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Service Bulletin 506464

METTLER TOLEDO MultiRange ID5sx weighing terminal

Supplement to the service manual 703630

The MMRx explosion-proof weighing system has been expanded by the ID5sx weighing terminal.
This service bulletin contains the following information for an MMRx explosion-proof weighing system when the ID5sx weighing terminal is used:

- Cautionary notes
- Putting into operation
- Service
- ID5sx with exploded view drawing, spare parts list and information on corrective maintenance of the ID5sx.

Cautionary notes

The METTLER TOLEDO MultiRange MMRx explosion-proof weighing system ranks among products associated with increased liability risk owing to its use in hazardous areas.

Special care must be exercised when handling such products. The code of conduct is determined by the national plan regarding "Intrinsically safe distribution".

Strict adherence to the following basic rules is essential in service work with Ex scales:

Δ Service work may be performed only by service engineers who have completed an Ex training course specific to the product. Ex service documentation will be distributed only to trained service engineers.

Δ If the end user company has so-called "Safety directions for outsiders", the service engineer must be familiar with these before starting service work.

Δ For work in the hazardous area of the end user who requires service work to be performed, use appropriate tools and protective clothing.

Δ Service work in hazardous areas may be performed only if the end user has issued a permit (also known as a "spark certificate" or "fire certificate").
Even the dismantling of an Ex scale in the hazardous area and moving it to the nonhazardous area is regarded as service work.
Service work may not be started until the safety officer of the end user has confirmed that no hazard exists.

Δ Whenever possible, service work must always be performed outside hazardous areas.

Δ Making and isolating the connection to the power supply must be effected solely by an electrician of the end user.

Δ Only parts or assemblies specified in the spare parts list may be changed.

Δ No changes whatsoever to the products or repairs to assemblies may be performed.

Δ On completion of the service work and before putting into operation again, the Ex scale must be checked to ensure it is in perfect condition with regard to safety.

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1. System overview

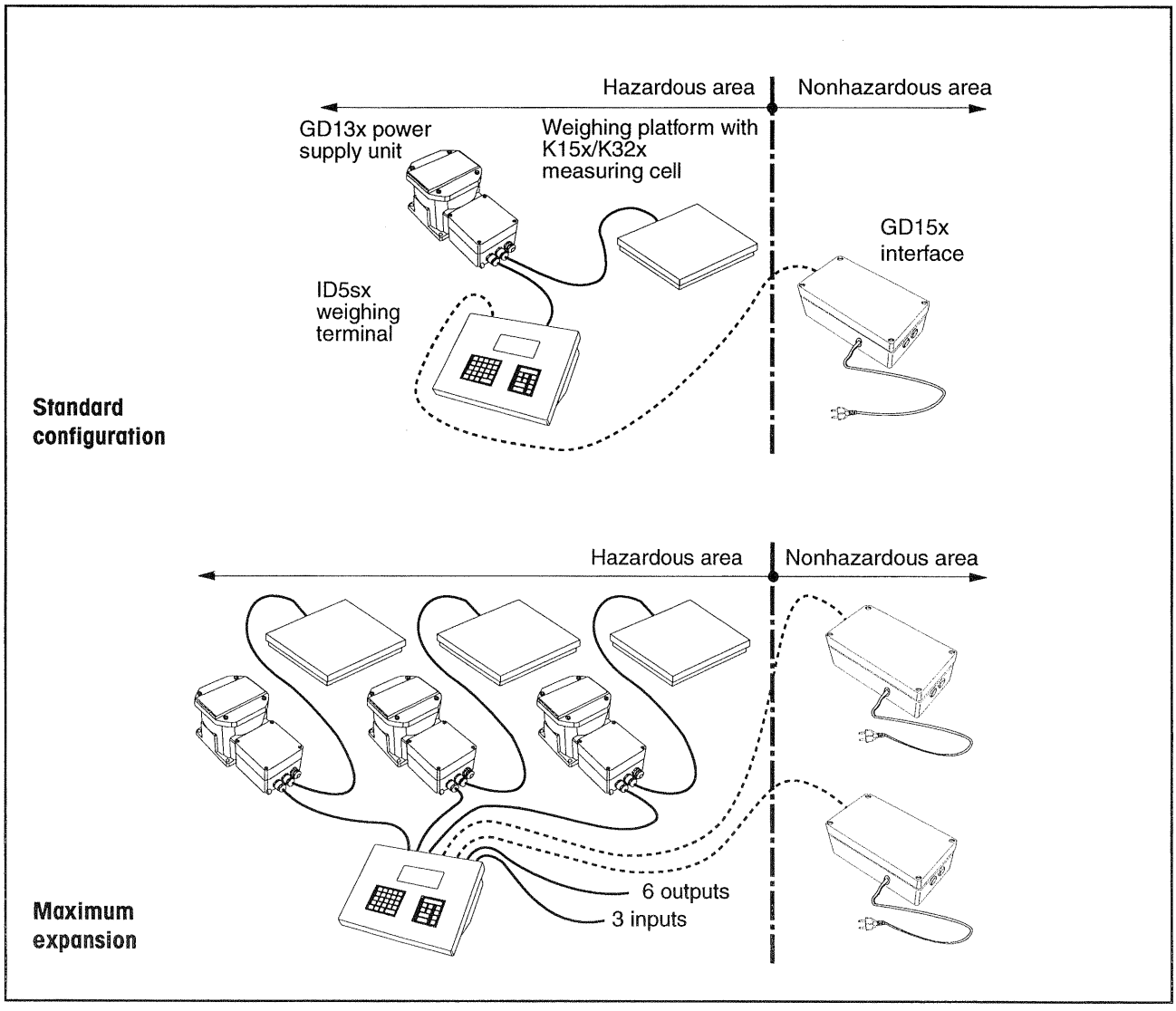
The MMRx weighing system is suitable for use in the hazardous areas of zones 1, 2 and 11. It comprises the following components:

- ID5sx weighing terminal,
- with up to three K...x weighing platforms and
- up to three GD13x power supply units.

These three components are installed in the hazardous area. The weighing platforms are each attached to the weighing terminal via a separate power supply unit. The connections of the weighing terminal and weighing platform are led to the terminal box of the power supply unit. The terminal box is thus used as the central test point in repair work.

The following peripherals can be installed:

- up to two GD15x interfaces. These must be installed in the nonhazardous area.
- one peripheral to each of the 3 digital inputs or 6 digital outputs of the weighing terminal. These are installed in the hazardous area. The inputs and outputs can be controlled by means of the appropriate Pac software of the ID5sx.



2. Putting into operation

2.1 Installation

See Guide for installers "MMRx – ID5sx explosion-proof weighing system".

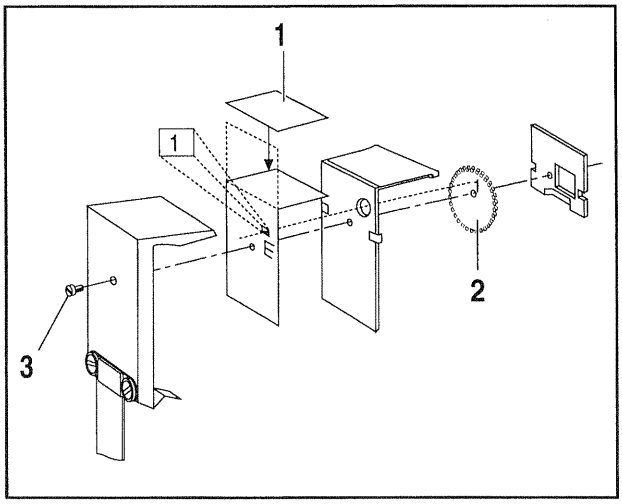
2.2 Setting up

2.2.1 Attaching ident (identification) card to the weighing terminal (bench version only)

In the factory the ident (identification) card is provided with the measurement data plate of the default configuration of the weighing platform, the ident (identification) code disk shows "1".

Putting into operation for the first time in the default configuration

- Mount ident card directly on the terminal.



Putting into operation after changing the weighing platform configuration

- Remove ident card.
- Affix appropriate measurement data plate (1).
- Set ident code disk (2) so that it matches the displayed ident code.
- Assemble ident card.
- With certified scales, seal screw (3).

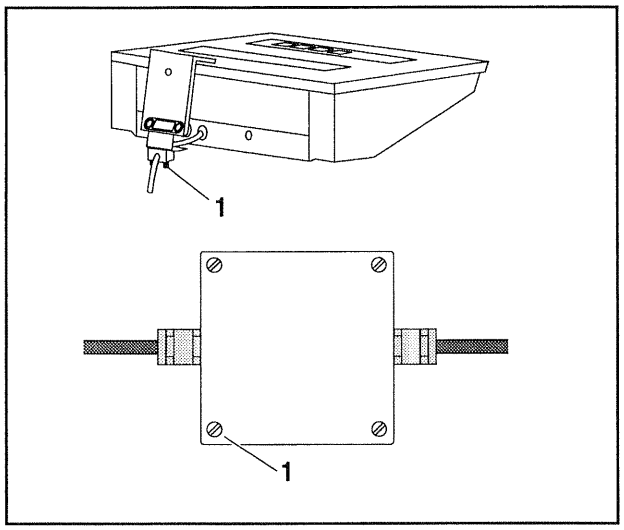
2.2.2 Noting measurement data on weighing terminal (version for switch cabinet installation only)

In the factory the weighing terminal is not provided with a measurement data plate for weighing platforms.

- Before putting into operation, inscribe measurement data plate in accordance with the configuration and affix to housing cover.
- With a certified configuration, secure the measurement data plates with the appropriate certification seals.

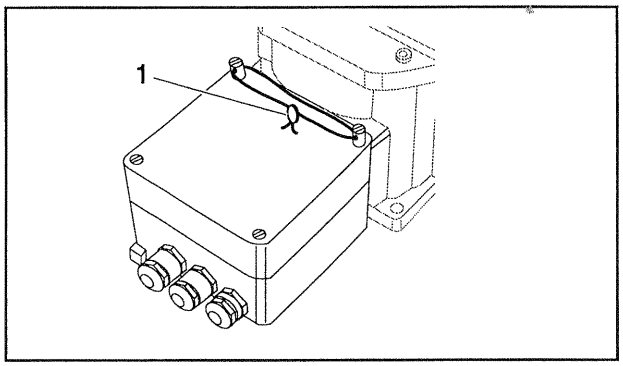
2.3 Certification

If a scale is certified after putting into operation, secure the affected parts of the weighing system as follows:



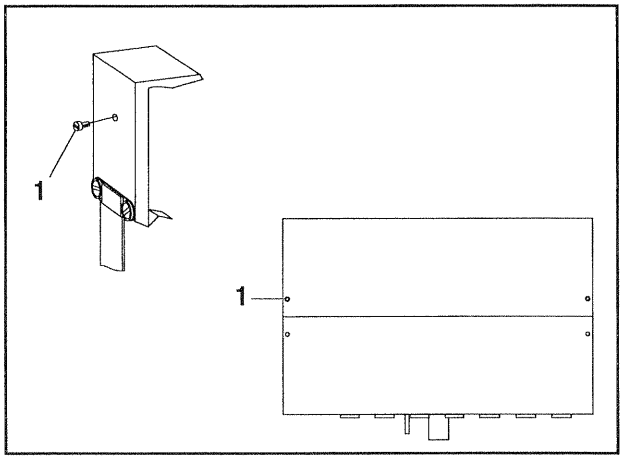
Secure by break-off screws (1):

- Ident card at the terminal.
- Terminal box of the weighing platform.



Secure by sealing (1):

- Cable connection box of the power supply unit.



Secure by certification seals (1):

- Ident card at the terminal (bench version only).
- Screws on top part of cover of the terminal (version for switch cabinet installation only).

2.4 Preparing cables

See Guide for installers "MMRx – ID5sx explosion-proof weighing system".

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1. Dismantling the MMRx Ex weighing system

If the end user company can not guarantee that no explosible atmosphere will be formed during service work, the weighing system must be dismantled as follows and reassembled in the nonhazardous area.

- Have system disconnected from the power supply by an electrician of the end user company.
- Disconnect all connection cables. If cables have a fixed routing, they remain in the hazardous area.
- Dismantle Ex measuring cell of the weighing platform (see Weighing platforms section, 3.1 Changing the measuring cell).
- Unscrew power supply unit.
- Recable the system in the nonhazardous area as described in the MMRx – ID5sx Guide for installers. If connection cables have been left in the hazardous area, new standard cables (see spare parts list) must be used: The power supply connection must be made yourself using a power cable.

2. Checklist maintenance

2.1 Visual inspection

- Check the condition of the following scale components for mechanical damage:
  - Weighing terminal
  - Power supply unit(s)
  - Weighing platform(s)
  - Interface(s) (if used)
  - Peripheral unit(s) (if used) at inputs and outputs of the weighing terminal.
- Check condition of the following cables:
  - Power cable
  - Connection cable between power supply unit and weighing terminal
  - Connection cable between power supply unit and weighing platform
  - Connection cable between weighing terminal and interface(s) (if used)
  - Connection cable between weighing terminal and peripheral unit(s) (if used)
  - Cable for equipotential bonding
- With certified scales, check seal and certification seals.

The visual inspection is conducted although the condition of the system is the responsibility of the end user.

- Inform end user of any damage.

2.2 Function check

- With certified scales, check ident code (see Putting into operation, section 2.2).
- Perform calibration and display check using Test key.
- Check functions by entries using keypad (see operating instructions).
- Check following settings of the weighing platform (see standard service manual of the attached weighing platform):
  - Calibration
  - Cornerload
  - Linearity
  - Hysteresis

3. Troubleshooting

Caution: **If no spark certificate has been issued by the end user company for service work on the weighing system, the service work must be performed in the nonhazardous area (see 1.).**

Notes: In the following table, the

- "Possible cause" and "Rectification" always refer to the weighing platform currently selected.
- References to the Guide for installers always refer to the Guide for installers for the "MMRx – ID5sx explosion-proof weighing system".

Fault	Possible cause	Rectification
No display at terminal	• No line voltage available • Power supply board or attached devices faulty • Display faulty • ID5sx board faulty • Cable to the display slack	• Inform electrician of end user • Measure supply voltages U1, U2, U3, U4 in terminal box of the power supply unit and change faulty components • Change display (see ID5sx section, 3.3) • Change board (see ID5sx section, 3.4) • Plug in cable proper
The display shows _ _ _ _ or the weight display changes continuously	• Transport safeguards of the weighing platforms not loosened • Mechanical system touching	• Undo transport safeguards (see operating instructions of weighing platform) • Adjust frame and lever system (see service manual of the weighing platform)
No entry via keypad possible	• Keypad faulty • ID5sx board faulty • Keypad cable not plugged in	• Change housing cover (see ID5sx section, 3.1) • Change board (see ID5sx section, 3.4) • Plug in keypad cable proper
The display shows PLUG-IN	• Selected weighing platform not attached • Connection cable of weighing platform faulty • Measuring cell of weighing platform faulty	• Attach weighing platform (see Guide for installers) • Check cable and replace if need be (see Guide for installers, "Preparing cables" section) • Replace measuring cell (see Weighing platforms section, 3.1)
The display shows ERROR ID5	• Fault in terminal	• Check all plug-in connections, Check EPROM service PRG Option ID5sx and ServicePac PRG for firm seating

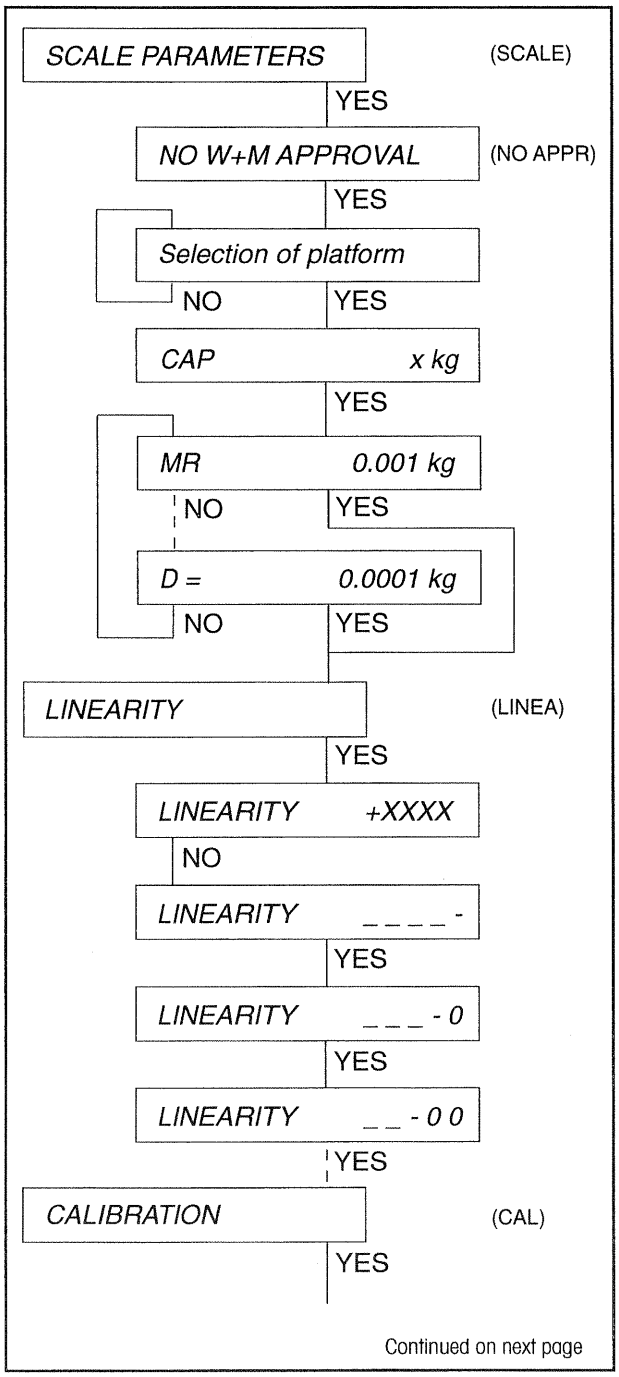
Fault	Possible cause	Rectification
INTERF. 1 CL BREAK appears in the display	• Peripheral units not attached or faulty • Interface faulty	• Check connections and change peripheral if need be. • Change Ex GD15x board (see GD15x section, 3.2)
CALIBRATION ERROR appears in the display	• Calibration error	• Repeat calibration
PLATFORM ERROR appears in the display	• Connection cable of weighing platform faulty • Measuring cell of weighing platform faulty	• Check cable and change if need be (see Guide for installers, "Preparing cables" section) • Change measuring cell (see Weighing platforms section, 3.1)
No weight display or display of PLUG IN or 888 appears	• Connection cable faulty • Measuring cell faulty • ID5sx board faulty	• Change cable (see Guide for installers, "Preparing cables" section) • Change measuring cell (see Weighing platforms section, 3.1) • Change board (see ID5sx section, 3.4)
Attached computer receives no values from balance	• Connection cable not attached or faulty • Settings of data interface in ID5sx and computer do not match • EX GD15 board faulty	• Check cabling and replace if need be (see Guide for installers, "Preparing cables" section) • Check settings and adjust if need be (see installation instructions of the weighing terminal, "Master mode" section) • Change board (see GD15sx section, 3.2)

Clearing error messages: switch line voltage off then on.

4. Determining the linearity code

The measuring cell is linearized in the factory. The linearity factor is determined in the factory and is set when the scale is delivered. If this factor has changed owing to service work or other influences, it can be redetermined as follows:

- Set service mode on terminal (see 5.3).



Select program block SCALE PARAMETERS.

Select "No W+M approval".

Select attached weighing platform.

Select maximum capacity.

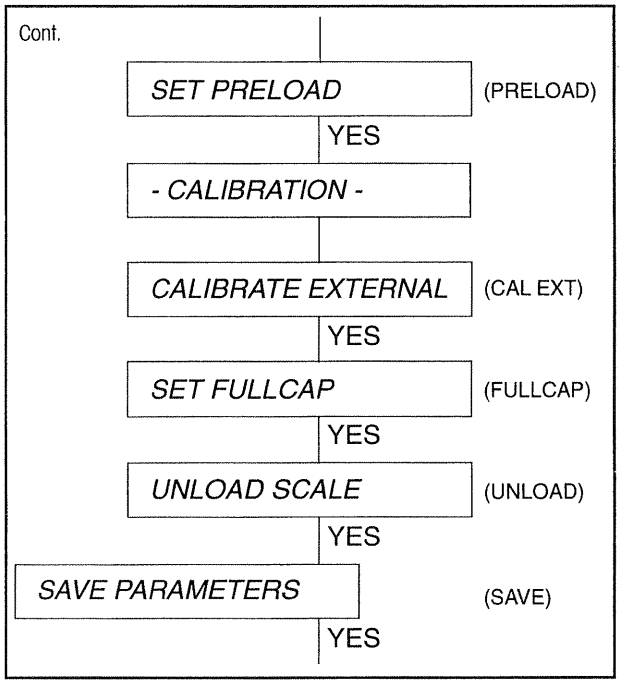
Select maximum resolution.

Select program block LINEARITY.

Set linearity is displayed:
Note: Make a note of the set linearity code.

Set linearity code to +/-0000.

Select program block CALIBRATION.



Unload weighing platform. Attach special external fittings or preloads if desired by customer.

Scale calibrates internally.

Select external calibration.

Load full load. Scale calibrates with full load.

Unload scale.

Select program block SAVE PARAMETERS.

- In the master mode, select "High resolution" (CONTROL) (see operating instructions of the weighing terminal).
- Load half load on weighing platform and note down displayed value.
- Calculate **deviation** from target weight with sign.
- Take **platform factor** from table corresponding to the maximum capacity.

Maximum capacity		Resolution in d		Platform factor	
kg	**lb**	**kg**	**lb**	**kg**	**lb**
15	30	1 500 000	3 000 000	3.2	1.6
60	120	600 000	1 200 000	8.0	4.0
120	250	1 200 000	2 500 000	4.0	2.0
150	300	1 500 000	3 000 000	3.2	1.6
240	500	2 400 000	5 000 000	2.0	1.0
300	600	3 000 000	600 000	1.6	8.0
600	1 200	600 000	1 200 000	8.0	4.0
1 500	3 000	1 500 000	3 000 000	3.2	1.6
3 000	6 000	3 000 000	600 000	1.6	8.0
6 000	12 000	600 000	1 200 000	8.0	4.0

- Calculate linearity code from the formula

  Linearity code = Platform factor x Deviation

  If need be, round off decimal places.
- Set service mode on terminal (see 5.3).
- Enter calculated linearity code with sign in the program block LINEARITY.

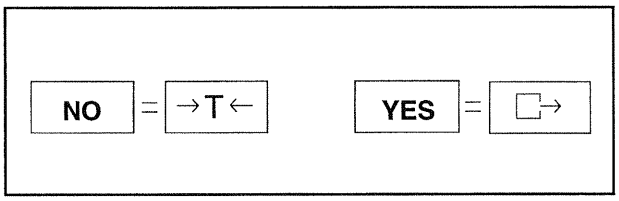
5. Service mode

5.1 Layout of the service mode

The service mode is divided into program blocks within which it is possible to change one or more parameters.

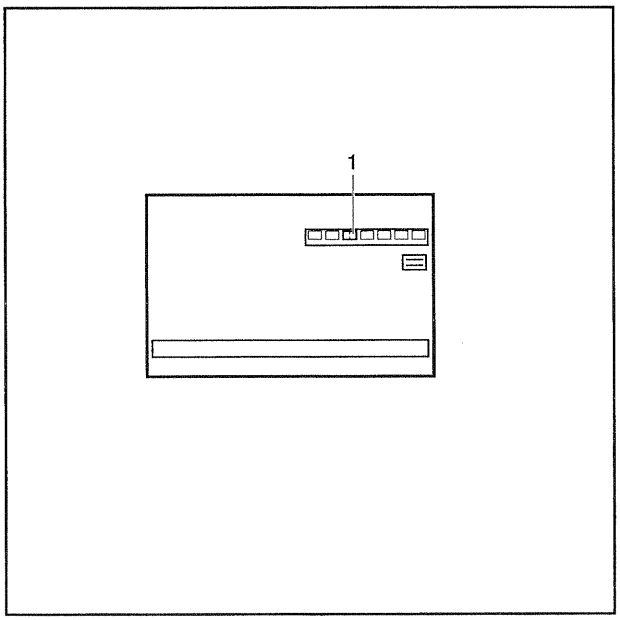
Note: The parameters which can be changed in the service mode are protected by certification. When the changed parameters are stored, the ident code counter is incremented by one. In the case of a certified scale, this corresponds to destruction of a certification seal. Recertification of the scale is then necessary.

5.2 Operation of the service mode



The program blocks or data shown in the display are proposals which must be answered by YES or NO.
The tare key and the transfer key of the terminal are used for the responses. Their meaning is shown opposite.

5.3 Entry into the service mode



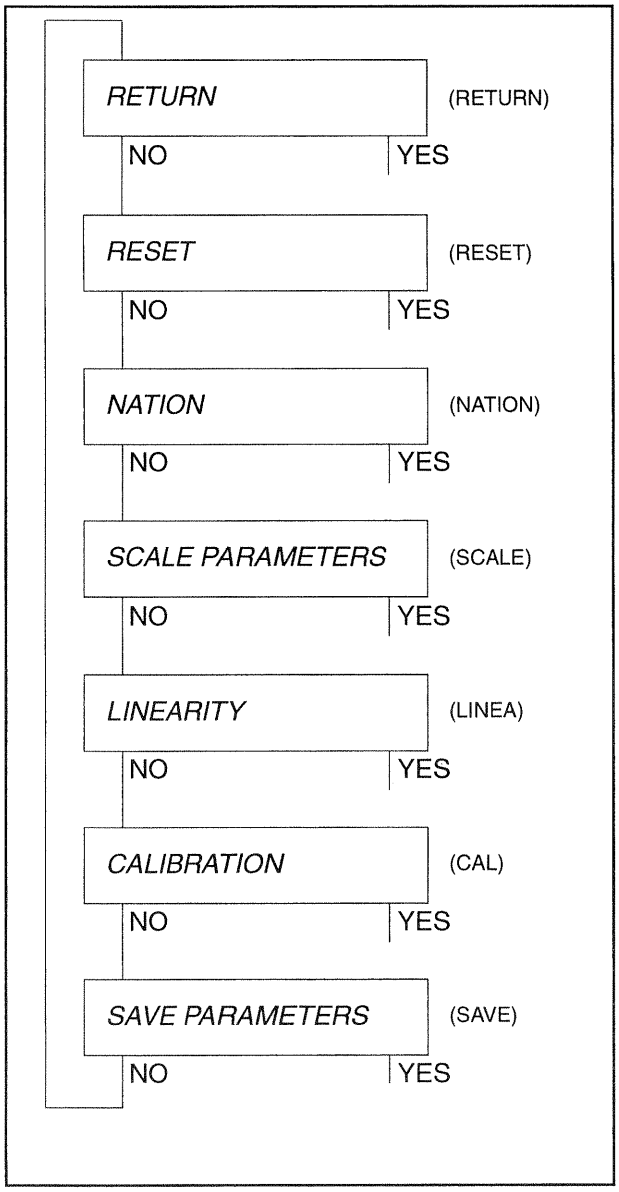
- With bench version:
  - Detach ident card.
  - Unscrew fastener screws of the housing cover.
  - Swing housing cover forward.
- With version for switch cabinet installation:
  - Open switch cabinet.
  - Unscrew fastener screws of the top part of cover.
  - Remove top part of cover.
- Press and hold zeroing key and disconnect cable at pin 1 of terminal 200 (1).
- Wait until SERVICE appears in the display.
- Reconnect cable to pin 1 of terminal 200.
- Assembly in reverse order.

  Note: Pay attention to certification (see "Putting into operation" section, 2.3).

The service mode is used for

- Entry of the parameters specific to the weighing platform following measuring cell replacement.
- Calibration of the scale with the calibration weight built into the measuring cell or externally by loading the scale with the required weights.
- Setting the linearity.
- Resetting the measuring cell parameters to the factory setting.

Overview of the program block structure



The first program block RETURN allows the service mode to be quit without a change in the set parameters and the ident code counter.

The program block RESET clears the scale number. Maximum capacity and scale interval are reset to the factory setting.

In the program block NATION the country is selected. The certification regulations of the country are automatically taken into account.

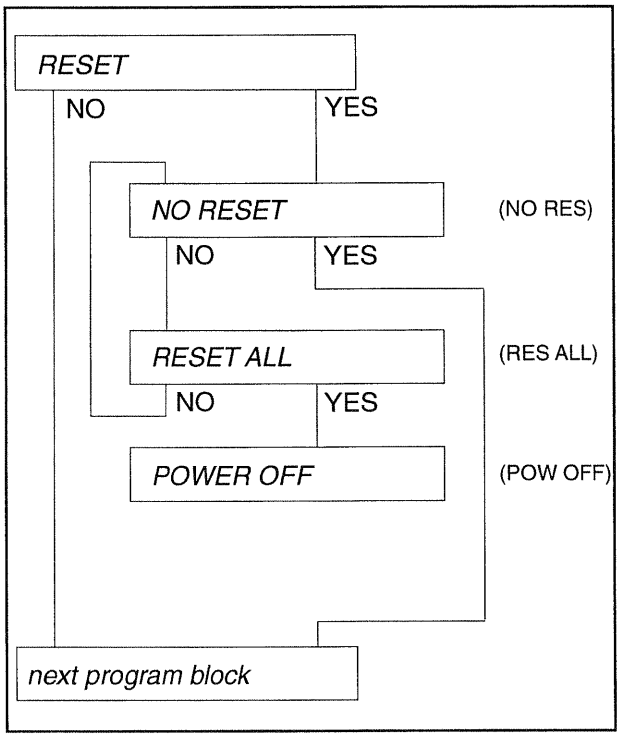
In the program block SCALE PARAMETERS the parameters specific to the weighing platform, namely admissibility for certification (approval), type, maximum capacity and scale interval can be entered.

In the program block LINEARITY the linearity of the weighing platform can be adjusted.

In the program block CALIBRATION the weighing platform can be calibrated internally with a built-in precision weight or externally by loading the corresponding weights.

In the program block SAVE PARAMETERS the selected configuration is saved. The ident code counter is incremented by one if the scale is set to W+M APPROVAL on entry into the service mode. With certified scales this corresponds to the destruction of a certification seal. Re-certification is thus necessary.

Program block RESET



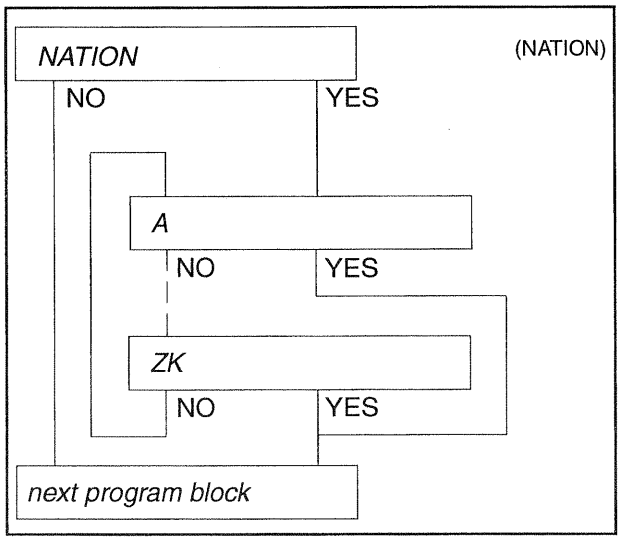
In this program block the parameters specific to the weighing platform, namely admissibility for certification (approval), maximum capacity, range and scale interval are reset to the factory setting.

With YES the program block can be exited.

With the confirmation of RESET ALL, the parameters are reset.

POWER OFF appears in the display. Disconnect and reconnect GD13x power supply connection.
After disconnection and reconnection, the scale is calibrated internally and the weighing platform assigned a new scale number.

Program block NATION

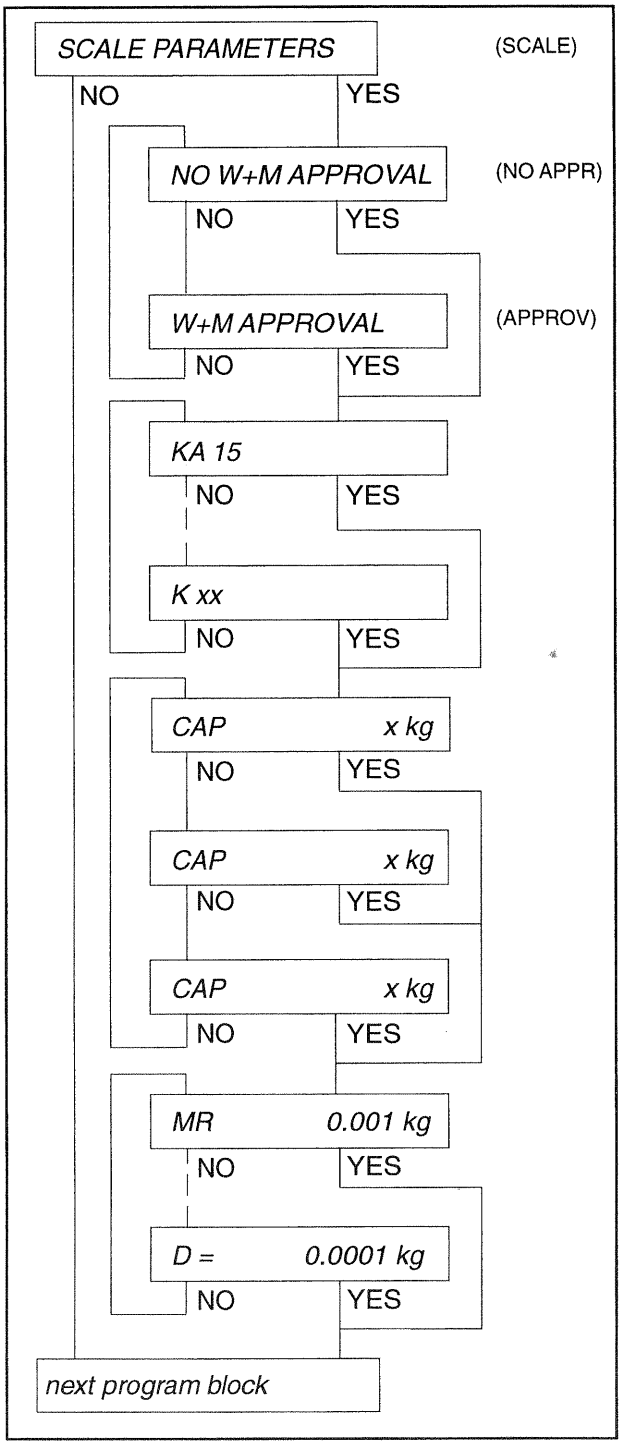


In this program block the country can be selected by its national code. With selection of the country, the language and any national certification regulations are set.

The countries can be displayed in succession with NO.

YES selects the country.

Program block SCALE PARAMETERS



In this program block the parameters specific to the weighing platform, namely admissibility for certification (approval), maximum capacity, range and scale interval are entered.

With NO set "NO W+M APPROVAL" or "W+M APPROVAL" and confirm with YES.

The weighing platform types can be displayed in succession with NO. Select attached weighing platforms and confirm with YES.

The display shows the maximum capacity of the selected weighing platform. The maximum capacity with which the scale is operated can be selected in three steps (maximum load, 1/2 load and 1/4 load). Selection of the load is also available in lb units for certain countries.

The readability of the scale can be set:

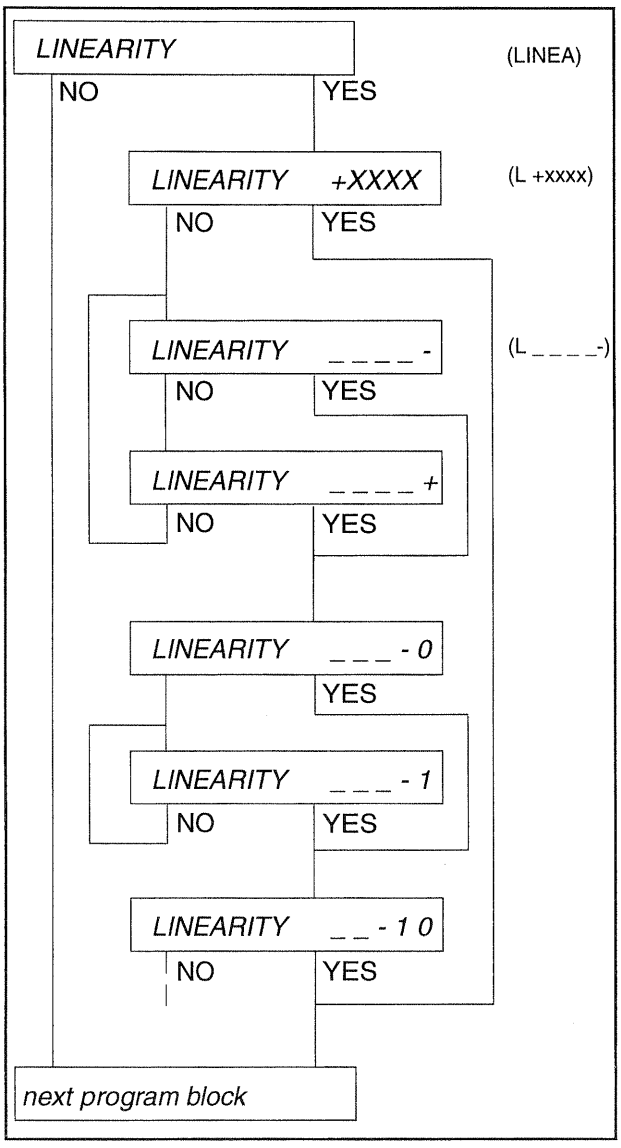
MR represents multi-interval scales with the display readability in the first partial weighing range.

D represents single-interval scales with the displayed accuracy over the entire weighing range.

Program block LINEARITY

After replacement of the measuring cell or a change in the stored linearity code, this must be reentered. The linearity code is found at the rear of the ident card bracket or must be redetermined (see 4.).

Note code and enter as follows:



The stored linearity code is displayed.

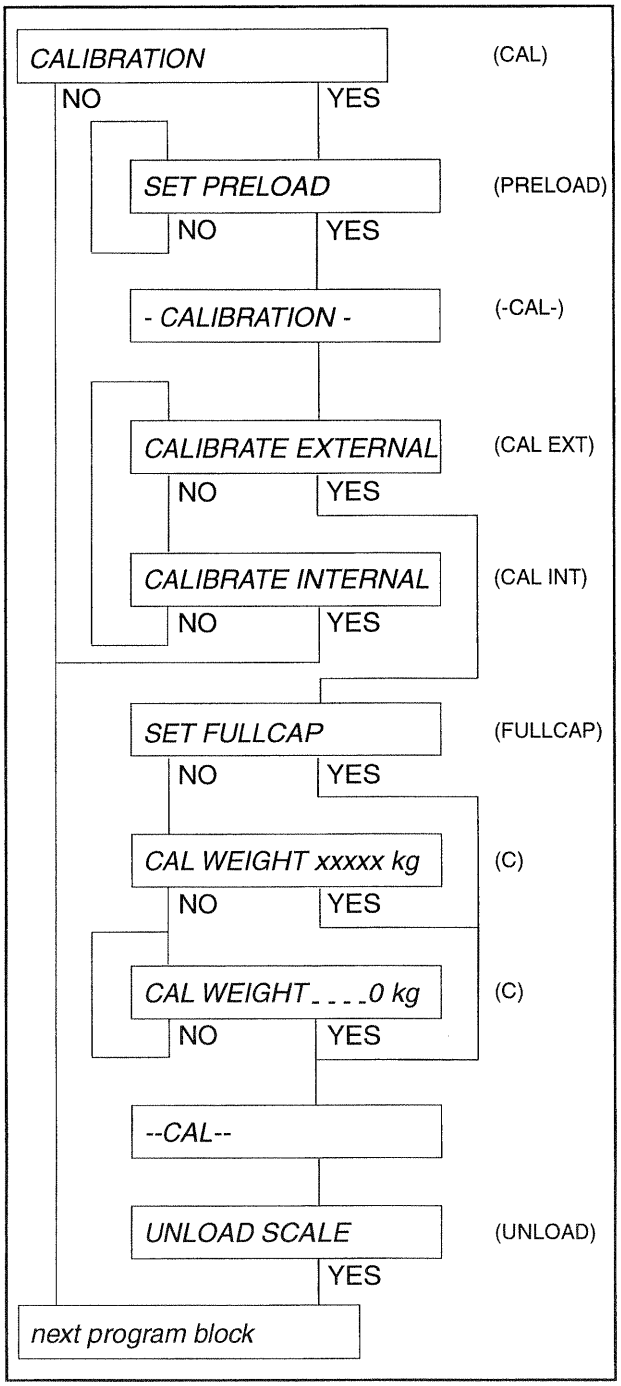
With NO the sign is selected. Confirm sign with YES.

With NO the first digit can be selected. Select digit and confirm with YES.

The next digit appears in the display. Select digit as described above.

After confirmation of the fourth digit, the next program block appears in the display.

Program block CALIBRATION



This program block is used for calibration of the scale.

Unload weighing platform. Attach special external fittings or preloads if desired by the customer.

Scale calibrates internally.

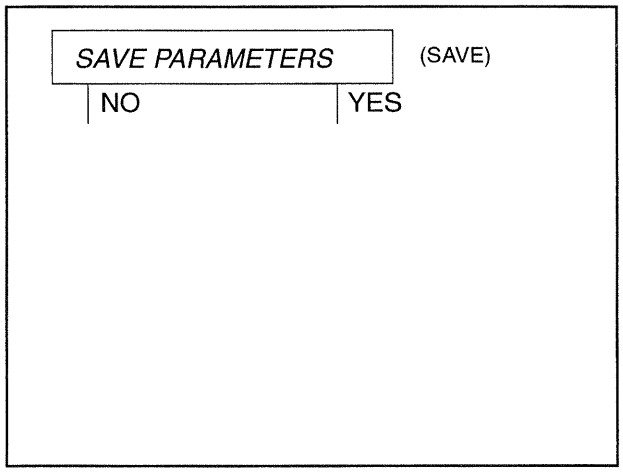
Scale can be calibrated externally by confirmation with YES.

Load calibration weight on the scale and select appropriate program block.
In the first program block the maximum capacity of the attached weighing platform is displayed.
In the second program block the set maximum capacity of the scale is displayed.
In the third program block the calibration weight can be set. NO is used to select the digit and YES to confirm it. 5 digits must be entered.

Scale calibrates with loaded weight.

Unload weighing platform.

Program block SAVE PARAMETERS

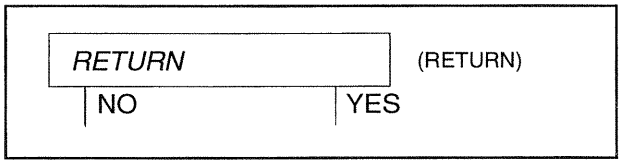


In this program block the set configuration can be saved.

The scale returns via the display check to normal operation.

Note: The parameters which can be changed in the service mode are protected by certification; they also include the parameters for admissibility for certification (approval) (program block SCALE PARAMETERS). When the changed parameters are saved, the ident code counter is incremented by one. With a certified scale, this corresponds to destruction of a certification seal. Recertification of the scale is then necessary.

Program block RETURN



After confirmation with YES, the scale returns to normal operation.
The set configuration is not saved and the ident code counter remains unchanged.

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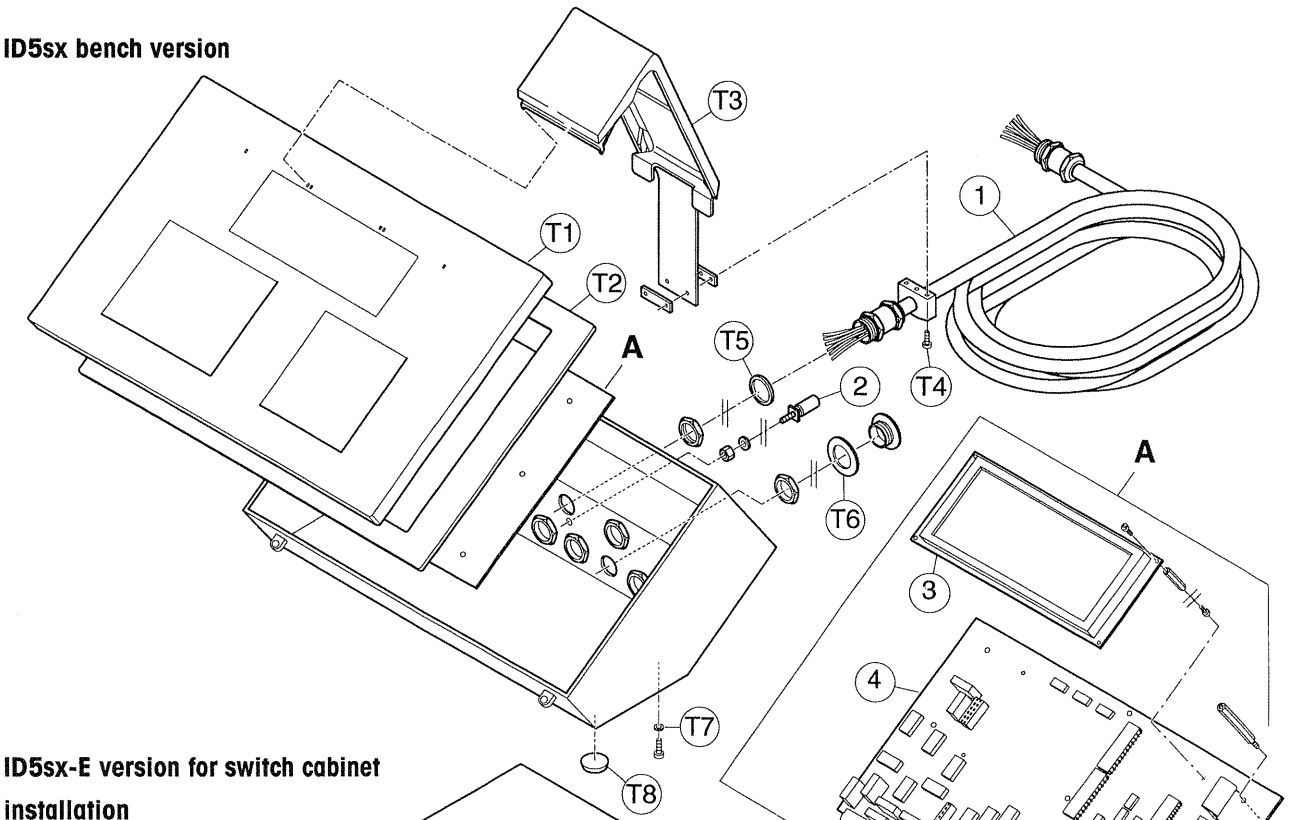
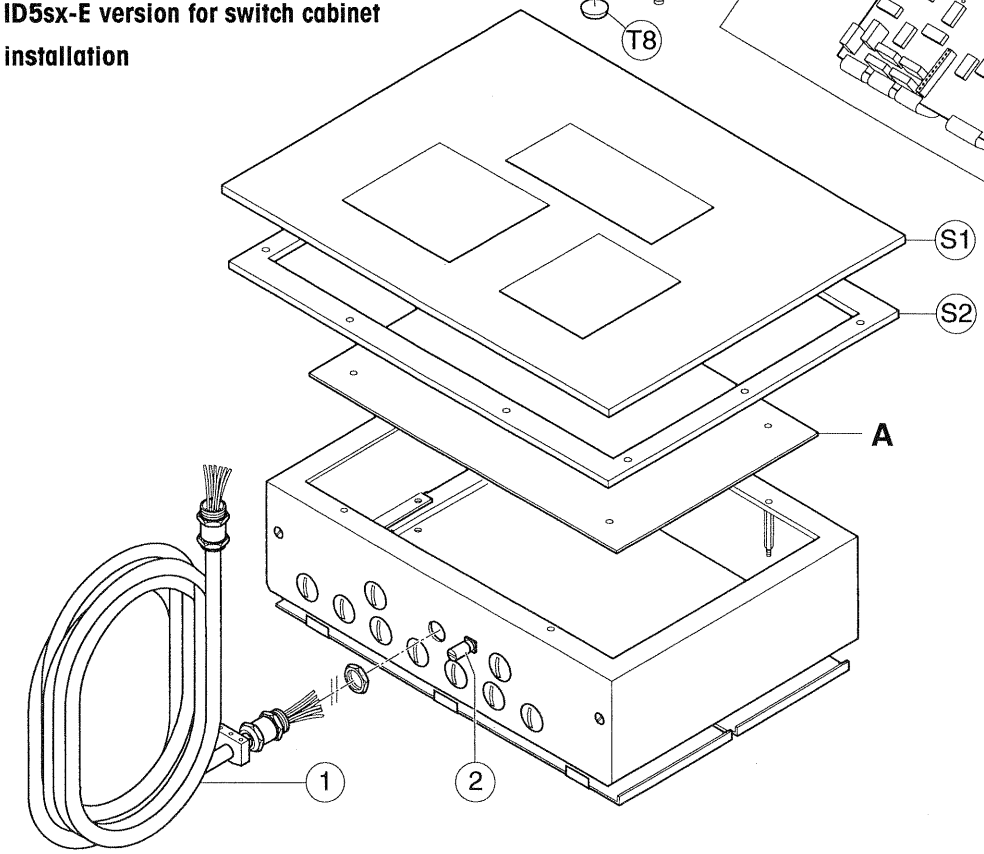
1. Exploded view drawing

ID5sx bench version



ID5sx-E version for switch cabinet installation



2. Spare parts list ID5sx

Note

All spare parts must be purchased from Mettler-Toledo (Albstadt) GmbH.

2.1 Spare parts of the bench version (ID5s) and the version for switch cabinet installation (ID5sx-E)

Item	Designation	Part No.	Replaced by
1	Ex connection cable; length approx. 5 m for connection of ID5sx and GD13x	504 668	
2	Mantel terminal	504 664	
3	LC ID5sx	506 362	
4	Board ID5sx	506 361	
5	ServicePac PRG ID5sx/BasePac ID5sx/DosPac ID5sx/FormPac ID5sx/ContrPac ID5sx/DataPac ID5sx/DosPac-R ID5sx/SumPac ID5sx/CountPac	 506 364 506 365 506 366 506 367 506 378 506 383 506 384 506 385	
6	Service PRG Option ID5sx	506 363	

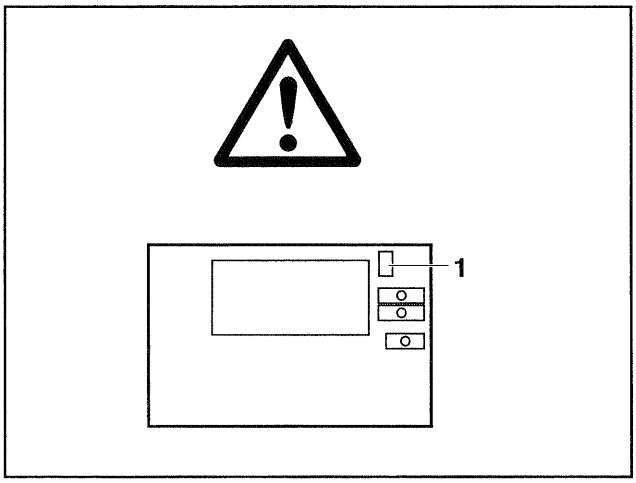
2.2 Spare parts of the bench version (ID5sx)

Item	Designation	Part No.	Replaced by
T1	Housing cover		
	ID5sx/BasePac	506 368	
	ID5sx/DosPac	506 369	
	ID5sx/FormPac	506 370	
	ID5sx/ContrPac	506 371	
	ID5sx/DataPac	506 372	
	ID5sx/DosPac-R	506 386	
	ID5sx/SumPac	506 387	
	ID5sx/CountPac	506 388	
T2	Housing seal	206 220	
T3	Ident card	504 468	
T4	Break-off screw	504 659	
T5	Seal for cable gland PG11	500 492	
T6	Ring seal for dummy stopper	203 654	
T7	Ring seal DIN 7603 for housing screws; A4x8x1 copper	203 659	
T8	Leveling foot	504 186	

2.3 Spare parts of the version for switch cabinet installation (ID5sx-E)

Item	Designation	Part No.	Replaced by
S1	Housing cover		
	ID5sx-E/BasePac	506 373	
	ID5sx-E/DosPac	506 374	
	ID5sx-E/FormPac	506 375	
	ID5sx-E/ContrPac	506 376	
	ID5sx-E/DataPac	506 377	
	ID5sx-E/DosPac-R	506 389	
	ID5sx-E/SumPac	506 390	
	ID5sx-E/CountPac	506 391	
S2	Housing seal	207 938	

3. Corrective maintenance



Caution

- Before opening the instrument, make system dead.
- Attach cables as described in the MMRx terminal diagram in the Guide for installers "MMRx – ID5sx explosion-proof weighing system".
- Before touching electronic components, ground yourself.
- Always place electronic components on antistatic material.
- Never replace yellow Ex battery (1) on ID5sx board.
- Before corrective maintenance, note customer's parameter settings of the weighing terminal.

3.1 Removing and installing ID5sx

3.1.1 Bench version

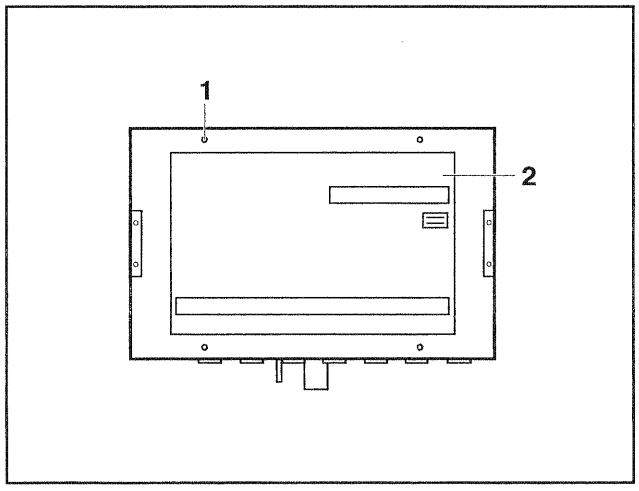
- Undo ident card and remove.
- Unscrew fastener screws of the cover.
- Remove cover with ID5sx board.
- Depending on the type of corrective maintenance, disconnect cables from terminals.
- Unscrew fastener screws of ID5sx board.
- Carefully raise ID5sx board and disconnect keypad cable at rear.
- Place ID5sx board on a suitable antistatic support.

3.1.2 Version for switch cabinet installation

- Open switch cabinet.

If access to just the strip with the terminals for the GD15x interface or the inputs/outputs is required,

- unscrew only fastener screws of the lower part of cover.



If additional dismantling is necessary:

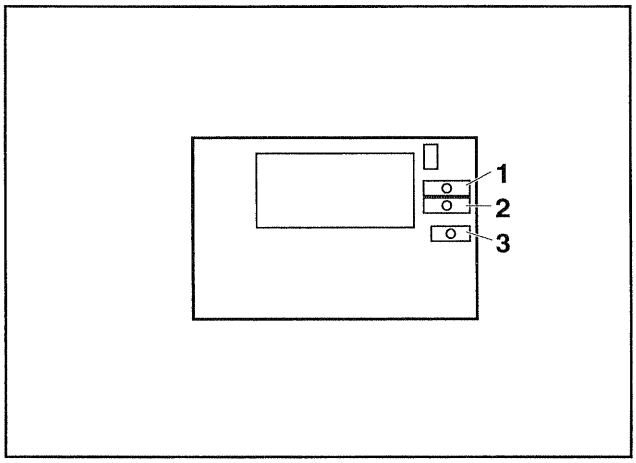
- Unscrew fastener screws of both cover parts.
- Remove top and bottom parts of cover.
- Depending on the type of corrective maintenance, disconnect cables from terminals.
- Undo 4 bolts (1) above and below ID5sx board (2).
- Remove housing frame.
- Unscrew fastener screws of ID5sx board.
- Carefully raise ID5sx board and disconnect keypad cable at rear.
- Place ID5sx board on a suitable antistatic support.
- If the housing cover of the ID5sx-E has to be changed, remove housing cover from switch cabinet.

3.1.3 Installation

Installation is in reverse order to removal of the ID5sx. Here:

- Ensure correct positioning of the seals. Use only undamaged seals. Change any seals that are damaged.
- Ensure correct seating of all plug-in connections.
- With the certified version for switch cabinet installation, ensure all certification seals are affixed to the top part of the cover.
- If the housing cover of the version for switch cabinet installation is changed, affix blank label sets corresponding to the configuration and inscribe accordingly.
  Note: Use waterproof pen.

3.2 Changing the service PRG Option ID5sx or ServicePac PRG



- Remove ID5sx (see 3.1).
- Position ID5sx board so that the ID5sx LCD is visible.
- Pull ServicePac PRG (1 and 3) using IC pliers from socket (or service PRG Option ID5sx (2)).
- Insert new ServicePac PRG (1 and 3) in IC socket (or new service PRG Option ID5sx (2)). In this case
  - Carefully bend IC contacts straight if necessary.
  - Pay attention to marking on IC and at socket.
  - Insert EPROM 0 from ServicePac PRG in socket IC103 (3), and EPROM 1 in socket IC104 (1),
    or EPROM from service PRG Option ID5sx in socket IC105 (2).

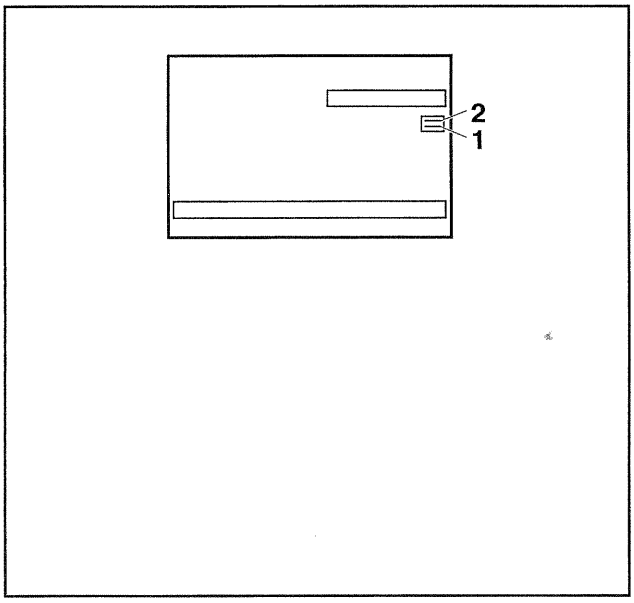
- Perform installation in reverse order.
- Set the weighing terminal to the customer's parameter settings noted down earlier.

3.3 Changing ID5sx LCD

- Remove ID5sx (see 3.1).
- Position ID5sx board such that the ID5sx LCD is visible.
- Unscrew fastener screws of ID5sx LCD.
- Carefully disconnect ID5sx LCD from plug-in connection to ID5sx board.
- Perform installation in reverse order.

3.4 Changing ID5sx board

- Remove ID5sx (see 3.1). Disconnect cables from terminals.
- Position ID5sx board such that the terminals are visible.
- Unscrew fastener screws of ID5sx LCD.
- Carefully disconnect ID5sx LCD from the plug-in connection to the ID5sx board.
- If necessary, remove service PRG Option ID5sx and ServicePac PRG from the IC socket of the ID5sx board using IC pliers (see 3.2).
- Insert service PRG Option ID5sx and ServicePac PRG in IC socket on replacement board (see 3.2).
- Turn ID5sx board so that the terminal strips are visible.



- Set the hook switches (1 and 2) on the board in accordance with the attached weighing platforms:

Attached weighing platforms	Number and position of the hook switch
1	1 closed 2 closed
1 and 2	1 open 2 closed
1 and 3	1 closed 2 open
1, 2 and 3	1 open 2 open

- Perform installation in reverse order.
- Set the weighing terminal in accordance with the customer's parameter settings noted down earlier.