LENZ
Fluid Power Specialist

WHY SELECT THE O-RING SEAL TUBE FITTING

The design simplicity , efficiency, ease of application, performance under shock and vibration , have increased the use of the Lenz O ring seal tube fitting on all types of applications. The Lenz fitting seals with a standard locally available o ring. O rings are excellent for sealing on tubing. At zero pressure and low pressure, the natural resilience of the o ring furnishes the necessary sealing force; at higher pressures, the distortion of the cross se tion, by the pressure augments this sealing force.

The hydraulic fluid even provides lubrication, to the o-ring and a leak-free connection can be expected for the life of the installation. The Lenz fitting makes a dependable dynamic and static seal through the wide ranges of pressure, temperatures, and sizes. Wall thickness of tubing need not be taken into consideration, as the O ring does the sealing on the OD of the tube making a perfect seal every time. The tubing is chamfered to provide a shoe horn for the o-ring and for easy assembly.

The tube is held onto to the fitting by means of a tempered, serrated, tapered collet and nut. The nut fits loosely on the tube for assembly. It is not necessary to cut the tubing to exact length, nor is it necessary to cut the tubing exactly square. No special care is needed in tightening nut uniformly. No periodic tightening of the nut is necessary to maintain a tight joint. There is nothing to shed off and thereby cause trouble in strainers or pumps. For field expediency, a hacksaw and file are the only tools required for preparation of the tubing. However a Tube cutter and Outside Deburring Tool are preferable (Lenz Catalog for more details) can be disassembled and reassembled any number of times – all parts reusable each time.

In addition to hydraulic applications, the fitting is being used for air and vacuum, having been tested on a mass spectrometer at 3X 10-6 without the slightest trace of leakage. The Lenz fitting conforms to or exceeds JIC, SAE, and many Military specifications, available in tees, ells, etc., and is stocked and sold by distributors throughout the US and Canada.

F.A.Q.

Question: Will the men damage the o-rings?

Answer: O-Rings are commonly used today, and you are using O-rings on other applications where your men are aware that at least a little care need to be taken with the O-ring rotating shafts, over threaded ends, etc.

Question: Do the o-rings wear out?

Answer: Lenz has fittings in the field that were installed years ago and are still in operation. O-ring designs and compounds are being constantly improved with respect to durability, heat resistance.

Question: What if the tubing is damaged, scratched, or out of round?

Answer: Tubing is normally supplied with the ends plugged to protect the ends and keep dirt out. It takes at least a 1/64" in depth scratch to affect the sealing of the O-ring. The O-ring tends to conform and seal any scratches – even more so under pressure. If the tubing is out of round, when the nut is tightened, the collet with its wrap around affect tends to bring the tubing back into round.

Question: Would a variance in the OD of the tubing affect the o-ring?

Answer: Tubing is held to amazingly close tolerance – 1/2" to 1 1/2" OD having a tolerance of .005" minus .000". Our fittings are designed around the standard tolerance s of tubing.

Comment: Our maintenance men will never remember to chamfer the tubing.

Answer: A machine repairman spends a lot of time learning their trade and their men are as good as those in other plants. Maintenance men are always under pressure to keep the machines working and will welcome anything that will save them time and trouble.

Comment: We are all standardized and having no trouble.

Answer: A customer will say they are standardized, and still be using 3 to 4 different types and brands of fittings. They usually do not know what standardization is. This is probably just another way of saying that he does not want to give it any thought right now.

As for "having no trouble," remember that often times as an engineering department or purchasing department are so far removed from the production or maintenance departments that they do not hear of the trouble they are having.

At a customer plant which we recently standardized on the Lenz fitting, the Plant Engineer told machine repairmen replacing a hydraulic line on a machine which he had remembered seeing him replace about 2 days before. An Ermerto

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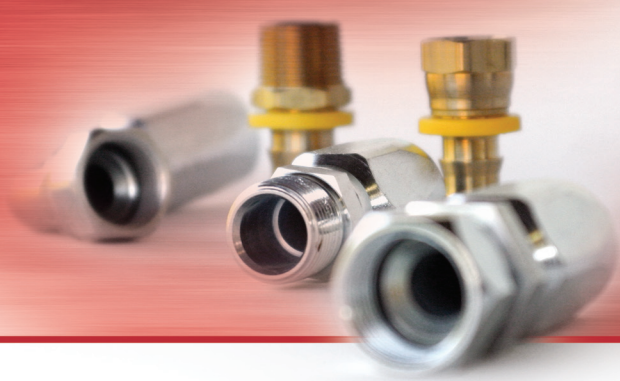

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(contd)

pressure type fitting was being used that crushes the tube for a seal. The Engineer asked why that type of fitting was being used. The maintenance man replied that he "liked that type of fitting because when the tubing broke off from vibration, it broke off clean". This is just an example of how customers will sometime take trouble for granted, and not even mention it to the engineering department.

Comment: It is too difficult to change the prints.

Answer: Tell them to order by competitor number, and Lenz will do the transposing or get a list of what they are using, and make them a cross- reference. When the above is a definite obstacle, sell the purchasing and production departments, with the inference that engineering departments are always afraid of doing a little work ….. such as changing a few numbers on prints.

Comment: Hard to install the fitting in confined places.

Answer: Show how the fitting can first be installed on tube, and then pipe thread installed. Demonstrate this using straight tube connection and bent tube connection.

Comment: Collets too hard to get off the tube.

Answer: It is actually an advantage that collet stays in place, as it is in exact position for reassembly. Furthermore, if one wishes to remove it, it is no trouble to spread it and slide it off the tube. The collet is reusable, whereas in other fittings all the parts are not reusable.

Comment: Collet hard to get on the tube

Answer: This should be pointed out as an advantage rather than a disadvantage. The collets are tight for a purpose. If you forget to tighten the nut, the tube will not whip out like a garden hose when the pressure is turned on. It does not take much effort with a coin or screw driver to gently spread the collet as one slides it onto the tube.

Comment: The O-Ring will leak at zero pressure.

Answer: This opinion probably stems from an experience where the O-Ring was damaged at installation, but sealed under pressure.

Question: Will over tightening deform the tube?

Answer: This is not likely to happen except on some very thin–walled tubing. However a slight deformity in the tubing would merely tend to give it added pull out strength; the taper is so slight that even if the nut is over tightened or bottomed, the indentation is very small. The Lenz collet tends to straighten the tube, if it is deformed, rather than deform it.

Question: Does over tightening the nut deform the O-ring?

Answer: The nut has no connection with the sealing. It does not compress the o-ring.

Comment: The fitting we are using are inexpensive and do the job.

Answer: The labor saving with the Lenz fitting can be as high as 40% and the labor cost and is just as tangible as material cost. Our fittings are in line with other domestically produced fittings, but taking into consideration the labor, in addition to the superior performance of the fitting, it is the most inexpensive fitting on the market.

The Lenz fitting is being widely used in maintance departments, replacing flares that break from fatigue, and replacing ferrules which have been broached off the tube, or causing the tube to fail. The time required to replace a bad fitting is not worth the price of several fittings. A poor fitting is the weakest link in the chain.

Comment: Sometimes our the fittings are inventoried and not used right away – what is the affect on the O-ring

Answer: The O-ring is lubricated when assembled in the fitting; therefore a long shelf life can be expected.

Comment: We have been using the same fitting for years and are getting along.

Answer: It is safe to assume that any operation which is still being done the same as it was 10 years ago is being done wrong… product changes, product design, diversification of product, etc. The complacent person who has been getting by for years is hesitant to try anything new.

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