ANDERSON GREENWOOD SINGLE ACTIVE SSV

INSTALLATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be fully read and understood

The intent of these instructions is to acquaint the user with the storage, installation and operation of this product. Please read these instructions carefully before installation.

SAFETY PRECAUTIONS

When the valve is under pressure never place any part of your body near the outlet of the relief valve. Always wear proper safety gear to protect head, eyes, ears, etc. anytime you are near pressurized valves.
Never attempt to remove the valve from a system that is pressurized.
Never perform maintenance on the valve while in service unless the valve is isolated from the system pressure. If not properly isolated from the system pressure, the valve may inadvertently vent resulting in serious injury.
Remove the valve prior to performing any pressure testing of the system.
The safety of lives and property often depends on the proper operation of the valve. The valve must be maintained according to appropriate instructions and must be periodically tested and reconditioned to ensure correct function.

WARNING

An attempt to repair this product by unauthorized or unqualified persons voids the product warranty and may cause damage to equipment and serious injury or death to persons.
The product is a safety related component intended for use in critical applications.
The improper application, installation or maintenance of the product or the use of parts or components not manufactured by Anderson Greenwood may result in a failure of the product.
Any installation, maintenance, adjustment, test, etc. performed on the product must be done in accordance with the requirements of all applicable Anderson Greenwood procedures and instructions as well as applicable National and International Codes and Standards.

STORAGE AND HANDLING

Valve performance may be adversely affected if the valve is stored for an extended period without proper protection. Rough handling and dirt may damage, deform, or cause misalignment of valve parts and adversely affect valve performance and seat tightness. It is recommended that the valve be stored in the original shipping container in a warehouse or as a minimum on a dry surface with a protective covering until installation. Inlet and outlet protectors should remain in place until the valve is ready to be installed in the system.

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1 GENERAL VALVE DESCRIPTION AND INSTRUCTIONS

The Anderson Greenwood Safety Selector Valve (SSV) is a device for diverting process flow from one pressure relief valve (PRV) to another. Different configurations are shown in Figures 1 thru 4.

1.1 SIZE/PRESSURE TEMPERATURE RATINGS

	ANSI pressure	Maximum pressure rating psig (barg) (at 100°F (37.8°C))		Soft goods - Maximum temperature rating °F (°C)		
Size	Class[2]	CS body[1]	SS body[1]	PTFE	Peek/Grafoil®	Grafoil®[3]
1"	150# - 2500#	6170 (425.5)	6000 (413.8)	400 (204.4)	600 (315)	800 (426.7)
1.5"	150# - 2500#	6170 (425.5)	6000 (413.8)	400 (204.4)	600 (315)	800 (426.7)
2"	150# - 2500#	6170 (425.5)	6000 (413.8)	400 (204.4)	600 (315)	800 (426.7)
3"	150# - 900#	2220 (153.1)	2160 (150.0)	400 (204.4)	600 (315)	800 (426.7)
4"	150# - 900#	2220 (153.1)	2160 (150.0)	400 (204.4)	600 (315)	800 (426.7)
6"	150# - 600#	1480 (102.1)	1440 (99.3)	400 (204.4)	600 (315)	800 (426.7)
8"	150# - 600#	1480 (102.1)	1440 (99.3)	400 (204.4)	600 (315)	800 (426.7)
10"	150# - 300#	740 (51.0)	720 (49.6)	400 (204.4)	600 (315)	800 (426.7)

NOTES

1. Temperature range is limited according to body material of construction as follows:
   CS -20°F to 800°F (-28.9°C to 426.7°C)
   SS -423°F to 800°F (-252.8°C to 426.7°C)
2. Flange pressure and temperature rating is in accordance with ASME/ANSI B16.34.
3. All Grafoil® soft goods are available up to ANSI Pressure Class 600# except for 10" SSV, which is up to 300#.

2 MAINTENANCE - 1" 150# TO 600#

Refer to Figure 1 and 2

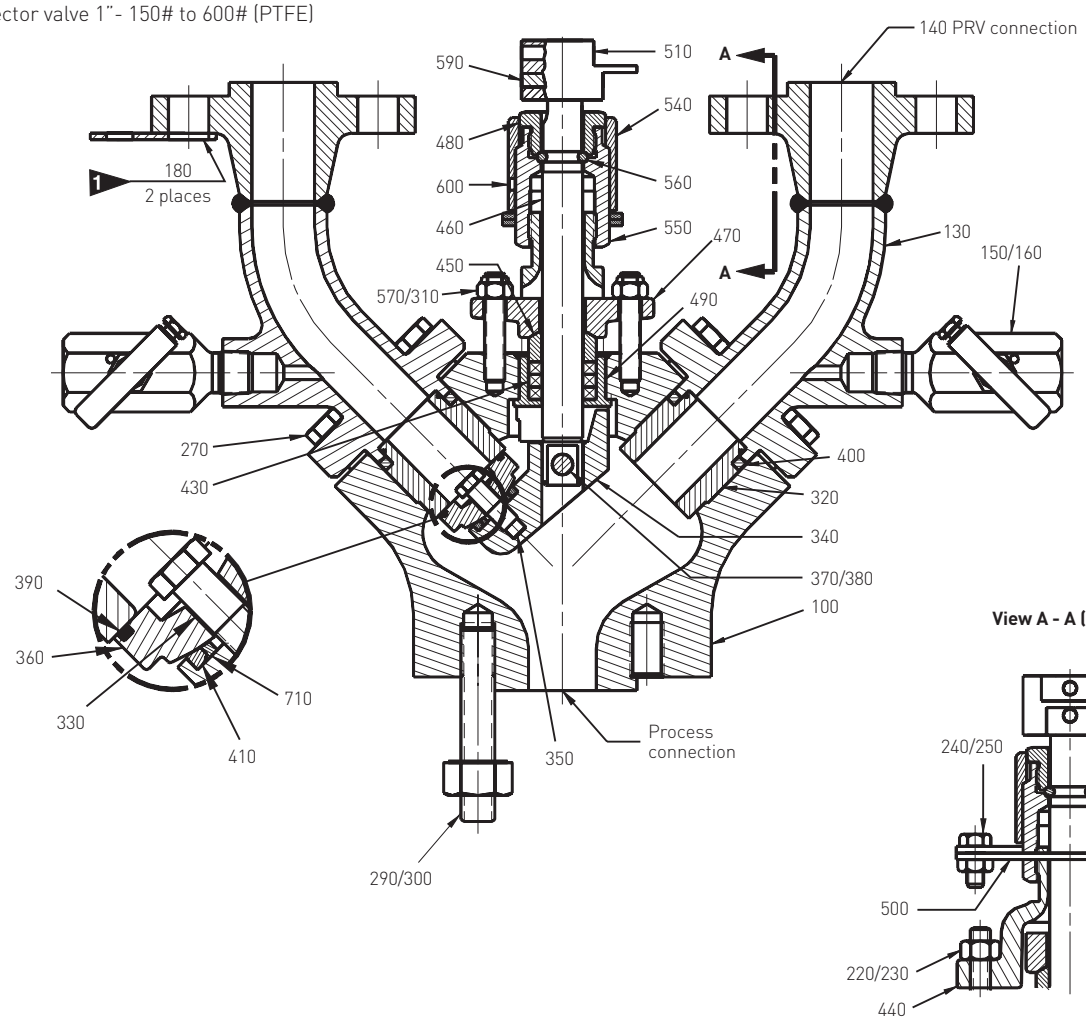
2.1 Disassembly

1. Remove lock (240, 250).
2. Turn hex (1½ inch) under index bushing/ indicator, retraction bushing (550) clockwise (downward) to stop.
3. Remove elbow bolts (270) and elbow (130), on both sides.
4. Remove seat seals (400) and seats (320).
5. Remove disc bolt (330), disc assembly and lock washer (350) from rotor (340). Remove parts through body outlet.
6. Remove shaft nut (380) and bolt (370) by extending two swivel sockets with extensions through body outlet holes on opposite sides of the body. Rotor (340) is free to drop. Remove through body outlet.
7. Remove four yoke nuts (230) and two packing nuts (310).
8. Work yoke assembly loose and slide out of body.
9. Remove pin (590), index bushing/indicator (510), set screw (600), lock stop (540) and retainer bushing (480) and inspect bearings (560) and races (460, 480, 550).
   Note: retainer bushing (480) has left hand threads.

2.2 Assembly

1. Clean all parts prior to assembly. Lubricate all threads and bearing surfaces with 'Never Seez Pure Nickel Special' number NG-8, Never Seez Compound Corp. or equivalent. All soft goods (except Grafoil® seals) to be lubricated with a thin coat of compatible lubricant.
2. Replace shaft packing (430). Install yoke assembly into body and tighten four yoke nuts (230). Install packing nuts (310) and tighten only enough to prevent leakage.
3. Insert rotor (340) into body through outlet opening and manoeuver the rotor into position on the end of the index shaft (460). Install shaft bolt (370) and nut (380) through body outlet and with the aid of two swivel sockets with extensions, secure rotor to shaft.
4. PTFE and Peek valves: install new lock washer (350), new disc (360) through body outlet ports and tighten disc bolt (330). Disc bolt torque should not exceed 29 lb·in. Grafoil® valves: replace disc seal (390) using the same seat retainer (700). Replace rotor equalizer seal (410) using the same equalizer ring (710). Install new lock washer (350) through body outlet ports and tighten disc bolt (330). Disc bolt torque should not exceed 29 lb·in.
5. Disc (360) should be free to swivel and rotate around the disc bolt (330) on the rotor assembly.
6. Inspect the seat (320) surfaces for nicks or scratches. Restoration of seat surfaces should only include lapping and/or polishing. If the seat surfaces are damaged more extensively, machining may be required (surface finish 32 RMS or better). The total maximum allowed material removal shall not exceed 0.010 in. For Grafoil® valves, if seat surface reconditioning is required, please contact the factory.
7. Replace seat seals (400) and install seats (320).
8. Install elbows (130) and elbow bolts (270).

FIGURE 1
Safety selector valve 1"- 150# to 600# (PTFE)



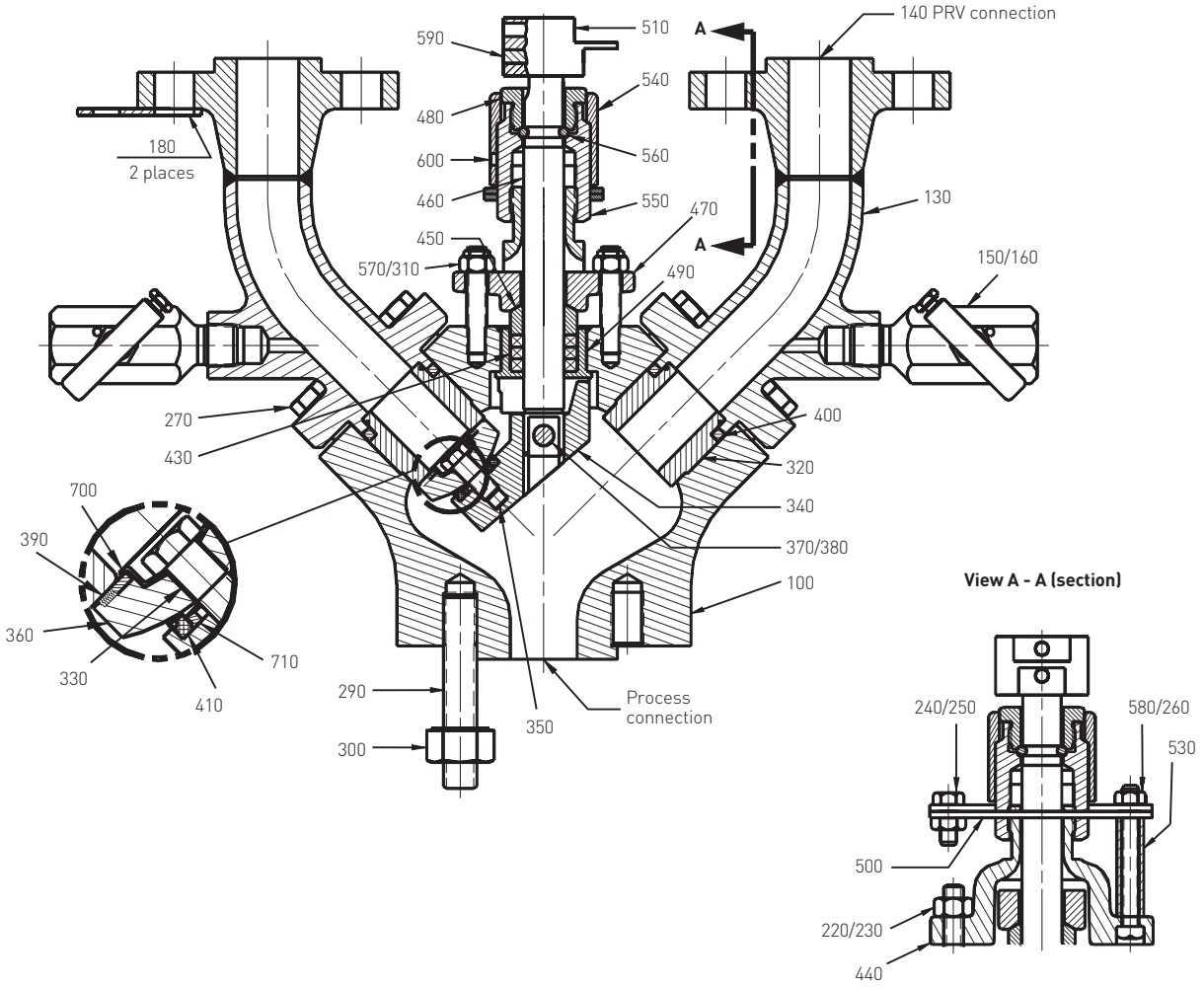
PARTS LIST

Item	Description
Body/base parts	
100	Body
130	Elbow
140	Flange (PRV connection)
490	Insert, body
Internal parts	
320	Ring, seat
330	Bolt, disc
340	Rotor
350	Washer, lock
360	Disc, isolation
370	Bolt, shaft
380	Nut, shaft bolt
460	Shaft, index
710	Ring, extrusion equalizer
Soft goods	
390	Seal, disc
400	Seal, seat ring
410	Seal, rotor
430	Packing

Item	Description
Operator parts	
220	Studs (yoke bolting)
230	Nuts (yoke bolting)
240	Bolt (lock device)
250	Nut, reg hex (lock device)
260	Nut, flexloc (lock device)
440	Yoke
450	Follower
470	Gland flange
480	Bushing, retainer
500	Lock, rotor assembly
510	Indicator/bushing
530	Spacer
540	Lock stop
550	Bushing, retraction
560	Balls
580	Bolt (lock device)
590	Pin
600	Screw, set

Item	Description
Bolting	
180	Hook-lifting
270	Bolt, hex (body/elbow)
290	Studs (studded base)
300	Nuts (studded base)
310	Nuts, locking (packing)
570	Studs (packing)
Bleed port accessories	
150/160	Hand valves/flanges/plugs

FIGURE 2
Safety selector valve 1"- 150# to 600# (Grafoil®)



PARTS LIST

Item	Description
Body/base parts	
100	Body
130	Elbow
140	Flange (PRV connection)
490	Insert, body
Internal parts	
320	Ring, seat
330	Bolt, disc
340	Rotor
350	Washer, lock
360	Disc, isolation
370	Bolt, shaft
380	Nut, shaft bolt
460	Shaft, index
700	Retainer, seat
710	Ring, extrusion equalizer
Soft goods	
390	Seal, disc
400	Seal, seat ring
410	Seal, rotor
430	Packing

Item	Description
Operator parts	
220	Studs (yoke bolting)
230	Nuts (yoke bolting)
240	Bolt (lock device)
250	Nut, reg hex (lock device)
260	Nut, flexloc (lock device)
440	Yoke
450	Follower
470	Gland flange
480	Bushing, retainer
500	Lock, rotor assembly
510	Indicator/bushing530
530	Spacer
540	Lock stop
550	Bushing, retraction
560	Balls
580	Bolt (lock device)
590	Pin
600	Screw, set

Item	Description
Bolting	
180	Hook-lifting
270	Bolt, hex (body/elbow)
290	Studs (studded base)
300	Nuts (studded base)
310	Nuts, locking (packing)
570	Studs (packing)
Bleed port accessories	
150/160	Hand valves/flanges/plugs

3 MAINTENANCE - 1" 900# TO 2500# AND 1.5" TO 10"

Refer to Figures 3 and 4

3.1 Disassembly

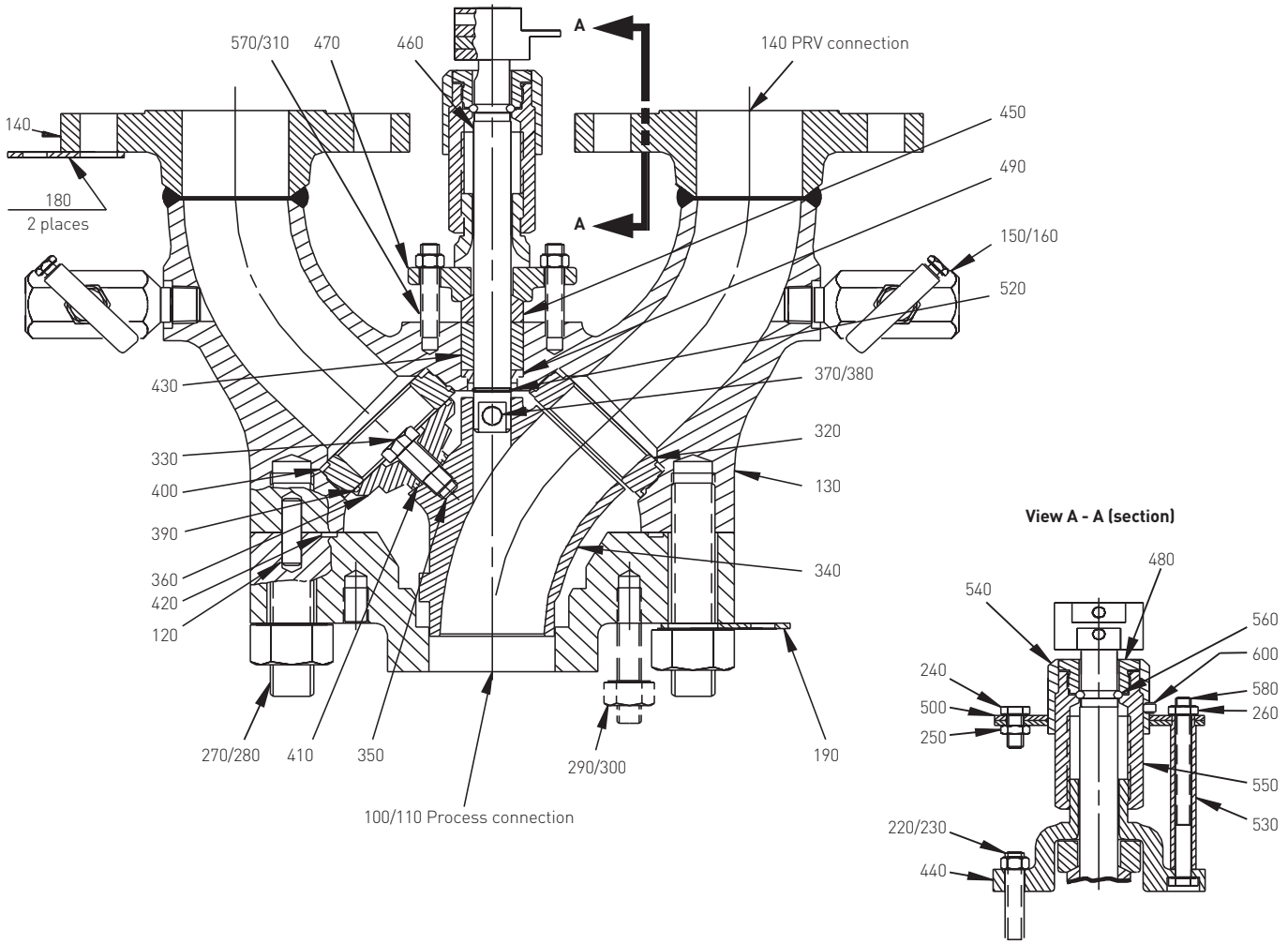
1. Remove lock (240, 250).
2. Turn hex (1½ inch) under index bushing/ indicator, retraction bushing (550) clockwise (downward) to stop.
3. Remove body/base nuts (280) and base (100).
4. Remove shaft nut (380) and bolt (370). Rotor (340) is free to drop.
5. Remove disc-bolt (330) and disc assembly from rotor (340).
6. Remove four yoke nuts (230) and two packing nuts (310).
7. Work yoke assembly loose and slide out of body.
8. Remove pin (590), index bushing/indicator (510), set screw (600), lock stop (540) and retainer bushing (480) and inspect bearings (560) and races (460, 480, 550).
   Note: retainer bushing (480) has left hand threads.
9. Remove shaft retaining ring (520) from shaft (460).
10. If seat removal is required use seat tool listed below:

Valve size	Seat removal tool Anderson Greenwood part number
1" - 2"	04.8475.001
3"	04.8475.002
4"	04.8475.003
6"	04.8475.004
8"	04.8475.005
10"	04.8475.006

3.2 Assembly

1. Clean all parts prior to assembly. Lubricate all threads and bearing surfaces with 'Never- Seez® Pure Nickel Special' number NG-8, Never-Seez Compound Corp. or equivalent. All soft goods (except Grafoil® seals) to be lubricated with a thin coat of compatible lubricant.
2. Inspect the seat (320) surfaces for nicks or scratches. Restoration of seat surfaces should only include lapping and/or polishing. If the seat surfaces are damaged more extensively, machining may be required (surface finish 32 RMS or better). The total maximum allowed material removal shall not exceed 0.010 in. For Grafoil® valves, if seat surface reconditioning is required, please contact the factory.
3. Install seats (320) with new seat seals (400), if needed. Torque seats to 350 ft·lb.
4. Replace shaft packing (430) and install shaft retaining ring (520). Install yoke assembly into body and tighten four yoke nuts (230). Install packing nuts (310) and tighten only enough to prevent leakage.
5. PTFE and Peek valves: install new lock washer (350), new disc (360) and tighten disc-bolt (330).
   Grafoil® valves: replace disc seal (390) using the same seat retainer ring (700).
   Replace rotor equalizer seal (410) using the same equalizer ring (710). Install new lock washer (350) and tighten disc bolt (330).
6. Disc (360) should be free to swivel and rotate around the disc bolt (330) on the rotor assembly.
7. Install rotor assembly onto shaft (460) and secure with bolt and nut (370, 380).
8. Replace base seal (420) on base. Install base (100) onto body (130), tighten nuts (280).
   Note: align either of two rotor slots with boss in base and orient pins (120) in body to holes in base.

FIGURE 3
Safety selector valve 1"- 900# thru 2500# and 1.5" - 10" all (PTFE)



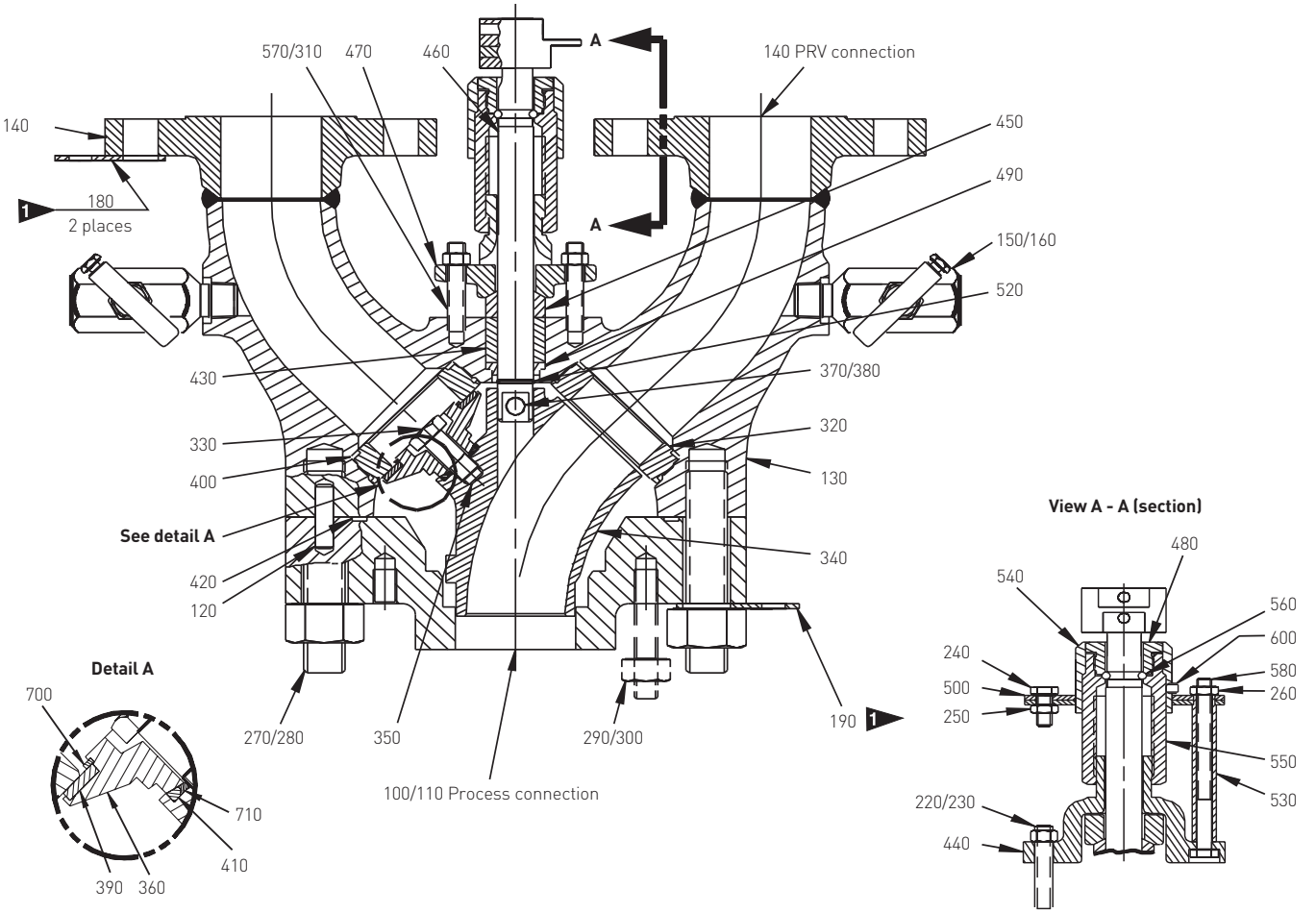
PARTS LIST

Item	Description
Body/base parts	
100	Base
110	Flange (process connection)
130	Body
140	Flange (PRV connection)
170	Expanders
Internal parts	
320	Ring, seat
330	Bolt, disc
340	Rotor
350	Washer, lock
360	Disc, isolation
370	Bolt, shaft
380	Nut, shaft bolt
460	Shaft, index
490	Bearing, packing
520	Retaining ring, shaft
Soft goods	
390	Seal, disc
400	Seal, seat ring
410	Seal, rotor
420	Gasket, base
430	Packing

Item	Description
Operator parts	
220	Studs (yoke bolting)
230	Nuts (yoke bolting)
240	Bolt (lock device)
250	Nut, reg hex (lock device)
260	Nut, flexloc (lock device)
440	Yoke
450	Follower
470	Gland flange
480	Bushing, retainer
500	Lock, rotor assembly
510	Indicator/bushing
530	Spacer
540	Lock stop
550	Bushing, retraction
560	Balls
580	Bolt (lock device)
590	Pin
600	Screw, set
Locators	
120	Pin, groove

Item	Description
Bolting	
180	Hook-lifting
190	Hook-lifting
270	Bolt, hex (body/base)
290	Studs (studded base)
300	Nuts (studded base)
310	Nuts, locking (packing)
570	Studs (packing)
Bleed port accessories	
150/160	Hand valves/flanges/plugs

FIGURE 4
Safety selector valve 1"- 900# thru 2500# and 1.5" - 10" all (Grafoil®)



PARTS LIST

Item	Description
Body/base parts	
100	Base
110	Flange (process connection)
130	Body
140	Flange (PRV connection)
170	Expanders
Internal parts	
320	Ring, seat
330	Bolt, disc
340	Rotor
350	Washer, lock
360	Disc, isolation
370	Bolt, shaft
380	Nut, shaft bolt
460	Shaft, index
490	Bearing, packing
520	Retaining ring, shaft
700	Retaining ring, seat
710	Ring, extrusion equalizer
Soft goods	
390	Seal, disc
400	Seal, seat ring
410	Seal, rotor
420	Gasket, base
430	Packing

Item	Description
Operator parts	
220	Studs (yoke bolting)
230	Nuts (yoke bolting)
240	Bolt (lock device)
250	Nut, reg hex (lock device)
260	Nut, flexloc (lock device)
440	Yoke
450	Follower
470	Gland flange
480	Bushing, retainer
500	Lock, rotor assembly
510	Indicator/bushing
530	Spacer
540	Lock stop
550	Bushing, retraction
560	Balls
580	Bolt (lock device)
590	Pin
600	Screw, set
Locators	
120	Pin, groove

Item	Description
Bolting	
180	Hook-lifting
190	Hook-lifting
270	Studs (body/base)
280	Nuts (body/base)
290	Studs (studded base)
300	Nuts (studded base)
310	Nuts, locking (packing)
570	Studs (packing)
Bleed port accessories	
150/160	Hand valves/flanges/plugs

4 SOFT GOODS AND REPAIR KITS

The kits are available from stock. To ensure the purchase of the correct kit, the user should confirm the correct kit number with the factory prior to placing an order. The order should specify the valve part number, the serial number from the nameplate, and the kit number from the Anderson Greenwood recommended Soft Goods Kits Report 04.8474.

5 LEAK TESTING

5.1 Internal leak test

1. With safety relief valves in place, rotate index bushing/indicator (510) to either side. Turn hex under index bushing/indicator, retraction bushing (550) counter clockwise (upward) to stop, torque approximately 20 ft·lb.
2. Open bleed port (150/160) on neck opposite index bushing/indicator (510).
3. Pressurize inlet to 90% of PRV set pressure. Open bleed port (150/160) on inactive side and check for leaks using standard leak check. If leak is present, tighten hex under index bushing/indicator, retraction bushing (550) until leak stops using 80 ft·lb torque maximum. At this time leak check joint of relief valve on opposite neck with a leak test solution.
4. Close bleed port (150/160). Turn hex under index bushing/indicator, retraction bushing (550) clockwise (downward) to stop. Turn indicator bushing/indicator (510) to opposite side. Turn hex under index bushing/ indicator, retraction bushing (550) counterclockwise (upward) to stop, torque approximately 20 ft·lb.
5. Open bleed port (150/160) on inactive side and again check for leaks as described above.

5.1 External leak test

Check for external leakage by applying leak test solution to all joints and seals. At this point, retighten packing nuts (310) if required.

6 INSTALLATION

Repaired valves should be installed per Emerson's Installation and Operational Safety Instructions VCOSI-01055 (AGCDR-0054).