

Repair instructions for the diamond core drill DD3-152

I. General

- (a) The diamond core drill should only be repaired by authorized service centre. The following explanations are in accordance with the spare parts list DD3-152 .
- (b)  **To avoid electric shock, unplug the drill from the power supply before attempting service!**

II. Dismantling the diamond core drill

1. Motor Section

- ◆ At first remove the additional handle (73). After that purge the gear oil from gearbox by loosening cap screw 1/8" (44) and fill the gear oil in a proper container. Then loose the four screws 5,5x50 (46) and remove motor with gear bearing shield from gearbox. Remove the gearbox seal (32).
- ◆ To open the handle halves (12) remove the eight self-tapping screws 4,2x22 (29). As next loosen two self-tapping screws 5,5x19 (21) and two self-tapping screws 4,8x38 (14) fixing the right handle half on motor housing (3). Take off the upper handle half and deinstall switch (24), capacitor (22), line cord (25), and cable grommet (26).
- ◆ Dismantle the left handle half from motor housing. Now exchange of circuit board (15) is possible. Disconnect the circuit board (15) from stator (2) (2x coil winding, 2x PTC thermistor) and release the two self-tapping screws 3,9x9,5 (16).
- ◆ Take out the carbon brushes (7). Subsequently, lift the gear bearing shield (31) and the rotor (1) together out of motor housing using two mounting levers. Loose the two machine screws M4x16 (11) and press the rotor and the shaft seal (34) out of the gear bearing shield with pressing out facility.
- ◆ Now the rotor (1) can be checked and exchanged if it is necessary. Take care of the bearings and the correct position of the bearing cap (9). The removal of bearings from the rotor shaft requires a pulling off facility.
- ◆ To exchange the motor housing (3) do the following. Disconnect the stator (2) from brushes. Unscrew the brush holders (6) from motor housing and put them away. Take the air-guiding ring (4) out of the motor housing and press out the stator.

2. Gearing Section

- ◆ Start dismantling gear by taking out the clutch (complete) (53). The torque of safety clutch must be set at 16 Nm till 18 Nm. A special fixture is used to determine the torque setting. Don't built in if not catching these values.
- ◆ Before deinstall the switching (77) unlock circlip (71) and remove loose wheel 2 (70). After loosening of cheese-head screw M5x12 (20) take off the gear lever (18) and press out the switch button (78). Check rubber round ring (80) for damaging.

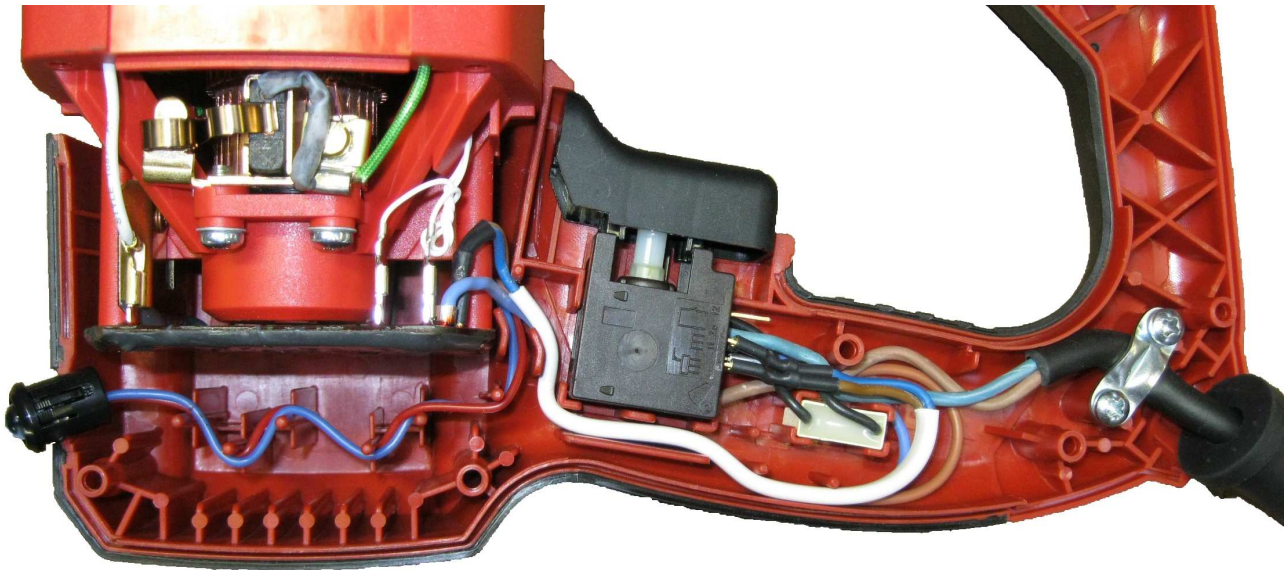
- ◆ Now pull out switch-actuating wheel (69) and pay attention to ball (58) and compression spring (57). Remove the key (56) from spindle and unlock circlip (68) using special pliers to remove loose wheel 1 (67).
- ◆ Next unlock snap ring (60) and press out spindle (54) with ball bearing (59). Exchange of ball bearing (59) is possible by unlocking snap ring (61) and press spindle from ball bearing.
- ◆ Take care while exchanging shaft seals! Do not scratch the bearing for seals in the gearbox housing. It would be permeable for gear oil. At first unlock snap ring (62) and press out the shaft seal (66) opposed drilling direction using a bar of diameter 26mm.
- ◆ Then press out shaft seal (63) and pull out the two scraper (64) (brass discs) and the spacer block (65). Last pull out shaft seal (72) with special tool.
- ◆ Notice: If it is necessary to dismantle the prism block (40) gear oil can leak, when the gearbox housing is filled with gear oil! Use Loctite screw glue on the screws M10x25 (43) for assembling the prism block (40).



III. Assembling the diamond core drill

1. Motor Section

- ◆ Assembly starts with the motor housing (3). Press in the stator (2) without squeezing any wires. After that screw the brush holders (6) on motor housing using spring washers (5) and screws ZM4x12 (7). Screw brushes (7) and wires of stator on the brush holders (6).
- ◆ Now insert the air-guiding ring (4).
- ◆ In the next step press the greased shaft seal 15x21x3 (34) and the rotor (complete) (1) in the gear bearing shield (31) and lock the rotor with two machine screws M4x16 (11), toothed washer, washer and round ring. These will be set in with silicone glue for sealing. For better assembly the bearing cap (9) can be sprayed slightly with Würth Carburettor Cleaner. Press the prepared arrangement in motor housing exactly. The rotor should be movable easily. No wires must touch the rotor! Then put in the brushes (7).
- ◆ Continue assembly with attaching the circuit board (15) to the motor housing. Check the back side of circuit board of full covering with black protection layer. Connect the circuit board (16) with wires of stator (2) (2x coil winding, 2x PTC thermistor) and the control wire.
- ◆ After that screw on the left handle half (12) on motor housing and mount switch (24) with capacitor (22) and line cord (25) with cable grommet (26). Do all electric connection – switch/circuit board, switch/line cord, switch/control wire (see VI. Wiring Diagram). Lay the wires for LED along the plastic pins and set the LED in LED-holder (41) in the gap of handle half (12). Attention, all wires must be laying exactly without any squeezing!



- ◆ Finally mount the right handle half (12) and check the correct seat of LED-holder (41) in the hole between the handle halves.

2. Gearing Section

- ◆ At first insert greased shaft seal (72) into the gearbox housing. After inserting [scraper – spacer block – scraper] (64-65-64) press in greased shaft seal (63) and lock with snap ring 47/1,75 (62). In drilling direction affix the shaft seal (66).
- ◆ Next press work spindle (54) in ball bearing (59) and secure it with snap ring (61). Press this arrangement in gearbox housing carefully. Fit in the snap ring (60).
- ◆ Now slide loose wheel 1 (67) on spindle and lock with circlip SW 18 (68). Insert key 5x5x40 (56), compression spring (57) and ball (58) in mid spindle hole and push over the switch-actuating wheel (69). Thereby thrust a bar through gearbox housing side hole to press in the ball and slide over the switch-actuating wheel.
- ◆ Then put the switching (77) in the gearbox housing and mount the gear lever (18) by screwing on with cheese-head screw M5x12 (20). Use screw fixing glue. Pay attention to the correct position of the gear lever straight pin (19) in the notch of switch-actuating wheel. Test smooth running of the switch button. Now slide on loose wheel 2 (70) and secure it with circlip SW 14 (71).
- ◆ Take great care of the clutch (53)! Only use clutches matching the required torque setting values! Furthermore the loose clutch parts (49, 51) have to slide smooth on the clutch shaft (48) to guarantee the full functionality of the safety clutch. After checking the clutch put it in the gearbox housing.
- ◆ Now put the gearbox seal (32) on gear bearing shield (31) and mount the complete gearbox to motor assembly using the four screws 5,5x50 (46). Then fill 200ml of gear oil into gearbox housing and mount the cap screw 1/8" (44) (use screw fixing glue) and sealing ring 1/8" (45). Finally mount the additional handle (73).

IV. Checklist for testing the machine

- Check for correct assembly!
- Check the functionality of the machine (first, second and third gear)!
- Test speed-control in different switch positions!
- Test overload cutoff!
- Check isolation of machine with high voltage (1500V)!

V. Grease and Glue

	Produkt:	Verwendung:
1. Gearbox Oil	Lubcon Turmogearoil PE 150	200ml inside gearbox housing (39)
2. Seal Grease	Rhenus Norlith LZP 2	inside shaft seals (34, 63, 66, 72)
3. Silicone	Omnivisc 1002	Screw M4x16 (11) for sealing of gear bearing shield (31) fix LED in LED-holder (41)

VI. Wiring Diagram

