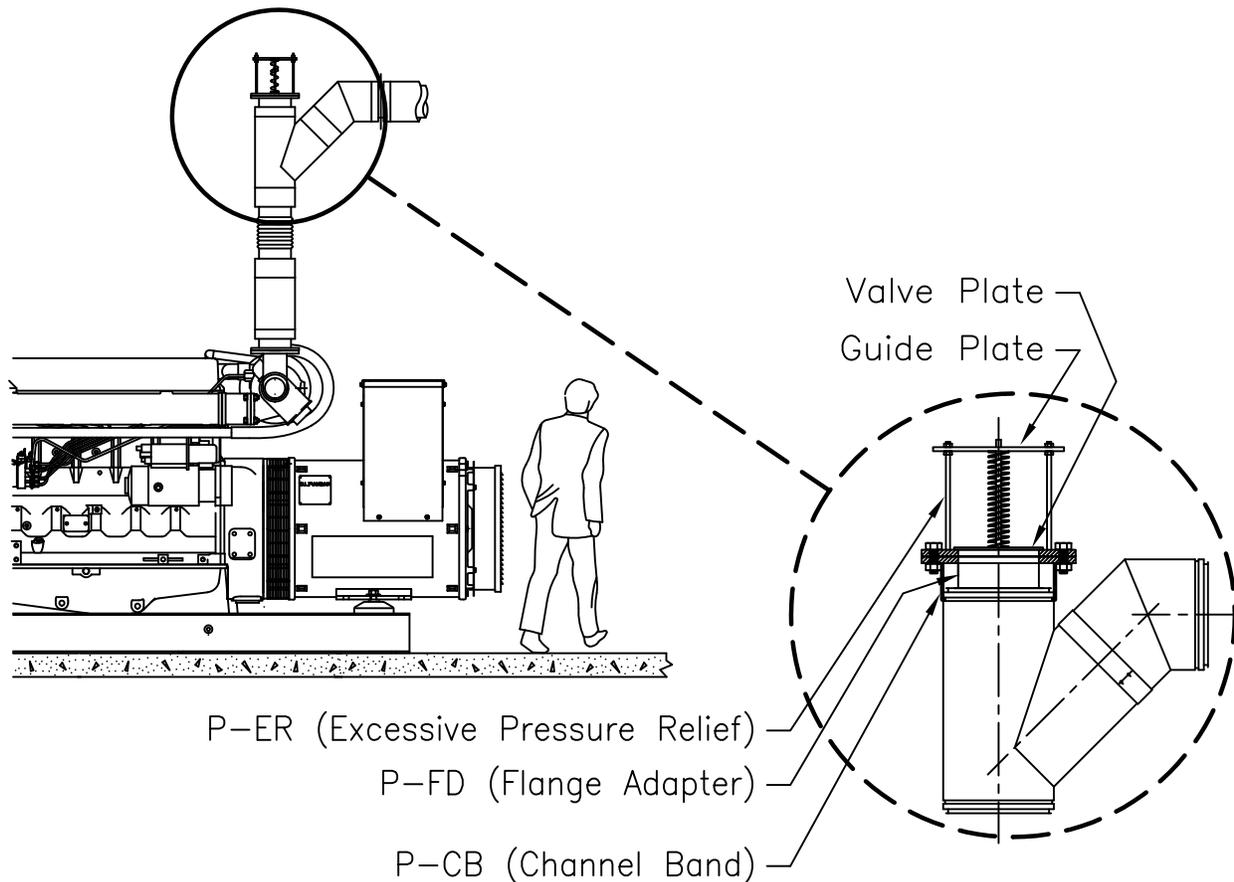


# Excessive Pressure Relief Installation Instruction



## INSTALLATION:

The Excessive Pressure Relief Valve should be located as close to the engine exhaust outlet as is safely possible to prevent damage to system. Please refer to the Functional Description and Maintenance page for more complete description of device. **CAUTION** – This device is designed to disperse excessive pressure in the case of an engine malfunction for the sole purpose of protecting the physical integrity of the exhaust system. If a malfunction occurs, the device will release hot gases, sparks and/or flames into the immediate environment, which is what it is designed to do. As such, this device should never be installed where human contact with any such release is possible, or near flammables or combustibles like gas cans, oils, or other such materials.

## ADJUSTMENT:

The Excessive Pressure Relief valves are set to open at exhaust pressures exceeding 27.7" of water column. When properly adjusted, the distance between the top of the valve plate and the bottom of the guide plate measures 8-9/16". If additional tension is required due to normal operating pressures exceeding 27.7" of water column, additional auxiliary springs may be obtained by contacting Selkirk. These springs will allow the valve to operate to 41" of water column when necessary. Never lower the guide plate below 8-9/16" under any circumstances.

## NOTES:

1. Caution must be used in locating this valve in an exhaust system. The vented gases are hot and could cause serious injury to bystanders.
2. The number of snubber & tension spring pairs, support rods, guide rods and flange holes varies with valve size.
3. Dimensions A, B & C describe maximum overall dimensions of valve when open or closed.

## **EXCESSIVE PRESSURE RELIEF VALVE FUNCTIONAL DESCRIPTION AND MAINTENANCE PROCEDURES**

The Mechanical Equipment Excessive Pressure Relief Valve is designed for installation in the exhaust system of stationary IC engines. It's function is to protect engine exhaust components from damage due to engine exhaust explosions (backfire) AND to limit exhaust back pressure on the engine.

Most exhaust explosions are caused by mechanical malfunction of the engine or by operator error. The magnitude of exhaust explosions vary depending on the air/fuel mixture in the exhaust upon ignition.

When operating as a back pressure limiting device, the valve should "float" when design opening pressure is achieved. "Chattering" will occur which indicates to the operator that corrective measures should be taken.

Functionally, valve design is such that in case of an explosion, the valve plate slams open and is "caught" by the snubber spring(s) to prevent total collapse (going solid) of the tension springs. The tension springs are intended to maintain the design opening pressure even under extreme temperatures. Because of their design, they are constructed of exotic, expensive material. If tension springs are permitted to "go solid", they will lose their tensioning capability requiring their replacement. Therefore, the snubber spring is intended to protect the tension spring before it "goes solid" and should be considered an expendable part. For that reason it is constructed of an industrial quality, less expensive spring steel.

After each "backfire", the snubber springs should be replaced, the valve seat gasket should be checked and the valve plate should be evaluated for damage. In the case of recurring backfires when the snubber spring(s) are NOT replaced, the tension spring(s) should be checked for damage. This can be determined by measuring them for deformation.

If the snubber spring(s) are not replaced after a "backfire", further mechanical damage can occur to the relief valve. Because the snubber spring(s) has lost it's tensioning capabilities in the initial backfire, further backfires can cause damage to the tension spring(s), guide rods, support rods, the guide plate and the valve plate itself. In the case of severe recurring "backfires", valve plates can warp because of the solid, tensionless slamming action of the valve plate, which sandwiches the damaged snubber spring(s) and tension spring(s) between the valve plate and the guide plate.

Further, severe "backfiring" can blow the valve seat gasket from the valve seat causing metal to metal valve seating. Should this occur, the valve seat gasket should be replaced as soon as possible to prevent valve plate and seat damage.

The relief valve should be installed in such a manner as to allow ambient air to circulate around the outer exposed valve surfaces. Should it be necessary to shroud the valve, it should be installed such that the outer exposed valve areas do not exceed 400°F on a continuous basis. Any exhaust leakage through shrouded valves can cause significant damage due to excessive external operating temperatures. Further, shrouded valves should be periodically checked for the collection of exhaust debris which may collect around the valve.

In cases where higher than normal exhaust back pressures are anticipated, an additional, excess pressure tension spring is available. It is designed to be installed over the standard tension spring and will increase opening pressure by a minimum of twice the standard design.

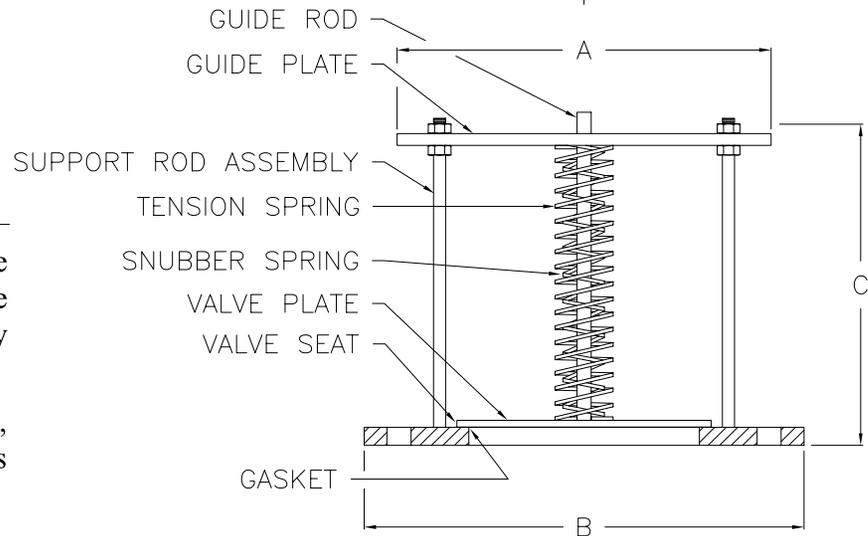
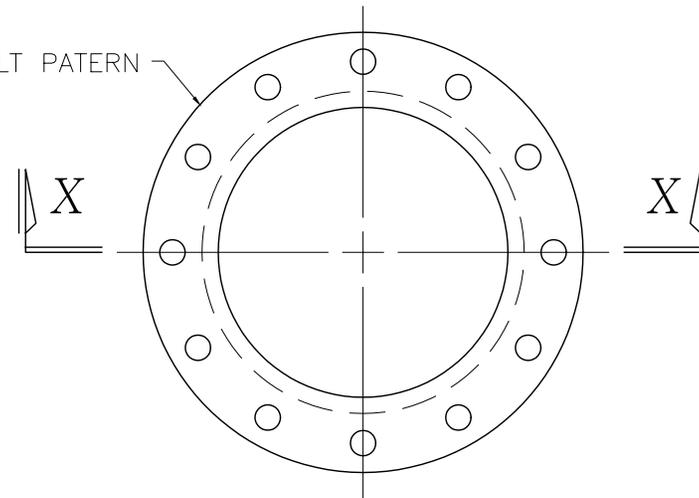
The relief valve should protect the engines' exhaust components against extreme damage but for all the reasons herein stated, it should be properly applied, installed and maintained. Further, the cause of backfire or excessive back pressure should be corrected as soon as detected.

VALVE Ø	A	B	C
6"	9- $\frac{5}{8}$ "	11"	10- $\frac{3}{4}$ "
8"	12- $\frac{1}{4}$ "	13- $\frac{1}{2}$ "	10- $\frac{3}{4}$ "
10"	14"	16"	10- $\frac{3}{4}$ "
12"	16- $\frac{3}{4}$ "	19"	10- $\frac{3}{4}$ "
14"	18- $\frac{1}{4}$ "	21"	10- $\frac{3}{4}$ "
16"	20- $\frac{1}{4}$ "	23- $\frac{1}{2}$ "	10- $\frac{3}{4}$ "
18"	22- $\frac{1}{4}$ "	25"	10- $\frac{3}{4}$ "
20"	24- $\frac{1}{4}$ "	27- $\frac{1}{2}$ "	10- $\frac{3}{4}$ "
24"	28- $\frac{1}{2}$ "	32"	10- $\frac{3}{4}$ "

**NOTES:**

1. Caution must be used in locating this valve in an exhaust system. The vented gases are hot and high velocity and could cause injury to bystanders.
2. The number of snubber & tension spring pairs, support rods, guide rods and flange holes varies with valve size.
2. Dimensions A, B & C describe maximum overall dimensions of valve when open or closed.

150# ANSI FLANGE BOLT PATERN



**SECTION "X-X"**

PART NO.	 <b>SELKIRK METALBESTOS</b>	COMMERCIAL / INDUSTRIAL OPERATIONS
<b>P-ER</b>		DWG. NO.
SCALE: NONE	<b>Excessive Pressure Relief Valve</b>	DATE
DRAWN BY: <i>AM</i>		12-28-04

# *Warranty*

## Mechanical Equipment, Inc. Exhaust Explosion Relief Valves

Mechanical Equipment Inc. warrants this product against defects in material and workmanship for a period of one (1) year after startup or eighteen (18) months, after shipment, whichever occurs first. Mechanical Equipment, Inc. assumes no responsibility for damages to the equipment that this product is applied to nor bodily injury that may result for any reason whatsoever, including the proper or improper use or installation thereof. Should failure occur to this product during the warranty period, the unit should be shipped prepaid, to MEI's factory for inspection and warranty determination. If the failure is covered by warranty, necessary repairs or replacement of the product will be made. Please contact MEI at (432) 687-0601, Fax (432) 687-0810, P.O. Box 1800, Midland, TX 79702. Our physical address is 2525 E. I-20, Midland, TX 79701