



TRANSFER OIL

thermoplastic and ptfе hoses – fittings and assemblies

Transfer Oil S.p.A. – via sacca 64 – 43052 – Colorno – Parma – Italy
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vat and business register of parma: IT 02306450343 – share capital: EUR 2.500.000 fully paid-up



Title Factors of Hose Service Life

Issue date 12/09/2012

Thermoplastic Sewer Cleaning Hose

Factors of Hose Service Life

Scope

Transfer Oil sewer cleaning hoses are purpose designed for aggressive sewer cleaning applications. The hose is designed and constructed to withstand a degree of abuse and give a long service life for the user. However as with any hose in application there are limitations to how long the hose will last and this depends on the method of use and history of the hose assembly from first use. Users should be aware of factors which can reduce the service life of the hose. Damage to a sewer hose may not necessarily cause instant failure but can be the precursor to failure at a future date. By careful handling of the product the service life can be greatly extended.

Transfer Oil also advises that hose assemblies require caution in use not only to provide long service but also to guard against potentially dangerous failure. Serious injury, death and destruction of property can result from the rupture or blowing-apart of hydraulic hose assembly that is damaged, worn out, badly assembled or installed incorrectly.

By taking note of the following recommendations, premature failure can be avoided.

Contents:

1) Do not kink the hose!	2
2) Do not pull on loops!	3
3) Do not excessively stretch the hose!.....	4
4) Do not squash the hose!	5
5) Do not twist the hose excessively!	6
6) Do not cut the hose cover!	7
7) Use proper guide at the entrance of the sewer	8
8) Do not kink the hose at the hose fittings!	9
9) Use suitable hose drum!	10
10) Check hose guide on the sewer hose truck if utilized!.....	11
11) New end fittings on sewer cleaning hose!	12
12) Store the hose correctly!	13
13) Keep the hose away from extreme heat!.....	14
14) Inspect hoses regularly!	15
15) Use ECOLEADER sewer hose to increase maneuverability, safety and the lifetime of the main high pressure of the sewer cleaning hose!.....	16

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1) Do not kink the hose!

If the hose is sharply and aggressively bent below its stated minimum bend radius it can be kinked and the hose is weakened. Between the inner tube and the outer protective covering there are layers of reinforcement which maintain the high pressures used in the application. Kinking of the hose disrupts and weakens these layers. Usually once a hose has been kinked it continues to be kinked in the same position further weakening the reinforcement until failure eventually occurs. Avoid sudden jerky movements and forcing the hose against corners and tight bends. Let the hose follow its natural course without forcing into a tight bend.



Effects on shape of a kinked hose.

WARNING

KINKING THE HOSE EXCESSIVELY MAY IRREPARABLY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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2) Do not pull on loops!

If during handling loops occur in the hose than unloop the hose before continuing. Pulling aggressively on loops may result in one or multiple kinking of the hose and subsequent weakening leading to early failure.



Effect of a aggressive pull on loops that has produced several kinks in the hose.

WARNING

PULLING ON LOOPS THE HOSE MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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3) **Do not** excessively stretch the hose!

During operation the hose undergoes a degree of stretching during cleaning of the sewer and retraction of the hose. The hose should not be subjected to more than this normal operation. Using the motion of the sewer truck or other methods to remove the hose from the sewer if difficulty is encountered should be avoided. High pressure hose is not to be used as a rope substitute and must not be used to maneuver plant or equipment. Excess tensions on the hose can result in excessive elongations causing damage to the individual layers of the hose. Although the hose may have some elasticity and be able to retract itself after stretching, damage is still being caused to the materials of construction.



The first image shows the normal appearance of a no-stretched hose. The second image shows the distortion of the hose due to an excessive stretching.

WARNING

STRETCHING THE HOSE EXCESSIVELY MAY DAMAGE THE HOSE,
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4) Do not squash the hose!

Hose may be squashed on the drum or when going through the sewer if excessive tensions are being used which should be avoided. In addition, driving over the sewer hose or laying heavy objects on the sewer hose may also damage the product.



Do not allow the hose to be run over by vehicles. Driving over a sewer hose may squash the hose and damage it irreparably. The second image shows effect on shape of a hose excessively squashed.

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SQUASHING THE HOSE MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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5) Do not twist the hose excessively!

Twisting of the hose can have similar affect as with stretching and squashing disrupting the layers of the hose and reducing service life. Care should be taken, particularly during redrumming, that the hose follows its natural bend and is not twisting. Coiling should be neat and properly layered avoiding sudden changes of direction.



Effects of twisting a hose. This stress could severely damage the hose.

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6) **Do not** cut the hose cover!

Although the hose cover material has a high degree of wear resistance and cut resistance any elastomeric hose can be cut or sliced if in contact with a cutting edge particularly when under tension. Beneath the hose cover is the yarn reinforcement which can also be cut and negating the pressure retention capabilities of the hose. Avoid contact with protruding shards edges (such as stones, metal sharps or nails, etc.) when the hose is entering or retracting from the sewer entrance. If possible the use of suitable hose guides to avoid direct contact with the sewer entrance should be used.



A hose with a severe cover cut, probably produced by sharp edges inside the sewer.

WARNING

CUTTING THE HOSE COVER MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY

7) Use proper guide at the entrance of the sewer

A proper guide should be used at the entrance of the sewer to prevent kinks, squashes or any type of contact with sharp edges which could reduce or compromise the hose performance.



A typical guide that can avoid contact between the hose and any sharp edges in the sewer.

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NOT USING PROPER GUIDE AT THE ENTRANCE OF THE SEWER MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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8) Do not kink the hose at the hose fittings!

The hose and fitting connection is a particular weak point for any hose and kinking, stretching or twisting at this point may weaken the connection and result in leakage from this area. The leakage at the fitting may travel for some distance between the hose tube and hose cover layers weakening the braid and possible lifting of the hose cover some distance away from the fitting. Where the hose is connected to the hose drum the hose should protrude straight from the fitting and not at a sharp angle.



Images of hoses in which there is a kink close to the fitting.

WARNING

KINKING THE HOSE AT THE HOSE FITTINGS MAY DAMAGE THE HOSE,
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9) Use suitable hose drum!

The connection and coiling of the hose onto a hose drum should avoid the hose being in contact with sharp edges, avoid sudden changes of direction especially below the minimum bend radius of the hose. Avoid contact over raised slats in the drum. Ideally a round belly should be used.



Unsuitable hose drum could squash and damage the hose during application. The white arrow and the black circle underline the effect of this improper use.

WARNING

DO NOT USE HOSE DRUM THAT MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY

10) Check hose guide on the sewer hose truck if utilized!

Some sewer hose trucks use various guides, capstans, pulleys to guide the hose. These should be carefully monitored and set as to not stretch, kink or squash the hose excessively.



A severely damaged hose due to a bad routing and setting of the guide on the truck.

WARNING

DO NOT USE HOSE GUIDES ON THE SEWER HOSE TRUCK THAT MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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11) **New** end fittings on sewer cleaning hose!

Sometimes new fittings may be assembled on an existing sewer hose assembly. Often the first meters to enter the sewer has the harshest treatment and burst or leakage can occur at the fitting itself. If a hose is to be assembled with new fittings it is recommended that the hose is cut at least 5 meters, preferably 10 meters, from the original fitting. This is because fluid leak from the fitting could travel a distance down the hose. The section of hose to be assembled need to be free of wear or damage. The fitting need to be recommended for that type of hose and needs to be swaged to the specified swage OD. If the hose is under swaged there is a risk of leakage through the fitting. Over the hose is over swaged there is a risk of kink or burst at the fitting itself. The operation needs to be performed by suitable trained personnel.



Effects of under swaged and over swaged hose respectively. Follow the specified swage OD.

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INCORRECT ASSEMBLY OF NEW END FITTINGS MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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12) Store the hose correctly!

Sewer hose should be stored indoors and off the ground. Hoses should be stored as neat coils or on drums and protected from environmental factors and also to create a safer, more productive working environment. Attempts to recoil badly stored hose may result in twisting and kinking of the product and compromise the safety of the operation. Do not coil hose below its stated minimum bend radius.



The first image represents some hoses well stored. These hoses are coiled onto a wooden bobbin or neat coil, protected from dust and environmental factors with protective packaging. The second image shows an improper storage. This hose could be severely damaged and also could be a danger for people that work close to the hose.

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13) **Keep** the hose away from extreme heat!

Thermoplastic sewer hoses are rated to maximum working temperature 60°C. Avoid the hose being in contact with excessive heat sources during storage and use of the hose. On the sewer hose truck and during sewer cleaning operation the hose should be routed away from high temperature heat sources.

WARNING

ROUTING THE HOSE EXCESSIVE NEAR HEAT SOURCES MAY DAMAGE THE HOSE, RESULTING IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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14) Inspect hoses regularly!

Users should follow good maintenance practices. Avoid expensive downtime by establishing a program of inspection, testing and replacement of hose assemblies before failure occurs; taking into account factors including: severity of application, frequency of equipment use, past performance of hose assemblies. Document your maintenance, inspections and testing. Check the hose before using it. If you have any concerns about its suitability for the task, quarantine the hose, let your supervisor know, and follow your workplace safety procedures.

WARNING

AVOIDING HOSE INSPECTIONS MAY BE DANGEROUS. USING DAMAGED HOSE, COULD RESULT IN POSSIBLE PREMATURE FAILURES, BODILY INJURY, DEATH AND DAMAGE TO PROPERTY



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15) Use ECOLEADER sewer hose to increase maneuverability, safety and the lifetime of the main high pressure of the sewer cleaning hose!



The ECOLEADER Sewer Leader Hose is a section of hose to be attached to the front of the main jetting hose.

First meters/feet of a high pressure sewer cleaning hose are the most exposed section of the hose to abrasion, kink, cut and failures. The initial section of the hose is the closest piece to the rear abrasive discharge of the nozzle. Fast high pressure water flow, dirt and debris propelled by the nozzle discharge can wear through the hose to cause a premature abrasion or cut through the cover. For this reason, ECOLEADER Sewer Leader Hoses, installed to the front of the main jetting hose, act as a sacrificial hose section, preserving the integrity and length of the main high pressure sewer cleaning hose. In fact, when the ECOLEADER Sewer Leader Hoses starts showing signs of wear, abrasion or kinking, it can be easily substituted with a new ECOLEADER Sewer Leader Hose, preserving the main hose. This type of hose can also increase maneuverability of the main pressure sewer cleaning hose because normally ECOLEADER is used with a smaller diameter in order to negotiate traps and bends easier than the larger one. ECOLEADER Sewer Leader Hoses can have a different outer cover color which gives increased safety in the sewer cleaning process. When used, the color change gives an indication of where the nozzle is when the hose is being coiled back and alerts the operator to be prepared to shutoff the high pressure flow.