0.62)	31.8 (1.25)	31.8 (1.25)	44.4 (1.75)	100.000 (3.9370)	6	5/8-11

NOTE: Suggested tolerances are to be measured on assembled engine. For measuring procedure, see SAE J1033. Dimensions and tolerances are in millimeters and (inches).

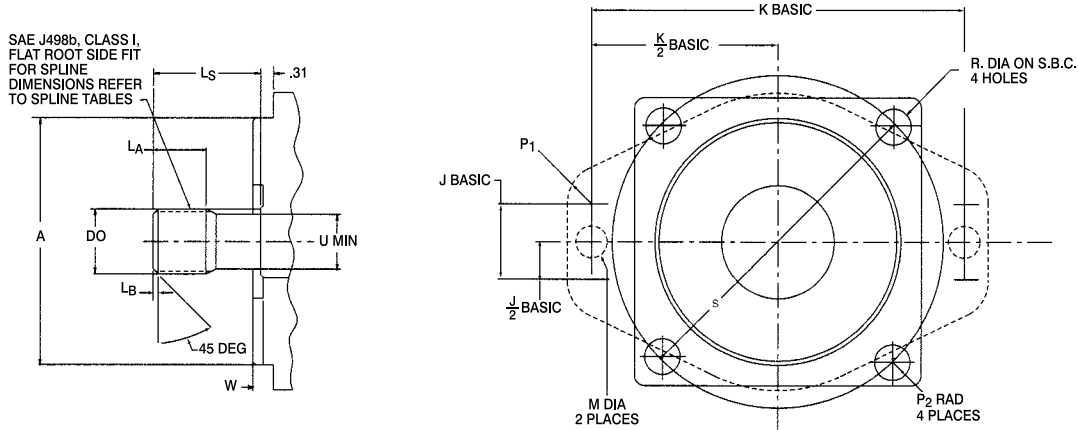
(a) Diameter tolerance of driving ring pilot bore "B" is plus 0.13 (0.005), minus 0.000; maximum eccentricity is 0.13 (0.005) total indicator reading; face runout maximum total indicator reading is 0.0005 times the measured diameter. Diameter tolerance for mating driving ring pilot diameter is plus 0.000, minus 0.13 (0.005).

(b) Eccentricity between driving ring pilot bore "B" and pilot bearing bore "L" is not to exceed 0.20 (0.008) total indicator reading.

(c) "K" is length of bore for pilot bearing; "L" is nominal diameter of bearing. Diameter and fit are to suit installation. Maximum eccentricity is 0.13 (0.005) total indicator reading.

(d) Tapped holes shall be threaded in accordance with UNC Class 2B tolerances of ANSI B1.1 screw threads, and the minimum length of thread engagement shall be 1.5 times the nominal diameter.

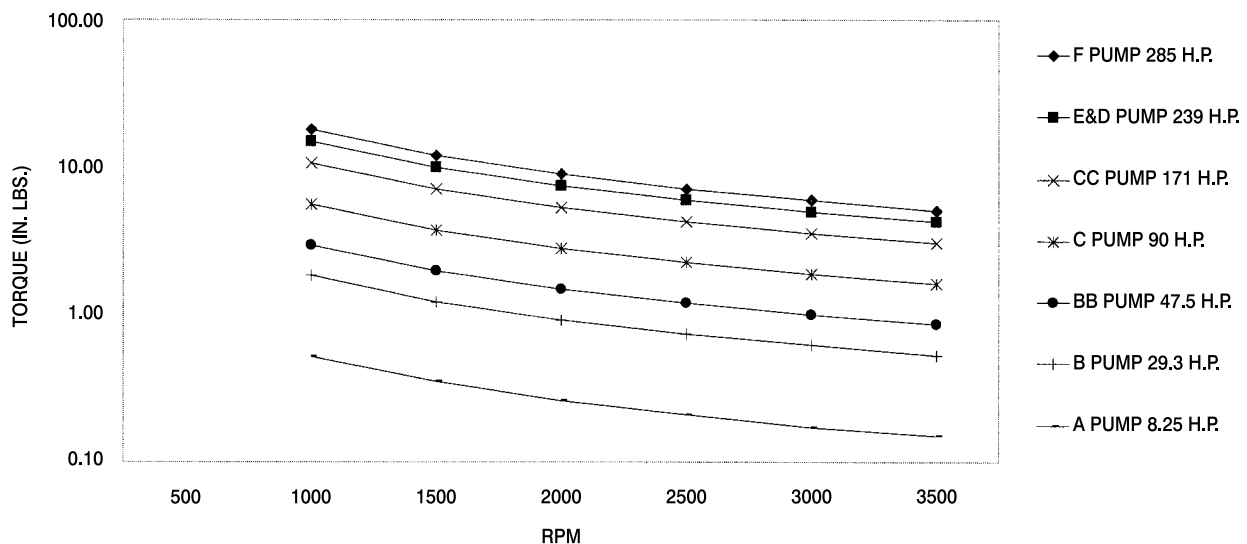
MOUNTING FLANGES AND SHAFT SPECIFICATIONS FOR HYDRAULIC PUMPS PER SAE J744c



Mounting Flange and Shaft Size	Shaft Stress =25,000 psi 25,000 pal		SHAFT DIMENSIONS								FLANGE DIMENSIONS								
			30 Degree Involute Spline								2 BOLT TYPE				4 BOLT TYPE				
			Torque, in-lb	hp at 1000 rpm	Spline DP	A	W	DO	U min	LA	Ls	L	K	M +0.010 -0.005	Radius	B	J	S	R +0.010 -0.005
A	517	8.25	9T 20/40	3.25	.250	.625	0.4725	0.30	0.938	0.06	4.188	0.438	0.47	3.75	0.72	---	---	---	
B	1,852	29.3	13T 16/32	4.00	.380	.875	0.7225	0.40	1.312	0.06	5.750	0.562	0.56	4.75	0.99	5.000	0.562	0.56	
BB	2,987	47.5	15T 16/32	4.00	.380	1.000	0.8475	0.50	1.500	0.06	5.750	0.562	0.56	4.75	0.99	5.000	0.562	0.56	
C	5,677	90.0	14T 12/24	5.00	.500	1.250	1.0497	0.60	1.875	0.09	7.125	0.688	0.62	5.81	1.22	6.375	0.562	0.62	
CC	10,777	171	17T 12/24	5.00	.500	1.500	1.2997	0.70	2.125	0.09	7.125	0.688	0.62	5.81	1.22	6.375	0.562	0.62	
D	15,057	239	13T 13/16	6.00	.500	1.750	1.4530	0.80	2.625	0.12	9.000	0.812	0.75	7.88	1.55	9.000	0.812	0.75	
E	15,057	239	13T 8/16	6.50	.625	1.750	1.4530	0.80	2.625	0.12	12.500	1.062	1.00	10.62	2.15	12.500	0.812	0.75	
F	17,962	285	15T 8/16	7.00	.625	1.998	1.7030	1.00	3.125	0.12	13.781	1.062	1.00	11.75	2.37	13.781	1.062	1.00	

For continuous service, SAE pump should operate below or to the left of the curve per SAE J744c. If your pump exceeds these ratings, please contact your pump manufacturer and your GPI representative.

SAE TORQUE RATINGS



FOR REMOTE CONTROL OF OVER CENTER CLUTCH

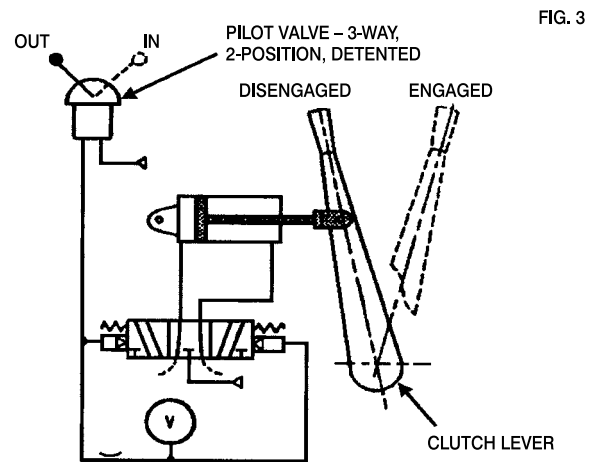
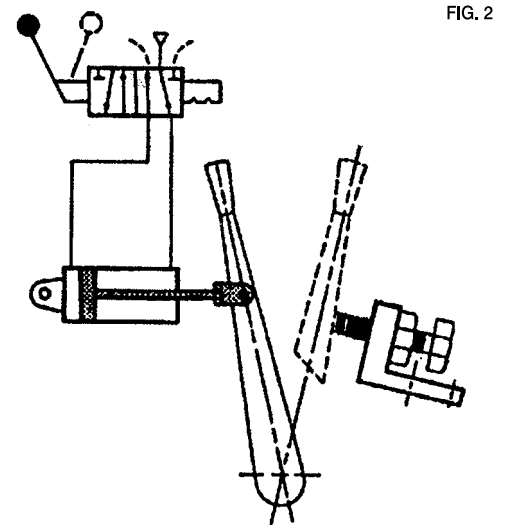
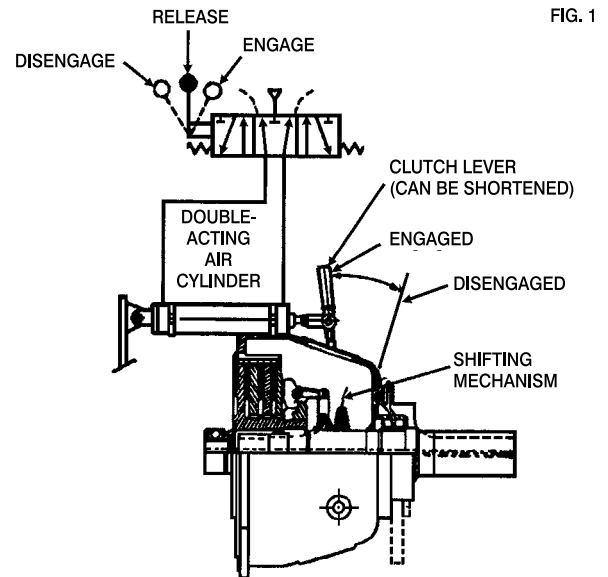
Figure 1 illustrates a typical air control system that is easy to install.

Figure 2 utilizes a 2 position, 4 way valve. This system does not return to neutral and does require a mechanical stop to limit the cylinder stroke and take the cylinder force off the clutch shifting mechanism. Periodic adjustment of the mechanical stop will be necessary.

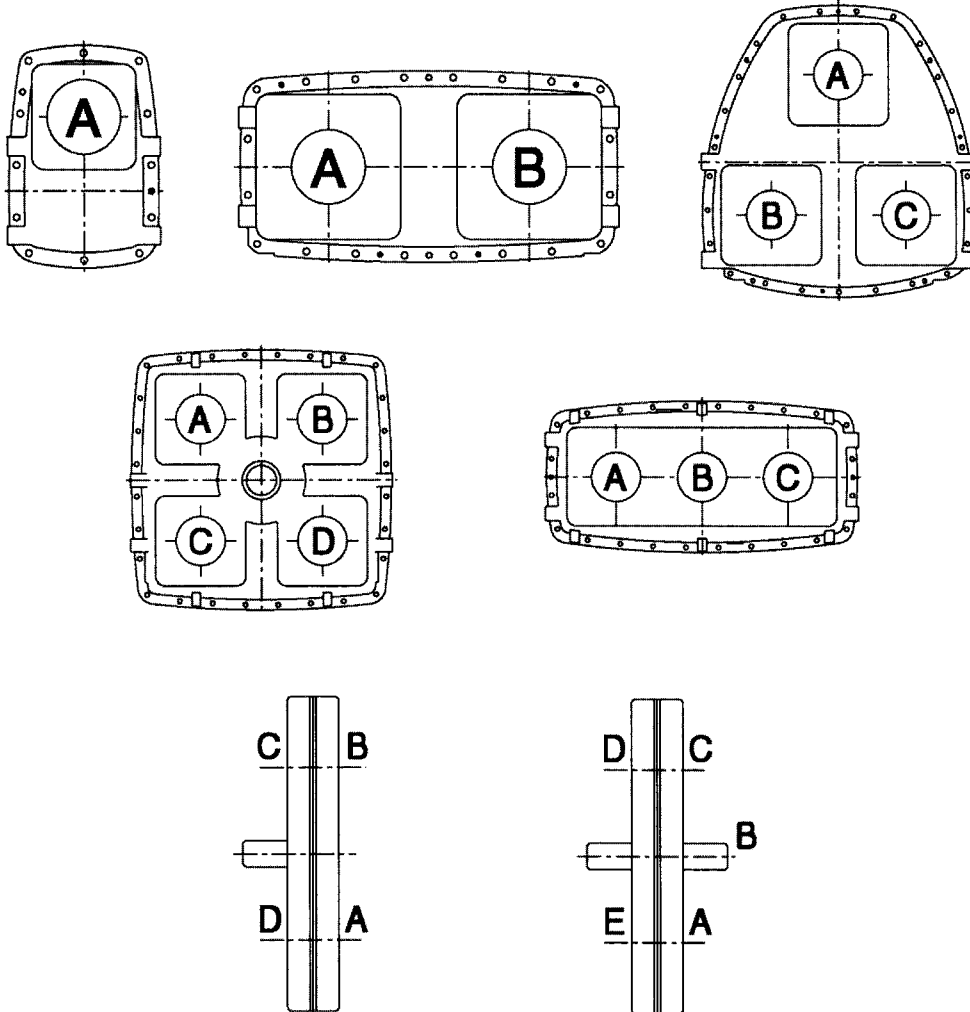
A double acting air cylinder will easily duplicate the motion a human arm makes to engage or disengage a mechanical clutch. A directional control valve to operate the double acting air cylinder can be located in a place convenient to the operator for remote control of the mechanical clutch.

It is important that the air cylinder operating the mechanical clutch be vented or exhausted to unload the shifting mechanism of the clutch after engagement. And prevent unnecessary force and wear on the clutch components.

Figure 3 illustrates a timed unloading circuit. Basically the same operation as figure 2 less the mechanical stop. Timed unloading systems should be used only with an overcenter type shifting mechanism.



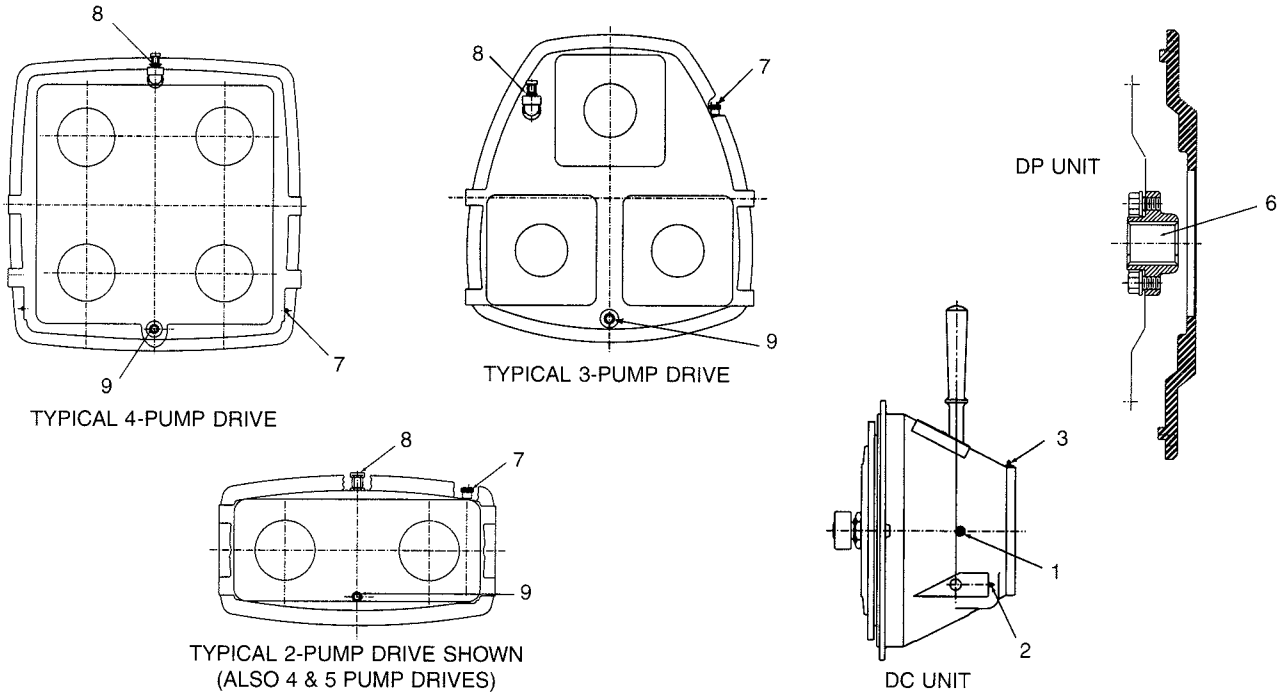
OUTPUT LOCATION SEQUENCE



LIMITED WARRANTY

GPI warrants each new product only in accordance with GPI's separate Limited Warranty. Buyer's remedy for any claim of any kind is exclusive and is limited to replacement or repair, at GPI's option, as provided in such separate Limited Warranty. SUCH WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. GPI shall not in any event be liable for consequential or incidental damages, regardless of whether such damages arise from contract or tort, including negligence, nor shall GPI be held liable for any expenses, attorneys' fees or delay caused by defective material or workmanship.

LUBRICATION INFORMATION



Point	QTY	HPD Section	Part	Fitting	Lubricant	Frequency
1	1	Clutch Input	Collar	Alemite	Grease	Daily during frequent operation
2	2	Clutch Input	Operating Shaft	Alemite	Grease	Every 100 hours
3	1	Clutch Input	Ball Bearing	Alemite	Grease	Every 100 hours
4	2	Extended Shaft	Ball Bearing	Alemite	Grease	Every 100 hours
5	1	Extended Shaft	Internal Spline	None	None	
6	1	Disc Drive Input	Internal Spline	None	None	
7	1	Gear Drive	Oil Level	Dipstick or plug	Gear Oil	Check level every 100 hours while unit is stopped. DO NOT OVERFILL
8	1	Gear Drive	Oil Fill	Vent Fitting	Gear Oil	*Change oil when contaminated or at least once each year or when engine oil is changed.
9	1	Gear Drive	Oil Drain	Magnetic Pipe Plug	Gear Oil	

RECOMMENDED LUBRICANTS

Grease: High grade, high pressure, multi-purpose, lithium base grease gun lubricant

Gear Oil: MIL-L-2105 or API-GL-5

Air Temp.: Below -10° F: SAE 75 wt.
Between -10° and 100° F: SAE 80-90 wt.
Above 100° F: SAE 85-140 wt.

APPROXIMATE SUM CAPACITIES^b

D*10 --- 5 qts	D*36 --- 4.5 qts
D*16 --- 1.5 qts	D*38 --- 6.5 qts
D*25 --- 4 qts	D*58 --- 10-12 qts
D*26 --- 2 qts	
D*28; 49 --- 5.5 qts	
D*30; 41; 60; 81 --- 8 qts	
D*20; 31; 40; 50 --- 7 qts	

(a) Change break-in oil after 100 hours of service. We recommend changing the oil when changing engine oil or every 6 months. Harsh environments, high temperatures or continuous service may require more frequent oil changes.

(b) Oil capacities are approximate and subject to change with ratio and output orientation.

FLUID POWER FORMULAS

FORMULA		WORD FORMULA	LETTER FORMULA
Fluid Pressure <i>In Pounds/Square Inch</i>	Pressure	= $\frac{\text{Force (Pounds)}}{\text{Unit Area (Square Inches)}}$	$P = \frac{F}{A}$ or $\text{psi} = \frac{F}{A}$
Cylinder Area <i>In Square Inches</i>	Area	= $\pi \times \text{radius}^2$ (Inches)	$A = \pi r^2$
		= $\frac{\pi}{4} \times \text{diameter}^2$ (Inches)	$A = \frac{\pi D^2}{4}$ or $A = .785D^2$
Cylinder Force <i>In pounds, Push or Pull</i>	Force	= Pressure (PSI) x Net Area (Square Inches)	$F = \text{psi} \times A$ or $F = PA$
Cylinder Velocity or Speed <i>In Feet/Second</i>	Velocity	= $\frac{231 \times \text{Flow Rate (GPM)}}{12 \times 60 \times \text{Net Area (Square Inches)}}$	$v = \frac{231Q}{720A}$ or $v = \frac{.3208Q}{A}$
Cylinder Volume Capacity <i>In Gallons of Fluid</i>	Volume	= $\frac{\pi \times \text{Radius}^2 \text{ (Inches)} \times \text{Stroke (Inches)}}{231}$	$V = \frac{\pi R^2 \ell}{231}$
		= $\frac{\text{Net Area (Square Inches)} \times \text{Stroke (Inches)}}{231}$	$V = \frac{A\ell}{231}$ (ℓ = length of stroke)
Cylinder Flow Rate <i>In Gallons per Minute</i>	Flow Rate	= $\frac{12 \times 60 \times \text{Velocity (Feet/Sec)} \times \text{Net Area (Square Inches)}}{231}$	$Q = \frac{720vA}{231}$ or $Q = 3.117 vA$
Fluid Motor Torque <i>In Inch Pounds</i>	Torque	= $\frac{\text{Pressure (psi)} \times \text{F.M. Displacement (Cu. In./Revolution)}}{2\pi}$	$T = \frac{\text{psi } d}{2\pi}$ or $T = \frac{Pd}{2\pi}$
		= $\frac{\text{Horsepower} \times 63025}{\text{RPM}}$	$T = \frac{63025 \text{ HP}}{n}$
		= $\frac{\text{Flow Rate (GPM)} \times \text{Pressure (psi)} \times 36.77}{\text{RPM}}$	$T = \frac{36.77QP}{n}$ or $T = \frac{36.77Q\text{psi}}{n}$
Fluid Motor Torque/100 psi <i>In Inch Pounds</i>	Torque/100 psi	= $\frac{\text{F.M. Displacement (Cu. In./Revolution)}}{.0628}$	$T_{100\text{psi}} = \frac{d}{.0628}$
Fluid Motor Speed <i>In Revolutions/Minute</i>	Speed	= $\frac{231 \times \text{Flow Rate (GPM)}}{\text{F.M. Displacement (Cu. Inches/Revolution)}}$	$n = \frac{231Q}{d}$
Fluid Motor Power <i>In Horsepower Output</i>	Horsepower	= $\frac{\text{Torque Output (Inch Pounds)} \times \text{RPM}}{63025}$	$\text{HP} = \frac{Tn}{63025}$
Pump Outlet Flow <i>In Gallons/Minute</i>	Flow	= $\frac{\text{RPM} \times \text{Pump Displacement (Cu. In./Rev.)}}{231}$	$Q = \frac{nd}{231}$
Pump Input Power <i>In Horsepower Required</i>	Horsepower Input	= $\frac{\text{Flow Rate Output (GPM)} \times \text{Pressure (psi)}}{1714 \times \text{Efficiency (Overall)}}$	$\text{HP}_{\text{IN}} = \frac{QP}{1714\text{Eff}}$ or $\frac{\text{GPM} \times \text{psi}}{1714\text{Eff}}$
Flow Rate Through Piping <i>In Feet/Second Velocity</i>	Velocity	= $\frac{.3208 \times \text{Flow Rate Through I.D. (GPM)}}{\text{Internal Area (Square Inches)}}$	$v = \frac{.3208Q}{A}$
Compressibility of Oil <i>In Additional Required Oil To Reach Pressure</i>	Additional Volume	= $\frac{\text{Pressure (psi)} \times \text{Volume of Oil Under Pressure}}{250,000}$	$\text{VA} = \frac{PV}{250,000}$ approximately ½% per 1,000 psi

Other High Performance Products



Planetary Swing Drives and Speed Reducers

Gear Products, Inc. manufactures a complete line of Planetary Spur Gear Speed Reducers and Swing Drive Gear Boxes. Output torque rating from 3,500 in.-lbs. to 120,000 in.-lbs. is conservatively rated as measured against the yield. Available gear ratios run the gamut from 3.2:1 to 71.25:1.

All models utilize heavy duty bearings on the output shaft and are constructed of quality heavy duty materials. Both internal or caliper type brakes are available on select models.

FEATURES

- Planetary spur gearing
- Heavy duty tapered roller bearings (on unit rated in excess of 3500 in.-lbs)
- Heavy duty construction
- Internal spring-applied hydraulic release
- Caliper type brake (available on specific model)

OPTIONS

- Hydraulic motor mounts
- Output shaft with integral pinion gear

BENEFITS

- Optimum usable horsepower
- High thermal capacity
- Protection for heavy side loads
- Protection for shock loads
- Holds rated load when hydraulic pressure is removed from system
- A dynamic hydraulic applied brake for precise load positioning



G-Series Rotation Bearings

GPI G-Series Rotation Bearings are multi-load bearings developed especially for the high moment applications associated with truck cranes, digger-derricks, aerial platforms and construction hoists where a smooth exactly controlled continuous rotation of the moment arm is demanded. External gear rotation bearings having a moment arm rating 23,800 ft.-lbs to 600,000 ft.-lbs, or internal gear rotation bearings having a moment arm rating of 91,700 ft.-lbs to 391,000 ft.-lbs are offered. Gearless bearings with a moment arm rating from 15,100 ft.-lbs to 520,000 ft.-lbs are also available.

Gear Products precision manufacturing and assembly techniques produce quality, low friction bearings with minimal accumulated bearing play. New and improved machines and manufacturing methods assure GPI rotation bearings are unexcelled in the industry.

FEATURES

- Induction hardened bearing path
- Magna-flux after induction hardening and after grind operation

OPTIONS

- Seal types
- Bolt patterns
- Induction hardened gear tooth

BENEFITS

- Longer bearing and path life
- Assures the integrity of the material before assembly



Worm Gear Speed Reducers and Swing Drives

The GPI Worm Gear Speed Reducer line provides units with ratings from 5,000 in.-lbs to 40,000 in.-lbs and with available ratios from 10:1 to 48:1 on selected series. These worm gear speed reducers are designed to function as swing drives, capstan drives and winches. They function well in applications requiring a right angle drive capable of absorbing heavy shock and side loading. Low reduction units in the 10:1 and 16.5:1 class are used where high efficiency and back drive capability are required. The back drive units and speed reducers used for customized winches require a spring-applied, hydraulic-released parking brake.

FEATURES

- Planetary spur gearing
- Right angle drive
- Back drive capability
- Heavy duty construction
- Eccentric ring

OPTIONS

- Pinion Gears, Guts & Glory
- Eccentric ring
- Hydraulic motor mount
- Worm gear brake

BENEFITS

- Compact package
- High reduction at low cost
- Provides protection for other components
- Optimum life under repetitive shock loads
- Adjustment for pinion gear/rotation bearing gear back lash

Planetary Winches

The PG Series of Planetary Spur Gear Winches are maximum rated from 5,600 lbs to 15,000 lbs line pull at the cable drum. Selective hydraulic motor sizes provide optimum line speed and pull for specific applications. All planetary winches incorporate a spring-applied, hydraulic static brake. A counter balance valve in the hydraulic circuit will provide dynamic control.

FEATURES

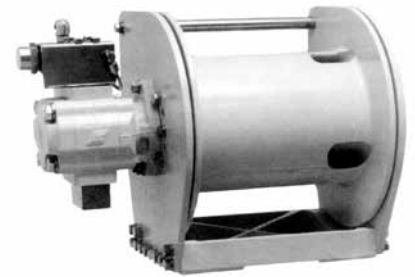
- Planetary spur gearing
- Internal spring-applied static brake hydraulic release
- Dynamic brake
- Cable anchor pockets
- Drain and fill plugs located in end of winch opposite motor

OPTIONS

- Gear ratios
- Side plates mounting bases
- Hydraulic motors
- Cable drum lengths
- Wire or poly rope

BENEFITS

- Improved thermal capacity
- Excellent line speeds
- Optimum usable horse power
- Improved winch safety
- High degree of operator confidence in winch static brake
- Eliminates heat fade
- Counter balance valve provides excellent control of loads
- Provides for smoother wire storage
- Allows use of either wire or poly rope
- Increased drum capacity
- Improved service and maintenance



Worm Gear Winch Assemblies

GPI offers five series of Worm Gear Winch Rated Assemblies. Winch output torque ratings are available from 5,150 in.-lbs to 75,500 in.-lbs providing 1st layer line pulls from 2,250 lbs. to 15,000 lbs.

All GPI winch assemblies are designed for direct hydraulic motor drive and suitable for application-specific customization. GPI is prepared to furnish complete winch with motor and customer specified drum. Or, if the customer prefers, supply the appropriate winch assembly without the hydraulic motor and/or the winch drum.

FEATURES

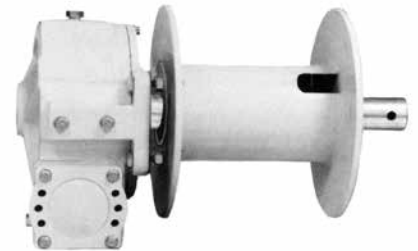
- Worm gear efficiency
- Right angle drive
- Heavy duty construction
- Automatic worm brake

OPTIONS

- Worm brake
- Capstan assembly with AT&T specified output shaft
- Motor mount
- Drum dimensions

BENEFITS

- Provides braking assistance
- Reduces overall winch package
- Resists shock loads
- Spring applied to hold suspended load cam released to raise load



Capstan Drives

For wire take-up work the Planetary Spur Gear Reducer provides high thermal capacity suitable for long sustained pulls capable with large collapsible reels. GPI offers two (2) series of planetary capstan drives—a Series 105 rated at 4,000 lbs line pull on a standard 7" bayonet capstan and 1,400 lbs on a 20" collapsible reel. The Series 105 has a standard AT&T specified output shaft that will accommodate either a standard bayonet type capstan or a collapsible reel.

The Series 106 Planetary Capstan Drive is rated at 10,000 lbs on a special 7" bayonet capstan having a 2 1/2" hex input to accommodate the 2 1/2" hex output shaft of the series 106 capstan drive.

Both series 105 and 106 capstan drives are furnished with a spring-applied hydraulic released internal disc type brake capable of bi-directional braking.

- Planetary spur gearing
- Bi-directional braking
- Heavy duty tapered roller bearings
- AT&T specified output shaft
- Hydraulic motor
- Counter balance valve with integral shuttle valve

BENEFITS

- High thermal capacity—sustained pulls
- Compact power package
- Smooth power transmission
- Optimum operating safety
- Protects against heavy side loads
- Use either bayonet capstan or C.R. reel





Rotation Bearings
Planetary Swing Drives and Speed
Reducers
Worm Gear Swing Drives and
Speed Reducers
Planetary Winches
Worm Gear Winches
Hydraulic Pump Drives
Hydraulic Motor Shaft Brakes
Planetary Capstan Drives
Rotators



Gear Products is a brand of TWG, a global leader in standard and engineered winch, gearbox and electronic monitoring systems.

As a leader in product innovation, Gear Products is committed to the ongoing improvement of our products. We reserve the right to make changes to our products without notice.

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LANTEC® PULLMASTER

