

## PARTS MANUAL

# Hydra-Cell<sup>®</sup>

## INDUSTRIAL PUMPS

### IMPORTANT

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

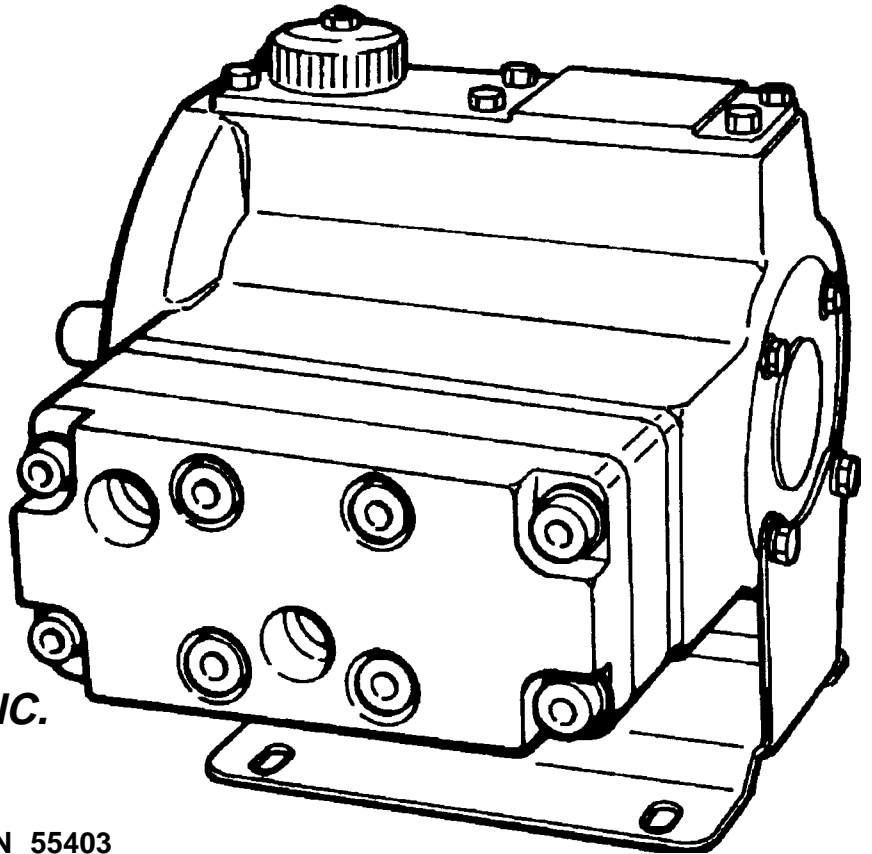
Model No. \_\_\_\_\_

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

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

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

## MODEL: D-04

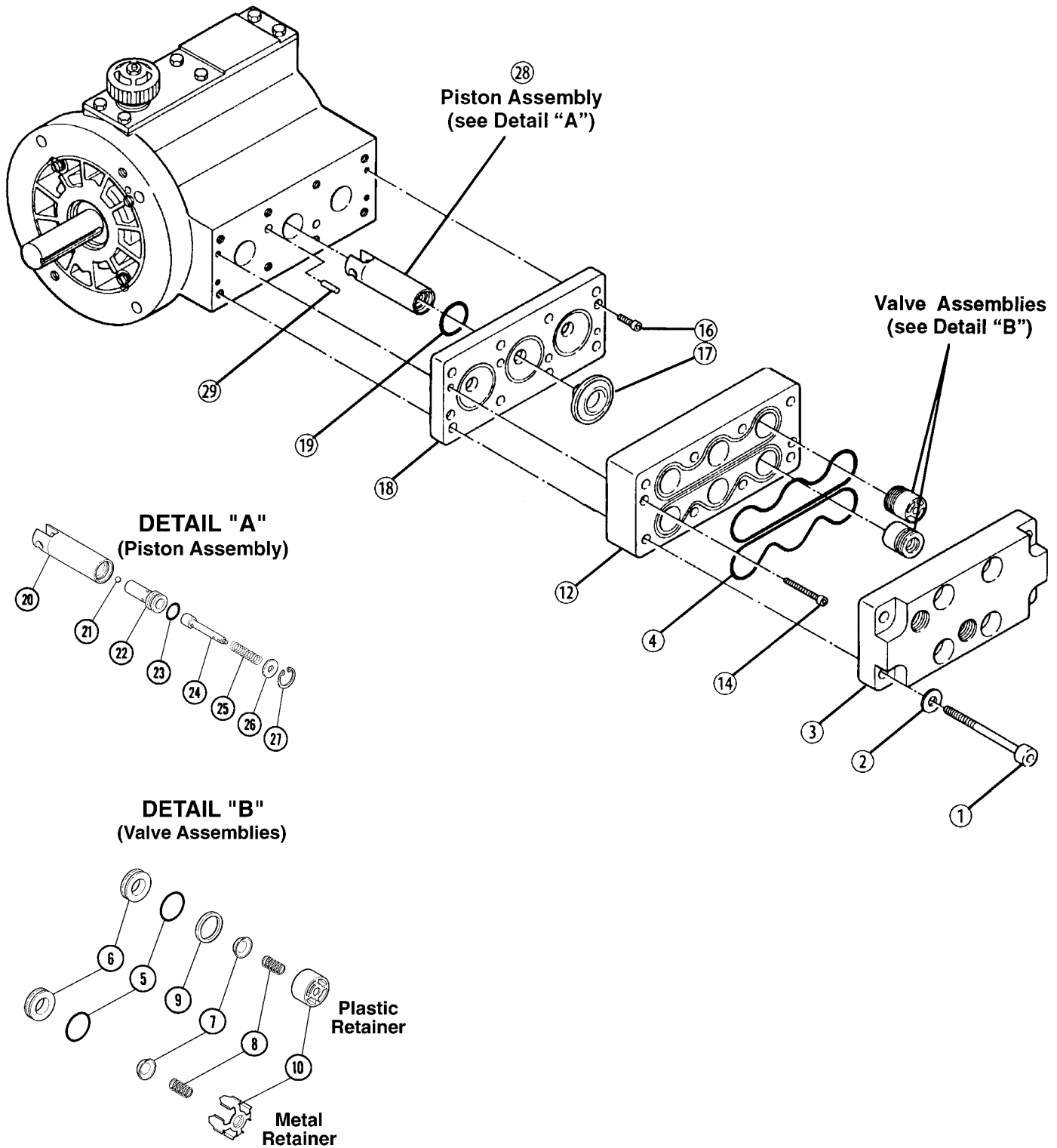


**WANNER ENGINEERING, INC.**

1204 Chestnut Avenue, Minneapolis, MN 55403  
TEL: (612) 332-5681 FAX: (612) 332-6937  
TOLL-FREE FAX [US only]: (800) 332-6812

[www.hydra-cell.com](http://www.hydra-cell.com)  
email: [sales@wannereng.com](mailto:sales@wannereng.com)

# D-04 Fluid End



## Bolt Torque Specifications

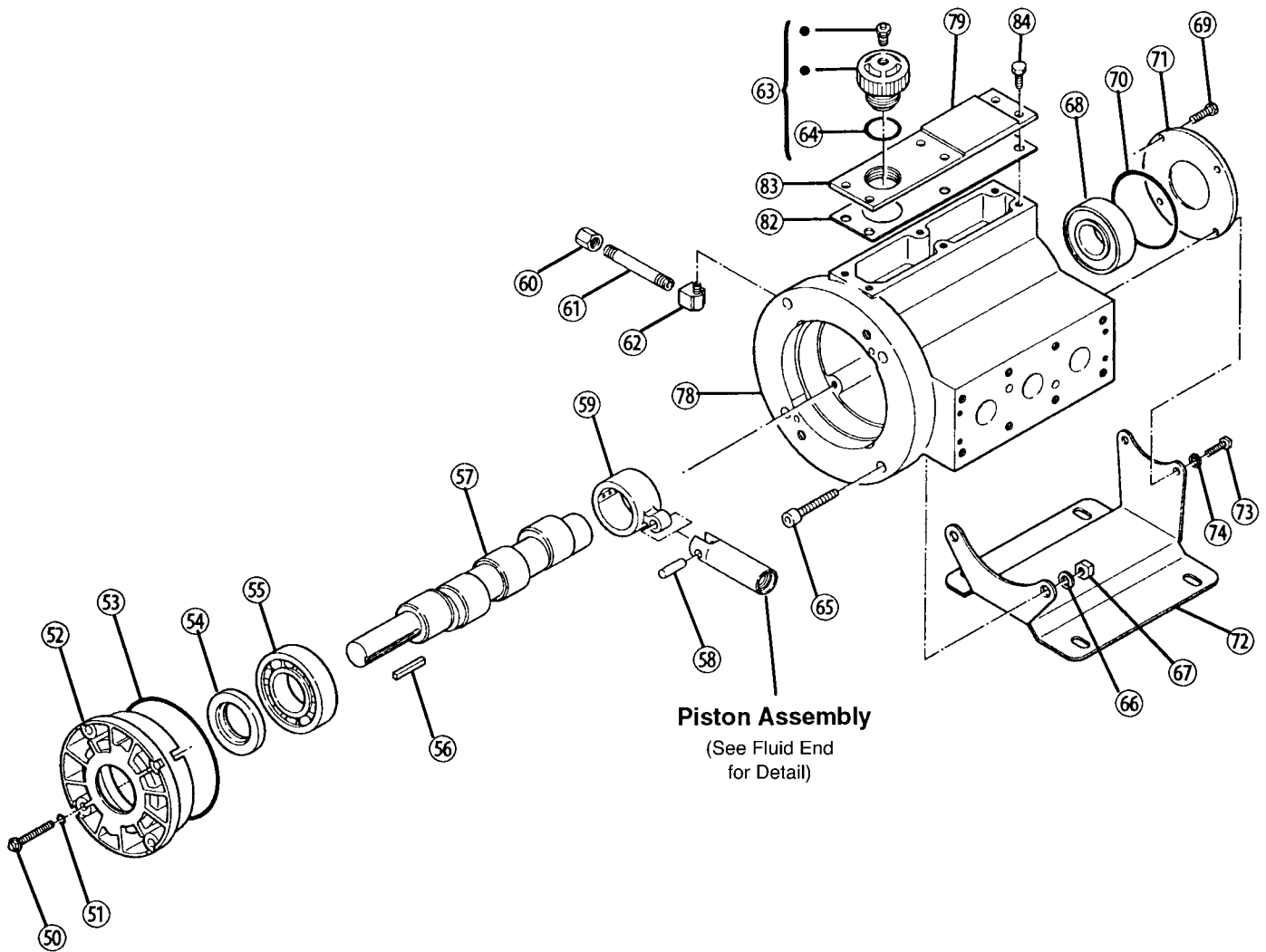
Ref. No.	D-04
1	50 ft-lbs
17	10 in-lbs

# D-04 Fluid End

Ref #	Part Number	Description	Quantity/ Pump
1	G10-024-2010	Cap Screw, socket-head, M10 x 1.5 x 90 mm .....	8
2	D11-048-2011	Washer, flat, hardened .....	8
3	D03-004-1040	Manifold, brass .....	1
	D03-004-1034	Manifold, 304 SST .....	1
	D03-004-1036	Manifold, 316 SST .....	1
4	D03-073-2140	O-ring, manifold, Buna .....	2
	D03-073-2141	O-ring, manifold, Viton .....	2
5	D25-046-2110	O-ring, valve seat, Buna .....	6
	D25-046-2111	O-ring, valve seat, Viton .....	6
6	D15-020-2010	Valve Seat, Nitronic 50 .....	6
	D15-020-2011	Valve Seat, 17-4 SST .....	6
	D15-020-2016	Valve Seat, tungsten carbide .....	6
	D15-020-2017	Valve Seat, Hastelloy C .....	6
7	D03-021-1011	Valve, Nitronic 50 .....	6
	D03-021-1015	Valve, 17-4, machined .....	6
	D03-021-1016	Valve, tungsten carbide .....	6
	D03-021-1017	Valve, Hastelloy C .....	6
8	D03-022-3113	Valve Spring, Hastelloy C .....	6
	D03-022-3114	Valve Spring, Elgiloy .....	6
	D03-022-3118	Valve Spring, 316 SST .....	6
9	D03-092-2110	Tetra Seal, Buna .....	6
	D03-092-2111	Tetra Seal, Viton .....	6
10	D03-023-1010	Retainer, valve spring, 17-7 SST .....	6
	D03-023-1017	Retainer, valve spring, Hastelloy C ...	6
	D03-023-2310	Retainer, valve spring, Celcon .....	6
	D03-023-2316	Retainer, valve spring, Nylon .....	6
	D03-023-2317	Retainer, valve spring, polypropylene	6
	D03-023-2318	Retainer, valve spring, Kynar .....	6

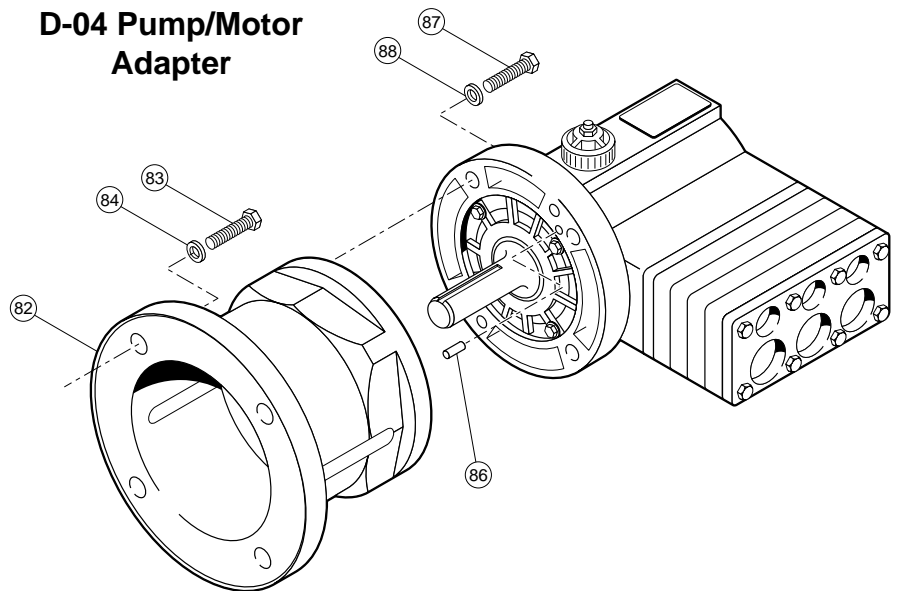
Ref #	Part Number	Description	Quantity/ Pump
11	D03-125-1011	Washer, dampening, SST .....	6
12	D03-003-1030	Valve Plate, brass .....	1
	D03-003-1034	Valve Plate, 304 SST .....	1
	D03-003-1036	Valve Plate, 316 SST .....	1
14	G10-088-2010	Cap Screw, socket-head, M6 x 1.0 x 30 mm .....	2
16	G03-088-2010	Cap Screw, socket-head, M6 x 1.0 x 20 mm .....	2
17	D03-018-1240	Diaphragm, Buna-N-XS .....	3
	D03-018-1245	Diaphragm, Viton-XT .....	3
18	D03-002-1012	Diaphragm Plate, steel .....	1
19	D03-075-2110	O-ring, diaphragm plate, Buna .....	3
20	D03-014-1004	Piston .....	3
21	D10-015-3010	Ball .....	3
22	D03-043-1000	Valve Cylinder .....	3
23	D03-034-2110	O-ring, valve cylinder, Buna .....	3
24	D03-044-1000	Valve Plunger .....	3
25	D03-045-3110	Spring, sleeve valve .....	3
26	D03-049-1000	Washer .....	3
27	D03-048-2210	Snap Ring .....	3
28	D03-014-1210	Piston Assembly .....	3
29	D03-026-2210	Pin .....	2

# D-04 Hydraulic End



**Piston Assembly**  
(See Fluid End  
for Detail)

## D-04 Pump/Motor Adapter



# D-04 Hydraulic End

Ref #	Part Number	Description	Quantity/ Pump
50	G03-086-2010	Bolt, hex flange, M6 x 1.0 x 40 mm ...	4
51	D25-047-2110	O-ring, back cover screws, Buna .....	4
52	D03-131-1000	Back Cover .....	1
53	D03-037-2110	O-ring, back cover, Buna .....	1
54	D03-031-2110	Seal, Buna .....	1
55	D03-011-2910	Back Bearing .....	1
56	D10-085-2210	Key, shaft .....	1
57	D03-009-1048	(S) Crank Shaft, shaft-driven, 7/8" O.D., 1.6 GPM @ 1750 RPM .....	1
	D03-009-1042	(E) Crank Shaft, shaft-driven, 7/8" O.D., 2.1 GPM @ 1750 RPM .....	1
	D03-009-1040	(X) Crank Shaft, shaft-driven, 7/8" O.D., 2.9 GPM @ 1750 RPM .....	1
58	D03-133-1000	Pin .....	3
59	D03-132-1004	Connecting Rod, aluminum-bronze ...	3
60	D10-078-2210	Cap, brass, 1/8" .....	1
61	D10-077-2210	Pipe, brass, 1/8" .....	1
62	D10-076-2210	Elbow, brass, 1/8" .....	1
63	D03-039-1210	Cap, oil fill (includes breather & O-ring) .....	1
64	D10-080-2110	O-ring, oil fill, Buna .....	1
65	G03-068-2010	Cap Screw, socket-head, M10 x 1.5 x 40 mm <sup>1</sup> .....	2

Ref #	Part Number	Description	Quantity/ Pump
66	G25-048-2010	Washer, M10 <sup>1</sup> .....	2
67	G10-028-2010	Nut, hex, M10 <sup>2</sup> .....	2
68	D03-010-2910	Front Bearing .....	1
69	D03-087-2010	Cap Screw, hex-head, 1/2" <sup>1</sup> .....	2
70	D40-074-2110	O-ring, front cover, Buna .....	1
71	D03-130-1000	Front Cover .....	1
72	D03-025-1010	Base Plate .....	1
73	D03-089-2010	Cap Screw, hex-head, 3/4" <sup>1</sup> .....	2
74	D03-050-2010	Washer, lock <sup>2</sup> .....	2
78	G03-001-1218	Pump Housing Assembly <sup>5</sup> .....	—
	G03-001-1228	Pump Housing <sup>5</sup> .....	1
79	D10-040-2410	Name Plate .....	1
82	G25-106-2318	Gasket, cover .....	1
83	H25-105-1018	Cover, housing .....	1
84	G25-090-2010	Cap Screw, hex-head, M8 x 1.25 x 16 mm .....	6
86	D03-026-2211	Pin <sup>3</sup> .....	2

- <sup>1</sup> Qty: 2 on pumps with baseplate (72); 4 on pumps with motor adapter (85).
- <sup>2</sup> Qty: 2 on pumps with baseplate (72); not included on pumps with motor adapter (85).
- <sup>3</sup> Qty: 2 on pumps with motor adapter (85); 4 on pumps with baseplate (72).
- <sup>4</sup> Pump Housing Assembly includes housing (78), drain plug (60, 61, 62) and from bearing (68).
- <sup>5</sup> Motor adapter is not supplied with pump, and must be purchased separately. Motor Adapter Kit includes all screws, washers, and pins required to connect it to the pump and motor (but does not include shaft coupling.)

## D-04 Pump/Motor Adapter Kit

For 56C-145TC NEMA C-Face Motors (Complete Kit Part No. A04-001-1202)

For 182-215TC NEMA C-Face Motors (Complete Kit Part No. A04-002-1202)

Ref #	Description	For A04-001-1202 Part Number	For A04-002-1202 Part Number	Qty/ Kit
82	Pump/Motor Adapter	A04-032-1000	A04-033-1002	1
83	Cap Screw, hex-head	D10-087-2010	M10-110-2000	4
84	Lockwasher	D10-048-2010	M10-111-2000	4
86	Pin	D03-026-2211	D03-026-2211	2
87	Cap Screw, socket-head	G03-068-2010	G03-068-2010	4
88	Lockwasher	G25-048-2010	G25-048-2010	4

# D-04 Series 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
---	---	---	---	---	---	---	---	---	----	----

Digit	Order Code	Description
<b>1-3</b>		<b>Pump Configuration</b>
	D04	For all D-04 Pumps
<b>4</b>		<b>Kit Designator</b>
	K	Complete Fluid End Kit
	D	Diaphragm Kit
	V	Valve Kit (diaphragm not included)
<b>5-6</b>		<b>Pump Head Version</b>
	51	Pump Head Version
<b>7</b>		<b>Diaphragm &amp; O-ring Material</b>
	G	Viton®-XT
	T	Buna-N-XS
<b>8</b>		<b>Valve Seat Material</b>
	D	Tungsten Carbide
	H	17-4 PH Stainless Steel
	N	Nitronic 50
	T	Hastelloy® C
	X	Not included in Diaphragm Kit
<b>9</b>		<b>Valve Material</b>
	D	Tungsten Carbide
	F	17-4 PH Stainless Steel – Machined
	N	Nitronic 50
	T	Hastelloy® C
	X	Not included in Diaphragm Kit
<b>10</b>		<b>Valve Springs</b>
	E	Elgiloy®
	S	316 Stainless Steel
	T	Hastelloy® C
	X	Not included in Diaphragm Kit
<b>11</b>		<b>Valve Spring Retainers</b>
	C	Celcon
	H	17-7 PH Stainless Steel
	M	Kynar®
	P	Polypropylene
	T	Hastelloy® C
	Y	Nylon
	X	Not included in Diaphragm Kit

## Kit Contents

Part Number*	Description	Qty	Kit Designator		
			K	D	V
D03-018-___	Diaphragm	3	•	•	
D25-073-___	O-ring, manifold	2	•	•	•
D25-046-___	O-ring, valve seat	6	•		•
D03-020-___	Valve seat	6	•		•
D03-021-___	Valve	6	•		•
D03-022-___	Valve spring	6	•		•
D03-092-___	Tetra seal**	6	•		•
D03-023-___	Retainer, valve spring	6	•		•
D03-125-1011	Washer, dampening***	6	•		•
A01-113-3400	Threadlocker	1	•	•	

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

\*\* Not included with metal spring retainers.

\*\*\* Dampening washer not used in newer models. The thickness of valve seat is increased on newer models to eliminate the need for the dampening washers.



## WANNER ENGINEERING, INC.

1204 Chestnut Avenue, Minneapolis, MN 55403  
 TEL: (612) 332-5681 FAX: (612) 332-6937  
 TOLL-FREE FAX [US only]: (800) 332-6812

www.hydra-cell.com

email: sales@wannereng.com

- Numbers in parenthesis refer to photo on flip side of these instructions for tool identification
- Refer to individual pump installation manual for complete servicing instructions

## Seal Protector (5)

When installing new shaft seals, the Seal Protector protects the inside of the seals from nicks and cuts.

1. Place shaft seals onto the tapered end of the seal protector with a liberal amount of grease in between seals (Figure 1).
2. Place Seal Protector completely onto pump shaft.



Figure 1

## Seal Inserter (2)

Used to seat seals on D/G-10 and larger size pumps.

1. Use tapered end of Seal Inserter to push seals off of Seal Protector and into pump housing (Figure 2).
2. Tapping with a rubber mallet may be necessary to fully seat seals flush with pump housing.



Figure 2

## Shaft Rotator (2 or 7)

Used to prime the pump's hydraulic cells.

1. After installing new diaphragms, prime the hydraulic cells by using the shaft rotator to rotate the pump shaft (Figure 3).



Figure 3

## Lever Assembly (3) and Valve Seat Puller (4)

The Lever Assembly and Valve Seat Puller are used to remove valve seats from the valve plate.

**Note: The valve plate can remain on the pump or be removed and held firmly on work surface.**

1. Thread the appropriate Valve Seat Puller onto the Lever Assembly.
2. Squeeze the claw end of the Puller and guide Puller into the valve seat (Figure 4) until all four claws are beneath the valve seat.
3. Position the Lever Assembly on a level area of the valve plate (Figure 5), and firmly depress the handle to draw the valve seat straight out of the valve plate.
4. Repeat process to remove all valve seats.
5. Unscrew Seat Puller from Lever Assembly and slide off all seats (Figure 6).



Figure 4



Figure 5

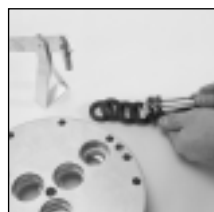


Figure 6

## Valve Plunger Holder (6)

Use Plunger Holder to firmly hold valve plunger stem while changing diaphragms (Figure 7).

1. Rotate pump shaft to maximum forward stroke of selected diaphragm.
2. Pull up on diaphragm to expose crosswise holes in valve plunger stem.
3. Insert center tine of Plunger Holder tool completely.
4. Release diaphragm while continuing to hold plunger holder.
5. Remove old diaphragm and install new diaphragm with an appropriate screwdriver and according to Installation manual.
6. Lift up on new diaphragm to remove Plunger Holder tool.
7. Rotate pump shaft for the next diaphragm and repeat.



Figure 7

## Plunger Guide Lifter (8 or 9)

For pumps without plungers (all F/G-20 D/G-03 and D/G-04 Series pumps), use the Plunger Guide Lifter (8) to retrieve valve plunger from inside piston.

For pumps with plungers (all D/G-10 Series and larger), use the Plunger Guide Lifter (9) to remove press-fit plungers from valve plunger stem.

### Plunger Removal

1. Thread small end of Plunger Guide Lifter completely into selected valve plunger.
2. Carefully tap hex end of Plunger Guide Lifter to drive valve plunger out the back of the plunger (Figure 8).
3. Unthread Plunger Guide Lifter to remove.

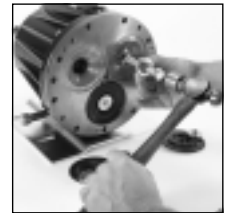


Figure 8

### Plunger Installation

1. Place a new plunger on the screw end of the Plunger Guide Lifter (flat side of plunger toward tool).
2. Screw the Plunger Guide Lifter and plunger into the valve plunger.
3. Hold the hex end of the Plunger Guide Lifter with one wrench while tightening the hex nut (Figure 9).
4. The shield will seat the plunger onto the valve plunger stem.

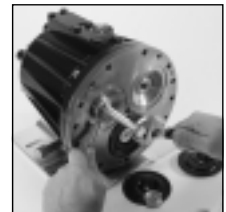


Figure 9

**Note: Never re-install used plungers.**

## Assembly Studs (10)

Assembly Studs are used to draw pump housing and cylinder housing together for size D/G-10 and larger pumps.

1. With the cylinder housing on wood blocks (pistons pointing up) and cam assembly in place, use Assembly Studs to draw pump housing and cylinder housing together.
2. Frequently rotate the pump shaft (Use Shaft Rotator Item 2) by hand to keep the front bearing centered in the cylinder housing bearing cup.

# Tool Kits Accessories



## Complete Pump Tool Kits

Wanner Tool Kits provide convenient specialty tools helpful for pump repairs and routine servicing. Tool Kits are customized for each pump model. Each pump tool kit is provided in a durable hard plastic case. Contents include: shaft rotator, valve seat remover, plunger guide lifter, plunger holder, protector seal, seal inserter and assembly studs.

Part Number	Description
A03-175-1107	Master Tool Kit for all Pump Models
A03-175-1105	F/G-20
A03-175-1106	D/G-03, D/G-04
A03-175-1101	D/G-10, D/G-10-SD, D/G-12
A03-200-1103	D/G-15/17
A03-175-1102	H/G-25, H/G-25-SD
A03-200-1100	D/G-35, D/G-35-SD



## WANNER ENGINEERING, INC.

1204 Chestnut Avenue, Minneapolis, MN 55403  
 TEL: (612) 332-5681 FAX: (612) 332-6937  
 TOLL-FREE FAX [US only]: (800) 332-6812

www.hydra-cell.com  
 email: sales@wannereng.com

## Specialty Tools

Individual specialty tools are available for all pumps.

Part Number	Description
① A03-126-1500	Toolbox
② A03-159-1200	Inserter/Rotator (D/G-10)
A03-155-1200	Inserter/Rotator (D/G-15/17)
A03-160-1200	Inserter/Rotator (H/G-25)
A03-185-1200	Inserter/Rotator (D/G-35)
③ A03-124-1200	Lever Assembly
④ A03-117-1000	Seat Puller (D/G-03, D/G-04)
A03-118-1000	Seat Puller (D/G-10, D/G-12)
A03-119-1000	Seat Puller (H/G-25, D/G-35)
⑤ A03-157-1000	Seal Protector (D/G-10, D/G-12)
A03-158-1002	Seal Protector (D/G-15/17)
A03-158-1001	Seal Protector (H/G-25)
⑥ A03-125-1020	Plunger Holder (F/G-20, D/G-03, D/G-04)
A03-125-1010	Plunger Holder (D/G-10, D/G-12, D/G-15/17)
A03-125-1000	Plunger Holder (H/G-25, D/G-35)
⑦ A03-195-1200	Shaft Rotator (F/G-20, D/G-03, D/G-04)
⑧ A03-196-1000	Plunger Guide Lifter (F/G-20, D/G-03, D/G-04)
⑨ A03-162-1200	Plunger Guide Lifter (D/G-10, D/G-12)
A03-162-1010	Plunger Guide Lifter (D/G-15/17)
A03-162-1201	Plunger Guide Lifter (H/G-25, D/G-35)
⑩ A03-156-1200	Assembly Studs (D-10, D-12, D/G-15/17, H/G-25, D/G-35)

©2004 Wanner Engineering, Inc. Printed in USA

A03-9/G93-2800 5/1/04