0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.3, 0.6, 0.10, 1.22, 1.23, diagram 15a	TN1000/09	October 2006
2	0.5, 0.6, 8.2, diagram 15a	ÄM 1000-1-07	December 2006
3	0.0, 0.3-0.6, 0.12, 1.1, 3.3, 4.2, 4.16, 4.17, 4.21, 4.28, 8.1, 8.4 diagrams 5, 6, 8 - 10, 12, 15, 15a, 5EP50, 5V18, 10FW2, encl. 2 page 1	TN1000/10 Manual revision	January 2007
4	0.1, 0.6, diagram 14	TN1000/11 Manual revision	October 2007
5	0.3, 0.4, 0.6, 0.10, 1.9, 1.10, 4.7, 4.9, Diagramme 17, 18	landing gear positive locking device TN1000/13	February 2008
6	0.3, 0.4, 0.6, 0.10, 1.19, 2.1, diagram 19, enclosure 3	TN1000/15 Throttle handle in rear Cockpit Option	March 2008

0.2 List of effective pages

Section	page	issued	replaced/	replaced/	replaced/
0	0.0	June 2005	January 2007		
	0.1	see manual amendments			
	0.2	"			
	0.3	"			
	0.4	"			
	0.5	"			
	0.6	"			
	0.7	June 2005	January 2007		
	0.8	"			
	0.9	"			
	0.10	"	Febr. 2008	March 2008	
	0.11	"			
	0.12	"	January 2007		
1	1.1	June 2005	January 2007		
	1.2	"			
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	1.4	"			
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	1.6	"			
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	1.8	"			
	1.9	"	Febr. 2008		
	1.10	"	Febr. 2008		
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	1.14	"			
	1.15	"			
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	1.18	"			
	1.19	"	March 2008		
	1.20	"			
	1.21	"			
	1.22	"	October 2006		
	1.23	"	October 2006		
	1.24	"			
	1.25	"			

0.2 List of effective pages (continued)

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	1.26	"			
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4	4.1	June 2005			
	4.2	"	January 2007		
	4.3	"			
	4.4	"			
	4.5	"			
	4.6	"			
	4.7	"	Febr. 2008		
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	4.9	"	Febr. 2008		
	4.10	"			
	4.11	"			
	4.12	"			
	4.13	"			

0.2 List of effective pages (continued)

diagram	issued	replaced/	replaced/	replaced/
1	May 2004			
2	Nov. 2001			
3	June 2005			
4	Nov. 2001			
5	Nov. 2001	January 2007		
6	Nov. 2001	January 2007		
7	Nov. 2004			
8	Nov. 2001	January 2007		
9	June 2005	January 2007		
10	May. 2005	January 2007		
11	June 2005			
12	Sept. 2003	January 2007		
13	June 2005			
14	June 2005	October 2007		
15	June 2005	January 2007		
15a	Oct. 2006	Dec. 2006	January 2007	
16	June 2005			
17	Febr. 2008			
18	Febr. 2008			
19	March 2008			
5EP34	25.01.90			
5EP50	17.12.98			
5V18	14.10.94			
10FW2	05.10.99			
10E102	14.09.05			
10E103	24.06.05			
Encl. 1	June 2005			
Encl. 2	June 2005	Page 1 January 2007		
Encl. 3	March 2008			

diagrams

1	Elevator control, trim
2	Rudder control
3	Aileron and spoiler controls in the fuselage
4	Aileron and spoiler controls in the wings
5	Tow releases
6	Water ballast system
7	Landing gear, hydraulic wheel brake (Version without nose wheel)
8	Landing gear, hydraulic wheel brake (Version with nose wheel)
9	Landing gear, non retractable
10	Systems for static and total pressure
11	Placards
12	Landing gear control (Version without nose wheel)
13	Powerplant
14	Extension/retraction mechanism
15	Fuel system
15a	Fuel system with automatic fuel cock
16	Powerplant retaining cables
17	Landing gear positive locking device
18	actuation unit LG locking device, differences to diagr. 12
19	Throttle handle in front and rear Cockpit TN1000/15

5EP34	Installation plan Dräger oxygen system
5EP50	Installation plan ELT ACK
5V18	Tool for airbrake adjustment
10FW2	Spring leg (landing gear)
10E102	Wiring plan DINA1 (in aircraft log)
10E103	Wiring scheme
Encl. 1	Download instructions for flightlog and service data from the DEI-NT
Encl. 2	Instructions for transponder installation
Encl. 3	Service Throttle handle in front and rear Cockpit TN1000/15

1.12.6 Starter:

Electric starter motor, type see section 8.1.

1.12.7 Ignition system:

a) spark plugs;
Electrode gap 0.5 mm (0.02 in.), type see section 8.1.
b) Ignition coils: One coil per cylinder, type see section 8.1

1.12.8 Throttle cable connections

The cables can be finely adjusted at the adjusting screws located at the intake manifolds (holders for the Bowden outers).
The cables are 1.5 mm diameter Bowden-cable
The stop for idle adjustment is at the rear carburettor.

Friction brake for throttle control: This device is located at the control bellcrank in the instrument panel.
The brake force must be adjusted for a control force of 15 - 50 N
(3 - 11 lbs.).

Option: throttle handle in rear cockpit TN1000/15:

a) No friction brake installed.
b) The interconnection between front and rear throttle handles is by means of 2 hydraulic cylinders and hydraulic lines.
Periodical service is not required. Instructions for service and repair are given in enclosure 3 for this MM.

1.12.9 Propeller stopper

Automatic operation: During powerplant retraction the propeller stopper is moved forward in the propeller circle by a gas strut (with compensator spring).

2 Inspections

2.1 Daily inspection

see flight manual section 4.3

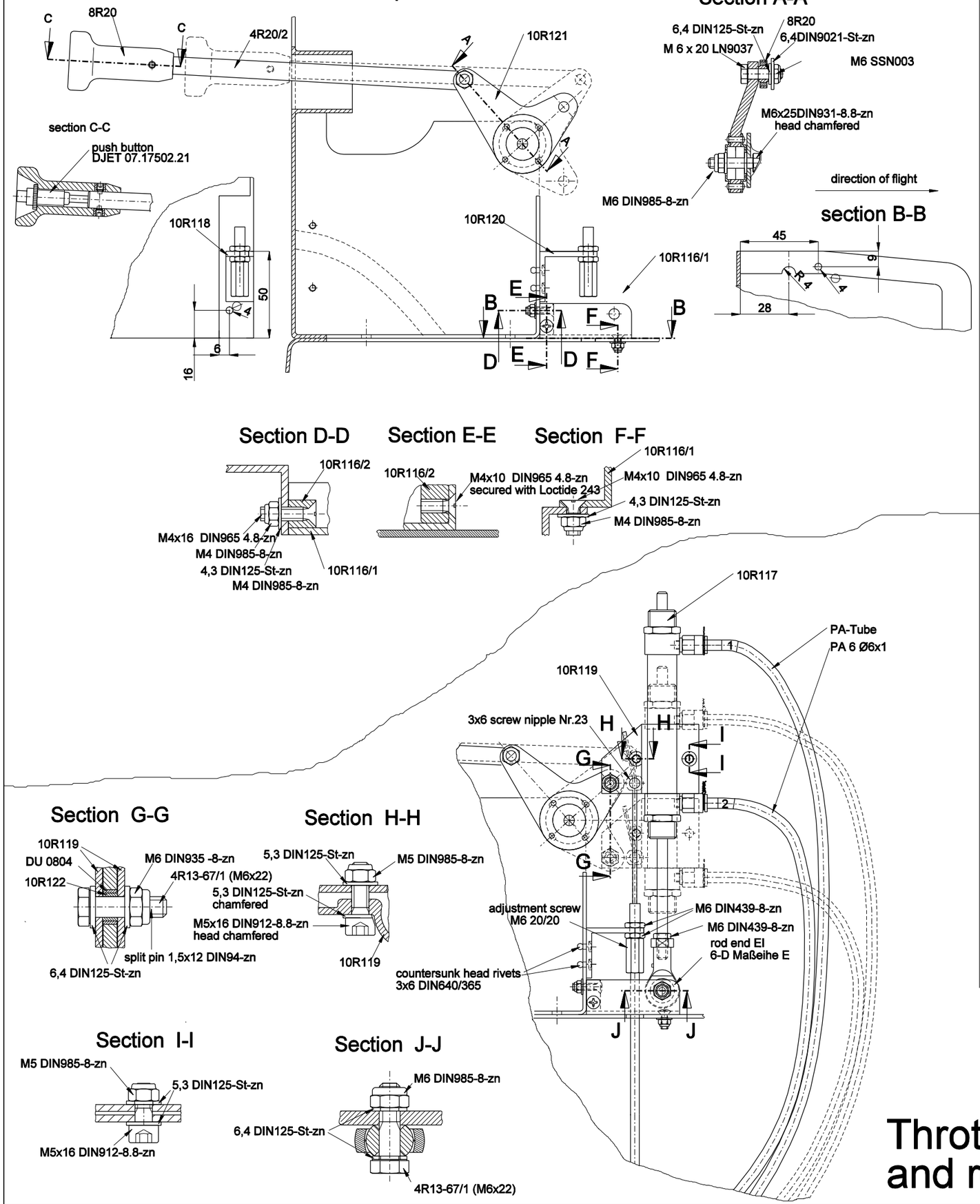
2.2 Regular inspections

A **After 200 flight hours and during the annual inspection**
Check the rudder cables for wear especially around the S tubes on the rudder pedals. Worn rudder cables should be replaced (see section 4.2). Check the sealing of the rudder (see section 1.3.5).

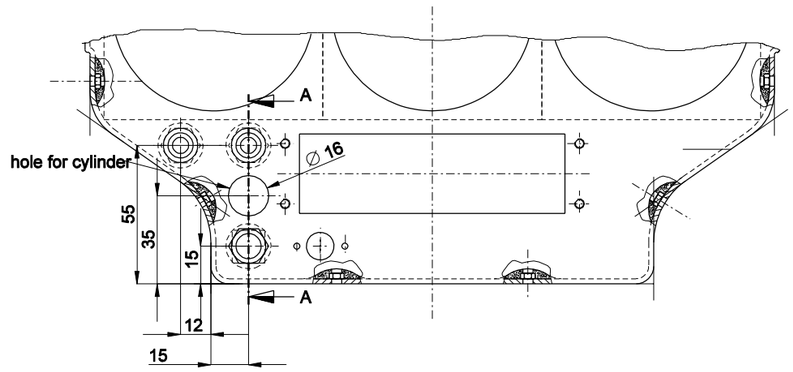
B Annual inspection (and 100hr inspection – only for USA)

- Execute all items of the daily inspection see flight manual section 4.3.
- Inspect all bolted connections and locking devices ie. locknuts, split pins etc.
- Check all metal parts for adequate greasing and rust prevention. (see section 3.3).
- Check the control surface deflections (see sections 1.2 up to 1.4).
- Check the free play in all control circuits (see section 1.2 up to 1.6)
- Check the fore and aft play of the wings (see section 1.11).
- Check the canopy emergency releases according to section 7.14 of the flight manual.
- Check the rubber cords in the control system (see sections 1.2.6 and 1.7.5.
- Check the thickness of the wheel brake linings (see section 1.6.4).
- Check if the brake fluid has to be exchanged (see section 1.6.4).
- Check the airbrakes according to section 4.4.
- Check the fin ballast tank system according to section 1.8.2.2.
- Check if the powerplant has been serviced according to section 3.6.1.
- Check the friction brake of the throttle control (see section 1.12.8).
  Option: throttle handle in rear cockpit TN1000/15:
  Check of friction brake not applicable, not installed.
- Check the torque of the propeller bolts (see section 3.6.1 item 23).
- **Tow hooks:** The operating and maintenance instructions for the release mechanisms, see sect. 0.4.4 of this maintenance manual have to be followed.
- **All-up weight and centre of gravity:** These should be checked at least every 4 years during the yearly inspection.

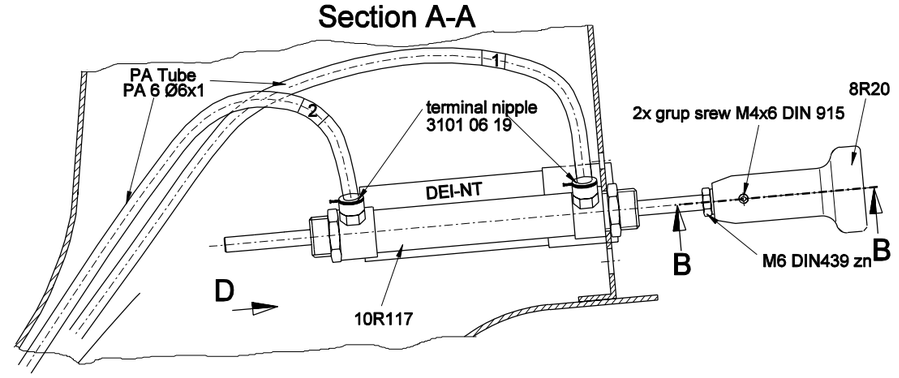
front cockpit



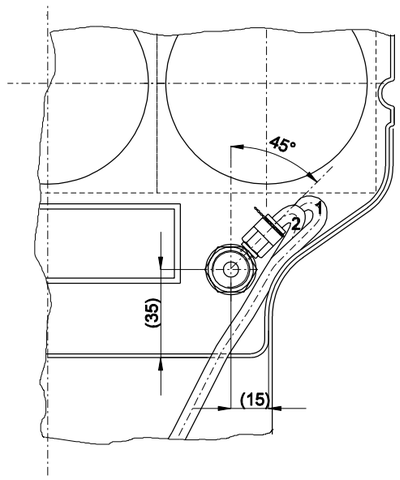
rear cockpit



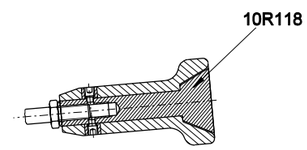
Section A-A



view D



Section B-B



securing the terminal nipples
lock wire twisted min. 3 times

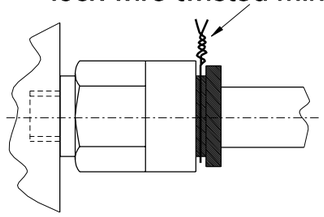


diagram 19

Throttle handle in front and rear Cockpit

issued March 2008
TN1000/15

Optional throttle handle in the rear cockpit TN1000/15
Service Instructions

Part designations see MM diagram 19 and sketches below

I. Bleeding the hydraulic system

Necessary material:

- Hydraulic fluid: Magura Blood Hydraulic Mineral Oil (don't use brake fluid)

Necessary tools:

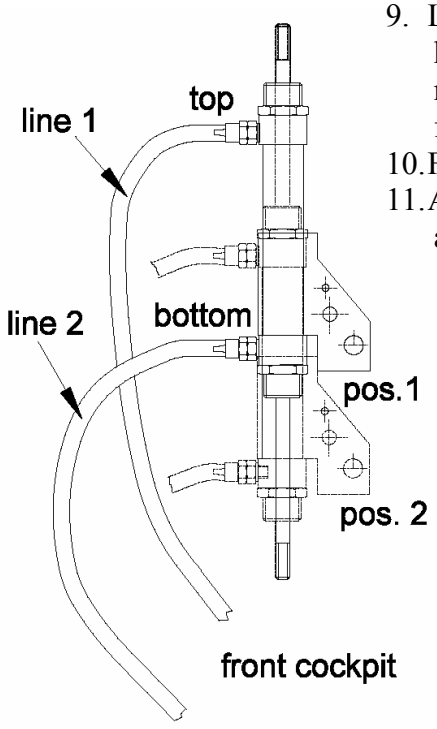
- Different spanners
- one 50 ml syringe
- one 20 ml syringe

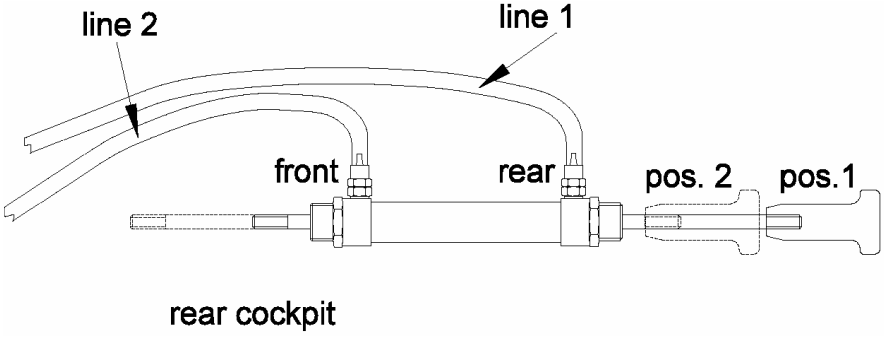
Instructions:

If there is so much air in the system that you can move the rear cylinder with the front cylinder blocked more than ± 5mm, both lines and both cylinders must be refilled.

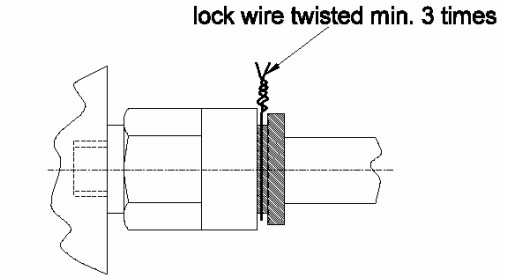
Proceed as follows:

1. Remove the cover from the front instrument panel and open the rear instrument panel.
2. Remove both cylinders. To accomplish this disconnect the front cylinder at its lower mounting and remove the clamp from the front cylinder. Don't remove the Bowden cable from the clamp! Remove the handle from the rear cylinder. Remove the lock wires from all terminal nipples.
3. Move the rear cylinder from position 1 to position 2. The terminal nipples must point upwards.
4. Remove line 2 from the front cylinder. To accomplish this press the black securing ring into the terminal nipple. Push one50 ml syringe into the line.
5. Remove line 2 from the rear cylinder. Insert the line into a canister with hydraulic fluid.
6. Pull approx. 50 ml hydraulic fluid with the syringe through the line.
7. Fill the 20 ml syringe with hydraulic fluid. Lift line 2 out of the hydraulic fluid and fill the line completely with hydraulic fluid from the 20 ml syringe. Fill also the front terminal at the rear cylinder and connect the line to the cylinder.
8. Remove the syringe from the front end of line 2. Fill the line completely with hydraulic fluid. Insert the line into a canister with hydraulic fluid. Pull the rear cylinder to position 1. The terminals of the front cylinder must point upwards. Pick up the excess hydraulic fluid
9. Lift line 2 out of the hydraulic fluid and fill the line completely with hydraulic fluid from the 20 ml syringe. Fill also the lower terminal nipple at the front cylinder and connect the line to the cylinder. The front cylinder must be in position 1 for this procedure.
10. Fill line 1 in the same way as line 2.
11. Apply the lock wire securing devices to all terminal nipples according to the sketch on the next page.





Securing the terminal nipples
Use lock wire with min. 0.8 mm diameter. The lock wire is necessary to prevent the connection from inadvertent opening.



12. Reinstall all parts. The clamp at the front cylinder must contact the lower flange of the cylinder.

II. Replacing of components of the hydraulic system

Instructions:

II.1 Replacing a cylinder

Necessary material and tools:

- see **I**
- Hydraulic cylinder: JOUCOMATIC 43850028-0050
- 2 pieces of Polyamid PA6 tube 6 x 1 (outside dia. x wall thickness), approx. 0.5 m long

Instructions:

1. Perform steps 1 and 2 of **I**.
2. Remove the lines from the defective cylinder. To accomplish this press in the black securing rings into the terminal nipples . Empty the cylinder into a container. Remove the terminal nipples from the cylinder.
3. Screw the terminal nipples into the new cylinder and tighten firmly.
4. Fill the new cylinder. To accomplish this fill a Polyamid PA6 tube 6 x1 approx. 0.5 m long via a syringe with hydraulic fluid. Move the cylinder into position 2
   Connect the tube to the front terminal (rear cylinder) resp. the upper terminal (front cylinder). Insert the other end of the tube into a container with hydraulic fluid and move the cylinder to position 1.
5. Fill the second Polyamid PA6 tube with hydraulic fluid and connect it to the other terminal nipple of the cylinder. Insert also the other end of the tube into a container with hydraulic fluid.
6. Place the cylinder below the container and move the piston rod several times until no air bubbles come out of the cylinder.
7. Remove the lines.
8. Connect lines 1 and 2 to the cylinder and perform steps 3 up to 12 of **I**

II.2 Replacing a line

Necessary material and tools:

- see **I**
- Hydraulic line: Polyamid PA6 tube 6 x 1 (outside dia. x wall thickness), approx. 1,80 m long
- Tape

Instructions:

1. Perform steps 1 and 2 of **I**.
2. Remove the defective line from both cylinders. Pull out the hydraulic fluid with a 50 ml syringe.
3. Fix the new line to the defective line with tape. Pull out the defective line while pushing in the new line at the same time. Remove the defective line.
4. Fill the new line via a 50 ml syringe with hydraulic fluid.
5. Reconnect the line to the cylinders and perform steps 3 up to 12 of **I**.