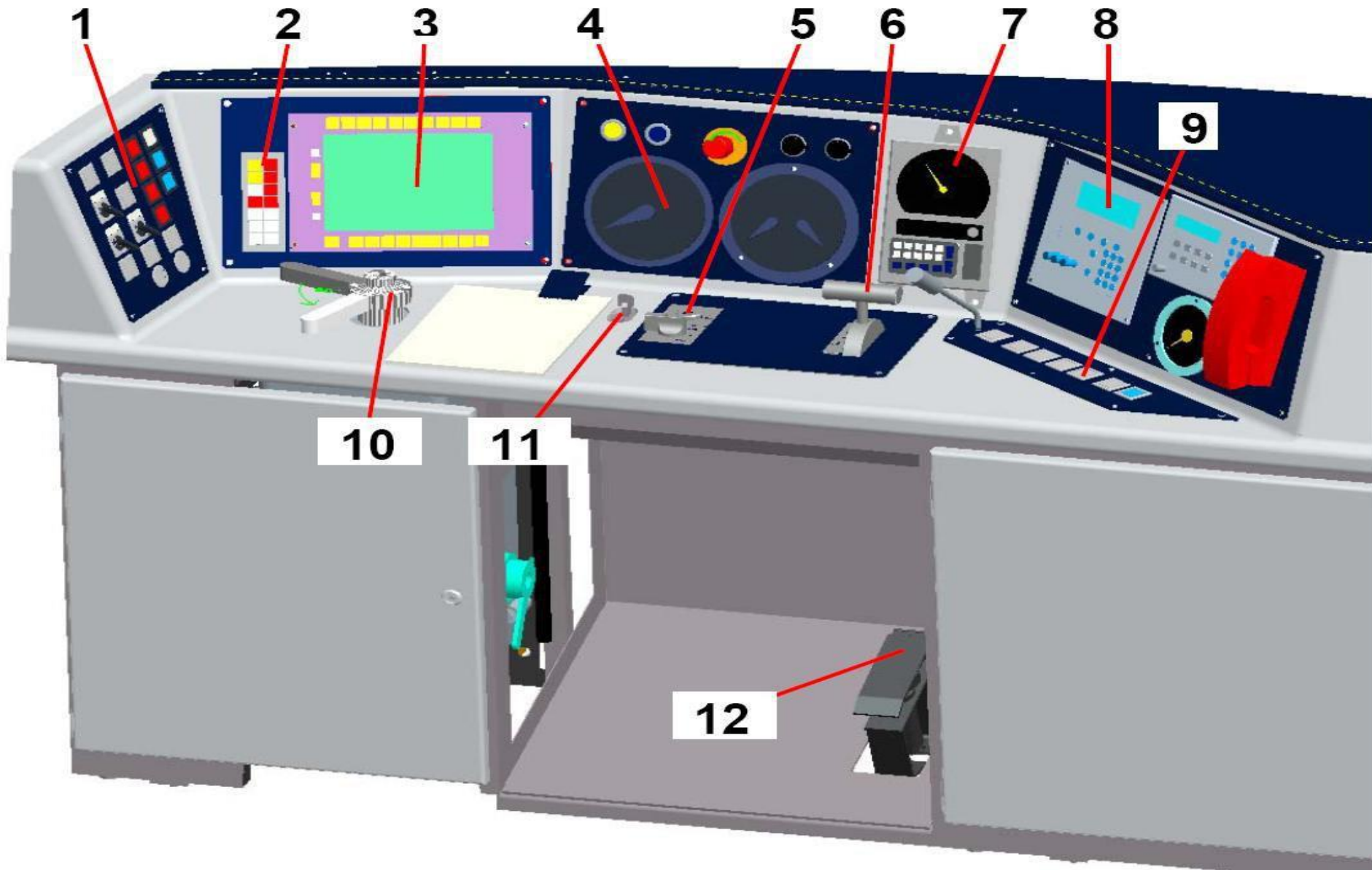


SIEMENS OPRATIONAL FEATURES

N.D.Turkar/PL/PSTC/IRIEEN/NK



Control elements in the driver's cab



MOTORMAN'S DESK OF AC/DC SIEMENS RAKE





13

RDM 0 ON

2 FWD 0 REV

Braking Driving

Switches in front of motor man



**MAIN CONTACTOR
SWITCH**



**NEUTRAL
SECTION
PUSH BUTTON**

**CRUISE
CONTROL
PUSH
BUTTON**

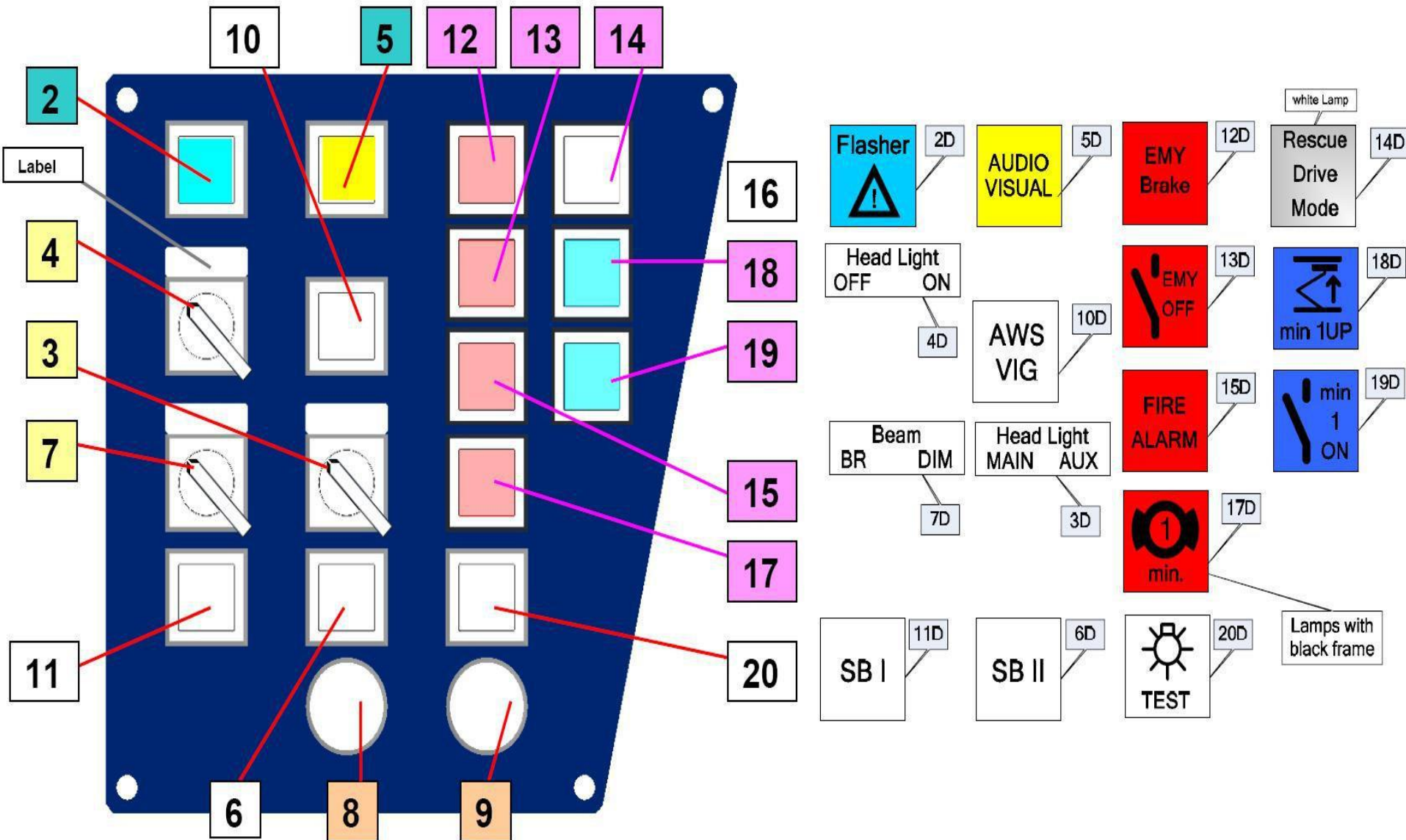


PANTO SWITCH

Control elements in the driver's cab

- 1 Side panel left + RDM signal lights
- 2 Signal lights
- 3 Display, MMI
- 4 Pressure panel (master brake controller)
- 5 Key switch and master controller
- 6 Power brake controller
- 7 Speedometer
- 8 Radio /PIS panel
- 9 Side panel right
- 10 Pneumatic control valve
- 11 Wiper valve
- 12 Horn valve

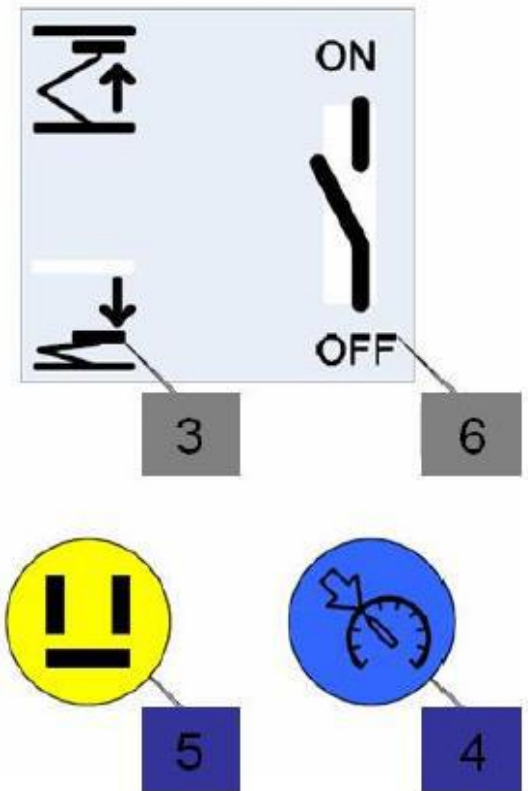
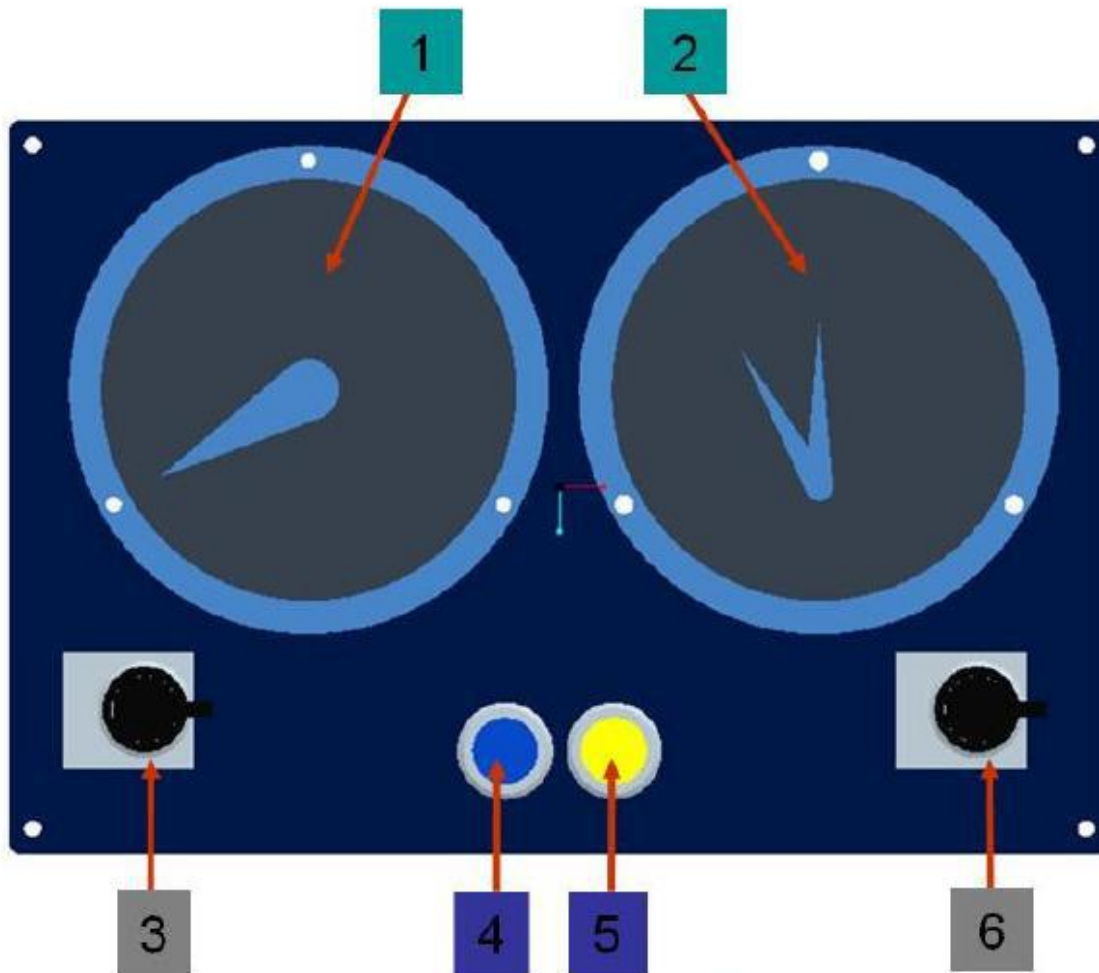
Panel on the left-hand side



Panel on the left-hand side

- | | |
|------------------------------------|---------------------------------|
| 1 Mounting plate | 11 SB I, signal bell driver |
| 2 Flasher driver | 12 Emergency brake |
| 3 Head light main/aux | 13 Emergency off |
| 4 Head light on/off | 14 RDM active |
| 5 Audio visual | 15 Fire alarm |
| 6 SB II, alarm bell driver
(HW) | 16 Reserve |
| 7 Beam br/dim | 17 Min. 1 brake applied |
| 8 Fire alarm (buzzer) | 18 Min. 1 panto up |
| 9 Audio visual (buzzer) | 19 Min. 1 circuit breaker
on |
| 10 AWS vigilance | 20 Lamp test driver |

Pressure panel

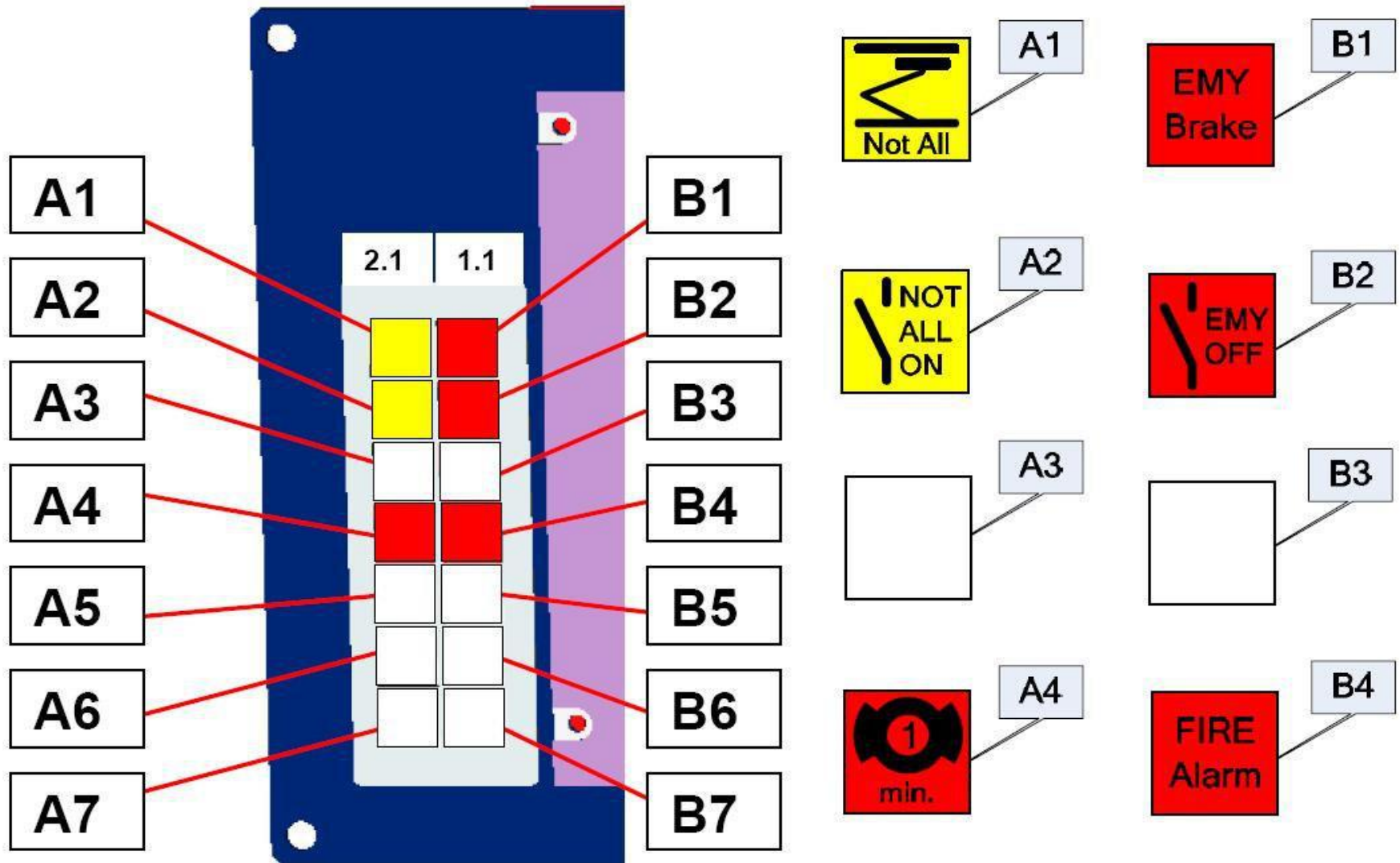


Pressure panel

Pressure panel

- 1 Brake cylinder pressure.
- 2 Pressure gauge for MR and BP Pipes.
- 3 Pantograph up/down.
- 4 Cruise control.
- 5 Neutral section pushbutton.
- 6 Main circuit-breaker on/off.

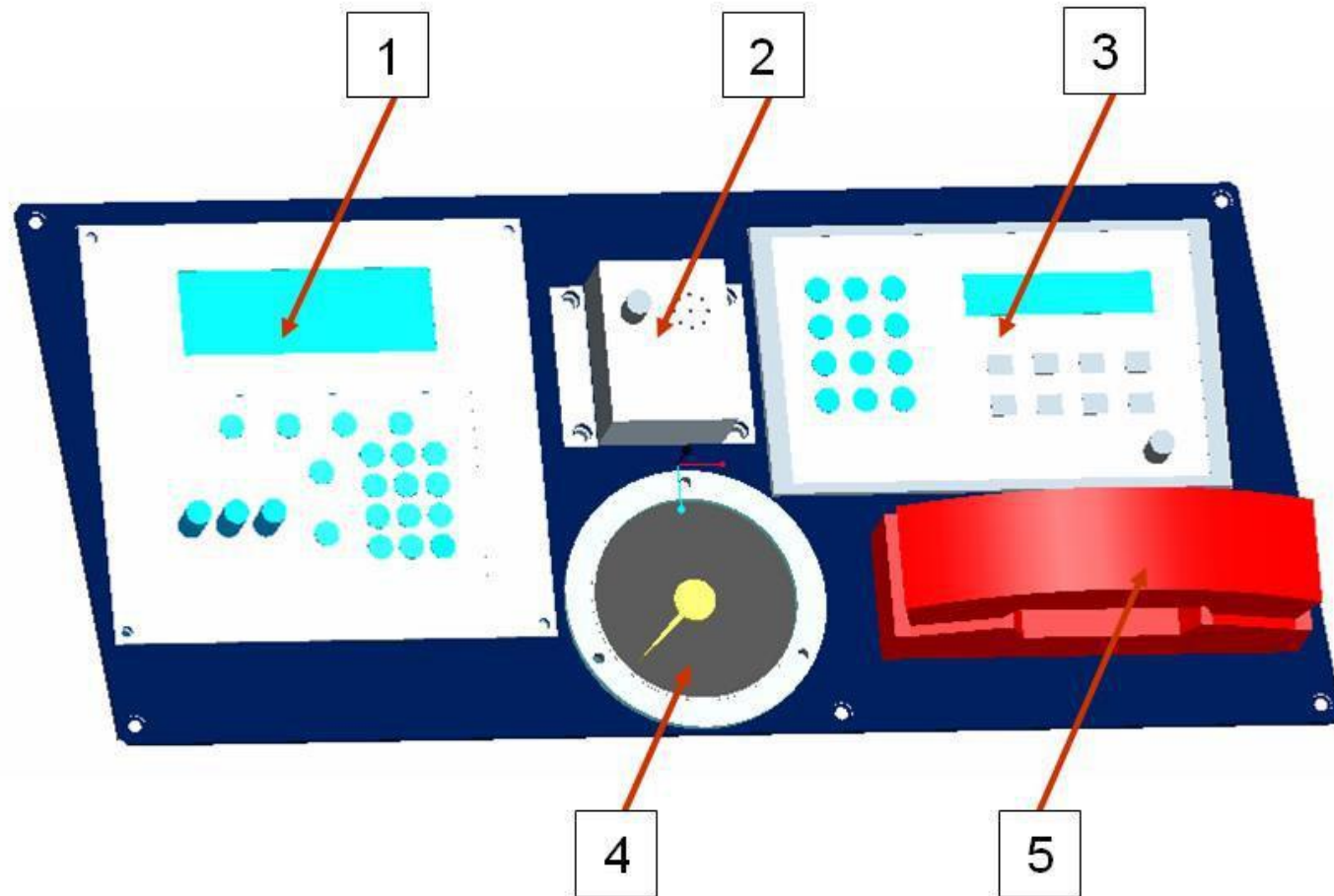
Auxiliary tell-tale lamps



Auxiliary tell-tale lamps

- A1 Not all pantos up
- A2 Not all main switches on
- A3 Reserve
- A4 Min. 1 brake applied
- A5 Reserve B5 Reserve
- A6 Reserve B6 Reserve
- A7 Reserve B7 Reserve
- B1 Emergency brake
- B2 Emergency off
- B3 Reserve
- B4 Fire alarm

Train radio and passenger information system



Train radio and passenger information system

1. PIS – MMI

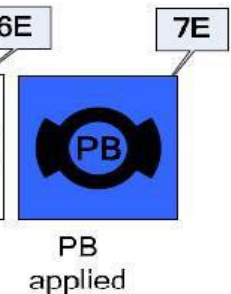
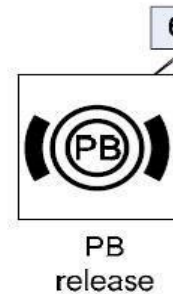
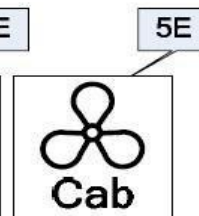
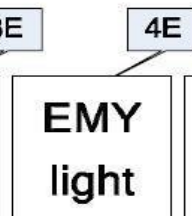
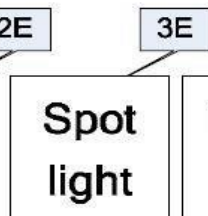
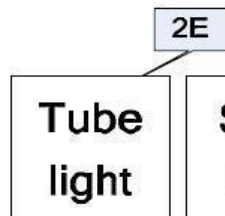
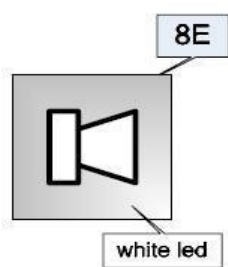
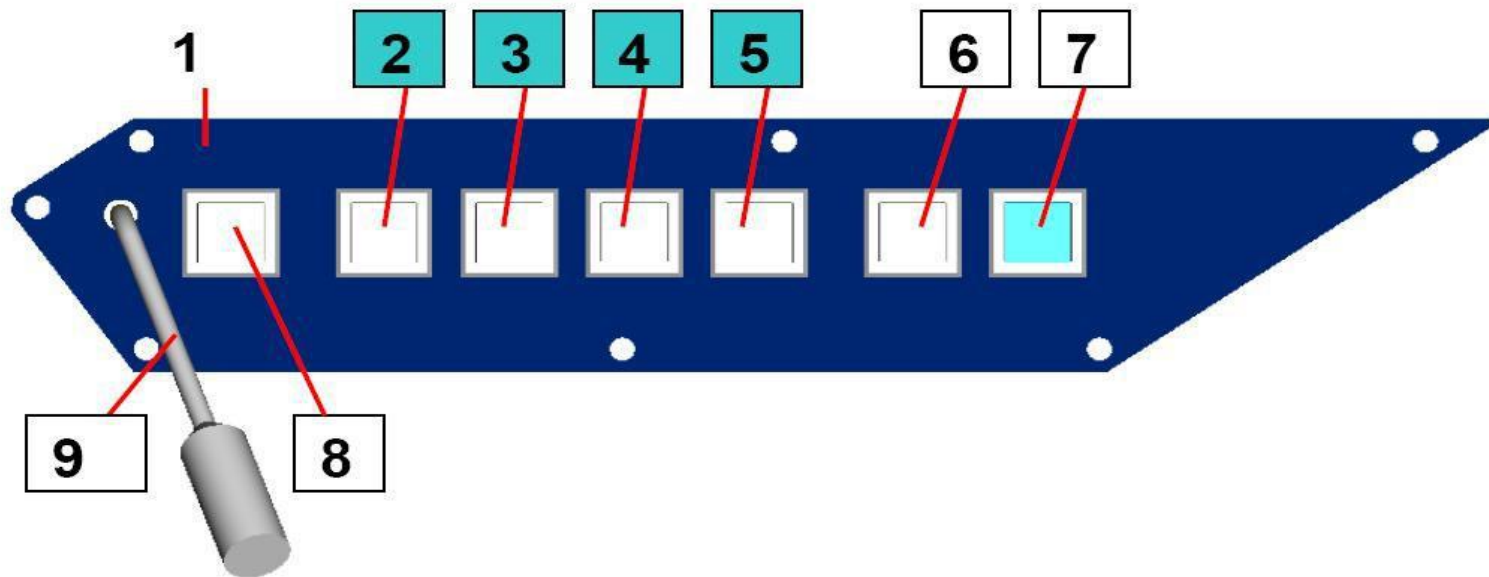
2. Train radio hands-free module

3. Train radio – MMI

4. Pressure gauges Parking brake

5. Train radio handset

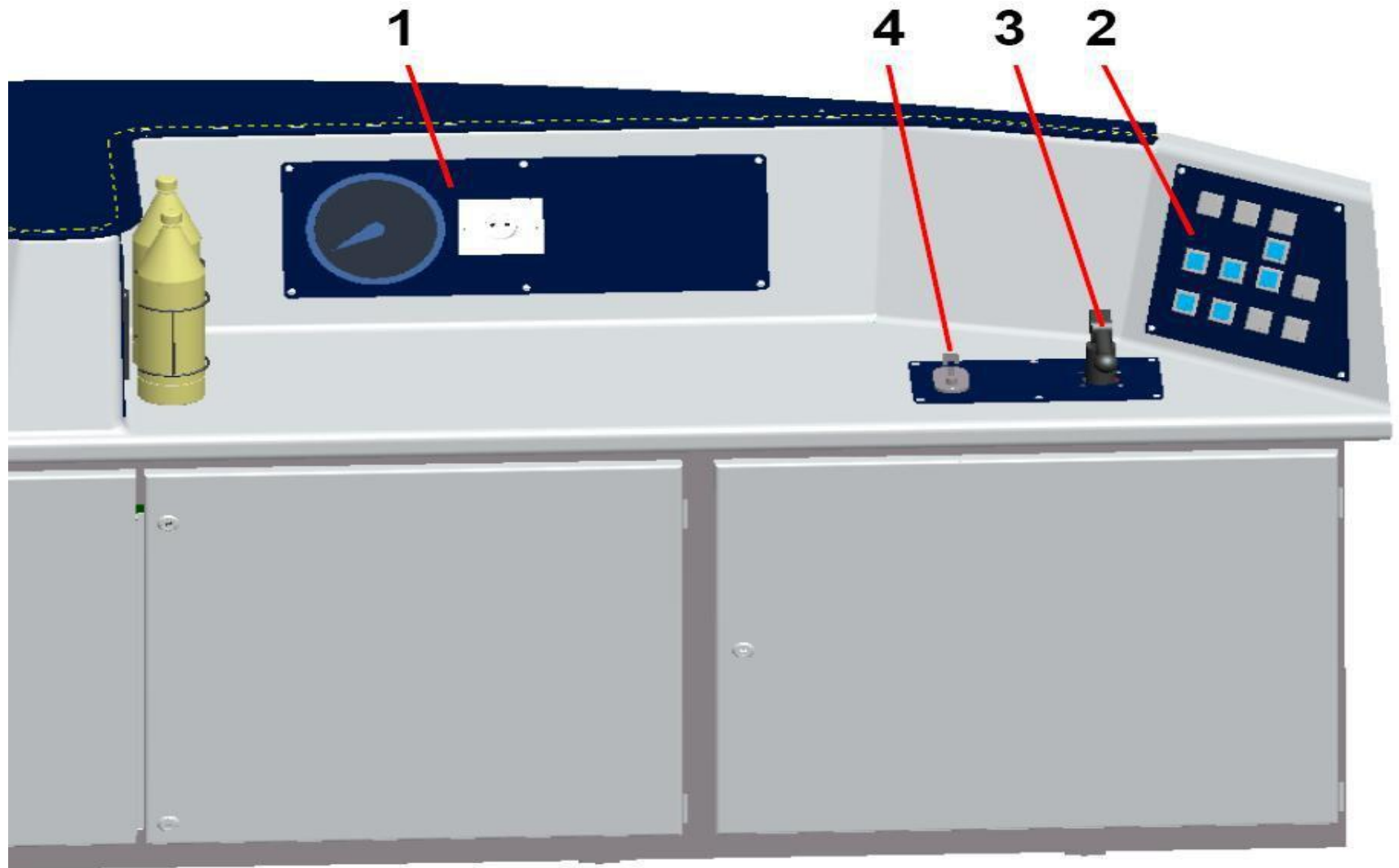
Control elements on the side panel on the right-handside



Control elements on the side panel on the right-hand side

1. Mounting plate
2. Cab tube light driver
3. Cab spot light driver
4. Cab emergency light driver
5. Cab fan driver
6. Parking brake release
7. Parking brake apply
8. PIS release button for microphone
9. PIS microphone

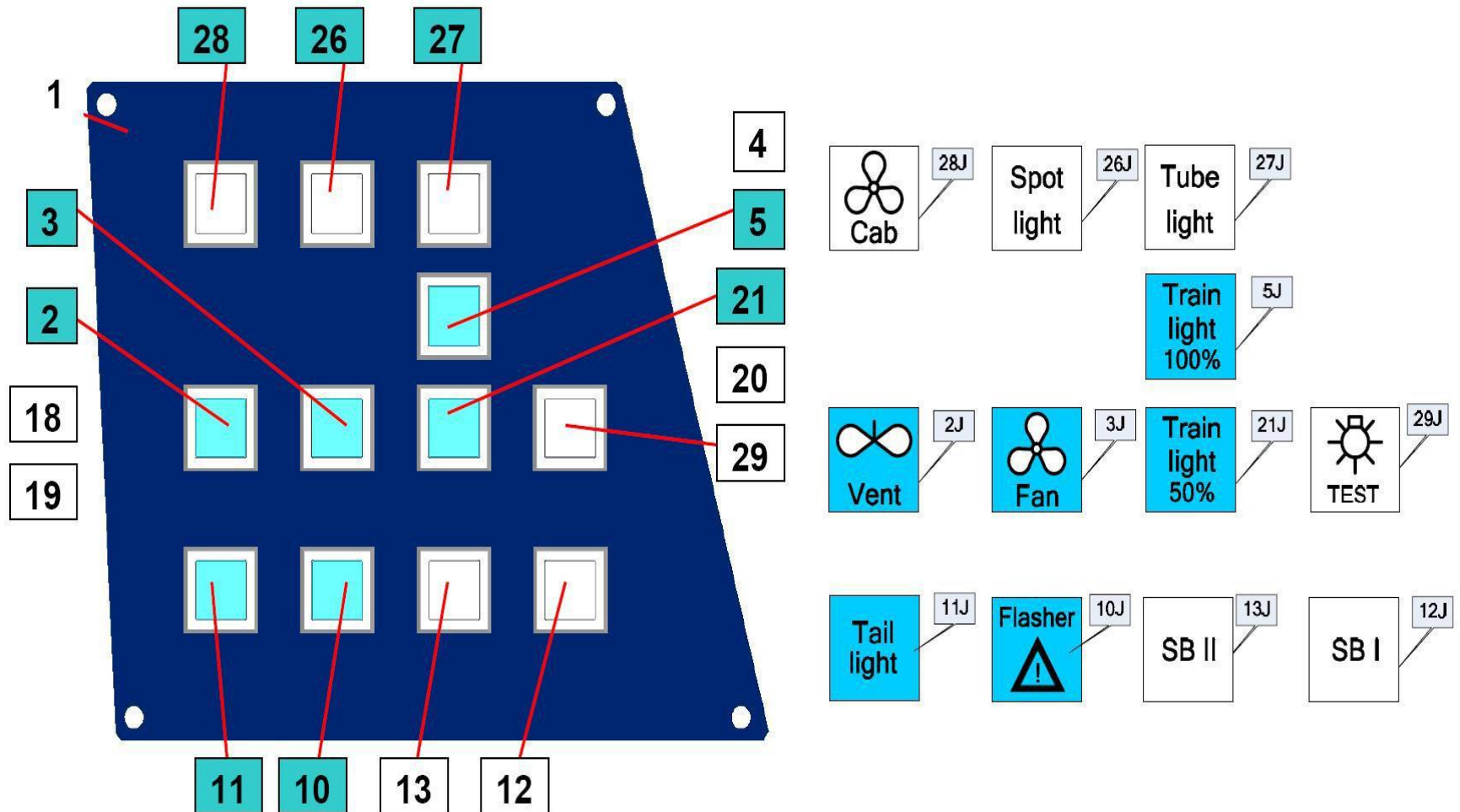
Guard control elements



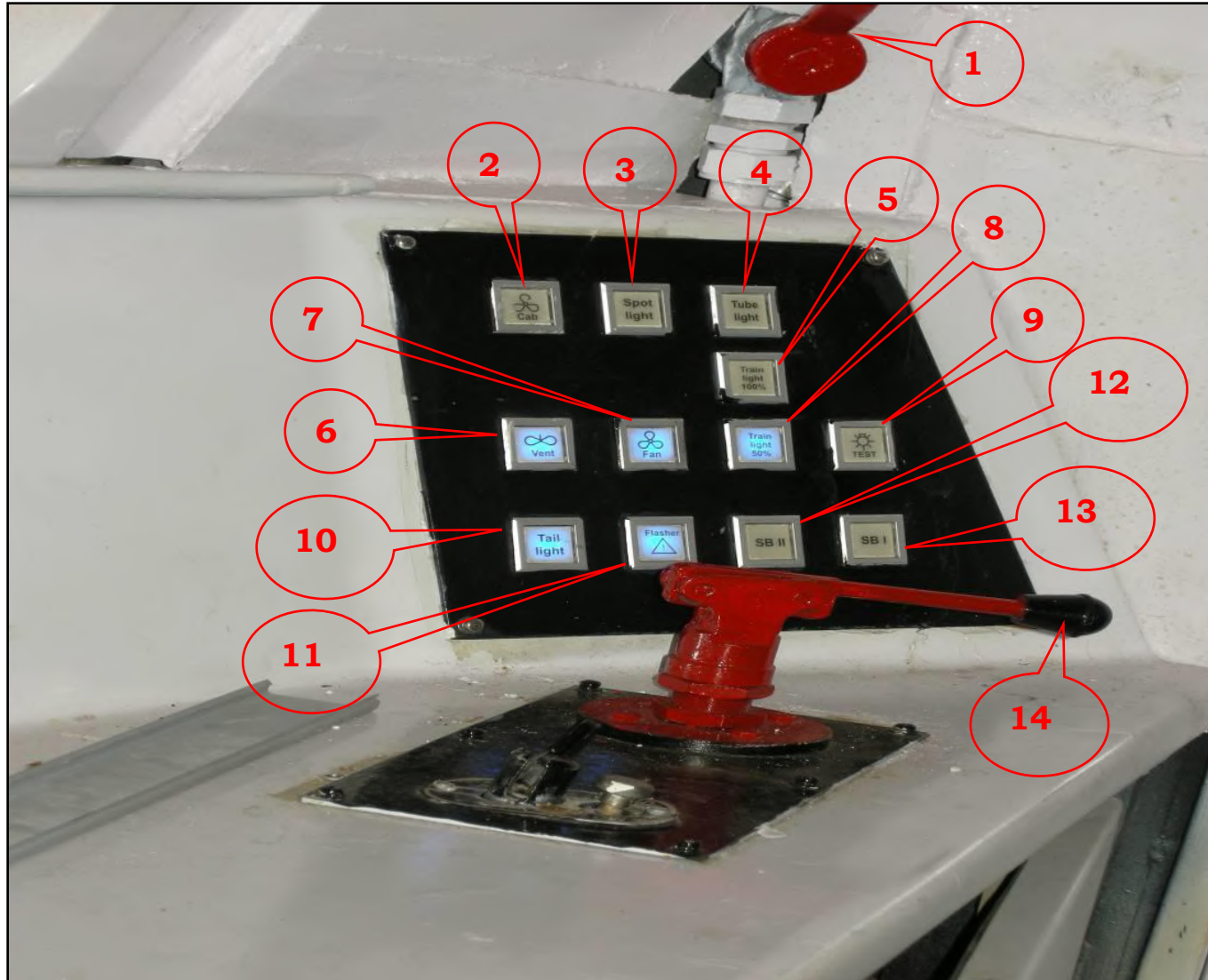
Guard control elements

1. Pressure panel guard
2. Side panel guard
3. Horn valve
4. Wiper valve

Guard panel right-hand side



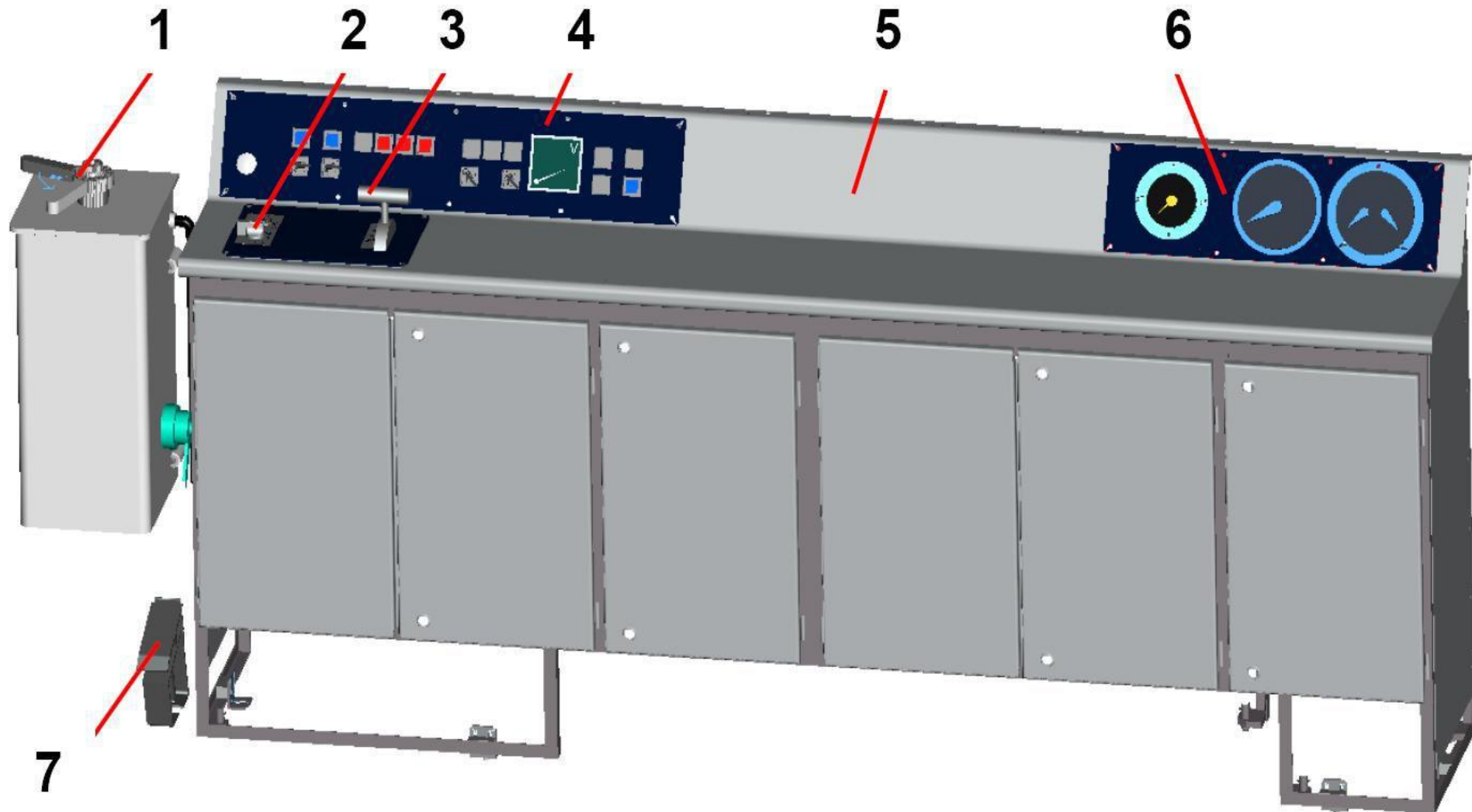
Guard side panel



Guard panel right-hand side

1 Mounting plate	18 Reserve
2 Ventilation released/off	19 Reserve
3 Fans released/off	20 Reserve
4 Reserve	21 Train light 50 %/off
5 Train light 100%/off	26 Cab spot light (guard)
10 Flashers light on/off (guard)	27 Cab tube light (guard)
11 Tail light on/off	28 Cab fan (guard)
12 SB I, signal bell guard (SW)	29 Lamp test
13 SB II, alarm bell guard (HW)	

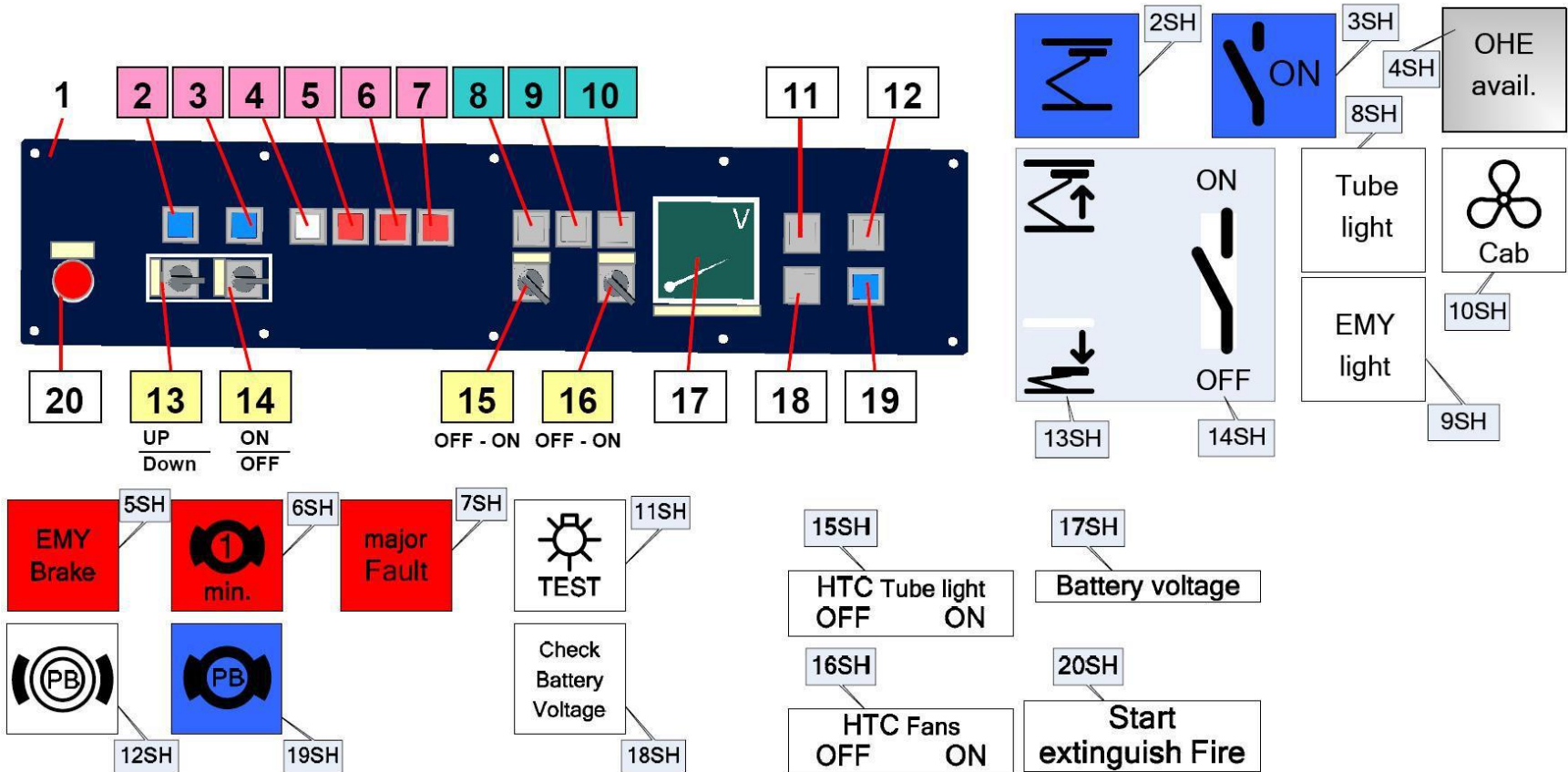
Shunting desk driver's desk



Shunting desk driver's desk

1. Pneumatic control valve
2. Key switch, master controller
3. Power brake controller
4. Operation panel
5. Shunting desk
6. Pressure gauge panel
7. Horn valve

Shunting desk control panel



Shunting desk control panel

- 1 Mounting plate
- 2 Panto is up
- 3 MC is on
- 4 OHE available
- 5 Emergency brake
- 6 Min. one brake applied
- 7 Summary fault
- 8 Cab tube light
- 9 Cab emy light
- 10 Cab fan
- 11 Lamp test
- 12 Parking brake release
- 13 Panto up/down
- 14 Main switch on/off
- 15 HTC tube
- 16 HTC fans
- 17 Battery voltmeter
- 18 Test battery voltage
- 19 Parking brake applied
- 20 Start fire extinguishing

Display screen

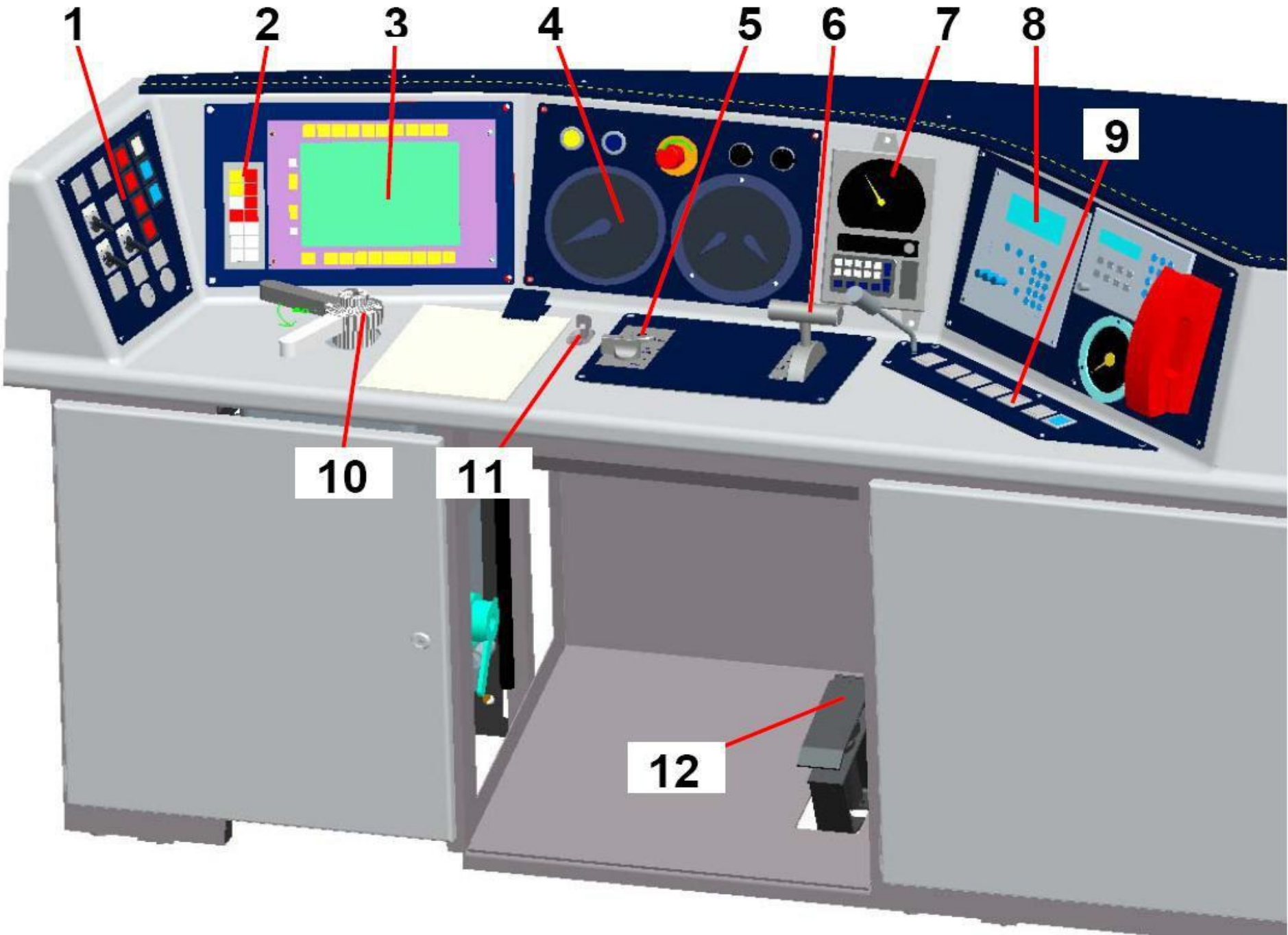
Train: 663632 | Top level | 14.03.06 | 10:03:06



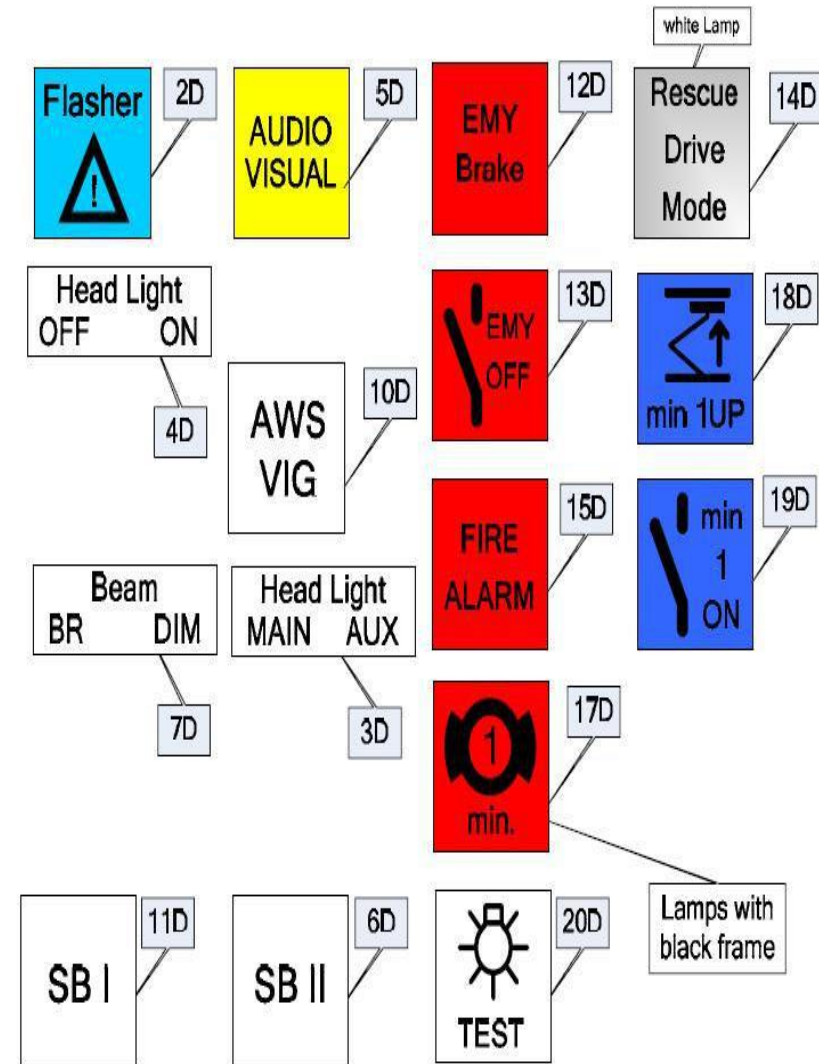
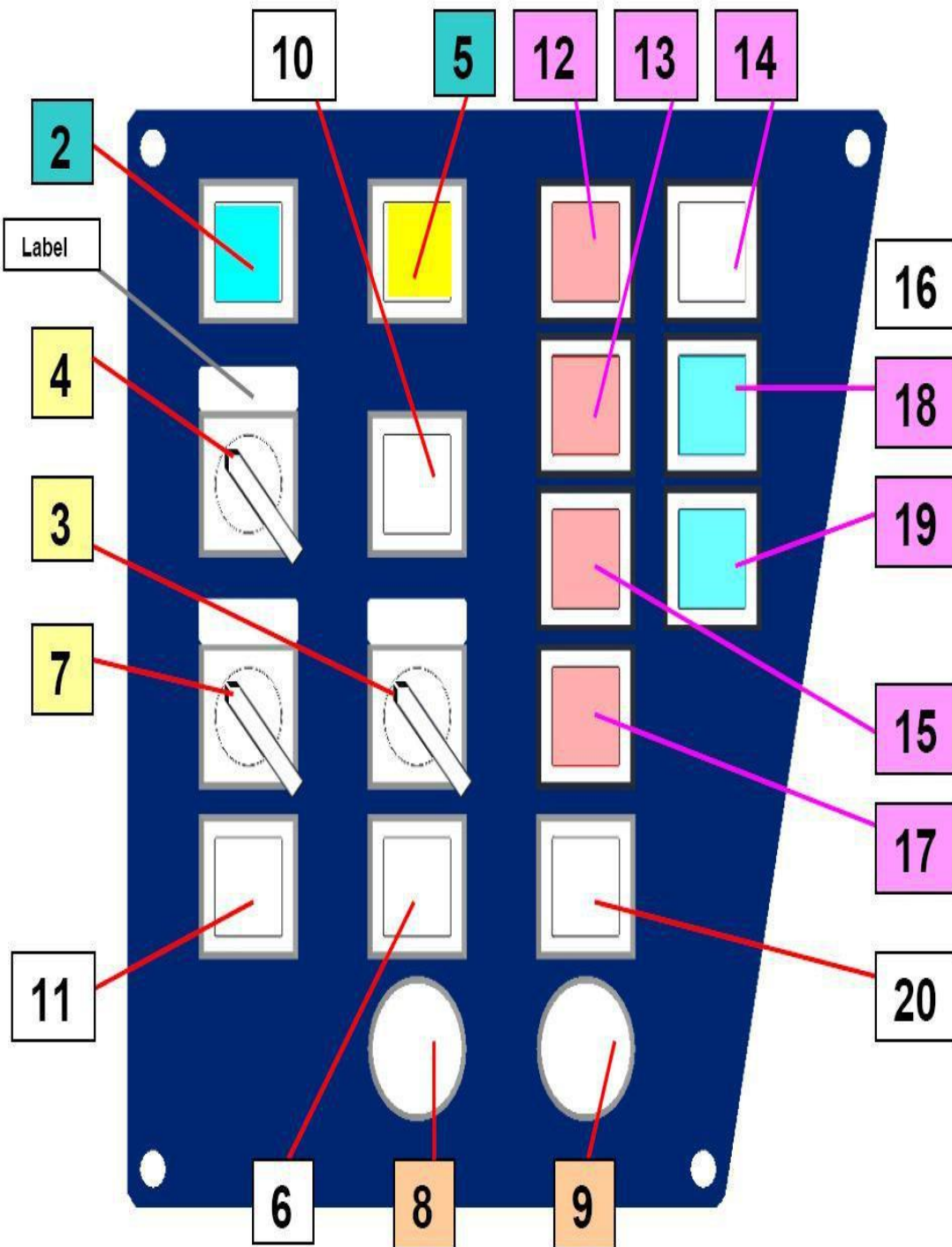
Unit 1		Unit 2		Unit 3		Unit 4		Unit 5	
AC	Cab	AC	Cab	AC	Cab	AC	Cab	DC	Cab
(M)		(M)		(M)		(M)		(M)	
FIRE		FIRE		FIRE		FIRE		FIRE	
EMY OFF		EMY OFF		EMY OFF		EMY OFF		EMY OFF	

A		Messagetext							
		Fault Short message							
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5		Drive/ Brake	Config		Driver








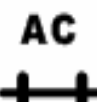


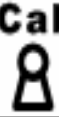

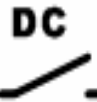
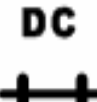












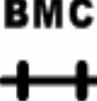



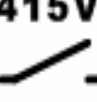
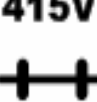

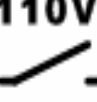
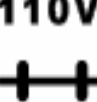













1 2 3 4 5 6 7 8 9 0










- 1 Side panel left + RDM signal lights
- 2 Signal lights
- 3 Display, MMI
- 4 Pressure panel (master brake controller)
- 5 Key switch and master controller
- 6 Power brake controller
- 7 Speedometer
- 8 Radio /PIS panel
- 9 Side panel right
- 10 Pneumatic control valve
- 11 Wiper valve
- 12 Horn valve













- | | |
|---------------------------------|------------------------------|
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| 5 Audio visual | 15 Fire alarm |
| 6 SB II, alarm bell driver (HW) | 16 Reserve |
| 7 Beam br/dim | 17 Min. 1 brake applied |
| 8 Fire alarm (buzzer) | 18 Min. 1 panto up |
| 9 Audio visual (buzzer) | 19 Min. 1 circuit breaker on |
| 10 AWS vigilance | 20 Lamp test driver |





		Pantograph down / up			Pass.Lighting OFF / ON		Train / Unit Fault occurred		Colour : basic + not ready
AC 	AC 	Main Contactor AC (VCB) OFF / ON			Roof Ventilation OFF / ON	Cab 	MasterKey on + Cab occupied		Colour + ? : communication error
DC 	DC 	Main Contactor DC (HSCB) OFF / ON			Pass.Fans OFF / ON	MVB	Train / Unit Bus system		Colour : device isolated
AC 	DC 	Cross Over switch (COS) AC / DC		L1 L2	Line 1 / Line 2				Colour : alarm, defect of device
AC 	DC 	OHE voltage AC / DC			Main Air Com- pressor (MAC) OFF / ON	Loop	Train wide loop EBL ,EMY OFF		Colour : warning, status changed
BMC 	BMC 	Battery Main Contactor (BMC) OFF / ON			Aux. Air Com- pressor (AAC) OFF / ON	EBL	Emergency Brake loop		Colour : ready + OFF
415V 	415V 	Change Over Contactor 3AC OFF / ON				EMY OFF	Emergency Power OFF		Colour : ON , released
110V 	110V 	Change Over Contactor 1AC OFF / ON			Parking Brake (PB) release / apply	Pass Alarm	Passenger Area alarm		Colour : applied , triggered
		Traction Converter (TCC) OFF / ON			Emergency Brake release / apply	Fire	Fire system (FDS) Fire detected		Colour : power supply off
		Aux.Converter (ACU) OFF / ON			Brake release / apply	BCU 	Brake control Unit (BCU)	A B	Traction converter (PWR) A , B

Cabs 	driver Cabs twice occupied
Cab 	MasterKey on only
Cab 	MasterKey on + Cab occupied
Cab + SH-Cab 	driver cab + shunting cab occupied
SH-Cab 	shunting cab occupied
Cab 	occupation of the cab not possible
AC DC	no OHE-Voltage detected
VSS 	Voltage sensor system faulty








	Parking Brake applied
	Parking Brake release
	Parking Brake released
	Parking Brake apply
	holding Brake applied
	holding Brake released
	Emergency Brake applied
	Emergency Brake apply
	Emergency Brake faulty










EMY OFF 	Emergency Off loop triggered
EMY OFF 	Emergency Off loop faulty
EBL	Emergency Brake Loop triggered
EBL	Emergency Brake Loop warning
EBL	Emergency Brake Loop faulty
	Basic Unit isolated
	Basic Unit major fault
	Basic Unit major warning











Fire 	Fire Extinction blocked
Fire 	Fire Extinction released
Fire 	Fire Extinction ready for start
Fire 	Fire alarm 1 + 2
Fire 	Fire alarm 2
Fire 	Fire alarm 1
Fire 	Fire Detection System (FDS) faulty
	Basic Unit minor warning
	Basic Unit warning
	Basic Unit alarm

Cab	e.g. Cab power supply switched off
Cab	driver or SH-Cab off status
Cab 	driver or SH-Cab twice occupied
Cab 	master-key only, Cab not occup., fault expected
Cab 	master-key + Cab occupied
Cab	Cab change cab occupied + master-key off
Cab 	Cab occupied not possible

EBL 1	Emy Brake Loop 1 isolated
EBL 2	Emy Brake Loop 2 isolated
EBL 3	Emy Brake Loop 3 isolated
EBL 2+3	Emy Brake Loop 2+3 isolated
EBL 1	Emy Brake Loop 1 triggered
EBL 2	Emy Brake Loop 2 triggered
EBL 3	Emy Brake Loop 3 triggered
EBL 3	Emy Brake Loop 3 faulty

EMY OFF 	Emy Off loop 1 + 2 isolated
EMY OFF 	Emy Off loop 1 or 2 isolated
EMY SH OFF 	Emy Off loop SH-Cab isolated
EMY 1 OFF 	Emy Off loop 1 triggered
EMY 2 OFF 	Emy Off loop 2 triggered
EMY OFF 	Emy Off loop 1+2 triggered
EMY OFF 	Emy Off loop faulty

' ' 	Cross Over switch (COS) blocked
' AC ' 	COS blocked in AC-Pos
' DC ' 	COS blocked in DC-Pos
' AC ' 	COS in AC-Position
' DC ' 	COS in DC-Position
' ' 	COS changes Position
' ' 	COS ready, but no Position detected
' ' 	COS faulty, and no Position detected
' AC ' 	COS faulty, and AC-Position detected

		Cab ?		Cab 	Cab
					
					
EBL	EBL	EBL ?			



EBL	EBL	EBL ?	EBL 1^2	EBL 2	EBL 1
------------	------------	--------------	----------------	--------------	--------------

EBL 2+3	EBL 2	EBL 3
----------------	--------------	--------------

EMY OFF	EMY OFF 	EMY OFF ? 
----------------	---	---

' '	' '	' ? '	' '
' '			
	' DC '	' DC '	

' AC '	' AC '	' AC '
' DC '		

- **ROOF EQUIPMENT**

- Pantograph
- Surge Arrestor
- AC-DC change over switch
- Brake resister
- PT
- HVCB
- CT
- Ventilation fans

- **UNDER FRAME EQUIPMENT**

- Traction Motors
- Traction Transformer
- Different reservoirs
- Combined brake unit
- Air suspension equipments
- Mechanical weight transfer equipments

TRAILER COACH

7.1 PANEL IN PASSENGER AREA OF TC

- SIBAS KLIP Station (31)
- Different rotary switches, MCBs, MPS for Ventilation fans, light & fans for passengers.

7.2 ROOF EQUIPMENT

Ventilation fans

7.3 UNDER FRAME EQUIPMENTS

- Different reservoirs
- Combined brake unit
- Air suspension equipments
- Mechanical weight transfer equipments

NON DRIVING TRAILER COACH

8.1 PANEL IN PASSENGER AREA OF NDTC

- SIBAS KLIP Station (41)
- Different rotary switches, MCBs, MPS for MCP, Ventilation fans, light & fans for passengers.

8.2 ROOF EQUIPMENT

Ventilation fans

8.3 UNDER FRAME EQUIPMENTS

- Main compressor
- Battery box
- Different reservoirs
- Combined brake unit
- Parking brake equipments
- Air suspension equipments
- Mechanical weight transfer equipments

TRANSDUCERS AND SENSORS

Transducers are the equipments which are utilised for converting the electrical or mechanical quantities into suitable electrical signals so that these signals can be processed by the control electronics for efficient control of the system. Following transducers and sensors are used in Siemens AC-DC EMU:

- Voltage transducer
- current transducer
- pressure transducer
- speed sensor
- oil flow sensor
- oil level sensor

Thanking You All

