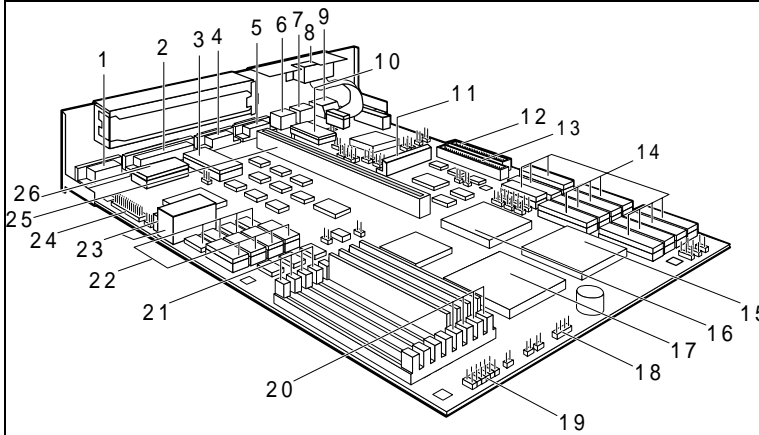## 3.1.7 80486sx, 25/33 MHz, System board S26361-D774
80486dx2, 50 MHz, System board S26361-D774


1 = Monitor interface
2 = Parallel interface (LPT1)
3 = Socket for system BIOS ROM
4 = Serial interface (COM2)
5 = Serial interface (COM1)
6 = Mouse interface
7 = Keyboard interface
8 = Interface Thick Ethernet (10 Base 5)
9 = Interface Twisted Pair (10 Base T)
10 = Socket for LAN address PROM
11 = Connector for power supply
12 = Connector for floppy disk drive
13 = Connector for IDE hard disk drive

14 = Sockets U48 - U58 for
        Second level cache memory
15 = Socket U1 for 80486SX, or 80486DX2
16 = Soldered place U3 for 80486SX
17 = Socket U2 for 80487SX or ODP486
18 = Connector for external loudspeaker
19 = Connector for LEDs
20 = RAM sockets J2 to J5
21 = RAM sockets J6 to J9
22 = Video memory
23 = Lithium battery and connector
24 = Connector for external monitor
        controller
25 = Bus interface
26 = Socket U58 for BOOT ROM

Features:

- 32 bit microprocessor 80486sx/25 MHz, 80486sx/33 MHz or 80486dx2/50 MHz with 8 Kbyte internal cache (first level cache)
- Upgrade socket for 80487sx/25, ODP486sx/25/33 or ODP486dx/33
- External cache (Second level cache) optional: 0 Kbyte, 64 Kbyte, 128 Kbyte or 256 Kbyte
- RAM memory on the system board: 4 Mbyte to 32 Mbyte RAM
- EPROM (128 Kbyte * 8)
- 114 byte setup memory in CMOS RAM
- Real-time clock/calendar with integrated battery backup
- Bus interface for platter
- Floppy disk drive controller (up to 1.44 Mbyte format)
- Connector for floppy disk drive
- Connector for IDE hard disk drive
- VGA controller onboard with 1 Mbyte video memory
- Connector for external video controller
- Loudspeaker - internal and connector for external loudspeaker
- Parallel interface
- Two serial interface
- Mouse interface PS/2
- Keyboard interface PS/2
- Monitor interface
- LAN interface Thick Ethernet (10 Base 5)
- LAN interface Twisted Pair (10 Base T)

Jumpers
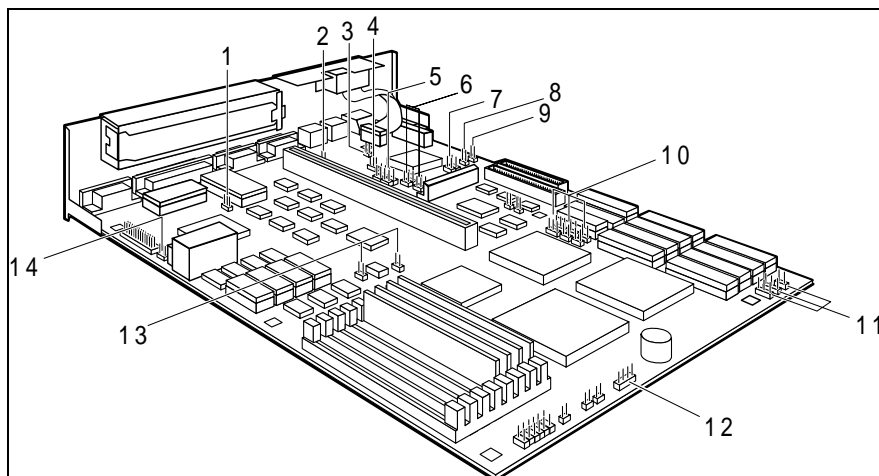
1 =   Jumper *JP25* for VGA controller
2 =   Jumper *JP11* for mouse interface
3 =   Jumper *JP10* for primary CRT controller
4 =   Jumper *JP37* for LAN interface
5 =   Jumper *JP34* for LAN interrupt
6 =   Jumpers *JP35* and *JP36* for LAN DMA channel (DRQ, DACK)
7 =   Jumper *JP33* for I/O address of LAN interface
8 =   Jumper *JP32* for loading the operating system
9 =   Jumper *JP31* for LAN interface ON/OFF
10 =   Jumpers *JP12* - *JP17* for Second level cache memory
11 =   Jumpers *JP1* - *JP3* for processor type
12 =   Jumper *J13* for internal loudspeaker
13 =   Jumpers *JP5* and *JP6* for processor speed
14 =   Jumper *JP38* for battery (delete CMOS RAM)

JP38 - Battery

JP38 1-2 inserted	Battery is switched on [1]
JP38 2-3 inserted	Battery is switched off - CMOS will be deleted

⚠ With switching off the battery the passwords can be deleted because they are stored in the CMOS.

JP10 - Monitor

JP10 inserted	Monochrome monitor (black/withe) is connected
JP10 not inserted	Color monitor is connected [1]

JP11 - Mouse and Interrupt 12 (IRQ12)

JP11 inserted	Mouse interface is enabled and IRQ12 is used for the mouse [1]
JP11 not inserted	Mouse interface is disabled

JP25 - Onboard VGA

JP25 1-2 inserted	VGA controller on the system board is enabled [1]
JP25 2-3 inserted	VGA controller on the system board is disabled

JP31 - LAN interface

With Jumper JP31 the LAN interface is enabled or disabled.

JP31 inserted	LAN interface is disabled
JP31 not inserted	LAN interface is enabled [1]

i When the LAN interface is disabled, jumper for interrupt (JP34) and DMA channel (JP35, JP36) are still inserted. If you want to use the interrupt and DMA channel for another application, you must remove the jumpers JP34, JP35 and JP36.

---

[1] Default setting

JP32 - Boot the operating system (LAN-BOOT-ROM)

With jumper JP32 it is specified, whether the operating system is to be booted from the hard disk or via the network (from a server).

|	
JP32 inserted	Operating system is booted from network
JP32 not inserted	Operating system is booted from hard disk [1]

In order to boot the operating system via the network, the LAN-BOOT-ROM chip must be inserted in socket U85 and the LAN interface must be configured according to the table below (depending on the LAN software in use).

Configuration for	I/O address	Interrupt	DMA channel
Novell- [*] 802.3	300	5	5
Netware [*] 802.3	320	9	6
[*] Ethernet II	340	10	6
[*] 802.3	360	11	5
MS LAN Manager	300	5	5
	320	9	6
	340	10	6
	360	11	5
Sinix	300	random	5
	320	random	6
	340	random	5
	360	random	6

[*] Frame type

Installing the LAN-BOOT-ROM chip

► Insert the LAN-BOOT-ROM chip in the socket U85. Note that the mark on the chip matches with the mark on the socket.

U85
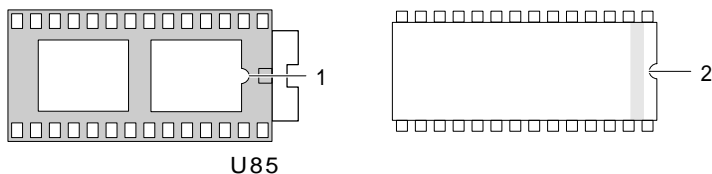
1 = Markierung am Steckplatz U85   2 = Markierung am LAN-BOOT-ROM-Baustein

[1] Default setting

JP33 - I/O address for LAN interface

With jumper JP33 the I/O address of the LAN interface and the address area for the LAN-BOOT-ROM is set.

I/O-address	Address area for LAN-BOOT-ROM	JP33	
		1-2	3-4
300H	C8000H - CBFFFH	**inserted**	**inserted** [1]
320H	CC000H - CFFFFH	not inserted	inserted
340H	D0000H - D3FFFH	inserted	not inserted
360H	D4000H - D7FFFH	not inserted	not inserted

JP34 - Interrupt for LAN interface

With jumper JP34 the interrupt (IRQ) for the LAN interface is set.

JP34 to 1-2 inserted	Interrupt IRQ5 [1]
JP34 to 3-4 inserted	Interrupt IRQ9
JP34 to 5-6 inserted	Interrupt IRQ10
JP34 to 7-8 inserted	Interrupt IRQ11
JP34 not inserted	Interrupt released for other applications

JP35 and JP36 - DMA channel for LAN interface

With jumper JP35 (DACK) and JP36 (DRQ) the DMA channel for the LAN interface is set.

JP35 and JP36 to 1-2 inserted	DMA channel 5 (DACK5, DRQ5) [1]
JP35 and JP36 to 3-4 inserted	DMA channel 6 (DACK6, DRQ6)
JP35 and JP36 to inserted	DMA channel released for other applications

---

[1]   Default setting

JP37 - LAN connection

With jumper JP37 you can select the LAN connection for the LAN interface.

i	Some LAN software drivers detect the type of LAN connection by means of the LAN cable (AUI or UTP). If you are using a driver of this kind, jumper JP37 has no function and can therefore be inserted or not.

JP37 to 1-2 inserted	Twisted Pair (UTP, 10 Base T) [1]
JP37 to 2-3 inserted	Thick Ethernet (AUI, 10 Base 5)

J13 - Internal loudspeaker

With jumper J13 you can enable or disable the internal loudspeaker.

J13 to 1-2 inserted	Internal loudspeaker enabled [1]
J13 not inserted	Internal loudspeaker disabled

If the internal loudspeaker is disabled you can use the pins of J13 as a connector for the external loudspeaker.

---

[1]   Default setting

Processor configuration

There are three sockets on the system board for the processor:
    U1 socket - the processor is inserted
    U2 upgrade socket - the processor is inserted
    U3 solder location - the processor is soldered onto the board

JP1, JP2 und JP3 - Setting the processor type in socket U1 [1)]

Depending on the processor type used in socket U1 the jumpers must be set.

Jumper	processor type	
	80486dx	80486sx
JP1	1-2 inserted	not inserted
JP2	2-3 inserted	1-2 inserted
JP3	1-2 inserted	not inserted

Default setting: dependent from the inserted processor

i   Remove jumper JP1 if a processor is plugged in the upgrade socket!

JP5 und JP6 - Setting the processor speed

Jumper	processor speed	
	25 or 50 MHz	33 or 66 MHz
JP5	inserted	not inserted
JP6	not inserted	inserted

Default setting: dependent from the processor

---

1)   At CPU boards with soldered processor JP1/2/3 can be not available.

Upgrading the processor

Overview table about upgrading

| Upgrade processor	source configuration				
Upgrade Socket U2	486sx/25 soldered	486sx/33 soldered	486sx/25 inserted	486sx/33 inserted	486dx2/50 inserted
487sx/25	x	x [1]	x	x [1]	u
ODP486/25	x	x [1]	x	x [1]	u
ODP486sx/33	-	x	x [2]	x	x [2]
ODP486dx/33	-	x	x [2]	x	x [2]

x = upgrade possible
u = disadvantage upgrade - does not increase the system performance
- = upgrade not possible

[1] Adjust the processor speed with jumper JP5 and JP6 to 25 MHz.

[2] Remove the processor from socket U1 and adjust the processor speed with jumper JP5 and JP6 to 33 MHz.

► Insert the 80487sx coprocessor or the ODP486sx/ODP486dx OverDrive processor in such a way that the mark on the processor matches the mark on the socket U2. Remove the jumper JP1.
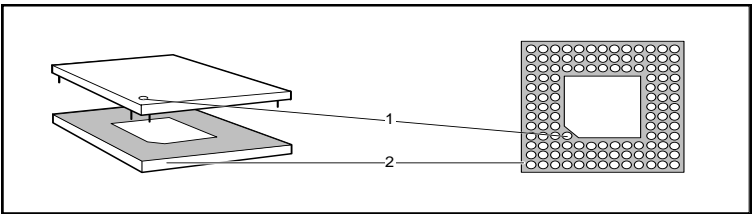
► Check the jumper setting for JP5 and JP6 (processor speed).

Interfaces
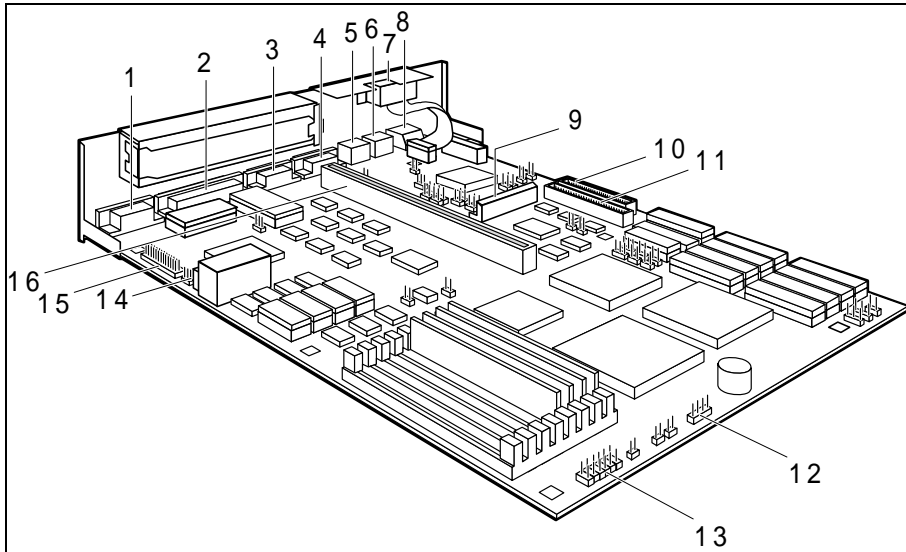
1   J24:   VGA interface   see chapter 9.2.6
2   J21:   Parallel Centronics interface   see chapter 9.4.1
3   J19:   Serial interface (V.24/RS232-C)   see chapter 9.5.1
4   J20:   Serial interface (V.24/RS232-C)   see chapter 9.5.1
5   J15:   Mouse interface (PS/2)   see chapter 9.6.4
6   J16:   Keyboard interface (PS/2)   see chapter 9.6.1
7   J27:   Thick Ethernet (10 Base 5) connector   see chapter 9.8.1
8   J28:   Twisted Pair (10 Base T) connector   see chapter 9.8.2
9   J1:   Connector power supply   see chapter 9.9.21
10 J18:   Floppy disk interface   see chapter 9.10.2
11 J17:   IDE hard disk interface   see chapter 9.10.1
12 J13   Connector loudspeaker   see chapter 9.11.7
13 JP30:   Connectors LED's   see chapter 9.11.6
14 J14:   Connector battery   see chapter 9.11.8
15 J23:   External monitor controller   see chapter 9.3.3
16 J26:   Bus interface   see chapter 9.1.5

Setting the parallel and serial Interfaces on the system board

Together with the ROM BIOS, MS-DOS can control up to seven interfaces on the CPU board and other boards (COM1, COM2, COM3, COM4, LPT1, LPT2 and LPT3). The parallel and serial interfaces on the CPU board will be set in the SETUP menu.

The following addresses can be set:

SER1	either	3F8		SER2	either	2F8
	or	3E8			or	2E8
PAR	either	378				
	or	3BC				

⚠ If you have an interface on an additional board, make sure it does not use an occupied physical address. Either change the interface on the additional board, or change the interface settings of the system board in the SETUP menu.

Memory configuration

Eight locations (J2 to J9) are available on the system board for connecting memory modules. The memory can be configured with 4 or 8 modules of 1 Mbyte or 4 Mbyte.

Only quick memory modules must be used (Access time = 70 ns or less!).

⚠ Only the memory sizes and locations in the table below are allowed.

The following memory configurations are possible:

Size	Module	Slot
4 Mbyte	4 module of 1 Mbyte each	J2 - J5
8 Mbyte	8 module of 1 Mbyte each	J2 - J9
16 Mbyte	4 module of 4 Mbyte each	J2 - J5
20 Mbyte	4 module of 1 Mbyte each	J2 - J5
	4 module of 4 Mbyte each	J6 - J9
32 Mbyte	8 module of 4 Mbyte each	J2 - J9

There are no hardware settings to worry about here. The memory size is configured by the PC on startup.

Removing a memory module
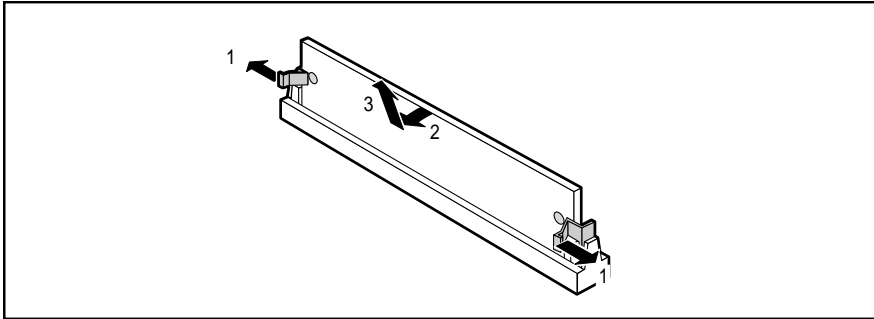
▶ Force the plastic holders carefully outward at left and right (1).

▶ Tilt the module forward (2) and pull the module off upward (3).
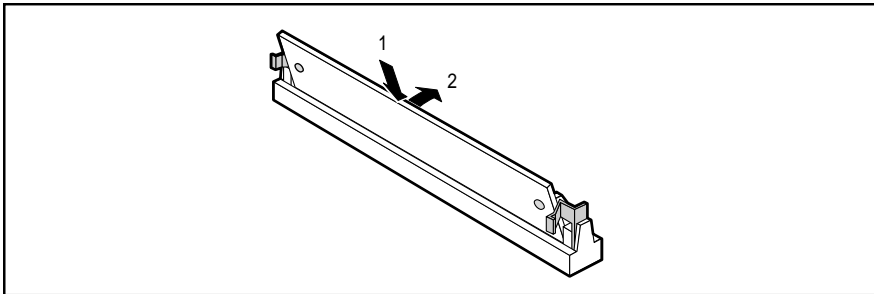

Installing a memory module

▶ Plug the module into its slot at a slanting angle (1).

▶ Tilt the module back until it snaps into place (2).

Second level cache memory (External cache memory)

The external cache can be 0 Kbyte, 64 Kbyte, 128 Kbyte or 256 Kbyte in size.
There are eleven sockets (U48 to U58) for incorporating the SRAM components.
Only the SRAM components and sockets listed in the table below are permissible
for the configuration.

Slot	cache memory 64 Kbyte		cache memory 128 Kbyte		cache memory 256 Kbyte	
U48	8Kbit*8	15 nsec	8Kbit*8	15 nsec	8Kbit*8	15 nsec
U49	---	---	---	---	8Kbit*8	15 nsec
U50	16Kbit*4	15 nsec	16Kbit*4	15 nsec	16Kbit*4	15 nsec
U51 - U54	8Kbit*8	20 nsec	32Kbit*8	20 nsec	32Kbit*8	20 nsec
U55 - U58	8Kbit*8	20 nsec	---	---	32Kbit*8	20 nsec

--- = not inserted

Memory-config.	Jumper setting of					
	JP12	JP13	JP14	JP15	JP16	JP17
0 Kbyte	2-3	2-3	---	---	---	---
128 Kbyte	1-2	1-2	inserted	---	---	inserted
64 Kbyte	2-3	2-3	---	---	---	---
256 Kbyte	2-3	2-3	inserted	inserted	inserted	inserted

--- = not inserted

Only the SRAM components listed in the table below must be used.

Memory configuration	number
64 Kbyte	S26361-F1052-V1
128 Kbyte	S26361-F1052-V3
256 Kbyte	S26361-F1052-V2

Installing the SRAM chip

⚠ Note the location of the SRAM chip when you plug in SRAM chip!
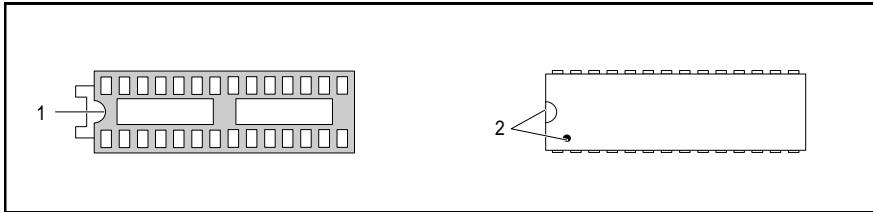
1 = Mark on the socket   2 = Mark on the top of the SRAM chip

► Insert the SRAM chip in such a way that the mark on the SRAM chip matches the position of the mark on the socket.

► Set the U-plugs JP12 to JP17 in accordance with the memory configuration.

VGA controller onboard

Standard modes

Mode	Resolution	Display	Vsync (Hz)	Hsync (kHz)	PF (MHz)
0,1	40x25	Color text 9x16-characters	70	31.5	14
			84	37.9	36
			83 *	39.4	37.7
2,3	80x25	Color text 9x16-characters	70	31.5	28
			84	37.9	36
			83 *	39.4	37.7
4,5	320x400	Color graphic 4 Colors	70	31.5	12.5
			84	37.9	36
			83 *	39.4	37,7
6	640x200	Color graphic 2 colors	70	31.5	25
			84	37.9	36
			83 *	39.4	37.7
7	80x25	Mono text 9x16-characters	70	31.5	28
			84	37.9	36
			83 *	39.4	37.7
D	320x200	Color graphic 16 colors	70	31.5	12.5
			84	37.9	36
			83 *	39.4	37.7
E	640x200	Color graphic 16 colors	70	31.5	25
			84	37.9	36
			83 *	39.4	37.7
F	640x350	Mono graphic 8x14-characters	70	31.5	25
			84	37.9	36
			83 *	39.4	37.7
10	640x350	Color graphic 16 colors	70	31.5	25
			84	37.9	36
			83 *	39.4	37.7
11	640x480	Color graphic 2 colors	60	31.5	25
			72	37.9	31.5
			72 *	39.4	33.4
12	640x480	Color graphic 16 colors	60	31.5	25
			72	37.9	31.5
			72 *	39.4	33.4
13	320x200	Color graphic 256 colors	70	31.5	12.5
			84	37.9	36
			83 *	39.4	37.7

* = overscan

Board specific modes

| Mode	Resolution	Display	Vsync (Hz)	Hsync (kHz)	PF (MHz)
14	132x25	Color text 8x16-characters	70	31.5	41.5
54	132x43	Color text 8x8-characters	70	31.5	41.5
55	132x25	Color text 8x14-characters	70	31.5	41.5
58/6A	800x600	Color graphic 16 colors	56	35.2	36
			60	37.8	40
			72	48.1	50
			75	50	50
5C	800x600	Color graphic 256 colors	56	35.2	36
			60	37.9	40
			72	48	50
			75	50	50
5D	1024x768	Color graphic 16 colors	87+	35.5	44.9
			60	48.3	65
			70	56	75
			75	60	80
5F	640x480	Color graphic 256 colors	60	31.5	25
			72	37.9	31.5
			72 *	39.4	33.4
60	1024x768	Color graphic 256 colors	87 +	35.5	44.9
			60	49	65
			70	56,5	75
			75	60	80
64	640x480	Color graphic, 65536 colors	60	31.5	25
			73	37.9	31.5
			71 *	39.4	33.4
65	800x600	Color graphic, 65536 colors	56	35.5	36
			60	37.9	40
6C	1280x1024	Color graphic, 16 colors	87 +	49	75
71	640x480	Color graphic, 16 million colors	60	31.5	25

* =   overscan

+ =   interlaced mode

The screen resolution depends on the connected monitor. Only those resolutions and refresh rates specified in the technical data section of the monitor description may be set. Otherwise the monitor can be damaged.

Battery
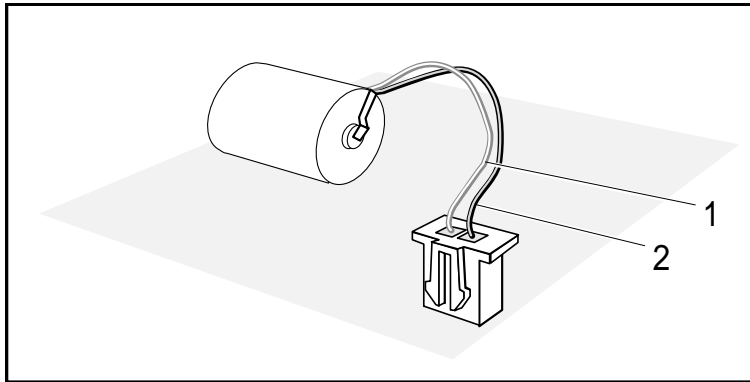
1 = red cable (+)   2 = black cable (-)

⚠ Note that the red cable of the battery is located at the left side of the coding of the connector.

⚠ Please note the following:

The battery on the board may only be replaced by a service engineer.

There is a danger of explosion if the battery is not replaced correctly.

The battery may only be replaced with an identical chip or by a model recommended by the manufacturer.

Ensure that the battery is inserted with the poles in the correct position.

Special arrangements must be made to dispose of used batteries in accordance with local regulations.