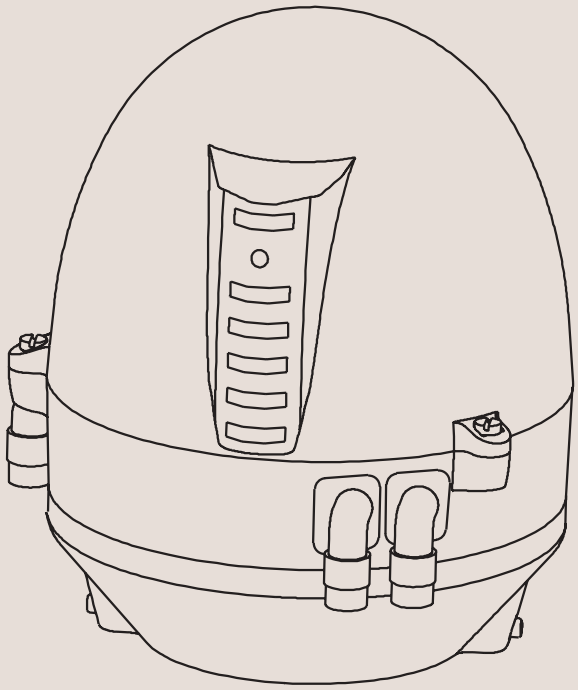
Instruction Manual

*Think*Top® AS-Interface 29.5 - 31.6 VDC



Patented Sensor System
Registered Design
Registered Trademark

IM70827-GB5 2002-12

Declaration of Conformity

The designating company

Alfa Laval

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Top Unit for Valve Control & Indication	*Think*Top® AS-Interface	
Denomination	Type	Year

is in conformity with the following directives with amendments:

- Low Voltage Directive 73/23/EEC
- EMC Directive 89/336/EEC

Vice President, R & D	Bjarne Søndergaard
Title	Name
Alfa Laval	B. Søndergaard
Company	Signature

Designation

CE

The information contained herein is correct at the time of issue but may be subject to change without prior notice.

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Unsafe practices and other important information are emphasized in this manual.
Warnings are emphasized by means of special signs.
All warnings in the manual are summarized on this page.
Pay special attention to the instructions below so that severe personal injury or damage to the top unit are avoided.

Always read the manual before using the top unit!

WARNING!
Indicates that special procedures must be followed to avoid severe personal injury.

CAUTION!
Indicates that special procedures must be followed to avoid damage to the *Think*Top®.

NOTE!
Indicates important information to simplify or clarify practices.

General warning:

Dangerous electrical voltage:

Caustic agents:

Installation
- Always observe the technical specifications (see chapter 3).
- Never install the *Think*Top® before valve or relay is in a safe position.
- If welding close to the *Think*Top®: Always earth close to the welding area.
- Disconnect the *Think*Top®.

- Always have the *Think*Top® electrically connected by authorized personnel.

Maintenance
- Always read the technical specifications thoroughly (see chapter 3).
- Always fit the seals between valve and *Think*Top® correctly.
- Never service the *Think*Top® before valve or relay is in a safe position.
- Never service the *Think*Top® with valve/actuator under pressure.

- Never clean the *Think*Top® with high pressure cleaning equipment.
- Never use cleaning agents when cleaning the *Think*Top®. Check with cleaning agent supplier.

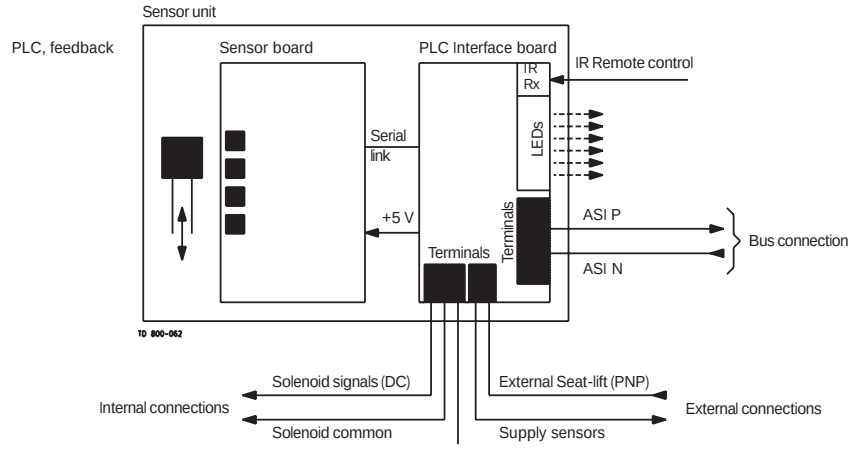
The *Think*Top® is designed to ensure optimum valve control in conjunction with Alfa Laval valves and it is compatible with most PLC systems (Programmable Logic Controllers) with AS-Interface.

The *Think*Top® can be equipped with 0-3 solenoid valves. The solenoids are electrically controlled by the AS-Interface and when activated the compressed air is activating the air actuator. All solenoids have build-in throttle function on both air inlet and outlet which means that it is possible to control the opening and closing time of the air actuator. The solenoids are also equipped with a manual hold override.

Visual LED lights are constantly indicating the status of the unit: Valve positions, solenoid activated, setup and local fault indication etc.

The *Think*Top® is characterized by a simple and modular design. It is exchangeable and is prepared for upgrading.

3.1.1 "No Touch" sensor system



Type: Alfa Laval “No Touch” System

For wire connections: See section 4.4 "Electrical connection, internal".

Features
Tolerance programmes.
Self adjustment programme (SRC/ARC valves only).
Built-in maintenance monitor.
Setup by internal pushbuttons or remote control (IR Keypad).
Setup and local fault supervision.
Setup saved at power shutdown.
Visual LED Indicator lights.

Sensor System
Unique “No Touch” sensor system without any mechanical sensor adjustments. A magnet is mounted on the valve stem and the magnetic field (axial) is detected by sensor chips inside the sensor unit. The measuring angle from each chip is used to locate the current position of the valve stem with an accuracy of ± 0.1mm. Note that the distance to the magnet can be 5 mm ± 3 mm.

Feedback signals
The sensor system can be used for 3 feedback signals + 1 status signal = 4 feedback signals. (Two of the feedback signals can be used for external sensors if necessary).

The status signal is used for detection of the following three conditions:
- A set-up is in progress.
- Internal error.
- Maintenance is required (based on time and/or the self adjustment programme).

Tolerance programme:
Individual according to valve types.
- Type 1: SRC/ARC and Series 700 valves.
- Type 2: LKB (LKLA-T).
- Type 3: *Unique*, SMP-SC Spillage-Free, SRC-PV and AMP.
- Type 4: SMP-SC, SMP-TO, SMP-BC, SMP-BCA and SBV.
- Type 0: (Preset) All Parameters Set To Default (also valid for MH Koltek valve and SMP-EC (seat-lift indication not possible for SMP-BC)).

Preset and reset values: Tolerance programme No. 0 (± 5mm) and all functions are disabled.
NOTE! Important to select the right tolerance programme.

Self Adjustment (SRC/ARC valves only)
The self adjustment feature is an exceptional aspect of the *Think*Top® design. A programme can be activated to allow an adjustment of the tolerance band if the seals in the valve are being compressed or are worn. When the tolerance band of the unit has been adjusted 0.3 mm, an alert warning will appear in the form of a status signal and a flashing maintenance LED. After 0.5 mm adjustment an alarm warning appears: Loss of feedback signal, status signal and steady maintenance light indicating a minimum of seal left requiring a replacement of the seal.

Built-in Maintenance Monitor
The unit can be preset to indicate when the time for maintenance of the valve has been reached. A status signal and flashing maintenance LED can be programmed to return after 3, 6, 9 or 12 months or more.

3.1.2 Technical specifications sensor system

Sensor accuracy: ± 0,1 mm.
Distance to magnet: 5 ± 3 mm.
Stroke length: 0.1 - 80 mm.
Electrical connection: Direct cable gland entry (hard wired)
PG11 (ø4 - ø10 mm).

Terminals
The terminal row of the sensor unit is equipped with screw terminals for both internal as well as external cables and wires. The terminals are suitable for wires up to 0.75 mm^2 (AWG 19).

Power Supply
The power supply to the complete unit is taken from the AS-Interface.
Supply voltage: 29.5 - 31.6 V DC.
Supply current: Max. 45 mA (for sensor unit alone)
(excluding current to the solenoids and the external proximity switches).

The fulfilling of the UL requirements in UL508 requires that the unit is supplied by an isolating source complying with the requirements for class 2 power units (UL1310) or class 2 and 3 transformers (UL1585).

Feedback signals
Signals transmitted over the AS-Interface BUS to the AS-Interface master PLC.

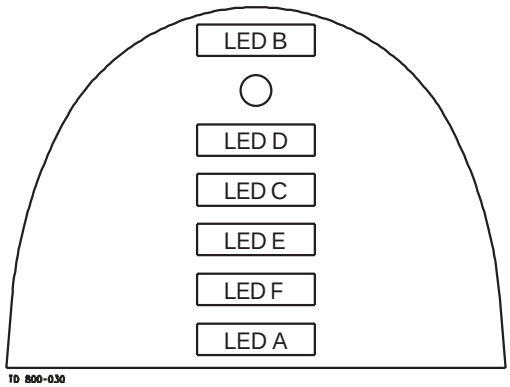
External sensors
The external sensors are used for seat-lift supervision when seat-lift can not be internally detected. The sensors get their supply voltage from the terminal row.The output signals from the sensors are connected to two inputs on the terminal row on the internal sensor unit. If the actual setup is set for internal seat-lift, the corresponding external signal is not used, otherwise the external signal logically controls the corresponding feedback to the PLC.

Supply voltage: As specified for the AS-Interface (typical 24 VDC).
Supply current: Max. 15 mA per sensor.
Type of sensor: Only 3-wire sensor PNP.
Sensor cable length. Max. 3 m.

ASi-bus bit assignment
For the AS-Interface version, the following bit assignment will be used:

Input bit 0 - feedback # 1 Closed position	Output bit 0 – Not connected
Input bit 1 - feedback # 2 Open position	Output bit 1 - Solenoid valve 1
Input bit 2 - feedback # 3-4 Seat 1 or 2 position	Output bit 2 - Solenoid valve 2
Input bit 3 - feedback # 5 Status	Output bit 3 - Solenoid valve 3

*Think*Top® Visual Indications



LED Indications

"Open valve"	(Yellow)
IR-Receiver	
"Setup/Internal fault"	(Red)
"Seat-lift 1/2"	(Yellow)
"Solenoid valves"	(Green)
"Maintenance"	(Orange)
"Closed valve"	(Yellow)

Note: If the programmer wishes to detect a physically closed valve position in an "open valve" sensor position, then there is no longer any consistence between the sensor valve detection position and the visual indications of the *Think*Top®.

Status signal (feedback # 5) Input bit 3:
The status signal is used for five purposes:
- To indicate that set-up is going on (LED D).
- To indicate an error condition (LED D), (flashing = software error), (steady = hardware error).
- To indicate that the time for maintenance has been reached (LED F).
- To indicate if there is a conflict in the self adjustment programme (LED F).

Default slave address: 0
I/O code: 7 (4 bit bi-directional)
I/D code: F (slave without profile)
P = F.7.
For wire connections: See section 4.4 "Electrical connection, internal".

No. of nodes: Max. 31 *Think*Top® on a single master/gateway.

3.1.3 Technical specifications solenoid valves

Solenoid signals
Signals transmitted over the AS-Interface BUS to the AS-Interface master PLC.

Internal connections
Terminals for connection of the solenoids mounted internally in the control head.
The number of solenoids actually mounted in the control head could be 0 - 3.
The signals are taken directly from the terminal row.

Technical specifications

Up to 3 solenoid valves in each unit.

Type	3/2 or 5/2 valve (only possible with one 5/2 valve).
Air supply	300-900 kPa (3-9 bar).
Filtered air, max. particles or dirt	0.01 mm.
Max. flow	180 l/min.
Max. oil content	1.0 ppm.
Max. water content	0.0075 kg/kg air.
Throughput	ø2.5 mm.
Air restriction (throttle function) air inlet/outlet.	
Manual hold override.	
External air tube connection	ø6 mm or 1/4" (specify when ordering).
Nominal voltage	24 VDC.
Nominal power	1.0 W.
Silencer/filter *)	Connection possible via ø6 mm or 1/4".

Internal connections (solenoids)

The solenoid drivers can reduce the solenoid power by PWM after the activation time. The PWM function is enabled by a jumper (12, 13). The number of solenoids actually mounted in the Control head could be 0 - 3.

Nominal voltage	24 VDC.
Nominal power	1.0 W.
Output voltage	Must match the selected type of *Think*Top®.
Load current	Max. 100 mA per solenoid. Max. current from any number of energized output stages is 200 mA.
Voltage drop	Max. 3 V at 50 mA.
Activation time	60 ± 10 ms (time with full power if PWM is enabled).
PWM duty cycle	40% (after activation time if PWM is enabled).
PWM frequency	2 - 5 kHz.

Materials

Plastic parts	Nylon PA12.
Steel parts	Stainless steel AISI 304 and 316.
Seals	Nitrile (NBR), EPDM rubber for SMP-EC activator stem.

*) Note! Filter recommended in tropical regions.

3.1.4 Micro environment demand specifications

Temperature		
Working:	-20°C to +85°C	IEC 68-2-1/2
Storage:	-40°C to +85°C	IEC 68-2-1/2
Temperature change:	-25°C to +70°C	IEC 68-2-14
Vibration	10-55 Hz, 0.7 mm 55-500 Hz, 10g 3 x 30 min, 1 octave/min	IEC 68-2-6
Drop test		IEC 68-2-32
Humidity		
Constant humidity:	+40°C, 21 days, 93% R.H.	IEC 68-2-3
Cyclic humidity: (working)	+25°C/+55°C 12 cycles 93% R.H.	IEC 68-2-30
Protection class	IP67	IEC 529
Input threshold		
Voltage/current:	Type 1 input requirements	EN 61131-2
EMC Directive	89/336/EEC	EN 50081-1, EN 50082-2
AS-Interface	Version 2.11 *)	EN 50295
UL Approval	8-30 VAC/VDC, Class 2 input, 45 mA max. output	UL 508-E203255

*) Max. 31 *Think*Top® on a single master/gateway.

Step 1

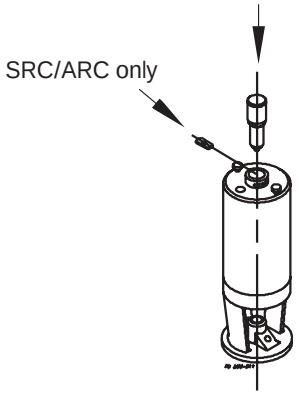
⚠

- Always read the technical specifications thoroughly (see chapter 3).
- Always have the *Think*Top® electrically connected by authorized personnel.
- Never install the *Think*Top® before valve or relay is in a safe position.

Step 2

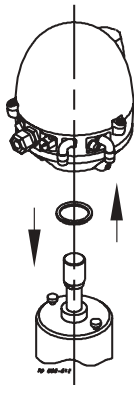
1. Fit the air fittings on actuator if not mounted.
2. Fit the activator stem (magnet) and tighten carefully with a spanner.

NOTE!
The *Think*Top® for the SMP-EC valve has a longer activator stem going through the shell.
Remember O-ring.



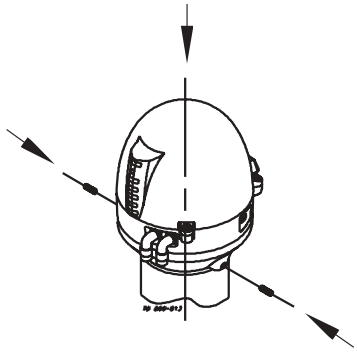
Step 3

1. Place the *Think*Top® on top of the actuator.
2. Make sure X-ring is mounted.

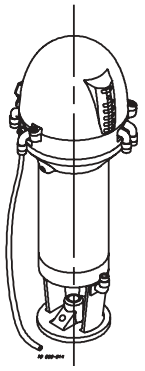


Step 4

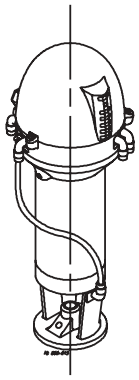
1. Ensure that the unit is correctly mounted by pressing down on top of the *Think*Top®.
2. Tighten the two Allen screws carefully.
3. Turn the actuator to have LEDs in a front view.
   NOTE!
   After a relevant period of time after installation (eg. two weeks) it is recommended to check that all connections are properly tightened.



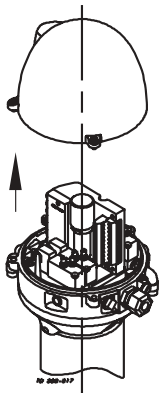
Step 5
Fit the ø6 mm (1/4") air tubes to *Think*Top® (see drawing "Air connections" later in this chapter).



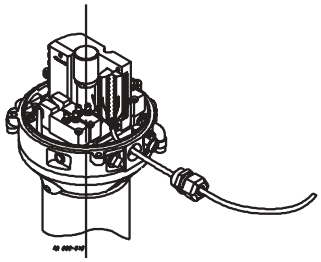
Step 6
Fit the air tubes to the actuator (see drawing "Air connections" later in this chapter).



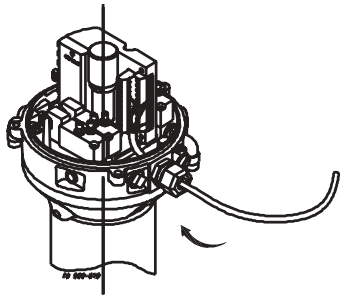
Step 7
Untighten the three screws and pull off cover of *Think*Top®.



Step 8
1. Install cable (if not present) through the cable gland.
2. Connect the *Think*Top® electrically (see section 4.4 "Electrical connection, internal").



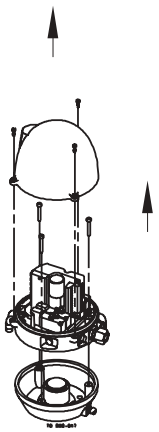
Step 9
Make sure the cable gland is completely tightened.



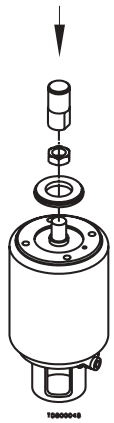
Step 10
Set up the *Think*Top® (see chapter 5).
NOTE!
The unit can be set up with the cover installed by using the IR keypad. To energize the valve, use a separate air tube or be in radio contact with the control room.

Step 1
1. Remove the cover by loosening the three cross recess screws.
2. Separate the adapter from the base by loosening the three recess screws on top of the base.

Installation on air actuators:

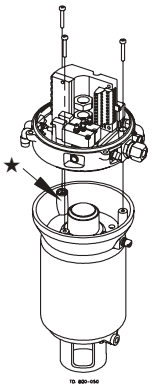


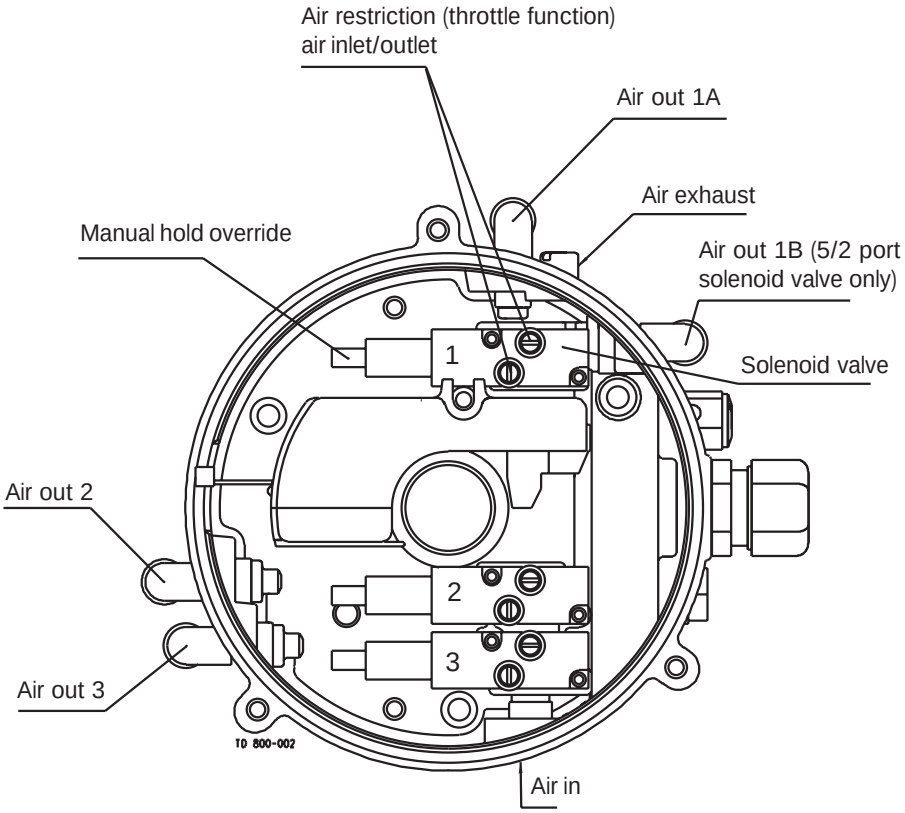
Step 2
1. Fit air fittings on actuator.
2. Position packing retainer in recess on actuator top.
3. Fit counter nut and indicator (magnet) on actuator rod. Engage approx. ¼" thread. Tighten counter nut and indicator with two wrenches.

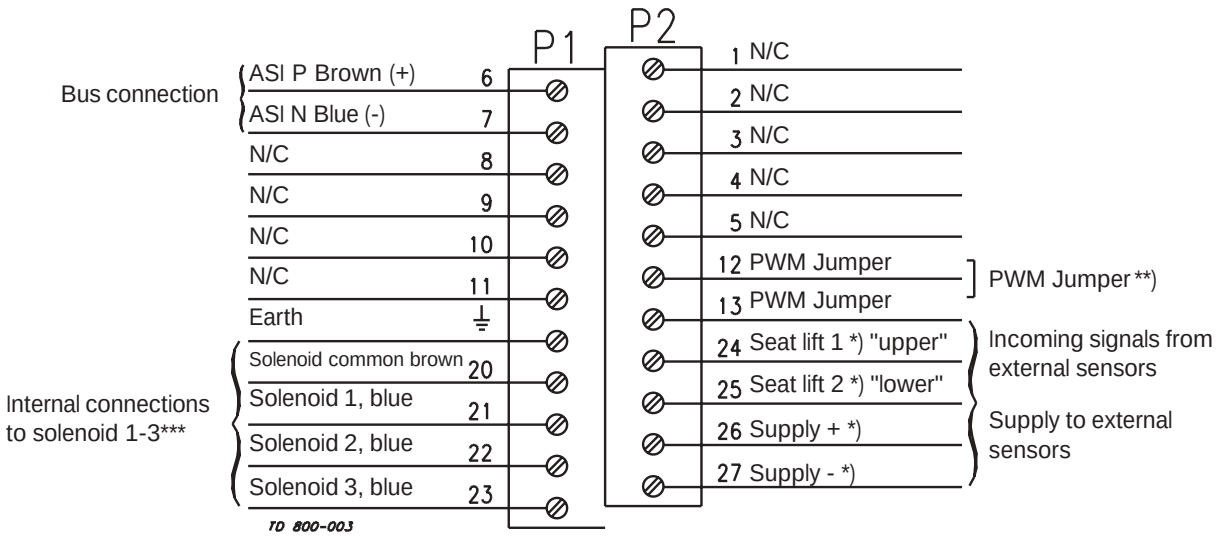


Step 3
1. Place the two O-rings in the grooves in the bottom of the adapter. Then place the adapter on the actuator top. The small O-ring must be positioned over the air hole on the actuator.
2. Fasten the adapter with the four 5/16" Allen screws.

Step 4
Mount the base on the adapter in the position needed (can be rotated 120° in both directions). Note that one of the screw towers on the adapter has a guide recess (see ★ on drawing).




Air restriction (throttle function)
air inlet/outlet
Air out 1A
Air exhaust
Manual hold override
Air out 1B (5/2 port
solenoid valve only)
1
Solenoid valve
Air out 2
2
3
Air out 3
TD 800-002
Air in



*) Note!
- Terminals 24, 25, 26 and 27 can be used for external seat lift sensors as well as for any digital input. Always use an external PNP sensor.
- Two external signals can be connected, they are associated with feedback signal 3 (seat lift 1) and 4 (seat lift 2). External sensor must always be a 8-30 VDC PNP 3 wire sensor. Connect (-) common on terminal 27, and (+) common on terminal 26. The signals from the external sensors are associated as follows: sensor signal on terminal 24 (seat lift 1) associated with feedback 3 (seat lift 1), and sensor signal on terminal 25 (seat lift 2) associated with feedback 4 (seat lift 2).

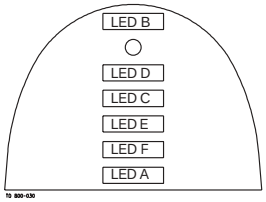
**) Note!
Jumper present = PWM. See section 3.1.3 "Technical specifications solenoid valves".

***) **Note!**
Internal connections: Terminals for connection for the solenoids mounted internally in the control head. The number of solenoids actually mounted in the control head could be 0 - 3. The signals are taken directly from the terminal row.

Notes: O - Scroll across, no change
———— - Notes Requires Key Function
— — — - Notes Automatic Progress as Indicated

General:
1. Flashing IND means no value set.
   Steady IND means value set as shown.
2. Default is: Step 2, Type 0 (+/- 5 mm)
   Step 3-8 disabled
3. Lamp Status Shown in [ ]

*Think*Top® Visual Indications

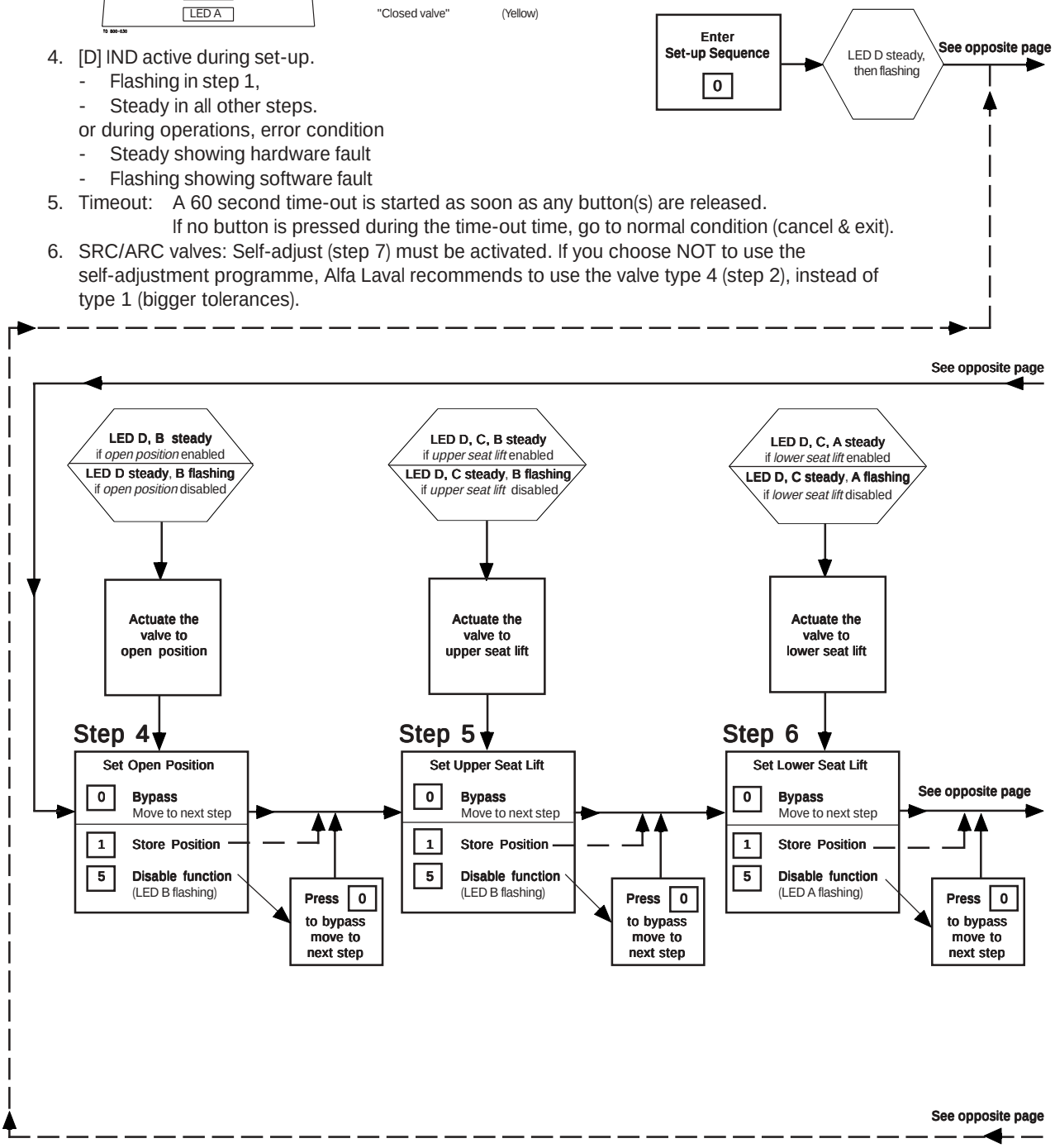


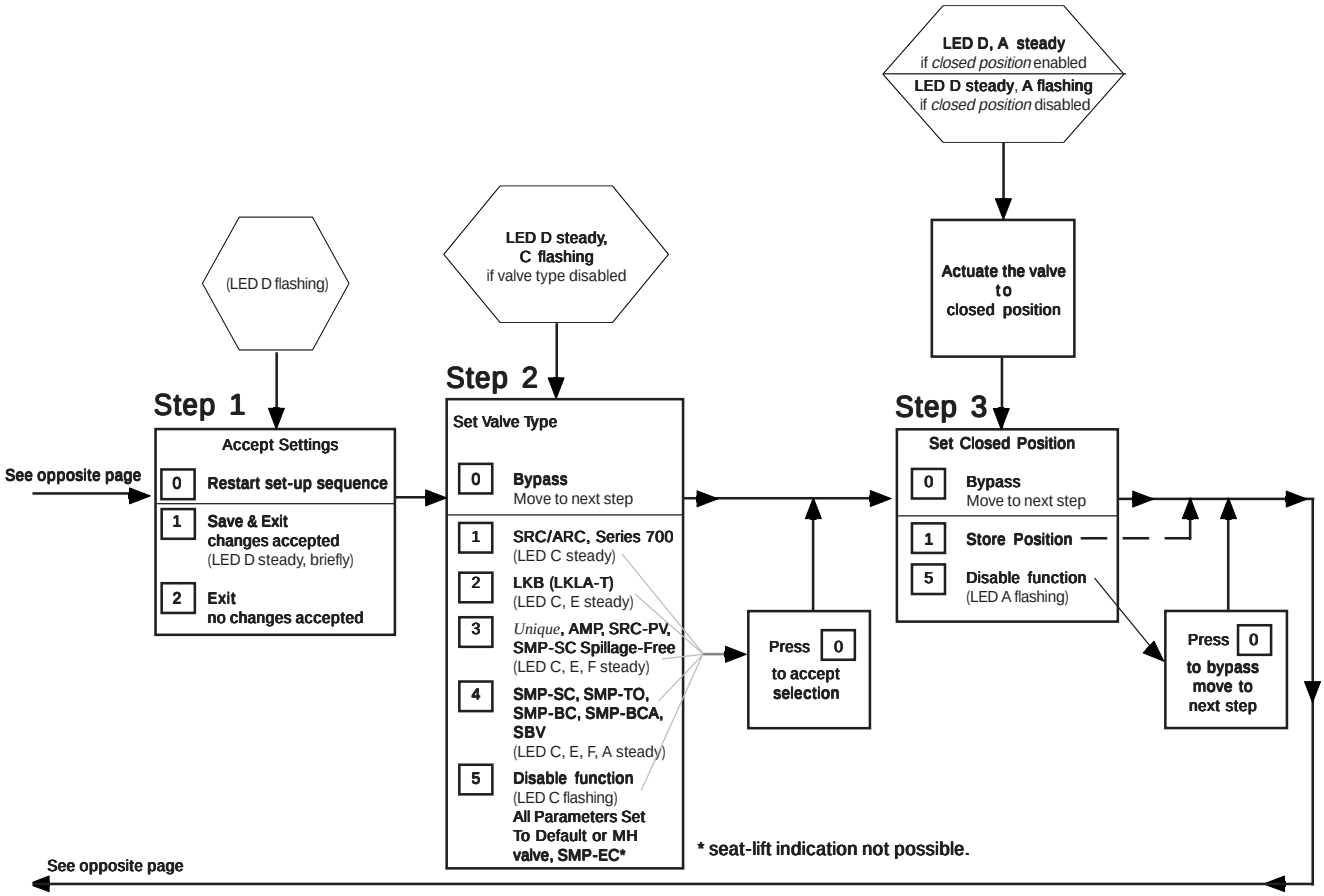
LED Indications

"Open valve"	(Yellow)
IR-Receiver	
"Setup/Internal fault"	(Red)
"Seat-lift 1/2"	(Yellow)
"Solenoid valves"	(Green)
"Maintenance"	(Orange)
"Closed valve"	(Yellow)

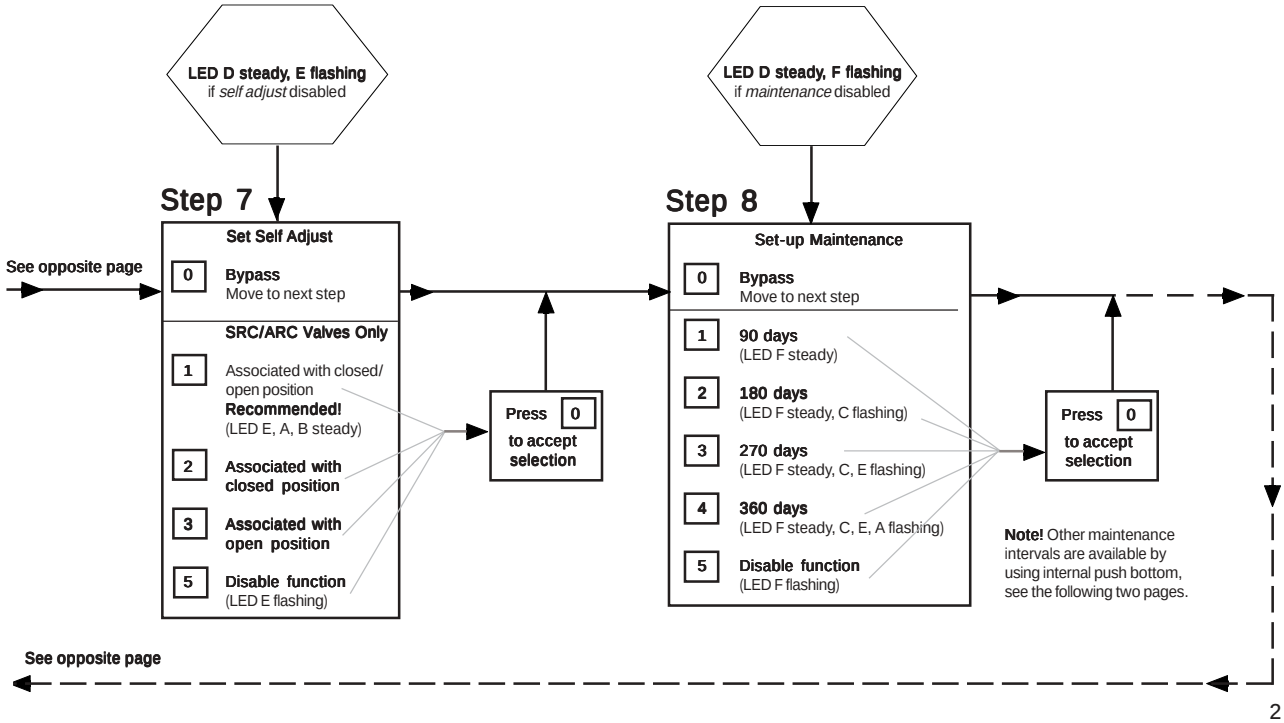
4. [D] IND active during set-up.
   - Flashing in step 1,
   - Steady in all other steps.

   or during operations, error condition
   - Steady showing hardware fault
   - Flashing showing software fault
5. Timeout: A 60 second time-out is started as soon as any button(s) are released.
   If no button is pressed during the time-out time, go to normal condition (cancel & exit).
6. SRC/ARC valves: Self-adjust (step 7) must be activated. If you choose NOT to use the self-adjustment programme, Alfa Laval recommends to use the valve type 4 (step 2), instead of type 1 (bigger tolerances).





Note! Remote distance keypad = *Think*Top® 0-300 mm.



Notes: I - Scroll across, no change
———— - Notes Requires Key Function
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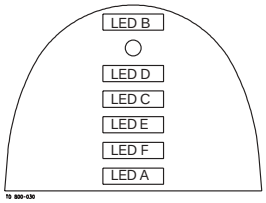
3. Lamp Status Shown in [ ]

*Think*Top® Visual Indications



LED Indications

"Open valve"	(Yellow)
IR-Receiver	
"Setup/Internal fault"	(Red)
"Seat-lift 1/2"	(Yellow)
"Solenoid valves"	(Green)
"Maintenance"	(Orange)
"Closed valve"	(Yellow)

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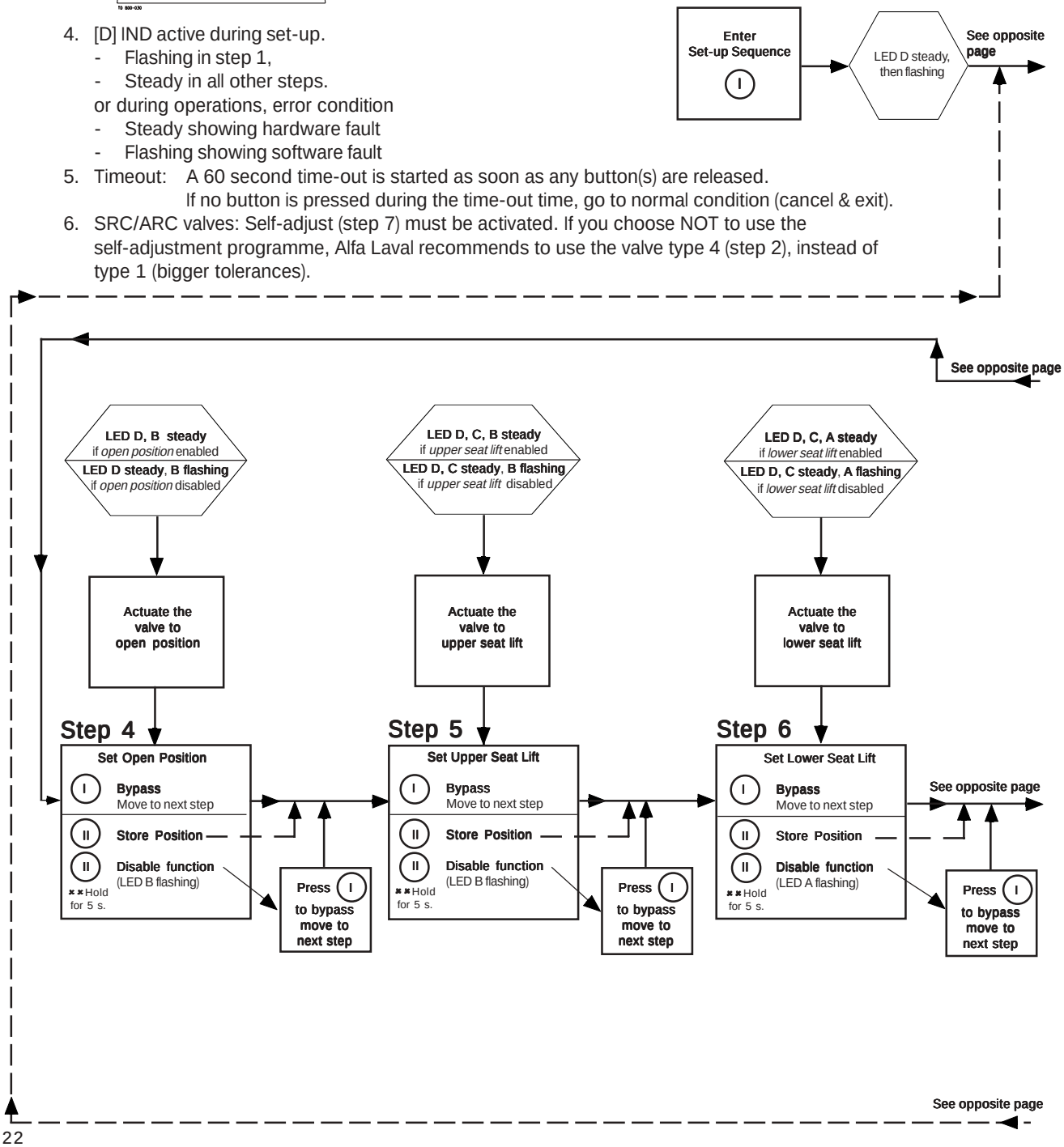
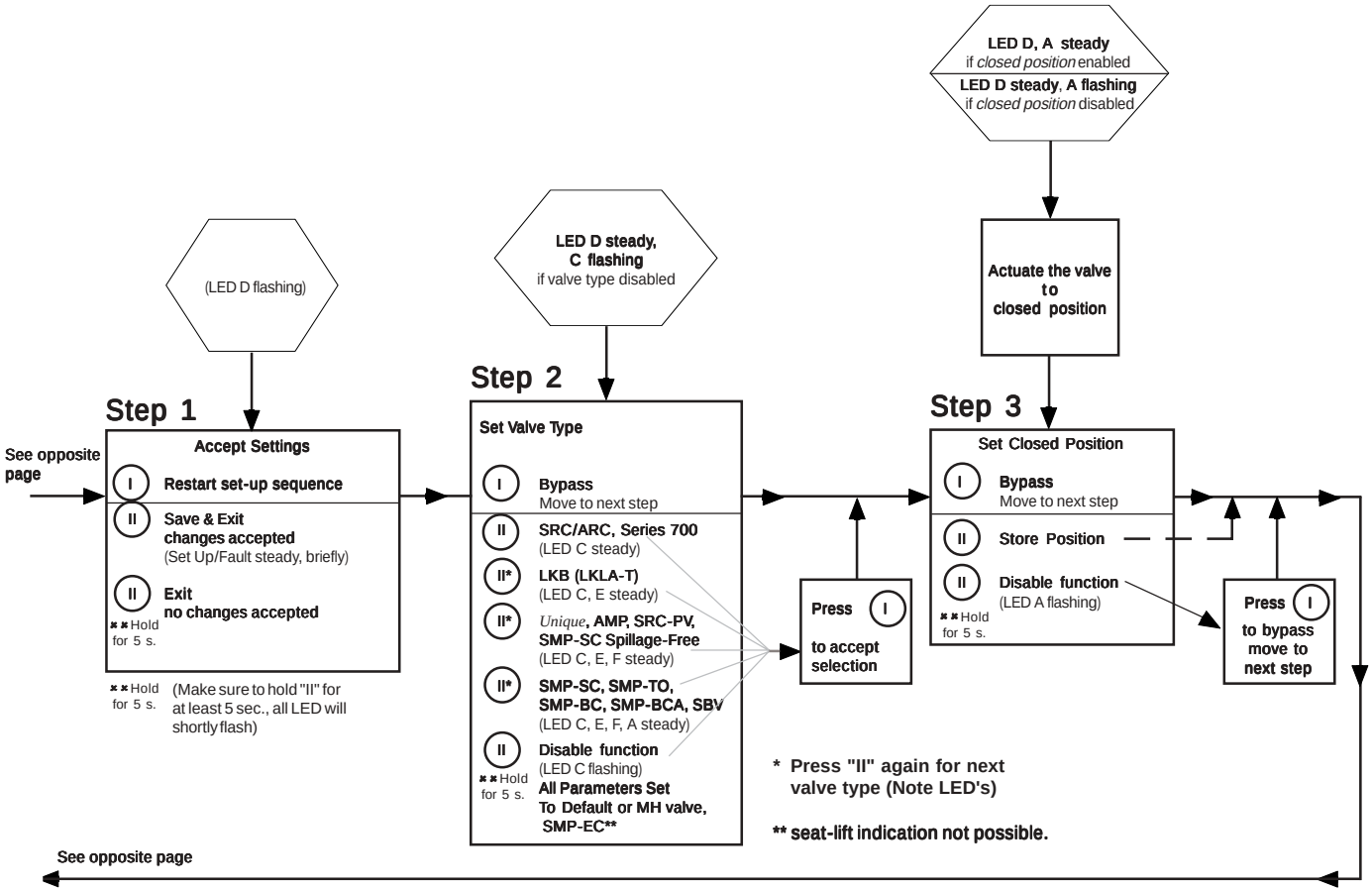
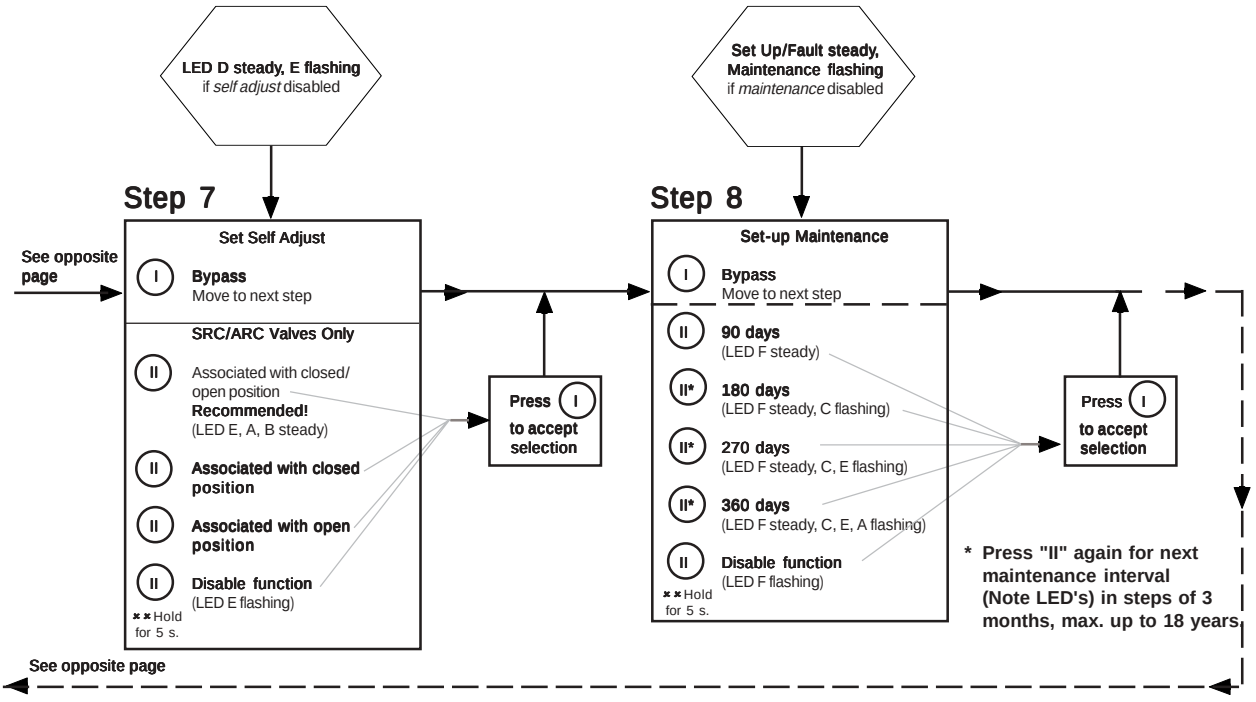
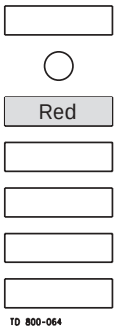
5. Timeout: A 60 second time-out is started as soon as any button(s) are released.
   If no button is pressed during the time-out time, go to normal condition (cancel & exit).
6. SRC/ARC valves: Self-adjust (step 7) must be activated. If you choose NOT to use the self-adjustment programme, Alfa Laval recommends to use the valve type 4 (step 2), instead of type 1 (bigger tolerances).




LED D, A steady
if closed position enabled
LED D steady, A flashing
if closed position disabled
Actuate the valve to closed position
(LED D flashing)
LED D steady, C flashing
if valve type disabled
Step 1
Step 2
Step 3
See opposite page
Accept Settings
I Restart set-up sequence
II Save & Exit changes accepted
(Set Up/Fault steady, briefly)
II Exit no changes accepted
** Hold for 5 s.
** Hold for 5 s.
(Make sure to hold "II" for at least 5 sec., all LED will shortly flash)
Set Valve Type
I Bypass
Move to next step
II SRC/ARC, Series 700
(LED C steady)
II* LKB (LKLA-T)
(LED C, E steady)
II* Unique, AMP, SRC-PV, SMP-SC Spillage-Free
(LED C, E, F steady)
II* SMP-SC, SMP-TO, SMP-BC, SMP-BCA, SBV
(LED C, E, F, A steady)
II Disable function
(LED C flashing)
** Hold for 5 s.
All Parameters Set To Default or MH valve, SMP-EC**
Press I to accept selection
Set Closed Position
I Bypass
Move to next step
II Store Position
II Disable function
(LED A flashing)
** Hold for 5 s.
Press I to bypass move to next step
* Press "II" again for next valve type (Note LED's)
** seat-lift indication not possible.
See opposite page

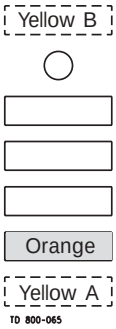

LED D steady, E flashing
if self adjust disabled
Set Up/Fault steady, Maintenance flashing
if maintenance disabled
Step 7
Step 8
See opposite page
Set Self Adjust
I Bypass
Move to next step
SRC/ARC Valves Only
II Associated with closed/ open position
Recommended!
(LED E, A, B steady)
II Associated with closed position
II Associated with open position
II Disable function
(LED E flashing)
** Hold for 5 s.
Press I to accept selection
Set-up Maintenance
I Bypass
Move to next step
II 90 days
(LED F steady)
II* 180 days
(LED F steady, C flashing)
II* 270 days
(LED F steady, C, E flashing)
II* 360 days
(LED F steady, C, E, A flashing)
II Disable function
(LED F flashing)
** Hold for 5 s.
Press I to accept selection
* Press "II" again for next maintenance interval (Note LED's) in steps of 3 months, max. up to 18 years.
See opposite page

Below is stated the meaning of the LEDs' indications for fault finding in connection with the operation of the *Think*Top®.



Red flashing: Unit in set-up mode or internal software fault.
If internal software fault, re-programme unit.

Red steady: Unit in set-up mode or internal hardware fault.
If internal hardware fault, check if magnet is in range and check correct wiring.



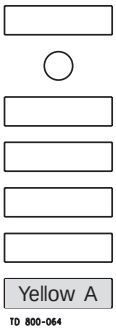
1. Orange flashing: Time for maintenance has run out.
The unit has been self-adjusted into a maintenance alert condition.
Valve maintenance is strongly recommended. After maintenance: Disabling of maintenance/self-adjustment function is required before setting new position, however, it is strongly recommended to make a complete new set-up after valve maintenance.

2. Orange steady, yellow flashing (A and/or B): The unit has been self-adjusted into a maintenance alarm condition and the feedback is lost (a minimum of seal left).
Valve maintenance is required. After maintenance: Disabling of the self-adjustment function is required before setting new position, however, it is strongly recommended to make a complete new set up after valve maintenance.

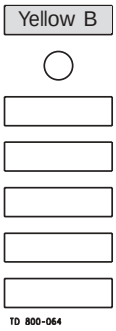
NOTE!

The maintenance indicator lighting up, and an open or closed light flashing.....
= Note the following:

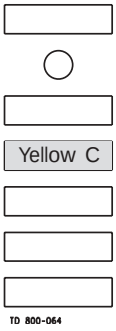
- Self-adjustment programme is only valid for SRC/ARC valves, do not use the programme for other valve types.
- Use tolerance/valve type 1.
- In conjunction with valve type change-over; 21, 22, 31 and 32, the open position must be defined as the upper sensor position (when the magnet is in the highest position).
- A loose top, magnet holder or sensor system can also generate the alert/alarm condition.
- Removing a *Think*Top® with self-adjust activated, will immediately generate an alarm condition! If the *Think*Top® has to be removed, not because of a valve maintenance issue, but for some other reasons, and you want to store the already adjusted data - disable the self-adjust function before removing the *Think*Top® and enable it again once the *Think*Top® is back on the actuator.
- After valve maintenance a disabling of the self-adjustment function is required before setting a new position, however, it is strongly recommended to make a complete new set-up (disable all functions in step 2 valve type - and make a complete new set-up).



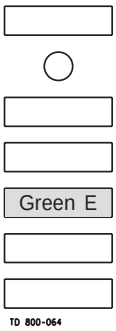
Yellow steady: Position A (closed valve).



Yellow steady: Position B (open valve).



Yellow steady: Position C (Seat lift 1-2 or external sensors).

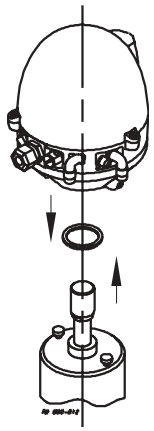


Green steady: Solenoid valves activated.

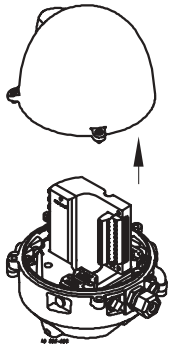
Note! During set-up LED lights have different functions.

Study the instructions carefully.
Handle scrap correctly.
Always keep spare X-rings in stock.

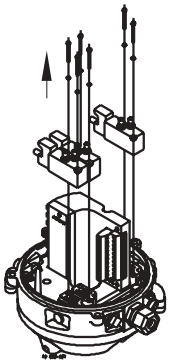
Step 1
1. Remove the *Think*Top® from the actuator.
2. Pull out X-ring and replace it.



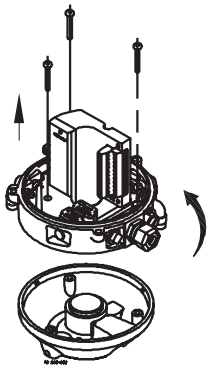
Step 2
1. Untighten the three screws.
2. Pull off the *Think*Top® cover.



Step 3
1. Untighten screws.
2. Remove solenoid valves (up to 3) and replace them with new ones.



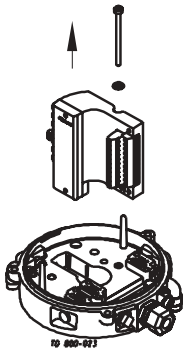
Step 4
1. To dismantle the adapter (the lower part of the *Think*Top®) from base (the middle part), unscrew the three screws.
2. Turn the lower part a little clockwise and pull.
3. Replace adapter if necessary.



Note:
Turn banjo connection!

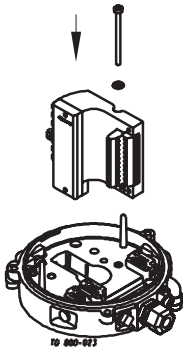
Study the instructions carefully.
Handle scrap correctly.
Always keep spare X-rings in stock.

Step 5
To remove the sensor unit untighten screw and pull out the sensor unit.

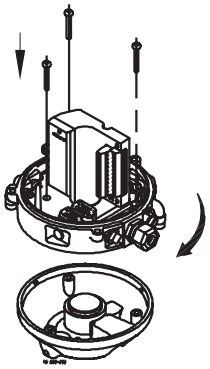


Study the instructions carefully.
Handle scrap correctly.
Always keep spare X-rings in stock.

Step 1
Place sensor unit in base and tighten screw (torque: 1 Nm).

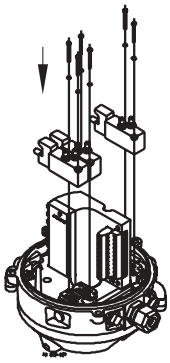


Step 2
Assemble base with adapter by turning adapter a little anticlockwise and tighten the three screws (1.9 Nm).

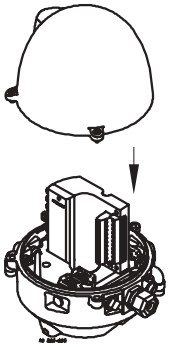


Note:
Turn banjo connection!

Step 3
1. Replace solenoid valves (up to three) with new ones.
2. Tighten screws (0.2 Nm).

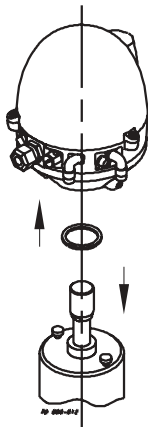


Step 4
Replace cover of *Think*Top® and tighten the three screws (0.6 Nm).



Study the instructions carefully.
Handle scrap correctly.
Always keep spare X-rings in stock.

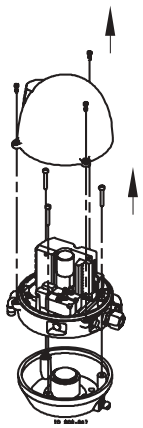
Step 5
1. Replace X-ring.
2. Mount the *Think*Top® on actuator.



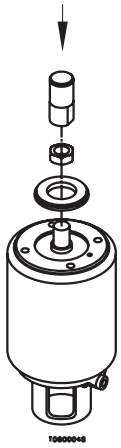
Study the instructions carefully.
Handle scrap correctly.
Always keep spare X-rings in stock.

Step 1
1. Remove the cover by loosening the three cross recess screws.
2. Separate the adapter from the base by loosening the three recess screws on top of the base.

Installation on air actuators:

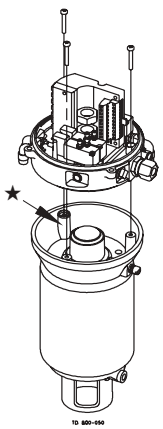


Step 2
1. Fit air fittings on actuator.
2. Position packing retainer in recess on actuator top.
3. Fit counter nut and indicator (magnet) on actuator rod. Engage approx. ¼" thread. Tighten counter nut and indicator with two wrenches.



Step 3
1. Place the two O-rings in the grooves in the bottom of the adapter. Then place the adapter on the actuator top. The small O-ring must be positioned over the air hole on the actuator.
2. Fasten the adapter with the four 5/16" Allen screws.

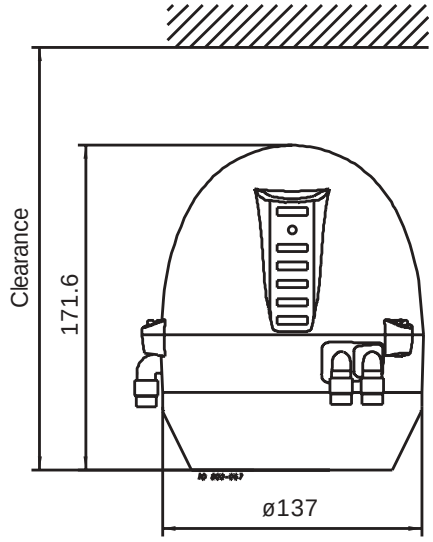
Step 4
Mount the base on the adapter in the position needed (can be rotated 120° in both directions). Note that one of the screw towers on the adapter has a guide recess (see ★ on drawing).



The drawing and the parts list include all items.

Parts List

Pos.	Denomination
1a	Shell
1b	Shell
2	O-ring, NBR
3	Screw
4	Washer
5	Sensor unit
6	Solenoid valve
7	PT screw
8	Base
9	O-ring, NBR
10	Air fittings
11	Blow-off valve
12	Thread plug, PG7
13	Cable gland, PG11 4-10 mm
14	Pressure control valve
15	Adapter
16	O-ring
17	O-ring
18	Allen screw
19	Special X-ring
20a	Indication pin
20b	Indication pin
21	O-ring, EPDM
23	2 m. ASI drop cable (2 x 0.5 mm^2) with flat cable connector
24	Air fitting incl. O-ring



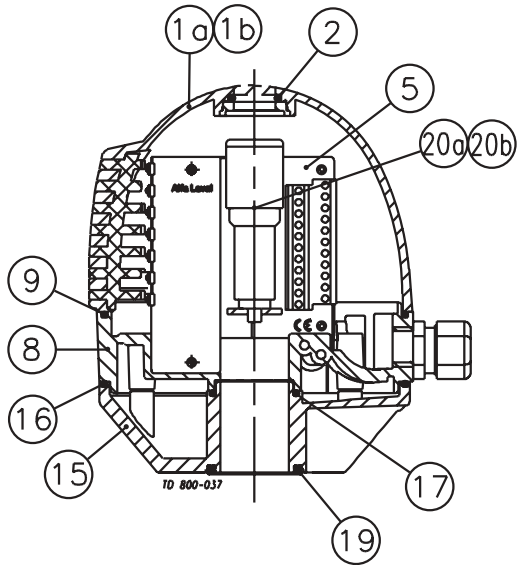
Note! This is the basic design.

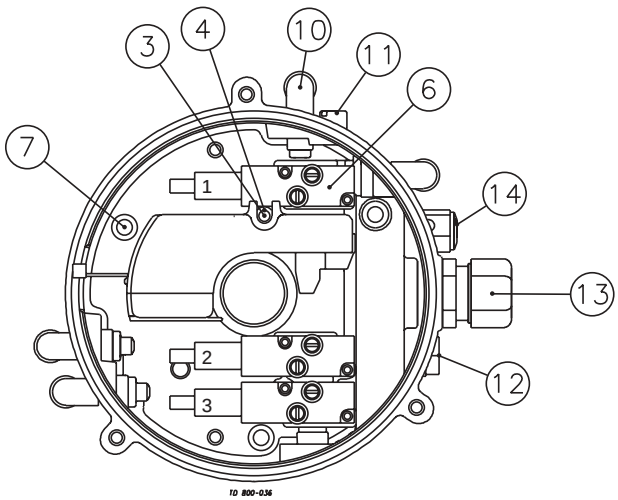
The clearance should be approximately:

ø 225 x 250 (SRC NC, SMP-SC/-BC/-TO, *Unique*, Koltek MH, SBV, AMP)
ø 225 x 320 (SRC NO)
ø 225 x 300 (LKB (LKLA-T))

Spare Parts

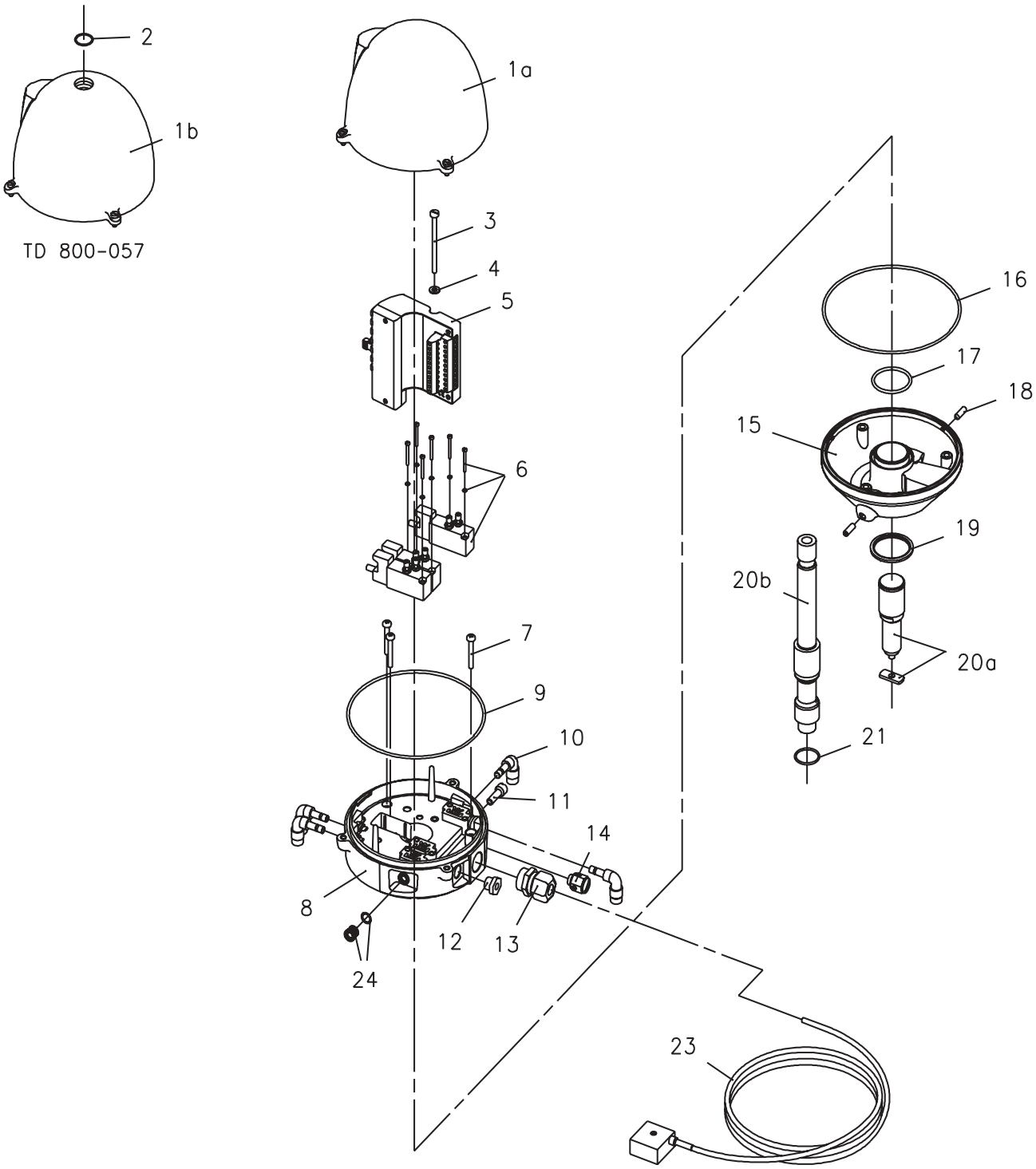
Denomination	Item number
Sensor unit AS-Interface 29.5-31.6 VDC ..	9612-5627-03
Solenoid valve 3/2, 24 VDC	9611-99-3324
Solenoid valve 5/2, 24 VDC	9611-99-3327
Air fitting incl. O-ring, Ø6 mm	9611-99-3404
Air fitting incl. O-ring, 1/4"	9611-99-3434





*This page shows an exploded drawing of the Think*Top®*. The drawing includes all items of the top unit.*

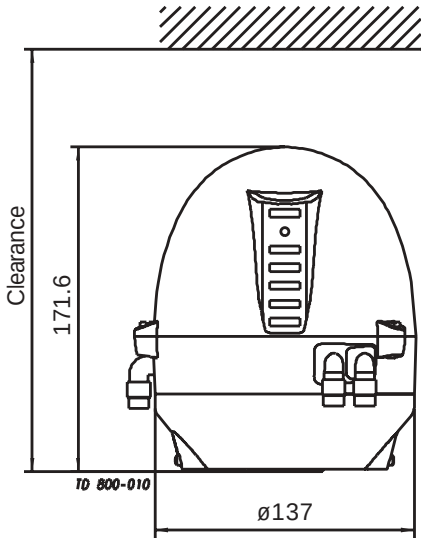
Exploded Drawing



The drawing and the parts list include all items.

Parts List

Pos.	Denomination
1	Shell
3	Screw
4	Washer
5	Sensor unit
6	Solenoid valve
7	PT screw
8	Base
9	O-ring, NBR
10	Air fittings
11	Blow-off valve
12	Thread plug, PG7
13	Cable gland, PG11 4-10 mm
14	Pressure control valve
15	Adapter
16	O-ring
17	O-ring
18	Screw
19	Retainer
20	O-ring
21	O-ring, EPDM
22	Indicator pin
23	Nut
25	2 m. ASI drop cable (2 x 0.5 mm²) with flat cable connector
26	Air fitting incl. O-ring



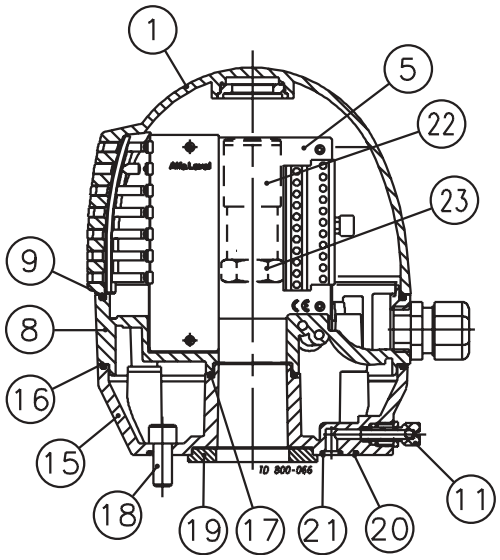
Note! This is the basic design.

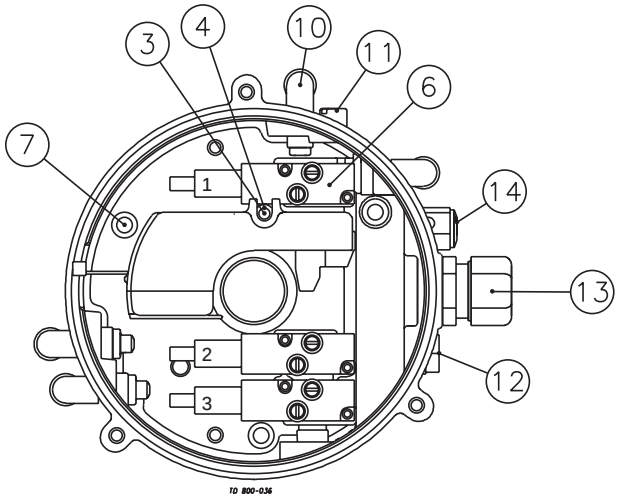
The clearance should be approximately:

ø 225 x 250 (SRC NC, SMP-SC/-BC/-TO, *Unique*, Koltek MH, SBV, AMP)
ø 225 x 320 (SRC NO)
ø 225 x 300 (LKB (LKLA-T))

Spare Parts

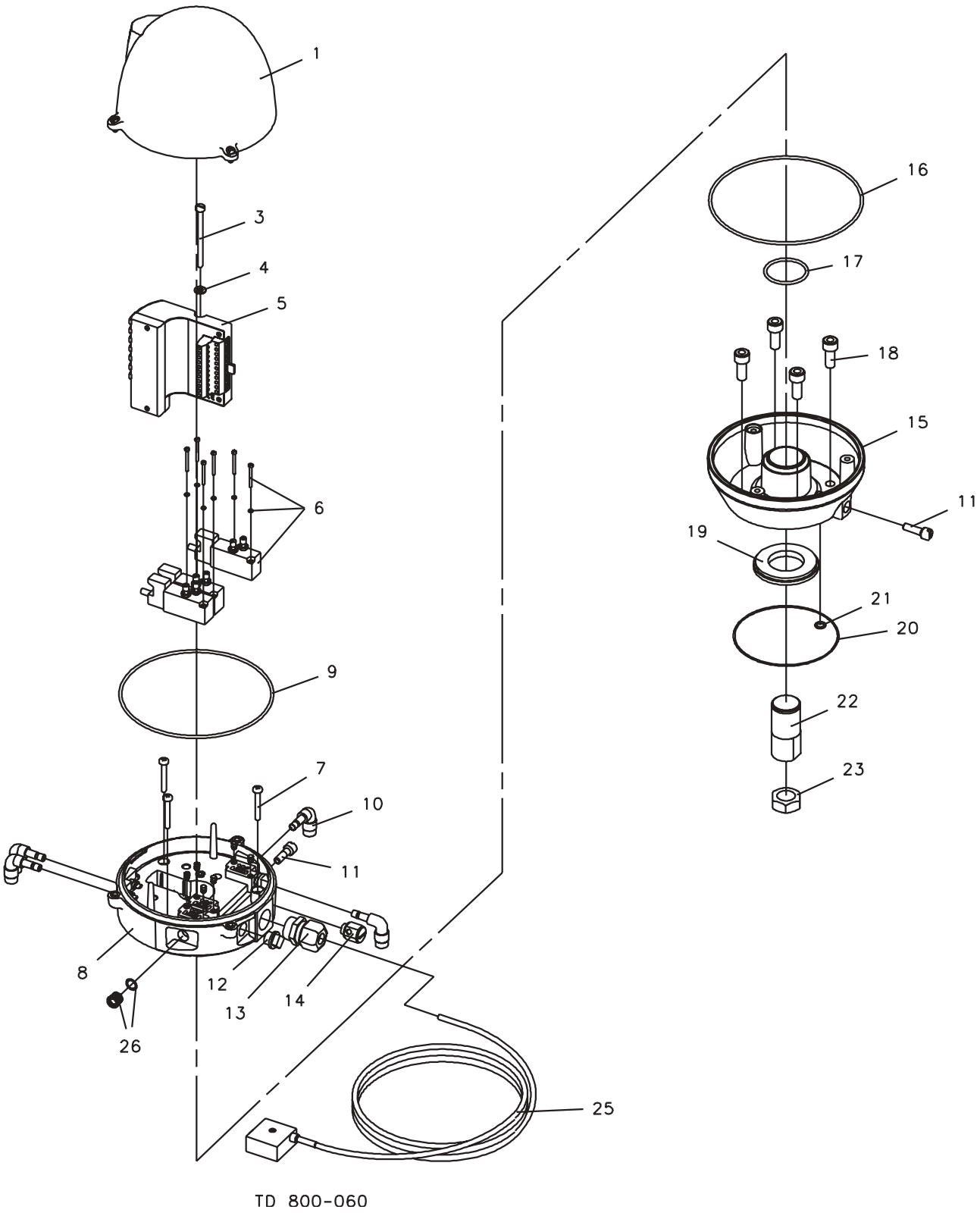
Denomination	1/4" Air connec.
Sensor unit AS-Interface 29.5-31.6 VDC ..	9612-5627-03
Solenoid valve 3/2, 24 VDC	9611-99-3324
Solenoid valve 5/2, 24 VDC	9611-99-3327
Air fitting incl. O-ring, 1/4"	9611-99-3434





*This page shows an exploded drawing of the Think*Top®. *The drawing includes all items of the top unit.*

Exploded Drawing



How to contact Alfa Laval
Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information direct.