0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.5, 0.6, 4.14-4.16 diagrams 7, 11, 12	Manual revision TN413/2	September 2003
2	0.6, diagrams 1 and 11	Manual revision TN413/3	May 2004
3	0.4, 0.6, 1.9, diagram 7	Landing gear / over centre lock in extended position TN413/7	Nov. 2004
4	0.4, 0.5, 0.11, 2.6, 6.2, 6.4, 7.1	Manual revision TN413/8	January 2005
5	0.4 - 0.6, 0.10, 1.9, 1.10, 4.7-4.9, diagrams 17, 18	landing gear positive locking device TN1000/13	February 2008
6	0.4, 0.6, 0.10, 1.14 diagram 6a	ÄM 1000-02 Fin ballast tank valve and handle	March 2008
7	0.4, 0.5, 0.6, 1.2, 2.6, 4.2, 6.2, diagrams 3, 9, 11, remove page 2.7	Manual revision TN1000/16	May 2008
8	0.4, 0.5, 0.6, 0.10, 4.8, 4.9, diagram 7a	ÄM1000-04 production version of the positive locking device	Oct. 2008
9	0.4, 0.6, 0.10, diagrams 20-22, drawings 10E3, 10E4, enclosure 1	Electrically operated main landing gear TN1000/14	November 2008
10	0.6 and 0.10, diagram 21, Encl. 1 pages 2, 2a and 8. drawing 10E4 issue E	Electrically operated landing gear, device to provide higher current for resetting the emergency extension gas strut TN1000/19	October 2010

0.4 List of effective pages (continued)

diagram	issued	replaced/	replaced/	replaced/
1	Nov. 2001	May 2004		
2	Nov. 2001			
3	Nov. 2001	May 2008		
4	Nov. 2001			
5	Nov. 2001			
6	Nov. 2001	March 2008	March 2008 Not valid for 10-101, and from 10-128 on	
	March 2008			
7	Nov. 2001	Sept. 2003	Nov. 2004	
7a	Oct. 2008			
8	Nov. 2001			
9	Nov. 2001	Jan. 2008		
10	Nov. 2001			
11	Nov. 2001	Sept. 2003	May 2004	May 2008
12	Nov. 2001	Sept. 2003		
17	Febr. 2008			
18	Febr. 2008			
20	Nov. 2008			
21	Nov. 2008	Oct. 2010		
22	Nov. 2008			
5EP34	25.01.90			
5EP50	17.12.98			
5V18	14.10.94			
10FW2	5.10.99			
10E3	28.11.2008			
10E4	20.10.08			
10E4	8.10.10			
issue E				
Encl. 1	Nov. 2008	Page 2, 2a, 8 Oct. 2010		

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
6a	Waterballast system 10-101, from 10-128 on
7	Landing gear, hydraulic wheel brake (Version without nose wheel) up to ser. No. 10-132
7a	Landing gear, hydraulic wheel brake (Version without nose wheel) from ser. No. 10-133 on
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)
17	Landing gear positive locking device TN1000/13, no more valid from ser. No. 10-133 on
18	actuation unit LG locking device, differences to diagr. 12 for TN1000/13 and from ser. no. 10-133 on
20	Electrically operated main landing gear (in landing gear box)
21	Electrically operated main landing gear (outside landing gear box)
22	Placards electrically operated main landing gear
5EP34	Installation plan Dräger oxygen system
5EP50	Installation plan ELT ACK
5V18	Tool for airbrake adjustment
10FW2	Spring leg (landing gear)
10E3	Wiring plan DG-1000S with electrically operated main landing gear
10E4	Wiring plan electrically operated main landing gear TN1000/14
10E4 issue E	Wiring plan electrically operated main landing gear TN1000/19
Encl. 1	Electrically operated main landing gear

1.6.5.2 Adjustment / limit switches

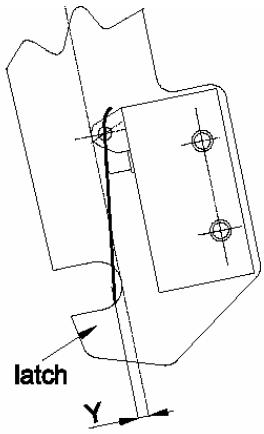
With the electrically operated landing gear only the limit switches have to be adjusted

a) Limit switch landing gear extended

1. Extend the landing gear electrically and check if the drag struts 10FW102 and the struts of the rear fork 10FW91 touch each other at their joint hinge point.
2. Apply a force of 100 N (2 lbs.) to the hinge point perpendicular to the centre line of the struts in upward direction. The system should be so stiff that you can move the hinge point no more than 2 mm (0.08 in.) out of line.
3. If it is possible to move the hinge point more than 2 mm, the limit switch must be adjusted. To accomplish this you have to bend the arm of the switch accordingly. The limit switch is mounted on the landing gear box and is activated by the lever 10FW108.
4. Retract the landing gear a small amount, extend again and check if the lower green control light starts shining. If not, the arm was bent too faar.
5. If the adjustment is correct, retract the landing gear and extend via the emergency system. Check if the lower green control light starts shining. If not, the arm was bent too faar. After adjustment repeat the check according to item 2.

b) Limit switch landing gear retracted

The spindle drive must be shut off in the retracted position when the bolt at the left drag strut 10FW102 engages in the notch of the left latch on shaft 10FW109 and activates the limit switch which is mounted to the latch.
Check: Activate the limit switch. The distance Y shall be 3 - 3 mm (0.08 – 0.12 in.) when the switch switches.
If necessary adjust the switch by bending it's arm.



c) Limit switch gas strut (emergency extension system)

This switch (position 12 in diagram 21) is mounted to the upper end of the gas-strut at bracket 10FW120. When resetting the gas strut the spindle drive must be stopped by the limit switch when the distance X in diagram 21 (from counter nut up to gas strut body) is 17 - 20 mm (0.67 – 0.8 in.). If necessary loosen the mounting screws and rotate the switch for adjustment.

d) Switch emergency extension system (optional with TN1000/19, standard from ser.no. 10-157 on)

This switch (position 20 in diagram 21) activates higher current for the spindle drive via the LG control unit to reset the gas-strut as long as one of the emergency extension handles is pulled. The switch is mounted to a bracket 10FW143 which is mounted to the bracket 10FW120 see item c). The switch is activated by the deblocking lever in the upper gas-strut end. In case the spindle drive has not enough power to reset the gas-strut check the function of the switch. To accomplish this disconnect the 2 wires from the switch. With one of the emergency extension handles pulled the resistance between these 2 terminals must be zero. If necessary adjust the switch by bending it's arm.

1.16.5.3 Free play

Free play between bell crank 10FW108 and shaft 10FW91 is not allowed.
If there is any free play tighten the two bolts M6x40 inside the landing gear box with a 10 mm open-end wrench. If there is still some free play, the bolts should be removed and the holes drilled out and reamed to diameter 8 H7. M 8 x 40 LN 9037 bolts should then be installed.

Section 8 Partlist

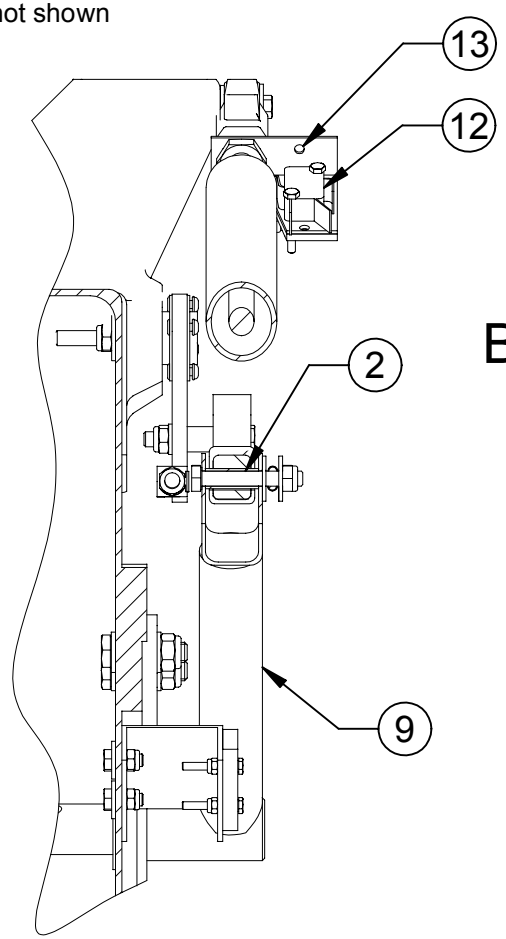
new Subsection

8.5 Parts for the electrically operated landing gear

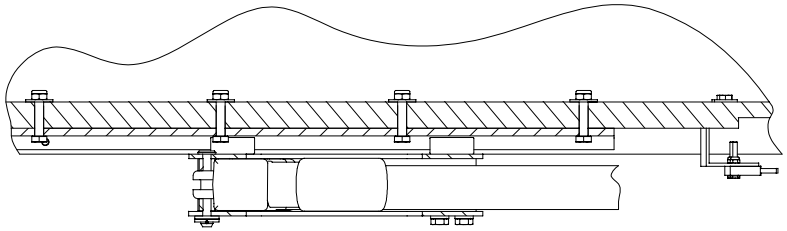
60000168 Lockable gas strut K0V2P-3-200-647-001/460N
41041400 Spindle drive completely assembled
60510463 Limit switch 164-(LG retracted)
60510464 Limit switch 164-574 (LG extended)
41040008 Limit switch XGG2-88-S20Z1 (gas strut)
60510484 Extension-retraction switch MTG 206 S (LG up, down)
60510375 Press button 12G2904 with cap 12G2910 black (LG up)

60510387 Circuit breaker ETA 4A
60510360 Toggle switch STA 106 D (selector switch Avionic)
60510476 Toggle switch APR20-647 H (main switch)
10180012 Battery Z01/2 (12V/12 Ah) with fuse 60510459
60510459 Fuse G 250V 5x20 / 16 A
60510865 Switch 1006.1511 **(optional with TN1000/19, standard from ser.no. 10-157 on)**

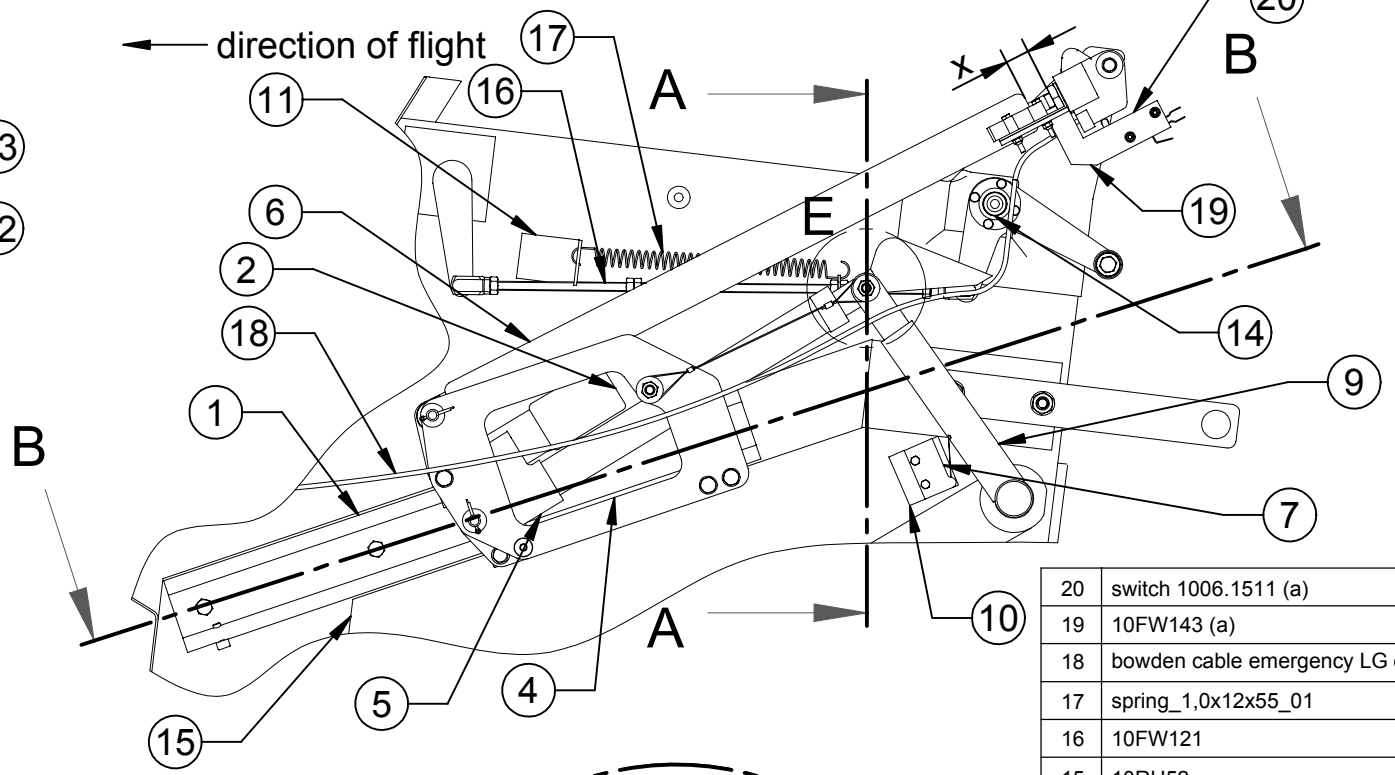
cable to the limit
switch gas strut
not shown



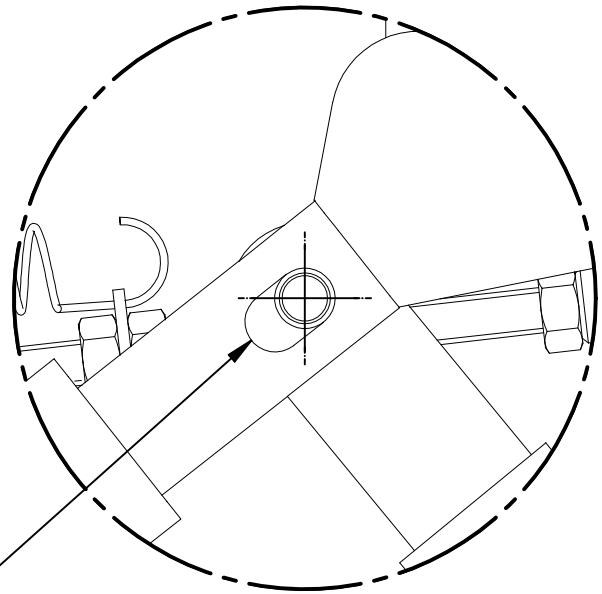
Schnitt A-A



Section B-B



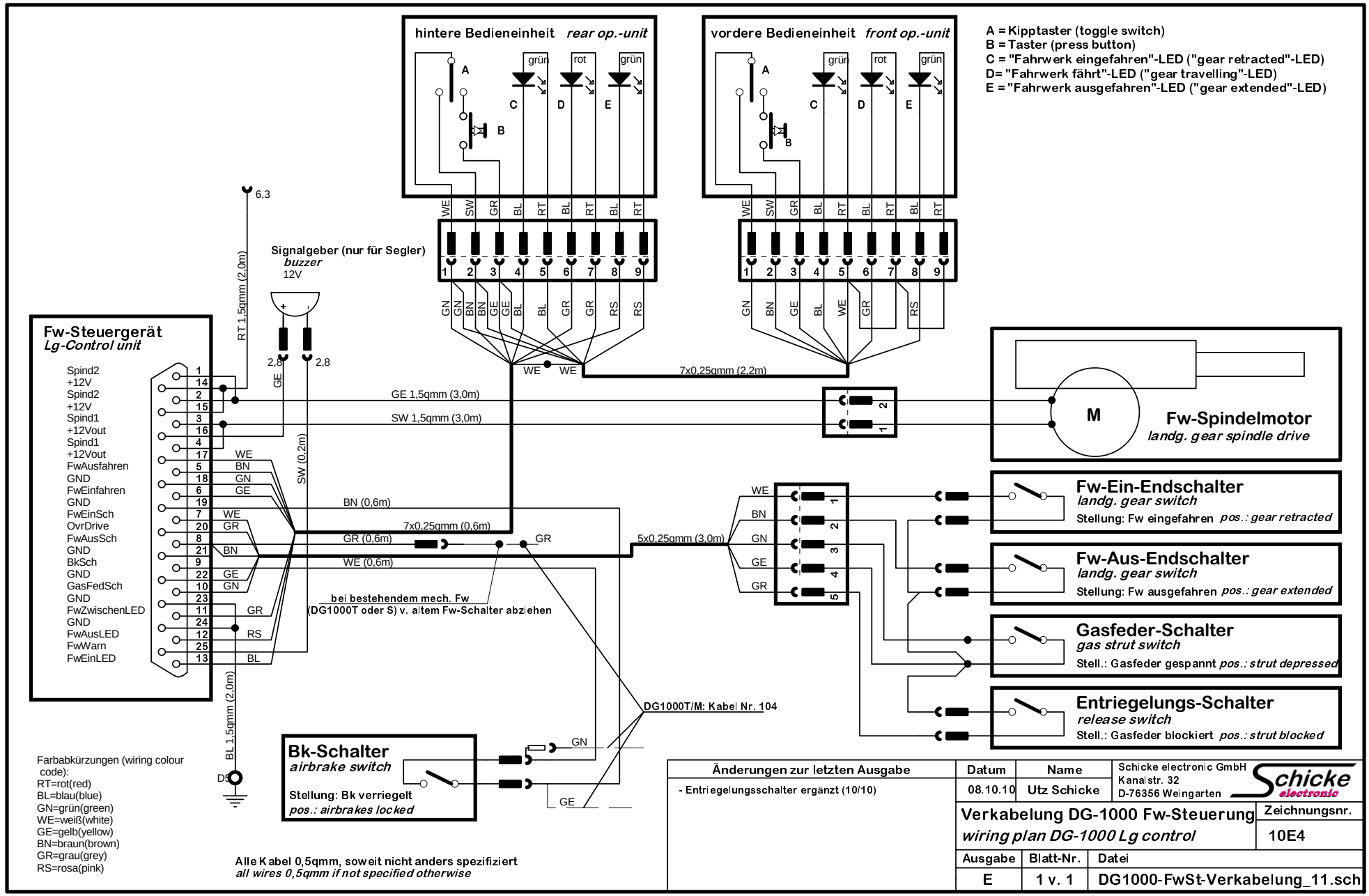
Detail E



elongated hole in head of spindle drive

No.	PART NAME	QTY
20	switch 1006.1511 (a)	1
19	10FW143 (a)	1
18	bowden cable emergency LG extension	1
17	spring_1,0x12x55_01	1
16	10FW121	1
15	10RU52	1
14	10FW130	1
13	10FW120	1
12	limit switch gas strut XGG2-88-S20Z1	1
11	10FW92	1
10	10FW93	1
9	10FW108	1
8	10FW90	1
7	limit switch LG ext. 164-574	1
6	K0V2P-3-200-647--001/460N	1
5	spindle drive 10 FW140	1
4	10FW98	1
3	10FW89	1
2	10FW135	1
1	10FW103	1

(a) only with TN1000/19 applied,
standard from ser. no. 10-157 on


hintere Bedieneinheit rear op.-unit
vordere Bedieneinheit front op.-unit
A = Kipptaster (toggle switch)
B = Taster (press button)
C = "Fahrwerk eingefahren"-LED ("gear retracted"-LED)
D= "Fahrwerk fährt"-LED ("gear travelling"-LED)
E = "Fahrwerk ausgefahren"-LED ("gear extended"-LED)
grün
rot
grün
WE SW GR BL RT BL RT BL RT
1 2 3 4 5 6 7 8 9
GN GN BN BN GE GE BL BL GR GR RS RS
GN BN GE BL WE GR RS
7x0,25qmm (2,2m)
6,3
RT 1,5qmm (2,0m)
Signalgeber (nur für Segler)
buzzer
12V
2,8
2,8
GE
SW (0,2m)
Fw-Steuergerät
Lg-Control unit
Spind2 +12V Spind2 +12V Spind1 +12Vout Spind1 +12Vout FwAusfahren GND FwEinfahren GND FwEinSch OvrDrive FwAusSch GND BkSch GND GasFedSch GND FwZwischenLED GND FwAusLED FwWarn FwEinLED
1 14 2 15 3 16 4 17 5 18 6 19 7 20 8 21 9 22 10 23 11 24 12 25 13
WE BN GN GE WE GR BN GE GN GR RS BL
GE 1,5qmm (3,0m)
SW 1,5qmm (3,0m)
BN (0,6m)
7x0,25qmm (0,6m)
GR (0,6m)
WE (0,6m)
GR
bei bestehendem mech. Fw
(DG1000T oder S) v. altem Fw-Schalter abziehen
5x0,25qmm (3,0m)
WE BN GN GE GR
1 2 3 4 5
M
Fw-Spindelmotor
landg. gear spindle drive
Fw-Ein-Endschalter
landg. gear switch
Stellung: Fw eingefahren pos.: gear retracted
Fw-Aus-Endschalter
landg. gear switch
Stellung: Fw ausgefahren pos.: gear extended
Gasfeder-Schalter
gas strut switch
Stell.: Gasfeder gespannt pos.: strut depressed
Entriegelungs-Schalter
release switch
Stell.: Gasfeder blockiert pos.: strut blocked
DG1000T/M: Kabel Nr. 104
BL 1,5qmm (2,0m)
Bk-Schalter
airbrake switch
Stellung: Bk verriegelt
pos.: airbrakes locked
GN
GE
Farbabkürzungen (wiring colour code):
RT=rot(red)
BL=blau(blue)
GN=grün(green)
WE=weiß(white)
GE=gelb(yellow)
BN=braun(brown)
GR=grau(grey)
RS=rosa(pink)
Alle Kabel 0,5qmm, soweit nicht anders spezifiziert
all wires 0,5qmm if not specified otherwise
Änderungen zur letzten Ausgabe
- Entriegelungsschalter ergänzt (10/10)
Datum 08.10.10
Name Utz Schicke
Schicke electronic GmbH
Kanalstr. 32
D-76356 Weingarten
Schicke electronic
Verkabelung DG-1000 Fw-Steuerung
wiring plan DG-1000 Lg control
Zeichnungsnr. 10E4
Ausgabe E
Blatt-Nr. 1 v. 1
Datei DG1000-FwSt-Verkabelung_11.sch