

- SUBJECT : Manual revision, relocation of the ignition electronic boxes and of the cooling liquid reservoir.
- EFFECTIVITY : a) DG-500M all serial no's
b) DG-500M serial no. 5E3M2 up to 5E33M17
- ACCOMPLISHMENT : Instructions 1 and 3 latest April 30st, 1992
Instruction 2 during every flight
- REASON : a) Manual revision
b) Due to the high vibration level at the present location the wires at the plugs to the ignition electronic boxes may fail.
This causes disturbance of the indications of the DEI in the rear cockpit at the beginning and loss of ignition when the wires fail completely.
A more favourable location for the boxes was found.
This allows also to move the cooling liquid reservoir to the front which makes the engine retaining cable deflector unnecessary.
- INSTRUCTIONS : 1. Exchange the following manual pages against the new pages issued February 1992.
Please note all changes which are marked by a black vertical line in the left hand margin.
Flight manual
0.1 record of revisions
0.3-0.5 effective pages
2.6 two stroke oil
4.10 position of the screwed joint of hose clamp
4.15 determination of take off distance
4.17 Winch launch
Maintenance manual
1 record of revisions
3,4 content
49 position of the screwed joint of the hose clamp
65 checking the ignition timing
67 ignition unit - trouble shooting
68 " " " "
88 ident no's corrected
89 " " amended
91 new type of fuel filter
93 proximity switch
digram 11 powerplant
2. Check during each flight if the display of the DEI in the rear cockpit is disturbed. This indicates failures of the wiring as described above.
If the indication is disturbed, it is prohibited to operate the engine, as long as instruction 3 is not completed.

3. Relocation of the ignition electronic boxes and of the cooling liquid reservoir according to working instruction No. 1 to TN 843/2.

MATERIAL : Manual pages see instruction 1
Working instruction no. 1 to TN 843/2
Drawings 5M2, 5M66, 5M67, 5V10
Material according to material list in
working instruction no. 1 to TN 843/2

WEIGHT AND
BALANCE : influence negligible

REMARKS : The instructions 1 and 2 may be executed by
th owner himself.
Instruction no. 3 is to be exeuted by the
manufacturer or by a licensed workshop and
to be inspected and entered in the aircraft
logs by a licensed inspector.

Bruchsal 4, date LBA - approved:
Febr. 19th, 1992 The German original of this TN has
been approved by the LBA under the
date of March 4th, 1992 and is
signed by Mr. Walter. The trans-
lation into English has been done by
best knowledge and judgement. In any
case of doubt the German original is
authoritative.

Author: *W. Walter*

Type certification inspector:

A. Lange

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**Working instruction no. 1 for
technical note no. 843/2.**

Part: 1 Relocation of the ignition electronic boxes.

A) Removal of the ignition boxes from the present location.

See diagram 11 maintenance manual, and drawings 5 M 66 and 5 M 67 for part-names.

1. Removal of the intake muffler.

- a) Remove the bolt which fixes the intake muffler to the propeller mountingplate. For this work use an allen key wrench with the short end shortened to a length of approx. 25mm (1 in.).
- b) Open the hose-clamp at the carburettor.
- c) Remove the intake muffler.

2. Remove all electrical plugs from the ignition boxes.

3. Removal of the ignition wires.

- a) Remove the spark-plug connectors.
- b) Cut off Ty-Raps.
- c) Remove the rubber caps from the ignition coils.
- d) Remove the ignition wires from the ignition coil.
- e) Unscrew the ignition wires from the spark-plug connector. The ignition cables will not be needed later.

4. Removal of the ignition boxes.

- a) Remove the 3 fixing screws, and take off the ignition boxes.
- b) Remove the engine retaining cable deflector.
- c) Remove the sheet-metal holders.
- d) Cut open and remove the rubber hoses from the struts 5 M 16. The deflector, the sheet-metal holders and the rubber hoses will not be needed later.

B) Preparation for the reinstalation of the ignition boxes in the new position.

1. Cut the threads for the new fitting 5 M 65.

- a) Unscrew the inner screw fixing the rubber shock mount to the engine mounting plate 5 M 8 (on both shock mounts).
- b) Mount the drilling pattern according to drawing 5 V 10 (no.1 at the front shock mount, and no. 2 at the rear shock mount) with M6 x 35 bolts.
- c) Drill holes diam. 5mm with an angular type drill. The holes have to go all the way through the engine mounting plate, but do not drill into the rubber of the rubber shock mounts.
- d) Remove the drilling patterns.

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e) Cut the threads M6.

CAUTION:

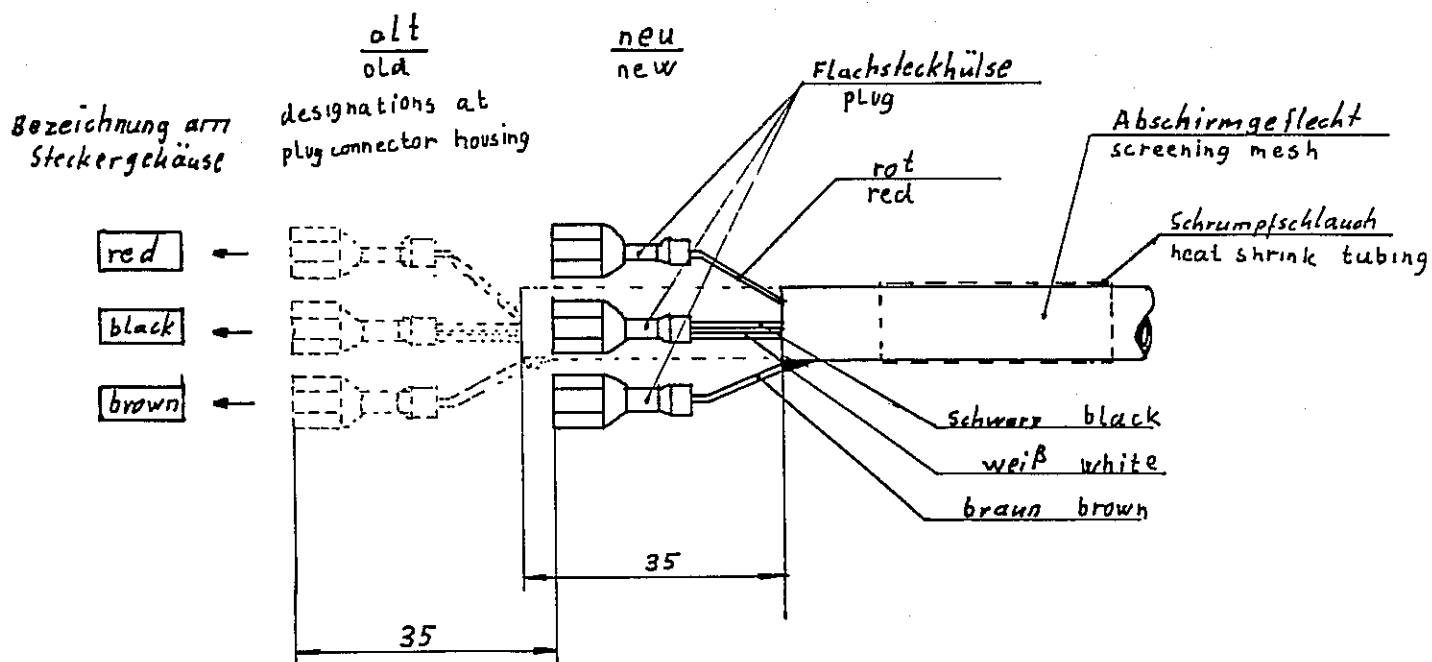
- use a ratchet because of the closeness to the engineblock.
- be careful that the tap does not break because of the eccentric load.
- use drill lubricant.
- the tap should not reach the spacer 5 M 65, as this may cause the tool to jam and break.

f) Deburr the thread with a counter-sinking tool, and clean it thoroughly.

g) Bend the oil-tube for the rotary valve gear 3 - 5 mm towards the engineblock. Hold the tube with pliers, and tap it carefully with a plastic hammer. Take care that the tube does not rotate in the glued joint with the engineblock. This can lead to leaks.

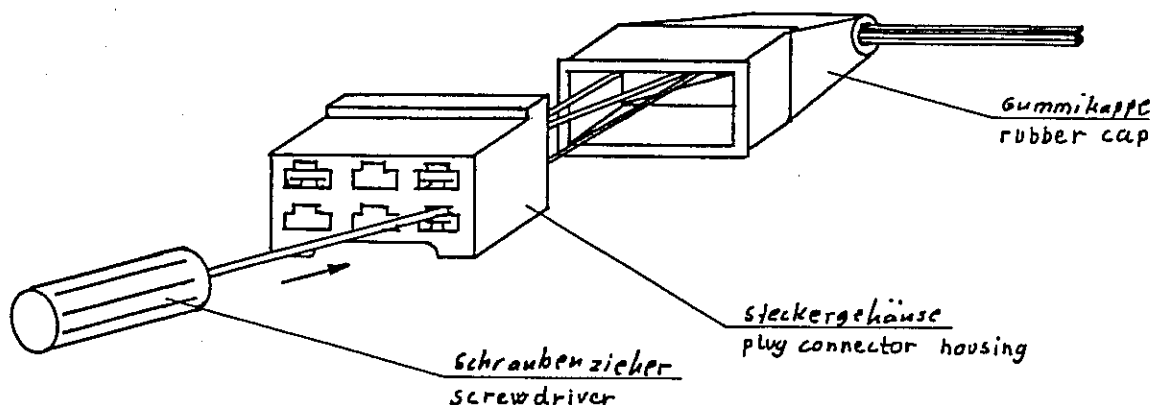
2. Run the new wiring from the ignition unit to the ignition-electronic boxes.

- a) Cut off the upper Ty-Raps (see drawing 5 M 66), so that the wiring is free up to the distributor. Fix the other wires again with new Ty-Raps.
- b) Remove the rubbercaps from the plug-connector housing.
- c) Cut off the plugs from the wires, and shorten the cable according to the sketch.



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- d) Remove the plugs from the plug-connector housing. Use a small screwdriver to bend down the holding-flap of the plugs (see sketch).



- e) Shorten the screening-mesh according to the sketch on the previous page. Solder a piece of brown cable to the mesh.
f) Push a piece of heat-shrink tubing (diam 1/2" and 30 mm long) and the rubber-cap onto the screening-mesh.
g) Crimp on new plugs with crimp-plier WZ 25. The black and the white cables come together in one plug (see sketch).
h) Insert the plugs according to the markings on the plug-connector housing (make sure they snap). Install the plug with the black and the white wires in the position marked "black" (see sketch).
i) Push the rubber-caps back in place.
j) Locate the piece of heat shrink tubing (see f) so that it covers the end of the screening mesh and the end of the rubber cap. Take care when shrinking, that the rubber-cap doesn't melt.
k) Run the wiring so that it runs downwards from the distributor. Fix it with 2-3 Ty-Raps according to drawing 5 M 66.

C) Installation of the ignition electronic boxes and the ignition wires.

1. Installation of the ignition-boxes.

- a) Remove one ignition-coil at each ignition box, turn it 180° and reinstall it according to drawing 5 M 66. **Caution: Do not damage or squeeze the thin cables.**
b) Install the two ignition-boxes back to back on the sheet-metal holder 5 M 65 (see drawing 5 M 66). The old bolts and washers can be used again, but the selflocking nuts have to be replaced by new ones.
c) Screw the whole arrangement with M6 x 35 bolts to the plate 5 M 8, and secure the bolts with Loctite 72b (672).
d) Make sure that the ignition-boxes can move freely in the ultra-bushings without touching any other parts.

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- e) Plug the plug connector housings to the ignition-boxes and push the rubber-caps in place. The caps must snap into the notches at the ignition boxes.

2. Preparing the ignition wires.

- a) Cut 4 pieces of ignition wire to a length of 400mm each.
- b) Screw a spark-plug connector to each cable. Use three of the former connectors and one new, similar connector.
- c) Cut a piece of screening-mesh to a length of approx. 1,5 times the length of an ignition wire.
- d) Enlarge the diameter of the mesh by pushing a rod with a diameter of about 8mm and a length of at least 500mm through the mesh. The rod has to be made conical at one end. When the mesh is enlarged to the correct diameter, cut it to the length of the ignition wire.
- e) Push the mesh onto the ignition wire. The mesh also has to be pushed onto the metal-housing of the spark-plug connector. By doing this, the mesh-end probably has to be cut open at one side to reach the diameter of the housing.
- f) Clamp the mesh to the housing with a hose clamp. Make sure that electrical contact exists.
- g) Shrink a piece of 1" heat-shrink tubing (length 60mm) over the place of attachment.
- h) Push a 1/2" heat-shrink tubing (length 30mm) onto the mesh.
- i) Push a rubber-cap onto the free end of the ignition-cable, and glue the mesh to the cap with silicone (see drawing 5 M 66).
- j) Move the heat-shrink tubing in place over the joint. Be careful when shrinking that the rubber-cap does not melt. The rubber-cap must be able to move freely on the ignition wire.
- k) Follow this procedure on all 4 ignition wires.

3. Installation of the ignition wires.

- a) Replace the rear spark plug (seen in direction of flight) with a spark plug of type NGK B8ES (with screw nipple screwed on).
- b) Screw the free ends of the ignition wires to the ignition-coils.
- c) Push the rubber-caps in place.
- d) Run the wires according to drawing 5 M 66 and connect the spark-plug connectors.
- e) Fix the wires with Ty-Raps according to drawing 5 M 66. **Caution: The throttle-cable must be allowed to move freely.**
- f) Reinstall the intake-muffler. Use a new selflocking nut.

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Part: 2 Relocation of the cooling-liquid reservoir.

1. Remove the engine retaining cable deflector.
2. Open the hose-clamp at the tank-cap, and unscrew the cap.
3. Remove the sheet-metal holder with the tank, and pour the cooling liquid into a canister and keep it for later use. The cooling-system is not totally emptied by this procedure, and does not have to be bled when refilling the system. Reinstall the front bolt, and secure it with Loctite 72 b.
4. Unscrew the tank from the sheet-metal holder. For this work a 24mm socket-wrench turned down to an outside-diameter of 31mm and an extension-piece are needed. The sheet-metal holder will not be used again.
5. Drill the hole in the propeller mountingplate 5 M 2 according to the drawing 5 M 2, modification a .
6. Remove the right, front cylinderhead-nut (see drawing 5 M 67).
7. Install the bracket 5 M 68/1, and screw on the cylinderhead-nut without tightening.
8. Insert an allen key bolt M6 x 35 with a distance-washer 5 M 68/2 according to drawing 5 M 67. Screw on the selflocking nut without tightening.
9. Tighten the cylinderhead-nut with a torque of 22 Nm (16 ftlb). Then tighten the selflocking nut.
10. Turn, grind or saw off 3mm from the top of the tank-cap.
11. Install the expansion tank according to drawing 5 M 57 (no distance-washer!). Seal with silicone between the tank and the bracket.
12. Fill in cooling-liquid again.
13. Screw on the tank-cap and tighten the hose-clamp. The hose clamp which secures the cap of the cooling liquid reservoir must be mounted so that the screwed joint is in the front to prevent the engine restraining cables catching the screwed joint.

Part 3: Test-run.

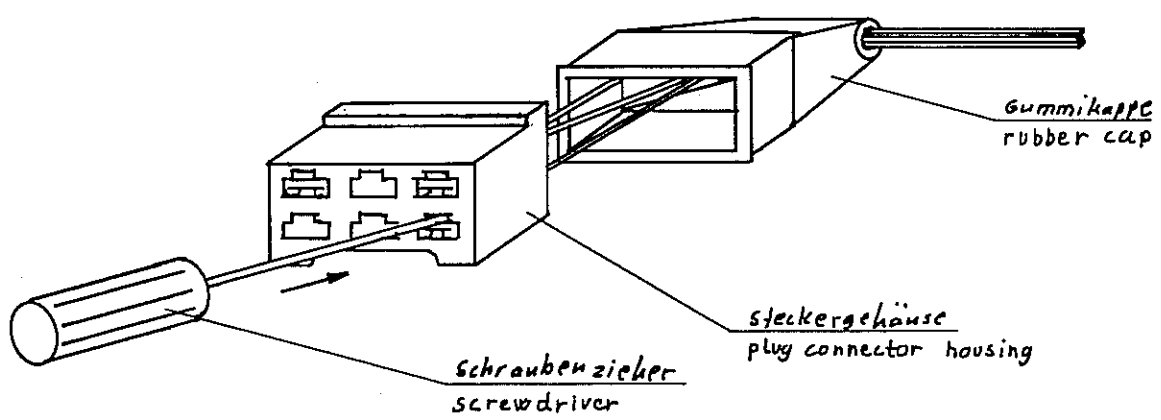
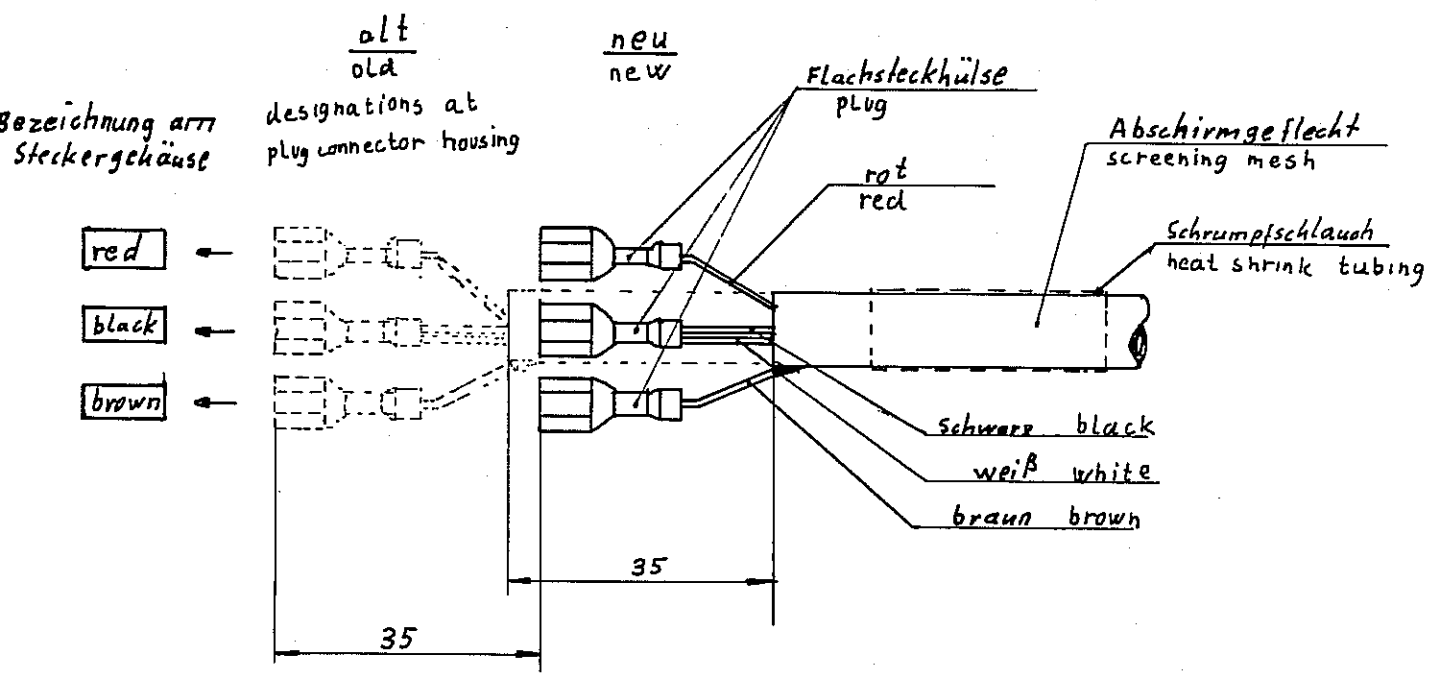
The test-running of the engine has to be done according to the maintenance manual sect. 3.5.1, items 36-39 and 41.

If you have problems with CHT please bleed the cooling system.

Working instruction no. 1 for
technical note no. 843/2.

Part 4: Material list

Amount:	designation:
1	Sheet-metal holder 5 M 65
2	Bush 5 M 66/1
1	Bracket 5 M 68/1
1	Distance-washer 5 M 68/2
1	Spark-plug connector Bosch 0356351032 1k Ohm
1	Spark-plug NGK B8ES with screw nipple
4	hose clamp NR 170, diam. 17mm
ca.2500mm	Screening-mesh, 1 Ohm, 63000010000
ca.1600mm	Ignition-cable 6181090100
ca.200mm	Heat-shrink tubing 1/2"
ca.250mm	Heat-shrink tubing 1"
8	Selflocking nuts M6 DIN 985.8 zn
6	Plug 4,0 - 6,0 6,3mm (Würth 5020)
1	Allen key bolt M6 x 35 DIN 931 8.8 zn
2	Bolts M6 x 35 DIN 931 8.8 zn
6	Washers 6,4 DIN 125 stzn
12	Ty-Raps 4,8 x 360



5M2

5M29

hose clamp Zebra 40-60

Ring fitting FAG A0356

hose clamp Zebra 8-12

5M68/1

5M4

valve case Fa. Blau KG

retaining ring 48 DIN 472

5M29/2

O-Ring Würrth 46801430

expansion tank FAG A 0142.1

strainer FAG A 0157

sealed with silicone

copper seal FAG A0750

hollow type bolt FAG A 0025

self locking nut M6 DIN 985, 8 ZH

washer 6,4 DIN 125 Stzh

5M68/2

allen key bolt M6 x 30 DIN 912 68 ZH

connection to cylinder head

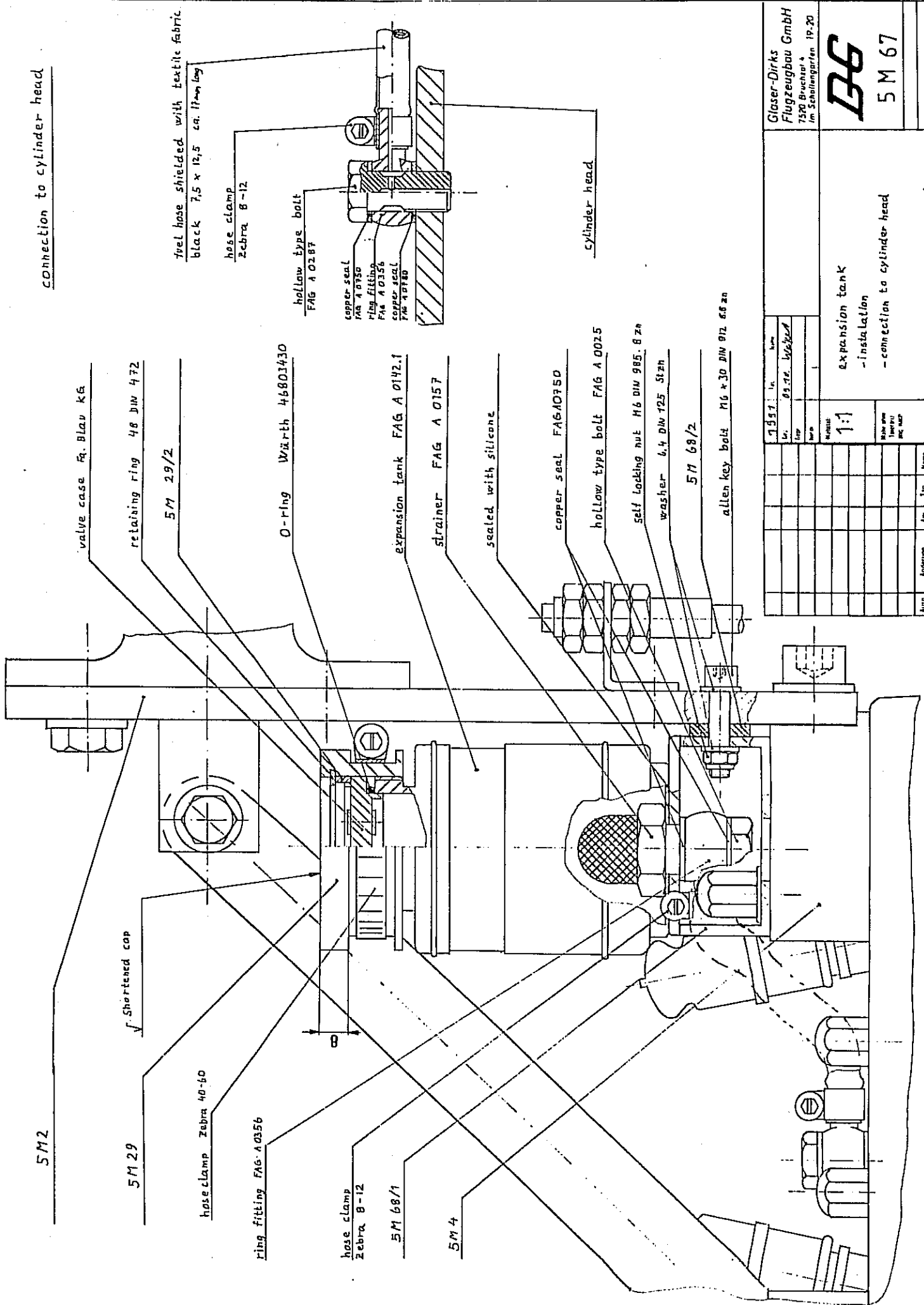
fuel hose shielded with textile fabric black 7,5 x 12,5 ca. 17cm long

hose clamp Zebra 8-12

hollow type bolt FAG A 0287

copper seal FAG A 0750
ring fitting FAG A 0356
copper seal FAG A 0750

cylinder head



1951		Name	
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GG

5 M 67

expansion tank
- installation
- connection to cylinder head

