

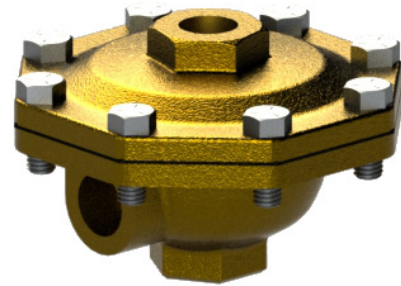
## MODEL GDPA AND GDPA-LP DRY PILOT ACTUATORS

### GENERAL DESCRIPTION

The Globe Model GDPA or GDPA-LP Dry Pilot Actuator may be utilized in several trim arrangements including; Dry, Dry Pilot Deluge, Single Interlock Preaction Dry Pilot, Non-Interlock, and Double Interlock Preaction Electric/Pneumatic. The primary function of the Model GDPA and GDPA-LP is to allow water pressure to be relieved from the Model RCW pressure chamber. This drop of pressure in the pressure chamber will cause the lever arm mechanism along with the roller arm assembly to retract to allow free movement of the clapper assembly. The pressure from the supply forces the clapper assembly upward and water is allowed to flow into the system piping.

The GDPA or GDPA-LP is normally held closed by air pressure maintained in the upper chamber. This air pressure within the upper chamber is supplied through either Dry Pilot Lines; as is the case for Deluge Dry Pilot Actuation or Single Interlock Preaction Dry Pilot Actuation system arrangements. The air pressure within the upper chamber is supplied directly from the system branch-line and main piping in Dry or Double Interlock Preaction Electric/Pneumatic Actuation system arrangements.

Upon loss of air pressure (in a pilot line or system) the upper chamber of the Model GDPA and GDPA-LP will sense that drop in air pressure. The mechanical advantage within the dry pilot actuator allows for a much lower air pressure to keep the Model GDPA and GDPA-LP in the closed position than the Pressure Chamber Pressure. Figure 1 and 2 shows the expected trip pressures as a function of static supply pressure for the Model GDPA or Model GDPA-LP respectively. Once the upper chamber of the Model GDPA or GDPA-LP reaches the trip point, the seat and piston assembly move upward, with the help of the spring. This movement allows for a path for water to flow out the side port on the Model GDPA and GDPA-LP to the drain. This flow of water is at a flow rate higher than the flow into the pressure chamber through the restricted connection. This loss in pressure then allows for the movement of the lever arm/ roller assembly off of the clapper assembly of the Model RCW Valve, leading to the eventual trip of the valve. This allows the water to flow freely into the system piping.



**MODEL GDPA DRY PILOT ACTUATOR**



**MODEL GDPA-LP DRY PILOT ACTUATOR**

### TECHNICAL DATA

#### Approvals

- cULus
- FM

#### Maximum System Working Pressure

- GDPA 300 psi (20.6 Bar)
- GDPA-LP 250 psi (17.2 Bar)

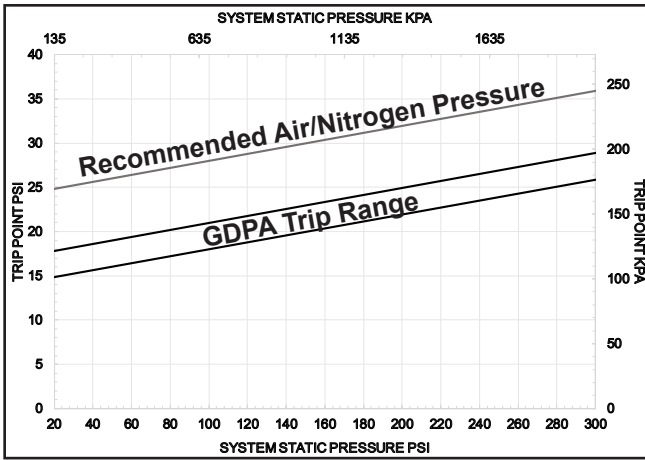
#### End Connections

- 1/2" Female NPT Connections

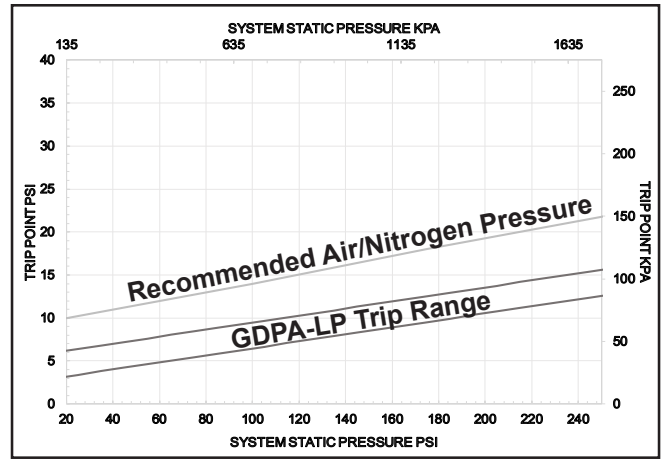
#### Materials of Construction

- See Figure 5

\*Patents Pending



**FIGURE 1: MODEL GDPA DRY PILOT TRIP RANGE**



**FIGURE 2: MODEL GDPA-LP DRY PILOT TRIP RANGE**

### GDPA VS GDPA-LP

When choosing the dry pilot actuator for your system there are many factors which influence the fluid delivery time. These factors range from system geometry, riser location, sprinkler orifice size, supply pressure, pump ramping time and more. In certain systems, higher system air pressure can be advantageous over lower system air pressure and the opposite can also be true. Some things to consider when choosing the GDPA vs the GDPA-LP are discussed below.

Below in Figure 3 shows air decay in a 1000 gal system. The initial air pressure is 15 psi (1 Bar) for one set of curves and 45 psi (3.1 Bar) for the other. As shown below, the pressure decays at a faster rate with the higher initial system pressure. The slope of the lines are much greater at the 45 psi (3.1 Bar) initial air pressure. This indicates that a similar fixed pressure drop (i.e. 5 psi drop) can be reached more quickly with the higher initial air pressure than a lower initial air pressure.

Unfortunately fluid delivery time is not just dependent on tripping the control valve but also dependent on the fluid moving through the system. As the water fills the system piping it can create a high pressure pocket of air at the inspectors test connection. This higher air pressure can slow the progress of the water progressing towards the inspectors test connection. This phenomenon typically happens with smaller K-factor

sprinklers. This scenario may lend itself to choosing to utilize lower system air pressure and the GDPA-LP actuator.

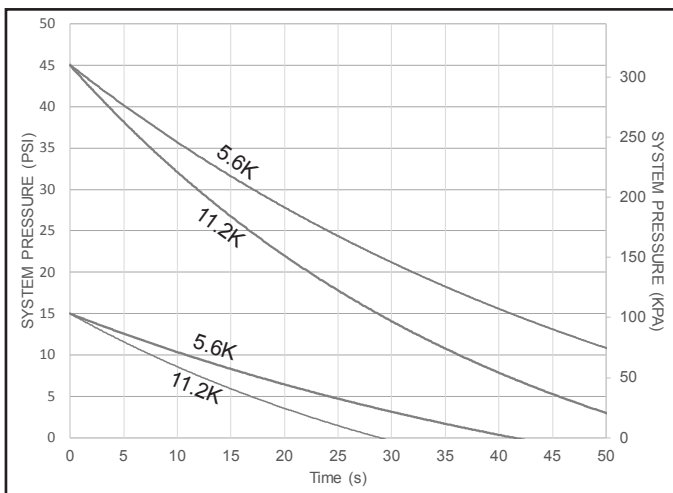
In other circumstances, systems are center fed, meaning roughly half of the volume of piping is on one side of the riser and half on the other. In these scenarios, higher system air pressure can be beneficial to system delivery time as the higher air pressure will actually impede or stop the propagation of water in the direction opposite the inspectors test connection (ITC) and force the majority of the available water flow towards the ITC.

It would be impossible to run through every scenario possible but there are a few generalities which can be used as guidance. Generally end fed systems will achieve faster fluid delivery times with lower air pressure. Generally center fed systems with moderate to better than moderate water supplies will have faster fluid delivery times with higher air pressure. This is meant to be general guidance, and should be in no way taken as a guarantee of fluid delivery time. All systems and configurations are different and there are always exceptions to the rule.

### GDPA-LP

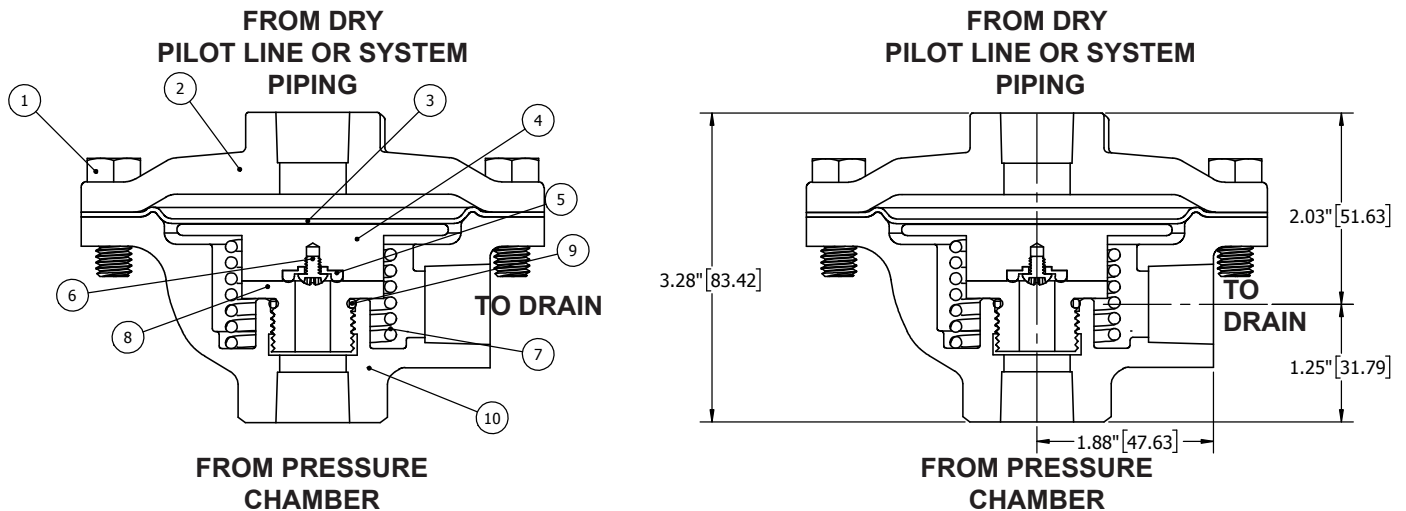
The Model GDPA-LP is only recommended for system supply pressures up to 250 psi (17.2 Bar). The GDPA-LP is factory painted green to identify the low pressure version. The Model GDPA is the standard pressure actuator, while the GDPA-LP can be utilized for low system air pressures. The types of systems where the use of the GDPA-LP has the potential to be beneficial to system performance are: Dry Systems, and Double Interlock Electric/Pneumatic Systems. There is little to no advantage to utilizing the GDPA-LP in Single Interlock Dry Pilot, or Deluge Dry Pilot Systems, as the pilot lines generally have a very small volume and the valve trips very quickly no matter the pilot line pressure.

If you have any questions on the application of the GDPA vs the GDPA-LP contact Globe Sprinkler Technical Services.



**FIGURE 3: SYSTEM AIR DECAY**

**FIGURE 4: MODEL GDPA AND GDPA-LP DRY PILOT ACTUATOR MATERIALS OF CONSTRUCTION AND INSTALLATION DIMENSIONS**



ITEM NO.	DESCRIPTION	MATERIAL	QTY.
1	HHCS (3/8-16 x .75)	STEEL	8
2	MACHINED COVER	BRONZE	1
3	DIAPHRAGM	EDPM	1
4	PISTON	STAINLESS STEEL	1
5	SEAL	EDPM	1
6	MACHINE SCREW(#8-32 x .188)	STAINLESS STEEL	1
7	SPRING	STAINLESS STEEL	1
8	SEAT	BRONZE	1
9	O-RING	EDPM	1
10	MACHINED BODY	BRONZE	1

## CARE AND MAINTENANCE

Proper operation of the Model GDPA or GDPA-LP Valve (i.e., opening of the Model RCW Valve as during a fire condition) must be verified, at the frequency described by the applicable Inspection Testing and Maintenance Standard (i.e. NFPA 25) or by the Local AHJ. Any impairments with the device must be corrected.

- STEP 1.** Ensure under normal operating conditions before the trip test that there is no leakage from the drain connected to the Model GDPA.
- STEP 2.** During the valve trip test ensure that water sufficiently flows to the drain to relieve the pressure from the Pressure Chamber to trip the valve.
- STEP 3.** Refer to appropriate system data sheet for valve trip test instructions.

*Note: GDPA and GDPA-LP are not field serviceable. In the event the dry pilot actuator is functioning improperly, the actuator should be replaced.*

## ORDERING INFORMATION

### MODEL GDPA DRY PILOT ACTUATOR

Specify: MODEL GDPA DRY PILOT ACTUATOR  
 PN ..... 317554

### MODEL GDPA-LP DRY PILOT ACTUATOR

Specify: MODEL GDPA-LP DRY PILOT ACTUATOR  
 PN ..... 317554-LP

## GLOBE® PRODUCT WARRANTY

Globe agrees to repair or replace any of its own manufactured products found to be defective in material or workmanship for a period of one year from date of shipment.

For specific details of our warranty please refer to Price List Terms and Conditions of Sale (Our Price List).

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