

OUTPUT DRIVE DIMENSIONS			
	F03	F04	F05
A	36	42	50
B	9	11 or 14	11 or 14
According to ISO5211 / DIN3337			

- 1- Local position indicator & Manual Override operator
- 2- Mains power connector
- 3- Manual Override selector
- 4- Volt free contact connector

The actuator has 2 components, an electric actuator and a 'BSR' (Battery 'Spring-Return') failsafe system. Incoming mains power, via a relay, is transformed & rectified to 24VDC, passes through a trickle charger and is then sent to the 24VDC actuator. Under normal conditions this rectified & transformed power drives the motor open and closed via cams and limit switches in the actuator. Whilst the mains power is connected the industrial batteries are constantly trickle charged to maintain full power.

In the event of mains failure, the relay instantaneously switches to batteries and power is drawn to place the actuator in the failsafe position, if not already in that position. On resumption of mains power, the BSR system will return the actuator to the position immediately prior to mains failure.

- + Corrosion resistant housing. + IP65 Protection
- + All Din plug connections eliminating the need to remove actuator cover to connect.



Optional Extras: Anti-condensation heater / thermostat.

SUPPLY VOLTAGE	VDC	12	24	110			
	VAC				24	110	220/240
CURRENT	A	1.2					
WORKING TIME	S/90°	7.5			8.5		
STARTING TORQUE	Nm	25					
WORKING TORQUE	Nm	20					
MAX. OPERATIONS	/Hr	8					
MIN. RECHARGE TIME	mins	8					
WORKING ANGLE	deg.	90°-180°-270°					
WEIGHT	KG	3.5					
TEMPERATURE LIMITS	°C	-20 +70					
CONNECTORS	-	DIN 43650-B/ISO 4400 & C-192					

MODEL RO 'BSR' FAILSAFE ELECTRIC ACTUATOR.

J+J
ACTUATORS

Drawn By
MRG

Chk
DC

File Name
9405

Scale
NTS

Dwg No. 9405

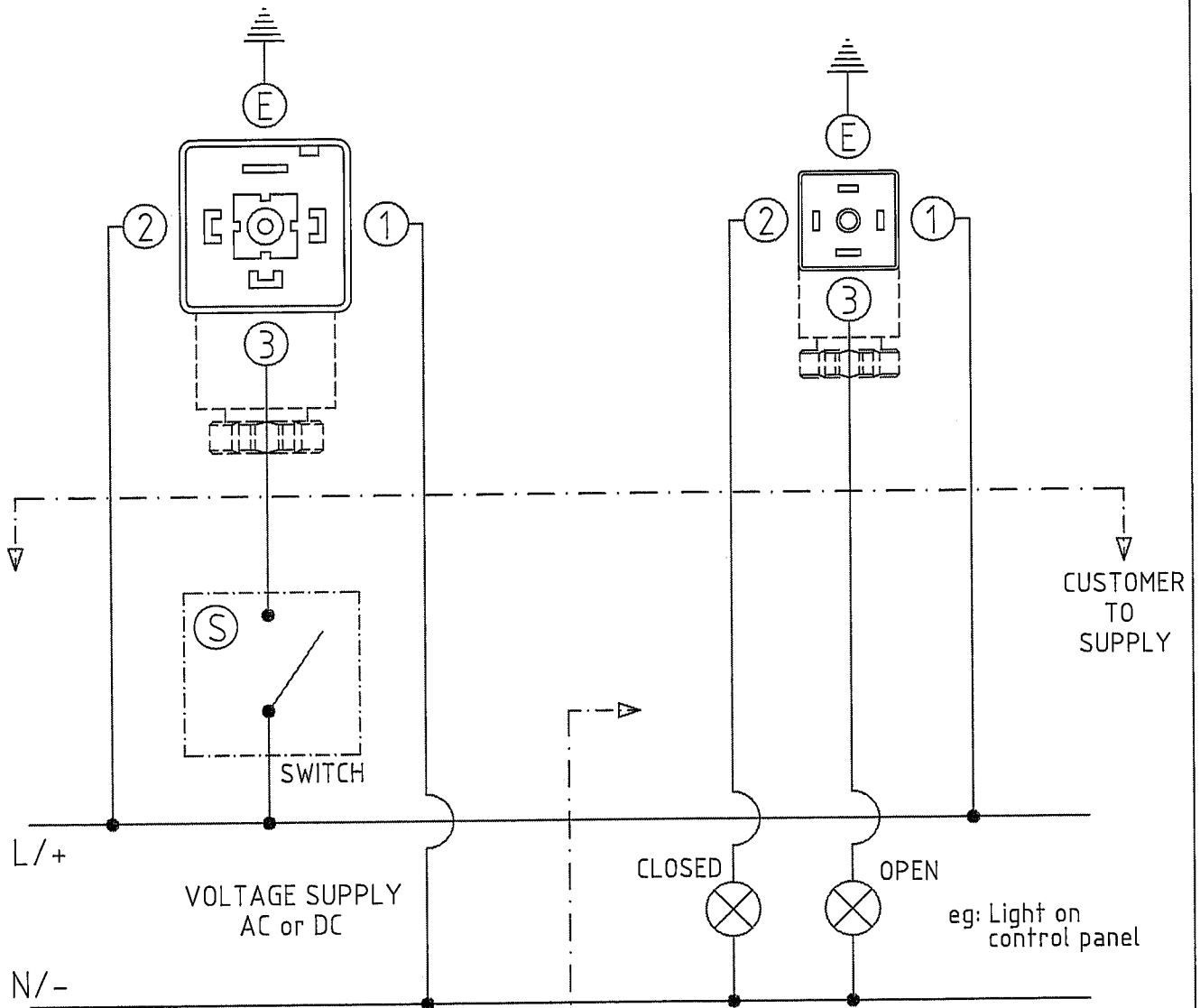
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06/09/01

POWER CONNECTION

VOLT FREE CONTACT CONNECTION



(S) = SWITCH (to supply a continuous signal until end of travel is reached).

eg: THERMOSTAT
RELAY
FLOAT/LEVEL SWITCH
MANUAL SWITCH
ETC.

VOLT FREE CONTACTS:
Factory set at 0 & 90°
Switches rated 220V 5A

Above wiring showing same supply as motor is only a suggestion.

NB: READ INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS BEFORE CONNECTING.

AC & DC WIRING DIAGRAM: ALL FAILSAFE REVERSIBLE MODELS

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MRG

Chk
DC

File Name
WRFS

Scale
NTS

Dwg No.

WRFS

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1

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14/06/00

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

Read these instructions fully before attempting to use the actuator as damage caused by non-compliance will invalidate any warranty. If in doubt, ask your supplier BEFORE you connect it.

1 ELECTRICAL CONNECTION

- 1.1 All J+J actuators have wiring diagrams attached to the side of the actuator on initial supply. Do not remove these diagrams as doing so may invalidate any warranty.
- 1.2 All J+J actuators have Din plug electrical connectors eliminating the need to remove the cover to connect electrically. Removing the cover is not necessary and doing so may invalidate any warranty. Ensure the rubber seal is correctly installed when refitting the plug after wiring to maintain IP65 rating. The Din plugs need to be fitted to maintain its IP65 rating, but take care not to over tighten the securing screws.
- 1.3 **WARNING – DANGER OF SHORT CIRCUITING** – never connect the open and closed pins (except with failsafe models) as this will short circuit the actuator causing irreparable damage and invalidating the warranty. If in doubt, ASK before you connect the power supply.
- 1.4 **WARNING – Overload protection.** We strongly recommend that the actuator is given its own independent fused supply to prevent current from other devices being drawn through the actuator which will cause irreparable damage and invalidate any warranty.

2 MANUAL OVERRIDE

- 2.1 All J+J actuators have a manual override facility, operated by a selector lever, which disengages the motor drive when moved from AUTO to MAN (Manual). The gearbox contains planetary gears and it may be necessary to 'wiggle' the selector lever whilst gently moving the manual override handle to ensure the gears disengage and re-engage. When resetting into AUTO – a positive 'click' will be felt when the gears have correctly disengaged/ re-engaged – again, 'wiggle' the selector lever if required. Fitted in all reversible models (prefix 'R'), is a safety cut out switch activated by the manual override selector lever, which cuts the power to the motor when in the 'MAN' position.
- 2.2 NEVER remove the selector lever retaining screw as this will allow the operating mechanism to become free and will cause irreparable damage to the actuator's gearbox. Removing this screw will invalidate any warranty.
- 2.3 When in AUTO mode, the manual override operating handle rotates on models U0, R0 and R1 – NEVER restrict this movement or irreparable damage will be caused which will invalidate any warranty. Forcing this override handle to move whilst in 'AUTO', when the actuator is not being operated electrically, will irreparably damage the drive mechanism and invalidate any warranty.
- 2.4 When in MAN mode, avoid rotating the actuator beyond the open and closed logos printed on the top of the actuator. There are no mechanical stops fitted to the actuator (to allow rotations of 120 and 180 degrees) and it is therefore possible to over rotate the actuator. Over rotation will position the internal cams beyond their micro switches, which will result in an abnormal first operation of the actuator when reset into AUTO mode (the actuator will rotate up to 270 degrees until the cam resets in the correct position).
- 2.5 In models where the power is not cut by the manual override selector lever (U0), NEVER leave the actuator in 'MAN' mode if the power supply is controlled by an external source (timer/ control panel etc) as upon receiving a signal to operate, the motor will run continuously as the drive is disengaged, and the motor will burn out, invalidating any warranty.
- 2.6 Open and closed logos are as follows:

OPEN



CLOSED



3 APPLICATION / SIZING

Correctly sized and used within the parameters of the specification of the actuator, over 10 year manufacturing experience shows the J+J actuators will provide trouble free service. NEVER operate the J+J actuators on equipment that can exceed the stated torque as it will cause irreparable damage and invalidate any warranty. Always allow a healthy safety margin when sizing.

STANDARD MODELS – POWER OPEN, POWER CLOSE INSTALLATION INSTRUCTIONS

J+J actuators operate using live electricity and we recommend that only qualified electrical engineers/ electricians be employed to connect the actuators electrically. These user friendly actuators can be fully connected without removing the actuator's cover using the external Din plugs and wiring diagrams affixed to the side of the actuator.

In AC power supplied models, a switch has to be provided by the user to switch the live between open and closed, and in some DC power supplied models, the polarity has to be reversed by components supplied by the user.

IOM's FOR ALL STANDARD ON/OFF ACTUATORS

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- I.1 Check that the voltage being applied matches the voltage shown on the actuator's identification label as damage caused by applying an incorrect voltage will invalidate any warranty.
- I.2 Connect the power supply as per the wiring diagram affixed to the side of the actuator. If in doubt, ASK BEFORE connecting.
- I.3 All J+J actuators are supplied with volt free position confirmation switches (limit switches) which require a separate power supply to operate (rated 240V 5A). The suggested wiring as per the wiring diagram affixed to the side of the actuator shows the same voltage for the actuator being used as the power source for these switches – this is a suggestion only and any standard control voltage can be used (eg: 12 or 24DC).
- I.4 We strongly disapprove of the use of mechanical stops as any physical restriction to the full rotation of the actuator will cause irreparable damage to the gearbox and/or burn out the motor, either invalidating any warranty.
- I.5 Whilst the J+J actuators can be fitted in any orientation subject to ambient/ environmental conditions, we recommend installing the actuator vertically wherever possible. Be aware of applications where elevated temperatures could be present and allow for the possibility of heat rising – in these cases use an extended mounting kit to help dissipate the heat. In applications where ambient conditions (humidity/ temperature) can fluctuate dramatically, we recommend the fitting of internal anti-condensation heaters..
- I.6 If in doubt at any point, ASK before connecting. Common sense and good engineering practice should always prevail.

OPERATING INSTRUCTIONS – STANDARD POWER OPEN, POWER CLOSE MODELS

Irreparable damage can easily be caused to J+J actuators through incorrect operation. Ensure the operator is aware of the rotation of the actuator – model U0 is unidirectional, all others are reversing - and exercise extreme caution if, against our recommendations, mechanical stops are to be employed.

These actuators work with the use of cams which operate limit switches, which control the power to the actuator's motor. These cams are factory set at 0 and 90 degrees and whilst they are adjustable, should not normally require any user adjustment.

- O.1 Supply a continuous (not pulse) live signal (either open, or close live) to operate the actuator. The actuator will rotate until the cams operate the micro switch and cut the power to the motor. The actuator will stay in this position until a further continuous live signal is received to send it to its next position. The rest positions will be shown by the open and closed logos, as indicated by a local visual position indicator. NEVER move the set position of this indicator or a false position will be indicated.
- O.2 In the case of mains power failure, the actuator will stay in the position it saw at the moment of power interruption. Should the actuator need to be operated under these circumstances, use the manual override facility, but remember to reset the selector lever in the AUTO position when the movement is completed as outlined earlier.
- O.3 The corrosion resistant housings of the J+J electric actuators are by their nature, not as rust as aluminium housed actuators and should be treated with care. NEVER support or lift an actuated assembly by the actuator or it may break causing irreparable damage and invalidating any warranty.

MAINTENANCE INSTRUCTIONS

The J+J electric actuators are designed to be maintenance free, the gearbox is factory lubricated for life and there are no other parts requiring maintenance. Simple external cleaning using soapy water will remove deposits and ensure the open and closed logos remain visible. NEVER pressure wash the actuators as they are not designed to withstand this form of cleaning and irreparable damage caused by pressure washing will invalidate any warranty.

OPTIONS

- A FAILSAFE electric actuators. A separate IOM sheet is supplied with failsafe J+J actuators
- B Modulating electric actuators. A separate IOM sheet is supplied with modulating J+J actuators.

SPECIAL BESPOKE ACTUATORS

We can supply special configuration actuators in certain circumstances which will be supplied with instructions specific to that build. However, the general IOM's contained in this document will still apply.

MANUFACTURER'S PRODUCT SUPPORT

J+J actuators are fully supported in the UK and Ireland and manufacturer's representatives can attend site to assist with 'problems', however a call out charge is made and expenses are recovered if the fault is proven to be 'user generated' due to non adherence to these IOM's. An order number MUST be issued to cover these charges BEFORE they will attend. Should the fault be due to manufacturing or material defects, no charge will be made.

Thank you for purchasing the J+J electric actuator. We trust that you will find them very user friendly and that if installed and operated in accordance with these instructions, you will find they give reliable and trouble free performance. E&OE Rev2 9.01

IOM's FOR ALL STANDARD ON/OFF ACTUATORS

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J+J FAILSAFE ELECTRIC ACTUATOR: BSR SYSTEM (Battery 'Spring-Return')

FUNCTION:

To provide an alternative source of power to drive the actuator to the pre-determined failsafe position in the event of a mains power supply interruption. Please note that the BSR system contains NO SPRINGS, and is not a true 'spring return' electric actuator – the 'return' to a failsafe position is achieved with stored battery power driving a 24VDC motor.

METHOD:

The incoming mains supply voltage passes through a power sensing relay, a transformer and rectifier (if applicable) and an industrial strength trickle charger before being fed to the actuator's DC motor. Under normal operating conditions the actuator is opened and closed using mains power, and this mains power simultaneously trickle charges the industrial rechargeable batteries to maintain them at full charge.

After an initial minimum charge of 24 hours to fully charge the rechargeable battery pack, immediately the mains supply is interrupted (power fail mode) the power sensing relay switches to battery power and, if not already in the pre-set failsafe position, the stored battery power is drawn to move the actuator to the pre-set failsafe position – either closed if configured normally closed (NC), or open if configured normally open (NO). In the power fail mode, the batteries are not being charged, and any movement of the actuator will be drawn from the batteries.

Upon mains power resumption, the relay senses the incoming mains power and switches the system back to mains, and re-sets the actuator to the position it saw immediately prior to the mains supply interruption.

INSTALLATION:

Any J+J electric actuator can be fitted in any orientation, although the standard position with the drive vertical is preferred. Electrical connection is per the wiring diagram affixed to the side of the actuator (or as per our separate wiring diagrams which are available on request). Should there be ANY queries regarding electrical connection, CHECK before applying power as irreparable damage caused by incorrect electrical connection will invalidate any warranty.

OPERATION:

(a) Standard Operation: Power open, power close, fails safe on power failure

The 'BSR' unit is automatic in that it senses the loss of mains power and triggers the drawing of battery power without any human intervention. To achieve full power the industrial rechargeable batteries MUST be charged for a MINIMUM of 24 hours, BEFORE they are to be put into service. Failure to comply with this minimum charging period can dramatically reduce the storage capacity and performance of the batteries. After the 24 hour charge, there is sufficient charge in the batteries to provide around 8 operations – this provides a significant factor of safety against degradation of the battery pack, as in an emergency only one operation is needed.

(b) 2 Wire Operation: Energise open, fail close (solenoid type operation)

Although not designed for this purpose, it is possible to use the BSR system as a solenoid, ie: energise open, fail close. There are two main differences between this configuration and the 'standard operation' above;

- 1) The wiring is generally a 2 wire system, and a link needs to be fitted between pins 2 and 3 in the power din plug live supply (+ve in DC systems), and
- 2) In models R0 and R1, the MINIMUM energise open time is 8 minutes, in models R2 and R2+ the minimum energise open time is 30 minutes.

These energise open times are the absolute MINIMUM needed by the BSR system to 'boost' charge the industrial rechargeable batteries to replace the battery energy lost on one 'fail close' cycle. The batteries are only being trickle charged during the energise open cycle.

EXTRA IOM'S FOR FAILSAFE ELECTRIC ACTUATORS

J+J
ACTUATORS

Drawn By
MRG

Chk
DC

File Name
MSW.JJBSR

Scale
NTS

Dwg No.

IOM.BSR

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2

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MANUAL OVERRIDE:

The Manual Override is provided for EMERGENCY hand operation only.

The BSR system operates around the position of the internal closed limit switch. In the closed position this switch is made and (in N/C applications) the actuator is in its failsafe position. No power is needed or called for by the BSR system. As soon as the actuator moves and the closed switch is broken;

If the power sensing relay senses mains power, the mains power will drive the actuator open.

If the relay does not sense mains power, it automatically switches to battery power to close the actuator.

Use of the manual override whilst there is power in the batteries will therefore result in the BSR system calling for battery power as soon as the closed switch is broken. It can't however drive the actuator closed as the gear train is disengaged whilst in manual, but will drive the disengaged gears to try and 'make' the closed switch. The batteries will continue to drive the disengaged gear train until the closed switch is made— and the operator will hear the disengaged gears running whilst operating the manual override.

MAINTENANCE:

All J+J electric actuators are designed to be maintenance free. Gearboxes are factory lubricated for life at time of manufacture. Simple cleaning using soapy water to ensure the local visual position indication logos remain visible is recommended. NEVER wash the J+J electric actuators with any pressure washing equipment as it will cause irreparable damage and invalidate any warranty.

PERFORMANCE:

The operating time is the same for either mains or battery power. The motors in all the BSR's are 24V DC (other supply voltages are transformed and rectified to 24VDC) to be compatible with the industrial batteries.

The rechargeable batteries are of industrial strength and have been sized to provide around 8 operations (open/close) at full charge, when in an emergency only one operation is needed, providing a significant safety factor against possible failure due to battery degradation. Should the batteries be fully drained, a short 'boost' charge will allow a single operation in a few minutes.

MANUFACTURER'S PRODUCT SUPPORT:

J+J actuators are fully supported in the UK and Ireland and manufacturer's representatives can attend site to assist with 'problems', however a call out charge is made and expenses are recovered if the fault is proven to be 'user generated' due to non adherence to these IOM's. An order number MUST be issued to cover these charges BEFORE they will attend. Should the fault be due to manufacturing or material defects, no charge will be made.

Thank you for ordering the J+J failsafe electric actuator. Correctly applied, installed, connected and operated in accordance with these instructions, your J+J failsafe electric actuator should give you reliable and trouble free performance.

E&OE Rev 2 9.01

EXTRA IOM'S FOR FAILSAFE ELECTRIC ACTUATORS

J+J
ACTUATORS

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MRG

Chk
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