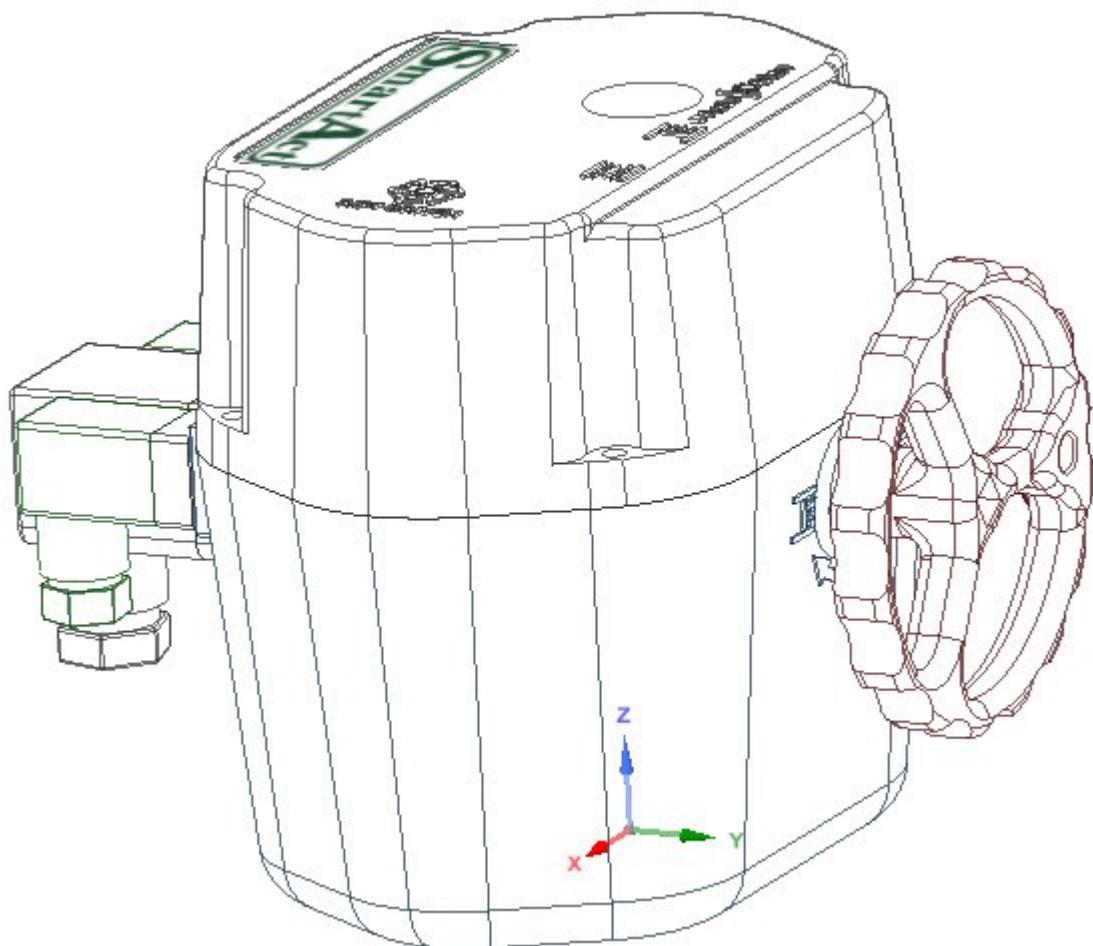


INSTALLATION OPERATION & MAINTENANCE INSTRUCTIONS

Rift Actuator® 30 Nm Small



VERSION 1.0 2020

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INTRODUCTION, STORAGE, and SAFETY



INTRODUCTION

The **RIFT®** 30 Actuator is the first commercial **RIFT DRIVEN®** product and is also the first Electric Valve Actuator that can be configured to offer either the functionality of a part-turn electric valve actuator, a direct acting solenoid or that of a multi-turn actuator. Correctly applied, configured, installed, connected, commissioned and used the **RIFT®** 30 will provide trouble-free, reliable and extremely energy efficient service. Energy consumption will be reduced by approximately 75%. This actuator is sold as an up to 30Nm part turn electric actuator with the ability to upgrade its default settings and features with the minimum disruption to the client or customer.

These IOM's (Installation, Operation & Maintenance Instructions) are provided to offer advice and information to installers and users of the **RIFT®** 30 to achieve reliable and trouble-free service. The following symbols are used to indicate warnings:

-  Yellow warning triangle advises actions that MAY cause incorrect operation and non-adherence to the warnings COULD result in product failure and potential personal injury and/or consequential damage.
-  Red warning triangles advise actions that WILL cause incorrect operation and that non adherence to the warnings WILL result in product failure and potential personal injury and/or consequential damage.

STORAGE

Store in a well-ventilated and dry room. Actuators should be stored off the floor, either on a shelf or on a wooden pallet, for example. Replace supplied transit plastic cable entry plugs with solid plugs and PTFE thread tape.

-  Do not store the Actuators with the covers or cable entry plugs removed, as no responsibility will be accepted for on-site deterioration caused by the covers being removed.

SAFETY INFORMATION

All personnel working with the **RIFT®** 30 must be familiar with this Installation, Operation & Maintenance instructions, and the safety recommendations are to ensure correct functionality of the **RIFT®** 30 Electric Actuator and to avoid personal injury or property damage that could occur from non-compliance to these instructions and recommendations.

-  Always ensure that an electric actuator is completely isolated before removing the lid to carry out any internal inspection or work. When connected electrically the **RIFT®** 30 is capable of carrying lethal voltages.
-  **RIFT®** 30 Electric Actuators operate with the use of live electricity. Only qualified electricians instructed in accordance with electrical engineering, and familiar with local electrical installation requirements and health and safety directives should be involved in the connection of these actuators.

MOUNTING TO A VALVE



RIFT® 30 Electric Actuators have mounting options that conform to ISO:5211 which enables them, where applicable, to be direct mounted to similarly compliant valves, thus eliminating the cost and additional height of a traditional box section (or similar) 'mounting kit'. ISO:5211 introduced a system to ensure the actuator drive is concentric and in vertical alignment with the stem or shaft of the valve to be driven, and the actuator is solidly mounted to the valve. All aspects of valve and actuator mounting are critical to the correct performance of the assembled valve and actuator.

The **RIFT®** 30 Nm has a base flange, giving an ISO:5211 mounting option as follows;

ISO:5211	Small Flange: F03, F04, F05
Dimensions 'F' PCD No of holes Metric female thread size? Max thread depth	F03: 36 4 M5 8
	F04: 42 4 M5 8
	F05: 50 4 M76 10
Female square drive (mm) Standard Option	11 14
Maximum depth of female drive output	11mm drive, max 12mm deep
	14mm drive, max 16mm deep

The female metric threads in the base flanges are zinc plated steel; these are specialist fixings designed for use in plastic injected molded components and are inserted into the flange during the injection molding process.



Ensure that the height of the stem or shaft to be driven, from the valve's ISO:5211 platform to the top of the stem or shaft, does not exceed the maximum depth of the female drive output to be used as this will push the actuator's internal components upwards which will cause irreparable damage.



Care must be taken when selecting the bolts to secure the valve to the actuator flange to ensure that the bolts do not reach the solid bottom of the threaded insert before the bolt is tight against the valve flange.



Ensure that the valve is in the same position as the actuator when assembling the valve to the actuator; otherwise the opposite position in the valve to the signal sent to the actuator will result. To assist with this, the closed symbol is molded into the actuator lid to ensure that the closed position/orientation is known, and the local visual indicator LEDs will indicate the current position of the actuator.



Where the valve is supplied with a lock washer on the stem nut (the nut that compresses either the Belville washers, or the stem packing), ensure this lock washer is still fitted when assembling the valve to the actuator, and use washers if necessary to ensure that the lock washer cannot slide up when assembled and thus become ineffective. This lock washer prevents the stem nut slackening off during operation.

CALIBRATION



This function will allow the customisation and orientation of the actuator mounting onto the desired Valve.

It is recommended that this process is carried out (if possible) before the valve is installed onto the pipeline and is feasible carried out in the closed position. The **RIFT® 30** will allow the calibration to be carried out in either the CLOSED or the OPEN positions.

- A warning that the Actuator will have to be put into “Local” control mode and external control signals will be ignored until the Auto/Man option is de-selected, the right LED will steadily flash Orange in Local (Manual) Mode and be extinguished in Remote (Auto) Mode.

Open. “Angle in Degrees”

- allows the manual angle to be inputted as an angle e.g. 95°, 86° or other desired angle.

Closed. “Angle in Degrees”

- allows the manual angle to be inputted as an angle e.g. 05° -06° or other desired angle.
- These allow you to manually set up the desired Open/Closed when setting up the Valve (it is recommended to only to adjust one value at a time, “Writing to Flash” after adjusting)
- Set from current angle will set the current Actuator position as the angle for the Closed position and adjust it as so.

PROCEDURE TO USE CALIBRATION MODE TO MOUNT TO A F03, F04, F05 FLANGE

(a) Move the actuator to the closed position.

(b) Mount the **RIFT® 30** actuator onto the valve (using the open/close pads in the manual position to align the F03, F04 or F05 mounting positions.

(c) Secure the actuator onto the valve

CALIBRATION MODE WITH THE ANDROID RIFT APP

This feature will allow the OPEN/CLOSED positions for the **RIFT® 30** to be calibrated to the required positions on the Valve.

The requested position for either Open or Closed can be Adjusted with the +/- buttons or by manually entering the required Angle manually. When the desired position for either Open or Closed is achieved the option to “SET OPEN/CLOSED HERE” should be selected and finally “Write to Flash” to commit those changes to the Firmware.

A prompt will ask, when completed adjustment, if you wish to maintain the last set working angle (e.g. 90°) if YES is selected the opposite angle will be adjusted from the new set position, if NO is selected the working angle will be assumed to be the difference between Open and Closed.

Please refer to the “Software User Guide for **RIFT® 30** Android” for full details for connection and configuration for the **RIFT® 30** Actuator and the Latest Version of the Android Application Software.

CONFIGURING AS A PART-TURN ELECTRIC ACTUATOR SOLENOID

The **RIFT®** 30 can be configured either as a part-turn electric actuator or as a direct acting solenoid. The selection of actuator or solenoid is made when the factory default settings are programmed into the **RIFT®** 30 at the RIFT Actuators factory or authorized distribution center. When configured as an electric actuator, a three wire supply system with a switchable live/+v must be connected as, in this configuration, the **RIFT®** 30 will not reverse if only 2 wires are connected. The **RIFT®** 30 could operate with failsafe as the instruction to reverse on loss of power, however caution must be observed as the primary position will need to be the non-failsafe position for the battery to receive the majority of the operational period time to maintain the charge to the battery.

Function	Power open, power close, stays put on external power failure
Working Angle	Either 90° / 180° or Multi-Turn (factory only configurable)
LED Array	Green or Red LED to indicate position and direction of travel
Maximum Torque	30Nm
Over-torque Trip	Set at maximum torque +10%
Working Time	As per specifications on page 11
Output Orientation	In-line/ square, or at 45° (user configurable as standard)
Emergency 'Hand' Operation	Use of Touch Pads and Manual Handle or through the RIFT® Android App
Thermostatic Heater	Active when external power applied (see note below)
Basic Data Logging	Active (Full Movements, individual operations, Battery Voltage & internal temperature)

Configured as a direct acting solenoid, the **RIFT®** 30 eliminates the problems commonly encountered with pilot operated solenoids relating to differential pressures across the valve, and the valve blocking or clogging. When connected using a 2 wire system, the **RIFT®** 30 can be configured as a standard normally closed solenoid so external power applied across the two pins opens the actuator and de-energizing closes it. The opposite occurs for normally open applications.

When connected using a 3 wire system, the **RIFT®** 30 can be configured as a latching normally closed solenoid so external power pulsed to the third pin opens the actuator and another pulse closes it. The opposite occurs for normally open applications. Dramatically different to solenoids, the **RIFT®** 30 introduces end of travel confirmation, local controls and torque protection and as an extra cost option, speed control.

[CONFIGURING AS A MULTI-TURN ACTUATOR](#) **RIFT®** 30 can be configured either as a part-turn electric actuator or as a multi turn actuator. The selection multi-turn is made through the Factory only, If the usage is within designed parameters this can be purchased and configured, this will be updated onto the Android **RIFT®** App when App is opened and connected to the internet.

CONFIGURING AS A MULTI-TURN ACTUATOR (Continued)

The Android Device will need to be able to connect to the Internet to retrieve the requested feature information. RIFT Actuators factory or authorized distribution centre is authorised to purchase these features. Once Multi-Turn is enabled the span can be adjusted beyond the default of <360° up to the required unlimited upper value, e.g. 10 complete turns (360° x 10) = a span in degrees of 3,600
When configured as a multi turn electric actuator, a three wire supply system with a switchable live/+v must be connected as, in this configuration, the **RIFT® 30** will not reverse if only 2 wires are connected.

DOWNLOADING RIFT APP FROM GOOGLE PLAY STORE

A suitable Android Device (Android 8.0 or above) will be required to configure and set-up

the **RIFT® 30** Electric Actuator *. Internet access to download the **RIFT®** App will be needed to install the App and update the features for the actuator. Search the Google Play Store for RIFT Actuators App. Install the App and the Icon will be placed on the front screen of the device.

*For devices running a version of Android below 8.0 please download the Legacy App.



REGISTERING FOR AN ACCOUNT

To access the **RIFT®** App you will need to register and create an account. To create an account click on the register button and complete the registration form. If you need assistance contact sales@riftactuators.com or call +44 (0) 1684 565709 during normal working hours.

PAIRING WITH ACTUATOR AND SIGNING INTO RIFT APP

Open the **RIFT®** App and sign in using your registered Email and Password, this will take you to the Connection page. Select the Actuator that you wish to pair with (e.g. RIFT(30) 201019 20001) and enter the pairing code '1234'.

Or

Go to the Settings of your device, Bluetooth, identify under "Available Devices" (e.g. RIFT(30) 070317 20001) select the Actuator you wish to pair with. Enter the default pairing code "1234" the actuator should be displayed under the Paired Devices list.

If you paired to the Actuator through your devices settings, open the **RIFT®** pp and sign in. This will take you to the 'Connect to Actuator' page, click on the desired Actuator and it will connect and move to the 'Connected' column. If you paired to the Actuator through the **RIFT®** App you will already be connected to the Actuator and in future won't need to enter the pairing code.

UPDATING RIFT FEATURES WITH ANDROID

When the Smart Act app is open and connected to the internet it will automatically sync all enabled features. When you connect your Android Device to the **RIFT® 30** Actuator, the Features are updated automatically. You do not need Internet connection to complete this transfer.

USER CONFIGURABLE SETTINGS THROUGH BLUETOOTH ON ANDROID

The **RIFT®** 30 direct acting actuator has a local control unit as standard to allow the actuator's accessibility to be controlled locally by Bluetooth Controlled User Interface **RIFT®** App (Available from the Google Play Store). The following parameters or settings are user configurable when the actuator is connected onto its Android Device through the latest version of the **RIFT®** Application. Internet access to download the **RIFT®** App will be needed to install the App and update the features for the actuator.

The Android Device will have to be paired with the **RIFT®** 30 for the Application software to operate with the **RIFT®** 30. Once paired and within the Bluetooth devices range the software will detect the **RIFT®** 30 devices and enable the user the option to connect to devices that have been paired with if within the Bluetooth range.

USER CONFIGURABLE SETTINGS BASIC SETTING.

- Firmware Version - Displays the version of the firmware flashed onto the **RIFT®** 30
- App Version—Displays the version of the App you are running.
- Valve Orientation - Set the valve orientation of the valve stem 45° (diamond) or 0° square.
- Number of full cycles - information on the total that the actuator has completed since firmware
- Number of starts - information on the total number of part operations that the actuator has completed.
- Reverse acting - allows the actuator to open Clockwise and close Counter Clockwise
- Indication mode - allows the user the option to select the valve flow type required (2 way, L port or T port)
- Torque profile - user settings to match the actuator to the type of valve that it is being used on. Custom settings option should only be used with after consulting the technical department of RIFT Actuators, as this will affect the performance of the **RIFT®** 30 actuator, as this will give access to PID control.
- Start in manual mode - should only be set if the user requires the Actuator to Start after re-storing external Power Supply in either manual mode or as previously set.
- Backlash - This setting is to remove any loose/play in the mounting of the Valve to the Actuator. It will apply this value to the open and the closed positions.
- Sleep when not powered - Default setting is for the actuator to enter sleep mode when external power is removed, this is to preserve the internal battery If the Actuator is required to remain awake when external power is removed this option can be selected but the battery life will be reduced.

USER CONFIGURABLE SETTINGS BASIC SETTING (Continued).

- Buttons Enabled - This setting removes Local/Manual control via the Touch Pads. The operation of the Actuator this can be re-instated through the Android App when paired via Bluetooth to the **RIFT®** 30 and the electronics will need to be manually Re-Set on completion of this feature being enabled or disabled.

"Write To Flash" sets the custom settings into the Actuators Flash Memory. Notice of Writing to Flash will appear briefly at the bottom of the screen

"Reset Board Without Changing Settings" (Manual Re-Set) this is a soft re-set, Similar to pressing Ctrl/Alt/Del on a standard computer please note that the features & settings that have already been set, will not be lost)

"Restore All Default Values" Hard Factory Re-Set. This should be a "Last Resort Option" as all paid for Features & Settings will have to be re-applied and implemented.

TORQUE LIMIT.

This function will allow the customisation of the maximum torque the **RIFT®** 30 actuator will be allowed to move to. The selection of this primarily is to offer protection to the valve the actuator is fitted to. Torque Limit Back off allows the user to specify the angle that the actuator will back off if the Torque Limit is reached.

The **RIFT®** 30 Actuator will display a fast flashing Red LED indicating that the Torque Limit has been reached and a fast flashing Orange LED if the 5 torque retries have failed. This is a calculated function derived from Amperage draw from the Battery and the objective of the movement, this feature should not be used below an agreed threshold and should be discussed with the factory for further information.

FAIL SAFE.

This function will allow the **RIFT®** 30 Actuator to move the valve to a desired Safe position in the event of external power failure when in Remote Control.

Fail Open - On Power Loss the Actuator will move to the Open Position

Fail Closed - On Power Loss the Actuator will move to the Closed Position

Fail to Specific Angle - This allows the User to specify the desired angle to move to on Loss of External Power

Failsafe Angle - Enter the Angle between 0° and 360° (0° - 90° in normal operations)

(If the actuator is being used in Multi-Turn Mode and a larger angle than 360° can be set as the Failsafe Angle)

If the **RIFT®** 30 Actuator is in the Manual/Local Mode Failsafe will not action as Manual/Local Mode is a safety feature and can only be removed manually via the touch pad or Android App (button)

MODULATING.

This function will allow the **RIFT®** 30 Actuator to move the Valve to a desired proportional working position via an analogue input control signal either 4—20mA, 0—20mA or 10—10v.

Loss of Signal Mode -

On Loss of Signal the **RIFT®** 30 Actuator will move to either:

- | | |
|----------------|---|
| Low Signal | RIFT® 30 Actuator will move to the Closed Position |
| Stay Put | RIFT® 30 Actuator will not move |
| High Signal | RIFT® 30 Actuator will move to the Open Position |
| Specific Angle | Manually enter the desired Angle in Degrees |

Modulation Options:

- | | |
|------------|---|
| Off | |
| 0 to 10v | |
| 4 to 20mA | Standard Analogue Process Signal input |
| 0 to 20mA | |
| 10v Switch | To be used in conjunction with a volt free switch |

Input control to either pin 2 (0—10v) or pin 4 (0/4—20mA) on the Analogue five pin connection block will supply the control signal for the **RIFT®** 0—40Nm Actuator. Feedback Control to either pin 1 (0—10v) or pin 5 (0/4—20mA) on the Analogue five pin connection block will feed back the actual **RIFT®** 0 - 30Nm Actuator position in either (0—10v) or (0/4—20mA) respective to the control signal input.

Volt free switch connection is connected through pin 1 (0-10v) and pin 2 (0-10v) on the Analogue five pin connection block.

SPEED CONTROL

This function will allow the User to dictate Actuator speed to move the Valve to open and closed position. The maximum speed the actuator can operate 90° is relative to the size and torque of the valve the actuator is fitted to, see recommended speeds for torque listed Below. This is a Paid for Features and can be purchased through the Portal or an authorised distributor.

DEFAULT SPEEDS FOR TORQUE SETTINGS FOR 90°.

- Up to 30 NM - 4 seconds

The working time of the actuator will effect the charge capacity of the battery. It is not recommended to operate 90° on any torques in under 4 seconds unless ample charging time can be guaranteed to replace the used energy from the battery. The speed increase can also effect the accuracy of the 90° movement at the higher torques. Alteration of PID settings within the “Customer Settings” under Basic Settings will have to be implemented to adjust for this, these settings should only be altered by authorised trained personnel as incorrect adjustment will degrade the performance of the Actuator and can even damage the unit.

OFF GRID TIMER

This is a Factory only enabled function. This, when enabled will allow the User to programme the Actuator and allow operating settings to control the actuator, when separated from an external source of control.

Off Grid Settings.

- Time Until First Open - This allows time before the 1st operation from Resetting the PCB (See Manual Reset Page 10) and is entered in Hours, Minutes and Seconds or parts thereof.
- Open Time - This is the time that the actuator will remain open again set in Hours, Minutes and Seconds or parts thereof.
- Time between Cycles - Upon Shutting, this is the time between cycles set again in Hours, Minutes and Seconds or parts thereof.

The **RIFT®** 30 Actuator has the ability to work autonomously with an external power source and no method of external control, this allows the actuator to operate in remote, inaccessible and hazardous settings with safety or on renewable energy platforms that are not easily assessable. We advise additional external battery storage is available to prolong operations on a predetermined cycle.

WIGGLE

This function will allow the **RIFT®** 30 Actuator to be programmed to operate and move over a small (pre-determined) angle to prevent Valve Seizure due to infrequent operation.

Settings.

- Wiggle Angle - This allows the Angle of movement to be customised, preventing disruption in the normal operational position whilst the movement is carried out
- Time Between Wiggles - This allows the operator to choose the times that the actuator will move, set in Hours, Minutes and Seconds or parts thereof.

The **RIFT®** 30 Actuator has the ability to move the desired amount and frequency autonomously, this will not effect the normal general operation. The operational Control request of movement will always override the programmed **RIFT®** 30 Actuator “Wiggle” as programmed but will continue on the next programmed cycle.

MULTI-TURN FUNCTION

Set the actuator to operate multi-turn for some Linear Valves and multi-turn [gearbox](#) applications, the working span can be set from 90° to greater than 360° with an upper limit (Please speak to the factory to request details on compatibility to your requirements).

CONTROL SYSTEM This allows the actuator to be programmed to operate and move in a nonlinear movement when control from an external source requires the actuator to manage the flow with the position of the valve.

VALVE PROFILE This function allows the actuator to be programmed to operate and move in a pattern similar to the design profile of specialised valves. The **RIFT® 30** actuator matches the flow similar to the design of the valve

EXTRA OPTIONS IN DESIGN (or available with restrictions)

BESPOKE BRANDING

Housing cover colours, moulded logo etc.

ELECTRICAL CONNECTION - ACTUATOR FUNCTION

 The **RIFT® 30** is designed to have external power permanently applied. The internal anti-condensation heater is only functional when external power is applied, without external power there is no protection against damage from condensation. Damage by condensation is therefore not covered by the warranty.

Note: (not all speeds are available at all motor power values) PID values will need to be adjusted. Consult your distributor or the **RIFT®** manufacturers for advice. The **RIFT® 30** has the capability to accept any externally applied voltage between the ranges 12-30vDC (12-26vAC). Supply voltages are segregated at the actuator's Type "GSA" connectors and must be wired in accordance with the wiring diagram Page 14

Follow the wiring diagram appropriate to your functional requirement to ensure the correct connection of power and control signaling to the **RIFT® 30** actuator.

DO NOT connect high voltage supply to the low voltage connection points on the terminal strip otherwise irreparable damage will result and damage so caused is not covered by the warranty.

 The command signals set to the actuator to control its movement must NEVER allow ANY external power to be applied to the OPEN and CLOSE contacts AT THE SAME TIME otherwise irreparable damage will result and damage so caused is not covered by the warranty.

 Ensure that each actuator has its own independent over-current protected switch or circuit breaker fitted as close as possible to the actuator and clearly marked that it is the isolator for that actuator.

Damage to the actuator resulting from excessive power being drawn through the actuator from inter-connected devices, such as a pump for example, is not covered by the warranty.

 You should not rely on the internal earth terminal as the only protective earth connection and should ensure that the actuator has appropriate externally connected grounding protection.

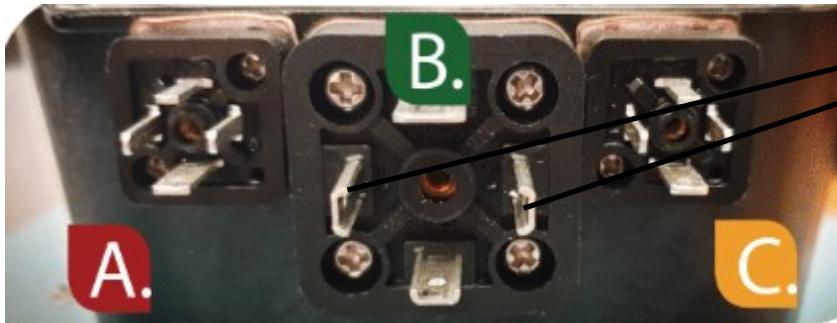
 Use cabling with the correct gauge and insulation to conform with the relevant local standards and codes, and use appropriate conduit or cable glands and ensure that they are fitted in accordance with the manufacturers' instructions to prevent water ingress via the cable glands. Damage from water ingress via the cable glands is not covered by the warranty.

ELECTRICAL CONNECTION



The RIFT® 30 has 2 power sources, external power connected via the main center terminal, and internal power provided by the 2 cell lithium ion battery pack.

External Power Supply



Left/Right Power Supply

Below are pictures showing the x3 Connectors and what each Terminal Blade represents

A.= Modulation Control Input and feedback

B.= External control power supply

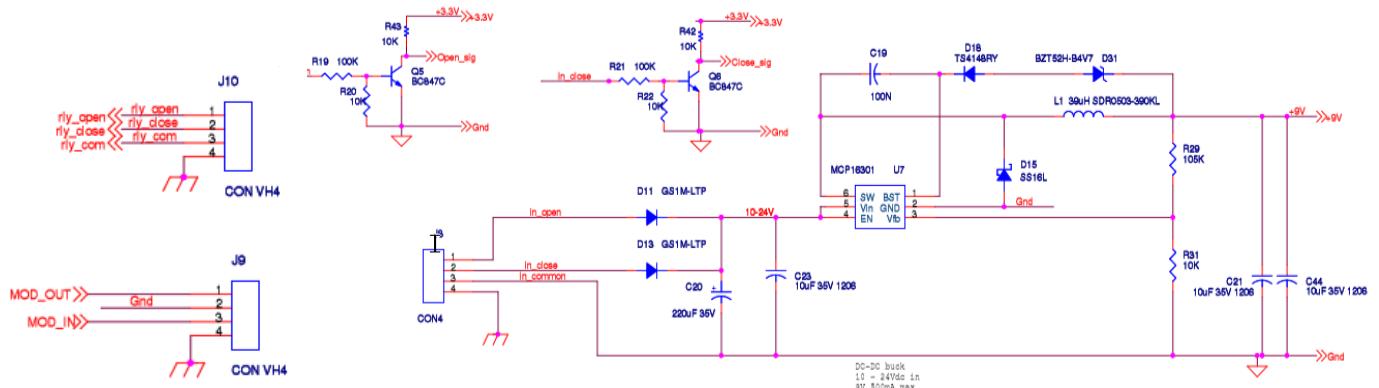
C. = End of Travel Conformation Output

Internal Power Supply



The RIFT® 30 Actuator has built in, internal Power Supply consisting of a 2 cell Lithium Battery. This must be connected at all operational times as it powers the internal motor drive and will enable fail safe actions if needed as a safety requirement.

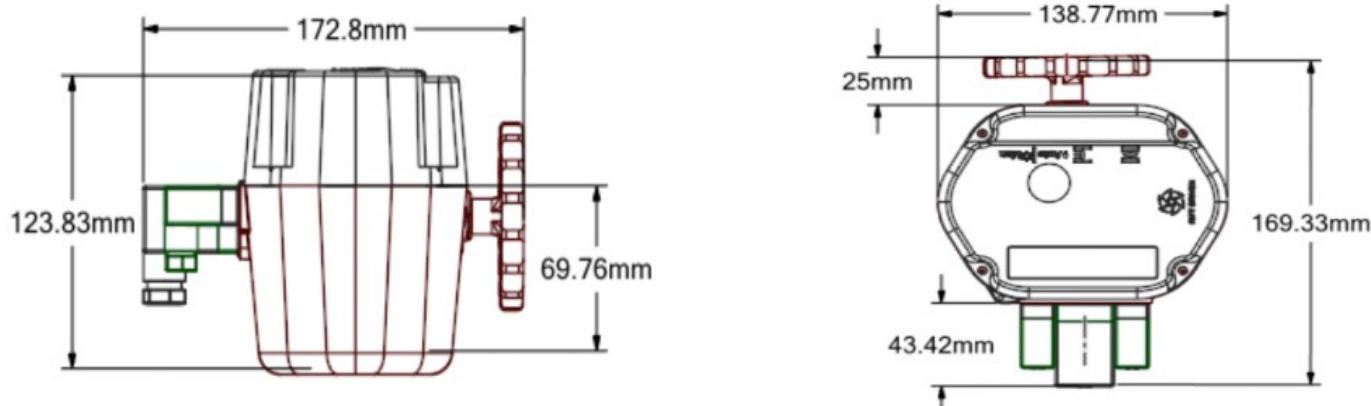
ELECTRICAL WIRING DIAGRAMME



STANDARD FEATURES AND OPTIONAL FEATURES

Standard Feature (Basic)		Optional Features (Premium)	
Working time 0° - 90°	4 Seconds	Speed Control	Contact Manufacturer
Torque Options	10NM, 20NM, 30NM	Failsafe	NC, NO, Stay Put, % Open
Anti-condensation Heaters	5 watts	Working Angle	0°-90°, 0°-180°, Custom
Cable Entries	External GSA Connectors	Drive Adapter	11mm, 14mm, or Custom
ISO 5211 mounting	F03, F04 & F05	Indication Mode	2 Way
Output Drive (Square)	11mm & 14mm	Modulation/Process Control	4-20 mA
Output Drive Orientation	0° or 45°	Modulating Loss of Signal	Close, Open, Stay Put
Ingress Protection	IP 67	Fieldbus Communications	(Under Development)
Voltage Range	12v DC—30v DC (540mA)	Reverse Acting	Close CCW
End of Travel Relays	<300v / 900mA	Wiggle	Angle/Frequency
Ambient temperature range	-20° to +70°	Custom Branding	Base Colour only
Weight	1 Kg	Calibration Mode	Open/Closed position & Angle
Manual Override	Local buttons & Manual Handle		
Bluetooth V2	Android Application		
Mechanical Position Indicator	Visual Positional Disk		
Electrical Position Indicator	Visual positional LED's		

Dimensions



LOCAL CONTROLS

The **RIFT® 30** Actuator has three physical external touch pads on the lid (and one internal reset button located under the lid) that provide local control functionality.

- Switch between Local/Manual or Auto/Remote control, isolate the **RIFT® 30** This prevents the actuator from responding to Remote OPEN/CLOSE Commands and ANALOGUE Signal Control
- When mounting the **RIFT® 30** actuator either, or make minor setting adjustments.
- Reset Button—(Soft reset of the electronics, similar to the Ctrl/Alt/Del) under Basic Settings option on the Android App only “Reset Board Without Changing Settings” this will re-set the board and an audible tune should be heard. The physical method is to remove the lid and press the re-set button on the PCB.

The Small Rift Driven Electric Actuator Default Specification/Configuration

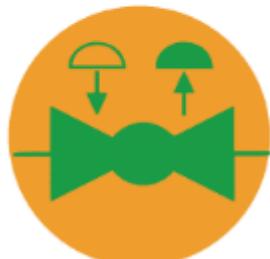
Standard Features		RIFT® 30 Low Voltage
Working Time 0-90°	Actuator Seconds	4
Torque (Nm)		30
Anti-condensation heater	Watts	5
Cable Entries		External GSA connectors
ISO 5211 Mounting		F03, F04 & F05
Output drive square	mm	11, 14
Output Drive orientation		0°/45°
Ingress Protection		IP 67
Voltage		12v – 30v DC
End of Travel Relays (2)	Max Volts/ Max Amps	
Ambient Temperature range	° C	-20 to +70
Weight	Kg	1.1
Manual Override		Local Touch pads & Manual Handle
Bluetooth Control		As Standard V2
Mechanical Visual Position Indicator		Positional Disk
Electronic Visual Position Indicator		As Standard

Speed Control

Default speed is set at 4 seconds for torque up to 30 Nm. Requirements to increase the operational working time can be adjusted with this feature.

Over Torque

Over torque protection default is set to 10% . If greater over torque setting is required, then Torque Protection will have to be activated.



Optional Features	Options
Failsafe	NC, NO, Stay Put, % Open
Working Angle	0 - 90°, 0 - 180° & Custom (factory Set)
Output Drive Orientation	0° , 45°
Drive Adaptor	11mm, 14mm Custom (Factory Set)
Indication Mode	2 Way
Modulating	4 – 20 mA or 0 – 10 v
Modulating Loss of Signal	Close, Open, Stay put
Speed Control	Contact Smart Actuator Company
Torque Limit	Custom
Fieldbus/Modbus Communication	Under development
Reverse Acting	Close CCW
Wiggle	Angle/Frequency
Customer Branding – Minimum required	Base Molded Color



SWITCHING ON THE RIFT® 30 ACTUATOR

This is achieved on the **RIFT® 30** by a single press & hold of the Auto/Manual Touch Pad until the Blue LED illuminates & flashes, this is the Bluetooth LED, then touching either the open or close pads will send the actuator towards that position whilst the touch pads are engaged or a double tap will complete the move or move the actuator fully to the opposite position;

If external power is available and a remote command signal is being received (Auto), the actuator will respect the remote command signal being applied and if not already in the commanded position, and will move to it. If the actuator has been put into local control (Manual) the local commands override the remote command signal and the actuator will move to that selected position whilst the Open/Close Pads are pressed. The actuator will not accept remote command signals until the actuator is put back into the remote command mode (Auto)

When the actuator is released from local control (Manual) the actuator will revert back to the last or selected remote command position or Powered Position if no command given.

When mains power is unavailable, an internal trickle charged Li-Ion battery, supplied with the actuator, provides internal power to allow use of the Touch Pads to open or close the actuator with the relative Pad being pressed. On releasing the Pad, the actuator will stay put, on resumption of external power the actuator will remain in local manual control and not move to the remote command position until

the Auto/Manual Touch Pad is pressed to release the actuator from this overriding control position returning the actuator to normal remote control selected position.



If it is **essential** that the actuator moves to a pre-determined position upon external power failure, **you must** select and configure the **RIFT®0–40 Nm Actuator** for '**FAILSAFE**' functionality.

Auto/Manual Touch Pad selected for EMERGENCY HAND OPERATION is as follows;

If the actuator is OPEN with an open signal applied, this will have no effect, but pressing the CLOSE Pad it will start the actuator to rotate in a Clockwise (CW) direction and the RED LED will display (slow flash), and when the CLOSE Pad is released or the movement is completed the Red LED will display to indicate it is in the Closed Position. Press the OPEN Pad and the actuator will move in a Counter Clockwise (CCW) direction and the Green LED will display (slow flash). If the actuator is CLOSED with a Close signal applied, this will have no effect, but pressing the OPEN Pad will start the actuator to rotate in a CCW direction and the Green LED will display (slow flash), and when the OPEN Pad is released or the movement is complete the Green LED will display to indicate it is in the Open Position. If the actuator stops in its mid-position the LED will not display until the completion of the full cycle movement (fully Open or Fully Closed).

EFFECT OF LOSS OF CONTROL SIGNAL FOR MODULATION: FAILSAFE MODULATING FUNCTION (EPS) ELECTRONIC POSITIONING SYSTEM

Including Battery Failsafe System (EPS+BFS) In standard modulating mode the **RIFT® 30** will stay put on external power failure. **RIFT® 30** can however be configured for failsafe modulating functionality, where it will be driven to a pre-determined position should external power be lost. This is achieved by combining the modulating and battery failsafe systems, selected both 'Failsafe' and 'Analog Control' in the Bluetooth Interface. Effect of loss of external power with failsafe enabled:

WIRING MODULATING “PROPORTIONAL CONTROL” FUNCTIONALITY

In modulating mode, the **RIFT® 30** proportional controller (positioner) enables the actuator to automatically position a valve in proportion to an analogue current or voltage control signal. A signal derived from the actuator's non-contacting 10bit position sensor is automatically compared with a signal proportional to the input position. If a difference exists an open or close command to cancel the difference/error is generated by the EPS. The valve's position is therefore automatically adjusted in proportion to the analogue signal.

The external power supplied through the 4 pin Connector is used as external power supply for the battery, Bluetooth and the anti-condensation heaters only and will not control the movement of the Valve & Actuator when Analogue Signal Control is selected, this is primarily used as a charging circuit.

Unnecessary frequent movement instigated by a constantly fluctuating input signal is damped by averaging formulae within the EPS programme to prevent the motors running continuously.

Input signal options: 0-10v DC, 0-20mA, 4-20mA - Output signal options: 0-10v DC, 0-20 mA, 4-20 mA

MODULATION CONNECTION FOR VOLT FREE SWITCH MODE

When connecting to a volt free switch (float switch for example) that requires the actuated valve to close on the switch circuit connection made, and open when the switch connection is broken, it can be configured through the modulation feature when activated and simple 2 core wiring connection from the volt free switch connected back to the Analogue input connections **①**(0-10v Out) & **②** (0-10v In) on the 5 pin Analogue Input Connection.

METHOD OF OPERATION:

Whilst external power is available the actuator responds to open and close command signals whilst the internal Battery Voltage remains above 7.2v, this is to protect the recharge capability of the internal 8.2v lithium ion battery. Should the external power fail, and failsafe is activated and the internal batteries set the actuator to the pre-designated position, if not already in that position. When the power is restored before the completion of the failsafe operation the **RIFT® 30** has the ability to protect the gears, motors, electronics and battery from exceeding the maximum safety torque of the actuator. This feature is not only to protect the actuator but also the valve is fitted onto, within its operational torque. If the maximum torque is exceeded through either blockage, or trying to exceed the operational design the LED on the PCB and on the Android App, if Bluetooth connected, will indicate a by flashing Orange LED.

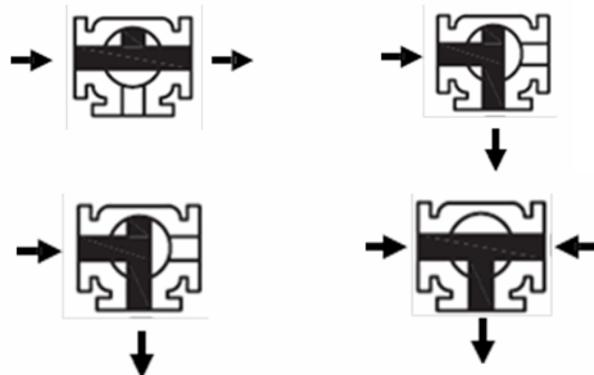
To resolve this, either select remotely the reverse direction allowing the blockage to clear the valve, or via local control, by selecting manual mode, move the actuator in the reverse direction or if unsure of direction of movement, when over torque occurred. Select the open direction first then close, allowing the blockage time to clear. The **RIFT® 30** when reverted back to remote control will automatically move to the last remote selected position.

will restore back to the operation position prior to power loss. For Failsafe and Manual/Local there is no lower voltage limit for the Battery.

3 WAY BALL VALVES - DEFAULT FLOW PATTERNS



Side entry, 90° operation - Default flow pattern



T Port 3 way valves - Diverting

Side entry, 90° operation - Default flow pattern

T Port 3 way valves - Mixing

BLUETOOTH

Settings can only be accessed by via the Bluetooth User Interface on a Android based device. The **RIFT® 30** has the ability to protect the gears, motors, electronics and battery from exceeding the maximum safety torque of the actuator. This feature is not only to protect the actuator but also the valve is fitted onto, within its operational torque bands. If the maximum torque is exceeded through either blockage, or trying to exceed the operational design the LED's on the Lid and on the Android App, if Bluetooth connected, will indicate a cross pattern of flashing Orange LED's.

To resolve this, either select remotely the reverse direction allowing the blockage to clear the valve, or via local control, by selecting manual mode RED Flashing LED at the 8 O'clock position) move the actuator in the reverse direction or if unsure of direction of movement, when over torque occurred. Select the open direction first then close, allowing the blockage time to clear. The **RIFT® 30** when reverted back to remote control will automatically move to the last remote selected position.

- Android Application from the Google Play Store.

On the Android device, pair with the **RIFT® 30** has the ability to protect the gears, motors, electronics and battery from exceeding the maximum safety torque of the actuator. This feature is not only to protect the actuator but also the valve is fitted onto, within its operational torque bands. If the maximum torque is exceeded through either blockage, or trying to exceed the operational design the LED's on the Lid and on the Android App, if Bluetooth connected, will indicate a cross pattern of flashing Orange LED's. To resolve this, either select remotely the reverse direction allowing the blockage to clear the valve, or via local control, by selecting manual mode RED Flashing LED at the 8 O'clock position) move the actuator in the reverse direction or if unsure of direction of movement, when over torque occurred. Select the open direction first then close, allowing the blockage time to clear. The **RIFT® 0—40Nm** when reverted back to remote control will automatically move to the last remote selected position.

- ensure that Bluetooth is on. Add device Identified by the unique model number on the front label; enter pairing code "1234" when prompted.
- It is recommended that you use the Android Device's Bluetooth connection through its Settings.
- Run the program from the **RIFT®** icon.
- Log on. Only authorised registered users will be able to access and control their purchased actuators
- Select 'Connect to Actuator' now select desired actuator from the "Unconnected" list on the screen, this will move the paired Actuator over to the "Connected List"
- To amend parameters, click either Basic or desired feature as appropriate.

- Click into the parameter box of a setting you wish to amend, type a value or select from a dropdown, and click ‘Write To Flash’. The new setting is written to the **RIFT® 30** flash memory and is available for use immediately. You can test the changes where applicable by selecting using the relevant buttons on the screen of your Bluetooth device (e.g. OPEN) and clicking, or physically touching the Pad on the **RIFT® 30**. Please note that some parameter changes are chargeable and you must purchase features from the Portal to amend such parameters.
- Basic data is available on the Settings screen of the User Interface, including the number of full cycles the **RIFT® 30** has achieved (open, reach desired working angle, close), and the number of times the motor has started for modulating applications where the end of travel is rarely reached).

When updating flash memory following a parameter change, take care to only click ‘Write to Flash’, the new settings are written to flash and a rotating.

BATTERY FAILSAFE FUNCTION (BFS)

This Bluetooth configured option uses an internal trickle charged industrial Li-Ion battery as an alternate power source and independent to any external power supply, to set the actuator to a pre-determined position should the external power fail the FAILSAFE Feature must be activated.

These pre-determined positions are:

- 1) Close on external power failure (Normally Closed or NC)
- 2) Open on external power failure (Normally Open or NO)
- 3) Set fail to specific angle on external power failure (option to enter specific angle is only made available when this option is selected)

RIFT® 30 LED Sequence

The **RIFT® 30** has 3 LED's on the PCB, located above the Open, Close and the Auto/Man touch sensitive pads.

- | | |
|--------|---|
| LED 1. | Bluetooth LED, Blue Flashing—Not Connected. Blue Solid Connected to Android Device |
| LED 2. | Power Charging LED, Blue Solid—Charging. (extinguished—Charged) |
| LED 3. | Multi Coloured LED, Red Solid—Closed in the Auto Control Mode
Red Flashing—Closed in the Manual Position
Green Solid—Open in the Auto Control Position
Green Flashing—Open in the Manual Position
Orange Flashing—Over Torque
Orange Solid—Actuator Locked |

RIFT® 30 Lock Mode

The **RIFT® 30** Has the ability to be electronically “Locked” the will ignore all electrical movement commands (Auto or Manual) The Manual Hand will can still be operated if fitted. This feature is activated from the Basic Settings Page and will display “Locked” on that page as well as displaying “Locked on the Control Page (Alternating between its last position, either fully Open or Fully Closed and Locked) The Actuator will Display a Solid Orange LED 3 whilst Locked.

The Locked mode can only be removed from the Basic Settings Page, selecting Unlock and Typing the word UNLOCK (this is not case sensitive) The **RIFT® 30** can now operate normally.

UNDER DEVELOPMENT

The **RIFT®** 0—40 Nm will be capable of being configured to be used with the more commonly used field bus communication systems. A separate PCB is installed to provide the functionality and connectivity.

Options:

- | | |
|--------------|---------------|
| a) Profibus | b) Modbus |
| c) Fieldbus | d) Device Net |
| e) Pack scan | f) Profi Net |

DEFINITIONS & ABBREVIATION

<u>Definitions & Abbreviation</u>	Explanation
AC	Alternating Current
DC	Direct Current
PCD	Pitch Circle Diameter
LCM	Local Control Mode
PID	Proportional Integral Derivate
CW	Clockwise
CCW	Counter Clockwise
LED	Light Emitting Diode
BFS	Battery Failsafe
Nm	Newton Meters
PCB	Printed Circuit Board
PSU	Power Supply Unit
EPS	Electronic Positioning System
mA	Milliamps
RIFT	Reduced Induction Field Torque
RPM	Revolutions Per Minute
RIFT	Smart Actuator Company (A RIFT Technology Company)
RIFT	Patent and Licence holding company
NO	Normally Open
NC	Normally Closed
SMT	Surface Mount Technology
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
SW	Switch
NPT	National Pipe Thread



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