Honeywell

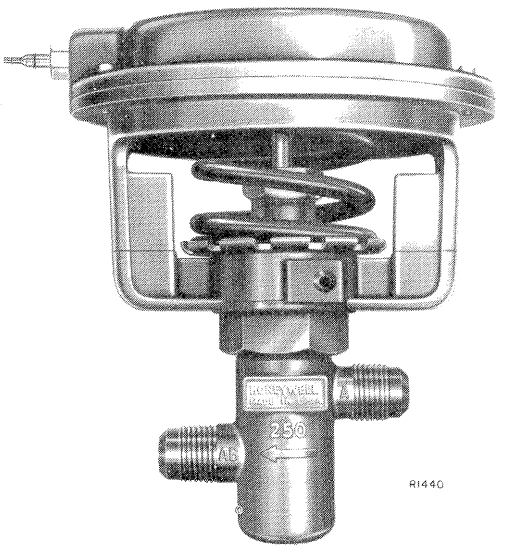
Comfort Control Systems

VP513A & B SINGLE SEATED WATER VALVE

Service Data

GENERAL

These instructions include service and repair information for the VP5 13A and B pneumatically operated, high-pressure, single-seated water valve.



SPECIFICATIONS

MODELS:
VP5 13A (normally open)
VP5 13B (normally closed)

NOMINALVALVE BODY RATING: 250 lb/in^2 (1724 kPa).

MAXIMUM BODY TEMPERATURE: 250 F (121 C).

SIZE:
VP513A: 1/2 in. (nominal for 5/8 in. O.D. copper tubing), 3/4 in. (nominal for 7/8 in. O.D. copper tubing).
VP513B: 1/2 in. (nominal for 5/8 in. O.D. copper tubing).

CAPACITY INDEX (Cv):
VP5 13A: 1.0, 1.6, 2.5 or 4.0 Cv.
VP5 13B: 1 .0, 1.6, or 2.5 Cv.

MAXIMUM SAFE OPERATOR AIR PRESSURE: 2.5 lb/in^2 (172 kPa).

APPLICATION

The VP5 13A (normally open) and VP5 13B (normally closed) water valves provide proportional control of unit air conditioners using hot and/or cold water as the controlled medium.

OPERATION (See Fig. 1)

An increase in control air pressure from the system temprature controller proportionally drives the VP5 13A closed or the VP513B open, modulating the medium's flow through the coil.

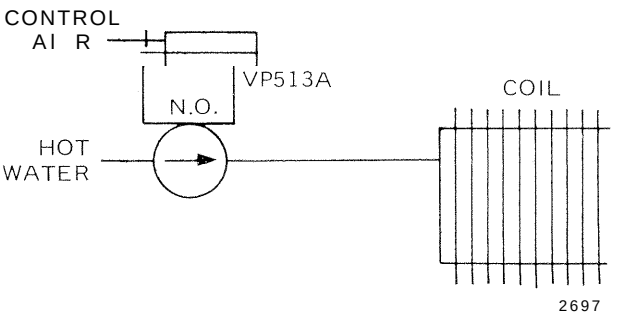


Fig. 1. VP5 13A Typical Operation

MAINTENANCE

CLEANING

Remove all dirt and grease accumulation from side of operator and around packing nut and stem. Use solvent if necessary.

INSPECTION

Inspect top of packing nut around stem for signs of leakage. Repack the valve if necessary. See REPAIR, Packing Replacement

CAUTION

Do not allow solvent to come into contact with diaphragm, as it can cause serious damage.

Work in well ventilated room to prevent breathing toxic fumes of solvent.

TROUBLESHOOTING

1. Observe room temperature and move thermostat setting up or down to simulate high or low temperature.

2. Check air pressure at valve and water flow. Normal conditions are shown in Table 1.

   a. *[fair pressure is opposite normal condition,* check thermostat operation and calibration. When air pressure is lower than normal, check for proper air supply pressure and for air leaks in piping or diaphragm (see REPAIR, Diaphragm Replacement). Replace Series 1 models with new operators or replace both diaphragm and cover.

   b. If *air pressure is cowect and water is not flowing when it should be,* check for pump operation, air lock, closed hand valves, or stuck valve.

   c. If *air pressure is correct and water is flowing when it should not be,* check for a bad disc or seat, something lodged under the disc, or water pressure exceeding valve close-off rating.

Replace stems and discs by disassembling valve (see REPAIR, Stem and Disc Holder Replacement). Replace seats on VP5 13B valves by using special tool, Part No. CCM3833. Replace the entire valve body if the seat on a VP5 13A valve is defective.

3. Visually inspect the valves for leakage at stem. If repacking is necessary, see REPAIR, Packing Replacement.

Table 1-Normal Operating Conditions of VP5 134 & B.

Model No.	Application		Room Temp.		Air Pressure		Water Flow	
	Hot W.	Ch. W.	High	Low	High	Low	Flow	No. Flow
VP5 13A (N.O.)	X		X		X			X
	X			X		X	X	
		X	X			X	X	
		X		X	X			X
VP51 3B (NC,)	X		X			X		X
	X			X	X		X	
		X	X		X		X	
		X		X		X		X

REPAIR PROCEDURE

DIAPHRAGM REPLACEMENT (See Fig. 2):

1. Shut down air supply to operator.

2. Using a screwdriver, draw the valve stem retainer (2) from the locked position.

3. Back off setscrews (10) and lift operator from valve. 30 NOT scratch or bend valve stem.

4. Remove the two allen head cap screws in the base of the spider (8).

CAUTION

The main spring (4) is under compression. Use care to prevent stripping of threads.

5. Remove the operator cover mounting screws (14) Remove defective diaphragm (13).

6. Install new diaphragm and reassemble. Be careful not to pinch or cut the new diaphragtn during reassembly.

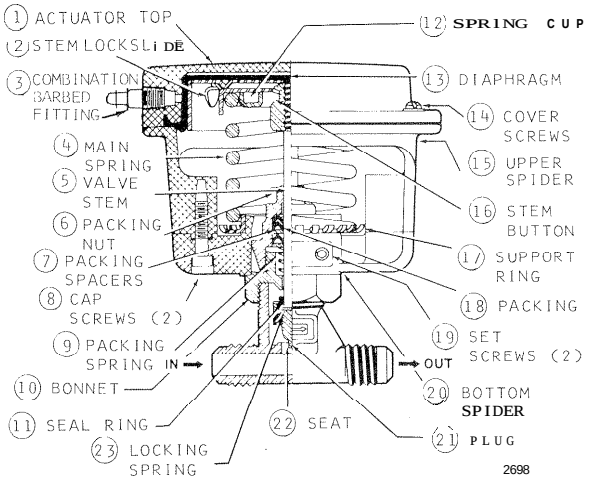


Fig. 2. Details of VP513A

PACKING REPLACEMENT (See Fig. 2)

NOTE: Shut down the system when repacking the VP5 13B models. The VP5 13A can be repacked without the system shutdown by pulling the valve stem *all the way up* allowing the O-ring (11) to seal off any leakage through the bonnet (10)

CAUTION

The controlled medium pressure holds the O-ring seal in place. DO NOT depress valve stem while repacking.

1. With the operator removed, inset-r a nail, awl. pin, or similar instrument into the 1/16 in. diameter hole near the top of the valve stem, Prevent stem from turning and remove the stem button (16), Important: DO NOT remove the setscrew from the top of the button.

2. Pull stem up and remove packing nut (6), old packing (18) spacers (7) and packing spring (9) See Fig. 3 for exploded view of packing components.

3. Inspect valve stem at this time to dctermine its condition.

4. Glean spacers, packing nut, spring and exposed portion of stem with tricloroethylene or similar solvent.

5. Lubricate stem, spring, spacer and each new packing ring with lubricant, Part No. 309535.

6. Reassemble packing components.

CAUTION

DO NOT force the new packing rings over the threaded end of the valve stem. Carefully screw them over the threads to avoid damage to thc ring.

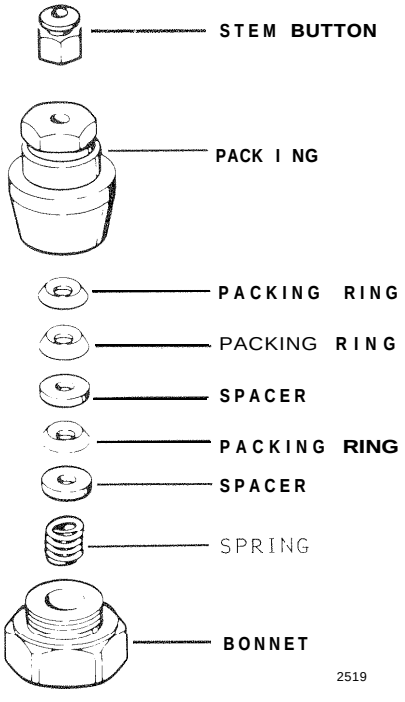


Fig. 3. Packing Assembly

STEM AND DISC HOLDER COMPONENT REPLACEMENT (See Fig. 4)

Shut down system (supply air and control medium).

Remove operator and packing components as previously discussed.

3. Remove bonnet (Fig. 2. (10)).

4. VP5 13A models:

   a. Remove stem and disc holder assembly from valve body.
   b. Remove throttling plug (Fig. 2, (21)) for access to defective components. Be sure O-ring seal is in position on valve stem.

      Inspect integral valve seat (Fig. 2 , (22)). If defective, replace complete valve.
   d. Replace parts as required (see PARTS LIST).

5. VP5 13B models:

   a. Remove valve seat with special tool, Part No. CCM3833, and lift out stem assembly.
   b. Replace components as required by removing disc holder mounting screw. See PARTS LIST for parts ordering information.

6. Reassemble and start up system. Observe operation through several cycles.

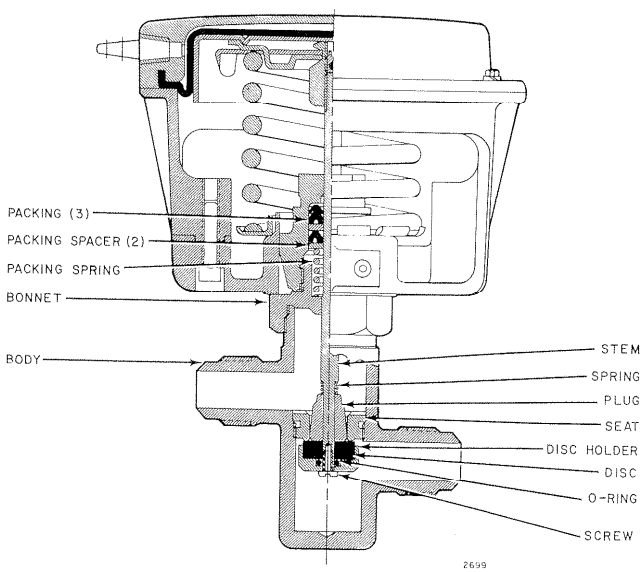
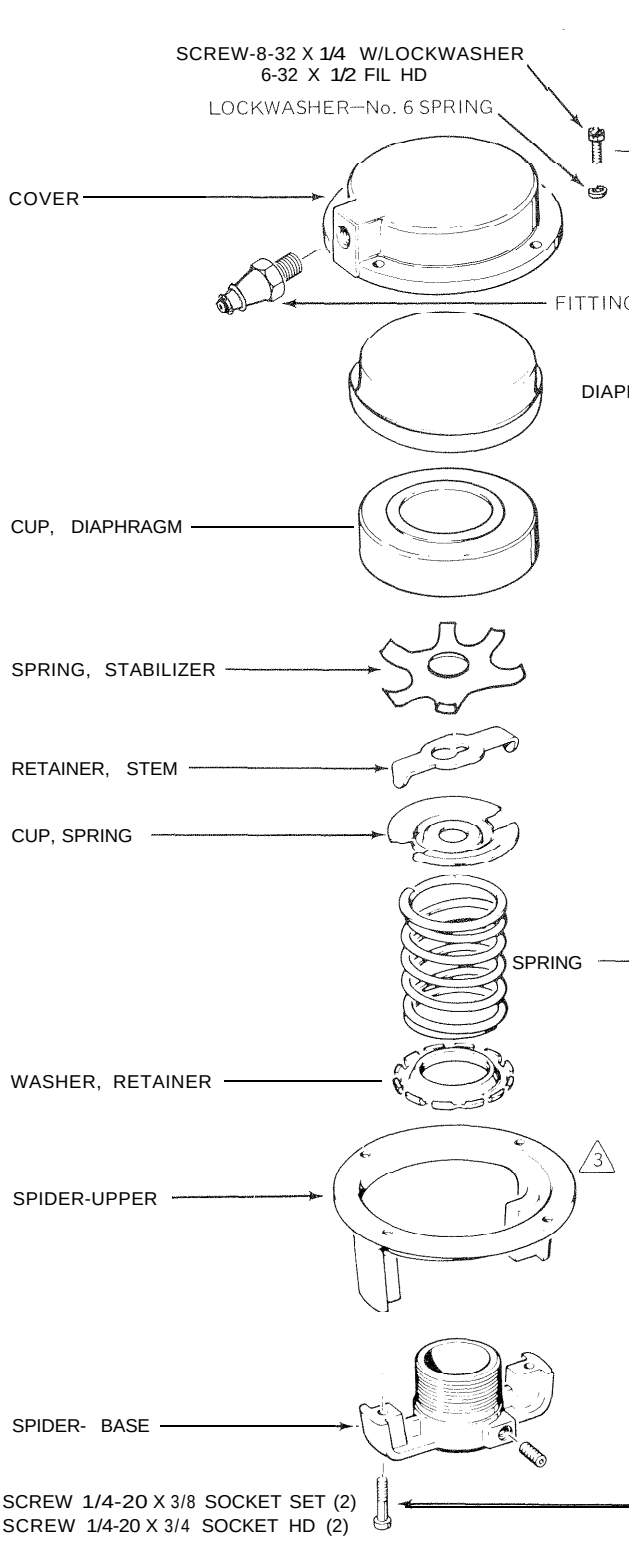


Fig. 4. Details of VP513B

PARTS LIST



VP5 13A				
SERIES 2-3			SERIES 1	VP513B
4 △1			NONE	4
NONE			8 △1	NONE
NONE			8 △1	NONF
14003572-001			14003572-001	
312760			△2	312760
RANGE: LB/IN2 (kPa)		3-10 (21-69)	8-13 (55 83)	3-7 (21-48)	9-13 (62-90)
VP513A	3/8" NOM VALVE	314062	NONE	314325	—
	1/2" NOM VALVE	314526	314615	314616	- -
	3/4" NOM VALVE	314526	314615	314616	—
VP513B	1/2" NOM VALVE	314526	—	—	315413
2 △1			2 △1		2 △1
2 △1			2 △1		2 △1

△1 STANDARD HARDWARE ITEM: OBTAIN LOCALLY WHEN POSSIBLE

△2 WHEN REPLACING THE SERIES 1 OPERATOR COVER AND/OR DIAPHRAGM, UPDATE TO A SERIES 2 AND 3 VERSION COVER AND DIAPHRAGM

△3 WHEN REPLACING THE SERIES 1 UPPER SPIDER, UPDATE TO A SERIES 2 AND 3 UPPER SPIDER, COVER, DIAPHRAGM AND MOUNTING SCREWS (4)

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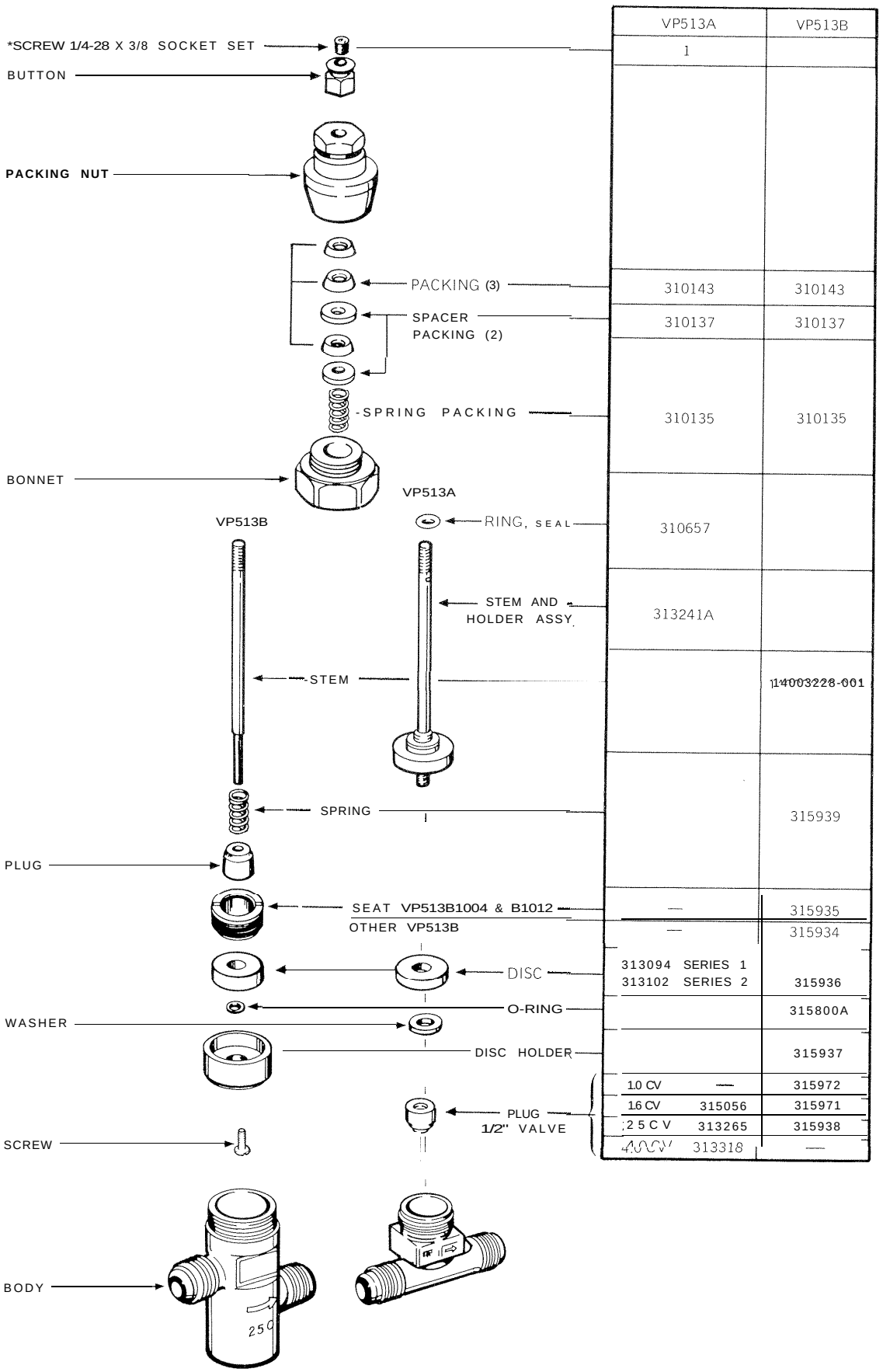
Fig. 5. VP5 13 Parts List.



	VP513A	VP513B
*SCREW 1/4-28 X 3/8 SOCKET SET	1	
BUTTON		
PACKING NUT		
PACKING (3)	310143	310143
SPACER PACKING (2)	310137	310137
SPRING PACKING	310135	310135
BONNET		
RING, SEAL	310657	
STEM AND HOLDER ASSY.	313241A	
STEM		14003228-001
SPRING		315939
PLUG		
SEAT VP513B1004 & B1012	—	315935
OTHER VP513B	—	315934
DISC	313094 SERIES 1 313102 SERIES 2	315936
O-RING		315800A
WASHER		
DISC HOLDER		315937
PLUG 1/2" VALVE	1.0 CV —	315972
	1.6 CV 315056	315971
	2.5 CV 313265	315938
	4.0 CV 313318	—
SCREW		
BODY		

'STANDARD HAPDWARE ITEM. OBTAIN LOCALLY WHEN POSSIBLE.

NOTE PARTS FOR OBSOLETE VALVES (ANGLE PATTERN **AND 1/2 IN OD) ARE NO LONGER AVAILABLE SUBSTITUTE VP527A FOR SMALL CV S.T VALVES.**

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Fig. 6. VP5 13 Parts List (Continued).