

10-4 SERIES AIR OPERATED LIQUID PUMPS

PRESSURE RATIO OLD & NEW

PART NUMBERS

In the mid 1990's with the advent of a new inventory and computer system, SC Hydraulic Engineering was forced to change the part numbering system for better control and understanding.

Prior to that time, a typical part number stated the basic series number, a ratio reference number, and a suffix if there were any modifications. Typically, a call out might be 10-500-1.5 or perhaps 10-600-20BA. The biggest change, and where some confusion may occur, is in the pressure ratio model call out for the various sizes available.

The chart below can be used as an aid in determining the correct number. Take careful note to similar call outs such as .5 (now 005) and 5 (now 050). At the time of the change, it was decided that all new products would use actual pressure ratios for hydraulic section call outs. Hence, with the D5 and D6 Series the model suffix is just that. Note however, the actual physical size of the unit is identical to the 10 Series model.

Additional changes of the part numbers from the old model numbers and the new numbers are shown on the 'How to Order Table'.

10-4 SERIES			10-5 & D5 SERIES			10-6 & D6 SERIES		
HYDRAULIC SECTION MODEL			HYDRAULIC SECTION MODEL			HYDRAULIC SECTION MODEL		
OLD	NEW	RATIO	OLD	NEW	D5 / RATIO	OLD	NEW	D6 / RATIO
0.25	003	5	0.24	003	5	.35QR	003	5
0.5	005	10	0.5	005	10	.5QR	005	10
1	010	15	0.65	007	12	1	010	20
1.5	015	30	1	010	20	1.5	015	25
2	020	35	1.5	015	25	2	020	35
3	030	55	1.75	018	30	3	030	55
5	050	100	2	020	35	5	050	95
8	080	140	3	030	55	8	080	145
12.5	125	220	4	040	70	10	100	180
			4.5	045	85	15	151	240
			6	060	105	20	201	330
			8	080	140	30	301	460
			10	100	195	40	402	740
			16	160	280			
			25	250	440			
			35	350	555			

NO OTHER PUMPS OFFER ALL THESE ADVANTAGES

Simple operating principle – SC air operated hydraulic pumps operate on the simple but efficient principle of pressure intensification through the use of differential areas. Fulfilling Boyle's Law, a larger air-driven piston delivers pressure to a proportionally lesser diameter hydraulic piston, providing fluid flow at relatively higher pressures.

High output capacity and outstanding performance provided at very low cost.

Guaranteed performance – All SC Hydraulic pumps will give years of low cost, trouble free service when properly installed and maintained to manufacturer's instruction.

Wide range of operating pressures is provided by all models. For example, the D5000B55 operates efficiently when delivering from 400 to 5800 psi (see D5 Series specifications).

Wide range of output capacities – Only 100 psi air pressure is required for all models to attain maximum rate of flow (see performance charts for data).

Complete flexibility – SC Hydraulic pumps adapt to a wide variety of applications, from simple manual controls to fully automatic operation. Air motors are interchangeable for most models within each series.

Automatic restart – Whenever an SC Hydraulic pump is idle, the pilot valve is designed to re-position the pump on the power stroke for the next cycle of operation.

Smooth operation – The air piston actuating valve is precision fit to close tolerances for maximum efficiency and long service life.

Both pressure and volume of flow are easily and accurately controlled by a pressure regulator installed in the air supply line.

Fluid Compatibility – Pumps can operate with almost any type fluid service (specify when ordering).

Hydraulic cylinders are constructed from aluminum-bronze, stainless steel, or carbon steel.

Hydraulic pistons are constructed from stainless steel, hard chrome-plated.

Materials incorporated in the hydraulic assembly vary depending upon type of service and pump model.

Designed for easy maintenance – Costly down time is reduced to a minimum when service is required. "D" Dry Lube Series pumps are packed at the factory with valve lubricant and may be operated without a lubricator in air supply. Hydraulic cylinder packing may be replaced without dismantling the air motor.

Three Series available – choose from:

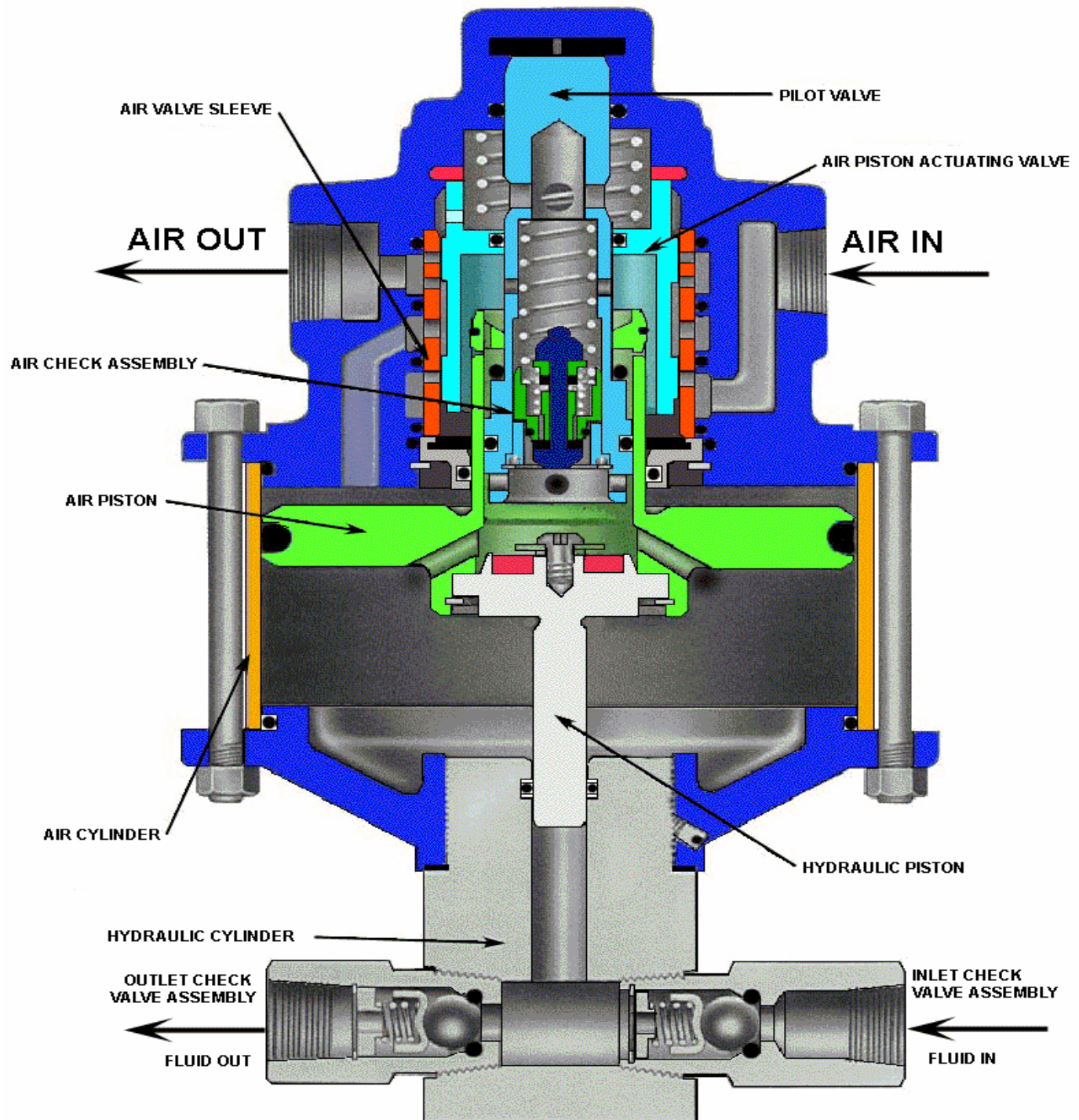
10-4 Series • 9 models • to 22,000 psi

D5/10-5 Series • 16 models • to 55,000 psi

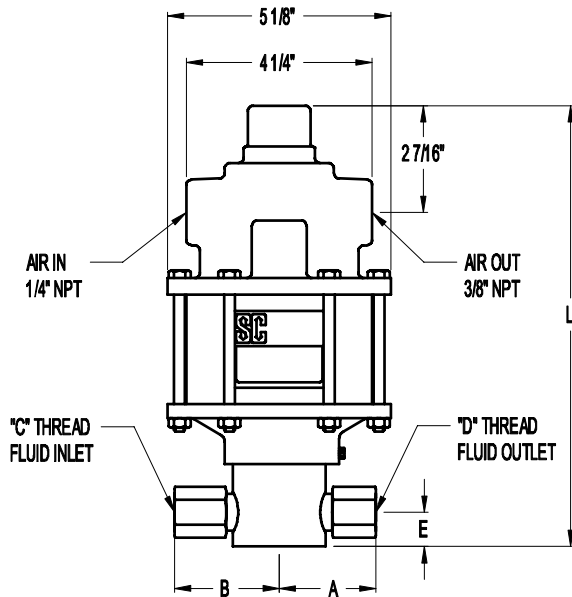
/D6/10-6 Series • 13 models • to 65,000 psi

Applications include static and burst testing, flow testing requiring relatively low flows at high pressures, operation of hydraulic presses, clamping, pressing, metal forming, piercing, blanking, staking, etc. Applications requiring extreme intermittent pressure and velocity commonly associated with water blasting and jetting.

Liquid Pump Cut-a-way



10-4 SERIES



10-4 Series pumps have a 4" diameter air piston and a 1 1/4" stroke. Nine models are available with pressures up to 22,000 psig.

When operating from 0 to rated hydraulic pressure, air consumption will be approximately 14 scfm of free air at 100 psi output. At lower air pressures and higher hydraulic pressures, air consumption will be reduced proportionately to flow rates indicated.

Mounting may be in any position, vertical preferred. When mounting in an inverted position, a drain cock should be provided to drain off any liquid that may accumulate in the pilot valve air chamber.

Mounting Dimensions in Inches

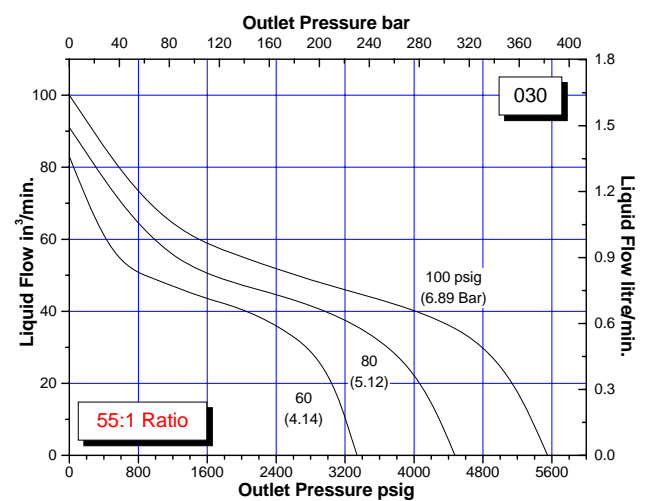
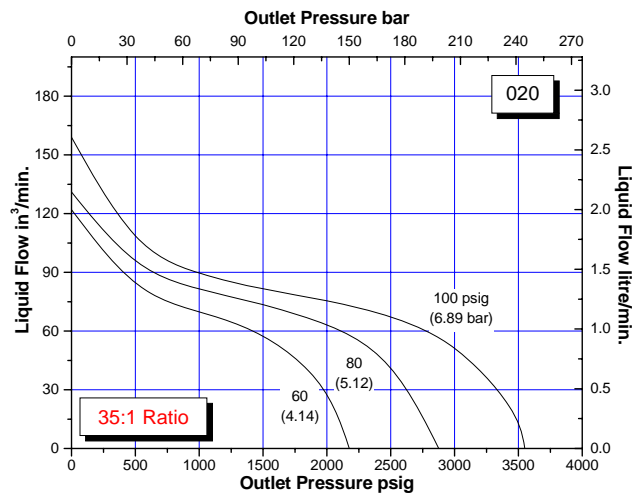
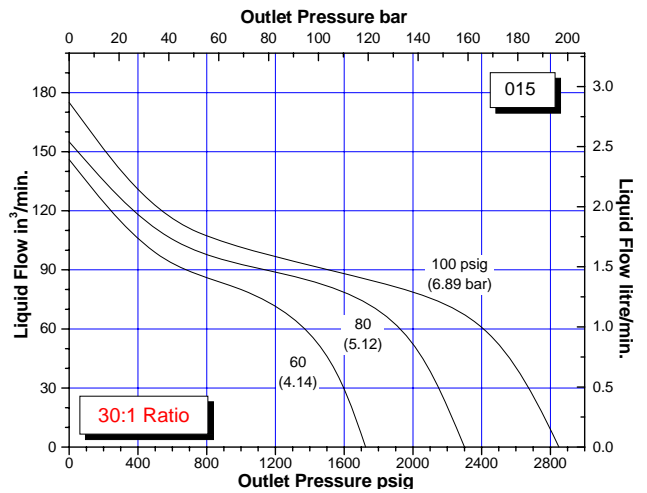
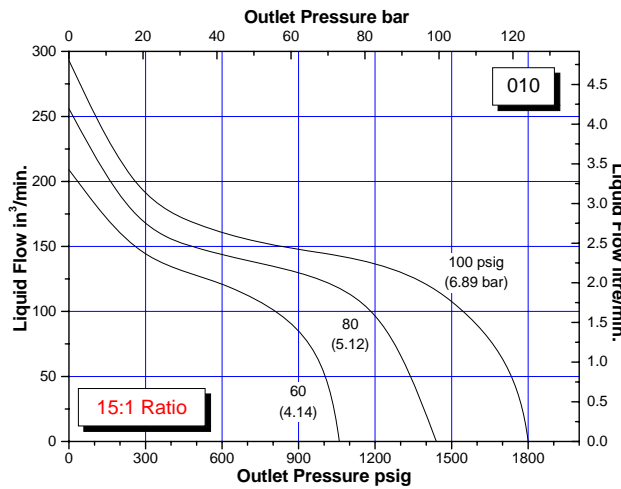
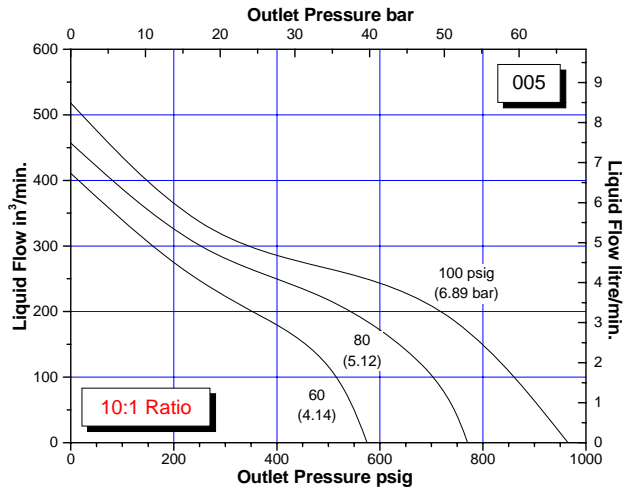
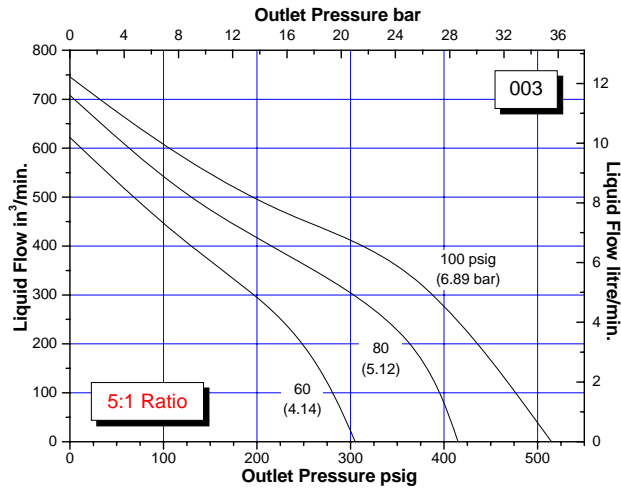
10-4 Series Model	L	A	B	NPT (Standard)		E	F
				C Thread	D Thread		
-003	11.375	2.438	3.000	1/2"	3/8"	.813	1.500
-005	11.188	2.438	3.000	1/2"	3/8"	.813	1.500
-010 thru -015	11.063	2.438	2.438	3/8"	3/8"	.813	1.500
-020 thru -300	10.063	2.438	2.438	3/8"	3/8"	.813	1.500
-050 thru -125	10.500	2.375	2.313	3/8"	3/8"	.813	1.500

Measurements & Approximate Air to Hydraulic Pressure Ratios – Static Conditions

10-4 Series Model	Ratio	Hydraulic Piston Diameter (in)	Hydraulic Piston Area (in ²)	Volume per Stroke (in ³)	Air Pressure (PSI)									
					10	20	30	40	50	60	70	80	90	100
-003	5	1.6250	2.070	2.590	35	90	145	200	250	305	360	415	465	515
-005	10	1.1875	1.110	1.390	80	180	280	375	475	575	675	770	870	965
-010	15	0.8750	0.601	0.751	160	340	520	700	880	1060	1240	1440	1600	1800
-015	30	0.6875	0.371	0.464	250	550	850	1150	1425	1725	2000	2300	2575	2850
-020	35	0.6250	0.307	0.384	300	675	1050	1450	1800	2175	2525	2875	3225	3550
-030	55	0.5000	0.196	0.245	500	1040	1620	2200	2750	3340	3850	4475	5000	5550
-050	100	0.3750	0.110	0.138	950	1850	2900	3800	4850	5900	6875	7900	8900	9900
-080	140	0.3125	0.077	0.096	1300	2700	4150	5700	7100	8600	9900	11200	12600	14000
-125	220	0.2500	0.049	0.061	2100	4400	6750	8750	11250	13250	15250	17500	19750	22000

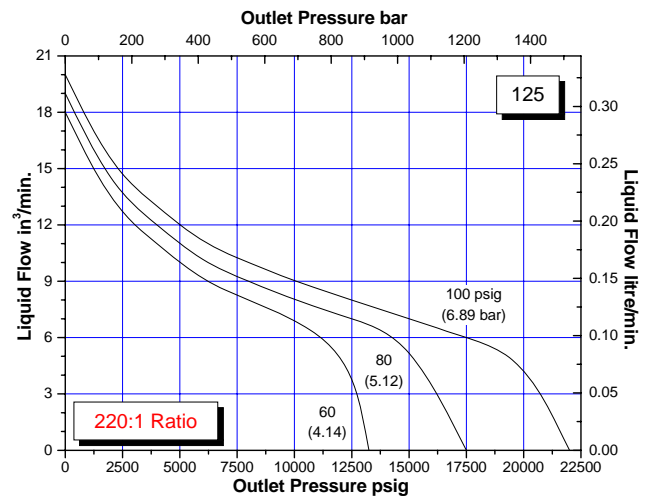
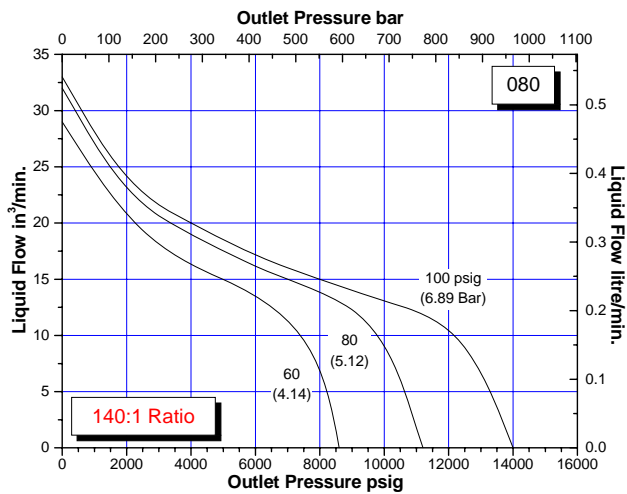
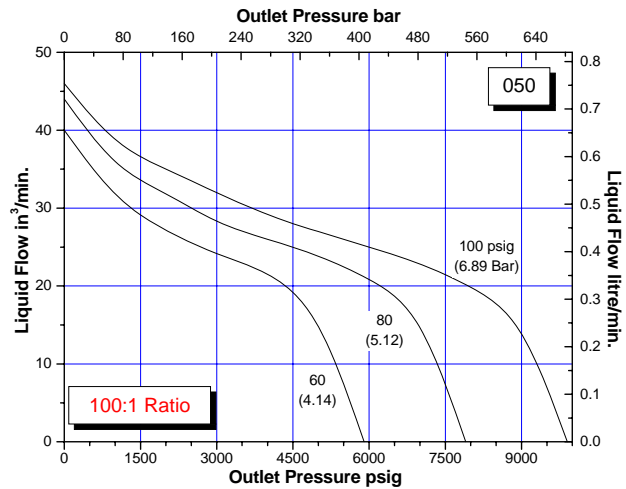
10-4 SERIES

APPROXIMATE RATE OF DISCHARGE

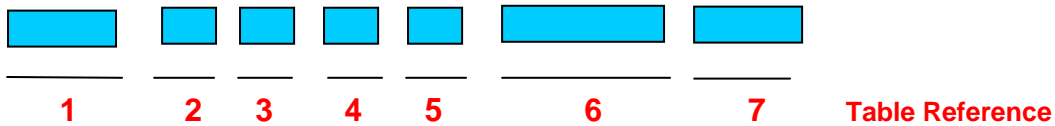


10-4 SERIES

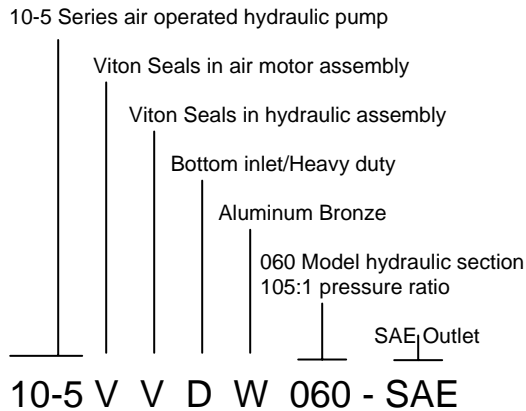
APPROXIMATE RATE OF DISCHARGE



HOW TO ORDER TABLE



Example #1 Pump Selection



Example #2 Pump Selection

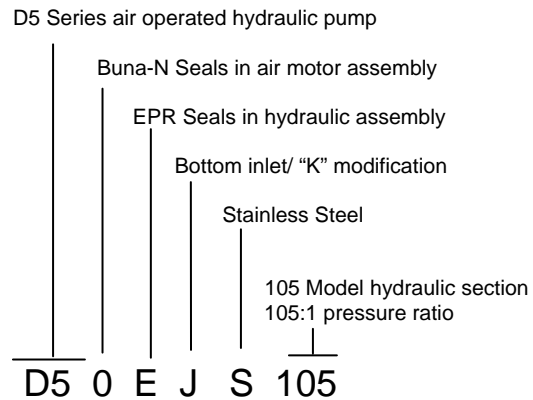


TABLE 1 ⁽⁴⁾ Pump Series Designation

10-4	Series Lubricated pump
10-5	Series Lubricated pump
D5	D5 Series "Dry Lube" pump
10-6	Series Lubricated pump
D6	D6 Series "Dry Lube" pump
80-5	5 1/2" Bore Intensifier
83-5	5 1/2" Intensifier with Position Indicator Rod
80-6	7" Bore Intensifier
83-6	7" Intensifier with Position Indicator Rod

TABLE 2 Seal Compound - Air Motor

0	Buna-N (standard)
V	Viton

TABLE 3 Seal Compound – Hydraulic Section

0	Buna-N nitrile (standard)
E	EPR - ethylene propylene
V	Fluorocarbon
*	Consult factory for special compounds

TABLE 4 Modifications

0	Standard pump
A	"A" modification
B	Bottom inlet ⁽¹⁾
C	Chevron Seals
D	Bottom inlet – heavy duty ^(1,3)
E	Bottom inlet – "A" modification ⁽¹⁾
F	Isolator – Chevron Seals ^(1,3)
G	Isolator – heavy duty ^(1,3)
H	Heavy duty ⁽¹⁾
J	Bottom inlet – "K" modification ⁽¹⁾
K	"K" modification ⁽¹⁾
M	Bottom inlet – "A" and "K" modification ⁽¹⁾

TABLE 4 Modifications

(continued)

N	Isolator – "A" modification ⁽¹⁾
P	Isolator – "K" modification ⁽¹⁾
Q	Isolator – "A" and "K" modification ⁽¹⁾
R	Isolator ⁽¹⁾
S	Heavy duty – "K" modification ^(1,3)
U	Heavy duty – bottom inlet – "K" mod. ^(1,3)
V	Heavy duty – isolator – "K" modification ^(1,3)

TABLE 5 Material of Construction – Hyd. Section

W	Aluminum bronze & stainless steel (10-4, 10-5, 10-6 Series) standard
B	Aluminum bronze & stainless steel (D5, D6 Series) standard
S	All stainless steel
C	Cad plate carbon steel, stainless steel ⁽²⁾

TABLE 6 Model designation –Pressure ratio

Refer to pressure ratio charts for proper selection

TABLE 7 Port option

Blank	Standard
SAE	Straight thread as indicated on chart
HF4	9/16-18 x 1/4" OD tube 60K psi

Additional Special Modifications may be included with an "M" suffix at the end of the model number.

Notes:

- (1) Not available for 10-4 Series
- (2) 25 piece minimum order
- (3) "A" modification included with all Chevron and Heavy Duty seal modifications.
- (4) Do not fill gap on a two digit description. Refer to Example #2