

0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.1, 0.3 ÷ 0.7, 0.13, 1.5, 1.19, 1.36, 2.1, 3.4, 4.1, 4.2, 4.17, 4.25, 6.2 ÷ 6.4, 7.1, 8.1, 9.3, 9.4, 9.6, diagrams 1, 3, 5, 12, 22, 23	Manual revision TN LS10-02	December 2011

0.2 List of effective pages

Section	page	issued	replaced/	replaced/	replaced/
0	0.0	October 09			
	0.1	see manual amendments			
	0.2		"		
	0.3		"		
	0.4		"		
	0.5		"		
	0.6		"		
	0.7		"		
	0.8	October 09			
	0.9		"		
	0.10		"		
	0.11		"		
	0.12		"		
	0.13		"	December 11	
	0.14		"		
1	1.1	October 09			
	1.2		"		
	1.3		"		
	1.4		"		
	1.5		"	December 11	
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	1.18		"		
	1.19		"	December 11	
	1.20		"		
	1.21		"		
	1.22		"		
	1.23		"		
	1.24		"		
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	1.26	"			
	1.27	"			
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	1.33	"			
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	1.35	"			
	1.36	"	December 11		
	1.37	"			
	1.38	"			
2	2.1	October 09	December 11		
	2.2	"			
	2.3	"			
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	2.5	"			
	2.6	"			
3	3.1	October 09			
	3.2	"			
	3.3	"			
	3.4	"	December 11		
	3.5	"			
	3.6	"			
	3.7	"			
	3.8	"			
	3.9	"			
	3.10	"			
4	4.1	October 09	December 11		
	4.2	"	December 11		
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	4.4	"			
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Section	page	issued	replaced/	replaced/	replaced/
	4.9	October 09			
	4.10	"			
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Section	page	issued	replaced/	replaced/	replaced/
5	5.1	October 09			
	5.2	"			
6	6.1	October 09			
	6.2	"	December 11		
	6.3	"	December 11		
	6.4	"	December 11		
7	7.1	October 09	December 11		
8	8.1	October 09	December 11		
	" 8.2	"			
	8.3	"			
9	9.1	October 09			
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	9.4	"	December 11		
	9.5	"			
	9.6	"	December 11		
	9.7	"			

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diagram	issued	replaced/	replaced/	replaced/
1	September 09	December 11		
2	September 09			
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8	September 09			
9	September 09			
11	September 09			
12	September 09	December 11		
13	September 09			
Diagrams only for LS10-st				
14	September 09			
15	September 09			
16	September 09			
17	September 09			
18	September 09			
19	September 09			
20	September 09			
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23	September 09	December 11		

Enclosure

9E2 LS10-st	28.11.08
9E4 LS10-s	28.11.08
9EP22	25.05.09
9EP24	25.09.09
9R79	11.09.08
9V21	14.09.09
9V96	29.04.09

0.4 Airworthiness limitations

0.4.1 Repairs

Repair or replace damaged parts prior to next flight. Follow the instructions of the LS10-S,-ST repair manual for repairs of the airframe. Repairs outside the scope of LS10-s,-st repair manual and major repairs must be accomplished at a certified repair station or by an approved mechanic rated for composite aircraft structure work in accordance with DG repair methods.

Use only genuine spare parts.

For all aircraft under EASA regulations the following applies: According to part 21, subpart M to accomplish major repairs an approved repair instruction is required, see also TN DG-G-01 “Approved repair methods according to EU Commission Regulation 1702/2003 part 21, subpart M”

0.4.2 Life time of the airframe

The maximum allowable operating time for the variants LS10-s and LS10-st is 12000 flight hours. Therefore inspections according to section 2.4 of this manual have to be executed at 3000 h, 6000 h, 9000 h and every 1000 hours following thereafter.

0.4.3 Life time of components

1. The **fabric straps of the safety harness** have to be exchanged after 12 years.

2. **Other components**

All other components like tow hook, wheels, gas struts, control system parts, bolts, pins etc. have no life time limitation, but should be replaced when worn, damaged or disqualified by excessive corrosion.

Only LS10-st

3. The **gasket for the drainer valve** has to be exchanged after 6 years.

4. The **spark plugs** have to be exchanged after 25 engine hours.

1.4 Aileron and wing flap control

1.4.1 Control circuit

see diagrams 3 and 4

2 springs (9St08) at the aileron control rod 4R10-73 provide additional aileron return forces to improve flight handling qualities especially at positive wing flap settings.

1.4.2 Deflections and tolerances

Aileron deflections:	up	38 ± 3 mm	(1.5 ± 0.12 in.)
	down	21 ± 3 mm	(0.83 ± 0.12 in.)

measured at 145 mm (5.71 in.) from hinge axis (at inboard end of flaperon against the fixed part at the wing root), wing flap setting -1 (-4°).

Wing flap deflections:	up -1 (-4°)	0 ± 1 mm	(0 ± 0.04 in.)
	0 (0°)	10 ± 2 mm	(0.39 ± 0.08 in.)
	down L (+12°)	40 ± 3 mm	(+1.57 ± 0.12 in.)

measured at 145 mm (5.71 in.) from hinge axis against the fixed part at the wing root.

1.4.3 Stops

The aileron stops are located as follows:

Control stick displaced to the right: Stop located at the control stick mounting shaft 9St4.

Control stick displaced to the left: Stop located at the control column mounting 1R03-74.

The stops can be adjusted with a 10 mm open end spanner.

The wing flap stops are by the cut outs in the wingflap-airbrake guide plate 9St14 and are not adjustable.

The locking plate at the wing flap handle 9St9 which actuates as dent for the notches in the wing flap guide plate 9St10 is exchangeable if TN LS10-2 instruction 1 b) has been performed. The locking plate 9St9/6 must be fixed with 2 bolts M4x10 DIN933-8.8 BIC to 9St9. The bolts must be secured with Loctite 243.

The locking plate 9St9/6 must be exchanged if more than 2 mm (0.08 in.) have been grinded away. If the plate is not yet removable TN LS10-02 instruction 1 b) must be performed.

1.4.4 Free play

The max. free play measured at the trailing edge of the flaperons measured at 145 mm (5.71 in.) from hinge axis (inboard end) should not exceed ±1 mm (±0.04 in.) The control stick and the wingflap handle should be in neutral position.

To take the measurement fix the flaperon of the opposite wing. With both flaperons fixed, a maximum free play of ±2 mm (±0.08 in.) at the top of the control stick is allowed.

1.13 Cockpit canopy

1.13.1 Canopy locking and emergency release function:

Measure force required to open canopy emergency release according to following steps (If this measurement or an operational check is performed without a helper, the spring for the canopy emergency jettison LS hook (Röger hook) at the rear upper end of the canopy becomes deformed and must be exchanged !):

- (a) "Pilot" in seat with spring gauge.
- (b) Both canopy locking levers opened.
- (c) Helper holding front canopy end must hold canopy on opener to avoid lifting of canopy by gas spring.
- (d) Force required to open right side emergency release max. 15 kg <33°lbs>.
- (e) After force measurement, the pilot pushes the canopy emergency jettison LS hook (Röger hook) free and lifts the canopy at opening levers, the helper still holds the front end on the opener.

With canopy fully open, the helper pushes the connecting pin upward and engages canopy to opener by turning drive lug anti-clockwise.

When emergency release force is too high, grease all moving parts, contact DG Flugzeugbau if necessary.

1.13.2 Function of the LS latch (Röger hook) for canopy emergency release

Measure the required force to lift the canopy rear edge to move the pin at the canopy out of the spring at the fuselage):

Reference value 8 to 15 kg <18 to 33 lbs>

If the required force is lower, the spring must be exchanged to ensure proper functioning of the canopy emergency jettison.

1.14 Main structure and secondary structure

No secondary structure existing

1.19.13 Proximity switch (only LS10-st)

The inductive proximity switch at the engine gets pulses from two bolt heads on the back of the propeller flange, see diagram 15.

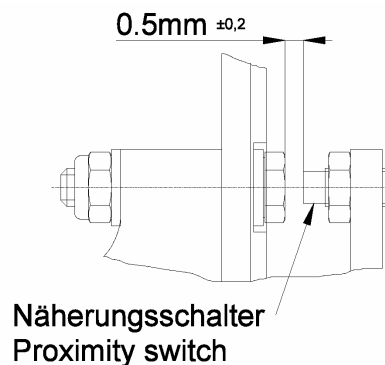
It switches the following functions:

1. Activation of the retraction mechanism and indication in the DEI-NT
2. Impulses for RPM measurement

To activate the proximity switch two bolt heads opposite each other holding the propeller swivel bearing brackets are being used, they are opposite the proximity switch with propeller position vertical. Both these bolt heads are shimmed for correct distance to the switch. During any work, these shims must neither be forgotten nor misplaced!

Required clearance between bolt heads and switch $0,5\text{mm} \pm 0,2\text{mm}$ $<0.02 \text{ in} \pm 0.008 \text{ in}>$. With clearance too large RPM measurement functions incorrectly, with too small a clearance danger of collision exists.

Lock proximity switch tightly with the counter nuts. If the switch comes loose or a damage of switch results in false RPM measurement and the automatic extension-retraction system will be inoperable. With a defective switch, the DEI-NT will display an error message “RPM Pickup” and shows **????** in the RPM position of the display (see Flight Manual, section 7.4.2.4 D).



2 Inspections

2.1 Daily inspection

see flight manual section 4.3

2.2 Regular inspections

2.2.1 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).

2.2.2 Annual inspection

It is recommended to use the Checklist section 9.3)

- 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 1.4).
- Check the free play in all control circuits (see section 1.2 up to 1.6)
- Check and exchange if necessary the locking plate at the wingflap handle (see section 1.4.3).
- Check the fore and aft play of the wings (see section 1.10).
- Check the canopy emergency releases according to section 1.10.
- Check the fin ballast tank system according to section 1.8.4
- Check the powerplant.
- **Tow hooks:** The operating and maintenance instructions for the release mechanisms, see sect. 0.4.4 of this maintenance manual have to be followed.
- **Empty weight and centre of gravity:** These should be checked at least every 4 years during the annual inspection and after repairs or modifications.

Note: The following sliding guides are maintenance-free and must not be greased.

But in case of excessive friction you may proceed as follows:

Remove the pushrod and clean pushrod and guide. If there is still too much friction you may apply a small amount of Molykote grease BR2 (-30° - 130°C <- 22° F to 266° F >) or Molykote grease 33 (-70° - 180°C <-94° F to 356° F >)

- Wing flap control system: rod 9St39 in 9R65 (2 PA bushes), see diagram 3.
- Wing flap control system: handle 9St39 on 3R06-58 (2 IGUS sleeves), see diagram 3.
- Elevator control/trim: Bush in trim locking mechanism 9EP4 (1 IGUS sleeve), see diagram 1.
- Rudder control: pedal adjustment 3R14-16 on guide tubes 4R14-18 and 9St36 (2 IGUS sleeves each), see diagram 2.
- Landing gear handle 4R2-87 (2 IGUS sleeves), see diagram 7.

The following bearings contain maintenance-free metal-polymer compound material, which requires **no** lubrication:

- Engine tower attachment (2 units)
- Switch rod for position switches (1 unit, see diagram 19, item 2)
- Propeller swivel bearing on crankshaft flange (2 units)

4 Detailed instructions for assembly and servicing work

4.1 Seat shell removal and reinstallation

4.1.1 Removal

- (1) Remove battery cover from front seat end (2 Camlock fasteners).
- (2) **Only LS10-st:** Remove 4 bolts holding DEI-NT at seat front and pull out DEI-NT to the front (in direction of flight).
- (3) Remove 8 bolts (8 mm thread) hexagon recess No. 5, watch for length and position of bolts, colour mark position of short ones !
- (4) Disconnect backrest base from seat, remove backrest.
- (5) Remove countersunk screws each (Philips recess) 4 pieces at left side along air brake/wing flap handle guide and 5 pieces at right side at landing gear lever guide. Remove T-shaped handle from pedal adjustment cable (5 mm thread, nut DIN 985-8zn). Hold with pliers at pressed-on end fitting to avoid cable twisting.
- (6) Loosen control stick opening cover, place air brake lever into forward position.
- (7) Swivel left side of seat upward. Carefully direct left lap belt fixing at seat over the elevator pushrod guide. To accomplish this move seat as far as possible to the right and bend the seat a little bit. Take seat out to upper left.

4.1.2 Reassembly

- (1) Inspect under seat region for foreign matter, tools etc.
- (2) Check steel strap in front of control stick existent.
- (3) Connect battery wires to batteries.
- (4) Rest right seat side on support and direct control stick into cut-out.
- (5) Direct pedal adjustment cable below steel strap into guide, place air brake handle into forward position.
- (6) When lowering the seat, direct tow release handle around seat edge and watch especially for left lap belt fixing, this should never be forced over the seat support and elevator pushrod guide. To accomplish this move seat as far as possible to the right and bend the seat a little bit.
- (7) Fix countersunk screws along left side air brake/wingflap guide and right side gear handle guide.
- (8) Insert remaining 8 mm thread bolts with a 5 mm Allen key wrench, watch bolt length and positions as noted before.
- (9) **Only LS10-st:** Push DEI-NT from the front into seat and fix. Don't kink the cable harness.

- (10) Place battery cover to front seat end and lock the 2 Camlock fasteners.
- (11) Check control system after installation for proper operation
- (12) **Only LS10-st:** Check the DEI-NT for proper functioning.

4.2 Replacement of control circuit cables

Control cables and connections

For processing Nicopress sleeves refer to FAA "Aircraft Inspection and Repair" FAA AC 43.13-1 A or later issue

1. Rudder cables

Cable: B 3.2 MIL-W-83420 I/A resp. ISO 2020 (former LN 9374) zinc plated

Steel thimbles: A 3.5 DIN 6899

Cable sleeves: Nicopress NT 283M (28-3-M), 3 pressings required, with tool groove Oval M tool 64-CGMP

2. Tow hook operation and wheel brake

Cable: A 2.4 MIL-W-83420 I/A resp. ISO 2020 (former LN 9374)

A 2.4 LN 9389 corrosion resistant (C.G. hook)

2.5 DIN3055 corrosion resistant with steel core (C.G. hook)

Steel thimbles: A 2.5 DIN 6899

Cable sleeves: Nicopress NT 282GA (28-2-G), for pressing use tool groove Oval G of tool 64-CGMP. 1 press (

Stop sleeve: Nicopress NT S117J (871-17-J), use tool groove "J" of tool 51-MJ 1-press

3. Waterballast control

Fuselage:

Cable: A 1.6 7 x 7 MIL-W-83420 I/A or ISO 2020 (former LN 9374)

Steel thimble: A 1.7 DIN 6899

Wings:

Cable: 1,25mm D construction 7x7 DIN3055 stainless steel 1.4401

Steel thimble: A 1.7 DIN 6899

connected with screw nipple 4F5-120

Stop sleeve: Nicopress NT S117J (871-17-J), for pressing use

a. groove "J" of tool 51-MJ, **thereafter**

b. groove "G" of tool 64-CGMP, 1 press each in given sequence

Only LS10-st

4. Deco valve

Cable: A 1.6 7 x 7 MIL-W-83420 I/A or ISO 2020 (former LN 9374)

Steel thimble: 2,0 mm HC2

Cable sleeves: Nicopress NT 281CA (28-1-C), for pressing use groove "C" of tool 64-CGMP. 1 press.

5. Engine retaining cable

a) Connection to engine: see 1.

b) Connection retaining cable to bungee: Nicopress NT 284P (28-4-P), Use 64-CGMP groove P.

c) Stop sleeve: Nicopress NT S118J (871-18-J), use tool groove "J" of tool 51-MJ, 1-press

9. **18 m wing tip:** When removed from the inboard wing the flaperon is held in place by the internal sealing only. So to remove the flaperon you have to remove only the internal sealings, see section 4.8.3. Shift the flaperon inboards for removal.

4.7.2 Reinstallation of the flaperons

Prior to reinstallation clean and grease all hinge bushes and pins.

Reinstallation must be done together with the installation of the sealings according to section 4.8.1.

2 people are necessary.

1. Reinstall the **inboard flaperon** with 2 people. Use a new self locking nut (M5 DIN985-8 zn) to secure the flaperon at hinge 9F16 (8 mm socket key wrench).
2. Reinstall the **centre flaperon** with 2 people. Be careful that the 2 pins of the centre flaperon engage in the bushes of the inboard flaperon. Then screw on the bush 9F21/1 together with washer 5,3DIN125 St zn (8 mm socket key wrench), secure with Loctite 243.
3. Reinstall the **outboard flaperon** to the 18 m wing tip. You have to install only the sealings to fix the flaperon.
4. Rig the wings to the fuselage and reinstall the inboard control surface horns 9F27/1 to the flaperons (bolts M5x16 DIN912-8.8zn). Secure bolts with Loctite 243. Don't forget to reinstall the correct number of shims 9F51.
5. Check the control surface deflection according to section 1.4.2.
6. If the deflections are within the tolerances reinstall the outboard control surface horns 9F27/2 (bolts M5x16 DIN912-8.8zn). Secure bolts with Loctite 243. Don't forget to reinstall the correct number of shims 9F51.
7. Reinstall the fairings to the control surface horns. Glue the fairings with Polyester resin to the lower ends of the control surface horns. Press fairings to horns to make sure that they don't chafe at the wing-side fairings during operation.
8. Check the external sealing (Mylar strips, optional) for any damage and replace if necessary.

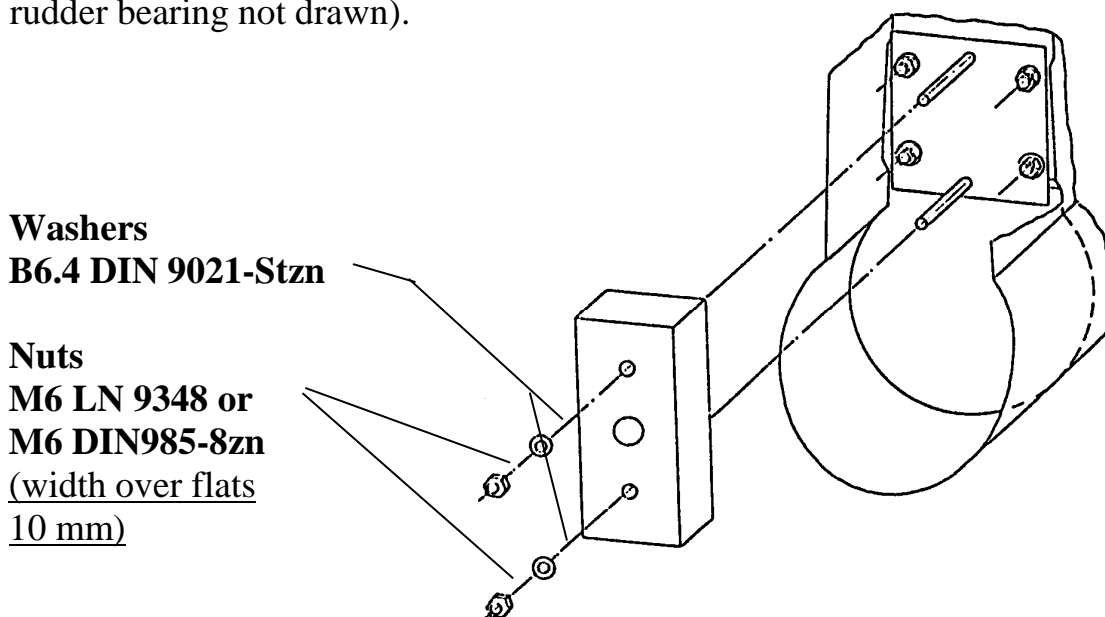
4.10 Permanent Installation of fixed Ballast at rear Fuselage

In special cases empty weight C.G. position may be shifted rearward to allow heavy pilots to fly with rearward in-flight C.G. positions.

Therefore it is possible to install the following ballast at the tail:

- a) a battery 3BR-199
- b) a heavy tail wheel hub S27
- c) a trim weight (drawing 4R8-109) at the vertical fin shear web above the tail wheel box see sketch 1.

Sketch 1: (Tail wheel box and lower rudder bearing not drawn).



Caution: The necessary holder (according to drawing 4R8-107b) is not installed as standard equipment. It may be installed according to section 4.11.

Never dismount the trim ballast holder because its bolts and nuts are fixing points for the elevator control system!

Removal and installation of the rudder (see section 1.3). Check for unobstructed movement of rudder and measure rudder deflections after work!

After installation of permanent weight at rear fuselage, a new C.G. weighing must be performed (see section 5).

Maximum weight of trim weight 4R8-109: approx. 2.45 kg <5.5 lbs>.

Compass

Manufacturer	Type	Certification No.
PZL	B - 13	FD 19/77
Ludolph	FK 16	10.410/3
Airpath	C 2300	
Airpath	C 2400 P	
Hamilton	H I 400	TSO C 7c Type1
Bohli	46 MFK 1	(only as additional equipment.)

The compass should be compensated in the A/C.

A deviation table must be installed if deviation is more than 5°.

VHF transceiver

Manufacturer	Type	Certification No.
Dittel	FSG-40 S	10.911/45
	FSG-50	10.911/71
	FSG-60 M	10.911/72
	FSG-70,71 M	10.911/81
	FSG-90	0.911/98JTSO
	FSG 2T	LBA.0.10.911/103JTSO
Becker	AR 3201-(1)	10.911/76
	AR 2008/25 (A)	10.911/48
	AR 4201	JTSO-2C37 D, ED-23A
	AR 6201	EASA.210.1249
Filser/Funkwerk	ATR 720 A	10.911/74
	ATR 720 C	10.911/83
	ATR 600	O.10.911/106JTSO
	ATR 500	LBA.0.10.911/113JTSO
	ATR 833	EASA.210.0193

or other instruments certified for aircraft use according to TSO or JTSO or ETSO standards may be installed.

Note: Only radios with diameter 58mm (2 ¼ in.) can be installed at the assigned place in the console below the instrument panel.

Variometer

Manufacturer	Type	Certification No.
Winter	5 StVM5 (Diameter 58mm)	TS 10.230/14
	± 5 m/s Ident.No. 5451	
	±1000 ft/min Ident.No. 5452	
	± 10 kts Ident.No. 5453	
Winter	5 STV 5 (Diameter 80mm)	TS 10.230/13
	± 5 m/s Ident.No. 5251	
	±1000 ft/min Ident.No. 5252	
	± 10 kts Ident.No. 5253	

Turn and bank indicator

Manufacturer	Type	Certification No.
Apparatebau Gauting	WZ-402/31 12 V	10.241/8

Outside air temperature gauge

LS10-s:

Störck TF-00-59K

Installation of the sensor in the nose hook compartment.

LS10-st: incorporated in the DEI-NT see below

Engine instrumentation only LS10-st

(RPM, fuel, CHT, voltmeter, engine elapsed time, outside air temperature)

Manufacturer	Type
DG Flugzeugbau	DEI-NT-DG808C

Instruments which are not part of the minimum equipment:

Transponders: Transponders certified for aircraft use according to TSO or JTSO or ETSO standards may be installed.

Installation of Transponder and Transponder antenna must be accomplished according to technical note DG-G-03.

ELT: The ELT may be installed on the holder 9R96 according to installation plan 9EP24 attached to the Maintenance Manual and according to the ELT manufacturer's instructions.

The designated place is the moulding on the RH side of the landing gear box below the baggage compartment. As the ELT is not accessible in flight an ELT remote control must be installed.

The gain access to the on-off switch of the ELT e.g. for switching off the ELT for ground transport, the radio speaker plate must be mounted on an access door according to drawing 4R07-091.

Caution: Antenna installation is only certified according to installation plan 9EP22 attached to the MM.

After installation, a functional test and inspection must be performed by a licensed inspector.

The ELT must be switched off during road transport.

With ELT installed onto holder 9R96, the installation of an additional battery see AFM sect. 7.17.4 is not possible.

Other instruments and equipment (eg. variometers, gliding computers or flight data recorders):

Instruments and other equipment may be installed if they do not in themselves, or by their effect upon the sailplane, constitute a hazard to safe operation.

Note: For further instructions please refer to TN DG-G-07 (Installation of instruments and equipment which are not part of the minimum equipment).

Caution: If additional instruments or equipment are to be installed after production of the glider, it must be assured that they will be installed in the places provided by the design. If installed in other places it must be assured that they are secured safely.

Electrical instruments and equipment must be connected via appropriately rated fuses, the power consumption of each single part should not exceed 3 A.

Warning: If equipment is mounted on the canopy special care must be taken that canopy jettison is not impaired. To accomplish this any wire must be equipped with a plug in the vertical part. All plugs must be able to disconnect with low force, max. 10 N (2 lbs.). The wires must be long enough for the canopy to be lifted in the front for a min. 10 cm (4 in.) before the wires are tight. Equipment shall only be mounted at the fastening threads in the canopy frame provided by the design (if existent) or at the instrument cover (glare shield).
Max. mass of the equipment: 1 kg (2 lbs.).

Max. mass of all instruments and items of equipment in the instrument panel: 6.7 kg <14.8 lbs.>.

Caution: After installation raise a new weight and balance report.

7 List of special tools

a) Special Equipment

Tool	Drawing	Function
Ratchet key	4F02-15	for assembly / disassembly of elevator and wing tips
Filling funnel and tube with wire meshing and wing holder	Z201	for filling of water ballast system through discharge openings, use together with adapters
Water tank braceable wing adapter	4BF-137	for filling of wing tanks through discharge openings together with filling funnel with wire meshing
Pin diameter 6 mm with knob	W36	For removal of the wing tip extensions

b) Tools

1. Open end wrenches

Width over flats 7, 8, 9, 10, 13mm

Width over flats 14, 17, 19, 22mm

2. Allen key (hexagon socket) wrenches size 5, 6, 8, 10 and 12mm

3. Spring scale, max. range 300 N (30 kg <67 lbs>)

4. Nicopress tool 64 – CGMP for oval sleeves and 51-MJ for stop sleeves.

5. Torque wrench

Torque range up to 50 Nm with sockets for hexagon heads, width over flats 10, 13, 17, 19mm, and spark plug socket, width over flats 21mm, as well as Allen key inserts sizes 3, 4, 5, 10mm.

6. Spark plug wrench, width over flats 21mm(13/16 in.)

8 Partlist

Please find the part no's of the control-system parts and of the metal fittings of the powerplant in the following diagrams.

8.1 Parts for the powerplant (only LS10-st)

a) necessary for the 25 hours inspection

- 40050360 Spark plug S36 (Bosch W5AC Electrode gap 0,5 mm <0,02 in>) with pressed on screw cap, marked by red dot on insulator.
- 60507571 Fuel filter

b) Spare parts

- 45002085 Spark plug cap Denso, 5kOhm
- 60510601 Ignition coil for SOLO 2350
- 45002081 Exhaust gasket, 1.5mm thick (2 units required)
- 45002071 Decompression valve (2 units installed)
- 45002088 Lift cylinder for LS8-t, HG7000-12-225-30, modified
- 45002038 Gas strut 600N for extension-retraction mechanism
- 45002039 Gas strut 100N for propeller stopper
- 45002074 Propeller stopper rubber stop

Shock mounts for engine installation

- 45002079 Upper engine shock mounts (2 units installed)
- 45002080 Lower engine shock mounts (2 units installed)

Fuel system

- 60507608 Fuel quick connector KL-006-2-SL007
(Coupling for re-fuelling line)
- 60507550 Drainer CAV 110 (1/8" NPT)
- Caution:** Exchange O-ring (Avgas type) as delivered with drain valve against part No. 60504402 !
- 60504402 O-Ring for Drainer CAV 110 (Mogas type)
- 30092049 Fuel hose PUR 3x1,5x6mm hydrolyse and microbe-resistant
- 30092050 Fuel hose PUR 5x1,5x8mm hydrolyse and microbe-resistant
- 60000103 Fuel hose PUR 6x1,5x9 hydrolyse and microbe-resistant
- 60000102 Fuel hose PUR 8x2x12 hydrolyse and microbe-resistant
- 30092051 Metalmesh inner dia. 8 mm (for fuel lines)
- 60507561 Electric fuel pump Facet 40106 (engine fed and re-fuelling)
- 60500164 Membranpump Bing
- 45000162 Fuel cock 4M1-034

Propeller attachment

- 45002052 Rubber stop for propeller

9.3 Annual Inspection Checklist

Annual Inspection Checklist 1/4

Serial No.:		Reg. Signs:		Year of Manuf.:	
	<u>Wings</u>		<u>15m/18m tips</u>		<u>Fuselage continued</u>
	Part No. : _____		Part No. : _____		Control connectors
	Shell: finish, dents, cracks		Shell: finish, dents, cracks		Trim system
	Spar stub		Spar ends		Trim operation + locking
	Root ribs and pins		Pins		Rudder Pedals
	Lift pin bushes		Skids		-Adjustment + locking
	Drain orifices		Assembly free from play		Rudder control cables
	Main pins		Locking		Ground connections
			Drain orifices		Backrest adjustment
			18m tip flaperons		-Upper end lock
	<u>Flaperons</u>		<u>Horizontal Tail</u>		-Lower end pins + bolt
	Part No. : _____		Part No. : _____		Trim weight holder
	Shell: finish, dents, cracks		Shell: finish, dents, cracks		-Fixing nut
	Drives at flaperons		Stabiliser ventilation		Nose hook fitting
	fixed hinge + washer		Elevator ventilation		-control
	Hinges		Elevator drive lever		Tail wheel
	Lateral hinge gaps		Hinges		Connecting means
	Lateral gaps to wing		Fin connection		Ballast dump system
	Sealings		Pins/bushes		Locking plate at the wingflap handle
	Ventilation		Sealing		
	<u>Air brakes</u>		<u>Fuselage</u>		<u>Tail fin battery box</u>
	bearings		Part No. : _____		battery box cover
	Corrosion at levers		Finish condition		Locking bow existent
	Cover springing		Shell: finish, dents, cracks		
	Drive at root rib		Drain orifices		<u>Tail fin tanks</u>
	Over centre-locking		Rudder mounting		Tail tank adapter existent
			Stabiliser mounting		Cable wear
	<u>Wing water system</u>		Tangential tubes		-Corrosion
	Control system		Lift pins		Valve operating ease
	<u>Tanks-</u>		Cockpit		Functioning
	-Externally tight		Seat		level indicator markings
	-Tight between tanks		Under seat		Dump time fin tank right (System 2)
	-Valve adjustment		Lap belt fixing at seat		(max. 115 s): _____
	Ventilation inner tank		Control stick		Dump time fin tank right(System 1)
	Ventilation centre tank		Elevator drive under seat		(max. 80 s): _____
	Ventilation outer tank		Flaperon syst. under seat		
			Air brake system		

Place: _____ Date: _____ Stamp: _____ Signature: _____

Annual Inspection Checklist 2/4

Serial No.:	Reg. Signs:	Year of Manuf.:
-------------	-------------	-----------------

<u>Canopy</u>	<u>Equipment</u>	<u>Adjustments</u>
Part No. : _____	Minimum instrumentation	Wings and horizontal tail
Locking mechanism	Additional Instrumentation	Tangential play
Emergency release funct.	Operating range marks	Zero position of controls
Side window	Limit marks	Control surface deflections
Ventilation system	Vacuum flasks	Air brake left+right equal
Canopy fixing system	Instrument lines	Air brake locking force
Gas strut operation	Instruments functioning	Control surface friction
LS latch (Röger hook)	Total energy unit	Control surf. free play
force: ____ (8-15 kg) (18-33 lbs)	<u>Systems free from leaks</u>	Landing gear locking
	Total pressure	Trim system function
<u>Rudder</u>	Static pressure	Harness function
Part No. : _____	T.E. system	“ Op.Limit: _____
Shell: finish, dents, cracks	Electrical wiring	Ballast system function
Ventilation openings	Battery + fitting	Absolutely tight?
Drive	Battery main fuse	
Fixed bearing + washer	Tail fin battery	<u>General</u>
Upper bearing	Tail fin battery main fuse	Registration signs
Clevis pins/split pins	Radio	Nationality marks
	Antenna system	Fireproof type placard
<u>Landing gear</u>	SWR: _____	External colour marking
Undercarriage + axle	Communication check	Placards accord. to MM
Tyre		Data placard
Spring mounting	<u>Tow hooks</u>	Compass deviation table
Bearings + joints	C.G. hook	Minimum cockpit load
Folding strut overcenter	-Function + automatic rel.	Flight Manual
Folding strut preset load	-Serial No.: _____	Maintenance Manual
Doors	-Op.Limit: _____	
Drive rods	Nose hook function	Cert. of Airworthiness
+ longitudinal Motion bearing	-Serial No.: _____	Registration form
Locking in cockpit	-Op.Limit: _____	Logbook notation
Wheel brake system	Release cable end play existent w. gear down	Inspection for increase of service time
	C.G. hook + drive	TN-AD-List in aircraft log updated
<u>Miscellaneous</u>	Ground conn. to contr. stick	Absence. of foreign matter
Baggage comp. cover		
Oxygen bottle receptacle		
Fixed ballast at front/rear		

Place: _____ Date: _____ Stamp: _____ Signature: _____

Höhensteuerung, Trimmung
Elevator control circuit, trim

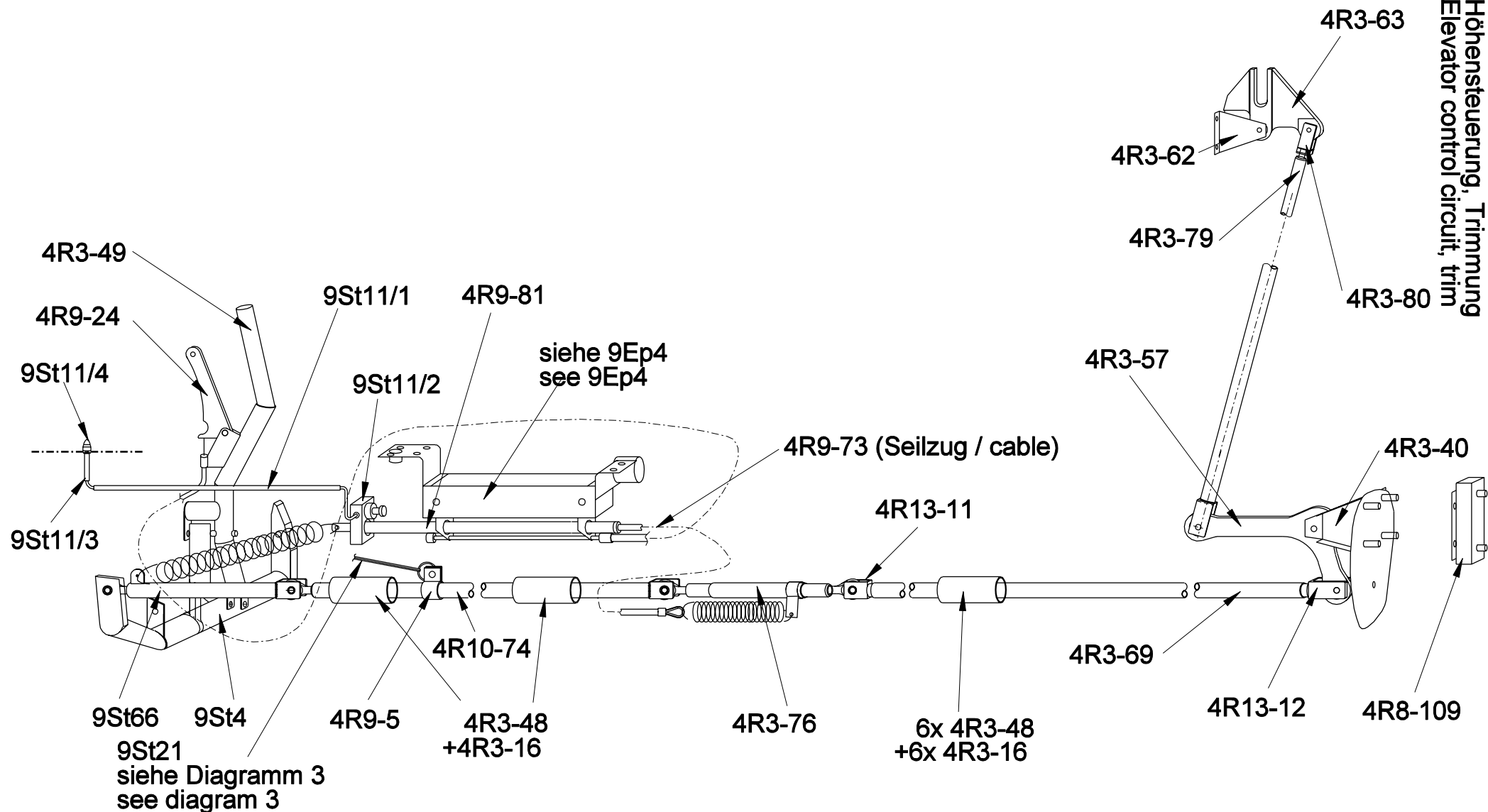
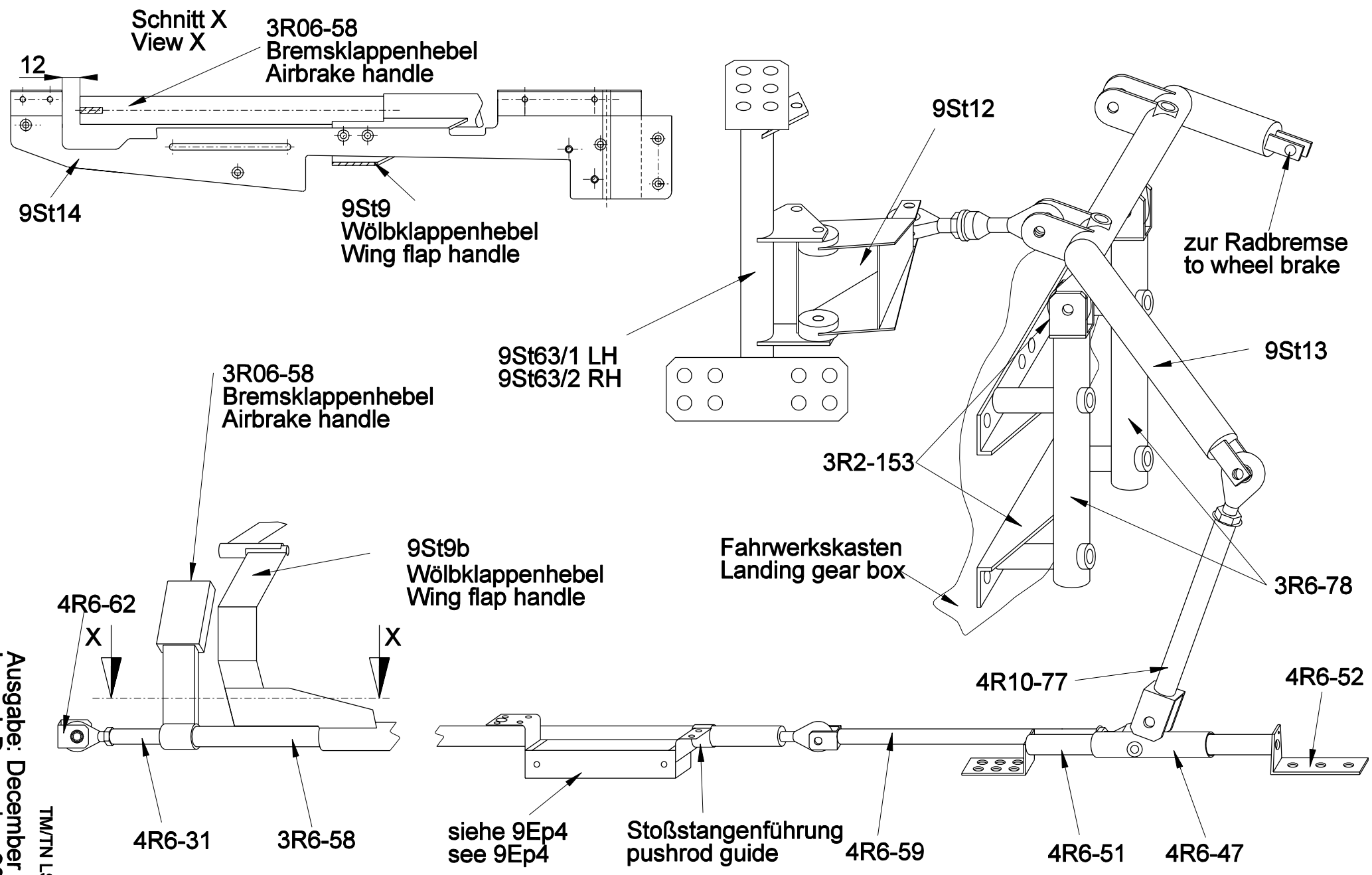
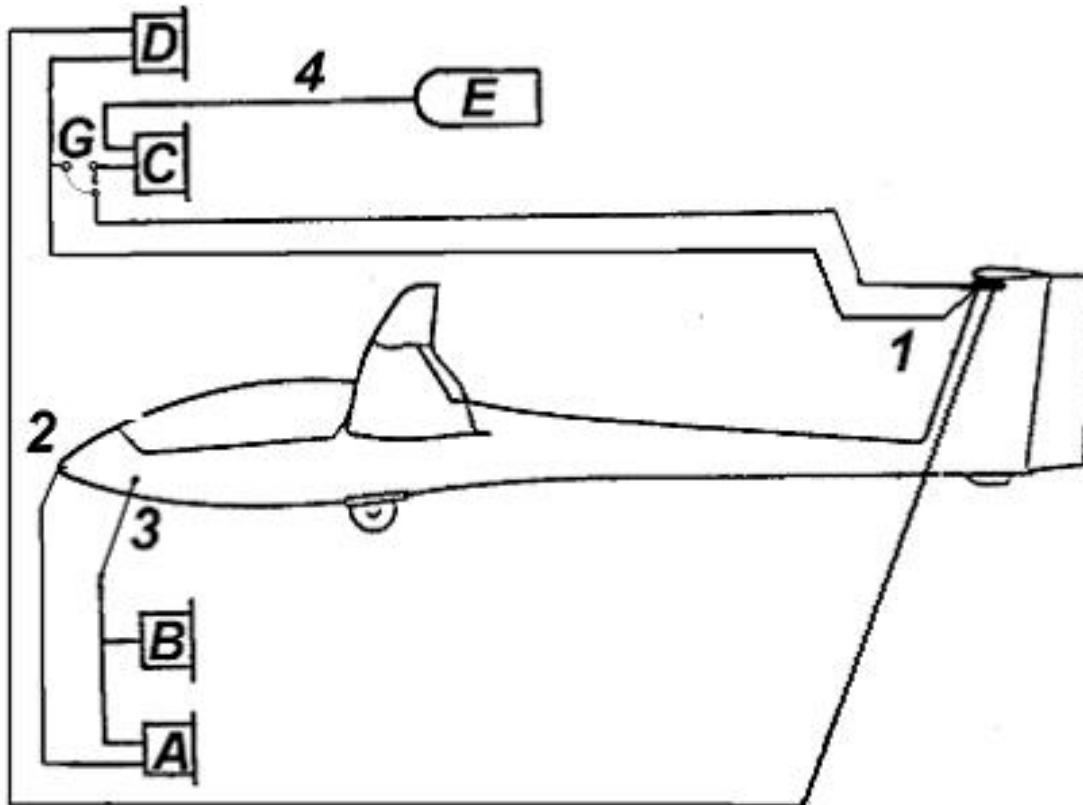


Diagramm 1
diagram 1





- 1 Multi Probe : Pitot-/Static-/TE pressure port
 2 Pitot pressure port at fuselage nose.
 3 Static pressure port for airspeed indicator and altimeter – forward fuselage sides.
 4 Vacuum Bottles.
- | | |
|--------------------------------|---|
| A ASI | E Capacity bottles for variometers |
| B Altimeter | G Variometer switch (Option): |
| C Variometer | TE (Soaring) / static (Engine operation) |
| D Electrical Variometer | (switch shown in „SOARING“ position) |

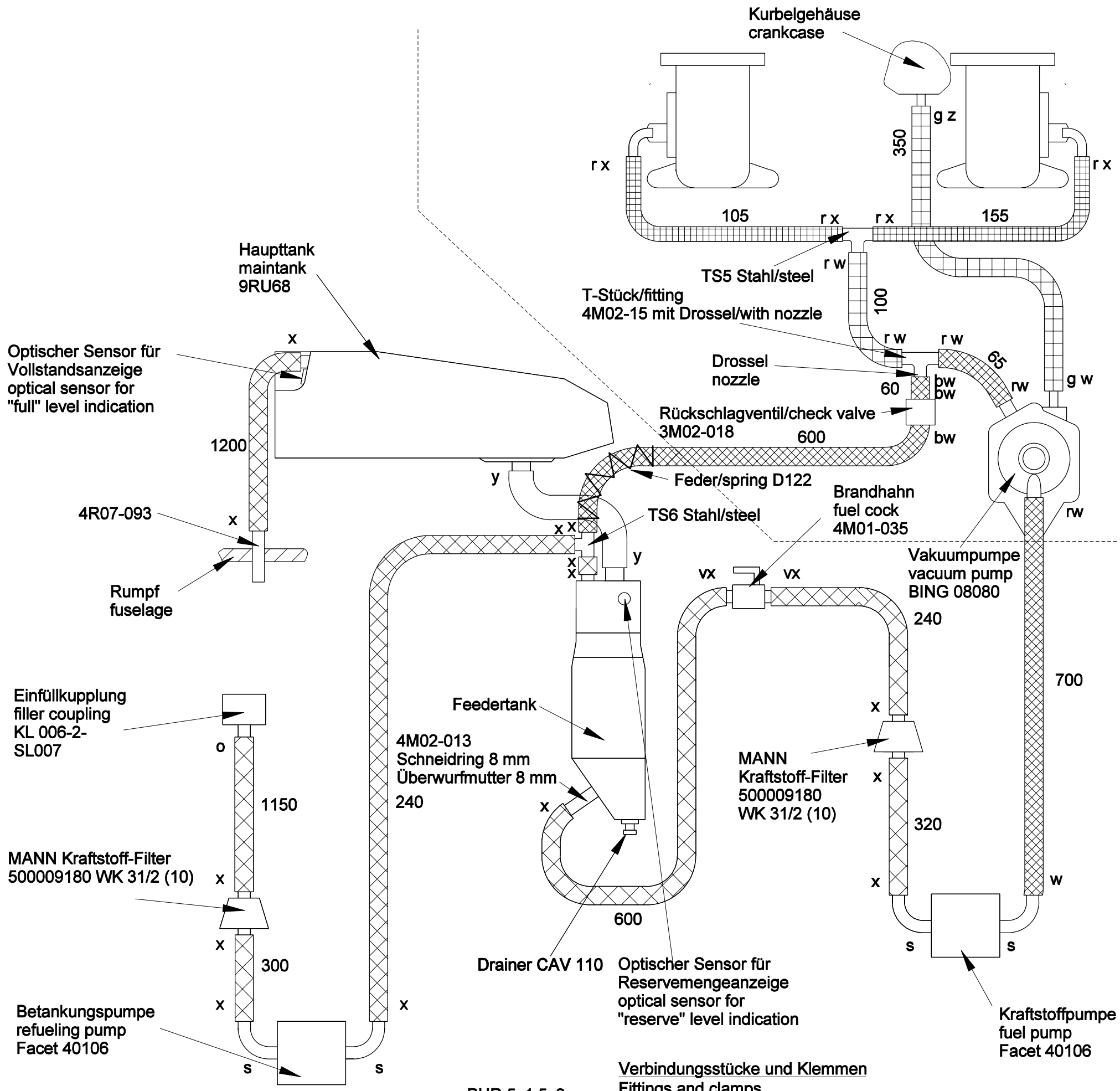
Colours of instrument lines:

- | | | |
|---|-----------------------------|---|
| 1 | Multi Probe: | |
| | Pitot | clear |
| | Static | red |
| | TE | green |
| 2 | Front total pressure | yellow |
| 3 | Static pressure front | blue (for ASI and altimeter only!) |
| 4 | Variometer capacity bottles | clear Ø8 mm (0,315 in) |

Note: To preserve the sealing-rings inside the holder for the Multi Probe, the end of the probe should be greased with e.g. Vaseline from time to time.

Kraftstoffsystem bis W.Nr. L10-014 Fuel system up to ser. no. L10-014

Diagramm 22 diagram 22



Kraftstoffschläuche / fuel hoses
Alle PUR Schläuche hydrolyse und mikrobebeständig

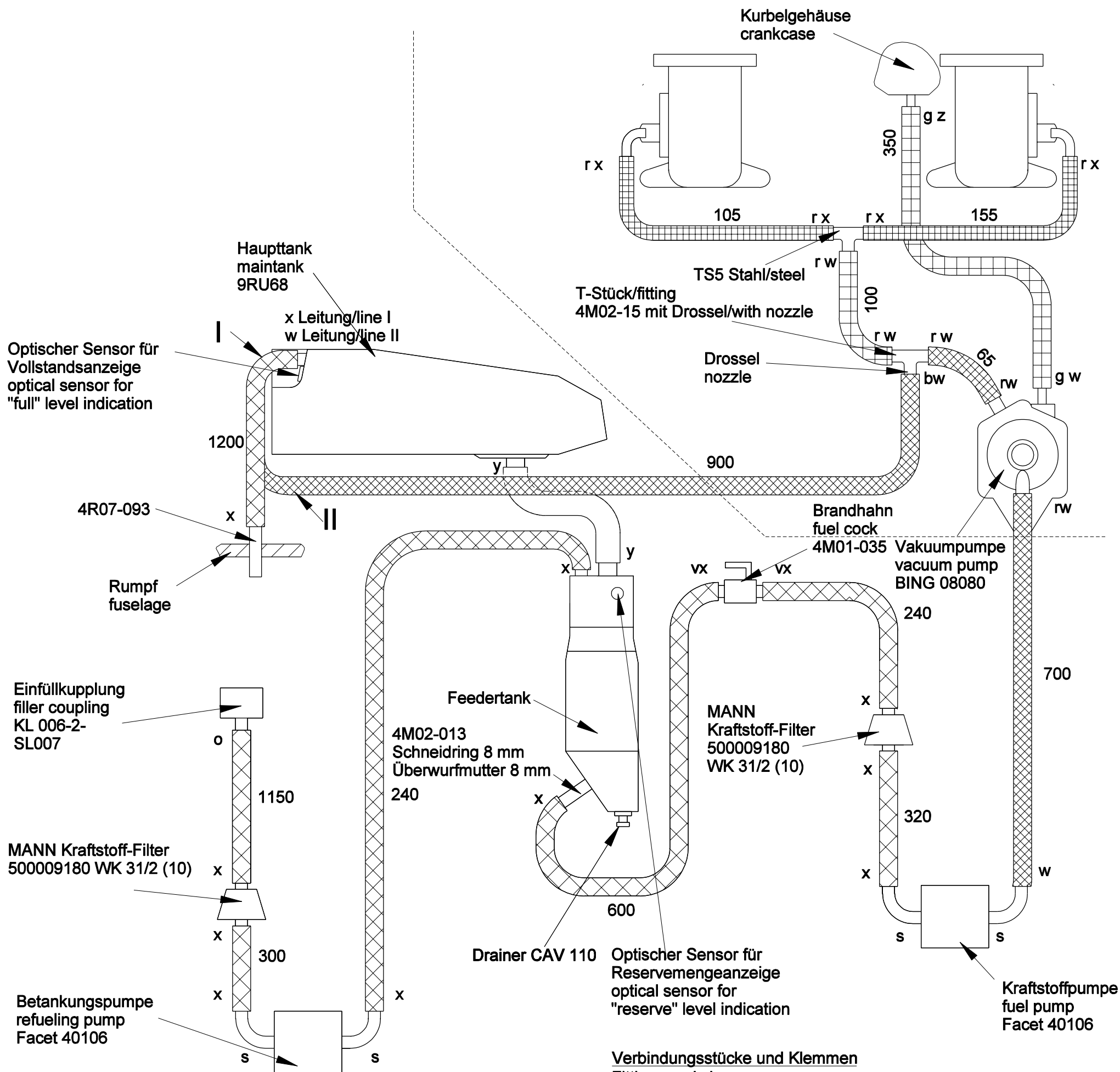
PUR 6x1,5x9 mm	PUR 6x1,5x9 mm	PUR 8x2x12 mm
Schlauch ohne Ummantelung blank fuel hose	mit Metallgeflecht überzogen metal braided	Schlauch ohne Ummantelung blank fuel hose

Verbindungsstücke und Klemmen
Fittings and clamps

PUR 5x1,5x8 mm		r	roter Schrumpfschlauch/red heat shrink-tubing, 30mm lang
	mit Metallgeflecht überzogen metal braided	g	gelber Schrumpfschlauch/yellow heat shrink-tubing, 30mm lang
PUR 3x1,5x6 mm		b	blauer Schrumpfschlauch/blue heat shrink-tubing, 30mm lang
	mit Metallgeflecht überzogen metal braided	s	Winkelstück/elbow fitting WSAG 06 1/8" Messing/brass
		u	Einschraubnippel/nipple SAG 06/R1/8"
		v	Einschraubnippel/nipple 1/4"
		w	Schlauchschelle/hose clamp S70/2
		x	Schlauchschelle/hose clamp S70/1
		y	Schlauchschelle/hose clamp S70/3
		z	Drahtsicherung (0,8 mm Draht) /safety wire
		o	Ohrklemme/press clamp 113

Kraftstoffsystem ab W.Nr. LS10-015 Fuel system from ser. no. L10-015 on

Diagramm 23 diagram 23



Kraftstoffschläuche / fuel hoses
Alle PUR Schläuche hydrolyse und mikrobienbeständig

PUR 6x1,5x9 mm	PUR 6x1,5x9 mm	PUR 8x2x12 mm
Schlauch ohne Ummantelung blank fuel hose	mit Metallgeflecht überzogen metal braided	Schlauch ohne Ummantelung blank fuel hose

PUR 5x1,5x8 mm

mit Metallgeflecht überzogen
metal braided

PUR 3x1,5x6 mm

mit Metallgeflecht überzogen
metal braided

Verbindungsstücke und Klemmen
Fittings and clamps

r	roter Schrumpfschlauch/red heat shrink-tubing, 30mm lang
g	gelber Schrumpfschlauch/yellow heat shrink-tubing, 30mm lang
b	blauer Schrumpfschlauch/blue heat shrink-tubing, 30mm lang
s	Winkelstück/elbow fitting WSAG 06 1/8" Messing/brass
u	Einschraubnippel/nipple SAG 06/R1/8"
v	Einschraubnippel/nipple 1/4"
w	Schlauchschelle/hose clamp S70/2
x	Schlauchschelle/hose clamp S70/1
y	Schlauchschelle/hose clamp S70/3
z	Drahtsicherung (0,8 mm Draht) /safety wire
o	Ohrklemme/press clamp 113