ProWay Livestock Equipment ©

STOCKFLOW Automated Livestock Handling ™

PNEUMATIC EQUIPMENT

Maintenance and Service Manual

VERSION 1.2

PLEASE READ CAREFULLY PRIOR TO INITIAL OPERATION

PH: 1300 655 383

www.proway.com.au

Thank you for purchasing ProWay StockFlow Pneumatic Equipment

The following document outlines key safety and operation instructions. Please be sure to read this document carefully before operation and that new staff are adequately inducted for safe use of all pneumatic equipment prior to use.

ProWay are committed to providing quality after sales service to our customers. Please be advised that parts, repairs and servicing will require time to ship and install.

Following a maintenance schedule will increase the longevity of your equipment and reduce risk of breakdowns and potential injury.

To minimise risk of downtime, **prior to commencing stockwork**, we recommend checking air supply and that all components and are working as intended.

In the case that replacement parts or service is required please contact us on:

Ph: 1300 655 383
Email: information@proway.com.au

Our service and technical operating hours are Monday to Friday, 9am – 5pm EST.
Please be aware our service technicians will not be available on public holidays or weekends.

CONTENTS

SAFETY AND PRECAUTION WARNINGS

General Precautions

Safety instructions are intended to prevent hazardous situations and/or equipment damage. Safety instructions contained in this document apply to tasks that must be adhered to. It is important that these safety concerns are always followed. Failure to do so could result in personal injury and/or damage to the unit or other equipment.

With this in mind, here are some basic safety recommendations:

- Read and become familiar with this *Safety Precautions and Warnings* section prior to installing, operating, maintaining or repairing.
- Store this document within easy reach of operation and/or maintenance personnel.
- Wear personal protective equipment and clothing as required.
- Familiarise yourself with and follow all safety guidelines prescribed by your company, and government safety regulations.

Warning Symbols

The following symbols are used to warn against dangers or possible sources of danger.

WARNING: Failure to observe may result in **personal injury**, **death** or equipment damage.

WARNING: Risk of electric shock. Failure to observe may result in personal injury, death or equipment damage.

CAUTION: Failure to observe may result in equipment damage.

Qualified Personnel

Only qualified personnel should operate this equipment.
"Qualified personnel" refers to individuals who understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, within the relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating the equipment to see that its personnel meet these requirements

INSTALLATION

Installation – Electrical and Pneumatic

WARNING: Risk of electric shock. Failure to observe may result in personal injury, death or equipment damage.

WARNING: Air pressure has the potential to cause injury, do not perform maintenance duties until air supply is isolated, vented, and is safe to carry out work. Failure to observe may result in personal injury, death or equipment damage.

WARNING: All control cabinets requiring electrical supply leads should be installed by qualified electrical personnel only. Failure to observe may result in **personal injury**, **death** or equipment damage.

CAUTION: It's recommended installation of an air dryer, after cooler and other air preparation equipment. Condensate in the air may cause the malfunction of pneumatic equipment.

CAUTION: Use the product within the specified range of fluid and ambient temperature. Take measures to prevent freezing, since moisture in airlines will be frozen under 5ºC, and this may cause damage to seals and lead to malfunction.

- All electrical and pneumatic connections and installations of this equipment are to be carried out by qualified personnel. Be sure to follow installation instructions for components and accessories.
- If electrical power is required to operate the equipment; do not perform maintenance duties until electricity is isolated, and is safe to carry out work. Apply the correct power voltage to the equipment, incorrect voltage will result in damage to the electrical instruments in the control cabinet.
- Cables which run outside of the unit must be checked for wear or damage.
- Power supply wire gauge and insulation must be sufficient to handle the rated current consumption.
- Cables must never be squeezed or pinched. Do not locate cables or hoses in high traffic areas.
- Do not operate service or repair equipment or attempt to remove components until safety is confirmed.
- Install air filters at the upstream side of the valves and/or pneumatic equipment. The standard level of filtration should be 5μ or finer.

MAINTENANCE / REPAIR

MAINTENANCE

Allow only qualified personnel to perform the procedures set out in this document. Wear appropriate protective clothing and equipment when carrying out maintenance or repairs.

WARNING: Ensure that electrical power is fully isolated from the unit. Even when only the circuit breaker is switched OFF the unit is still electrically energized. Failure to observe may result in **personal injury, death** or equipment damage.

WARNING: Air pressure has the potential to cause injury, do not perform maintenance duties until air supply is isolated, vented, and is safe to carry out work. Failure to observe may result in personal injury, death or equipment damage.

- Disconnect, lock out and tag external power supply.
- Follow the specific instructions provided in this manual to relieve the system pressure in the entire unit.
- Only use genuine and authorised parts which do not compromise the safe operation of this unit.

SERVICE AND MAINTENANCE REQUIREMENTS

MAINTENANCE OPERATIONS AT REGULAR INTERVALS
(Assuming normal operating conditions.)

Daily: Check the operating pressure of the supply from the compressor.
Check the operating pressure of the control system. Adjust as necessary.

Weekly: Check the level of condensate in the air service unit and empty if required.
Check the oil level in the lubricator and the drop rate of the oil (if fitted.)

Monthly: Check the filter cartridge and bowl in the service unit if applicable.
Clean the bowl, if necessary, and clean or replace the filter cartridge if the pressure drop is greater than 50 kPa.

MAINTENANCE / REPAIR

COMPRESSED AIR SUPPLY

It is essential that within a compressed air system that minimum condensation accumulates, and no excessive amount of oil is delivered to the system by the compressor.

Small amounts of contaminants, however, will reach the control system. These can be minimised by air service equipment. If no air service equipment is connected to the system, then efficient, continuous operation of the system cannot be guaranteed.

> **Note:** The mains air pressure to the installation should be at least 100 kPa more than the system pressure to ensure that pressure fluctuations that occur in the main air supply do not disturb the control system.

CONNECTION OF AIR SUPPLY

A. Prior to connecting the compressed air supply to the system, ensure that all working parts are in the initial or “at rest” position.

B. Pressurise the system slowly to avoid damaging any of the components, especially in the event of wrongly connected peripheral equipment.

C. Check the pressure gauge(s) immediately to ensure that the pressure is correctly set. After adjusting the pressure, lock the regulators (via the locking screw located on top of the adjustment knob) to prevent unauthorized adjustments taking place.

HOSE LINES AND FITTINGS

ProWay pneumatic hose lines are installed at the minimum possible length, are kink free and cannot become entangled in other components. In the case this is not observed contact ProWay customer service.

For repair and or replacement of hoses and fittings use appropriate air hose and fittings with consideration to wear and flexibility and ensure that undersized hoses and/or fittings do not restrict supply to components. Ensure hoses are fitted at the minimum possible length, are kink free and cannot become entangled in other components.

MAINTENANCE / REPAIR

PNEUMATIC COMPONENTS FAILURE PROCEDURE

If failure of a pneumatic component is suspected, the following checks should be made to determine the cause of the fault.

I. Ensure that the air supply is sufficient.

II. Check for kinks and blockages in the air lines, both inside and outside the system, that are associated with the suspect component(s).

III. Listen or feel for air leaks in the tubing system. Rectify as necessary.

IV. Check the hose connections with the pneumatic circuit, ensuring that the cylinder is connected to the correct bulkhead or multiple pin number.

V. If a cylinder is suspect, pressurise one end of the cylinder, then disconnect the hose on the other side. If air is still exhausting after the cylinder has reached the end of its stroke, the piston seals are faulty and the cylinder will need to be repaired or replaced.

A fault identification flowchart can be found on page 10 & 11. This a guideline reference which will likely indicate the cause of failure to single or multiple pneumatic gates.

PROCEDURE FOR ACCESSING FAULTY COMPONENTS

Following fault identification:

I. System shutdown and component removal.

II. Close main supply inlet at the shut-off valve up stream of the air service unit supplying the control system.

III. Close the dump valve on the air service unit so that when the supply is isolated from the system and the air in the system is dumped. The component containing the fault may now safely be removed.

IV. Remove the tubes from the faulty component and label tubes for identification when reassembling

V. Remove the fault component, keeping all washers present and repair or replace as required. If repairing, ensure that all O rings and other small components are not inadvertently lost while the component is disassembled and lubricate where indicated on the spare parts drawings located at the back of this manual.

OPERATION

Intended Use

ProWay StockFlow Pneumatic equipment is designed and intended to be used for the purpose of livestock processing and husbandry using best practice stock management. Applications not in accordance with the intended product use or which have been modified from the original installation are considered outside the intended use and may void product warranty.

WARNING: Use of pneumatic equipment in ways other than the primary product intention may result in **personal injury, death** or equipment damage.

ProWay StockFlow Pneumatic rotary block gates, draft systems, swing gates and guillotine gates should be operated using best practice stock movement and are not intended to physically manoeuvre cattle, but rather allow or prevent throughput.

ProWay StockFlow systems have been tested under appropriate operating conditions, however putting disproportionate or excessive strain on pneumatic components can lead to damage to equipment overtime.

Adjustment

Needle valves on the air rams regulate the speed of gate operation. These are set at time of installation and should not need adjusting. If alteration is required undo locking nut, rotate needle valve until gate moves at desired speed. Retighten lock nut.

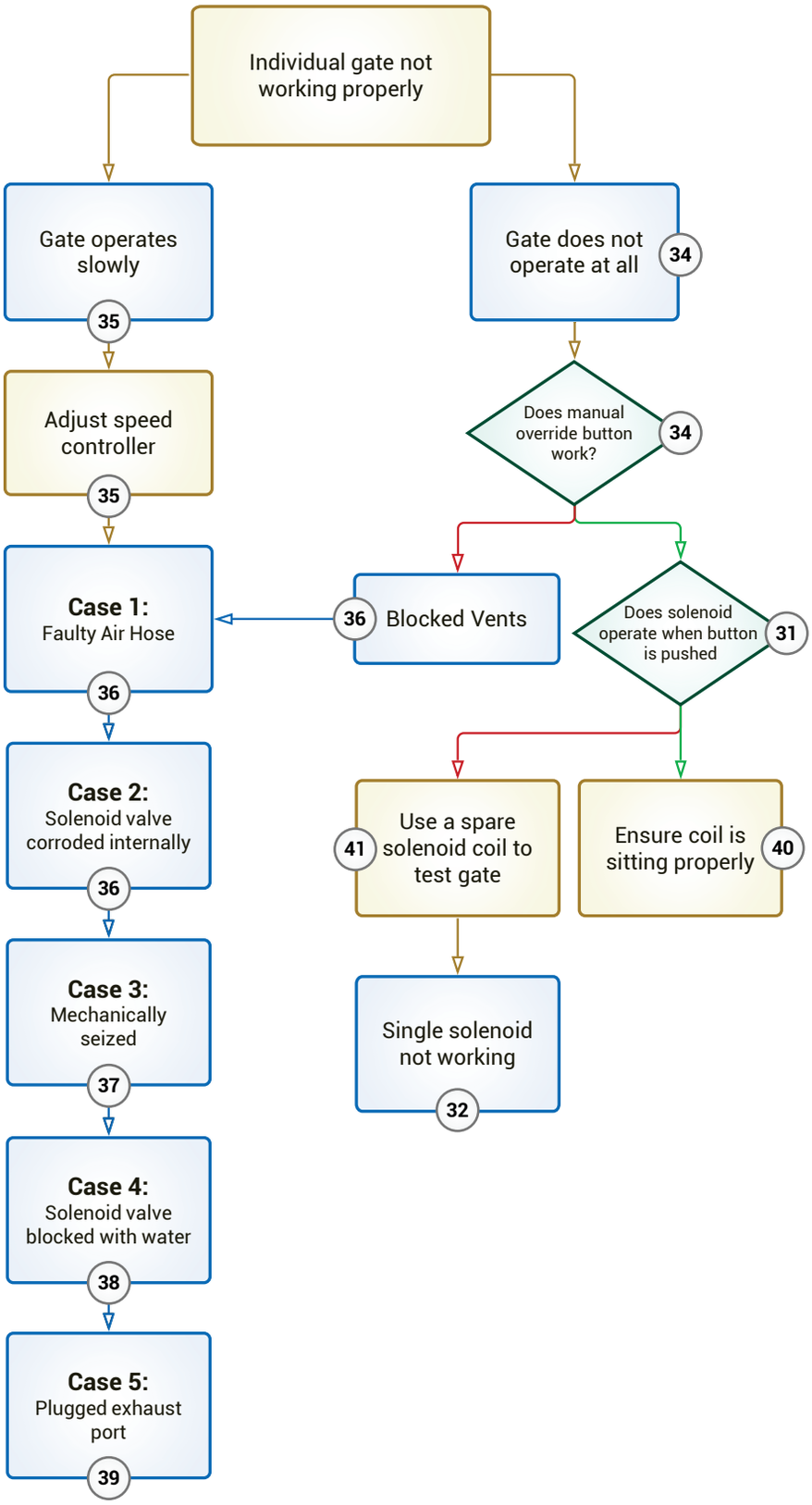
Product Checks

Proway StockFlow Pneumatic gates are designed to operate smoothly with minimal maintenance, however to provide years of service the following should be carried out in addition to the pneumatic maintenance outlined on the previous page.

Monthly
Lubricate catches on gates
Check rams, gates and latches for signs of wear and fatigue.
Check rubber shock absorbers are functioning.
Replace components if required

The following flow charts can be used as a logical checking process to identify a fault in your ProWay Pneumatic system should one occur.

ISSUE: INDIVIDUAL GATE FAILURE



NOTE

If viewing this guide on a tablet, PC or phone, the individual icons can be clicked to revert to the corresponding instruction page.

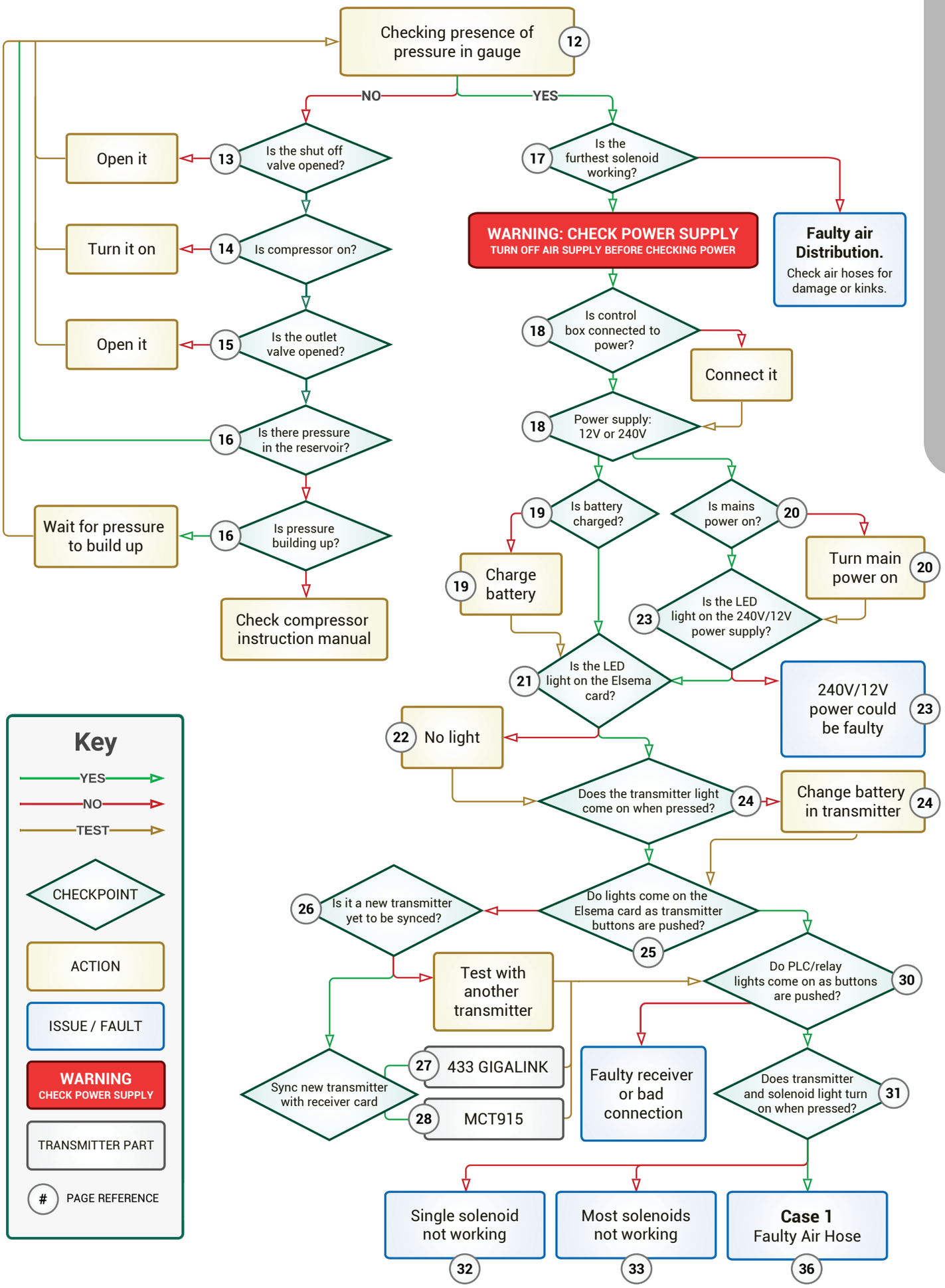
If this is a printed manual, please refer to the page reference number adjacent to the shape icons.

(#) PAGE REFERENCE

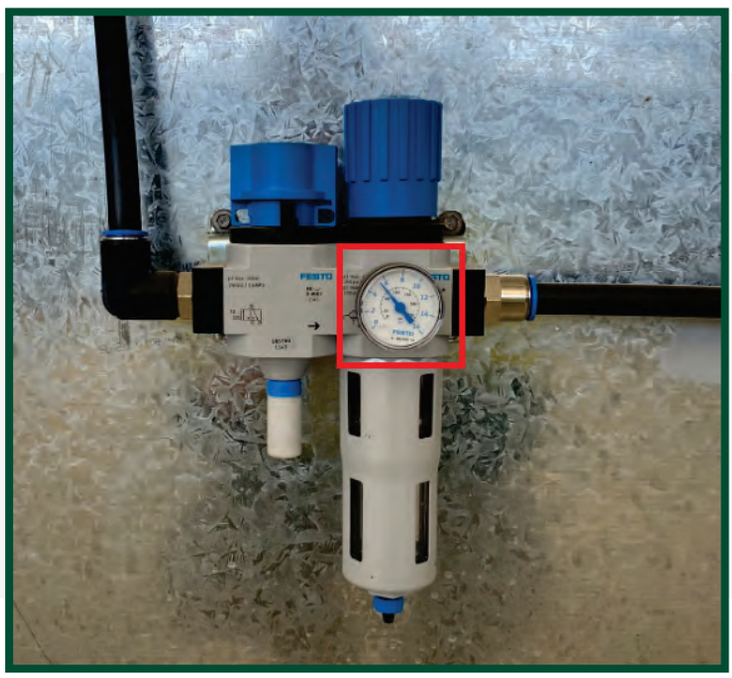
Key

YES
NO
TEST
CHECKPOINT
ACTION
ISSUE / FAULT
WARNING
CHECK POWER SUPPLY
TRANSMITTER PART
(#) PAGE REFERENCE

ISSUE: COMPLETE SYSTEM FAILURE



Presence of pressure in gauge



Pressure gauge shown in red box

Pressure can be read from the pressure scale of the regulator

The desired pressure should be shown 6 Bar

Pressure can be adjusted by regulator knob

The desired pressure **6 Bar** should be shown on the gauge

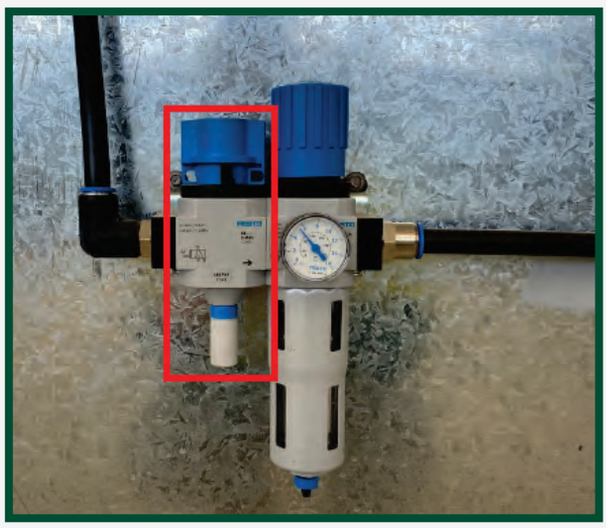
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

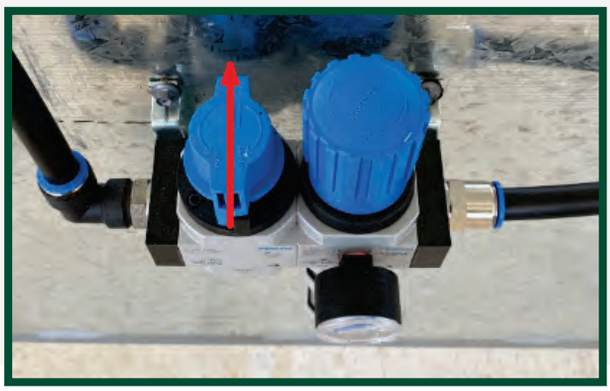
TEST

If no resolution refer back to **page 10 & 11** | Flowchart

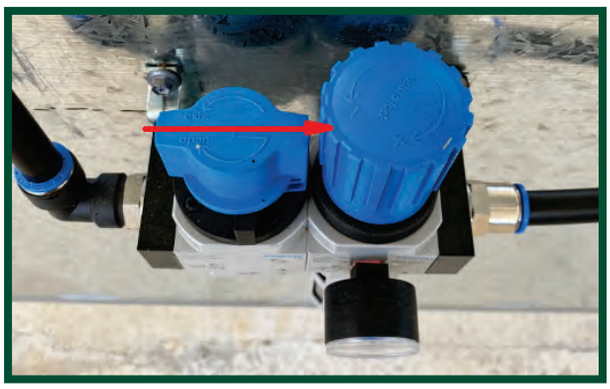
Is shut-off valve opened?



Shut off valve shown in red box



Above valve shown in **CLOSED** direction



Above valve shown in **OPEN** direction

Shut-off valve is shown as red box.

It is part of filter regulator assembly and usually located near the control box.

It should be in opened position, which is along the pipe direction.

If shut-off valve is closed, open it by turning the knob in clockwise.

Desired pressure (usually 6bar) should be read in the pressure scale of the regulator.

Shut-off valve closed, the pressure downstream of filter regulator is dumped.

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is compressor on?

Electric screw compressor example

Single phase electric compressor example

Ensure the compressor is turned on. If your compressor is not or will not run, refer to your compressor operation manual.

For electric compressors ensure is properly connected to an adequate power supply.

Some electric compressors have a digital screen which may show diagnostic information.

For petrol driven compressors ensure the tank has adequate fuel and is running correctly.

You should be able to hear the sound of the compressor building up pressure.

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is compressor outlet valve opened

Outlet valve open.

The compressor outlet valve should be opened position as shown in the photo. (Valve knob along the pipe line).

If the valve is not open turn the tap to the correct position. This should be in line with the air delivery line.

Tap shown in open position.

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is there pressure in the reservoir?

Pressure displayed on screen and reservoir gauge

Pressure can be read from digital screen and/or pressure scale from reservoir.

If you just turn on the compressor after draining the reservoir or from an empty reservoir, pressure in reservoir may be low or empty.

If the compressor is on, the reservoir gauge should indicate pressure is building up.

Wait for desired pressure **(6 Bar).**

Compressor restart procedure instructions:

1. Turn off the compressor
2. Drain the compressor tank by opening the outlet valve
3. Start the compressor and build up the pressure again

- If pressure still not building up, it could indicate a faulty compressor. Review air compressor manual or contact to your compressor supplier.

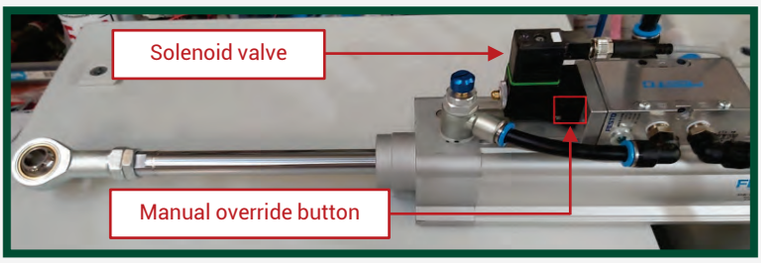
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

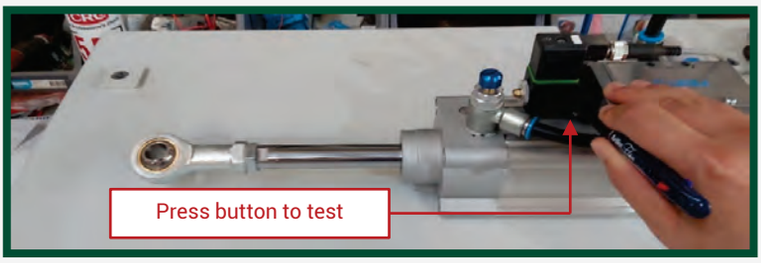
TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is the furthest solenoid working?



WARNING PRESSING THE MANUAL OVERRIDE BUTTON SHOULD CAUSE PNEUMATIC CYLINDER TO MOVE.



Cylinder in closed position

Test manual override function.

To check this, air should be on.

Once you press the manual override button on the solenoid valve, cylinder (gate) will be moving to the opposite position.

Therefore, please take every precaution that you or others are not in a position which can cause injury with a gate or cylinder closing.

1. Check the farthest one from the compressor. If it works, it means air distribution is working.
2. If the farthest one is not working, check other solenoids to determine where the “blockage” might be.

IMPORTANT

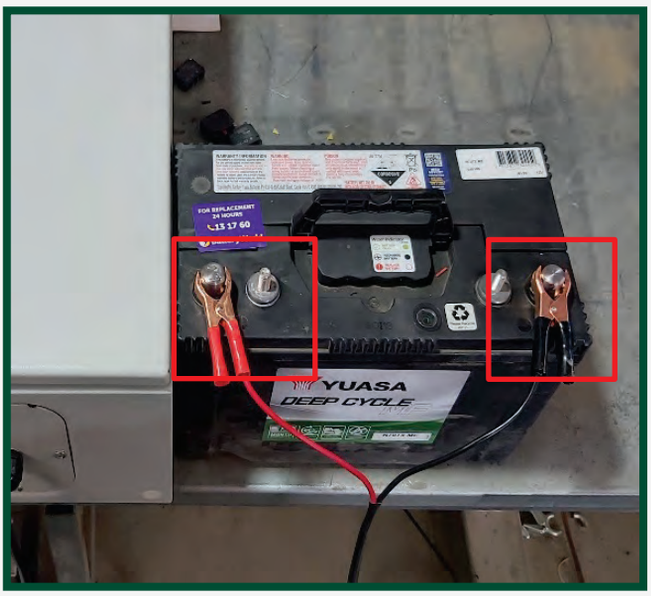
ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is control box connected to a power supply?

WARNING: Before re-connecting power, ensure air supply has been turned off and people/livestock are clear of all moving components.



Properly connected 12V battery

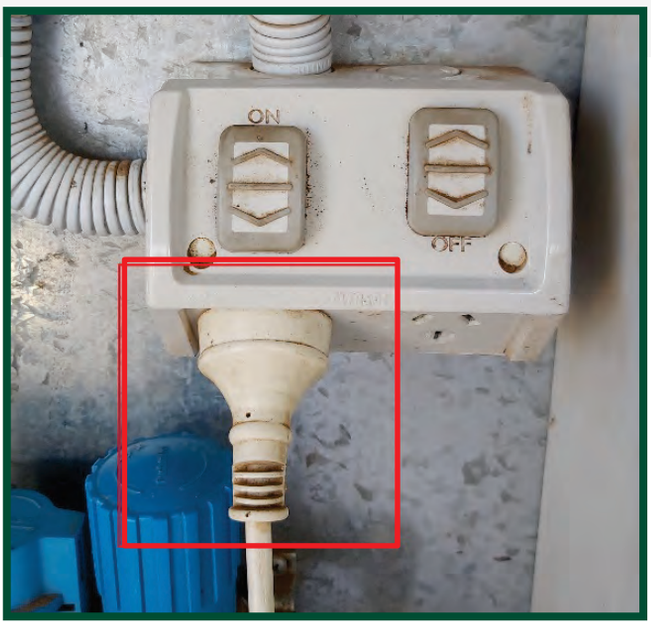
Connect the power supply as per the original installation.

For 12V systems connect:

- **Red alligator clip to positive terminal**
- **Black alligator clip to negative terminal**

For 240V systems connect:

- **Power cable to power outlet.**
- **Turn on power.**



Properly connected 240V lead

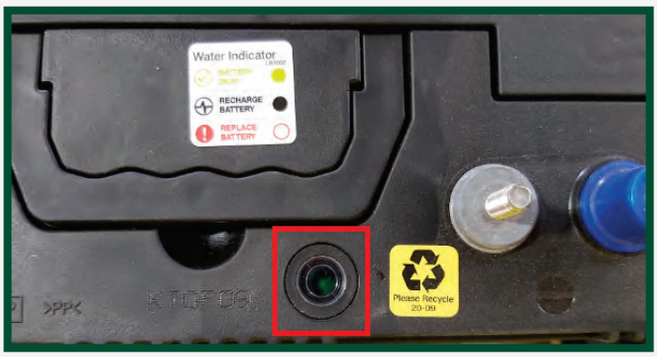
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is 12V battery charged?



Charge indicator

Checking charge with multimeter

Some 12V batteries have an indicator which shows the state of the battery.

This battery indicator shows green which means the battery has charge.

You can check voltage in the battery by using a multimeter.

Fully charged 12V battery should show 12.6+V (Around 12.7-13.2V)

Charge 12V battery if it is flat or faulty:

Make sure battery is fully charged showing over 12.6V on multimeter. If battery will not charge it may be faulty. Replace with a new 12V supply.

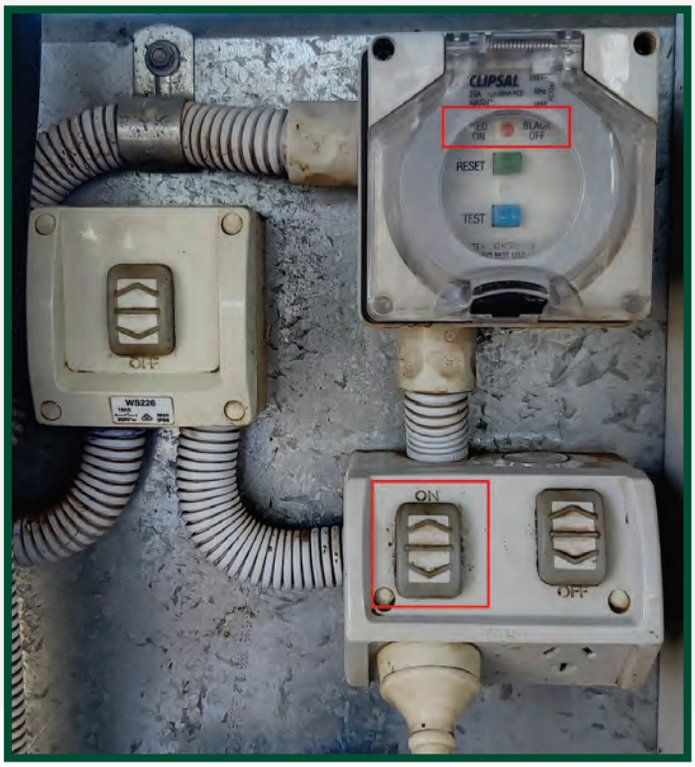
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

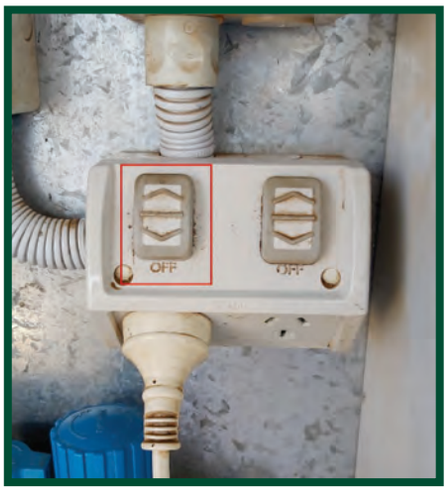
Is 240V mains power on?

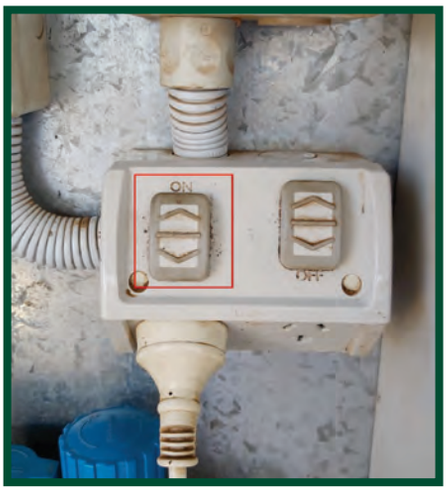


Power and mains supply on

Make sure that 240V switch and 240V power supply are on.

If the power supply is turned off, turn the power on.





If the main power is off, turn it on.

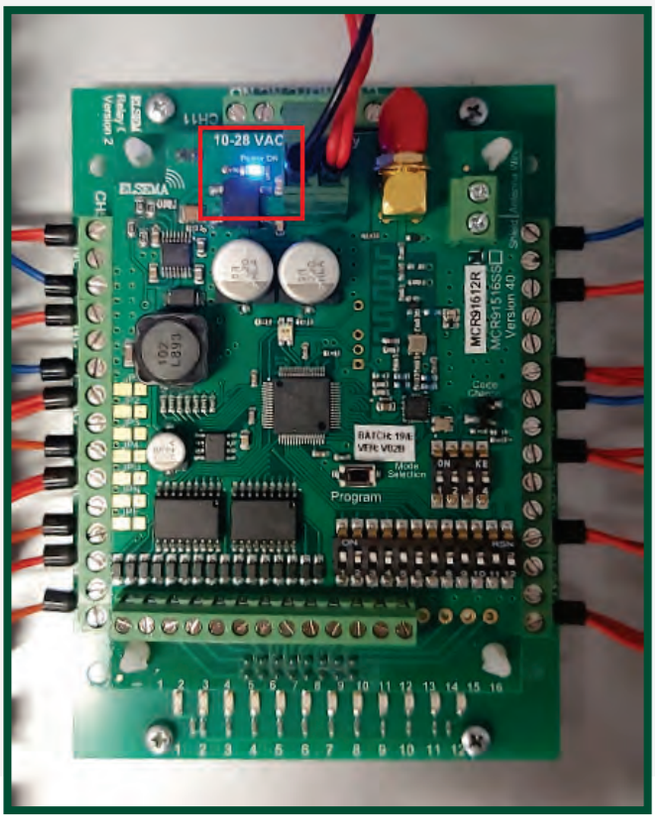
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is LED light on Elsema card?



When 12V battery has power, LED light on Elsema card should be lit.

If there is no light on Elsema card check polarity of battery.

(**Red is +** and **Black is -**)

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

No light on Elsema card

Step 1.) If 12V battery is used, check correct polarity of battery.

(**Red is +** and **Black is -**)

Step 2.) Check 12V across input terminals of Elsema card with a multimeter.

- If 12V are not shown, tighten the wires fitted into socket and make sure +/- plug is properly inserted into Elsema card.
- If 12V is still not shown, go to Step 3
- If 12V is shown, and there is still no blue light showing. Then Elsema card could be faulty.

In this case, please contact ProWay on: 1300 655 383

Step 3.) Check 12V crossing power terminals.

If 12V is not shown:

1.) Tighten the terminals

2.) Check the power cables between terminals and battery (with multimeter.) If a cable is faulty it needs to be replaced.

3.) Remove the rubber cover and check alligator clips are connected properly with cables.

If 12V is shown on terminals but not Elsema card:

Check cabled between Elsema card and power terminals. If a cable is faulty, it needs to be replaced

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Is LED light on 240V/12V power supply?

There should be a green light on the power supply.

If there is no light on 240V/12V DC power supply even though main 240V is on, the power supply could be faulty.

In this case, please contact ProWay on: 1300 655 383

WARNING: 240V power supply should only be serviced by qualified person

Failure to observe may result in personal injury, death or equipment damage.

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

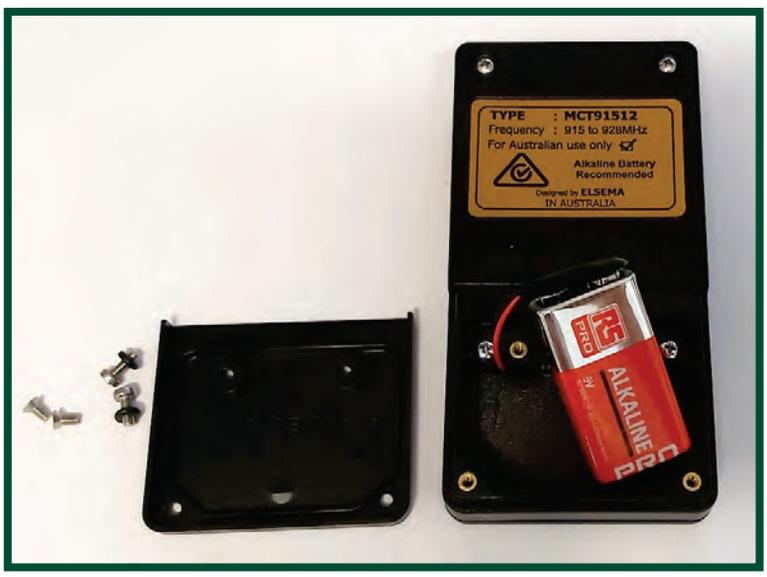
Does red light turn on when transmitter button is pressed?

Light should be on when a button is pressed as shown in the photo.

If no light is showing at the top of the transmitter, replace battery with a new 9V battery.

If there is still no light after changing battery, transmitter could be faulty.

In this case, please contact ProWay on: 1300 655 383



IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Do lights turn on the Elsema card when transmitter button is pressed?

Light on the Elsema card should be lit when a button on a transmitter is pressed as shown in the photo.

If it is a new transmitter, it may need to be synced to the Elsema card.

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

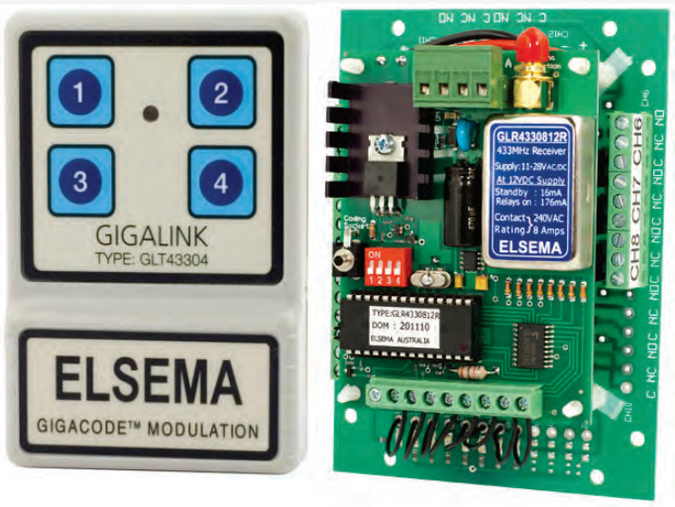
If no resolution refer back to **page 10 & 11** | Flowchart

Sync the new transmitter with the receiver card

There are two common types of transmitters used for ProWay pneumatic equipment.

Depending on your equipment you will have one of the below:

433 GIGALINK (See page 28)



MCT 915 (See page 29)

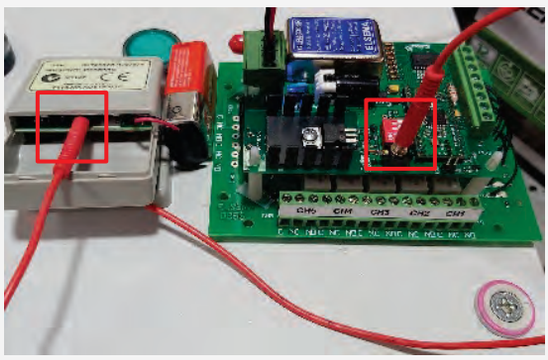
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

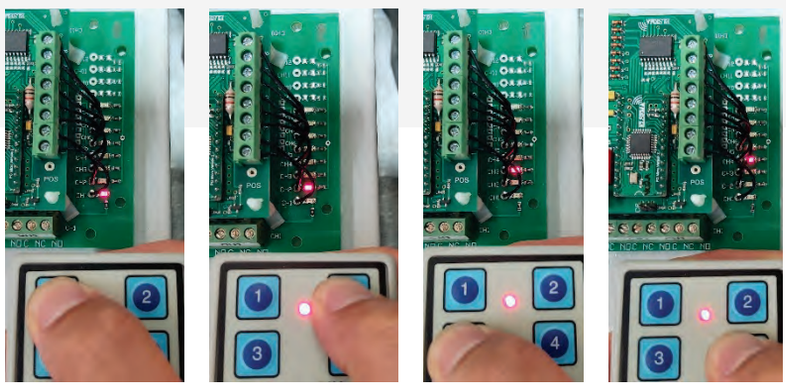
433 GIGALINK SETUP



1) Connect the red cable between transmitter and receiver. Power on the receiver. Ensure a 9V battery is in the transmitter.

2) Light of transmitter should be on, which means it is now programming mode.

3) Press any two buttons and hold for 1-2 seconds. You will see the light blinks twice, which means it is now programmed.



4) Remove the red cable. Press buttons on transmitter to see lights on receiver (Elsema card) come on.

If lights on the Elsema card are still not visible when buttons are pressed, please contact ProWay on: 1300 655 383

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

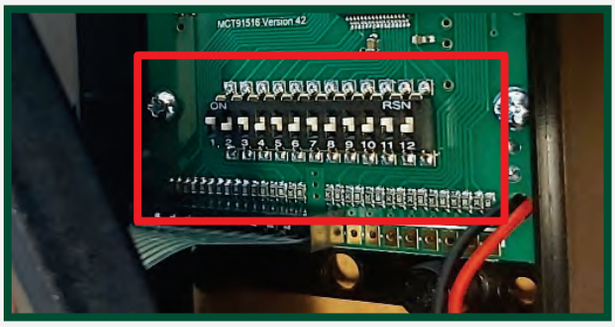
If no resolution refer back to **page 10 & 11** | Flowchart

MCT915 Syncing using dipswitches

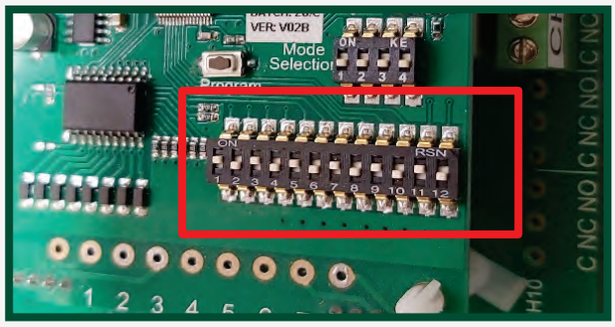
The positions of dip switches from both transmitter and receiver should be same.

For example, the example transmitter and receiver pictures show:

1	2	3	4	5	6	7	8	9	10	11	12
Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down



(Transmitter)



(Receiver)

If lights on the Elsema card are still not visible when buttons are pressed, please contact ProWay on: 1300 655 383

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

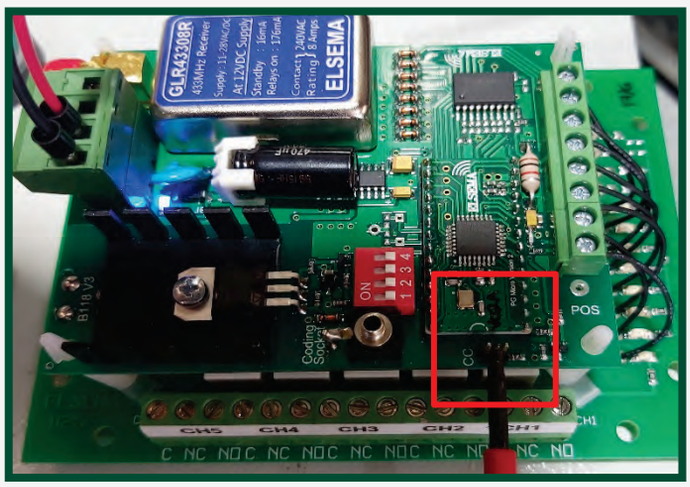
If no resolution refer back to **page 10 & 11** | Flowchart

Test system with another transmitter

If another transmitter is working, then the “not working” transmitter may need to be synced.

If no transmitters are working, then you may need to resync the transmitter(s) with receiver.

Short out CC (Code Changing) pins on receiver by using a screwdriver to give a random code in the receiver.



433 GIGALINK (See page 28)

MCT 915 (See page 29)

Note: This will stop any existing transmitters which may have been connected from working with this receiver. All transmitters will then need to be synced with the steps outlined for the appropriate transmitters.

* If there is still no light visible on the Elsema card when the transmitter buttons are pushed, there may be a fault with the receiver or bad connection. Contact ProWay

IMPORTANT

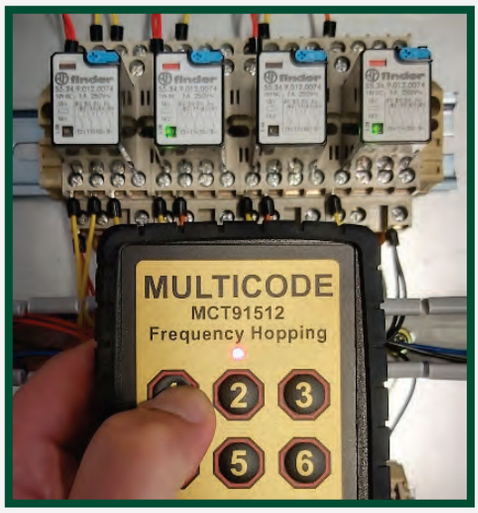
ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

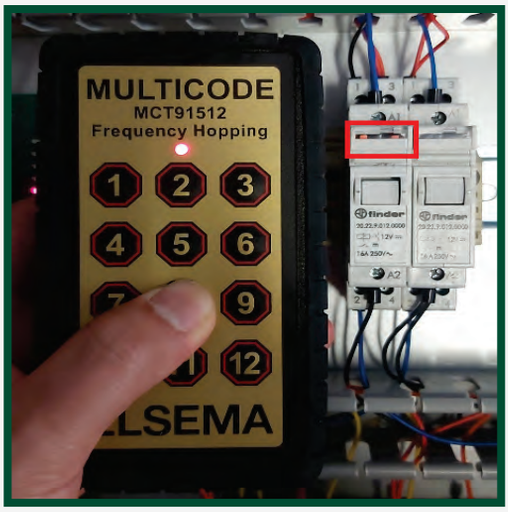
If no resolution refer back to **page 10 & 11** | Flowchart

Do other PCL/Relay lights come on as buttons are pushed?

Light on PLC after input



Light on PLC after input Ice Cube LED and Flag



Latching relay change state

If there is no light visible on the relay when the transmitter buttons are pushed, there may be a fault with the receiver or bad connection.

In this case, please contact ProWay on: 1300 655 383

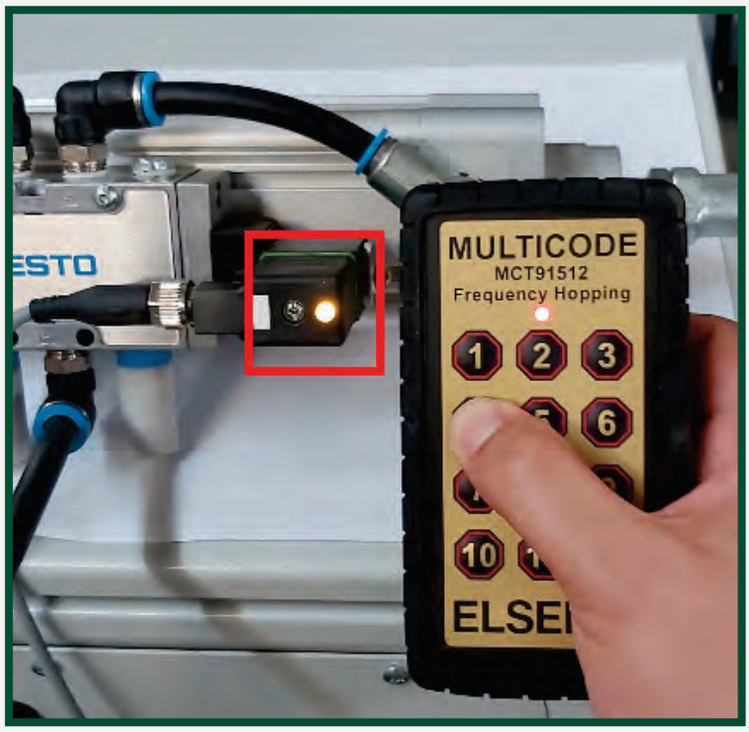
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Do individual solenoids operate when buttons are pushed?



When the button for the gate is pressed on the transmitter, check that the small LED is turning on at the solenoid.

There should be a clicking sound at the solenoid.

* If there is no light visible on the solenoid a multimeter is required to identify the fault.

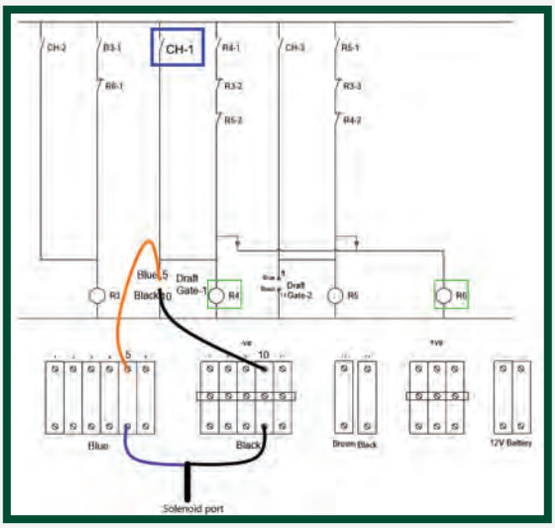
IMPORTANT

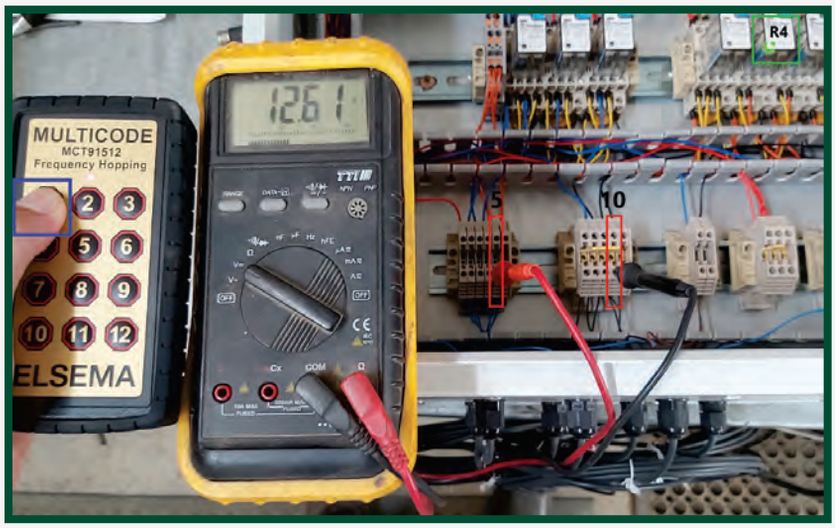
ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Single solenoid not working





* These are general schematic and control box picture which may not be applicable to your system

To check that solenoid gets a signal from the control box (relays), a multimeter is required.

For example, the schematic shows that when CH-1 (Button1) is closed(pressed), Draft gate-1 gets a signal while R4 and R6(Relay4 and 6) on.

To check there is a signal going to solenoid, use a multimeter to measure voltage between socket 5 (+, positive) and 10 (-, negative) shown in the schematic and picture.

Touch red jack to terminal 5 and blue jack terminal 10 (It can be the other way; it will just show negative value).

When you press the button on the transmitter, it should show 12V in the multimeter.

12V is shown	Solenoid cable could be faulty. Check the cable for damages and replace the fault cable
12V is not shown	Check the wires fitted in the sockets properly and tight them up.

If there is still an issue, please contact ProWay on: 1300 655 383
.

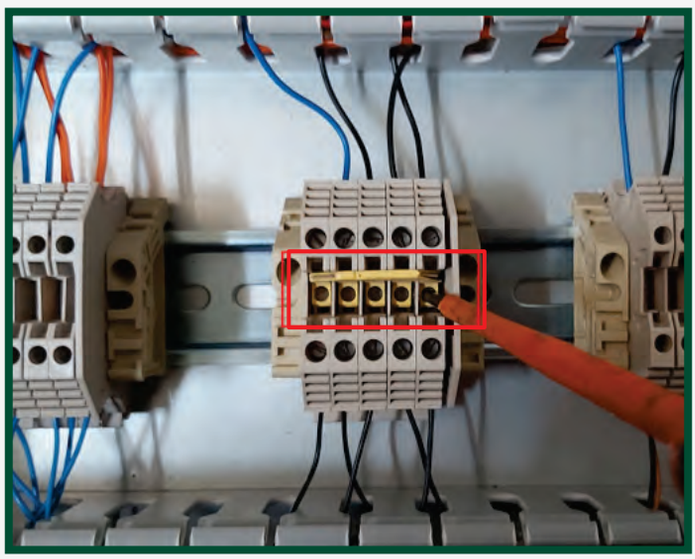
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Most of the solenoids not working



If there is no operation on any solenoid, then likely cause is a fault with the negative (-) terminated bar.

Please check the wires fitted into socket properly and tight up the bridge shown in the picture.

If there is still an issue, please contact ProWay on: 1300 655 383

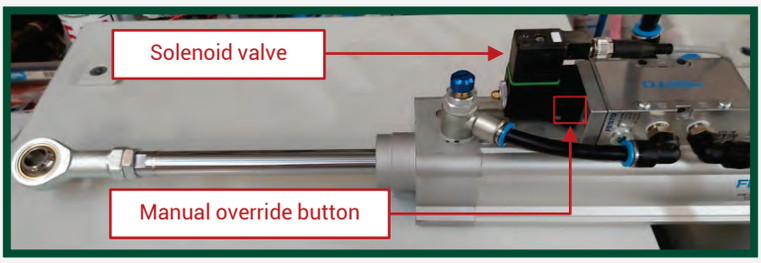
IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

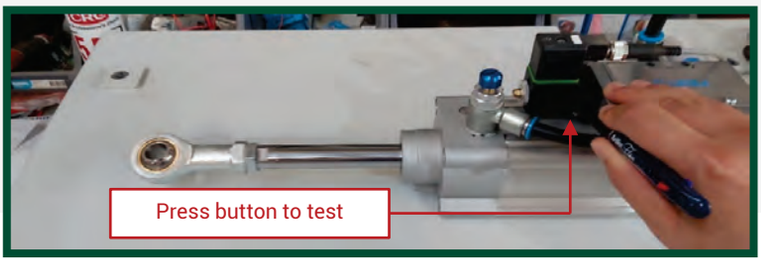
TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Does manual override button work?



WARNING PRESSING THE MANUAL OVERRIDE BUTTON SHOULD CAUSE PNEUMATIC CYLINDER TO MOVE.



Cylinder in closed position

To check this, air must be on.

Once you press the manual override button on the solenoid valve, cylinder (gate) will be moving to the opposite position.

Therefore, **please take every precaution that you or others are not in a position which can cause injury with a gate or cylinder closing.**

1. Check the farthest one from the compressor. If it works, it means air distribution is working.
2. If the farthest one is not working, check other solenoids to determine where the “blockage” might be.

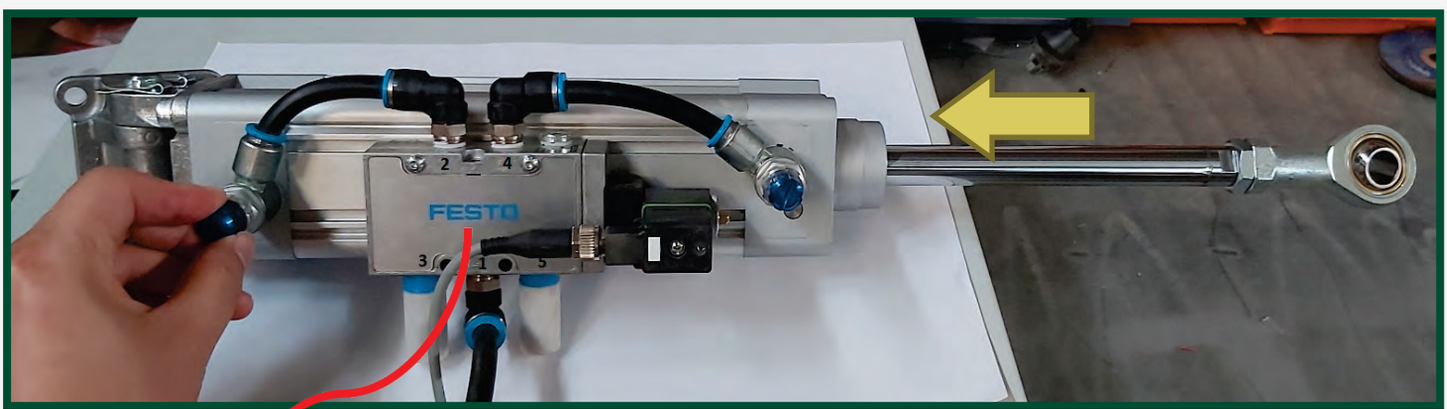
IMPORTANT

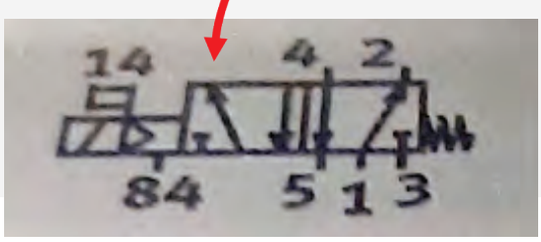
ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Gate operating slowly: Adjusting speed controller





* This is general schematic which may not be applicable to yours.

When the gate is opening too slow or too fast, you can adjust the speed controller.

In the above schematic, it shows that air goes from port 1 to 2, and then leaves port 4 to 5 in normal position.

The picture shows normal position of the cylinder. If you turn speed controller clockwise on the port 2 as shown in the picture, It will decrease the retracting speed of the rod. Anti-clockwise will increase the retracting rod speed.

If you want to control the speed of extending the rod, adjust the speed controller on port 4 side.

* If there is still an issue with cylinder speed, go to next page

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

Individual gate malfunction - Possible Issues

Case 1.
Faulty Air Hose

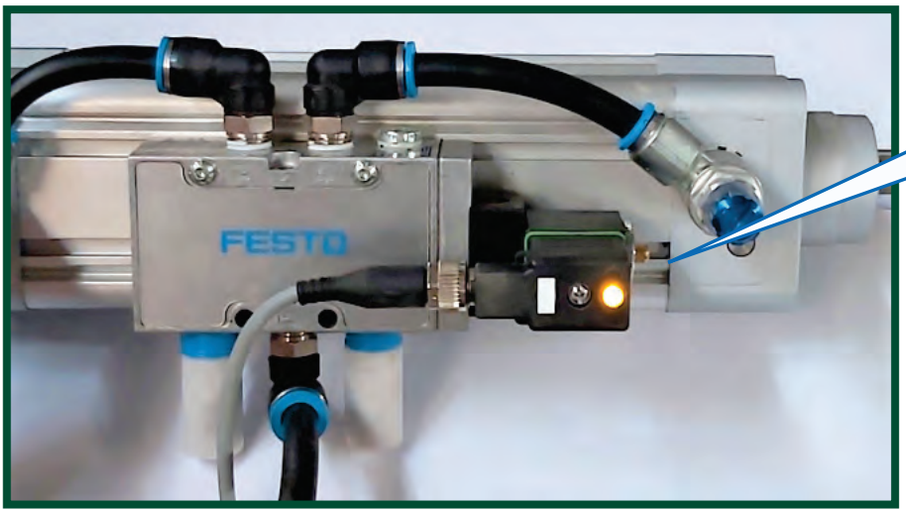
Inspect the air hoses that they are not kinked or folded which may stop the air flow.

If not solved yet. Go to next Case

Case 2.
Solenoid valve corroded internally

The internal components of the valve may be stuck. With the air turned off, you should be able to hear and feel a small click as the shuttle valve responding to the coil turning on and off.

If there is no click when the coil in energized then the valve is likely to be corroded or faulty and will need replacement.



Should be able to hear "Clicking" sound from solenoid

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

* If there is still an issue with cylinder speed, go to next page

Individual gate malfunction - Possible Issues

Case 3.
Mechanically seized

Carry out the following steps to determine if there is another problem which is causing the gate not to operate

1) Turn off the air supply
2) Bleed air from system (Operate gates using transmitter until the gate no longer moves)
3) Disconnect the airlines between the valve and the cylinder
4) Can the gate now be moved by hand? Are the hinges stiff or frozen? If it appears to be the cylinder then mechanically disconnect it from the gate. Does the gate now move freely? If yes, the cylinder is at fault. It may be internally seized or bent cylinder rod.

In either case the cylinder will need to be replaced.

For a replacement cylinder please contact ProWay on: 1300 655 383

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

* If the cylinder and hinges are functioning well go to next page.

Individual gate malfunction - Possible Issues

Case 4.
Solenoid valve blocked with water

In some cases, where large amounts of water get into the compressed air system the water may migrate through the air lines and “pool” in the low spots. This can cause the cylinder to be filled with water which will affect the cylinder movement and operation of the solenoid valve. To check this, carry out the following;

1) Turn off the air supply
2) Bleed air from system (Operate gates using transmitter until the gate no longer moves)
3) Disconnect the two airlines from the cylinder as shown in the picture.
4) Move the gate by hand and see if water comes out of the cylinder.
5) Turn the air back on. **Note:** Air should escape violently from one of the hoses which were disconnected if it is a simple solenoid valve shown as the picture.
6) Operate the solenoid for the gate concerned. Again, note that the disconnected airlines may move violently.
7) Take note if water came out. If it did then the system can be reconnected and test again for correct operation.
8) If air did not escape violently from the airlines when the valve is operated then the feed airline is blocked or the valve is faulty. (New valve required)

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

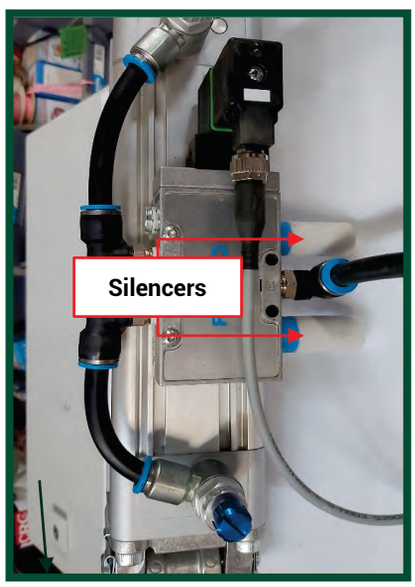
Individual gate malfunction - Possible Issues

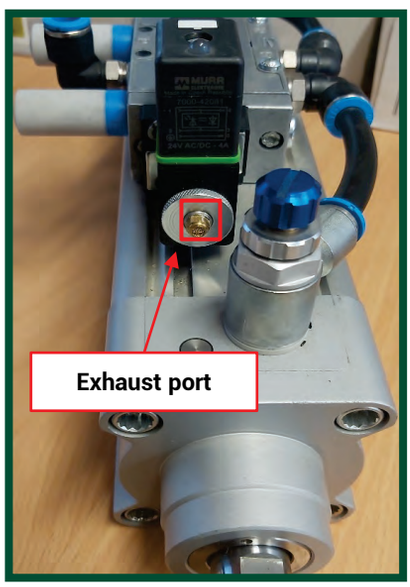
Case 5.
Plugged exhaust ports

Usually on each of the solenoid valves, there are exhaust silencers. Over time these may become blocked with atmospheric dust which can cake on the silencer and restrict the air flow. This can be tested by removing the silencer.

In areas at low temperatures, the rapidly expanding exhaust air can freeze moisture on the exhaust silencer which blocks it with ice which inhibits performance. This will usually occur after the gate has operated a few times. May need to remove the silencer to continue operation.

There is a small exhaust port on the end of the solenoid coil mounting shaft. This allows the pilot operated valve internal shuttle to operate. This may become blocked by insects such as mud wasps. This will result in slow or no valve operation. There is usually a small brass filter plug in the end of the shaft to prevent this. It may be possible to clear the blockage using a spray of penetrating oil and a small nozzle.





IMPORTANT

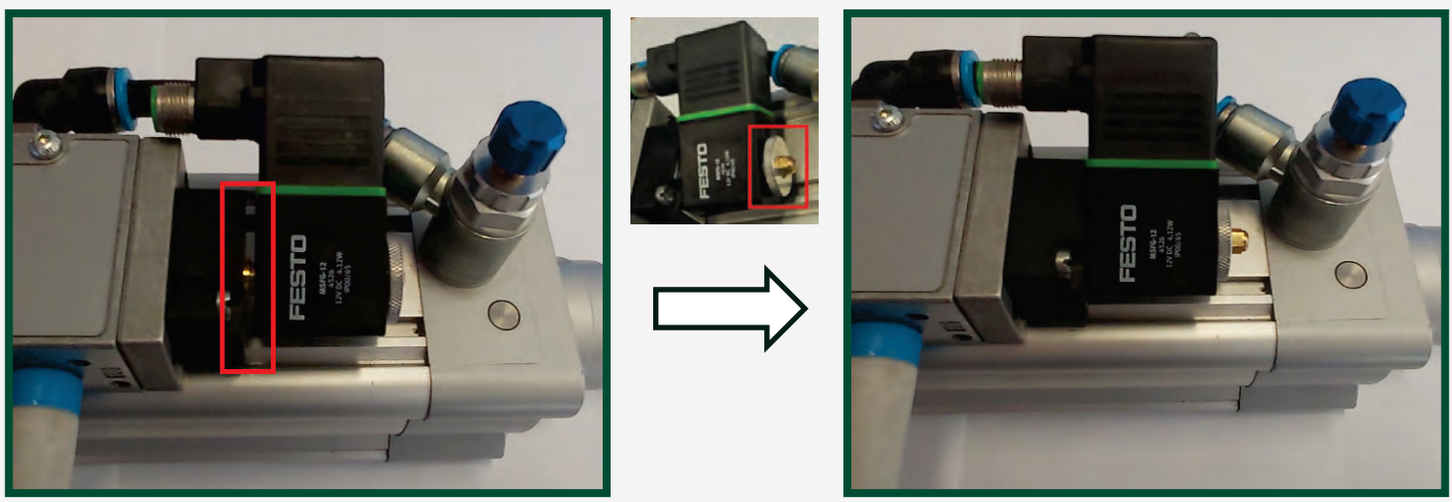
ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

* If the fault is not yet resolved, please contact ProWay on: 1300 655 383

Make sure coil (solenoid) is correctly fastened



If there is a gap between solenoid and holder as shown in the picture, tight the nut to sit coil (solenoid) properly on the holder.

If the solenoid does not make a clicking sound, it could be faulty (Internally seized).
Please contact ProWay on: 1300 655 383

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

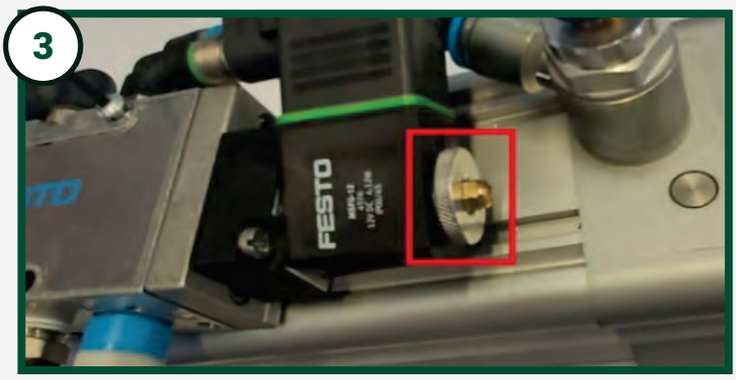
If no resolution refer back to **page 10 & 11** | Flowchart

Use coil (solenoid) from a gate which is operating on a spare

1

2

3



4

Carry out the following steps to determine if there is another problem which is causing the gate not to operate.

1) Unscrew bolts to dismount valve from cylinder if there is not enough space for solenoid to be removed
2) Tilt valve to give space for solenoid to be uninstalled
3) Unscrew nut
4) Test the spare coil to verify it works

If a spare coil (solenoid) is working, the previous coil is faulty. Contact ProWay to replace the coil.

If a spare coil (solenoid) is not working, it could be faulty solenoid cable. Check the cable for damages and replace the faulty cable.

If there is still an issue, please contact ProWay on: 1300 655 383

IMPORTANT

ENSURE OPERATOR, PERSONNEL AND LIVESTOCK ARE NOT IN PROXIMITY TO MOVING PARTS

TEST

If no resolution refer back to **page 10 & 11** | Flowchart

COMMON PARTS INDEX

For replacement parts and materials, please note any visible part codes and take a photo of the faulty component.

Pneumatic Cylinder

Converts compressed air into linear mechanical force and motion. Consists of a movable element such as a piston and a piston rod, plunger or ram, operating within a cylindrical bore. Most cylinders will have two sensor slots. Universal FESTO cylinders are used throughout ProWay products.

Numerous variants with key information are usually listed on cylinder housing including:
Item Code: eg: DSBC-40-200-PPVA-N3 (1376663)
Diameter: (Varies) 32, 40, 50, 63, 80, 100, 125 mm
Stroke length: Length of piston extension (Varies) 1 - 2000 mm
Force: (Varies) 483 - 7363 N

Fittings

Common connections (fittings) and line connecting components with push-in, threaded and barbed fitting connection.

Typical shapes of push-in fittings and connectors include straight, L, T, X and Y.

The convenient fitting system includes well over 1000 types of standard and function fittings.

Gauges and Regulators

Gauges control the air pressure delivery to the system. A regulator that transforms a fluctuating air pressure supply to provide a constant lower pressure outlet.

Desired pressure (usually 6 bar) should be read in the pressure scale of the regulator when compressor is functioning correctly.

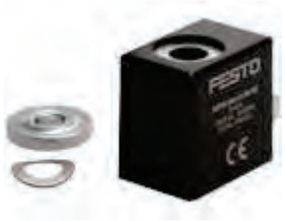
Application-specific control valves

Electrically and pneumatically actuated directional control valves may be installed as part of your system.

These are installed to direct and control flow rates and are suited to 12V and 240V systems.

There are varied pressure and control parameters depending on product function. Numerous variants, part numbers and key information are usually listed on valve housing.

Solenoid Valves and Coils



A solenoid valve is an efficient method of converting electrical signals into pneumatic functions. Applying electricity to the solenoid quickly directs air through the valve and into the circuit.

Replacement solenoid coils for pneumatic control valves are needed when the electric solenoid in the valve control system wears out or breaks.

Hoses, pipe and tubing

Depending on your system there will be a combination of air hoses and pipe installed to deliver air throughout the facility.

Various materials, diameter and operating pressure air lines are used throughout the system and it is important to only use properly rated and fitted hoses, pipe and tubing for optimal product function.

In the case of kinks, splitting or damage to air lines contact ProWay for replacement.

Wireless transmitters and fixed button controls

ProWay install fixed and wireless Elsema transmitters for pneumatic systems depending on the required functions. Wireless transmitters require a 9V battery to operate, while fixed buttons are hard wired.

Wireless transmitters are available for one up to 16-channel programming.

Spare and replacement transmitters can be supplied for multiple users.

Receiver card

ProWay use Elsema receivers for wireless pneumatic systems as they are Versatile and easy to install, these receivers are designed to stand the test of time. In most cases wireless pneumatic equipment will run via a single receiver.

Depending on your system you will likely have a 433 Gigalink or MC 915 receiver installed.

Control Box

At the heart of the pneumatic facility the “control box” which relays signals to the air valves and cylinders.

ProWay control box systems include switchboards and receivers which are mounted in a dust and waterproof housing. This control box should remain closed at all times to avoid damage and corrosion to electrical components.

AIR COMPRESSOR MAINTENANCE CHECKLIST

ProWay advise to refer to your air compressor manual for best maintenance guidelines, however the following checklist offers generic maintenance advice for 240V compressors.

Air Compressor Maintenance Checklists

For best long term maintenance and to ensure your entire system is working correctly it is best to setup a maintenance schedule for your compressor. Over time, you'll need to inspect the pump oil level, change pump oil and potentially the air filters depending on frequency of use.

Before undertaking maintenance:

- ☐ Disconnect the unit from its power source
- ☐ Ensure compressor has not been running to avoid being burned by hot engine components
- ☐ Make sure compressor is on a flat surface

Typically, regular checks and associated basic maintenance should include:

- ☐ Check lubricant levels
- ☐ Check for leaks around seals and gaskets
- ☐ Change the lubricants as required
- ☐ Change the filters as required
- ☐ Inspect air filters and suction strainers
- ☐ Inspect and clean the crankcase breather on reciprocating compressors
- ☐ Where an intercooler is fitted, inspecting the moisture drain
- ☐ Check operation of the intercooler relief valve if applicable. The valve is designed to stop the intercooler from rupturing, should the second-stage inlet valves fail.
- ☐ Check and clean the compressor cooling fins on reciprocating compressors
- ☐ Periodical checks of inlet and outlet valves on reciprocating compressors
- ☐ Check vee belts for tension and condition
- ☐ Check for perished hoses or cracked discharge pipes
- ☐ Check pressure regulation systems and unloading systems

To prevent an increase in air delivery temperature, inspect and clean heated surfaces (for example, those of intercoolers and water jackets) regularly. A suitable interval should be established in the maintenance schedule for cleaning operations on every machine.

Preventative Air Compressor Maintenance Schedule

Depending on frequency of use this may be daily, weekly and monthly. Keep a log of maintenance performed to keep track of service history and prompt future checks prior to issues arising.

ProWay recommend dealing with a professional supplier and/or technician to ensure long term reliability and quality air delivery.

EXAMPLE SERVICE & MAINTENANCE LOG

Maintenance for normal operating conditions

Date: _____ Previous service date: _____ Estimated plant and equipment hrs: _____

Operator/technician: _____ Property Name: _____

SERVICE	Y/N	ACTION / COMMENT
Compressor		
Check replace compressor oil and filters		
Inspect moisture drain and drain reservoir as required		
Check compressor belts for tension and condition		
Check power supply for compressor and system		
Pneumatic System		
Check hoses for air leaks, blockages or signs of wear		
Check hoses and electrical leads are securely fastened		
Ensure oil levels are correct on airline lubricators		
Ensure compressor is running correctly		
Ensure main delivery regulator gauge reads 6 bar		
Check condensation traps for build up and ensure closing properly		
Check/replace transmitter battery (keep spares)		
Check cylinders for signs of damage and ensure mounts are stable		
Check safe operation of all pneumatic products		
Check products are preforming normal action/no noise when in use		
Check products are opening at normal/required speed		
Ensure clean workplace free of hazards to staff and livestock		

PRODUCT WARRANTY

ProWay Livestock Equipment and facilities are covered by a 12-month warranty against workmanship and/or materials from date of practical completion. For standalone products which are delivered in working condition, the warranty period commences from date of delivery.

Scheduled maintenance of ProWay products and facilities is recommended and will ensure many years of safe and efficient stock handling. With the correct site preparation and recommended professional installation, our products and facilities can be expected to last for generations. Should you experience a defect with a product or component within the warranty period, please cease ongoing use and contact your ProWay representative for assistance.

In the case that the fault is deemed under warranty, ProWay will replace and repair the issue on site or provide adequate materials and instructions to resolve the issue.

All steel and structural materials used are to the standard shown in the test certificates and comply with the relevant Australian Standards. Upon request, copies of the test certificates can be provided. In the case of extreme corrosive environments such as coastal locations, ProWay recommend a higher level of protection and maintenance is required to ensure greater longevity.

For service and repairs outside of the warranty period, ProWay will advise on practical actions required to rectify issues in a timely manner.

Workmanship

ProWay offer a 12-month warranty against workmanship and material failure on goods manufactured by ProWay. This excludes damage caused from unsuitable or unintended use i.e. vehicles or machinery colliding with equipment, modifications made subsequent to ProWay installation by a third party. Any defects deemed within the warranty period will be repaired if possible or replaced as required.

ProWay Fittings and Hardware

From date of practical completion and/or supply of standalone equipment, ProWay offer a 12-month warranty on steel, fittings, hardware and components installed or supplied as part of ProWay stockyards and equipment. Any defective items will be replaced in line with the terms and conditions outlined in the project summary sheet.

External Product Supplier Warranties

Some ProWay products including hydraulic, pneumatic, motorised and remote solutions include parts sourced from external suppliers. ProWay endeavour to source high quality and reputable components from external suppliers. This affords ProWay certain manufacturers' warranties in relation to those goods. The benefits of these warranties are passed on to our customers as required.

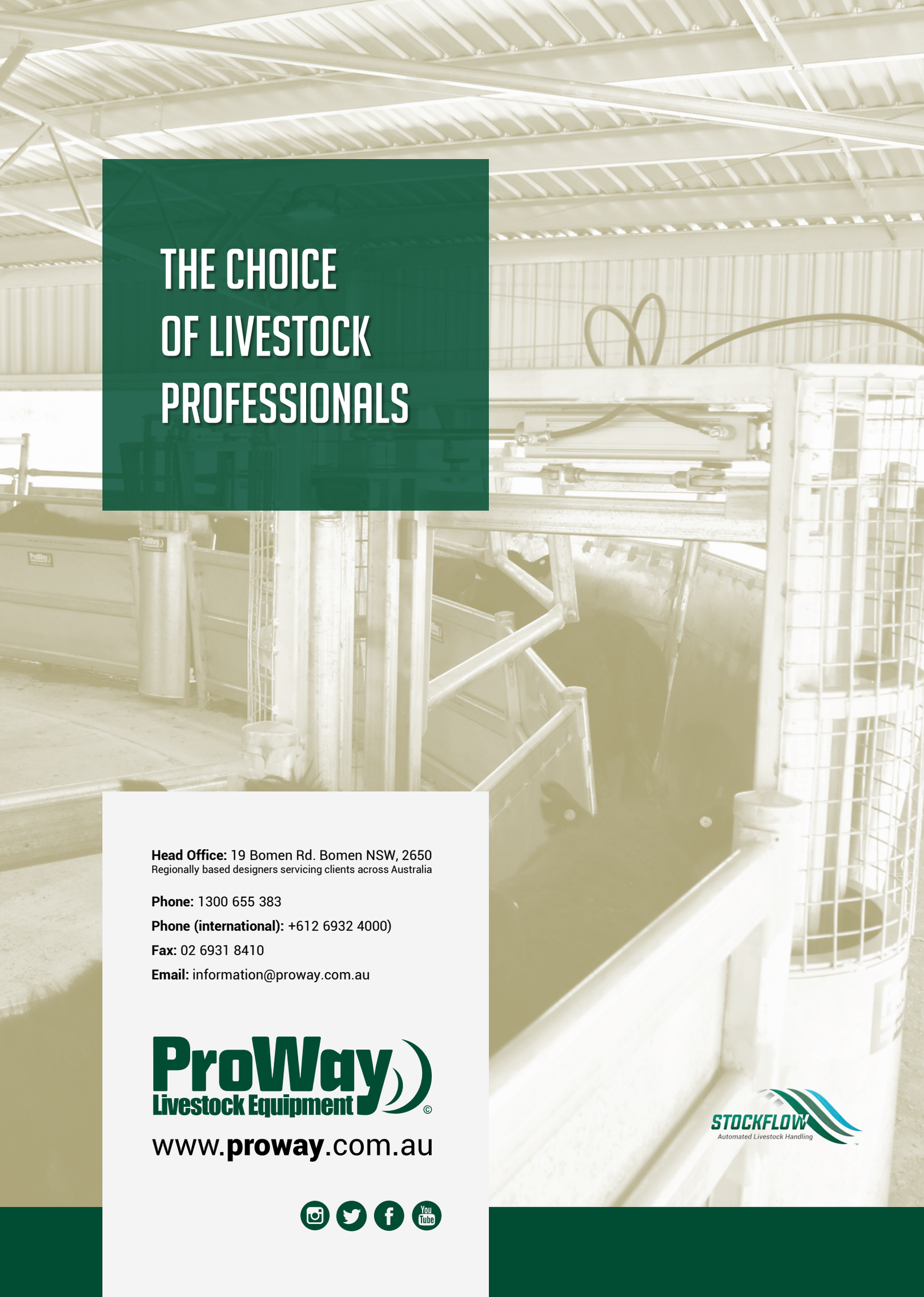
Product Defect Clause

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

You are also entitled to choose a refund or replacement for major failures with goods. If a failure with the goods does not amount to a major failure, you are entitled to have the failure rectified in a reasonable time. If this is not done, you are entitled to a refund for the goods. You are also entitled to be compensated for any other reasonably foreseeable loss or damage from a failure in the goods or service.

All correspondence to ProWay Livestock Equipment Wagga Head Office, PO Box 85, Wagga Wagga NSW 2650
ABN 64 071 312 804 Phone 1300 655 383 Fax 02 6931 8410 Email information@proway.com.au

Notes



THE CHOICE OF LIVESTOCK PROFESSIONALS

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STOCKFLOW Automated Livestock Handling ™