

## FREIGHT CONTROL VALVES

### Installation Procedure for Wear Protection

(Replaces Service Bulletin 68-17, dated February 1996)

APRIL, 1997

In order to minimize possible wear-related contamination, WABCO Freight Car Products has added wear rings to the service and emergency piston stems, installed a wear bearing button to the service accelerated release valve piston, and added a protective shield between the cover and piston assembly. New or reconditioned service and emergency pistons with grooves machined in the stems are required to accept the wear rings. The piece numbers of the wear protection details are shown in the following tabulation:

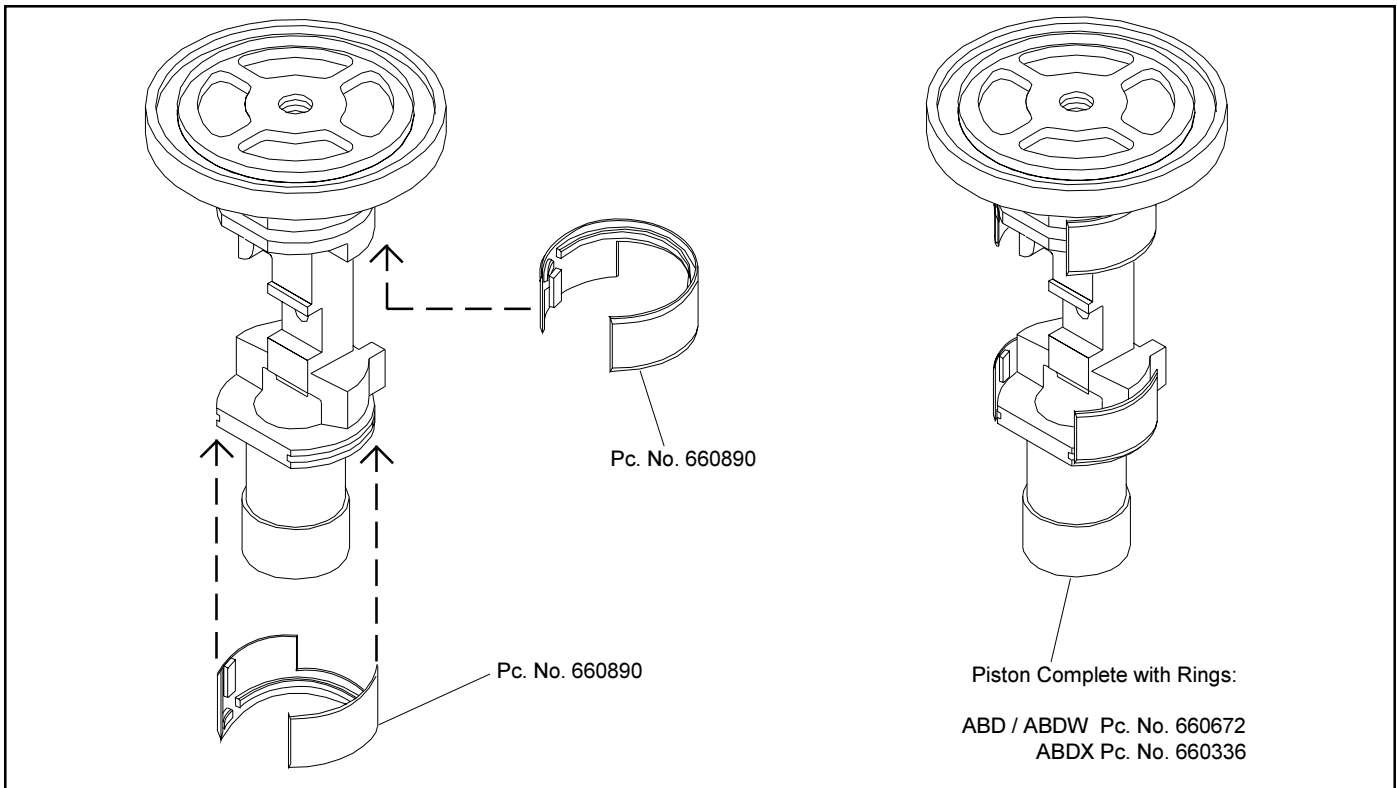
Position Location	Description	Piece Numbers	
		ABD & ABDW	ABDX
<b>Emergency Piston</b>	Piston Complete w/ rings	660670	660068
	Piston Machined	660669	660664
	Ring, Top (1)	660860	660860
	Rings, Bottom (1)	660660	660660
<b>Service Piston</b>	Piston Complete w/ rings	660672	660336
	Piston Machined	660671	660665
	Ring, Top (1)	660890	660890
	Ring, Bottom (1)	660890	660890
<b>Service Accelerated Release Valve</b>	Piston Complete	567252	567252
	Wear Protection Shield	660666	660666

Currently, new and reconditioned service and emergency pistons are furnished with the wear rings (Pc. Nos. 660890, 660860 & 660660) installed.

At the time of COT&S, if the portion was previously upgraded, the plastic wear details should be removed and discarded. New plastic wear details, listed in tabulation above, should be installed. The wear bearing button on the service accelerated release valve piston does not need to be replaced unless it is damaged.

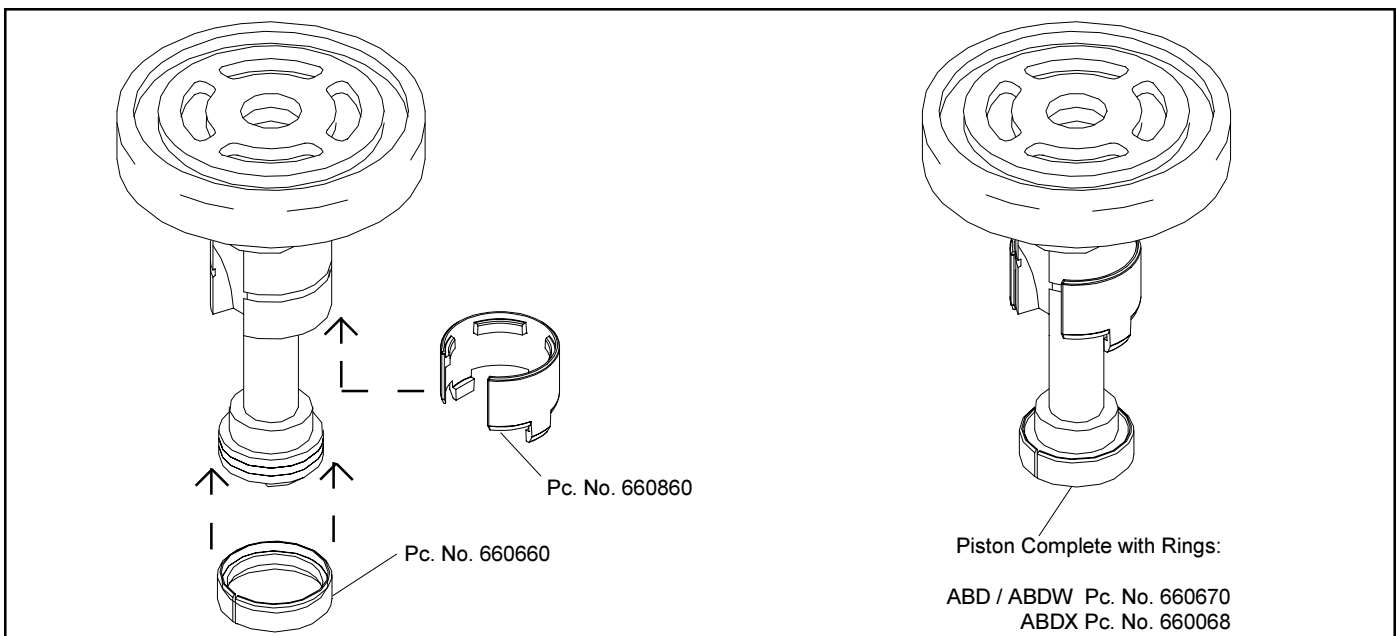
Figures 1A and 1B show the service and emergency pistons with machined grooves, the rings to be installed, the manner of installation, and the pistons with rings correctly installed.

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**Figure 1A - Service Piston**

**NOTE:** Apply guide rings to pistons before installing the slide valves. Carefully install the guide rings as shown in Figures 1A and 1B. Be sure to use the least amount of expansion possible when opening the rings during installation to avoid potential damage to the rings. Make sure the rings are snapped securely in place in the respective grooves on the pistons.

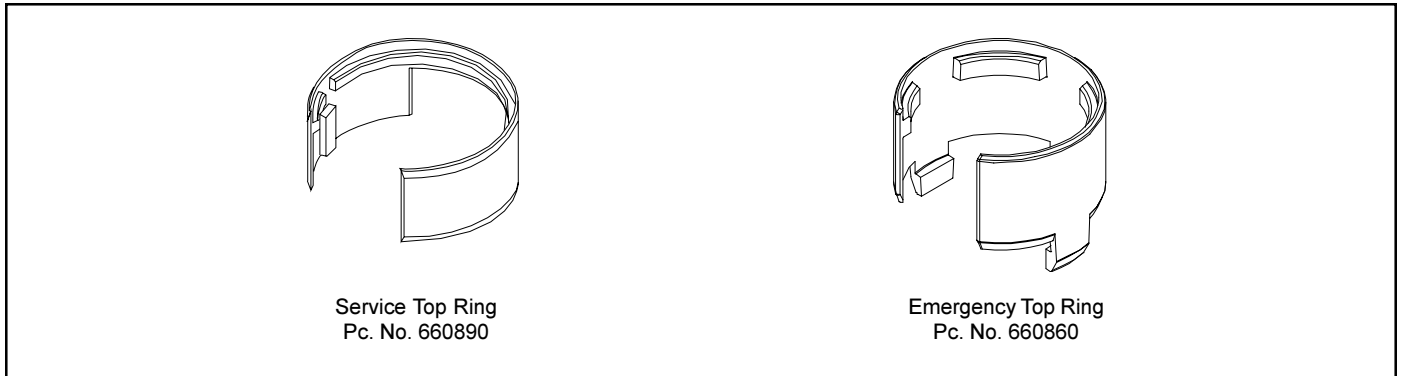


**Figure 1B - Emergency Piston**

When putting the wear rings on the pistons, care should be taken to expand or open them just enough to fit onto the pistons at their smallest cross section. The rings can then be moved axially and expanded just enough to enter the groove.

Over expanded or deformed rings can make subsequent installation of the piston assembly into the valve body difficult. It is important that the opening or gap of the wear rings be rotated and aligned toward the cut-out slots on the pistons (Figure 1A and 1B).

The top and bottom rings on the service piston and top ring on the emergency piston have been redesigned. The newly designed wear rings are wider and also have foolproofing lugs to ensure that the rings are properly orientated on the pistons (See Figures 2 & 4). Furthermore, the lugs also align the rings so the gap on the rings will span the slide valve.



**Figure 2 - Top Rings**

The top ring was redesigned because it is possible to damage the top wear ring during the assembly of wear protected control valve portions (Service Bulletin 68-17). The top wear ring may disengage from the bushing while positioning the sealing bead of the diaphragm into the diaphragm bead groove in the body. Therefore, when the top cover is assembled to the body, the top wear ring could possibly catch on the bushing and cause damage to the ring.

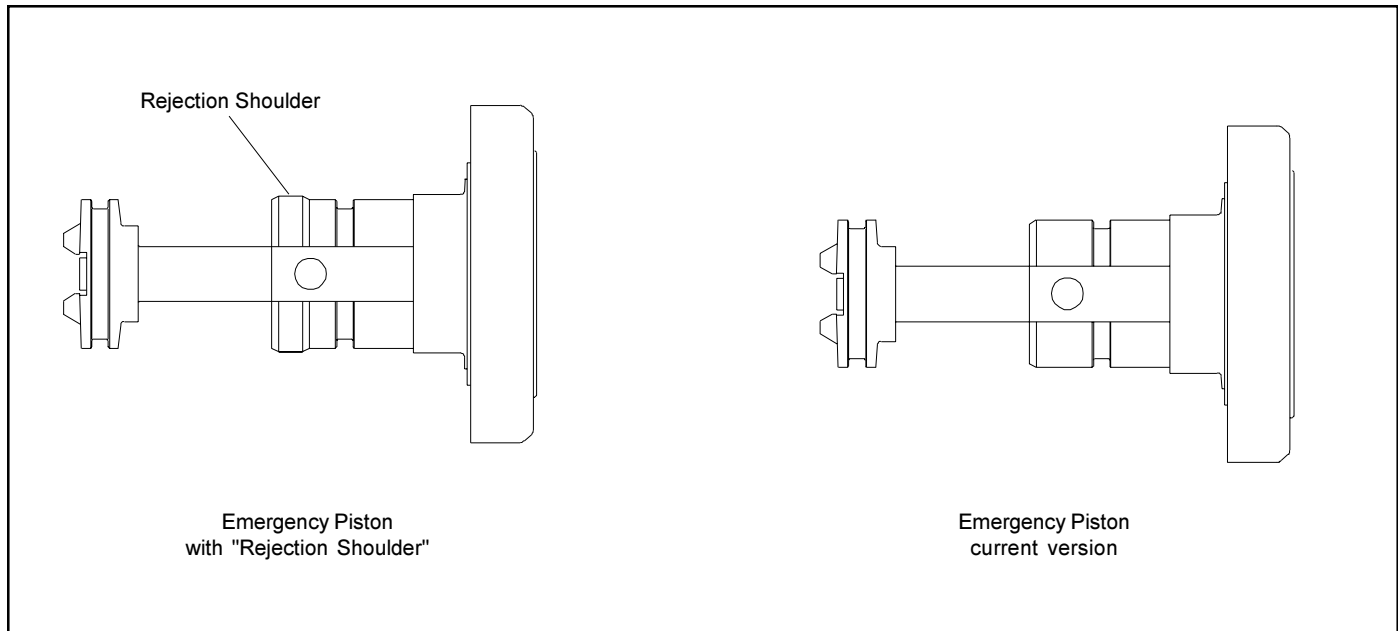
In order to prevent this, the overall axial lengths of the service and emergency top rings were increased. This allows the top ring to remain engaged into the bushing while the diaphragm sealing bead is positioned into the diaphragm bead groove.

Due to the redesign of the top emergency ring, some previously upgraded wear protected ABD/ABDW Emergency Portions may require installation of a reconditioned emergency piston during COT&S. It is necessary to inspect ABD/ABDW Emergency Pistons to identify the rejection shoulder shown by Figure 3. These pistons cannot be used with the new wide contour ring, Pc. No. 660860.

The combination of both the new top ring having an overall longer axial length and the ABD/ABDW Emergency Piston possessing a rejection shoulder prevents proper piston installation into the valve body.

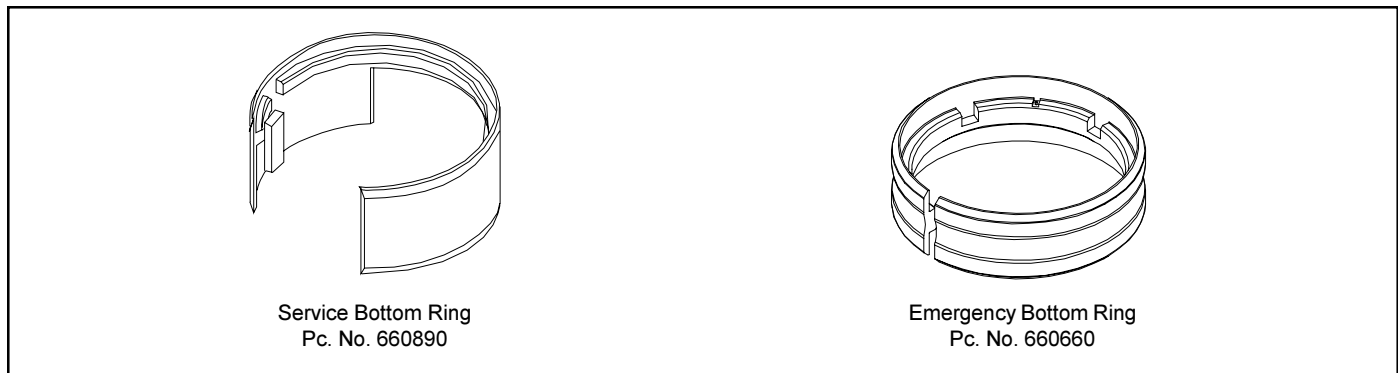
Please contact the nearest Wabtec Service Center to arrange for no charge exchange of pistons having the rejection shoulder. These pistons **MUST NOT** be reused in the Emergency Portion. ABDX Emergency Portions do not require reconditioned pistons.

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**Figure 3 - Identify Emergency Piston**

**NOTE:** The bottom ring on the emergency piston is symmetrical and can be flipped over without any adverse effects (See Figure 4).

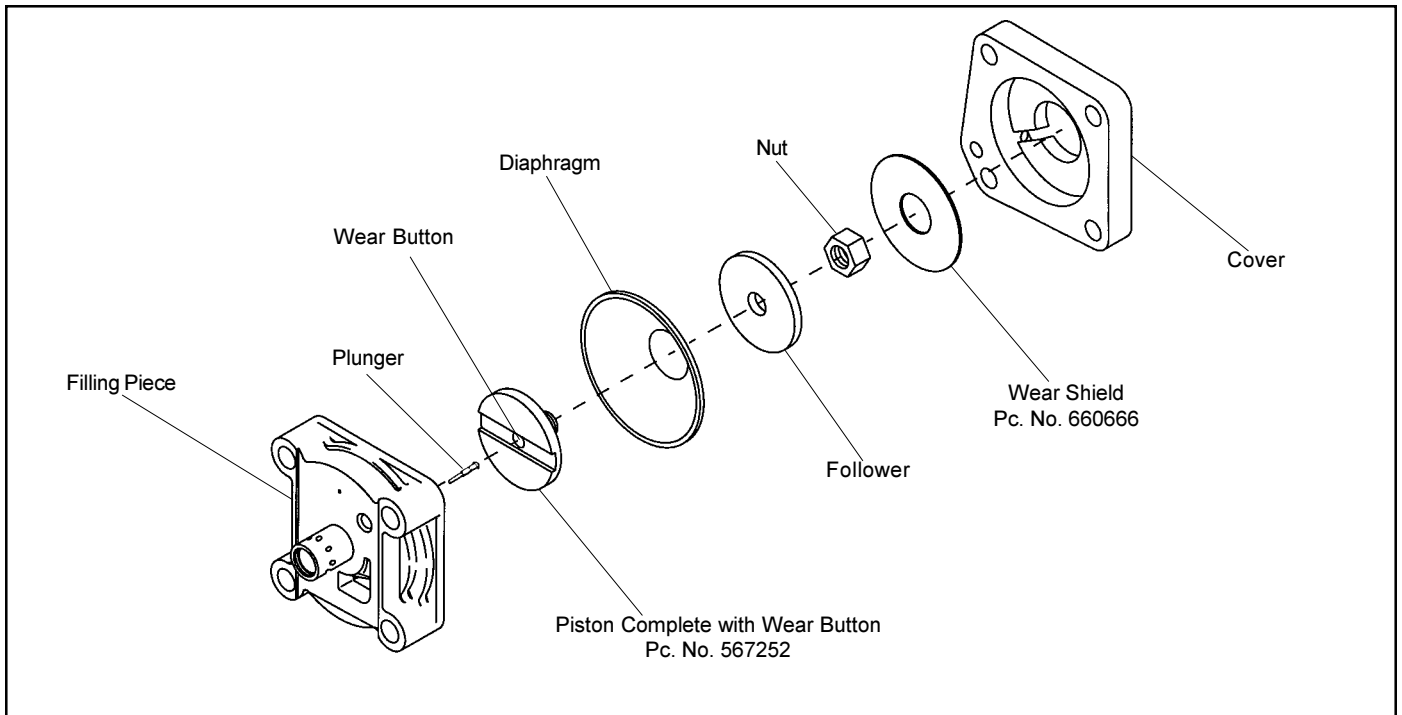


**Figure 4 - Bottom Rings**

**NOTE:** Before assembling the pistons into the body, evenly spread a light coating of Triple Valve Oil (Wabtec Corporation Specification M-07611-20, AAR Specification M-912) over the wear rings, slide valve, bushing seat and bore.

Care must be taken when inserting the assembled piston into the body. Along with the usual precautions when installing the slide valve, it is also essential that the wear rings enter the body properly. To verify the proper assembly, gently move the piston upward  $\frac{1}{4}$ " or until a slight resistance is felt. This can be accomplished by either lifting the diaphragm or gently pushing upwards on the bottom of the piston. Notice that the piston moves back slightly when it is released. If the service piston does not move freely as described, remove the piston and inspect the wear rings, slide valve, and bushings for damage, and ensure that the end of the butterfly spring was not touching the piston.

The service accelerated release valve piston assembly (Figure 5) is accomplished by carefully placing the diaphragm over the threaded shank of the piston. Make sure the diaphragm bead is properly seated in the bead groove on the piston. The follower is positioned to clamp the diaphragm in the groove of the piston and secured by the nut. Torque the nut between 30 to 35 foot-pounds. The piston diaphragm assembly is placed with the wear button facing towards the filling piece to contact the plunger. Make sure that the diaphragm bead is properly seated in the bead groove on the filling piece. Place the wear shield over the nut so that it lies against the follower. Carefully position the cover on the filling piece, making sure that all parts are properly positioned. Secure the cover and filling piece to the body with the four 1/2" x 2 3/4" hex head cap screws. Equally torque the screws between 35 and 55 foot-pounds.



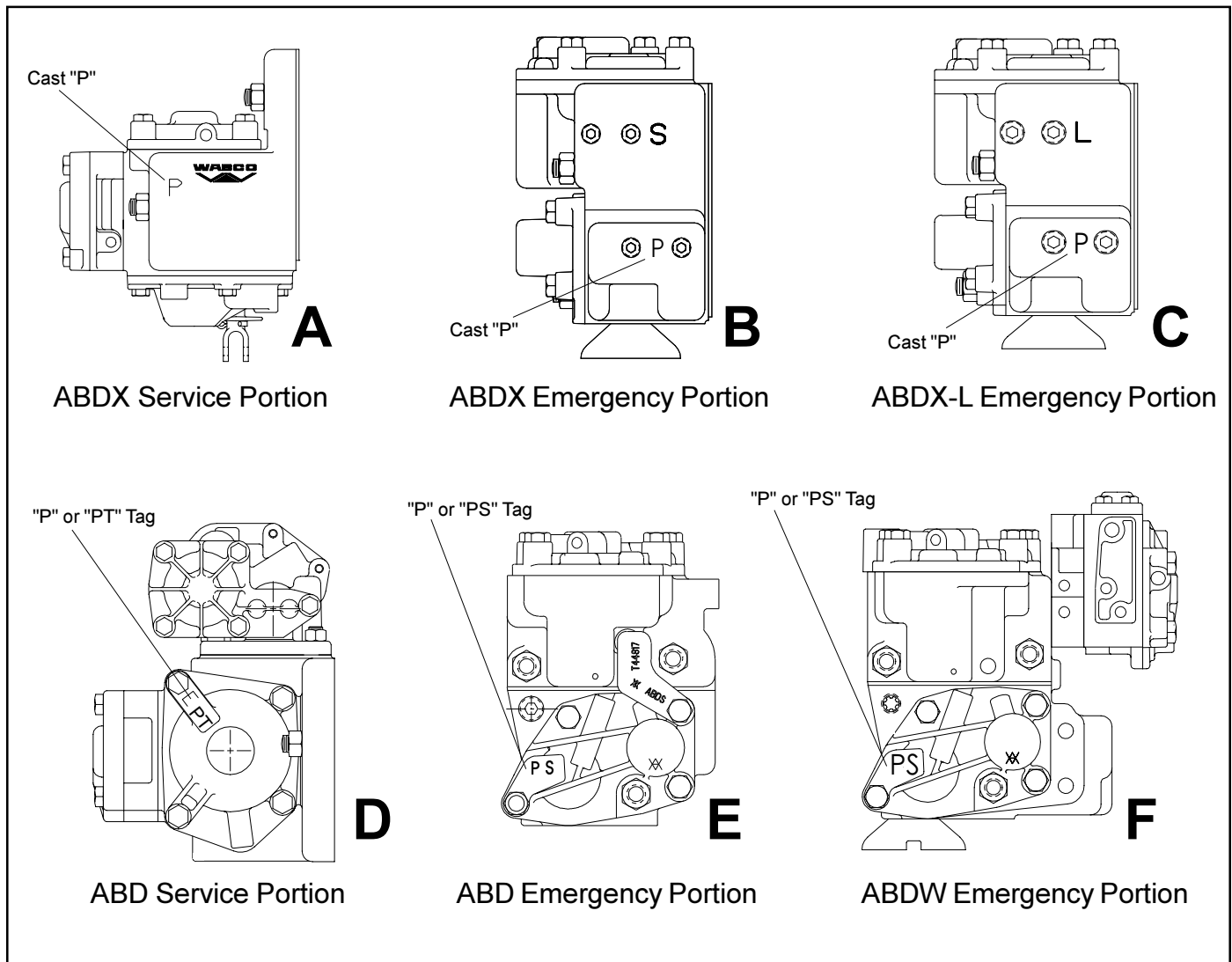
**Figure 5 - Accelerated Service Release Valve Assembly**

New ABDX Control Valves having internal wear protection details can be identified by the letter "P" cast into the service portion body (Figure 6A) and the emergency portion body (Figure 6B and 6C).

To properly identify that any ABD or ABDX service portion without a cast letter "P" has been equipped with the wear protection details, a metal tag with letters "P" or "PT" is to be installed under one of the cap screws securing the service portion top cover. This denotes that the valve has been wear protected or wear and leakage protected (Figure 6D).

To identify that an ABD, ABDW or ABDX emergency portion without a cast letter "P" has been equipped with wear protection details, a metal tag with the letters "P" or "PS" is to be installed under one of the cap screws securing the vent valve cover. This denotes that the valve has been wear protected or wear protected and stabilized (Figure 6E and 6F).

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**Figure 6 - Wear Protection Identification**

Tag part numbers are shown in the following tabulation:

		ABD & ABDW	ABDX
<b>Service</b>	"PT" Tag	660697	
	"P" Tag	660698	660698
<b>Emergency</b>	"PS" Tag	660695	
	"P" Tag	660696	660696