

**PARTS MANUAL**  
**F20-991-2402A**

# Hydra-Cell®

## INDUSTRIAL PUMPS

**IMPORTANT**

Record your pump model number and serial number here for easy reference:

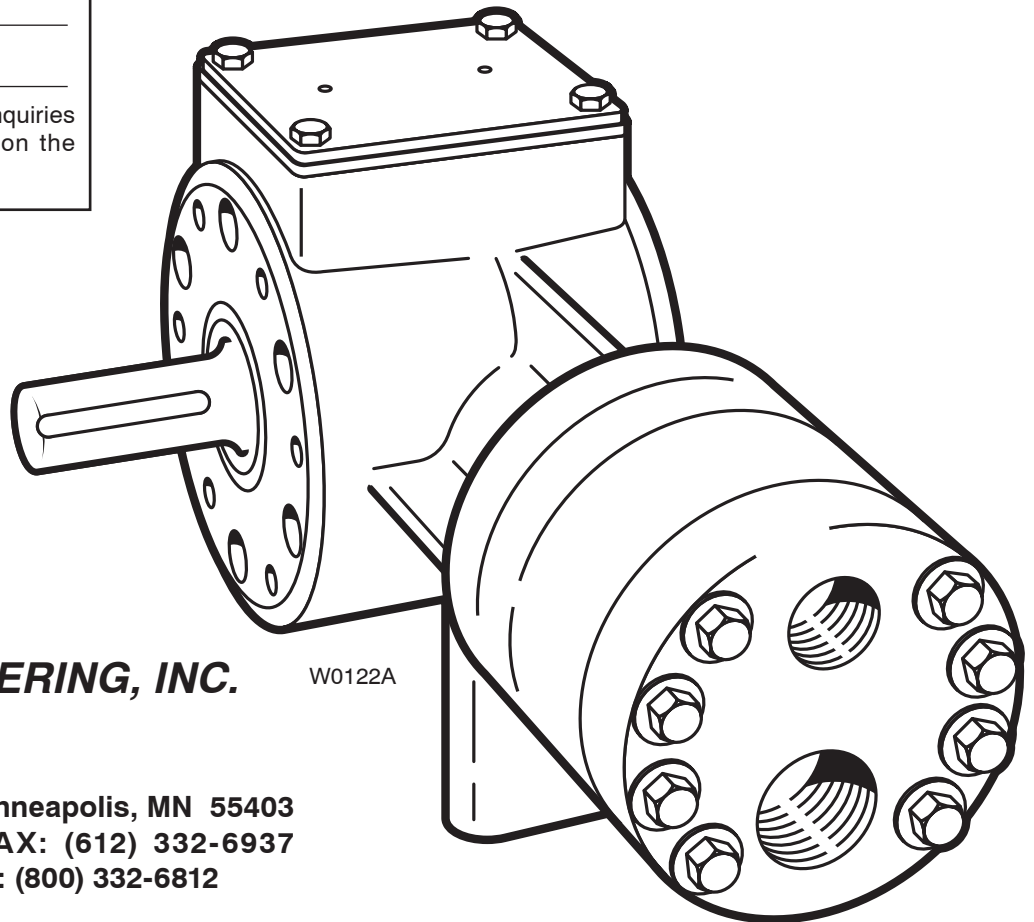
Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date of Purchase \_\_\_\_\_

When ordering parts or making inquiries about this pump, please mention the model and serial numbers.

**MODELS:**  
**F-20, F-21, F-22**



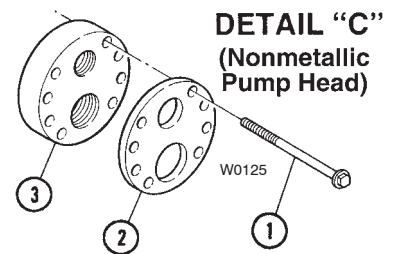
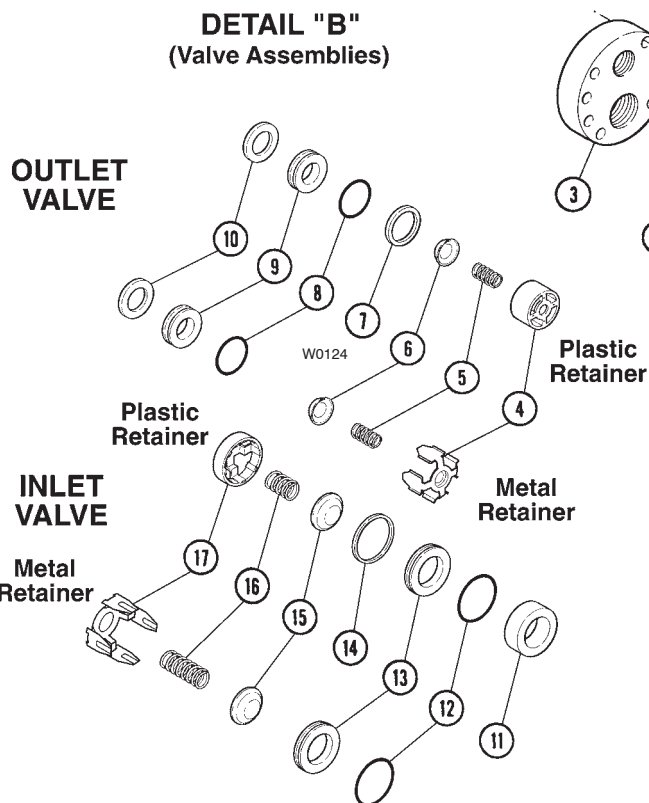
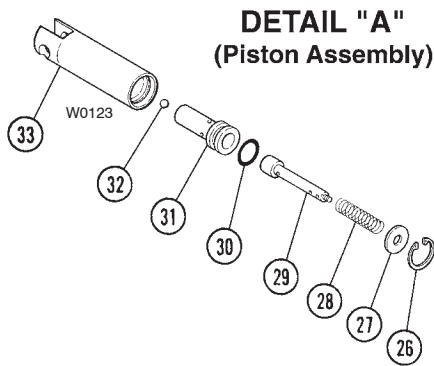
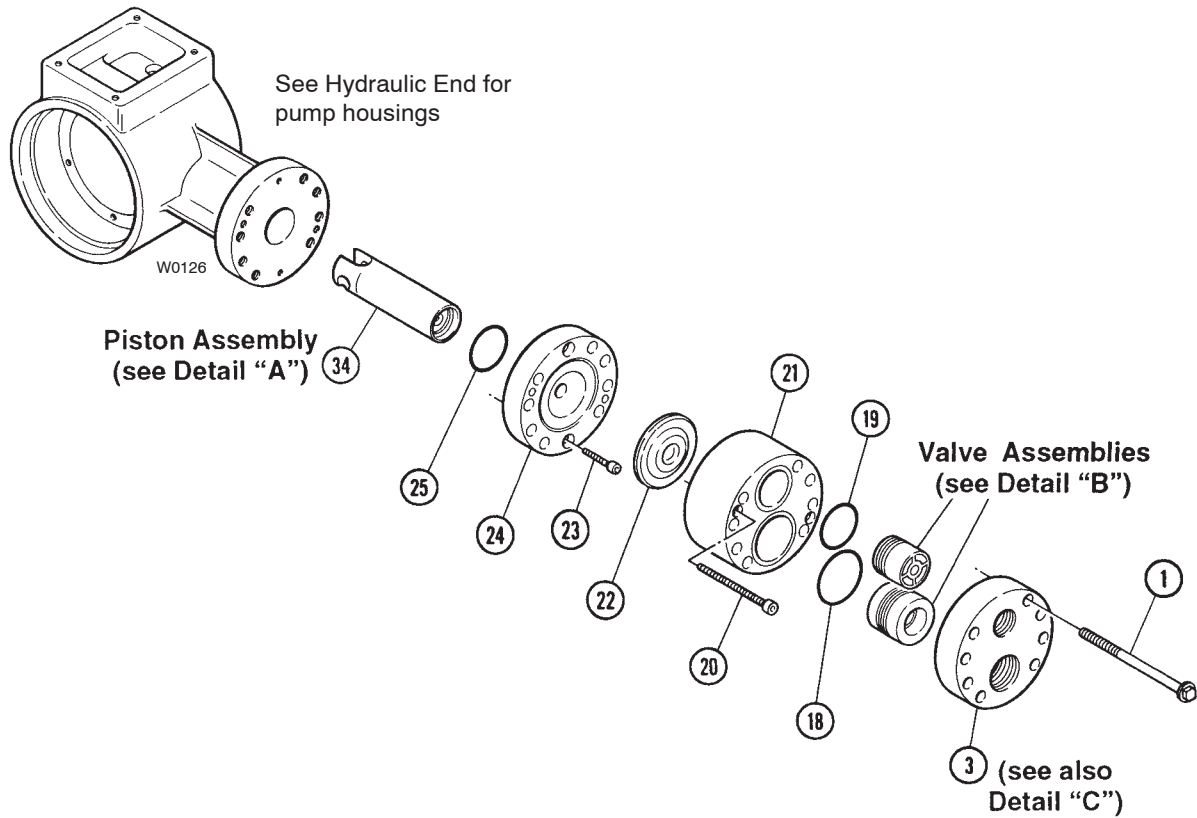
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W0122A

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# F-20/F-21/F-22 Fluid End



## Bolt Torque Specifications

Ref. #	Assembly Torque
1	90 in-lbs
20	14 in-lbs
22	10 in-lbs
23	14 in-lbs

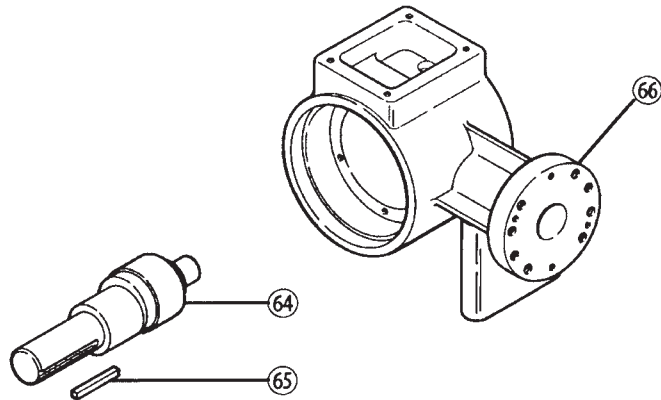
# F-20/F-21/F-22 Fluid End

Ref. No.	Part Number	Description	Quantity/ Pump
1	G20-024-2010	Bolt, hex-head .....	8
2	F20-100-1010	Plate, manifold support (nonmetallic heads) .....	1
	F20-100-1011	Plate, manifold support, painted (nonmetallic heads) .....	1
3	F20-004-1010	Manifold, brass, NPT .....	1
	F20-004-1012	Manifold, 316 SST, NPT .....	1
	F20-004-1017	Manifold, Hastelloy C, NPT .....	1
	F20-004-1050	Manifold, polypropylene, NPT .....	1
	F20-004-1053	Manifold, Kynar, NPT .....	1
4	D03-023-1010	Retainer, outlet valve spring, 17-7 SST .....	1
	D03-023-1017	Retainer, outlet valve spring, Hastelloy C .....	1
	D03-023-2310	Retainer, outlet valve spring, Celcon ..	1
	D03-023-2316	Retainer, outlet valve spring, Nylon ..	1
	D03-023-2317	Retainer, outlet valve spring, polypropylene .....	1
	D03-023-2318	Retainer, outlet valve spring, Kynar ..	1
5	D03-022-3113	Valve Spring, outlet, Hastelloy C .....	1
	D03-022-3114	Valve Spring, outlet, Elgiloy .....	1
6	D03-021-1002	Outlet Valve, 17-7 SST .....	1
	D03-021-1011	Outlet Valve, Nitronic .....	1
	D03-021-1016	Outlet Valve, Tungsten Carbide .....	1
	D03-021-1017	Outlet Valve, Hastelloy C .....	1
	D03-021-3300	Outlet Valve, ceramic .....	1
7	D03-092-2110	Tetra Seal, outlet, Buna .....	1
	D03-092-2111	Tetra Seal, outlet, Viton .....	1
	D03-092-2112	Tetra Seal, outlet, Neoprene .....	1
	D03-092-2113	Tetra Seal, outlet, EPDM .....	1
	D03-035-2118	Tetra Seal, outlet, PTFE .....	1
8	D03-035-2112	O-ring, outlet valve seat, Neoprene ..	1
	D03-035-2113	O-ring, outlet valve seat, EPDM .....	1
	D03-035-2118	O-ring, outlet valve seat, PTFE .....	1
	D25-046-2110	O-ring, outlet valve seat, Buna .....	1
	D25-046-2111	O-ring, outlet valve seat, Viton .....	1
9	D03-020-1001	Valve Seat, outlet, 316 SST .....	1
	D03-020-1002	Valve Seat, outlet, 17-4 SST .....	1
	D15-020-1016	Valve Seat, outlet, Tungsten Carbide ..	1
	D03-020-1017	Valve Seat, outlet, Hastelloy C .....	1
	D03-020-3300	Valve Seat, outlet, ceramic .....	1
10	D03-125-2310	Washer, outlet dampening, Celcon .....	1
	D03-125-2316	Washer, outlet dampening, Nylon .....	1
	D03-125-2317	Washer, outlet dampening, polypropylene .....	1
	D03-125-2318	Washer, outlet dampening, Kynar .....	1
11	D10-125-2310	Washer, inlet dampening, Celcon .....	1
	D10-125-2316	Washer, inlet dampening, Nylon .....	1
	D10-125-2317	Washer, inlet dampening, polypropylene .....	1
	D10-125-2318	Washer, inlet dampening, Kynar .....	1
12	D10-035-2110	O-ring, inlet valve seat, Buna .....	1
	D10-035-2111	O-ring, inlet valve seat, Viton .....	1
	D10-035-2112	O-ring, inlet valve seat, Neoprene .....	1
	D10-035-2113	O-ring, inlet valve seat, EPDM .....	1
	D10-035-2118	O-ring, inlet valve seat, PTFE .....	1
13	D10-020-1010	Valve Seat, inlet, 17-4 SST, HT .....	1
	D10-020-1011	Valve Seat, inlet, 316 SST .....	1
	D10-020-1016	Valve Seat, inlet, Tungsten Carbide ..	1
	D10-020-1017	Valve Seat, inlet, Hastelloy C .....	1
	D10-020-3300	Valve Seat, inlet, ceramic .....	1

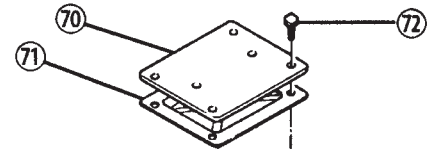
Ref. No.	Part Number	Description	Quantity/ Pump
14	D10-092-2110	Tetra Seal, inlet, Buna .....	1
	D10-092-2111	Tetra Seal, inlet, Viton .....	1
	D10-092-2112	Tetra Seal, inlet, Neoprene .....	1
	D10-092-2113	Tetra Seal, inlet, EPDM .....	1
	D10-092-2118	Tetra Seal, inlet, PTFE .....	1
15	D10-021-1010	Inlet Valve, 17-7 SST, stamped HT .....	1
	D10-021-1011	Inlet Valve, Nitronic .....	1
	D10-021-1016	Inlet Valve, Tungsten Carbide .....	1
	D10-021-1017	Inlet Valve, Hastelloy C .....	1
	D10-021-3300	Inlet Valve, ceramic .....	1
16	D10-022-3113	Valve Spring, inlet, Hastelloy C (plastic retainers) .....	1
	D10-022-3114	Valve Spring, inlet, Elgiloy (plastic retainers) .....	1
	D10-022-3117	Valve Spring, inlet, Elgiloy (metal retainers) .....	1
	D10-022-3123	Valve Spring, inlet, Hastelloy C (metal retainers) .....	1
17	D10-023-1010	Retainer, inlet valve spring, 17-7 SST .....	1
	D10-023-1017	Retainer, inlet valve spring, Hastelloy C .....	1
	D10-023-2314	Retainer, inlet valve spring, Celcon ..	1
	D10-023-2316	Retainer, inlet valve spring, Nylon .....	1
	D10-023-2317	Retainer, inlet valve spring, polypropylene .....	1
	D10-023-2319	Retainer, inlet valve spring, Kynar .....	1
18	F20-074-2110	O-ring, inlet manifold, Buna .....	1
	F20-074-2111	O-ring, inlet manifold, Viton .....	1
	F20-074-2112	O-ring, inlet manifold, Neoprene .....	1
	F20-074-2113	O-ring, inlet manifold, EPDM .....	1
	F20-074-2118	O-ring, inlet manifold, PTFE .....	1
19	F20-073-2110	O-ring, outlet manifold, Buna .....	1
	F20-073-2111	O-ring, outlet manifold, Viton .....	1
	F20-073-2112	O-ring, outlet manifold, Neoprene .....	1
	F20-073-2113	O-ring, outlet manifold, EPDM .....	1
	F20-073-2118	O-ring, outlet manifold, PTFE .....	1
20	G20-029-2010	Cap Screw, socket-head .....	2
21	F20-003-1010	Valve Plate, brass .....	1
	F20-003-1012	Valve Plate, 316 SST .....	1
	F20-003-1017	Valve Plate, Hastelloy C .....	1
	F20-003-1050	Valve Plate, polypropylene .....	1
	F20-003-1053	Valve Plate, Kynar .....	1
22	D03-018-1212	Diaphragm, Neoprene .....	1
	D03-018-1213	Diaphragm, EPDM .....	1
	D03-018-1215	Diaphragm, Viton-XT .....	1
	D03-018-1218	Diaphragm, PTFE .....	1
	D03-018-1220	Diaphragm, Buna-N-XS .....	1
23	G20-088-2010	Cap-Screw, socket-head .....	2
24	F20-002-1010	Diaphragm Plate .....	1
25	D03-075-2110	O-ring, diaphragm plate, Buna .....	1
26	D03-048-2210	Snap Ring .....	1
27	D03-049-1000	Washer .....	1
28	D03-045-3110	Spring, sleeve valve .....	1
	D03-045-3111	Spring, sleeve valve for PTFE diaphragm .....	1
29	D03-044-1000	Valve Plunger .....	1
30	D03-034-2110	O-ring, valve cylinder, Buna .....	1
31	D03-043-1000	Valve Cylinder .....	1
32	D10-015-3010	Ball .....	1
33	D03-014-1004	Piston .....	1
34	D03-014-1210	Piston Assembly .....	1

# F-20/F-21/F-22 Hydraulic End

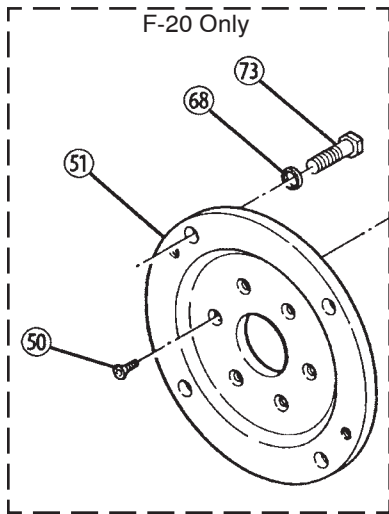
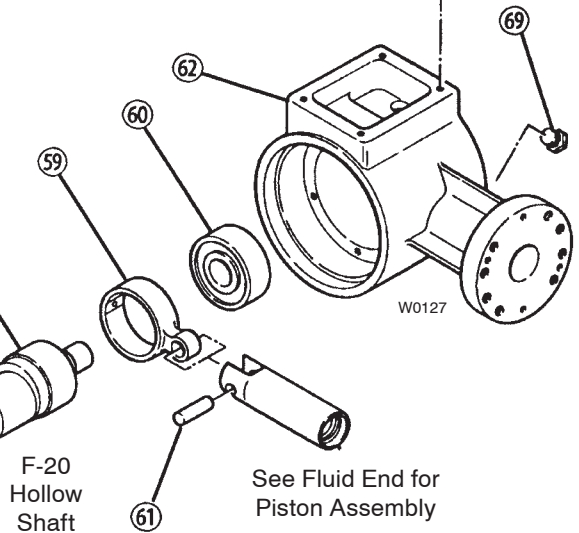
## F-21 Pump Housing



F-21 and F-22  
Shaft and Keyway



## F-20 and F-22 Pump Housing



F-20 Only

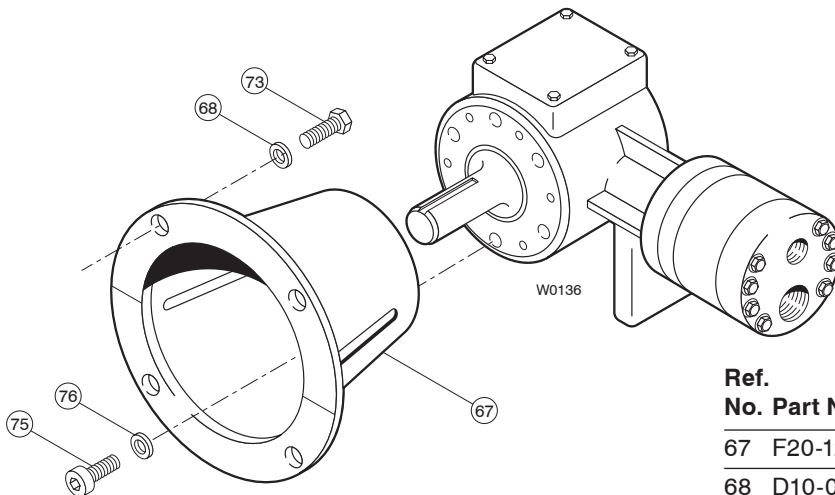
## Bolt Torque Specifications

Ref. #	Assembly Torque
50	35 in-lbs
52	14 in-lbs
72	10 in-lbs
75	35 in-lbs

# F-20/F-21/F-22 Hydraulic End

Ref. No.	Part Number	Description	Quantity/ Pump	Ref. No.	Part Number	Description	Quantity/ Pump
50	G20-089-2010	Screw, flat-head .....	6	62	G20-001-1010	Pump Housing .....	1
51	F20-120-1010	Flange .....	1	64	F21-009-1002	(E) Crank Shaft, shaft-driven, 5/8" OD 0.73 GPM @ 1750 RPM.....	1
52	G20-086-2010	Cap Screw, hex-flange-head .....	6		F21-009-1003	(X) Crank Shaft, shaft-driven, 5/8" OD 0.96 GPM @ 1750 RPM.....	1
53	F20-036-2110	O-ring, back cover screws, Buna.....	6		F21-009-1011	(B) Crank Shaft, shaft-driven, 5/8" OD 0.33 GPM @ 1750 RPM.....	1
54	G20-131-1010	Cover.....	1		F21-009-1018	(S) Crank Shaft, shaft-driven, 5/8" OD 0.55 GPM @ 1750 RPM.....	1
55	F20-037-2110	O-ring, cover, Buna.....	1		F21-009-1067	(G) Crank Shaft, shaft-driven, 5/8" OD 0.20 GPM @ 1750 RPM.....	1
56	F20-031-2110	Seal, Buna.....	1	65	D10-085-2210	Key, shaft .....	1
57	D03-010-2910	Back Bearing.....	1	66	G21-001-1010	Pump Housing .....	1
58	F20-009-1002	(E) Hollow Shaft, NEMA 56C direct .... drive, 5/8" ID, close-coupled, 0.73 GPM @ 1750 RPM.....	1	68	D10-048-2010	Lockwasher, 3/8".....	4
	F20-009-1003	(X) Hollow Shaft, NEMA 56C direct .... drive, 5/8" ID, close-coupled, 0.96 GPM @ 1750 RPM.....	1	69	D10-038-2210	Plug, drain .....	1
	F20-009-1011	(B) Hollow Shaft, NEMA 56C direct .... drive, 5/8" ID, close-coupled, 0.33 GPM @ 1750 RPM.....	1	70	F20-105-1010	Cover, oil reservoir .....	1
	F20-009-1018	(S) Hollow Shaft, NEMA 56C direct .... drive, 5/8" ID, close-coupled, 0.55 GPM @ 1750 RPM.....	1	71	F20-091-1010	Diaphragm, oil reservoir.....	1
	F20-009-1067	(G) Hollow Shaft, NEMA 56C direct .... drive, 5/8" ID, close-coupled, 0.20 GPM @ 1750 RPM.....	1	72	G20-090-2010	Cap Screw, hex-head.....	4
59	D03-132-1000	Connecting Rod .....	1	73	D10-029-2010	Cap Screw, hex-head, 3/8-16 x 1".....	4
60	F20-010-2910	Front Bearing .....	1				
61	D03-133-1000	Pin .....	1				

## F-21/F-22 Pump/Motor Adapter Kit for NEMA 56C-145TC Frame Motors (Complete Kit: Part No. A04-005-1200)



Ref. No.	Part Number	Description	Quantity/ Kit
67	F20-121-1010	Pump/Motor Adapter .....	1
68	D10-048-2010	Lockwasher, split .....	4
73	D10-029-2010	Cap Screw, hex-head.....	4
75	G20-101-2010	Cap Screw, socket-head.....	6
76	G20-050-2010	Lockwasher, split .....	6

# F-20/F-21/F-22 Replacement Parts Kits

TO ORDER REPLACEMENT PARTS KIT: A Replacement Parts Kit contains 11 digits corresponding to customer-specified design options.

1	2	3	4	5	6	7	8	9	10	11
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Digit	Order Code	Description
1-3	F20	Pump Configuration For all F-20, F-21 and F22 Pumps
4	K D V	Kit Designator Complete Fluid End Kit Diaphragm Kit Valve Kit (diaphragm not included)
5-6	52	Pump Head Version Pump Head Version
7	E G J P T	Diaphragm & O-ring Material EPDM Viton <sup>®</sup> -XT PTFE Neoprene Buna-N-XS
8	C D H S T X	Valve Seat Material Ceramic Tungsten Carbide 17-4 PH Stainless Steel 316 Stainless Steel Hastelloy <sup>®</sup> C Not included in Diaphragm Kit
9	C D H N T X	Valve Material Ceramic Tungsten Carbide 17-7 PH Stainless Steel Nitronic 50 Hastelloy <sup>®</sup> C Not included in Diaphragm Kit
10	E T X	Valve Springs Elgiloy <sup>®</sup> Hastelloy <sup>®</sup> C Not included in Diaphragm Kit
11	C H M P T Y X	Valve Spring Retainers Celcon 17-7 PH Stainless Steel Kynar <sup>®</sup> Polypropylene Hastelloy <sup>®</sup> C Nylon Not included in Diaphragm Kit

## Kit Contents

Part Number*	Description	Qty	Kit Designator		
			K	D	V
D03-018-___	Diaphragm	1	.	.	.
F20-073-___	O-ring, outlet manifold	1	.	.	.
F20-074-___	O-ring, inlet manifold	1	.	.	.
D03-035-___	O-ring, outlet valve seat	1	.	.	.
D03-020-___	Valve seat, outlet	1	.	.	.
D03-021-___	Valve, outlet	1	.	.	.
D03-022-___	Valve spring, outlet	1	.	.	.
**D03-092-___	Tetra seal, outlet	1	.	.	.
D03-023-___	Retainer, outlet valve spring	1	.	.	.
D03-125-___	Washer, outlet dampening	1	.	.	.
D11-035-___	O-ring, inlet valve seat	1	.	.	.
D10-020-___	Valve seat, inlet	1	.	.	.
D10-021-___	Valve, inlet	1	.	.	.
D10-022-___	Valve spring, inlet	1	.	.	.
**D10-092-___	Tetra seal, inlet	1	.	.	.
D10-023-___	Retainer, inlet valve spring	1	.	.	.
**D10-125-___	Washer, inlet dampening	1	.	.	.
A01-113-3400	Threadlocker	1	.	.	.

\* Last four digits of part numbers with -\_\_\_ refer to specific material of construction.

\*\* Not included with metal spring retainers.



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