



**45532694**  
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## Doser - Docking Station

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# Maintenance Manual



Save These Instructions



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## 1 Docking station – DS

Use the drawings and the component list for the specified unit. In the description below, the figures below (xx) refer to the corresponding figures on the drawing.

### WARNING

**Always turn off the air and material supply & depressurize the entire system before installing, removing or adjusting any accessory on this product, or before performing any maintenance on this product or any accessory.** Failure to follow these instructions can result in personal injury.

### 1.1 Dismounting the Docking Unit

Drawings/Component lists:

- DS-ATC complete (T2X-16-500-IR/ -501-IR/ -505-IR)
- Docking unit (T2X-16-502-IR/ -503-IR)

- a) Turn of the pneumatic system, ensuring the clamps are off. The clamp is normally open when the doser is away from the docking station. (Upper position – inside the guiding pins.)
- b) Take off the cover plate (9) by removing the 3 hexagonal screws (14), use a 4 mm Allan key.
- c) Disconnect material hose from the coupling (20 on T2X-16-502-IR/503-IR).
- d) Disconnect the air hose and lubrication hoses. Disconnect electric connection (24 on T2X-16-502-IR/503-IR).
- e) Take off the docking unit (1) by removing the 4 hexagonal nuts and washers (16 and 17).
- f) The docking unit (T2X-16-502-IR/-503-IR) can now be removed and exchanged.
- g) Inspect locating pins (2 on T2X-16-502-IR/-503-IR). If they are damaged they can be changed by unscrewing the screws (13 on T2X-16-502-IR/-503-IR).

## 1.2 Change Pneumatic Clamps

Drawings/ Component lists:

- |                                     |                                    |  |
|-------------------------------------|------------------------------------|--|
| • Aut. Tool Changer                 | DS Docking unit<br>DS-ATC complete | T2X-16-502-IR<br>T2X-16-500-IR/-505-IR |
| • Aut. Tool Changer- (onboard lub.) | DS Docking unit<br>DS complete     | T2X-16-503-IR<br>T2X-16-501-IR         |

a) Follow step a) to e) in section 1.1. The docking station can be turned 180° and place back in the same place.

- Disconnect electric contacts and remove pneumatic hoses on clamp unit.

b) Unscrew the four screws (15 on T2X-16-502-IR/-503-IR) and remove the pneumatic clamp (10 on T2X-16-502-IR/-503-IR).

Mount the new clamp. The two alignment pins (16) are used for guidance and the eight hexagonal screws (15 on T2X-16-502-IR/-503-IR) are mounted back. Connect the air hoses. The accompanying shims are important for the docking sequence functionality. *Do not lose or mix the shim to the corresponding clamp.*

c) Connect the air hoses.

*See "Doser" Maintenance Manual Form 45532660.*

d) Refit the docking station as reverse of above.

e) Put the cover plate (9 on T2X-16-500-IR/-501-IR/-505-IR) back by fastening the three screws (14 on T2X-16-500-IR/-501-IR/-505-IR).

### 1.3 Change Male Docking Valve Complete

- Drawings/Component lists:

T2X-16-500-IR/-501-IR/-505-IR  
T2X-16-502-IR/-503-IR  
T2X-16-511-IR

**NOTICE**

**This operation requires, the following special tools and preparations:**

- Mounting paste

- Remove the cover plate (9) by removing the three screws (14).
- Take off the docking unit (1) by removing the four nuts and washers (16 and 17).
- It is recommended to remove one of the clamps before continuing the dismantling of the docking valve.
- Loosen the three set screws (21 on T2X-15-511-IR) and remove Pt100 sensor (9 on T2X-16-511-IR) and heating pins (10 on T2X-16-511-IR).
- Unscrew the 4 hexagon screws (18 on T2X-16-502-IR/-503-IR) and dismantle the valve complete (5 on T2X-16-502/-503) from the docking unit. Disconnect the air hose, lubrication hoses and the electric connection.

Now the complete valve can be replaced.

**Note:** To do maintenance work on the male docking valve, see chapter 1.6.2. To do maintenance work on the female docking valve, see "Doser" Maintenance Manual Form 45532660.

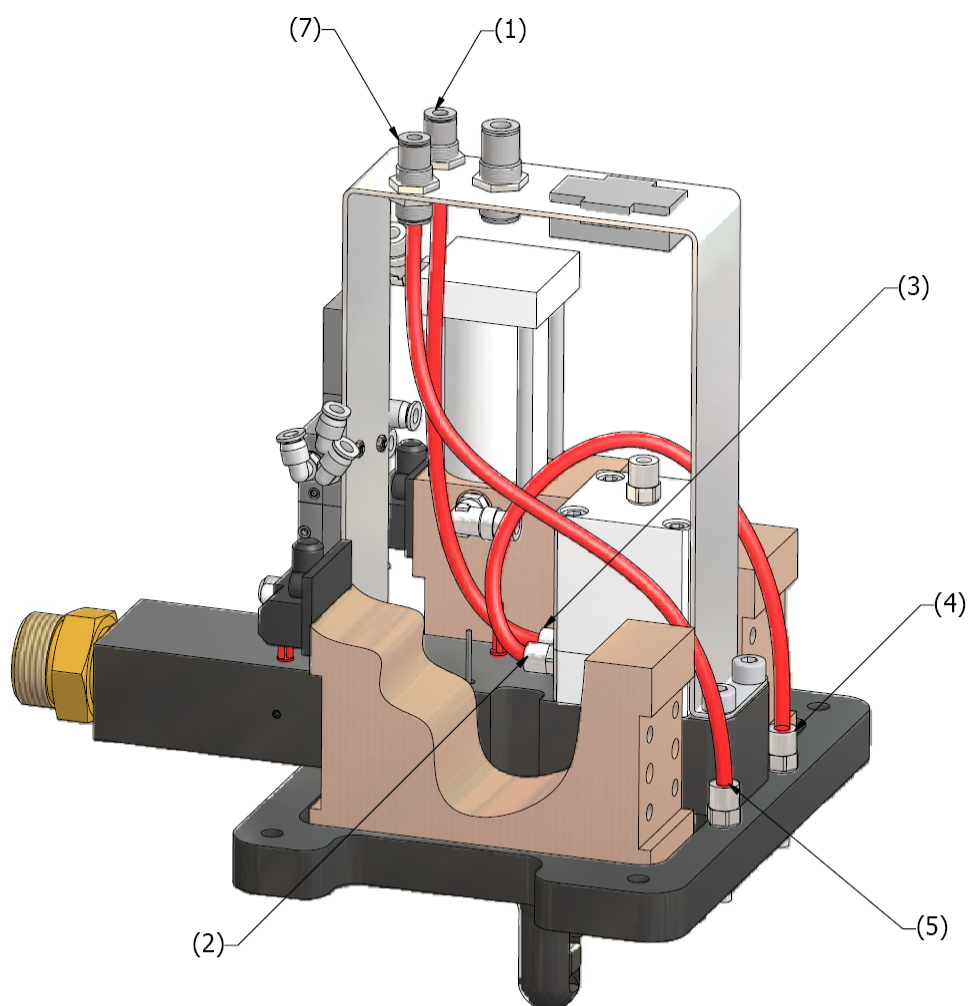
- Reassemble the heating pins (10 on T2X-16-511-IR) (with mounting paste) and the Pt100 sensor (9 on T2X-16-511-IR) (without mounting paste). Secure the heating pin and temperature sensor with the three set screws (21 on T2X-16-511-IR). Connect the air hose and the lubrication hoses.
- When mounting the valve complete: The two alignment pins (17 on T2X-16-502-IR/-503-IR) are used for guidance. Mount the 4 screws (18 on T2X-16-502/-503).
- Mount the docking unit (1 on T2X-16-500-IR/-501-IR/-505-IR).
- Mount the cover plate (9 on T2X-16-500-IR/-501-IR/-505-IR).

## 1.4 Hydraulics of the Docking Station

Drawing/Component list:

- |                                |                       |
|--------------------------------|-----------------------|
| • DS ATC                       | T2X-16-500-IR/-505-IR |
| • DS ATC (OnBoard Lubrication) | T2X-16-501-IR         |
| • Docking Unit ATC             | T2X-16-502-IR         |
| • Docking Unit (Onboard lub.)  | T2X-16-503-IR         |

For doser hydraulics and pneumatics, See “Doser” Maintenance Manual Form 45532660. **NOTE!** Only lubrication of inlet valve for OnBoard Lubrication. (No connection 4 and 5)

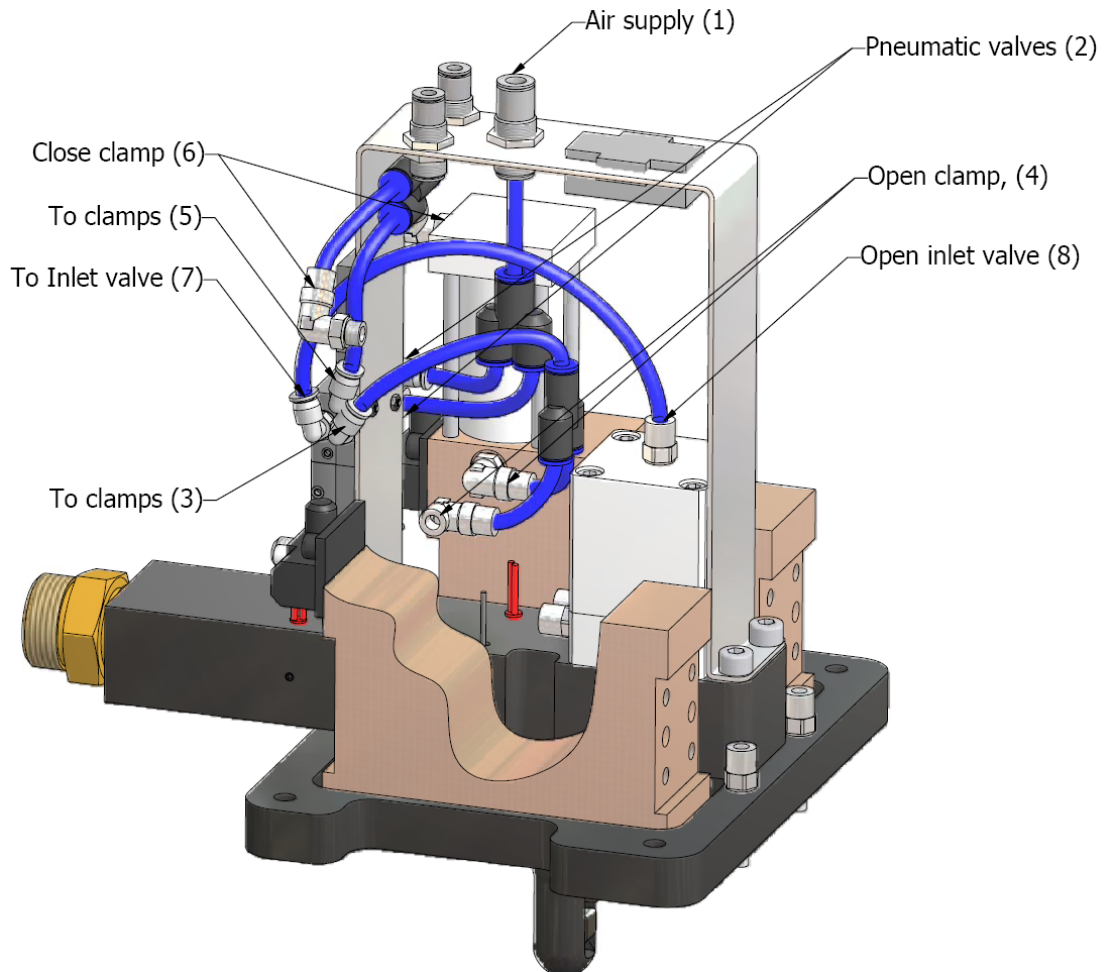


	From		To
(1)	Inlet hydraulics	(2)	Incoming inlet valve
(3)	Outgoing inlet valve	(4)	Incoming docking unit
(5)	Inside doser	(6)	Incoming docking unit
(7)	Outlet hydraulics		

## 1.5 Pneumatics of the Docking Station

Drawing/Component list:

- |                                |                       |
|--------------------------------|-----------------------|
| • DS ATC                       | T2X-16-500-IR/-505-IR |
| • DS ATC (OnBoard Lubrication) | T2X-16-501-IR         |
| • Docking Unit ATC             | T2X-16-502-IR         |
| • Docking Unit (Onboard lub.)  | T2X-16-503-IR         |



Also see *pneumatic scheme T2X-07-xxx*

	From		To
(1)	Inlet pneumatics	(2)	Pneumatic valves, connection 1
(3)	Pneumatic valve, connection 2	(4)	Open clamp
(5)	Pneumatic valve, connection 2	(6)	Close clamp
(7)	Pneumatic valve, connection 4	(8)	Open inlet valve

## 1.6 Male Docking Valve

- Drawing/Component list:

T2X-16-511-IR

Use the drawings and the component list for the specified unit. In the description below, the figures (xx) refer to the corresponding figures on the drawing.

### 1.6.1 Dismantling of the Male Docking Valve

<p><b>NOTICE</b></p>	<p><b>This operation requires, the following special tools and preparations:</b></p> <ul style="list-style-type: none"> <li>• <b>A T2000-17-005-IR to compress the spring (two threaded rods and a bracket with three holes).</b></li> <li>• <b>A flat, 7mm, fork spanner.</b></li> </ul>
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- After the valve has been removed from the docking station (see chapter 1.1), unscrew the four screws (19) holding the pneumatic cylinder (3).
- Pull the pneumatic piston (4) out from the cylinder (3).
- The piston (4) and the spring (14) are now visible. Use the 7-mm spanner to hold the needle (7) still. The spanner must be inserted into the compressed spring. Open the sealing nut (11) inside the piston.  
**Note:** *Take care, the spring is loaded. Use the special tool T2000-17-005-IR to keep the spring compressed.*
- Remove the piston (4) and the spring (14). Do not lose the distance shims (23) and (24).
- The packing housing (2) can now be removed. Also the Variseal (15) can be removed.
- To take out the Step seal (16) the retaining shim (5) has to be removed by unscrewing the two countersunk screws (22).
- Unscrew the four countersunk screws (20) holding the retaining flange (6) of the valve needle complete (7), and pull it out from the centre of the middle housing (1).
- Pull out the O-ring (17).
- Pull out the O-ring (18).  
**Note:** *To remove the O-ring, squeeze it with one hand in a way that will force it to become oval and in this way one side of it comes out of the groove. It is now easy to take it out from the groove completely. Do not use a screwdriver; it is very easy to damage the surface of the grooves.*
- Clean all parts carefully. The valve seat and the needle should be closely examined. Search for wearing out signs and for scratches. Especially the contact surfaces of the needle and the valve seat must be smooth and even all over the surfaces, no scratches.

**Note:** *All damaged parts must be changed to secure a proper function.*

**Take notice:** The valve seat and the valve needle are delivered as one unit, valve needle complete, and are consequently grounded together as one pair.



## 1.6.2 Assembly of the Male Docking Valve

<p><b>NOTICE</b></p>	<p><b>This operation requires, the following special tools and preparations:</b></p> <ul style="list-style-type: none"> <li>• A T2000-17-005 to compress the spring (two threaded rods and a bracket with three holes).</li> <li>• A flat, 7mm, fork spanner.</li> <li>• Screw locking liquid - Loctite 270</li> <li>• Special high temperature grease for the sealings, Uniway LIX 625.</li> <li>• Torque wrench</li> <li>• Two M6x35 screws</li> </ul>
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- First place the valve needle complete (7) into the middle housing (1), together with the O-ring (17), coated with a little grease, into its groove, and attach the retaining flange (6) with the four countersunk screws (20). Tighten the screws crosswise, carefully and equal.
- Insert the Stepseal® (16) in the immersion of the packing housing (2) and mount the retaining shim (5) with the two countersunk screws (22). Check the orientation of the Stepseal (16). The step must face the needle (see drawing).
- Insert the Variseal (15) in the recess of middle housing (1) with the V-opening first (see drawing).  
**Note:** Be careful not to harm the sensitive edge of the seal.
- Put the packing housing (2) onto the middle housing (1) and keep them fixed with the two M6x35 screws mounted diagonally – temporarily.
- Push the valve needle complete (7) in through the two seals (15) and (16) until the needle head touches the valve seat (closed valve).  
**Note:** One will feel a certain resistance each time the needle enters a seal.
- The O-ring (18), lightly greased, is put onto the piston (4). The distance shim (23 and 24) is “glued” with grease on the bottom surface of the piston (4). This shim prevents the sharp end of the spring from wearing out the piston as the spring always turns a little when being compressed.
- Mount the lightly greased spring (14) on top of the retaining shim (5).
- The piston (4) is put into the spring (14).
- Install the special (T2000-17-005-IR) tool into the two diagonally remaining holes of the middle housing (1), for compressing the spring. The spring is compressed by spanning it until the threaded part of the “valve needle complete” (7) reaches through the piston (4).
- The seal lock nut (11) is screwed onto the thread with a torque wrench. **Note:** Always use a new nut, and always use screw-locking-liquid (Loctite 270). Keep the needle fixed with the 7mm-spanner, and tighten the nut to the torque 5 Nm.
- The special tool and the two temporarily fitted M6 screws can now be removed because the spring tension keeps the whole assembly together.
- The inner surface of the air cylinder (3) must be greased carefully with Uniway LIX 625.

- m) Place the cylinder (3) on the piston, (4). Align it, and press it into the housing.
- n) Position all parts on the docking valve according to the drawing. Tighten the four screws (19). Torque is 10 Nm.
- o) Finally, the pneumatic unit function should be tested. Connect the air and check the movement of the needle.

## 1.7 Female Docking Valve

See "Doser" Maintenance Manual form 45532660.

## 1.8 Electrical contacts in docking station.

Length in mm = cable

Från nr.	Name	T2X-nr.	Se drawing:	Till (nr)	Name	T2X-nr.	Se drawing:	Comments
WH - 18	XP62/19 Poles	T2X-SF-008-IR	T2X-20-029-IR,sheet 302.0	WH - 18	XP61/36POL	T2X-SF-005-IR	T2X-20-029-IR,sheet 302.0	Length: 400mm
WH - 17	XP62/19 POLES	T2X-SF-008-IR	T2X-20-029-IR,sheet 302.1	WH - 17	XP61/36POL	T2X-SF-005-IR	T2X-20-029-IR,sheet 302.1	Length: 400mm
WH - 16	XP62/19 POLES	T2X-SF-008-IR	T2X-20-029-IR,sheet 302.1	WH - 27	XP61/36POL	T2X-SF-005-IR	T2X-20-029-IR,sheet 302.1	Length: 400mm
	Heater/inlet valve	T2X-SE-002-IR	10 on T2X-16-511-IR	WH - 8 WH/BU - 16	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 302.7	Length: 300mm l
	Heater/inlet valve	T2X-SE-002-IR	10 on T2X-16-511-IR	WH - 35 WH/BU - 25	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 302.7	Length: 300mm
WH - 4	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 503.0	WH - 30	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 505.5	Length: 400mm
WH - 14	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 503.0	WH - 34	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 503.0	Length: 400mm
	Sensor cable clamp	T2X-SK-008-IR	T2X-20-029-IR,sheet 505.4	BK - 13 BN - 31 BU - 22 WH - 4	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 505.4	Length: 270mm
	Sensor cable clamp	T2X-SK-008-IR	T2X-20-029-IR,sheet 505.7	BK - 15 BN - 33 BU - 24 WH - 6	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 505.7	Length: 270mm
WH - 3	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 508.1	WH - 3	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 508.1	Length: 400mm
WH - 12	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 509.2	WH - 1	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 509.2	Length: 400mm
WH - 13	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 509.2	WH - 10	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 509.2	Length: 400mm
WH - 10	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 509.4	WH - 19	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 509.4	Length: 400mm
WH - 11	XP62/19 POLES	T2X-SF-005-IR	T2X-20-029-IR,sheet 509.4	WH - 28	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 509.4	Length: 400mm
	PT100-givare	T2X-SC-004-IR	9 on T2X-16-510	WH - 2 RD - 11	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 509.8	Length: 300mm
	Contact/ inlet valve	T2X-SP-099-IR	T2X-20-029-IR,sheet 522.9	BK - 12 BK - 21	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 522.9	Length: 320mm
	Contact/close clamp	T2X-SP-099-IR	T2X-20-029-IR,sheet 526.1	BK - 29 BK - 20	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 526.1	Length: 320mm
	Contact/open clamp	T2X-SP-099-IR	T2X-20-029-IR,sheet 526.2	BK - 32 BK - 23	XP61/36POL	T2X-SF-008-IR	T2X-20-029-IR,sheet 526.2	Length: 320mm
PE	Ground		T2X-20-029-IR,sheet 302.0	Gul/Grn - 26	XP61/36POL		T2X-20-029-IR,sheet 302.0	Length: 400mm + 150mm ring terminal 4mm

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