

ALi ACTUATOR

Specification Nos. ALi1576 (standard frame)
 ALi1577 (standard frame)
 ALi1676 (short frame)
 ALi1677 (short frame)

The Satchwell ALi is an intelligent linear actuator providing a modulating output for the control of two and three port seat valves with a stroke of up to 38mm (1½"), within the limits of the output thrust stated overleaf. It is self-stroking, automatically adjusting for any valve within the stroke range.

The ALi has several modes of operation, from start and span settings to reverse acting including two safety modes. It incorporates a manual override with a gear train disengagement feature by means of a manual operation key located on top of the case.

The actuator is powered by a 24Vac supply. Suitable controllers are BAS, Satchwell Σ (Sigma) CZT, IAC, KMC, MMC, MN450, MN550, MN650 and URC. Any control device outputting 0-4, 6-10, 2-10 or 0-10Vdc signals can be used in conjunction with a suitable 24V power supply. Alternative signals can be used if conditioning is applied to ensure compatibility.

The ALi1577 and ALi1677 also have the ability to provide a 0-10V feedback signal for monitoring purposes.

Two frame sizes are available; standard and short.



ALi1577 shown with VZF (not supplied).

FEATURES

- Self-stroking
- Various operating modes
- Direct Coupling to Satchwell and 3rd party seat valves
- Electronic control of thrust under stall conditions
- LED indication of actuator status
- Manual operation override facility built-in
- Case sealed to IP 54 as standard (when manual operator pushbutton in Auto position)
- Safety modes in the event of controller failure reducing software engineering
- 700N Thrust
- Selectable resolution 200 or 25 steps
- No need to re-stroke after power failure
- 1mm/s speed
- Auxiliary switch kit available (ALA1211)
- 0-10V feedback (ALi1577 and ALi1677)
- 2 x PG13.5 Removable conduit connection
- Standard (310mm) and short (265mm) frame sizes



Data Sheets
Valves

DS 4.410 - VZ, VSF, VZF
 DS 4.610 - MZ, MJF, MZF

Linkage Kits

DS 5.020 - Linkage kits for Linear Actuators

Multi-Lingual Instructions

MLI 3.601 - Installation Instructions



SPECIFICATION

| | |
|---|--|
| Power Supply: | 34Vdc 24Vac $\pm 10\%$ 50/60Hz |
| Power Consumption: | 16VA |
| Speed: | 1mm/s ± 0.2 mm/s |
| Stroke: | 0-25.4mm (1") (ALi1676 and ALi1677) 0-38mm (1½") (ALi1576 and ALi1577) |
| Linear Thrust: | 700N (-0, +200N) |
| Auxiliary Switches: | Two 5A, 250V, Adjustable. Use kit ALA1211. |
| Resolution: (0.25V to 9.75V) | High Mode 43mV ± 10 mV Low Mode 400mV ± 80 mV |
| Hysteresis: (0.25V to 9.75V) | High Mode 100mV ± 20 mV Low Mode 400mV ± 80 mV |
| Threshold: (0.25V to 9.75V) | High Mode 200mV ± 40 mV Low Mode 800mV ± 160 mV |
| 0-10Vdc Input Resistance: | 22K Ω (Nominal) |
| 0-10Vdc Output Current: (1577 and 1677 only) | 5mA |
| Input Control Signal: (for modulation) | 0 to 10Vdc, 0 to 4Vdc, 6 to 10Vdc, 2 to 10Vdc (Safety Mode). |
| Ambient Temperature Limits: | Operating -10 to +50°C Storage -40 to +70°C |
| Ambient Humidity Limits: | Operating and Storage 95% rh non-condensing |
| Associated Controllers: | BAS, Σ , CZT (separate transformer required), IAC, KMC, MMC, MN450, MN550, MN650, URC. |
| Associated 2-port Valves: | VSF up to 25mm VSF 32 to 50mm VZF 65 to 100mm VZF 125 to 150mm (1576 and 1577 only) VZ up to 2" |
| Associated 3-port Valves: | MJF up to 25mm MJF 32 to 50mm MZF 65 to 100mm MZF 125 to 150mm (1576 and 1577 only) MZ up to 2" |
| Type of Operation: | Reversing, modulating |
| Coupling Thread: | ALi1576, ALi1577: ¾" -24 UNF ALi1676, ALi1677: ¼" -32 UNEF |

CONSTRUCTION

| | |
|--|--|
| Case: | Mild steel baseplate with moulded polycarbonate housing and removable terminal cover. Fire resistant to UL94V-0. |
| Mounting Bracket: | Die cast aluminium. |
| Protection Class: | IP 54 (when manual operator pushbutton in Auto position) |
| Drive: | Operates on screw-jack principle, driven by a reversible motor via a gear train. |
| Motor: | Reversible motor of the brushed DC type. |
| Spindle Coupling: | Freely rotating coupling, screwed ¾" (24UNF) |
| Manual Operator & Override: | Hand operator with gear train disengagement feature. |
| Position Indicator: | Spindle anti-rotation plate moves against stroke scale on mounting bracket marked 0-10 to represent 0-100% stroke. Fix scale to suit valve stroke (see Commissioning). |
| Status Indicator: | LED which indicates the state of the actuator. See table below. |
| Terminals: | PCB mounted block. Each terminal accepts 2 x 1.5mm ² or 1 x 2.5mm ² |
| Conduit Entries: | 2 x Ø21mm Knockouts - detachable plastic moulding. |
| Weight: | 1.91kg (standard), 1.71 (short) |
| Dimensions: | See back page. |

A PCB mounted LED (visible on the top of the actuator) indicates the status of the actuator. The table below describes the four different states:

LED STATUS

| LED | Notes |
|--------------------------|--|
| 1 second on/1 second off | Self-stroking or Commissioning Mode. |
| Rapid flash 4 per second | Error i.e. blocked valve, broken linkage, left in manual mode or switches set to impossible combination. |
| Once per second. | Idle - Auto. |
| On continuously | Actuator moving to next position. |

ACCESSORIES

Auxiliary switch kit (twin) ALA1211
Rain Protection Cover ALA1751
Spindle Adaptor LNK1402 (supplied)

LINKAGE KITS

| Specification | Valve Manufacturer | Valve | Compatibility |
|---------------|--------------------|-------------------------------------|---------------------|
| LNKLS01 | Landis & Staefa | VVF and VXF 20mm valve stroke | ALi 1576, 1577 only |
| LNKHW01 | Honeywell | V5011A 20mm valve stroke | " |
| LNKH01 | Hymatic | 1700 ¾" to 1½", 1450 1¼", 1400R 1½" | " |
| LNKIN01 | Siebe | VB up to 2" | " |
| LNKIN02 | Siebe | VB up to 2" | ALi1676, 1677 only |

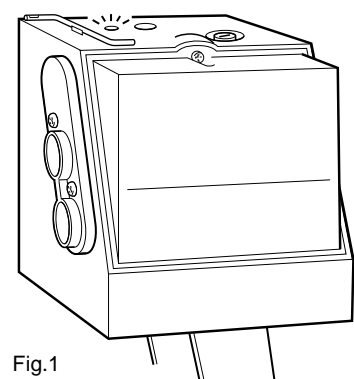
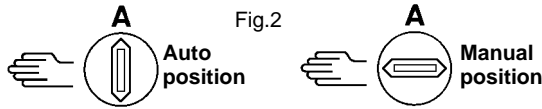


Fig.1

OPERATION

The frame of this actuator comprises of two spaced rectangular metal gearplates containing the gearbox, drive shaft and thrust bearings. Mounted on the top gearplate is a reversible brushed DC motor. The motor is supplied assembled on a gearbox of ratio 40:1 complete with a pinion.

Drive is transmitted from the motor/gearbox pinion via a reduction gear to the final gear and lead-screw assembly. This rotates in two bearings fitted in the upper and lower gearplate providing linear motion at the lead-screw output. The circuit limits the current into the motor and thus controls the torque output of the motor and (via the gearbox/lead-screw assembly) the linear thrust of the actuator.



The drive can be disconnected for manual operation. A button located on the top surface of the enclosure (Fig.2) is connected to a spring loaded push rod assembly. When this button is depressed, 2nd gear is moved out of mesh. The button mechanism can be locked in place by moulded ledges in the housing. Adjacent to this is a manual operation key, which is clipped in place on the top surface of the enclosure. The key can be fitted into a slotted feature in the end of the main drive shaft, which protrudes through the top surface of the enclosure. With the drive shaft disconnected from the gearbox/motor, the manual operation key can be used to provide manual operation of the actuator.

INSTALLATION

WARNINGS -

STEAM OR HOT WATER HAZARD. BEFORE REMOVING ACTUATOR FROM VALVE OR OPENING VALVE, ENSURE THAT THE VALVE CONTROL MEDIUM IS ISOLATED AND RELIEVE THE PRESSURE. WORK SHOULD ONLY BE CARRIED OUT BY A COMPETENT ENGINEER.

WHEN ACTUATOR IS OPERATING, BEWARE OF TRAPPING FINGERS ETC.

Cautions

This device may not be compatible with some plate heat exchangers. Please contact Customer Care for details.

Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.

This device contains static sensitive components which can be damaged by static charges. Use the following precautions when installing, servicing, or operating the system:

Work in a static-free area

Discharge static electricity by touching a known, securely grounded object.

Use a wrist strap connected to earth ground when handling printed circuit boards/components.

Observe VA Consumption.

Steam applications: Following a shutdown of the steam system it is important that the control valve is fully open before introducing steam into the pipeline (purging) or damage may occur to the actuator spindle or the valve plug.

Do NOT apply power unless the actuator is fitted to a valve.

When operating a valve handling fluid above 100°C, Do NOT mount actuator vertically above the valve, but to one side.

Ambient temperature should be between -20°C and 50°C.

Do not install valve with actuator directly underneath it.

Allow sufficient clearance for fitting and wiring, also minimum of 110mm between the top of the case and the nearest obstruction to allow good access when using the manual operation crank.

Do not self-stroke the actuator before fitting to a valve. The actuator's self-stroke system will not function correctly until valve connection is made.

ACTUATOR FITTING INSTRUCTIONS

The standard frame actuators (ALi1576 and ALi1577) fit Satchwell valves with ¼" and ⅜" threaded spindles. The short frame actuators (ALi1676 and ALi1677) fit Satchwell valves with a ¼" threaded spindle (DS 4.401 and DS 4.601).

1. Fit locknut 'B', (supplied) to the valve spindle (for certain older valves this will be supplied fitted (as locknut 'F')).

Note: Adaptor 'A' will be supplied fitted to some valve spindles and may not be necessary, in which case unscrew and discard it.

2. Unscrew lugnut 'C' from the valve bonnet. Place the actuator mounting frame over the valve bonnet and screw lugnut 'C' (lugs

uppermost) to the valve bonnet and tighten. Ensure clear access for conduit entry and wiring.

Note: For Satchwell 125 and 150mm valves, discard lugnut 'C' and mount the valve using the four bolts 'D' supplied with the valve.

3. Pull the valve spindle up to the fully extended position.
4. If the valve has a ¼" spindle, screw adaptor 'A' approximately 8mm into coupling nut 'E' and lock in position with locknut 'F'. Using the manual operator, lower adaptor 'A' until just touching the valve spindle. Lift the spindle into adaptor 'A' and screw in fully by turning coupling nut 'E'. Do NOT over-tighten. Lock using locknut 'B'.
5. If the valve has a ⅜" spindle, discard adaptor 'A' and screw the coupling nut 'E' approximately 8mm over the extended valve spindle. Lock using locknut 'B'.

Note: When using the manual operator, particularly when assembling to small size valves, avoid over-extending or retracting actuator spindle to prevent malfunction or damage.

6. Set the manual operator button to the Auto position.

7. If subsequently removing the actuator, e.g. to service the valve gland, it is **IMPORTANT** to isolate power supply to controller or actuator or otherwise select the 'Manual' position on the manual operator pushbutton. This will avoid malfunction or damage due to actuator spindle being accidentally driven beyond its normal stroke limits.

Cautions

For correct operation, it is essential to ensure the linkage is secure.

Do not leave the manual operator button in the Manual position (Fig.2)

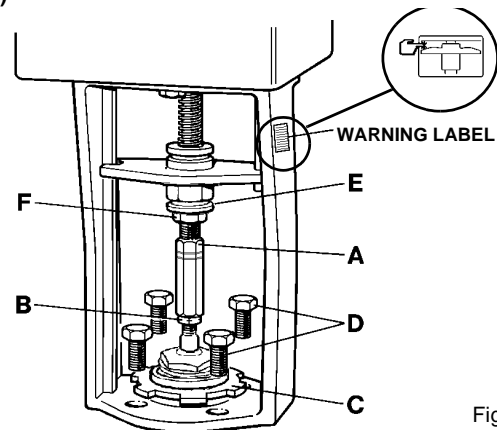


Fig.3

ALI WIRING PRECAUTIONS

| Wiring from actuator to controller: | Max. Length of 1.5mm ² cable unscreened | Max. resistance per conductor |
|-------------------------------------|--|-------------------------------|
| 24V~ supply | 100m | 1Ω |
| 0-10Vdc signal | 100m | 50Ω |

For longer lengths of 24 Volt supply wiring, increase cable size and observe maximum resistance.

Where screening is required, use either screened cable, or run cables in a separate conduit.

If auxiliary switches are fitted and used at mains potential, observe local wiring regulations, earthing requirements and all usual precautions.

Observe relevant controller data sheets to ensure correct signal and power supply.

WIRING

Caution

Observe static discharge precautions (see Cautions opposite).

1. Remove cover and conduit plate.
2. Fit flexible conduit to plate allowing sufficient length to permit removal of the actuator.
3. Connect cables in accordance with system wiring diagram or refer to diagram on front cover of the ALi in conjunction with the controller wiring diagram. Earth the actuator, where applicable. Observe 'Wiring Precautions'. Keep wiring clear of internal moving parts.
4. Replace conduit plate and cover.

Caution

Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.

FITTING AUXILIARY SWITCHES KIT ALA1211

WARNING - AUXILIARY SWITCHES MAY BE AT MAINS POTENTIAL.

1. Remove cover.
2. Push the switch operating rod 'A' into the large hole in the base of the actuator case (see Fig.4) until it clicks into the anti-rotation bracket (G above).
3. Fit the auxiliary switch kit 'B' to the left of the switch operating rod 'A'. Use the locating holes provided and tighten the fixing screws.
4. Note that the micro-switches are adjustable, one (S1, S2 & S3) between actuator positions 0 and 5, the other (S4, S5 & S6) between positions 5 and 10.
5. To adjust the switches, energise actuator (if commissioning in progress) at correct voltage and run to position at which one switch is required to operate. Alternatively, use manual operator facility.
6. Loosen micro-switch fixing screws 'C' and slide assembly with terminal block to the point at which vertical operating rod 'A' just operates switch. Hold assembly in this position and re-tighten the fixing screws.
7. Now energise actuator (if commissioning stages have been completed, see caution on Page 3), or use the manual operator, to run the actuator in the opposite direction to position at which second switch is required to operate, then repeat the setting procedure, as in points 5. and 6.
8. Connect cables in accordance with system wiring diagram. Ensure that all wiring is kept clear of internal moving parts.
9. Replace cover.

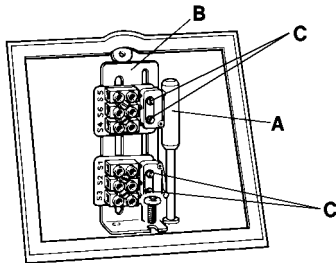


Fig.4

pressure is reduced during this operation, by switching off the circulating pump.

10. Wait until the actuator has completed its self-stroke procedure. The LED will flash once in a one second period to indicate the Idle state. The actuator's command signal now matches the current position.
11. Check the actuator operates correctly by operating the controlling switch or by adjusting the controller set value above and below the actual temperature (or humidity) currently read by the sensor (or simulated). This must be within the scale limits.
12. Whilst checking the actuator travel over full valve stroke, run the actuator to its fully retracted position. Select a self-adhesive scale to match valve stroke (from the packet attached to the inside of the terminal cover). Fix scale to the outside edge of the actuator mounting bracket so that the top edge of the anti-rotation plate lines up with position '0' on the scale (Fig.6).
13. If auxiliary switches are fitted, remove terminal cover to check the correct operation and switching functions.
14. Replace terminal cover.

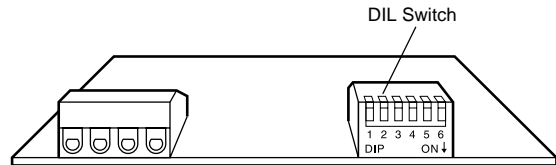


Fig.5

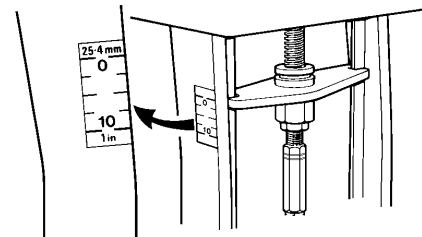


Fig.6

COMMISSIONING

WARNING - WHEN ACTUATOR IS OPERATING, BEWARE OF TRAPPING FINGERS ETC.

Cautions

This device may not be compatible with some plate heat exchangers. Please contact Customer Care for details.

Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.

The control loop must be adjusted to cater for the new accuracy and response rates. Performance of the application, valve and actuator will be compromised if the control loop is not tuned by a qualified person.

Observe static discharge precautions (see Page 3).

Before switching on power supply:

1. Check that all control equipment is correctly located and fitted.
2. Check ambient temperature conditions.
3. Check that the actuator has been correctly mounted on the valve, up to the stage where power is called for.
4. Remove terminal cover and check that all control circuit wiring is correct and in accordance with the overall control system wiring diagram. Note that the terminal block can be removed to ease access. Check that all electrical supply voltage is correct. Note: Wiring errors not only cause malfunctions; they may also damage controllers and/or actuators.
5. Ensure that the manual override pushbutton is set to the 'Auto' position.
6. Switch on power supply.
7. The actuators status will be indicated by the LED mounted on the PCB. See "LED STATUS" on page 2.
8. Select desired mode via the DIL switch (Fig.5). The adjacent table shows the available modes together with the required DIL switch setting.
9. Self-stroke the actuator - To initiate the self-stroke feature, switch ON DIL 6 and return it to the OFF position (toggle). Whilst self-stroking, the LED will flash for 1 second on then 1 second off to indicate the self-stroke state. It is recommended that valve

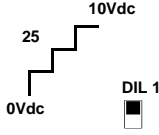
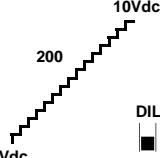
DIL (DUAL IN LINE SWITCH)

| DIL | OFF | ON |
|--------------------------|------------------------------------|------------------------------------|
| DIL 1 (STEPS) | 25 | 200 |
| DIL 2 (DIR ACTION) | DA | RA |
| DIL 3 (START) | 0V | 6V |
| DIL 4 (SPAN) | 10V OR IF DIL 5 = ON SM = 0% | 4V OR IF DIL 5 = ON SM = 50% |
| DIL 5 (SM) (Safety Mode) | OFF | ON |
| DIL 6 (SELF-STROKE) | TOGGLE FOR RESET | |

CHANGING DIL SWITCH POSITIONS AFTER COMMISSIONING

The DIL switch settings can be altered at any time. Make the changes as required, then toggle DIL switch 6 to re-stroke or remove then restore power to the actuator (allowing the LED to go out).

CONTROLLER COMPATIBILITY

| | | |
|--------------------------------|---|---|
| RESOLUTION |  |  |
| TYPE | | |
| BAS, Σ, IAC, KMC, MMC, MN, URC | ✓ | ✓ |
| CZT, DRTE | ✓ | * |

Note: 200 steps are available on valves with a 38mm stroke. Valves with a shorter stroke have a directly proportional reduction in available steps. 25 step setting is not affected. Where the span is set to be less than the full travel of the valve, the number of steps is proportionally reduced.

DIL SWITCH LEGAL COMBINATIONS

| Switch/Combo | 1 | 2 | 3 | 4 | 5 |
|--------------|-----|-----|-----|-----|-----|
| 1 | Off | Off | Off | Off | Off |
| 2 | Off | Off | Off | Off | On |
| 3 | Off | Off | Off | On | On |
| 4 | On | Off | Off | Off | Off |
| 5 | On | Off | Off | Off | On |
| 6 | On | Off | Off | On | On |
| 7 | Off | On | Off | Off | Off |
| 8 | Off | On | Off | Off | On |
| 9 | Off | On | Off | On | On |
| 10 | On | On | Off | Off | Off |
| 11 | On | On | Off | Off | On |
| 12 | On | On | Off | On | On |
| 13 | Off | Off | On | On | Off |
| 14 | On | Off | On | On | Off |
| 15 | Off | Off | Off | On | Off |
| 16 | On | Off | Off | On | Off |
| 17 | Off | On | On | On | Off |
| 18 | On | On | On | On | Off |
| 19 | Off | On | Off | On | Off |
| 20 | On | On | Off | On | Off |

| Steps | DIR | Start | Span/SM | SM |
|-------|-----|-------|---------|-----|
| = 25 | DA | 0 | 10 | Off |
| = 25 | DA | x | 0% | On |
| = 25 | DA | x | 50% | On |
| = 200 | DA | 0 | 10 | Off |
| = 200 | DA | x | 0% | On |
| = 200 | DA | x | 50% | On |
| = 25 | RA | 0 | 10 | Off |
| = 25 | RA | x | 0% | On |
| = 25 | RA | x | 50% | On |
| = 200 | RA | 0 | 10 | Off |
| = 200 | RA | x | 0% | On |
| = 200 | RA | x | 50% | On |
| = 25 | DA | 6 | 4 | Off |
| = 200 | DA | 6 | 4 | Off |
| = 25 | DA | 0 | 4 | Off |
| = 200 | DA | 0 | 4 | Off |
| = 25 | RA | 6 | 4 | Off |
| = 200 | RA | 6 | 4 | Off |
| = 25 | RA | 0 | 4 | Off |
| = 200 | RA | 0 | 4 | Off |

x = not used/irrelevant

Note: The ALi actuator LED will flash rapidly if the configuration is illegal and the actuator will not operate.

SAFETY MODES

The control signal may be conditioned to automatically put the actuator in a fixed position. Safety mode is enabled by dip switch 5. The position of 0% or 50% is set by dip switch 4. The control (2-10V) signal may be switched through an auxiliary relay to reflect a frost or high limit condition. When the control signal is <1.5V, this sends the actuator to the set position (0% or 50%). Where existing thermostats or relays are available these may not be directly compatible. The relay/switch must have gold contacts as the low current positioning signal will not provide an adequate wetting current to function with lower quality devices. Auxiliary relays with gold flashed contacts are suitable. Other non tarnishable contacts should be used when required. Relays used for data comms are preferred.

Note: Safety mode operation is not a total power fail condition. The actuator must have a 24Vac or 34Vdc power supply to drive to the required position. The control signal i.e. 0 to 10Vdc is switched/alterred.

MANUAL POSITIONING DURING A POWER FAILURE

The actuator will retain all data in the event of a power failure. It will not need to be restroked if manually positioned during a period without power. When put back into the auto position and power is restored, the actuator will travel to the required position and then control as normal.

If the actuator is manually positioned with power on, it is recommended that when returning to the auto position that the functionality of the actuator is checked in auto mode by varying the control signal as required.

SERVICE AND BMS MONITORING

The actuator should not require servicing during its operational life. The main bearings are low friction plastic and the gearbox is pre-lubricated for life.

Periodic monitoring of the LED status and initiating the self stroke feature to check operation is advisable. Monitoring of the feedback signal by a BMS system will reduce the dependency on planned maintenance and will also reduce delays in sensing plant errors.

WIRING DIAGRAMS

BASIC WIRING DIAGRAM

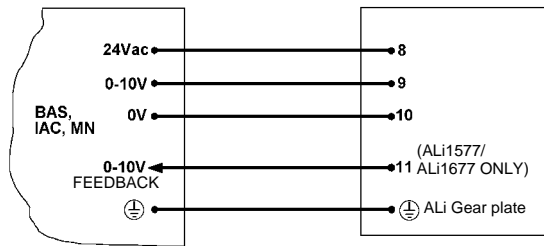


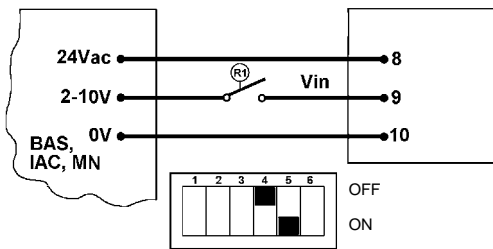
Fig.7

WARNING - MAINS VOLTAGE ISOLATORS MUST CONFORM TO EN 60335-1.

24Vac DEVICES MUST BE SUPPLIED BY A TRANSFORMER CONFORMING TO EN 61558.

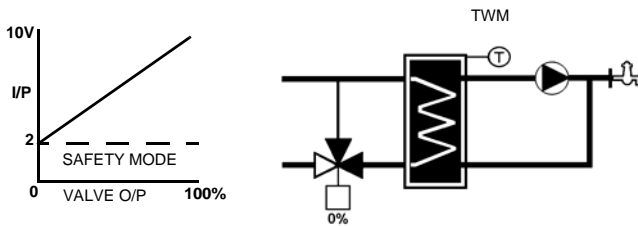
SAFETY MODE 1

CLOSE TO 0% ON SIGNAL LOSS E.G. HWS APPLICATIONS



If control signal $1.5 \pm 10\%$ or if R1 opens $V_{in} = 0V$ then ALi will drive to 0%. DA and RA settings apply.

Fig.9



Note: R1 is a gold plated contact. Controller signal will be min. 2Vdc max. 10Vdc

SEPARATE 24VAC SUPPLY

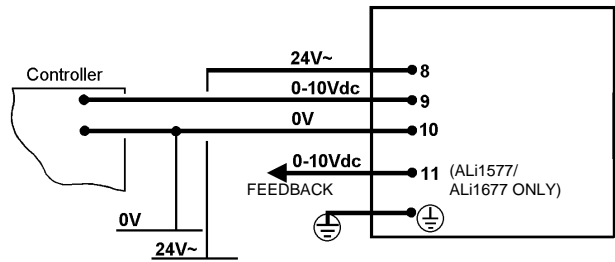


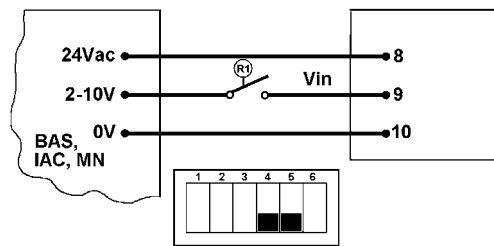
Fig.8

WARNING - MAINS VOLTAGE ISOLATORS MUST CONFORM TO EN 60335-1.

24Vac DEVICES MUST BE SUPPLIED BY A TRANSFORMER CONFORMING TO EN 61558.

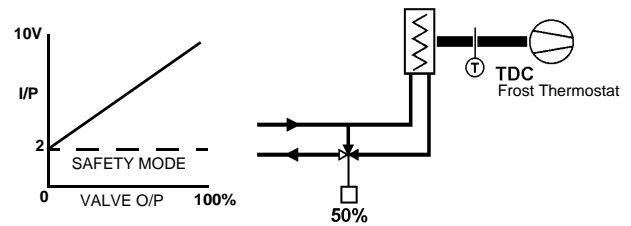
SAFETY MODE 2

OPEN TO 50% ON SIGNAL LOSS E.G. FROST COIL APPLICATIONS



If control signal $1.5 \pm 10\%$ or if R1 opens $V_{in} = 0V$ ALi drives to 50% DA and RA settings apply.

Fig.10



Note: R1 is a gold plated contact. Controller signal will be min. 2Vdc max. 10Vdc

EARTH CONNECTION

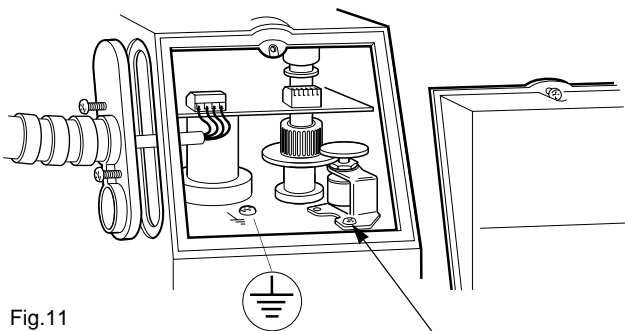


Fig.11

Caution
Do not adjust; manual adjustment of the potentiometer is unnecessary and will cause incorrect functioning of the actuator.

AUXILIARY SWITCH ALA1211

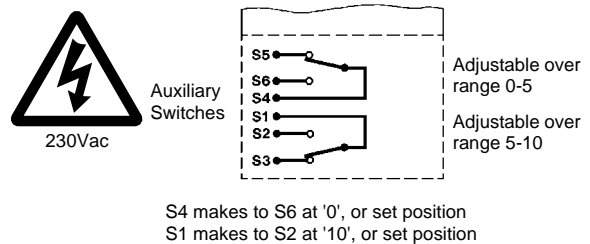
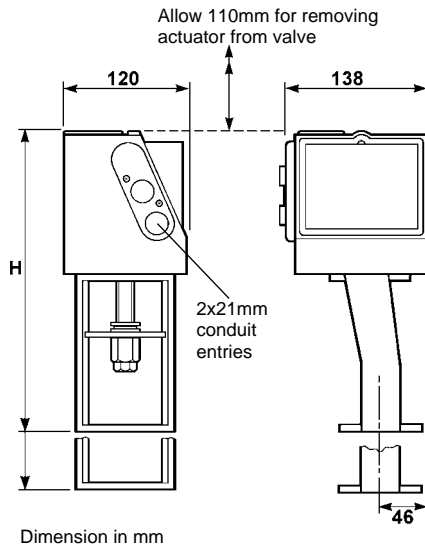


Fig.12

WARNING - AUXILIARY SWITCHES MAY BE AT MAINS POTENTIAL.
MAINS VOLTAGE ISOLATORS MUST CONFORM TO EN 60335-1.

DIMENSION DRAWING



Refer to 'Stroke' details

Short Stroke Version
(ALi 1676, 1677)
H = 265mm (height)

Weight: 1.71kg approx.

Standard Stroke Version
(ALi 1576, 1577)
H = 310mm (height)

Weight: 1.91kg approx.

WARNING -

STEAM OR HOT WATER HAZARD. BEFORE REMOVING ACTUATOR FROM VALVE OR OPENING VALVE, ENSURE THAT THE VALVE CONTROL MEDIUM IS ISOLATED AND RELIEVE THE PRESSURE. WORK SHOULD ONLY BE CARRIED OUT BY A COMPETENT ENGINEER.

AUXILIARY SWITCHES MAY BE AT MAINS POTENTIAL. MAINS VOLTAGE ISOLATORS MUST CONFORM TO EN 60335-1. WHEN ACTUATOR IS OPERATING BEWARE OF TRAPPING FINGERS ETC.

Caution

- Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.
- This device may not be compatible with some plate heat exchangers. Please contact Customer Care for details.
- If any equipment covers have to be removed during the installation of this equipment, ensure that they are refitted after installation to comply with UL and CE safety requirements.
- 24Vac devices must be supplied by a transformer conforming to EN 61558.
- Observe installation instructions.
- Observe wiring precautions.
- Observe static discharge precautions.
- Do not apply power unless the actuator is fitted to a valve.
- Ensure wires are not inadvertently crossed over. Wiring errors not only cause malfunctions; they may also damage controllers and/or actuators.
- Steam Applications: Following a shutdown of the steam system it is important that the control valve is fully open before introducing steam into the pipeline (purging) or damage may occur to the actuator spindle or valve plug.
- Observe maximum and minimum ambient temperatures.
- Check thrust requirements and maximum differential of pressure of valve to be driven. Do not exceed rated output thrust.
- Manual adjustment of the actuator potentiometer is unnecessary and undesirable.
- Do not leave the manual operator pushbutton in the Manual position (see Fig.2)
- Interference with those parts under sealed covers renders the guarantee void.
- Design and performance of TAC Satchwell equipment is subject to improvement and therefore liable to alteration without notice.
- Information is given for guidance only and TAC Satchwell does not accept responsibility for the selection and installation of its products unless information has been given by the Company in writing relating to a specific application.
- A periodic system and tuning check of the control system is recommended. Please contact your local sales office for details.

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