



P51

Reliability

Series 51 and 50 pumps and motors are quite similar except that Series 51 units have steel alignment dowel pins which allow them to be rated for 500 psi higher pressure operation. Both are cast from hi-tensile gray iron and offer a wide variety of drive shafts designed for high torque input/output. Unique pressure balanced thrust plates contribute to operating efficiencies of over 90%.

These units are designed for continuous operation in heavy-duty implement circuits. They're equally at home on lift trucks, auto wreckers and small dump body applications.

Call our Component sales team for quick application assistance and pump specifications.

Performance Data

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120°F. Requests for more specific data should be directed to our sales representatives.

Performance data for pumps and motors having other gear widths can be approximated by multiplying values in tables below by actual gear width.

Pump Speed rpm	Avg. Output (gpm) @ 2000 psi Gear Width (inches)			
	1	1-1/2	2	2-1/2
900	8.5	13.0	17.5	22.0
1200	12.0	18.0	24.0	30.0
1800	18.0	27.5	37.5	47.0
2100	21.5	32.5	44.0	55.0

Motor Speed rpm	Avg. Input/Output (gpm) @ 2000 psi					
	1" gear		2" gear		2-1/2" gear	
	gpm	hp	gpm	hp	gpm	hp
800	10.5	10.5	21.0	23.0	26.0	29.5
1200	15.5	16.0	30.5	35.0	35.0	44.5
1600	20.0	21.0	40.0	46.0	49.5	58.5
2000	25.0	25.5	49.0	56.0	61.5	71.5

How To Specify and Code

This catalog contains codes for our most popular models. Complete codes for all configurations are readily available upon request.

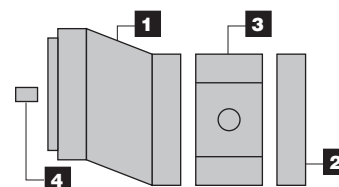
Single Units

Full assembly codes for single units combine shaft end cover, port end cover, gear housing and drive shaft codes. They are preceded by the letter P or M for pump or motor — and by 51 to designate the series and model. An example of an assembly code follows:

M51 SINGLE MOTOR

Assembly Code: **M 51A 942 BE YF15-7**

- MotorM
- Series51
- ModelA
- 1. Shaft End Cover942
- 2. Port End CoverBE
- 3. Gear HousingYF15
- 4. Drive Shaft7

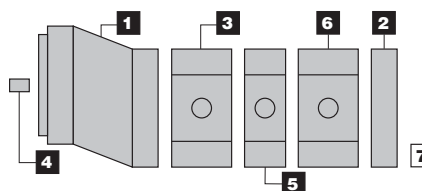


Multiple Units

Coding is the same as single units except that codes for added components must be included. Each gear unit added also requires code for a bearing carrier, the additional gear housing and connecting shaft. An example of an assembly code for a two-section Series 51 pump follows:

P51 MULTIPLE PUMP

Assembly Code: **P 51B 278 BY OM20-11 D UG10-1**



- PumpP
- Series51
- ModelB

- 1. Shaft End Cover278
- 2. Port End CoverBY
- 3. Gear HousingOM20
- 4. Drive Shaft11
- 5. Bearing CoverD
- 6. Gear HousingUG10
- 7. Connecting Shaft1

Variations

Series 51 units are available with gear sections ranging from 1/2" to 2-1/2" in 1/4" increments which provide displacements from 1.27 to 6.37 cu. in. per revolution. Two or more gear sections can be assembled on one drive shaft to provide larger flows, supply other circuits or make smoother, more powerful motors.

When specifying multiple units you must consider the drive shaft's strength. This is called a PL factor in which P = operating pressure and L = sum of gear widths. The recommended PL factors for various Series 51 shafts are shown with the shaft codes and are offered as a guide to shaft selection. A PL of 8000 means a maximum of 4" of gear can be operated at 2000 psi (2000 psi X 4" = 8000) without overloading the shaft. The gear widths can be divided many ways, eg. (2"-1"-1", 1"-1"-1"-1", 1-1/2"-1-1/2"-1-1/2") to provide the output you need for several circuits.

P51 Parts Breakdown Typical Parts List

For Series P51 Seal Kits and Repair
Parts, See Pages 475 - 477

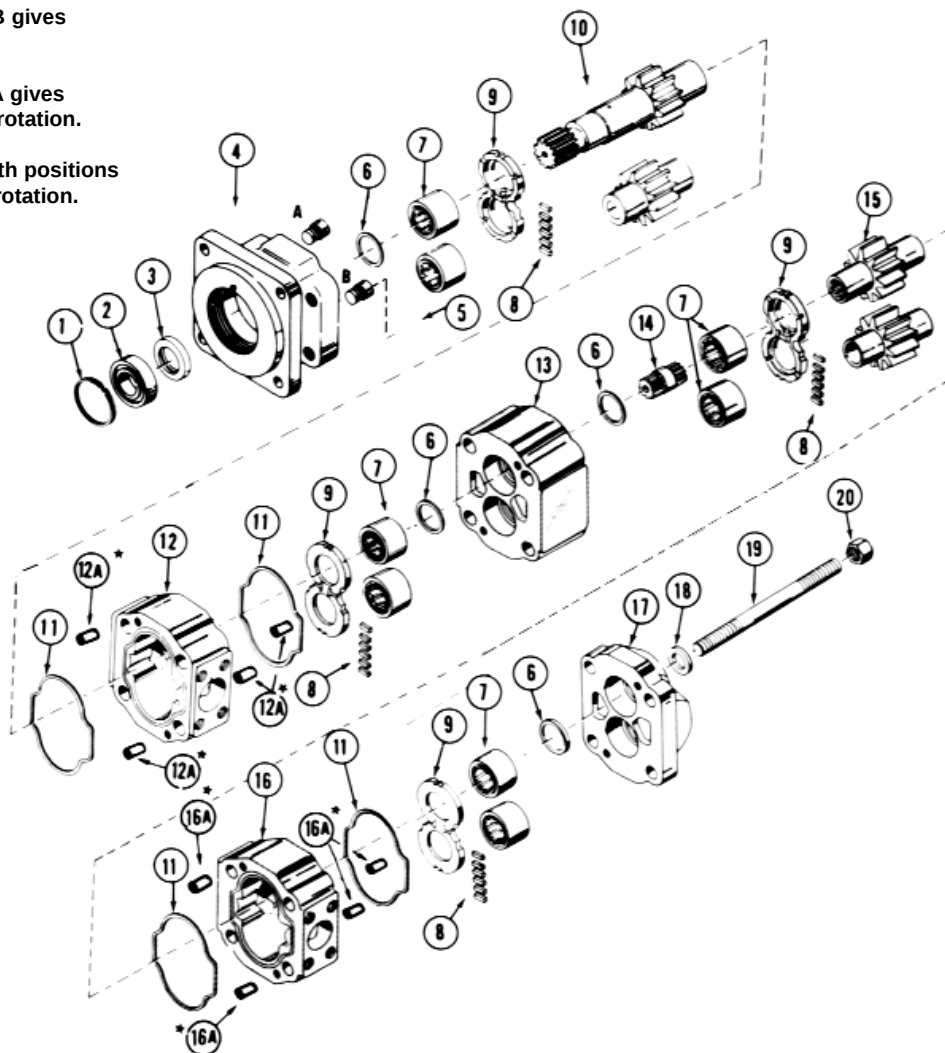
Note:

This page shows the typical arrangement of a 2-section unit.
It may not be pictorially correct and is not to scale.

Plug 5 in position B gives
clockwise rotation.

Plug 5 in position A gives
counter-clockwise rotation.

Check valves in both positions
give bi-directional rotation.



Item	Description	Part Number	Item	Description	Part Number
1	Snap Ring	CM-391-2686-065	11	Gasket Seals	CM-391-2884-021
2	Outboard Bearing	CM-391-0381-077	12	Gear Housing	See Option List
3	Seal	CM-391-2883-103	12A	Dowel Pins	CM-391-2082-032
4	Hi Pressure Seal (Motor)	CM-391-2883-115	13	Bearing Carrier	See Option List
5	Shaft End Cover	See Option List	14	Connecting Shaft	See Option List
6	Check Assemblies	CM-391-3681-001	15	Matched Gear Set	See Option List
7	Plug	CM-391-2286-004	16	Gear Housing	See Option List
8	Ring Seals	CM-391-2585-009	16A	Dowel Pins	CM-391-2082-032
9	Roller Bearings	CM-391-0381-905	17	Port End Cover	See Option List
10	Pocket Seals	CM-391-2185-912	18	Washers	See Option List
	Thrust Plates	See Option List	19	Studs or Cap Screws	
	Integral Drive Shaft and Gear Set	See Option List	20	Nuts	

1 & 2 Shaft & Port End Covers

P 51 SHAFT END COVERS

Description	PUMPS					MOTORS	
	Type	Outboard Bearing	CW	CCW	Double	1/4" NPT DRAIN	1/4" BSPP DRAIN
SAE B 4 Bolt	1	Without	142	242	342	942	1942
		With	442	542	642	842	1842
SAE C 4 Bolt	1	Without	178	278	378	978	1978
		With	478	578	678	878	1878
SAE B 2 Bolt	1	Without	197	297	397	997	1997
		With	497	597	697	897	1897
SAE C 2 Bolt	2	Without	196*	296*	396*	N/A	N/A
		With	498	598	698	898	1898
Pad Mounting	1	Without	199	299	399	N/A	N/A
		With	400	500	600	800	1800
Piggyback Shaft End Cover	50-50	Without	191	291	391	N/A	N/A
	75-50	Without	192	292	392	N/A	N/A

Two (2) speed motor valve assemble and fittings

* Available for special application upon request. Not a stock item.



P51 PORT END COVERS

Description	Single Pumps	Multiple Pumps		Porting	
		w/o Studs	w/ Ext Studs	LH	RH
No Ports	BE	BI	BY	—	—
ODT Ports	CE*	CI	CY	3/4	—
	DE*	DI	DY	—	3/4
	FE*	FI	FY	3/4	3/4
BSPP Ports	WE	WI	WY	3/4	—
	XE	XI	XY	—	3/4
	ZE	ZI	ZY	3/4	3/4
Metric Straight Thread Ports	NE	NI	NY	3/4	—
	PE	PI	PY	M26 X 1.5	3/4
	QE	QI	QY	3/4	M26 X 1.5
	—	—	—	M26 X 1.5	3/4
Piggyback Port End Cover	TYPE	CW	CCW	DOUBLE	—
	51—51	KO	LO	MO	—
	51—31	KO	LO	MO	—

*Available for special application upon request. Not a stock item.



4**Drive Shafts****P51 DRIVE SHAFTS**

Shaft Description	Code	
	Type 1	Type 2
Straight Keyed .998" Major Dia - 1/4 x 3/8" Key	43*	—
SAE B - 13 Tooth Spline .8555" Major Dia"	25*	—
SAE C - Straight Keyed 1.250" Major Dia - 3/4 x 1 1/2" Key	11	—
SAE C - 14 Tooth Spline 1.225" Major Diam.	7	53*
Connecting Shaft - Multiple Units	1	1
Connecting Shaft - Piggyback Pump	P51 to P51	22
	P76 to P51	23

* Available for special application upon request. NOT A STOCK ITEM.

P51 DRIVE SHAFT CODE

Gear Width	1-22-23	7	11	25*	43*	53*
1/2	•					
3/4	•					
1	•	•	•	•	•	•
1 1/4	•	•	•	•	•	•
1 1/2	•	•	•	•	•	•
1 3/4	•	•	•	•	•	•
2	•	•	•	•	•	•
2 1/4	•	•	•	•	•	•
2 1/2	•	•	•	•	•	•

3**&****6****Gear Housings****P51 GEAR HOUSINGS - BSPP PORTS**

Porting		1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
LH	RH									
—	—	AB05	AB07	AB10	AB12	AB15	AB17	AB20	AB22	AB25
3/4‡	—			YN10‡	YN12					
—	3/4‡			YQ10‡	YQ12‡	YQ15‡	YQ17	YQ20		
3/4	3/4				YS12	YS15		YS20		
3/4	1‡				YT12‡					
1‡	—				SL12‡	SL15‡				
1‡	3/4				YV12	YV15	YV17‡	YV20‡		
—	1‡			RQ10‡		RQ15‡	RQ17‡	RQ20‡	RQ22	RQ25
1	1							MP20		MP25
1	1 1/4‡							VY20‡		
1 1/4	1							IX20‡	IX22	IX25
—	1 1/4								UI22	UI25
1 1/4	1 1/4								PF22	PF25
1 1/2‡	1							VI20‡		
1 1/4	1 1/2‡									IQ25‡
1 1/2‡	1 1/4									IS25‡

‡ Low pressure only.



3 & 6 Gear Housings

P51 GEAR HOUSINGS - O.D. TUBE PORTS

Porting		1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
LH	RH							
—	—	AB10	AB12	AB15	AB17	AB20	AB22	AB25
3/4†	—	EC10†	EC12†					
—	3/4†	ED10†	ED12†					
3/4	3/4				EF17			
3/4	1†			EG15†				
3/4	1 1/4†			EH15*	EH17†			
1 1/4†	3/4			EK15*	EK17†			
1†	—	AC10†	AC12†	AC15†	AC17†			
—	1†	AD10†	AD12†	AD15†	AD17†			
1	1					AF20*		AF25
1	1 1/4					AG20*		
1 1/4	1					AJ20*		
1 1/4†	—			AA15†	AA17†			
—	1 1/4†			AO15†	AO17†			
1	1 1/2					AH20*		
1 1/2	1					AK20*		
1 1/4	1 1/4						AL22	AL25
1 1/4	1 1/2†						AM22†	AM25†
1 1/2†	1 1/4						AP22†	AP25†
1 1/2†	—					AE20†	AE22†	AE25†
—	1 1/2†					AU20†	AU22†	AU25†
1 1/2	1 1/2							AR25*

† Low pressure only.

* 2500 PSI maximum.

P51 GEAR HOUSINGS - SAE SPLIT FLANGE PORTS

Porting		1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
LH	RH							
—	—	AB10	AB12	AB15	AB17	AB20	AB22	AB25
3/4	—	UC10*	UC12*					
—	3/4	UD10*	UD12					
3/4	3/4	UF10*	UF12					
3/4	1†	UG10*	UG12†	UG15				
1†	3/4	UJ10*	UJ12†					
3/4	1 1/4†	UH12†	UH15†	UH17†				
1 1/4†	3/4	UK12†	UK15†	UK17†				
1†	—	OC12†	OC15†	OC17	OC20			
—	1†	OD12†	OD15†	OD17	OD20			
1	1		OF15*	OF17	OF20	OF22		
1	1 1/4†	OG12†	OG15*	OG17†	OG20†			
1 1/4†	1		OJ15*	OJ17†	OJ20†	OJ22		
1 1/4†	—	OA12†	OA15†					
—	1 1/4†	OB12†	OB15†					
1	1 1/2†		OH15*	OH17†	OH20†	OH22		
1 1/2†	1		OK15*	OK17†	OK20†	OK22	OK25	
1 1/4	1 1/4				OL20*	OL22	OL25	
1 1/4	1 1/2				OM20†*	OM22	OM25	
1 1/2	1 1/4				OP20†*	OP22	OP25	
1 1/2†	—		OE15†	OE17†	OE20†	OE22		
—	1 1/2†		OU15†	OU17†	OU20†			
1 1/4	2†				ON20†*	ON22†	ON25†	
2†	1 1/4				OQ20†*	OQ22†	OQ25†	
1 1/2	1 1/2					OR22	OR25	
1 1/2	2†					OS22†	OS25†	
2†	1 1/2					OV22†	OV25†	

† Low pressure only.

* 2500 PSI maximum.

P51 GEAR HOUSINGS - METRIC SPLIT FLANGE PORTS

Porting		1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
LH	RH							
—	—	AB10	AB12	AB15	AB17	AB20	AB22	AB25
3/4†	—	VN10†						
—	3/4†	VQ10†				VQ20		
3/4	3/4	VS10						
3/4	1†	VT10*	VT12†					
1†	3/4	RV10*	RV12†					
3/4	1 1/4†		RU12†	RU15†				
1 1/4†	3/4		RW12†	RW15†				
1†	—		UL12†	UL15†	UL17	UL20		
—	1†		UR12†	UR15†	UR17	UR20		
1	1			UM15*	UM17	UM20	UM22	
1	1 1/4†			YU15*	YU17†	YU20†		
1 1/4†	1			UX15*	UX17†	UX20†		
1	1 1/2†			HO15*	HO17†	HO20†	HO22	
1 1/2†	1			VO15*	VO17†	VO20†	VO22	
1 1/4†	—		NO12†	NO15†	NO17			
—	1 1/4†		UO12†	UO15†				
1 1/4	1 1/4					PO20*	PO22	PO25
1 1/4	1 1/2					QO20*	QO22	QO25
1 1/2	1 1/4					SO20*	SO22	SO25
2†	1					JB20†		
1 1/4	2†					JR20*	JR22†	JR25†
2†	1 1/4					JM20*	JM22†	JM25†
1 1/2†	—			UY15	UY17†	UY20†		
—	1 1/2†				TO17†	TO20†		
1 1/2	1 1/2						SV22	SV25
1 1/2	2†						JN22†	JN25†
2†	1 1/2						JQ22†	JQ25†

† Low pressure only.

* 2500 PSI maximum.

P51 GEAR HOUSINGS - METRIC STRAIGHT THREAD PORTS

Porting		1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
LH	RH							
—	—	AB10	AB12	AB15	AB17	AB20	AB22	AB25
3/4†	—	EN10†						
—	3/4	TQ10†	TQ12†	TQ15†	TQ17			
3/4	3/4		ES12*					
3/4	1		ET12*					
1†	3/4		EV12†*	EV15†*	EV17†	EV20†		
—	1†		ER15†	ER17†	ER20†	ER22		
1	1			CM17*				
1	1 1/4			VE17*				
1 1/4	1			EX17*	EX20*	EX22	EX25	
—	1 1/4†				UA20†	UA22	UA25	
1 1/4	1 1/4					PA22	PA25	
1 1/4	1 1/2†					QA22†	QA25†	
1 1/2†	1 1/4					SA22†	SA25†	

† Low pressure only.

* 2500 PSI maximum.

Metric Straight Thread Size	Thread Size
3/4	M26 X 1.5
1	M33 X 2
1 1/4	M42 X 2
1 1/2	M48 X 2

5 Bearing Carriers



P51 BEARING CARRIERS (FLOW DIVIDERS ONLY)

L	R	Porting		BSPP Code	SAE Split Flange Code	Metric Split Flange Code	SAE Str. Thread Code	Metric Str. Thread Code
		LH	RH					
		—	—	B	B	B	B	B Motor
		—	—	E	E	E	E	E
		1	—	X	J	T	F	—
		1 1/4	—	Y	K	V	G	—
		1 1/2	—	Z	L	W	H	—
		M33 X 2	—	—	—	—	—	—
		M42 X 2	—	—	—	—	—	—
		M48 X 2	—	—	—	—	—	—
		3/4	1	DG	GR	TR	GJ	—
		1	—	DF	MT	FM	BK	—
		M26 X 1.5	—	—	—	—	—	—
		M33 X 2	—	—	—	—	—	—
		3/4	1	DM	FD	KT	JH	—
		1	—	MN	JG	RP	PC	—
		M26 X 1.5	—	—	—	—	—	—
		M33 X 2	—	—	—	—	—	—
		1	3/4	FG	HR	VR	HJ	—
		1 1/4	3/4	SG	PR	WR	MJ	—
		1 1/3	3/4	XG	QR	XR	RJ	—
		1 1/4	1	GF	NT	QM	PK	—
		1 1/2	1	MF	RT	VM	RK	—
		M48 X 2	M26 X 1.5	—	—	—	—	—
		M42 X 2	M33 X 2	—	—	—	—	—
		M48 X 2	M33 X 2	—	—	—	—	—
		M33 X 2	M26 X 1.5	—	—	—	—	—
		M42 X 2	M26 X 1.5	—	—	—	—	—
		1	3/4	NM	GD	PT	PH	—
		1 1/4	3/4	PM	MD	OT	RH	—
		1 1/2	3/4	TM	PD	ZT	WH	—
		1 1/4	1	QN	PG	TP	QC	—
		1 1/2	1	TN	RG	ZP	VC	—
		M48 X 2	M26 X 1.5	—	—	—	—	—
		M42 X 2	M33 X 2	—	—	—	—	—
		M48 X 2	M33 X 2	—	—	—	—	—
		M33 X 2	M26 X 1.5	—	—	—	—	—
		M42 X 2	M26 X 1.5	—	—	—	—	—
		1	3/4	HP	WL	FP	MC	—
		M33 X 2	M26 X 1.5	—	—	—	—	—
		1	3/4	LP	ZL	GP	SX	—
		M33 X 2	M26 X 1.5	—	—	—	—	—
		1	3/4	—	—	—	—	—
		M33 X 2	M26 X 1.5	—	—	—	—	—

P51 BEARING CARRIERS (PUMPS ONLY)

L	R	Porting		SAE Split Flange Code	SAE Straight Thread Code	Porting	BSPP Parts Code	Metric Split Flange Code	Porting		Metric Straight Thread
		LH	RH			LH	RH		LH	RH	
		—	—	B*	—	—	—	B*	—	—	—
		—	—	C OR A	—	—	—	C	—	—	—
		—	—	D OR U	—	—	—	D	—	—	—
		Inlet	—	LB	CBN	Inlet	1	—	—	—	—
		1 1/4	—	MB	DB	1 1/4	—	DX	—	—	—
		1 1/2	—	NB	FB	1 1/2	—	FX	—	—	—
		—	Inlet	BL	BC	—	Inlet	1	—	—	—
		—	1 1/4	BM	BD	—	1 1/4	XD	—	—	—
		—	1 1/2	BN	BF	—	1 1/2	XF	—	—	—
		Inlet	Outlet	LR	CJ	Inlet	Outlet	—	—	—	—
		1 1/4	3/4	MR	DJ	1 1/4	3/4	CT	—	—	—
		1 1/4	1	MS	DK	1 1/4	3/4	DT	—	—	—
		1 1/2	1	NS	FK	1 1/4	1	DV	—	—	—
		1 1/2	3/4	NR	FJ	1 1/2	1	FV	—	—	—
		1 1/2	3/4	BR	FJ	1 1/2	3/4	FT	—	—	—
		Outlet	Inlet	XL	RC	Outlet	Inlet	MW	—	—	—
		3/4	1	XM	RD	3/4	1 1/2	QW	—	—	—
		3/4	1 1/4	XN	RF	3/4	1	MG	—	—	—
		3/4	1 1/2	ZN	SD	3/4	1 1/4	MH	—	—	—
		1	1 1/4	ZM	SE	1	1 1/4	NH	—	—	—
		1	1 1/2	SN	SF	1	1 1/2	NW	—	—	—
		Inlet	Outlet	LX	CR	Inlet	Outlet	GM	—	—	—
		1 1/4	3/4	MX	DR	1 1/4	3/4	HQ	—	—	—
		1 1/4	1	MZ	DS	1 1/4	1	HN	—	—	—
		1 1/2	3/4	NX	FR	1 1/2	3/4	WM	—	—	—
		1 1/2	1	NZ	FS	1 1/2	1	WN	—	—	—
		Outlet	Inlet	RB	JP	Outlet	Inlet	TL	—	—	—
		3/4	1	RL	JC	3/4	1	TC	—	—	—
		3/4	1 1/4	RM	KD	3/4	1 1/4	TD	—	—	—
		1	1 1/4	SM	KS	1	1 1/4	VD	—	—	—
		1	1 1/2	SN	KF	1	1 1/2	VF	—	—	—
		3/4	1 1/2	RN	JF	3/4	1 1/2	TF	—	—	—
		Inlet	Outlet	SR	KJ	Inlet	Outlet	PN	—	—	—
		1	3/4	—	—	1	3/4	—	—	—	—
		Outlet	Inlet	RS	JK	Outlet	Inlet	NP	—	—	—
		1	1	LL*	CC*	1	1	EE*	—	—	—
		1 1/4	1 1/4	MM*	BB*	1 1/4	1 1/4	GG*	—	—	—
		1 1/2	1 1/2	NN*	FF*	1 1/2	1 1/2	SS*	—	—	—
		Outlet	Inlet	—	—	Outlet	Inlet	—	—	—	—

* Code B, TT, LL, CC, VV, MM, BB, WW, NN, and FF for motors only.

* Code B, EE, RR, KK, GG, and SS for motors only.

Pump applications must be approved by Technical Service.