



## OPERATING INSTRUCTIONS



### Pulsation Dampeners



PD 25-METALLIC



PD 25-NON METALLIC

## Preparing instructions

The NAUTIC active pulsation dampeners represent the latest generation of active pulsation dampeners. They are also specially designed to be used together with TULIP Air Operated Double Diaphragm pumps in the Non-Metallic versions. A general aspect to be considered is, that a pulsation dampener can decrease the total capacity of the system depending on the point of operation.

Before putting a NAUTIC pulsation dampener into operation, make sure, that the materials of construction are resistant to the liquid to be pumped. To check this, the exact dampener code is required. This code, as well as the serial number, can be found in the following key. Be known that these data are noted on the identification plates on the damper itself.

## Model numberfication key.

PD	C	25	PE	E	P
					Material of dampener head: P - PE
				Diaphragm material E EPDM B Buna-N G Geolast TW Teflon Vulcanised	
			Wetted material (in contact with the liquid) PE Polyethylene PT PTFE A Aluminium S Stainless Steel AISI 316 SH St.St.AISI 316-Hygienic		
		Dampener nominal connection size:10: 3/8", 15: 1/2", 25: 1", 40: 1 1/2", 50: 2"			
	Conductive version (ATEX)				
Pulsation Dampener.					

**Air supply connection female:** PD 10-15: R 1/8", PD 25-50: R 1/4"

**Max. operating pressure:** 8 bar

**Max. operating temperature:** for dampener housing in PE 70oC ,  
for dampener housing in PTFE size PD 10: 100°C,  
for the other sizes 120°C (with dampener head in PE conductive 80°C)

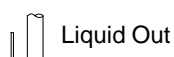
Maximum viscosity liquid: 5.000 cps at 20°C

For inflammable liquids as well as for applications in explosion protected areas, only dampeners made of conductive polymer materials (code C) may be used. It is not necessary to ground the dampener separately, as the dampener is connected conductively to the pump, which is conductive and has be grounded itself.

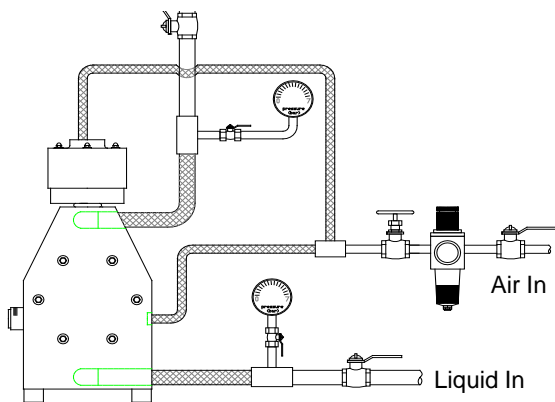
In general, pump and dampener are dispatched completely mounted. They can be packed in separate boxes, on customers wish. If so, the dampener has to be screwed into the thread at the top of non-metallic discharge port carefully, but only until the damper is in contact with the pump. Exceeded tightening may damage the thread. Besides, a correct positioning of the O-ring within the groove has to be ensured.

## Assembling instructions

The Nautic dampener can easily be mounted to a pump at any time as near as possible to the discharge port.

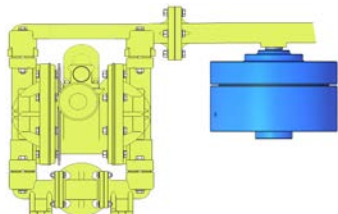


Before connecting the pump, take the red blind plugs out

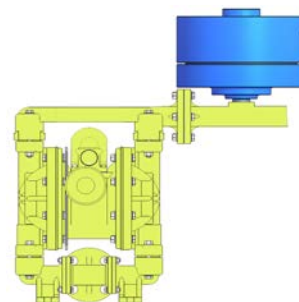


of air inlet which is located on the top of the dampener head. For correct operation, the dampener absolutely needs an air-supply of itself, which has to be taken from the air-supply of the pump. Pump and pulsation dampener have to be connected to the same air pressure. No stop or regulating valve may be placed between pump and dampener. The driving air has to be oil-free, dry and clean. Together with the pump an empty dampener has to be driven slowly. The dampers are self-regulating for all changing operating conditions.

The dampener can be installed in all suitable poses without any influence of the dampening.



**Examples for installation.**  
On pressure side of any pump model.



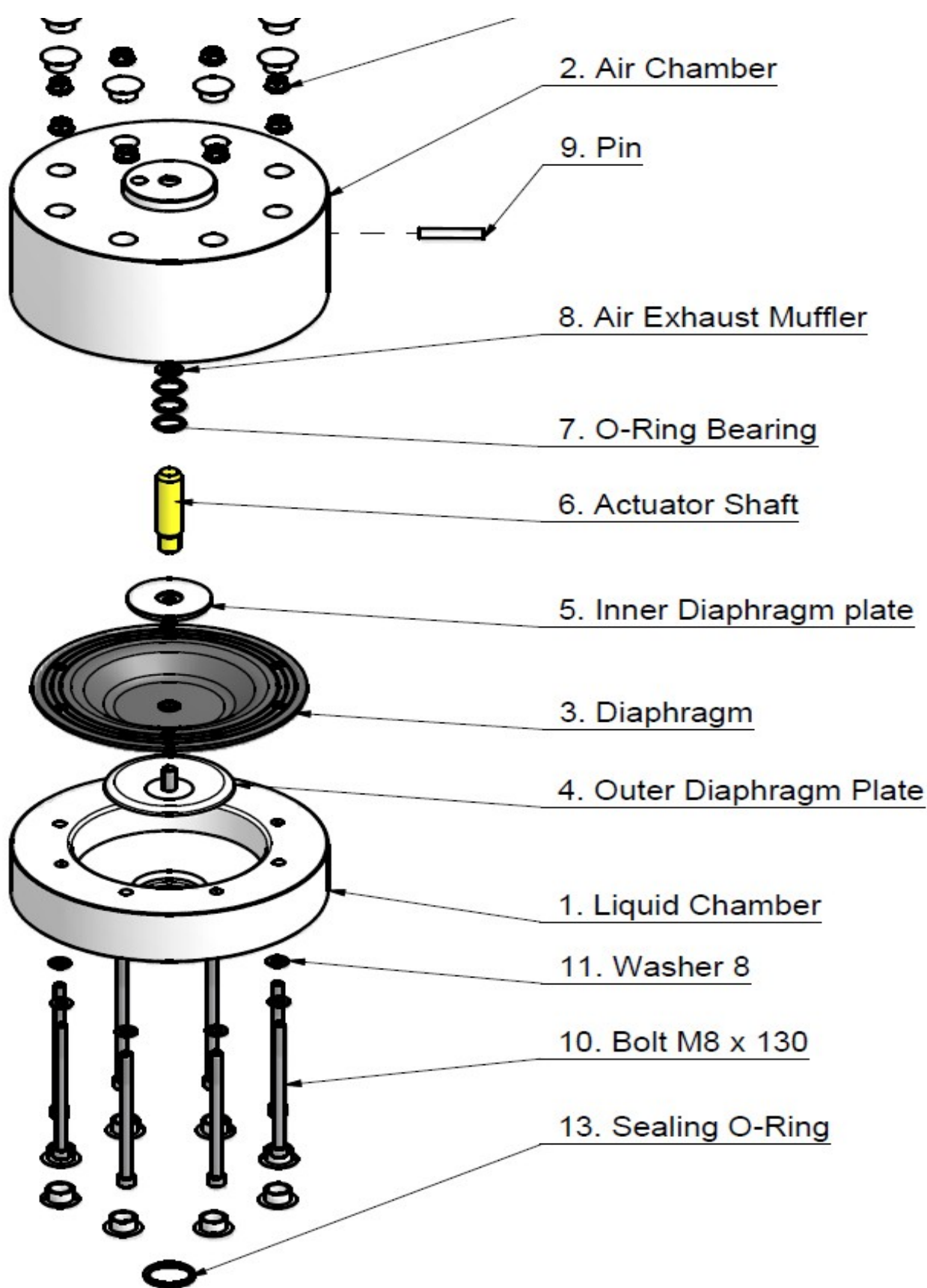
## CAUTION

- \* Before putting the pulsation dampener into operation as well as after some hours of operating, the housing bolts [42] have to be tightened carefully, as the elements of construction tend to "settle". Fixing the bolts is necessary as well after longer periods of stoppage, at extreme temperature variations, transport and after dismantling.
- \* Pressure tests of the plant a pump and a dampener are included it may only be carried out with the aggregate (pump and dampener) disconnected from the pressure on both ports or by using the pressure the aggregate develops while operating. The load of a pressure in the plant may damage the pump and the pulsation dampener.
- \* Before starting to disassemble the pump, take care that pump and dampener have been emptied and rinsed. Further both have to be cut off from any energy on the air and product side. If pump and dampener is being deported from the plant, a reference about the delivered liquid has to be attached.
- \* Please respect the relevant additional security advices, if the pump and the dampener have been used for aggressive dangerous or toxic liquids.
- \* Before putting the pump and the dampener back into operation, the tightness of both has to be checked.

### Disassembly instructions

Unscrew housing bolts [42] carefully. After that, all parts can be removed. Screw the diaphragm [40] off the actuator shaft [39]. A re-assembly of used piston rings [37] is impossible; they have to be replaced including the O-rings underneath. To assemble new piston rings [37] carefully shape them like kidneys with locking ring pliers and insert the rings into the grooves; completely press the rings into the grooves smoothly using some round tool.





Spare part list, pulsation dampener serial PD 25.

Item	Quantity	Description	Material	Part Nr.
1	1	Liquid Chamber	PE PE Conductive PTFE PTFE Conductive	100/PD185PE 100/PD185PEC 100/PD185PT 100/PD185PTC

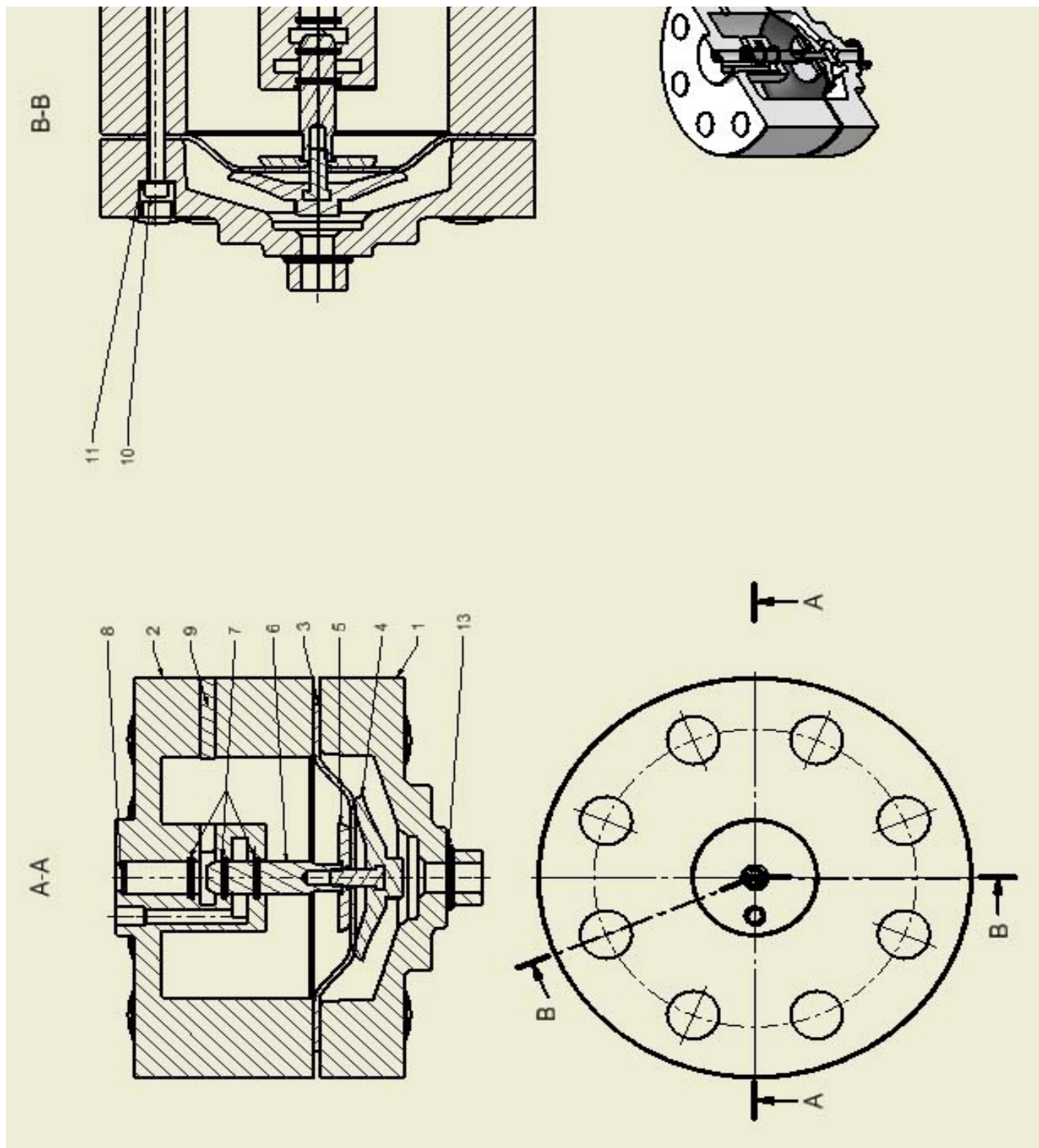
			Aluminium St.Steel	100/PD185A 100/PD185S
2	1	Air Chamber	PE PE Conductive	100/PD186PE 100/PD186PEC
3	1	Diaphragm	Elastomerlist	100/183xxx
4	1	Outer Diaphragmplate	PP PVDF Aluminium St.Steel	100/181P 100/181K 100/181A 100/181S
5	1	Inner Diaphragmplate	Steel	100/181C
6	1	Actuator Shaft		100/PD116
7	3	O-Ring Bearing	Buna-N	100/E103A
8	1	Air Exhaust Muffler	PE	100/PDM
9	1	Pin	PE	100/PDP
10	8	Bolt M8 x 130	St.Steel	100/PD186B
11	8	Washer 8	St.Steel	100/PD186W
12	8	Nut with Flange M8	St.Steel	100/PD186N
13	1	Sealing O-Ring	Elastomerlist	100190xxx
14	16	Dust Cover	PE	100/PD186BC

Pulsation Dampener 1 inch

Dimensions

	Inches	Metric mm.
A	8,0	202
B	7,2	182
C	9,4	240
D	1" Male	1" Male
E	1/4" Female	1/4" Female





**EC-DECLARATION OF CONFORMITY FOR MACHINERY**  
**directive, 94/9/EC ATEX).**

DECLARACIÓN CE DE CONFORMIDAD PARA LAS MAQUINAS (Directiva 98/37/EG, Anexo II, letra A)							
DÉCLARATION CE DE CONFORMITÉ POUR LES MACHINES (98/37/EG,Annexe II, point A)							
KONFORMITÄTSEKLRÄRUNGEN FÜR MASCHINEN (EG-Richtlinie 98/37/EG, Anhang II, Buchstabe A)							
DICHIARAZIONE DI CONFORMITÀ CE PER LE MACCHINE (Direttiva 98/37/EG, Allegato II, Punto A)							
EG-VERKLARING VAN OVEREENSTEMMING VOO MACHINES (Richtlijnen 98/37/EG, Bijlage II, onder A)							
DECLARAÇÃO CE DE CONFORMIDADE PARA AS MÁQUINAS (Directiva Máquinas 98/37/EG, Anexo II, Alínea A)							
PROHLÁŠENÍ EU O SHODĚ PRO STROJE ( směrnice 98/37/EG, příloha II, písmeno A)							



**TULIP PUMPS B.V.****Herewith declares that:****Air operated Diaphragm Pumps and Pulsation Dampeners**

declara que:

Aire operada Diafragma Bombas

déclare que:

Air Opéra Diaphragm Pompe

erklärt hiermit dass:

Luft Getriebener Membran Pumpen und Pulsation Dämpfers.

dichiariamo che:

Pomped Diaframma Azionate ad Aria

Verklaart dat:

Lucht Gedreven Membraan Pompen en Pulsatiedempers.

declara que:

Ar Operada Diafragma Bombas

prohlašuje, že:

Vzduchová membránová čerpadla

Models:TE53-M52-TE132-T240-T538-T985/Metalic VersionM10-M25-M52-M55-M125-T200-T400/Non Metalic VersionPD10-PD15-PD25-PD40-PD50-PD65 in Non Metalic and Metalic Version*II 2 G Eex c IIB T 4 (For Zone I)*Models:TEP53-TEP132-T240-T538-T985/Non Metalic VersionPD10-PD15-PD25-PD40-PD50-PD65 in Non Metalic and Metalic Version*II 3 G Eex c IIB T 4 (For Zone 2)***are in compliance with the Machinery Directive (98/37/EG, and directive, 94/9/EC ATEX).**

Está en conformidad con la directiva para las maquinas (98/37/EG, con inclusión de 94/9/EC ATEX).

Est en conformité avec la Directive pur les machines (98/37/EG /CEE, modifiée par, 94/9/EC ATEX).

Konform ist mit den einschlägigen Bestimmungen der EG-Maschinenrichtlinie (89/392/EWG, einschliesslich Änderungen, 94/9/EC ATEX).

È in conformità alla Direttiva-CE Macchine (98/37/EG, incl. 94/9/EC ATEX).

In overeenstemming is met de Machinerichtlijn 98/37/EG, waarin opgenomen, 94/9/EC ATEX).

Está em conformidade com a Directiva Máquinas (98/37/EG, incl. De 94/9/EC ATEX).

Jsou v souladu se směrnici pro stroje (98/37/EG, s dodatky 94/9/EC ATEX).

On Behalf of:

Pieter Deurloo

Ede, 10-08-2009

Managing Director

**TULIP PUMPS BV.**

Goorsteeg 120

6718 TB Ede.

Holland.

**The final user of the mentioned product is responsible for classifying its area of use (zone)**

For Zone 1: Pumps made with casings and/or manifolds, centre sections &amp; airvalve housings in conductive plastic and/or metal materials.

For Zone 2: Pumps made with casings and/or manifolds, centre sections &amp; airvalve housings in non-conductive plastic and/or metal materials.

Zone 1-II 2 G: Surface equipment for using in areas where gas, vapors or mists are occasionally present during normal operation. (EN 1127-1 § 6.3

Zone 2-II 3 G: Surface equipment for using in areas where the presence of gas, vapors or mists is unlikely, or rare and from short duration during operation.

Eex c : Equipment with build-in safety features (EN 13463-5)



Safety symbol in accordance with DIN 40012 Appendix A.

T4 : Allowed temperature class: Max. Liquid temp.: 65°C. Max. Ambient temp.: 135°C.

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II B : Exclusion of following halogenated solvents as: Hydrogen, Acetylene, Carbon disulphide, Methyl Chloride, Carbon Tetrachloride.







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