



DIAPHRAGM SEALS

TRANSMISSION FLUIDS

Diaphragm seals require filling with a fluid which will transmit pressure on the diaphragm to the measuring instrument. The properties of a fluid will determine whether it is suitable for a particular process application.

SELECTING A TRANSMISSION FLUID

Selecting an appropriate fill fluid for your diaphragm seal should be carried out with due consideration for their physical properties at the extremes of the ambient and process temperature to which they will be subjected.

Fill fluids must also be chemically compatible with the process fluid to avoid potentially hazardous reaction in the event of diaphragm failure.

Typically, hydrocarbon based liquids must not be used with strong oxidizers such as oxygen, chlorine, hydrogen peroxide or nitric acid. For these special applications, inert liquids are available.

PCi supply a large number of proprietary transmission fluids (TransOils) for all kinds of process applications covering all temperature and pressure ranges. Again, if you have any doubt as to which fill would be the most appropriate for your process, please check with our technical staff before specification.

Below we have listed our most commonly-used transmission fluids which are suitable for the majority of process situations. However, if you have special requirements, contact us with your specifications.

Properties	PCI TransOils									
	TO - 01	TO - 02	TO - 03	TO - 05	TO - 11	TO - 17	TO - 23	TO - 31	TO - 41	TO - 47
temperature range (°C)	-1 to +149	37 to +232	-18 to +149	-5 to +150	+15 to +190	-20 to +160	-40 to +232	-1 to +271	-40 to +204	-40 to +260
temperature range (°F)	+30 to +300	-35 to +450	+ 0 to +300	+21 to 302	+60 to 358	-4 to +320	-40 to +450	+30 to +520	-40 to +400	-40 to +500
viscosity at 25 °C (cSt)	100	20	350	5.9	67	9.5	10.7	44	6.3	5.5
density at 25 °C (kg/dm ³)	1.26	0.95	0.97	0.83	0.865	0.92	0.93	1.07	1.87	1.87
FDA (indirect food contact) approved	*	x	*	*	*	*	*	*	x	x
Process Applications										
chlorine / oxygen	x	x	x	x	x	x	x	x	*	*
high temperature	x	x	*	x	*	x	*	*	x	*
low temperature	x	*	x	x	x	*	*	x	*	*
high temperature / low pressure	x	x	*	x	x	x	*	x	*	*
vacuum	x	*	*	*	*	*	x	*	*	*
food / hygienic	*	x	*	*	*	*	x	x	x	x
pharmaceutical	x	x	*	*	*	*	x	x	x	*

VACUUM

Care should be taken when specifying a seal system for measuring a vacuum or high vacuum pressure. While they perform normally for most standard vacuum applications, as the pressure moves closer to a perfect vacuum, acceptable accuracy levels become more difficult to achieve.

This is due to the fact that most fill fluids contain microscopic amounts of air or trapped gases, which tend to expand significantly as a pressure of absolute zero is approached.