iControls

PULSE Direct Drive DC Door Operators with Battery Backup

PULSE 100 SERIES

Commercial Direct Drive Door Operator for Balanced Sectional and Rolling Steel Doors. Installation Manual and Setup/User Instructions

U.S. Patent No. 11105138

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GENERAL OVERVIEW

Thank you for purchasing this Pulse 100 Series Direct Drive Door Operator. This dependable operator is designed for medium-cycle duty of your Commercial Door. Quick and easy to install, this operator helps extend the life of your counter-balanced door with its integrated soft-start/soft-stop capability.

It features adjustable opening speeds of up to approximately 24" per second, a patented battery backup system that can operate the door in case of power failure, and adjustable auto-reversing force monitoring, along with a variety of other helpful programmable functions.

MEETING UL 325:2017 REQUIREMENTS

This Pulse Operator is provided with a Polarized Reflective Photo-Eye, which is pre-wired into the control panel via the push button station. This must be installed to meet UL325 requirements. Once the Close button is activated, the operator verifies that the Photo-Eye is connected and functional, is not bypassed by means of a jumper, and it continues to monitor the sensor as the door closes.

These operators are compatible with monitored reversing devices. The 'Reversing In' input on board automatically senses whether the connected reversing device is a monitored or non-monitored device, and behaves accordingly.

This operator also has adjustable Force Monitoring on the open and close cycle to act as a secondary safety/reversing feature.

This operator will initiate Push/Hold to CLOSE protocols should the photo-eye be misaligned or is otherwise compromised. Note that during Push/Hold to Close protocols, the door will reverse should it not fully reach the closed limit per UL 325.

BOX INVENTORY

Before beginning installation, please verify that all components are accounted for:

1. Motor Assembly (Motor, Gearbox, Control Panel)
2. Push Button Station (pre-wired to Operator and Photo-Eye)
3. Reflective Photo-Eye (pre-wired to Push Button Station), Bracket and Reflector
4. Limit Brackets and Hardware (Angle Brackets for Stop Limit to mount on door tracks)
5. Torque Arm, Mounting Bolts, Mounting Bracket
6. Shaft Collar and Bent Shaft Key
7. Two 12V, Lead-Acid Rechargeable Batteries

In case any of the above items is missing, please contact iControls and provide us with details of the missing part(s), as well as the serial number of your operator.

OPERATOR TECHNICAL OVERVIEW

Motor

HORSEPOWER:	Pulse 138 = 3/8 HP	Pulse 150 = 1/2 HP
SPEED:	1750 RPM	
CURRENT (FLA):	3/8 HP = 4A	1/2 HP = 5A
OUTPUT TORQUE:	Pulse 138 = 27.6Nm,	Service Factor 1.6
	Pulse 150 = 55.3Nm,	Service Factor 1.6

Electrical

SUPPLY VOLTAGE:	110-130, 1ph Input (Standard 3 prong pre-wired cord provided for electrician-free installation)
BATTERIES:	2 x 0.82Ah
CONTROL VOLTAGE:	24Vdc, 0.8A Power/Connections supplied for activation and reversing devices
AUX RELAY:	1 SPDT Programmable Relay (factory default to activate on Open Limits)

Safety

PHOTO-EYE SENSOR:	Polarized Photo-eye Sensor/Reflector with Bracket provided with unit as non-impact reversing device protection.
POWER OUTAGE OPERATION:	Battery Backup to open/close the door in case of power-outage. 3/8" ratchet socket for manual crank open/close as added redundancy.

Maximum Recommended Counter-Balanced Door Size

Pulse 138:	up to 150 Square Feet
Pulse 150:	up to 200 Square Feet

IMPORTANT

WARNING – These instructions are intended for experienced personnel trained for service and installation of sectional doors and operators. All safety precautions and local codes must be followed.

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.

2. Have qualified service personnel make necessary repairs to ensure door is operating smoothly without any unusual noise. Install operator only on a smoothly operating and well balanced door.

3. Remove all pull ropes and remove locks (unless mechanically and/or electrically interlocked to the power unit) connected to the door before installing the operator.

4. A commercial/industrial door operator that has exposed moving parts capable of causing injury to persons or employs a motor deemed indirectly accessible by clause 10.6 by virtue of its location above the floor shall include:
   a. Install the door operator at least 2.44m (8 ft) or more above the floor: or
   b. If the operator must be installed less than 2.44m (8ft) above the floor, then exposed moving parts must be protected by covers or guarding; or
   c. Both a. and b.

5. Do not connect the operator to the supply power until instructed to do so.

6. Locate the push button station: (a) within sight of the door, and (b) at a minimum height of 1.53m (5 ft) above floors, landings, steps, or any other adjacent walking surface and (c) away from all moving parts.

7. Install an Entrapment Warning Placard next to the control station in a prominent location.

PRE-INSTALLATION ASSEMBLY REQUIREMENTS

BEFORE INSTALLATION, ENSURE THAT YOUR DOOR IS PROPERLY BALANCED AND RUNNING SMOOTHLY. ALSO ENSURE THAT THE LIMIT BRACKETS (SUPPLIED) ARE INSTALLED AND SECURED PROPERLY. BUMPER/PUSHER SPRINGS MAY BE USED IN PLACE OF, OR IN ADDITION TO LIMIT BRACKETS FOR PULSE OPERATORS, BUT MUST BE INSTALLED PRIOR TO OPERATION.

Operator Mounting Requirements

Pulse 100 Series operators are mounted directly anywhere on the door shaft. Before installing the operator, please ensure following criteria is met:

The door must be well balanced, and have been tested for smooth functioning without any unusual noises or snags.

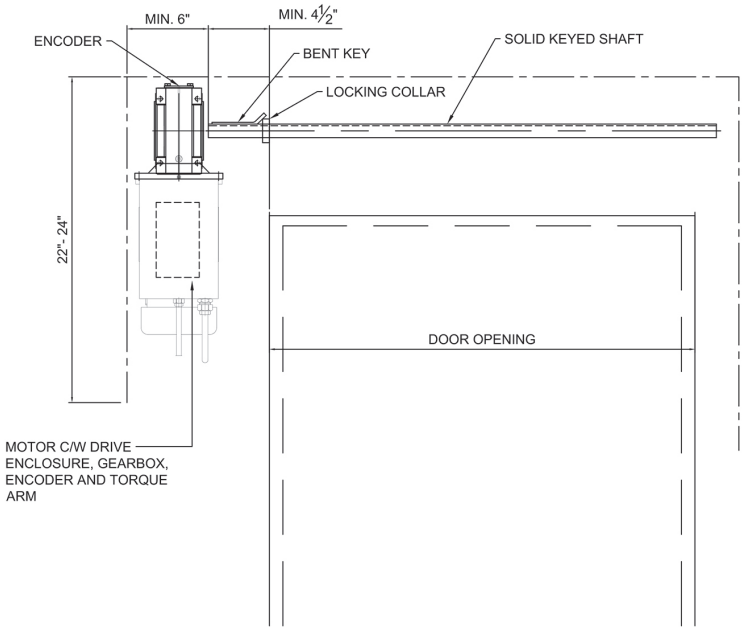
Provided Limit Brackets are installed 4"-5" past door's desired open position, and within allowable maximum cable height, to prevent the doors from over-travel (See Fig. 1A). Bumper or Pusher Springs are acceptable as an alternate.

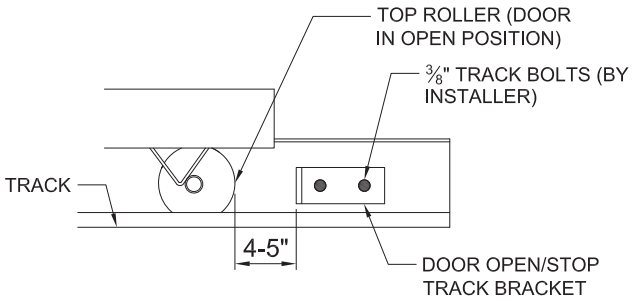
The door has a solid keyed shaft with a minimum exposed length of 4.5” on the operator side.

Clearance of at least 6” from end of shaft, and 18” vertically below the shaft. There is adequate structural support surface to securely install the torque arm mounting bracket/torque arm. For more details, see mounting installation instructions Fig: 1 & 7.

Mounting space for the push button station: Min. 5 ft. from ground level, within clear sight of the door but far enough away as to prevent users from coming into contact with moving parts.

The operator must be mounted within a 4 foot radius of a standard 15A (minimum) 3 prong electrical outlet for power connection.

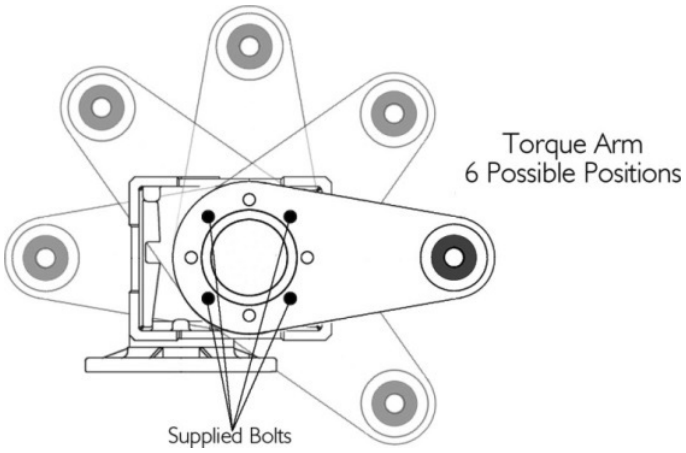


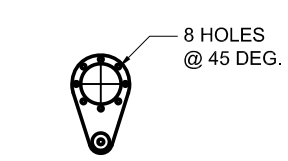


Assembling Torque Arm to Gearbox

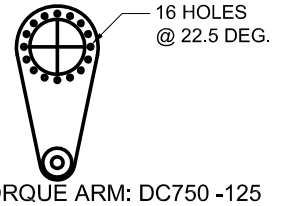
The torque arm can be assembled onto either side of the gearbox using the enclosed 4 bolts. There are 6 possible angle positions for the torque arm, and its optimal mounting position should be pre-determined prior to assembly. Tighten bolts appropriately. THE TORQUE ARM IS AN INTRINSIC COMPONENT OF THE OPERATOR'S SAFETY AND FUNCTIONALITY AND MUST BE INSTALLED SECURELY. See Fig: 4

See below for recommendations on how to mount Torque Arm to Operator/ Mounting Bracket in relation to Shaft Off-set.



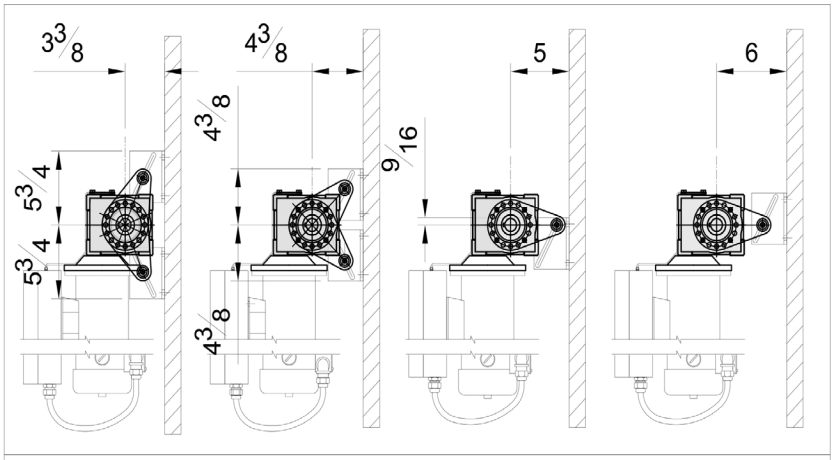


TORQUE ARM: DC500-100
DC750-100

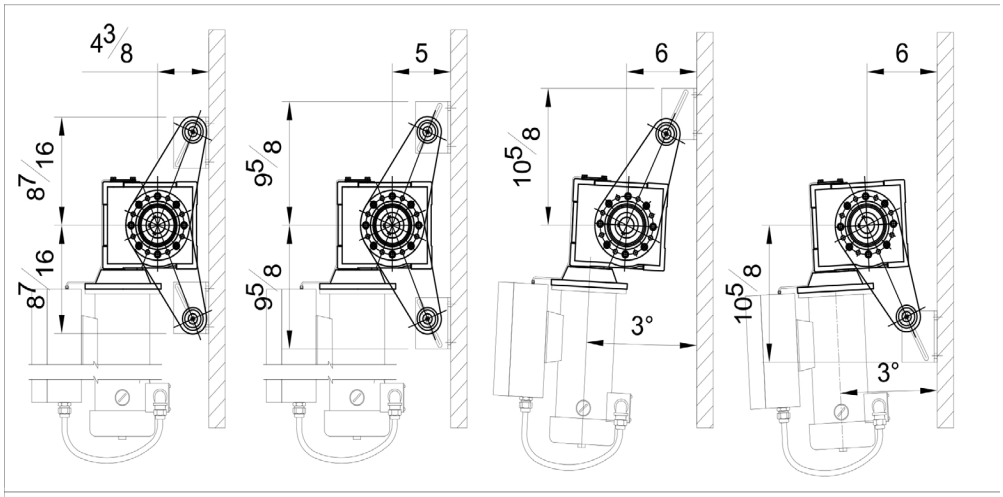


TORQUE ARM: DC750 -125
DC1000 - 125

TORQUE ARM POSITION IN RELATION TO OPERATOR



OPERATOR MODELS: 138-100, 150-100, 500-100, 750-100



OPERATOR MODELS: 138-125, 150-125, 500-125, 750-125, 1000-125, 2000-125

MOUNTING INSTALLATION INSTRUCTION

WARNING

- **TO REDUCE THE RISK OF PERSONAL INJURY OR DEATH, DO NOT CONNECT ELECTRICAL POWER UNTIL COMPLETE OPERATOR, PUSH BUTTON STATION AND PHOTO-EYE ARE INSTALLED, SECURED AND PROTECTED PER FOLLOWING INSTRUCTIONS.**
- **ENSURE THAT AREA IS CLEAR OF PERSONNEL AND CORDONED OFF TO ACCESS WHILE INSTALLING OPERATOR.**
- **USE PROPER SAFETY PROTOCOLS ACCORDING TO INTERNAL, LOCAL AND FEDERAL REQUIREMENTS.**

MANDATORY FIRST STEP - Limit Bracket Installation

If your door is not already equipped with bumper/pusher springs, it is mandatory to install the supplied Limit Brackets. Mount one bracket to the top of each track (See Figure 1A) to prevent over-travel of the door, and enable automatic encoder recalibration prior to setting limits (and after an extended power-loss). These should be mounted inside the door-tracks at the door's maximum allowable travel point, and are required to be located at the same exact position on both tracks so that the top rollers of the door rest against them in a level position.

To install, manually open the door to the uppermost opening position allowable by the cables, clamp the door in place, and secure the brackets to the track as shown Figure 1A using the top rollers as the reference points for the brackets.

IN THE ABSENCE OF BUMPER/PUSHER SPRINGS, INSTALLATION OF LIMIT BRACKETS IS MANDATORY PRIOR TO OPERATOR INSTALLATION. WITHOUT PHYSICAL LIMITS, THE DOOR CAN RUN OUT OF ITS TRACKS AND CAUSE SEVERE PERSONAL INJURY AND/OR CAUSE SEVERE DAMAGE TO THE DOOR. FURTHERMORE, YOU WILL BE UNABLE TO SET THE LIMITS.

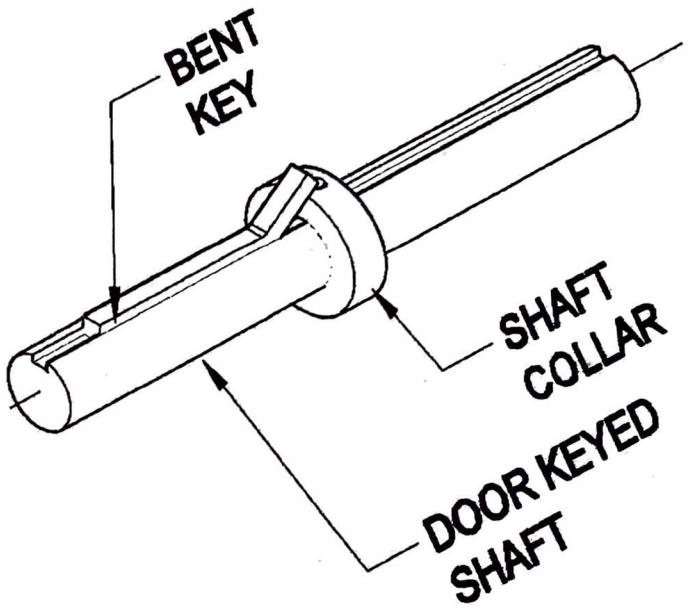
Shaft Collar/Bent Key Installation

The Shaft Collar serves as an end-stop for the bent shaft key to prevent it from back-travel out of the keyed shaft and from rubbing on the bearing plate. It needs to be mounted in conjunction with the key as shown in diagram.

Adjust the door so that the shaft keyway is facing up (you may have to open/wedge/clamp the door open slightly to achieve this).

Loosen the Shaft Collar set screw and slide the collar over the shaft close to the bearing plate, but not so close as to touch it. Firmly tighten the set screw.

Insert the 3 inch bent shaft key (provided with operator) into the door shaft keyway with the bent end facing the installed shaft collar.

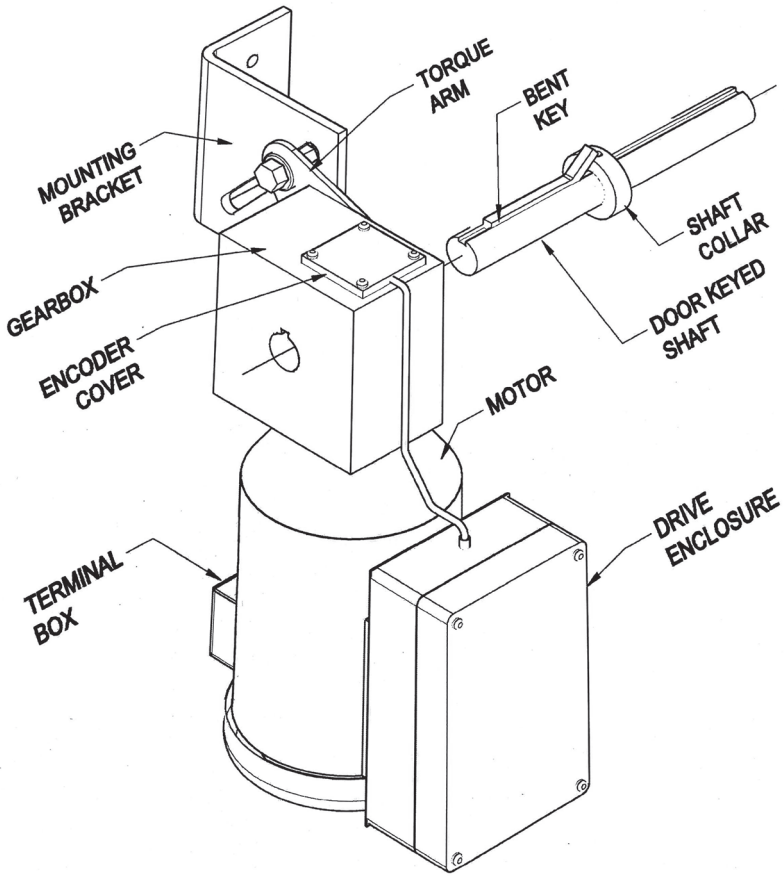


Operator Installation

WARNING

WARNING: THE OPERATOR ASSEMBLY IS HEAVY AND CAN CAUSE SERIOUS INJURY OR DEATH SHOULD IT BE DROPPED DURING INSTALLATION. TAKE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID DROPPING THE OPERATOR (I.E. TETHER/TIE DOWN) PRIOR TO ATTEMPTING INSTALLATION. SCAFFOLDING OR SCISSOR-LIFTS/ PLATFORM-LIFTS ARE ADVISED FOR OPERATOR INSTALLATION. NEVER ATTEMPT TO INSTALL AN OPERATOR ABOVE EYE-LEVEL OR FROM A LADDER.

ENSURE THAT PREVIOUS STEPS FOR SHAFT COLLAR/BENT KEY INSTALLATION HAVE BEEN PROPERLY FOLLOWED BEFORE PROCEEDING.



Align the keyway of the gearbox with the pre-mounted bent key (see Key Shaft Collar/Key Installation on previous page) located on the mounting side of the shaft. Bent section of key should face the shaft collar as noted in previous instructions.

Adjust the keyway of the hollow gearbox so that it is facing upwards (use a 3/8" ratchet placed in the bottom entry of the operator to move to rotate the hollow gearbox). Slide the gearbox onto the shaft until it makes contact with the bend of the key.

Fasten the torque arm to structural support by means of the supplied bolt, locking nut and washers. The supplied bracket may be required. If the torque arm does not align with structural support, you may try adjusting the torque arm position on the gearbox (see Assembling Torque Arm to Gearbox) accordingly or use the Torque Arm Bracket.

If the Torque Arm Bracket is needed, pre-assemble the bracket to the Torque arm using the provided fasteners prior to sliding on the operator (NOTE: DO NOT TIGHTEN THE NUT FULLY). Locate the proper position for the bracket on solid structural support (i.e. wall), mark the mounting holes, and install anchors as required (you may need to remove the operator to do this). Fasten the bracket to the support, then tighten the Torque Arm Bolt.

FAILURE TO SECURELY FASTEN TORQUE ARM COULD RESULT IN DAMAGE, SERIOUS INJURIES OR DEATH AND WILL VOID THE WARRANTY.

Push Button and Photo-Eye Mounting

The control panel should be securely mounted at or around eye level (minimum 5 ft. from floor) on the same side as the operator. Ensure that the control panel is mounted far enough away from the door as to avoid user contact with the door while in operation, but close enough that the user has clear view of the door at all times. Remove cover of Push Button Station to expose 2 mounting holes and to obtain the mounting hardware.

The included polarized reflective photo-eye sensor should be mounted so that it scans area that spans the entire width of the door at a height of no more than 6 inches from the ground. The sensor (reflective photo-eye) should be mounted on the operator side, while the reflector should be mounted on the opposite side of the door, facing the sensor so that its center meets the beam. Use the included mounting bracket to secure to either the door tracks or the wall. Refer to the specific mounting details provided with the sensor. For final alignment of the sensor, apply power to the Operator (after complete installation - follow all installations instructions prior to powering up). Once properly aligned, the yellow LED indicator on the top of the sensor will light up (and remain lit) in confirmation.

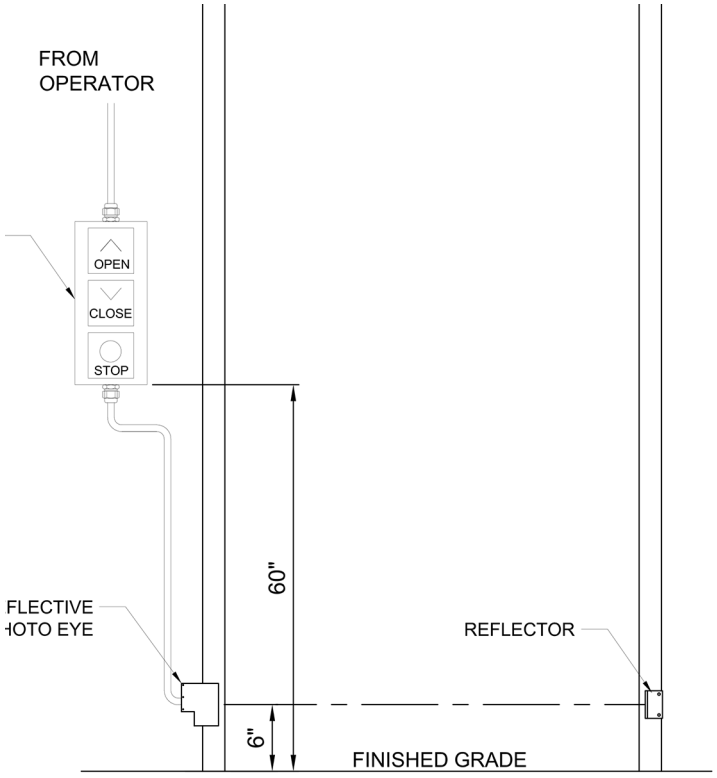


FIGURE: 8

WIRING INFORMATION

WARNING

TO REDUCE THE RISK OF PERSONAL INJURY OR DEATH, ENSURE THAT THE FOLLOWING PRECAUTIONS HAVE BEEN FOLLOWED PRIOR TO CONNECTING OPERATOR TO POWER:

1. Ensure that a 15A (min.) outlet has been previously installed within 4 foot radius of Operator by qualified electrician/technician only and meets national and local electrical codes.
2. Outlet should be on a dedicated circuit and properly protected.

Applying Power

The Pulse 100 Series Operators do not require a qualified electrician for installation, provided an outlet has been properly wired and mounted by a qualified electrician within 4 feet of the operator. The operator is provided with a standard 3 prong power plug - simply insert it into the outlet to apply power.

DO NOT PLUG IN UNIT UNTIL INSTALLATION IS COMPLETED FULLY AND YOU ARE PREPARED TO ALIGN PHOTO EYE AND SET LIMITS.

Wiring of Peripherals

The Pulse 100 Series Operators can accomodate added reversing devices (Photo-Eyes, Light Curtains, Reversing Edges, Etc.) and added activation devices (Remote Radio, Floor Loop, Pull Cord, Motion Detector, Photo Eye, Etc.) across a variety of peripherals - see the wiring diagrams for connection details. As well, there is an on board relay for interlocking or external communication for signalling devices, security systems, fire systems, etc.

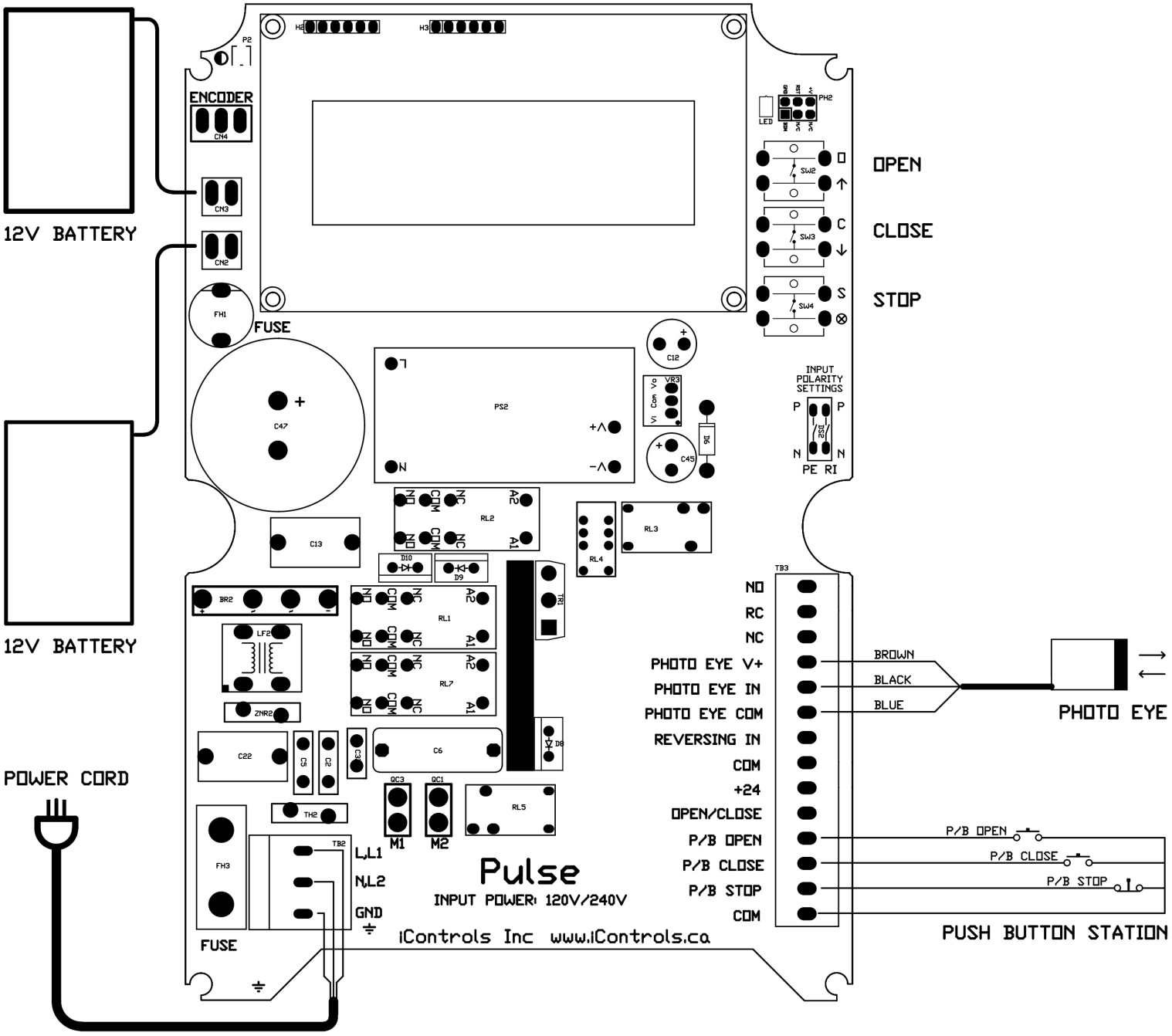
NOTE: It may be required to drill an added hole into the enclosure for wire access for peripherals. If doing so, DO NOT DRILL INTO THE PRINTED CIRCUIT BOARD, CLEAN ALL SHAVINGS/DEBRIS FROM INSIDE THE PANEL and USE APPROPRIATE CONNECTOR FOR CABLE ENTRY.

Battery Connection

The Pulse 100 Series come standard with Built-In Battery Backup that provides 24Vdc/0.8Ah of power for power-outage situations. To connect the batteries, first mount the batteries to the inside of the enclosure lid by matching up the applied Tongue and Loop on the batteries with those in the enclosure lid and firmly applying. Then simply connect the battery wires to the connectors found on the upper left corner of the board.

Door Operator Models: Pulse 138/Pulse 150

Field/Factory Wiring



STARTUP PROCEDURE

CAUTION! **Before applying power to the Pulse operator, ensure that the unit is firmly in positioned on the door shaft and securely fastened to the torque arm/bolt, that the torque arm is anchored to structural support, and that Limit brackets are in place.**

POWERING UP

Apply power to the unit (plug in electrcal cord). The Control Panel LED Screen should light up and run a self-diagnostic. If LCD screen is not lit, refer to Trouble Shooting on Page 25. Once it has run through its self-diagnostic, the screen will read 'Door is Ready - Press Open to Start'. DO NOT TRY TO OPERATE THE DOOR AFTER INITIAL POWER UP - LIMITS MUST BE SET.

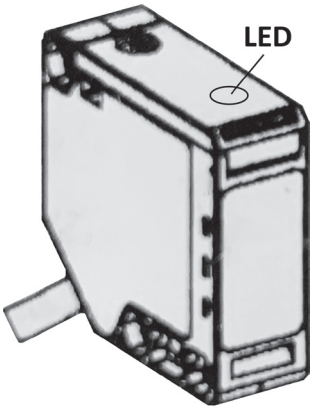
Once powered on, check Photo-Eye alignment - the yellow LED on top of the Photo-Eye should be lit if it is properly aligned with the reflector. If it is not, adjust until in proper position and green LED is lit. Once Photo-Eye is correctly aligned, move on to Menu Settings. DO NOT OPERATE DOOR UNTIL LIMITS HAVE BEEN SET (see below instructions).

SETTING LIMITS

Limits should be set before any other menu option. Limits can be set from the main control panel, or, if default factory settings are acceptable for your operator, can be easily set from the push button station.

Before setting limits, ensure that the Reflective Photo Eye Sensor is properly installed and aligned, and that the power is on. The yellow LED on top of the Sensor should be lit. If it is not, ensure that power is on and align Sensor accordingly. If setting limits using push button station, see below instructions. If setting limits using the operator panel, skip to STARTUP MENU and see DOOR LIMITS.

SETTING LIMITS USING PUSH BUTTON STATION



The LED light on the Photo-Eye provides communication for Limit Setting. Ensure that light is on, and is solid yellow, then follow the instructions below (should the light be flashing, press the open button - the door will open slowly to rest against the limit bracket, and then the light should turn solid Yellow).

1. Press the STOP button and hold firmly, while then pressing and holding the OPEN and CLOSE buttons for 5 seconds. Once the system is ready to set limits and while holding all 3 buttons, the LED on the phot-eye will turn off.

2. Release the buttons. The LED should now begin to flash. Press and release the OPEN button to reset the encoder - the light will turn off (unless already fully open, the door will rise slowly to touch the limit brackets). Once the door has stopped, the LED will begin flashing, and you can now jog the door down to set the desired open limit positiion (note that OPEN and CLOSE buttons can be used to attain position - press and hold button to move door). It is recommended that the open limit is at least 4" away from the limit brackets. Press and release STOP to save the desired open limit. Once saved the LED will blink as verification, and as a prompt for next step.

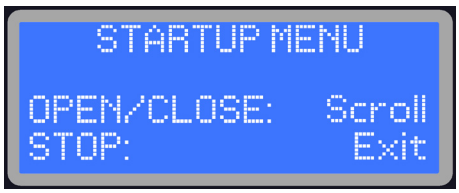
3. Now set the close limit position. The LED will turn off once you press and hold a button (OPEN or CLOSE) and will remain unlit until the close limit is saved. Once the door is at the desired position, press and release STOP button to save close limit. LED will turn on (steady) to verify save.

4. Now cycle the door at least 2 times to calibrate the unit. Note that the door will operate at the programmed speed (Default = Medium Speed), and the LED will remain solid yellow. A 3rd cycle of the door should be done to confirm limit positions. If limits not set properly, retry entire process from step 1.

STARTUP MENU - ACCESSING ALL MENU SELECTIONS

NOTE THAT ALL FACTORY MENU SETTINGS ARE RECOMMENDED FOR SECTIONAL DOORS ONLY. CONTACT iCONTROLS FOR SETTINGS FOR OTHER DOOR STYLES (i.e. Rolling Steel, etc.)

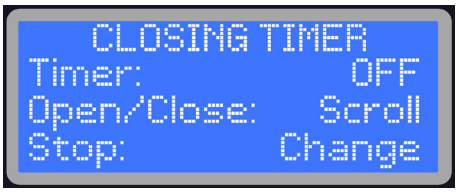
For access to the STARTUP MENU press and hold the STOP button on the control board (bottom button beside the LCD screen) for 5 Seconds - do not release until STARTUP MENU appears on the screen. Once done, you can scroll between the various STARTUP MENU options by pressing the OPEN and CLOSE buttons. Once you have reached a selection that you would like to change, press the STOP button. Use the OPEN and CLOSE buttons to scroll/toggle between options within the selection, and then press STOP to save your selection and return to the STARTUP MENU.



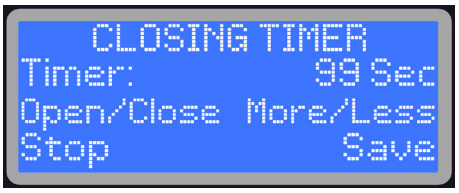
CLOSING TIMER

IT IS NOT RECOMMENDED TO SET THE CLOSING TIMER UNTIL AFTER THE UNIT HAS BEEN FULLY TESTED.

The Closing Timer will automatically close the door after opening by the preset number of seconds that have been programmed using this STARTUP MENU option.



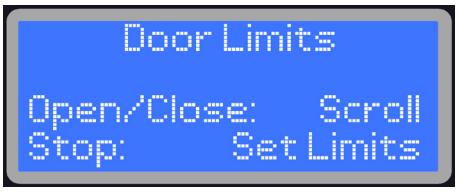
Once you have accessed this option, use the OPEN and CLOSE buttons to increase or decrease the closing timer value in 1 second intervals. If it is not required, ensure that the Closing Timer is set to OFF. If it is required, set it to any number of seconds from 1 to 99. Remember that this is the number of seconds that the door will remain open before automatically closing. Press the STOP button to save the value and return to the SETUP MENU.



The Closing Timer will de-activate in the event that the Photo-Eye is in a fault condition (blocked, misaligned, damaged), and manual Push and Hold to Close protocols (constant pressure) will apply to door closing operations.

DOOR LIMITS

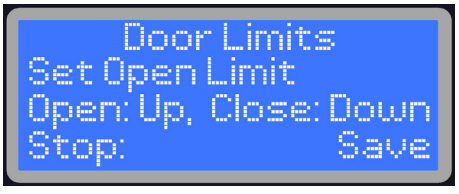
NOTE: PROGRAMMING OF LIMITS SHOULD BE PERFORMED BY TRAINED PERSONNEL ONLY. THE ENCODER WILL RETAIN THESE LIMITS UNLESS RE-PROGRAMMED.



Press the STOP button to set the limits. Once selected, DOOR LIMITS heading will appear with a prompt to 'Push OPEN to Start'. Push the OPEN button, and the door will open to the fully open position against the Limit Brackets. ENSURE THAT THE TOP ROLLERS OF THE DOOR ARE RESTING AGAINST THE LIMIT BRACKETS. The Open Limit now needs to be set.

SET OPEN LIMIT

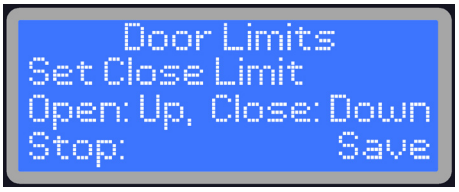
Press CLOSE (OPEN functional should you overshoot desired position) to jog the door to the desired Open Limit height. **The Open Limit Setting Should be a minimum offset of 3" from the Limit Bracket**. Press STOP button to save Open Limit and advance to SET CLOSE LIMIT.



SET CLOSE LIMIT

From the Open Limit, jog to the desired Close position, using the CLOSE button (OPEN available for fine tuning). Ensure that the door is properly sealed at the bottom.

Press STOP button to save and return to STARTUP MENU.



SETTING DOOR SPEEDS

On initial set up please use the factory default MEDIUM speed. As noted below the Motor, Door and Drum size may affect the opening speed of the door and the Medium setting may be all that is required to achieve 24" per second opening speed. Test door at factory setting prior to setting adjustment.

Please note that the Pulse has been developed with the same technology that is used in High Speed Door Operators. While we have limited the maximum opening speed to ~24" per second for sectional doors (this is dependent on the type of door and drum used) and maximum closing speed to ~16" per second, we recommend that you set the speed to accommodate both your requirement, and the hardware of the door. To get the longest life out of your door, and to maximize your allowable speed, we recommend Stainless Steel cables and nylon rollers be installed if they are not already standard on your door.

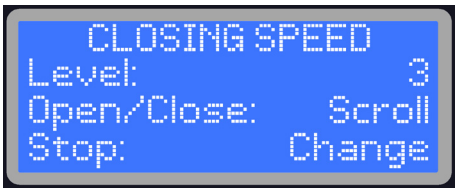
OPENING SPEED

To access the Open Speed Settings, ensure you are in STARTUP MENU (see above instructions), then toggle between options using the OPEN or CLOSE buttons until Open Speed appears on the screen. Then press the STOP button to access and macke changes.

The Pulse operator is factory equipped with 3 options of open speed settings: low, medium and high. Toggle between these 3 options by using the OPEN and/ or CLOSE buttons, and press the Stop button once the desired selection appears on the screen to save and return to the STARTUP menu.

CLOSING SPEED

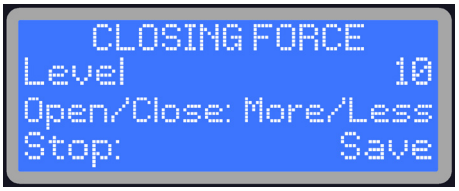
To access the Closing Speed Settings, ensure you are in STARTUP MENU (see above instructions), then toggle between options using the OPEN or CLOSE buttons until Close Speed appears on the screen. Then press the STOP button to select.



he Pulse operator is factory equipped with 3 options of close speed settings: low, medium and high. Toggle between these 3 options by using the OPEN and/or CLOSE buttons, and press the Stop button once the desired selection appears on the screen to save and return to the STARTUP menu.

CLOSING FORCE

If the door is obstructed from closing (ie. due to obstruction, jam, etc.) this current monitoring feature will stop and reverse the door to prevent damage. The sensitivity of this monitoring can be changed in this setting, or the feature can be turned off entirely.



Closing Force sensitivity can be adjusted from 1-99 (1 being most sensitive to obstructions/jams/imbalance) or OFF. Factory default is '30'.

Note that if this setting is turned to OFF, Push & Hold to Close protocol (constant pressure) will be initiated.

OPENING FORCE

If the door is obstructed from opening (ie. due to ice buildup, the door latch is engaged, etc.) this current monitoring feature will stop the door to prevent damage. The sensitivity of this monitoring can be changed in this setting, or the feature can be turned off entirely.

Opening Force sensitivity can be adjusted from 1-99 (1 being most sensitive to obstructions/jams/imbalance) or OFF. Factory default is '99'.

OPEN RAMPDOWN DISTANCE

This setting is used to change the point where the door begins to decelerate to slow speed as it approaches the Open Limit. The user can choose between auto (which is configured by the system) or the desired number of shaft rotations (between 0.5 turns and 3 turns in half rotation increments).

The Factory default setting for this feature is AUTO. This should not be changed unless recommended by Pulse Technical Support.

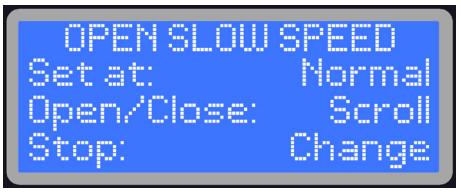
CLOSE RAMPDOWN DISTANCE

This setting is used to change the point where the door begins to decelerate to slow speed as it approaches the Close Limit. The user can choose between auto (which is configured by the system) or the desired number of shaft rotations (between 0.5 turns and 3 turns in half rotation increments).

The Factory setting for this feature is AUTO. This should not be changed unless recommended by Pulse Technical Support.

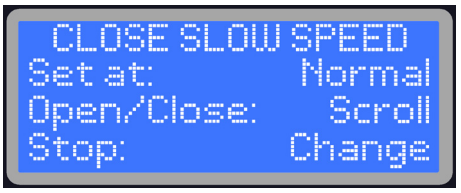
OPEN SLOW SPEED

When the door is approaching open limit and decelerates to slow speed before the stop (Soft Stop), added force/speed may be required to complete opening. While this is indcative of an improperly balanced door, this feature can be used to compensate. This setting should only be changed from the NORMAL to the HIGH setting if door becomes unbalanced over time and does not completely travel to Open limit. If it is a new installation, changing the spring tension for proper balance is a required first step. Factory default is 'NORMAL'.



CLOSE SLOW SPEED

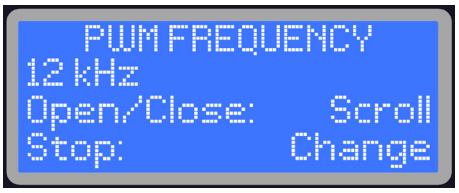
When the door is approaching Close Limit and decelerates to slow speed before the stop (Soft Stop), added force/speed may be required to complete closing. While this is indcative of an improperly balanced door, this feature can be used to temporarily compensate. This setting should only be changed from the NORMAL to the HIGH setting if door **becomes** unbalanced over time and does not completely travel to Close limit. If it is a new installation, changing the spring tension for proper balance is a required first step. Factory default is 'NORMAL'.



PWM FREQUENCY

This Setting allows the user to change the operating frequency for the motor between 2.4 kHz, 12kHz and 20kHz. Certain frequencies can interfere with third-party accessories, and adjustment may be necessary. Factory default is set to 12kHz. Do not alter this setting unless advised by Technical Support.

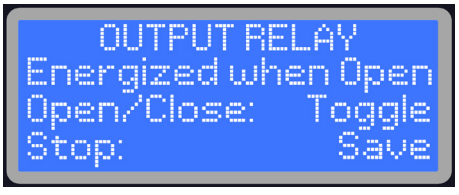
Note that if this setting is turned to OFF, Push & Hold to Close protocol (constant pressure) will be initiated.



OUTPUT RELAY OPTIONS

The Output Relay is used for signalling/interlocking with other devices such as a dock leveller, security equipment, other doors, etc. There is one NO and one NC contact available that can be energized at either the open or closed limit, or between limits, as chosen by the user in this setting.

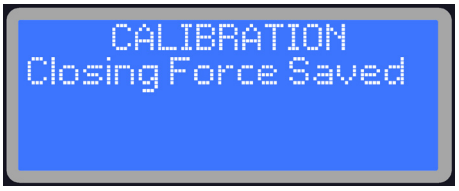
The Factory setting for this feature is ENERGIZED WHEN OPEN.



CALIBRATION

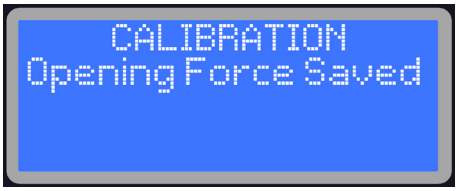
This feature is required to calibrate force monitoring levels. Screen prompts guide user through calibration. It is generally not required to select this menu setting as the Pulse Operator will prompt for calibration upon exit from menu, if required. If setting limits from Push Button Station, the first 2 operations will automatically calibrate the operator. Furthermore, the Operator will continue to re-calibrate during regular operation.

NOTE: IF YOU CHANGE ANY OF THE FOLLOWING SETTINGS, THE OPERATOR WILL PROMPT FOR RECALIBRATION WHEN EXITING THE MENU: Door Limits, Open Speed, Close Speed, PWM Frequency, Open Rampdown and Close Rampdown.



THE CALIBRATION OF THE DOOR INVOLVES THE FOLLOWING STEPS:

- An automatic slow opening cycle of the door. (You will be prompted to open the door)
- A close cycle of the door. Press the CLOSE button per prompt to Calibrate Closing Force. If a reversing device is activated, the Operator will abort this step and prompt you to start again.
- You will be prompted to open the door to Calibrate Opening Force.
- Calibration is complete. If you are calibrating using the Menu setting, you will need to exit the menu before normal operation of the door can begin.

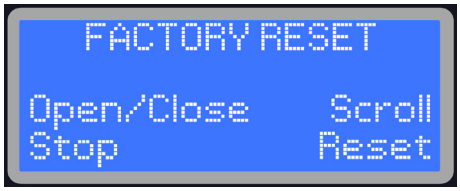


BALANCE CHECK

Once selected from the menu, the door will automatically run through one full close/open cycle (after an encoder reset). It will then report on the screen values representing the force required to open and to close the door. The difference in these numbers represents the imbalance, and adjustments to the spring tension should be made accordingly. Run this feature again to verify proper adjustment.

FACTORY RESET

This setting allows for a reset of all menu options to the factory default. These are the Factory Settings:



STARTUP MENU

Closing Timer: ..... OFF
Door Limits Setup: ..... 4 Rotations - Must be Re-Programmed by Installer
Open Speed: ..... Medium
Close Speed: ..... Medium
Opening Force: 99
Closing Force: 30
Open Rampdown: ..... Auto
Close Rampdown: ..... Auto
Open Slow Speed: ..... Normal
Close Slow Speed: ..... Normal
PWM Frequency: ..... 12 kHz
Output Relay: ..... Energized When Open

After performing factory reset (if deemed necessary), adjust settings as required, and re-program limit settings and perform calibration thereafter.

EXITING STARTUP MENU - CALIBRATION & TESTING

To exit from the Startup Menu, press and release the STOP button while STARTUP MENU appears on the LCD. If you have saved changes to the operator speed, PWM Frequency, Open or Close Rampdown, or reset limits, you will be required to do a quick system calibration. Screen prompts will provide real-time instruction on calibration requirements. See Page 20 for more detailed information on Calibration.

Once Calibration is completed or if it was not required, the system will run a quick diagnostic, and the LCD will read indicate its current position (OPEN, CLOSED or STOPPED). The door is now ready for use. BEFORE OPERATING THE DOOR, ENSURE THAT THE DOOR LIMITS HAVE BEEN SET.

Testing of the door is now required. Observe whether the door is running smoothly and is stopping at the appropriate limits. Ensure that the door is set at the required speeds, and test each reversing and activation device to confirm their functionality.

PATENTED BATTERY BACKUP - POWER OUTAGE OPERATION

The Pulse is factory equipped with a patented battery backup system and it is automatically activated during a power outage. This battery backup even works if there is board damage occuring due to external forces such as lightning or impact.

Simply push and hold the OPEN button in order to open the door, and push and hold the CLOSE button in order close the door – the door will respond accordingly, but note that speeds will be reduced. All safety devices will be disabled during a battery backup operation and any personnel operating the door should maintain a clear line of sight with the doorway in order to reduce the risk of possible door impact with personnel or equipment, and to ensure the door operates safely. To enable battery backup functionality when the power is available, please disconnect the power to the operator.

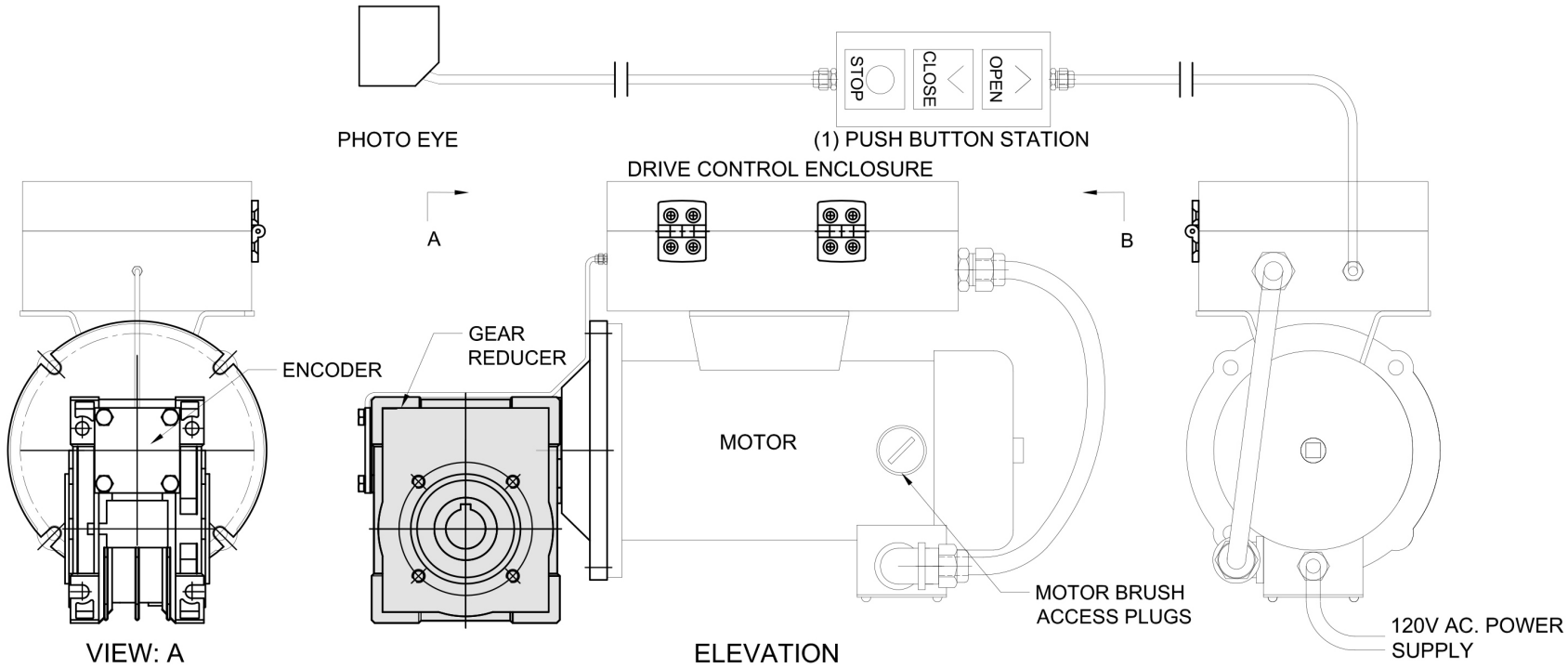
In case the batteries are fully drained or missing, the base of the motor is also equipped with a 3/8” ratchet entry. TURN OFF POWER TO THE OPERATOR (even if the power seems out), secure a crankshaft, socket wrench or power drill with 3/8” ratchet head (not included) inside the ratchet entry and rotate it in the appropriate direction in order to open or close the door. Turn on the power once manual operation is no longer required.

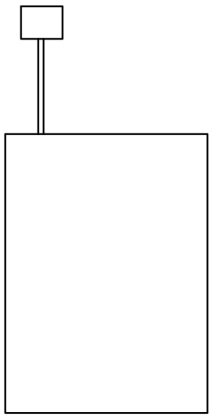
NOTE ON BATTERIES

Provided lead-acid batteries are 2 x 12V connected in series to provide 24Vdc. The controller provides a monitored trickle charger in order to maintain the batteries' life. Should the batteries be fully drained and no longer accept a charge, please replace them with equivalent batteries, and dispose of the expired units according to local environmental regulations.

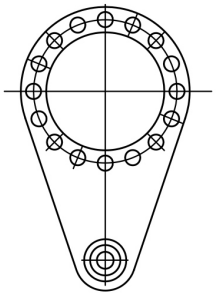
CAR WASH/WATER-RESISTANT APPLICATIONS

iControls recommends an available upgrade for all Car Wash/Water Resistant applicaitons. Standard Pulse Operator Drives are rated IP54, and could be vulnerable to water ingress. Furthermore, reflective photo-eye sensors have a tendency to be detrimentally affected by condensation on the reflector, preventing reliable operation in such conditions. iControls offers a cost-effective Water-resistant upgrade that both seals all ingress points, and includes a thru-beam sensor in place of a reflective photo-eye. Please contact iControls for details and pricing.



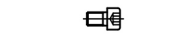


(2) 12 V, 0.8Ah
BATTERY

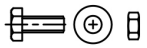


(1) TORQUE ARM

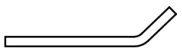
(1) SHAFT
COLLAR



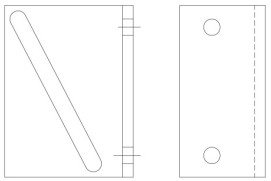
(4) M8 BOLTS



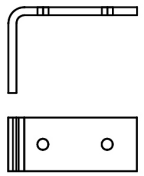
(1) $\frac{3}{8}$" DIA. BOLT,
(2) WASHERS,
(1) NUT



(1) BENT KEY

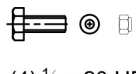


(1) TORQUE ARM
BRACKET

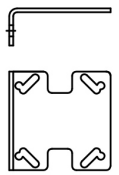


(2) OPEN/STOP
TRACK ANGLE

(1) REFLECTOR



(4) $\frac{1}{4}$ x 20 HEX HD BOLTS,
F/WASHERS, LOCK NUTS



(1) PHOTO EYE
BRACKET.

iControls®
Richmond Hill, Ontario.

TROUBLE SHOOTING GUIDE

The following are common user experienced problems that are easily diagnosed and quickly resolved during installation and operation of a Pulse 100 Series operator.

If, after reviewing the trouble shooting guide you are unable to resolve whatever issue you may be experiencing, please call our toll-free technical support line for assistance.

PULSE OPERATOR TOLL-FREE TECHNICAL SUPPORT: 1-833-785-7332

SYMPTOM	PROBABLE CAUSE	SUGGESTED ACTION
NO DISPLAY AT THE LCD PANEL	**NO POWER**	Check power is on at circuit breaker, disconnect switch is on, and ensure unit is plugged in.
		Check fuse in the junction box (6.3A Time Delay).
DOOR STOPS AT RANDOM POSITION DURING OPENING	**OPENING FORCE IS TOO SENSITIVE**	Adjust the Opening Force setting in the STARTUP MENU. 1 is most sensitive, and 20 is least sensitive.
	OBSTRUCTION/DOOR JAMMED	Check that there is nothing external causing Opening Force to activate.
DOOR REVERSES BEFORE REACHING CLOSE POSITION OR AS SOON AS THE CLOSE BUTTON IS RELEASED	**PHOTO-EYE/REFLECTOR MISALIGNED OR OBSTRUCTED**	Clean, re-align and/or clear obstruction in front of the sensors/reflector. Yellow LED on Photo Eye should be on, if okay.
	CLOSING FORCE IS TOO SENSITIVE	Adjust the Closing Force setting in the STARTUP MENU. 1 is most sensitive, and 20 is least sensitive.
	THIRD PARTY REVERSING DEVICES MALFUNCTIONING	Disconnect third party reversing devices and test again. Reconnect reversing devices one at a time to isolate the defected device.

TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	SUGGESTED ACTION
'DOOR IS STOPPED' MESSAGE ON LCD PANEL	OBSTRUCTION OR DOOR JAMMED DUE TO OBSTRUCTION.	Remove obstruction or free up the door, turn "OFF" the AC power and cycle test the door under battery power.
	PUSHER SPRINGS MAY BE PREVENTING DOOR FROM REACHING THE OPEN LIMIT.	Reset OPEN limit so that Pusher Spring are not significantly engaged.
	DOOR NO LONGER BALANCED PROPERLY	Run 'BALANCE CHECK' in STARTUP MENU and make required balance adjustment.
DOOR MOVES FEW INCHES AFTER OPEN/CLOSE COMMAND AND STOPS	THIRD PARTY PUSH BUTTON DOES NOT HAVE AN NC (NORMALLY CLOSED) CONTACT FOR THE STOP BUTTON.	Replace the push button station (or the contact for the STOP button) for one that has an NC contact on the STOP button. Wired unit from factory is compliant.
	THIRD PARTY PUSH BUTTON STATION WIRED INCORRECTLY.	Check and correct wiring as necessary.
DOOR DOES NOT CLOSE ON REMOTE OR CLOSE TIMER	PUSHER SPRINGS MAY BE PREVENTING DOOR TO OPEN FULLY TO THE OPEN LIMIT (SCREEN READS 'DOOR IS STOPPED') .	Reset Open Limit so that it does not engage pusher springs.
	CLOSE TIMER NOT SET OR NOT SET APPROPRIATELY.	Enter Menu, and ensure that Closing Timer is set for desired delay.
	PHOTO EYE IS BLOCKED, MISALIGNED OR DAMAGED.	Check that the LED light on the Photo-Eye is on. If not, Clean Photo-Eye and Reflector. If still not on, Check Alignment. If still not on, check for damage to Photo-Eye or Photo-Eye Cable.
'NO MOTION DECTECTED' MESSAGE ON LCD PANLE	DOOR IS OBSTRUCTED OR JAMMED.	Ensure that door latch is disengaged. Check for obstruction or that door is jammed in tracks. Turn off power and cycle test the door under battery power.

TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	SUGGESTED ACTION
DOOR DOES NOT WORK ON BATTERY POWER	**BATTERY FUSE MAY BE BLOWN**	Test Fuse in Vertical black Fuse Holder. Replace Fuse (6.3A Time Delay) if necessary.
	BATTERIES MAY BE DRAINED OR DEAD	Check batteries voltage, if low let it charge for 24 hours with AC power ON. Replace batteries if still not charged.
	DOOR IMPROPERLY BALANCED	Run 'BALANCE CHECK' in STARTUP MENU and make required balance adjustment.
	MAIN POWER STILL BE ON	Unplug unit to ensure the main power is off.
FORCE MONITORING NOT WORKING	**CLOSING/OPENING FORCE IS NOT SET PROPERLY**	Adjust the Closing and/or Opening Force. Directions are shown on Pages 21-22. Increase or decrease based on door weight/ size, door type/age and door hardware.

PULSE OPERATOR REPLACEMENT PARTS

REPLACEMENT PART DESCRIPTION	Pulse 138	Pulse 150
Motor	PulseM-P375-1800	PulseM-P500-1800
Motor Brush Set (2)	PulseM-BRUSH	PulseM-BRUSH
Gearbox	GB-50-1.0	GB-50-1.0
Drive Controls Enclosure	Pulse-ENC-ALBK2	Pulse-ENC-ALBK2
Replacement Printed Circuit Board	PCBA-Pulse100	PCBA-Pulse100
Torque Arm	TQARM-50	TQARM-50
Torque Arm Bracket	TQBKT-50	TQBKT-50
Limit Stop Brackets w/ Hardware	Pulse-LMTBKT	Pulse-LMTBKT
Shaft Collar	SHCOL-1.0	SHCOL-1.0
Bent Shaft Key	SHKEYB-3	SHKEYB-3
Encoder	Pulse-ENC1.00T	Pulse-ENC1.00T
Battery (single piece)	BTRY-0.8A	BTRY-0.8A
Battery Set	BTRY-0.8Ax2	BTRY-0.8Ax2
Reflective Photo Eye Set	RPE-100SET	RPE-100SET
Photo-Eye	RPE-100	RPE-100
Photo-Eye Bracket	RPESTB-BRKT	RPESTB-BRKT
Photo-Eye Reflector	RPE-RFLC	RPE-RFLC
Push Button Station	PBS-3	PBS-3

PULSE 100 WARRANTY

Coverage

Pulse 100 Series Operators are fully warrantied for a period of 2 years or 500,000 cycles (whichever comes first) from their purchase date. This warranty is inclusive of, and limited to, all component and manufacturing defects only, and does not cover possible failure due to external forces including irregularities caused by impact, improper installation and/or connection, voltage surges and any and all other user and/or environmentally caused failures. This warranty is valid for replacement or repair of defective product only, and does not include any labour incurred for the removal or installation of defective part(s), re-installation of replacement/repaired product, shipping charges for the return of the product, or other possible costs related to the inoperability of the operator. Coverage does not extend to maintenance of Motor Brushes which should be replaced every 200,000 cycles.

Software reliability and performance is also covered under our warranty, but does not include software updates, upgrades and/or custom modifications unless so authorized in writing by iControls.

Claims

Before making a warranty claim, please call Pulse Tech Support at 1-833-785-7332 and ask for troubleshooting assistance. **DO NOT REMOVE THE PRODUCT** , until so authorized.

Note

Upon request, iControls can also provide field assistance (additional fees may apply) and/or advice with installation, troubleshooting, product enhancement or improvement of our product.

Under the terms of this limited warranty, for any door components that are found to be defective upon inspection by authorized iControls personnel, iControls will replace the defective door components. Labour charges for installation or repairs shall be the responsibility of the customer and must be performed by an authorized iControls Dealer. This warranty applies only to doors that are professional installed by an authorized iControls dealer. In the case that one of the door model or part is discontinued or becomes obsolete, iControls reserves the right to replace the product with a suitable alternative.

iControls shall not be liable for any consequential or incidental damages. All other warranties, express or implied, including any warranty of merchantability, are hereby expressly excluded. Some jurisdictions do not allow the exclusion or limitation of consequential or incidental damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction. To make a claim under these warranties, contact iControls.

35 East Beaver Creek, Unit 1, Richmond Hill, Ontario Canada L4B 1B3
905-597-8989 • www.iControls.ca • sales@iControls.ca
PULSE TECHNICAL SUPPORT LINE: 1-833-PULSEDC (1-833-785-7332)