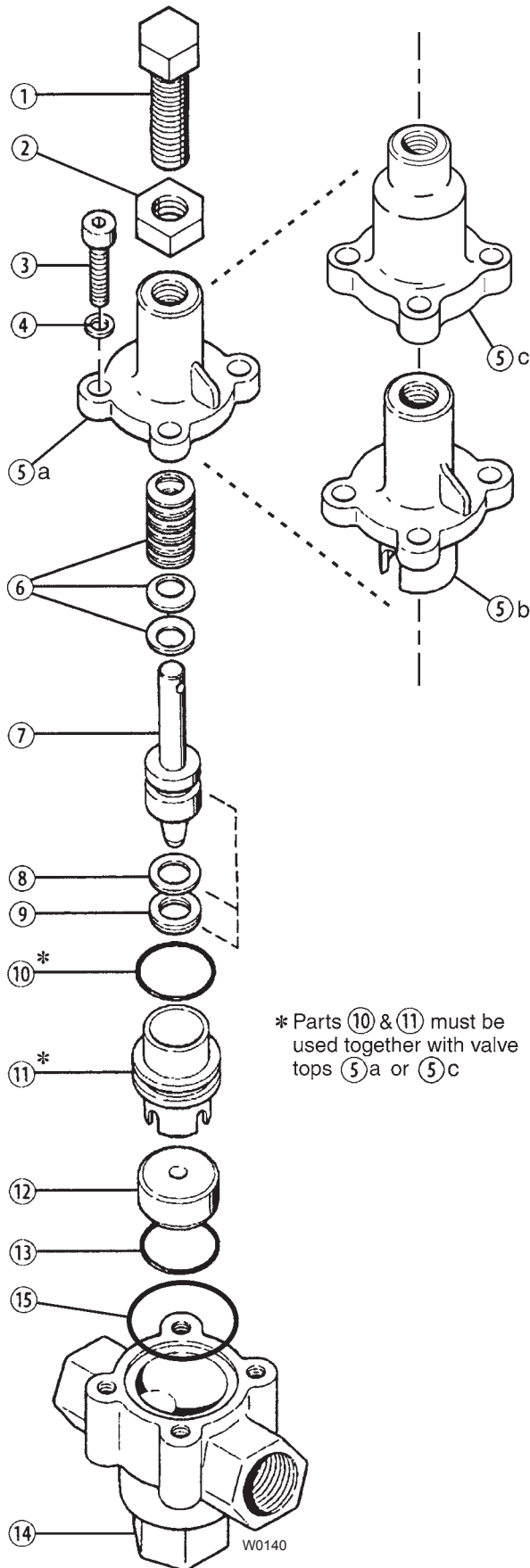


# C22A Parts



\* Parts ⑩ & ⑪ must be used together with valve tops ⑤a or ⑤c

## C22AA, C22AB, and C22AC

### Brass Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C22-004-1005	Adjusting bolt, Pressure range A	1
	C22-004-1006	Adjusting bolt, Pressure range B, C	1
2	C22-005-1000	Jam nut	1
3	C22-015-2000	Screw, Cap, 5/16 x 1"	4
4	C22-014-2000	Lockwasher, 5/16"	4
5a	C22-003-1002	Valve top, Unwetted	1
5b	C22-003-1000	Valve top, Brass	1
6	C22-018-3100	Spring disc, 20 x 10.2 x 1.2 mm	**
	C22-018-3101	Spring disc, 20 x 10.2 x 0.8 mm	**
	C22-018-3102	Spring disc, 20 x 10.2 x 1.5 mm	**
7	C22-023-1100	Plunger Assembly, 316 SST	1
	C22-023-1101	Plunger Assembly, SST, with tungsten carbide ball	1
	C22-023-1103	Plunger Assembly, 17-4 PH SST	1
	C22-023-1117	Plunger Assembly, Hastelloy C-276	1
8	C22-013-2110	Seal, Back-up, Buna-N	1
	C22-013-2117	Seal, Back-up, UHMW polyethylene	1
	C22-013-2118	Seal, Back-up, PTFE	1
9	C22-012-2110	Seal, Buna-N	1
	C22-012-2111	Seal, Viton	1
	C22-012-2113	Seal, EPDM	1
	C22-012-2115	Seal, Urethane	1
10*	C22-016-2110	O-ring, Sleeve, Buna-N	1
	C22-016-2111	O-ring, Sleeve, Viton	1
	C22-016-2113	O-ring, Sleeve, EPDM	1
11*	C22-024-1010	Sleeve, 316 SST	1
	C22-024-1017	Sleeve, Hastelloy C-276	1
12	C22-006-1000	Seat, 316 SST	1
	C22-006-1001	Seat, 17-4 HT	1
	C22-006-1002	Seat, Tungsten carbide	1
	C22-006-1017	Seat, Hastelloy C-276	1
13	C22-010-2110	O-ring, Valve seat, Buna-N	1
	C22-010-2111	O-ring, Valve seat, Viton	1
	C22-010-2113	O-ring, Valve seat, EPDM	1
14	C22-002-1000	Valve body, Brass, NPT	1
15	C22-011-2110	O-ring, Buna-N	1
	C22-011-2111	O-ring, Viton	1
	C22-011-2113	O-ring, EPDM	1
-	C22-022-2402	Nameplate, C22, blank (specify model & serial no.)	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce	

\*\* See page 5 for spring disc quantities and arrangements.

# C22A Parts

## C22AA, C22AB, and C22AC

### Stainless Steel Body Nickel Alloy Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C22-004-1005	Adjusting bolt, Pressure range A .....	1
	C22-004-1006	Adjusting bolt, Pressure range B, C....	1
2	C22-005-1000	Jam nut.....	1
3	C22-015-2000	Screw, Cap, 5/16 x 1" .....	4
4	C22-014-2000	Lockwasher, 5/16" .....	4
5a	C22-003-1002	Valve top, Nonwetted .....	1
6	C22-018-3100	Spring disc, 20 x 10.2 x 1.2 mm.....	**
	C22-018-3101	Spring disc, 20 x 10.2 x 0.8 mm.....	**
	C22-018-3102	Spring disc, 20 x 10.2 x 1.5 mm.....	**
7	C22-023-1100	Plunger Assembly, 316 SST.....	1
	C22-023-1101	Plunger Assembly, SST, with tungsten carbide ball .....	1
	C22-023-1103	Plunger Assembly, 17-4 PH SST .....	1
	C22-023-1117	Plunger Assembly, Hastelloy C-276....	1
8	C22-013-2110	Seal, Back-up, Buna-N.....	1
	C22-013-2117	Seal, Back-up, UHMW polyethylene...1	1
	C22-013-2118	Seal, Back-up, PTFE.....	1
9	C22-012-2110	Seal, Buna-N.....	1
	C22-012-2111	Seal, Viton .....	1
	C22-012-2113	Seal, EPDM.....	1
	C22-012-2115	Seal, Urethane .....	1
10*	C22-016-2110	O-ring, Sleeve, Buna-N.....	1
	C22-016-2111	O-ring, Sleeve, Viton.....	1
	C22-016-2113	O-ring, Sleeve, EPDM.....	1
11*	C22-024-1010	Sleeve, 316 SST.....	1
	C22-024-1017	Sleeve, Hastelloy C-276.....	1
12	C22-006-1000	Seat, 316 SST .....	1
	C22-006-1001	Seat, 17-4 HT .....	1
	C22-006-1002	Seat, Tungsten carbide .....	1
	C22-006-1017	Seat, Hastelloy C-276 .....	1
13	C22-010-2110	O-ring, Valve seat, Buna-N.....	1
	C22-010-2111	O-ring, Valve seat, Viton .....	1
	C22-010-2113	O-ring, Valve seat, EPDM.....	1
14	C22-002-1002	Valve body, 316 SST, NPT .....	1
	C22-002-1017	Valve body, Nickel alloy C series NPT 1	1
15	C22-011-2110	O-ring, Buna-N.....	1
	C22-011-2111	O-ring, Viton.....	1
	C22-011-2113	O-ring, EPDM.....	1
-	C22-022-2402	Nameplate, C22, blank (specify model & serial no.) .....	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce.....	

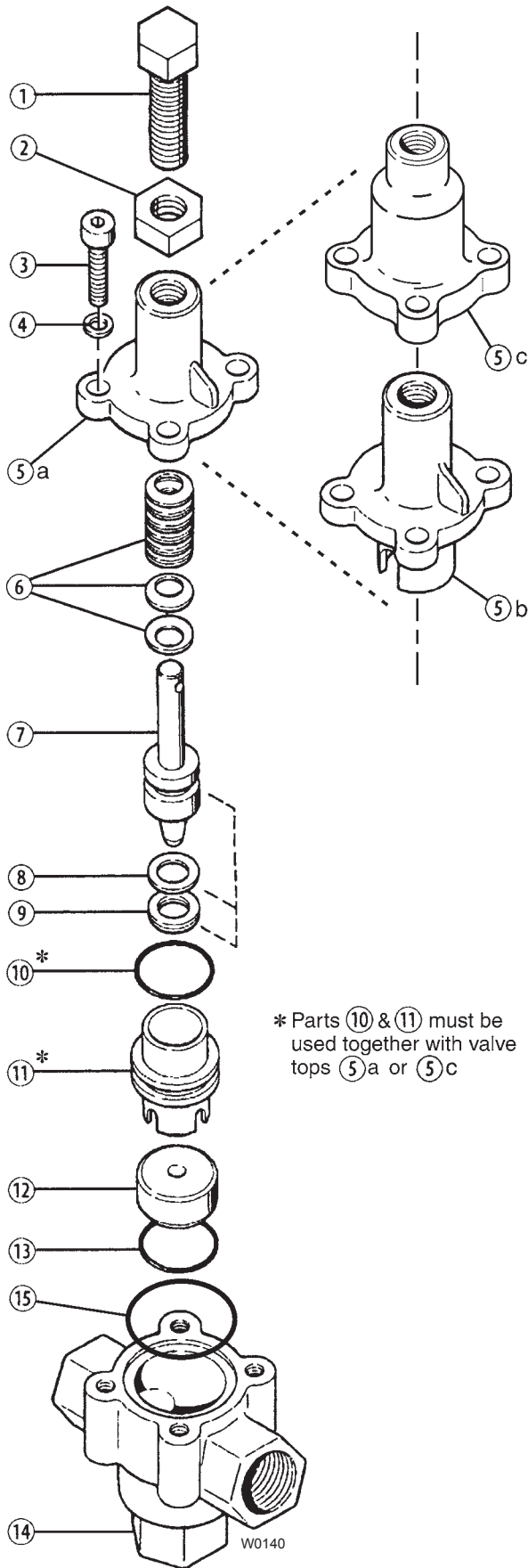
\*\* See page 5 for spring disc quantities and arrangements.

## C22AE

### Brass Body Stainless Steel Body Nickel Alloy Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C22-004-1008	Adjusting bolt, Pressure range E .....	1
2	C22-005-1000	Jam nut.....	1
3	C22-015-2010	Screw, Cap, 5/16 x 1-1/4" .....	4
4	C22-014-2000	Lockwasher, 5/16" .....	4
5c	C22-003-1003	Valve top, Non-wetted, 2500 psi .....	1
6	C22-018-3102	Spring disc, 20 x 10.2 x 1.5 mm.....	21
7	C22-023-1000	Plunger Assembly, 316 SST.....	1
	C22-023-1003	Plunger Assembly, 17-4 PH SST .....	1
	C22-023-1007	Plunger Assembly, Hastelloy C-276....	1
8	C22-013-2110	Seal, Back-up, Buna-N.....	1
	C22-013-2117	Seal, Back-up, UHMW polyethylene...1	1
	C22-013-2118	Seal, Back-up, PTFE.....	1
9	C22-012-2110	Seal, Buna-N.....	1
	C22-012-2111	Seal, Viton .....	1
	C22-012-2115	Seal, Urethane .....	1
10*	C22-016-2110	O-ring, Sleeve, Buna-N.....	1
	C22-016-2111	O-ring, Sleeve, Viton.....	1
11*	C22-024-1010	Sleeve, 316 SST.....	1
	C22-024-1017	Sleeve, Hastelloy C-276.....	1
12	C22-006-1000	Seat, 316 SST .....	1
	C22-006-1001	Seat, 17-4 HT .....	1
	C22-006-1017	Seat, Hastelloy C-276 .....	1
13	C22-010-2110	O-ring, Valve seat, Buna-N.....	1
	C22-010-2111	O-ring, Valve seat, Viton .....	1
14	C22-002-1000	Valve body, Brass, NPT .....	1
	C22-002-1002	Valve body, 316 SST, NPT .....	1
	C22-002-1017	Valve body, Nickel alloy C series NPT 1	1
15	C22-011-2110	O-ring, Buna-N.....	1
	C22-011-2111	O-ring, Viton.....	1
-	C22-022-2402	Nameplate, C22, blank (specify model & serial no.) .....	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce.....	

# C23A Parts



## C23AA, C23AB, and C23AC

### Brass Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C23-004-1005	Adjusting bolt, Pressure range A .....	1
	C23-004-1006	Adjusting bolt, Pressure range B .....	1
	C23-004-1007	Adjusting bolt, Pressure range C .....	1
2	C23-005-1000	Jam nut.....	1
3	D25-029-2010	Screw, Cap, 3/8 x 1-1/4" .....	4
4	D10-048-2010	Lockwasher, 3/8" .....	4
5a	C23-003-1002	Valve top, Nonwetted .....	1
5b	C23-003-1000	Valve top, Brass .....	1
6	C23-018-3100	Spring disc, 28 x 12.2 x 1.5 mm .....	**
	C23-018-3101	Spring disc, 28 x 12.2 x 1.0 mm .....	**
7	C23-023-1100	Plunger Assembly, 316 SST.....	1
	C23-023-1101	Plunger Assembly, SST, with tungsten carbide ball .....	1
	C23-023-1103	Plunger Assembly, 17-4 PH SST .....	1
	C23-023-1117	Plunger Assembly, Hastelloy C-276....	1
8	C23-013-2110	Seal, Back-up, Buna-N.....	1
	C23-013-2117	Seal, Back-up, UHMW polyethylene ...	1
	C23-013-2118	Seal, Back-up, PTFE.....	1
9	C23-012-2110	Seal, Buna-N.....	1
	C23-012-2111	Seal, Viton .....	1
	C23-012-2113	Seal, EPDM.....	1
	C23-012-2115	Seal, Urethane .....	1
10*	C23-016-2110	O-ring, Sleeve, Buna-N.....	1
	C23-016-2111	O-ring, Sleeve, Viton.....	1
	C23-016-2113	O-ring, Sleeve, EPDM.....	1
11*	C23-024-1010	Sleeve, 316 SST.....	1
	C23-024-1017	Sleeve, Hastelloy C-276.....	1
12	C23-006-1000	Seat, 316 SST .....	1
	C23-006-1001	Seat, 17-4 HT .....	1
	C23-006-1002	Seat, Tungsten carbide .....	1
	C23-006-1017	Seat, Hastelloy C-276 .....	1
13	C23-010-2110	O-ring, Valve seat, Buna-N.....	1
	C23-010-2111	O-ring, Valve seat, Viton .....	1
	C23-010-2113	O-ring, Valve seat, EPDM.....	1
14	C23-002-1000	Valve body, Brass, NPT .....	1
15	C23-011-2110	O-ring, Buna-N.....	1
	C23-011-2111	O-ring, Viton.....	1
	C23-011-2113	O-ring, EPDM.....	1
-	C23-022-2403	Nameplate, C23, blank (specify model & serial no.) .....	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce	

\*\* See page 5 for spring disc quantities and arrangements.

# C23A Parts

## C23AA, C23AB, and C23AC

### Stainless Steel Body Nickel Alloy Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C23-004-1005	Adjusting bolt, Pressure range A	1
	C23-004-1006	Adjusting bolt, Pressure range B	1
	C23-004-1007	Adjusting bolt, Pressure range C	1
2	C23-005-1000	Jam nut	1
3	D25-029-2010	Screw, Cap, 3/8" x 1-1/4"	4
4	D10-048-2010	Lockwasher	4
5a	C23-003-1002	Valve top, Nonwetted	1
6	C23-018-3100	Spring disc, 28 x 12.2 x 1.5 mm	**
	C23-018-3101	Spring disc, 28 x 12.2 x 1.0 mm	**
7	C23-023-1100	Plunger Assembly, 316 SST	1
	C23-023-1101	Plunger Assembly, SST, with tungsten carbide ball	1
	C23-023-1103	Plunger Assembly, 17-4 PH SST	1
	C23-023-1117	Plunger Assembly, Hastelloy C-276	1
8	C23-013-2110	Seal, Back-up, Buna-N	1
	C23-013-2117	Seal, Back-up, UHMW polyethylene	1
	C23-013-2118	Seal, Back-up, PTFE	1
9	C23-012-2110	Seal, Buna-N	1
	C23-012-2111	Seal, Viton	1
	C23-012-2113	Seal, EPDM	1
	C23-012-2115	Seal, Urethane	1
10*	C23-016-2110	O-ring, Sleeve, Buna-N	1
	C23-016-2111	O-ring, Sleeve, Viton	1
	C23-016-2113	O-ring, Sleeve, EPDM	1
11*	C23-024-1010	Sleeve, 316 SST	1
	C23-024-1017	Sleeve, Hastelloy C-276	1
12	C23-006-1000	Seat, 316 SST	1
	C23-006-1001	Seat, 17-4 HT	1
	C23-006-1002	Seat, Tungsten carbide	1
	C23-006-1017	Seat, Hastelloy C-276	1
13	C23-010-2110	O-ring, Valve seat, Buna-N	1
	C23-010-2111	O-ring, Valve seat, Viton	1
	C23-010-2113	O-ring, Valve seat, EPDM	1
14	C23-002-1002	Valve body, 316 SST, NPT	1
	C23-002-1017	Valve body, nickel alloy C series, NPT	1
15	C23-011-2110	O-ring, Buna-N	1
	C23-011-2111	O-ring, Viton	1
	C23-011-2113	O-ring, EPDM	1
-	C23-022-2403	Nameplate, C23, blank (specify model & serial no.)	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce	

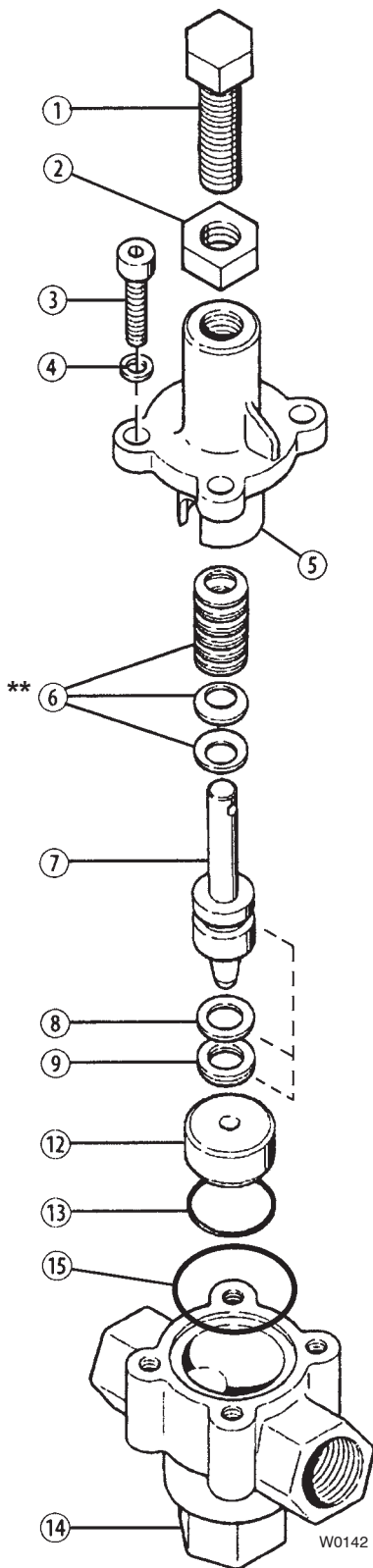
\*\* See page 5 for spring disc quantities and arrangements.

## C23AE

### Brass Body Stainless Steel Body Nickel Alloy Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C23-004-1008	Adjusting bolt, Pressure range E	1
2	C23-005-1000	Jam nut	1
3	A04-041-2010	Screw, Cap, 3/8" x 1-1/2"	4
4	D10-048-2010	Lockwasher	4
5c	C23-003-1003	Valve top, Brass, 2500 psi	1
6	C23-018-3100	Spring disc, 28 x 12.2 x 1.5 mm	28
7	C23-023-1100	Plunger Assembly, 316 SST	1
	C23-023-1103	Plunger Assembly, 17-4 PH SST	1
	C23-023-1117	Plunger Assembly, Hastelloy C-276	1
8	C23-013-2110	Seal, Back-up, Buna-N	1
	C23-013-2118	Seal, Back-up, PTFE	1
9	C23-012-2110	Seal, Buna-N	1
	C23-012-2111	Seal, Viton	1
10*	C23-016-2110	O-ring, Sleeve, Buna-N	1
	C23-016-2111	O-ring, Sleeve, Viton	1
11*	C23-024-1010	Sleeve, 316 SST	1
	C23-024-1017	Sleeve, Hastelloy C-276	1
12	C23-006-1000	Seat, 316 SST	1
	C23-006-1001	Seat, 17-4 HT	1
	C23-006-1017	Seat, Hastelloy C-276	1
13	C23-010-2110	O-ring, Valve seat, Buna-N	1
	C23-010-2111	O-ring, Valve seat, Viton	1
14	C23-002-1000	Valve body, Brass, NPT	1
	C23-002-1002	Valve body, 316 SST, NPT	1
	C23-002-1017	Valve body, Nickel alloy C series, NPT	1
15	C23-011-2110	O-ring, Buna-N	1
	C23-011-2111	O-ring, Viton	1
-	C23-022-2403	Nameplate, C23, blank (specify model & serial no.)	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce	

# C24A Parts



## C24AA, C24AB, and C24AC

### Brass Body Stainless Steel Body Nickel Alloy Body

Ref. No.	Part Number	Description	Quantity/ Pump
1	C24-004-1005	Adjusting bolt, Pressure range A .....	1
	C24-004-1006	Adjusting bolt, Pressure range B .....	1
	C24-004-1007	Adjusting bolt, Pressure range C .....	1
2	C24-005-1000	Jam nut.....	1
3	C24-015-2000	Screw, Cap, 7/16 x 1-1/2" .....	4
4	C24-014-2000	Lockwasher, 7/16" .....	4
5	C24-003-1000	Valve top, Brass .....	1
	C24-003-1001	Valve top, 316 SST .....	1
	C24-003-1002	Valve top, Nickel alloy C series .....	1
6	C24-018-3100	Spring disc, 35.5 x 18.3 x 2.0 mm.....	**
	C24-018-3102	Spring disc, 35.5 x 18.3 x 1.2 mm.....	**
7	C24-023-1100	Plunger Assembly, 316 SST.....	1
	C24-023-1101	Plunger Assembly, SST, with tungsten carbide ball .....	1
	C24-023-1102	Plunger Assembly, Hastelloy C-276....	1
	C24-023-1103	Plunger Assembly, 17-4 PH SST .....	1
8	C24-013-2110	Seal, Back-up, Buna-N.....	1
	C24-013-2118	Seal, Back-up, Viton.....	1
9	C24-012-2110	Seal, Buna-N.....	1
	C24-012-2111	Seal, Viton, .....	1
	C24-012-2113	Seal, EPDM.....	1
12	C24-006-1000	Seat, 316 SST .....	1
	C24-006-1001	Seat, 17-4 HT .....	1
	C24-006-1002	Seat, Tungsten carbide .....	1
	C24-006-1003	Seat, Hastelloy C-276 .....	1
13	C23-010-2110	O-ring, Valve seat, Buna-N.....	1
	C23-010-2111	O-ring, Valve seat, Viton .....	1
	C23-010-2113	O-ring, Valve seat, EPDM.....	1
14	C24-002-1000	Valve body, Brass, NPT .....	1
	C24-002-1001	Valve body, 316 SST, NPT .....	1
	C24-002-1002	Valve body, Nickel alloy C series, NPT .....	1
15	C24-011-2110	O-ring, Buna-N.....	1
	C24-011-2111	O-ring, Viton.....	1
	C24-011-2113	O-ring, EPDM.....	1
-	C24-022-2401	Nameplate, C24, blank (specify model & serial no.) .....	1
-	A01-115-3400	Grease, Regulator valve spring, 1/4 ounce.....	

\*\* See page 5 for spring disc quantities and arrangements.

# C22A/23A/24A Repair

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The valve can generally be repaired in place, without removing it from the system.

When disassembling, note the number of spring discs and their arrangement. They must be reinstalled in the same arrangement (refer also to page 5 — note that they are stacked, either singly or in pairs, facing in alternate directions). When reassembling, apply liberal amounts of high-temperature regulator grease (Wanner #A01-115-3400) on the springs and around the plunger stem.

The seal (9) and back-up seal (8) must be replaced together; don't replace one without replacing the other.

## C22A/23A/24A Troubleshooting

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### Excess Pressure Required to Bypass Fluid

- Regulating valve pressure not properly adjusted
- Not enough fluid being continuously bypassed
- Nozzles worn

### Fluid Leaking from Hole in Valve Top

- Worn Seals

### System Losing Pressure

- Nozzles worn
- Pump RPM reduced
- Regulating valve pressure not properly adjusted
- Worn pump components
- Worn regulating valve seat or plunger
- System drawing in air
- Too much fluid being bypassed

### Pressure Spikes

- Minimum bypass of 10% not being maintained
- Nozzles worn
- Regulating valve pressure not properly adjusted