

# Technical Note

## Breathers

### General:

The movement of meshing gears inside a gear reducer during normal operation produces friction and heat that cause the oil and air to expand. Expansion produces pressure that can become strong enough to cause seal failure, oil leakage and failure.

However, during rest periods, the oil and air cool to create a vacuum that draws outside air into the reducer. Consequently, water begins to collect as the moisture from the outside air condenses inside the reducer. Since water and oil do not mix, the water combines with oxygen and metal to produce rust, which is catastrophic to the bearings and gears. Even a small amount of water can be devastating.

Therefore, all SEW reducers are supplied with pressure relief breathers, with the following exceptions:

- W-series reducers
- R07, R17, R27 reducers in mounting positions M1, M3, M5, and M6 (M2 and M4 positions are supplied with breathers)

### Features/Benefits:

The SEW breather, shown in Figure 1, offers the following features:

- **Brass construction** – provides excellent corrosion resistance and reliable operation.
- **Check Valve** - contains a spring-loaded one-way check valve that allows venting from the inside out. Since it prevents outside air from entering the reducer during cooling, the entry of moisture is minimized.
- **4 psi Rating** – the venting pressure is approximately 4 psi, regardless of reducer type or size.

Breathers are equipped with a protective band (see Figure 1) to prevent the breather's vents from becoming clogged during painting. This band must be removed from the breather valve before starting up the gear unit.

The top portion of the band merely provides a grip to aid in removal. The bottom portion actually protects the vents. To remove the band, peel off the top ring and use it as a grip to remove the remaining part.

### Compact Series:

The breathers used for the Compact series of gear reducers are an open type, allowing an unobstructed transfer of air between the reducer's interior and the surrounding atmosphere. The breather is filled with a filtering agent (similar to fine steel wool) to help prevent outside contaminants from entering the reducer.

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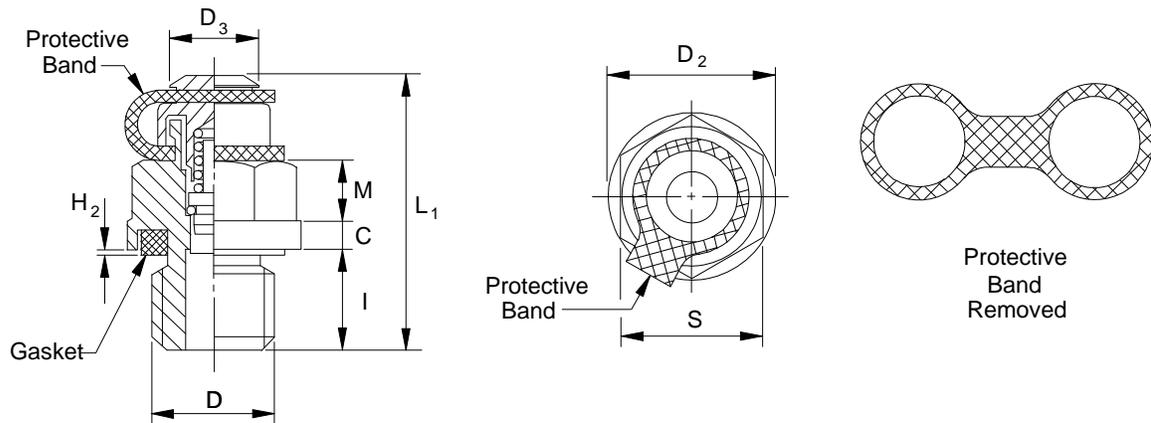


Figure 1

## Specifications:

Dimensions	Breather (in/mm)				
	M10 x 1	M12 x 1.5	M22 x 1.5	M33 x 2	M42 x 2
L <sub>1</sub>	0.98/25	1.06/27	1.08/27.5	1.32/33.5	1.32/33.5
I (± 0.008/0.2)	0.31/8	0.39/10	0.39/10	0.51/13	0.51/13
C	0.12/3	0.12/3	0.14/3.5	0.18/4.5	0.18/4.5
M	0.24/6	0.24/6	0.24/6	0.31/8	0.31/8
L <sub>1</sub> - I	0.67/17	0.67/17	0.69/17.5	0.81/20.5	0.81/20.5
D <sub>3</sub>	0.43/11	0.43/11	0.43/11	0.43/11	0.43/11
H <sub>2</sub>	0.01/0.25	0.01/0.25	0.01/0.25	0.01/0.3	0.01/0.3
S (-0.008/-0.2)	12mm	13mm	19mm	27mm	30mm
D <sub>2</sub> (-0.008/-0.2)	0.55/14	0.67/17	1.06/27	1.54/39	1.93/49
<b>Reducer Sizes</b>					
R series*	07 – 67	77 – 87	97 – 137	147	167
F series	27 – 67	77 – 87	97 – 107	127	157
S series	37 – 67	77 – 87	97	-	-
K series	37 – 67	77 – 87	97 – 107	127	157 – 187
<b>Part number</b>	013 030 3	013 031 1	013 032 X	013 033 8	013 034 6
<b>Tightening Torque (lb-in/Nm)</b>	70/8	140/16	400/45	885/100	1400/160

\* No breather required for R07, R17, R27 mounted in M1, M3, M5, and M6 positions. (M2 and M4 positions are supplied with breathers)