

SPRAYING TECHNOLOGY SINCE 1997



FIRE GATE BOXES

AIR TRACTOR AIRCRAFT

INSTALLATION INSTRUCTIONS



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ZANONI[®]
EQUIPAMENTOS

ZANONI GATES

Made of stainless steel, the second generation of Zanoni Equipamentos gates offers a simpler and more precise operation, with an electro-hydraulic drive system. One of its main differentials is the flexibility it gives to the aircraft: as it is not necessary to uninstall the spray system for its use, there is no headache to change equipment, allowing traditional activities of aerial application to be carried out without problems. In addition, with the opening adjustment system, it also allows the pilot to pour a consistent and controlled amount of flame retardant into the fire zone and also allows the dispersion of solids for use in the crop field.

Operating with this product line since 2006, Zanoni Equipamentos has dozens of gates in operation throughout Brazil and also in other countries in South America, where the company has been standing out as the main supplier of this type of equipment. The company has also been working together with foreign partners to develop new technologies in this product line and offer the best quality in different countries. Some of them are already in testing and the equipment is constantly evolving to offer the best possible technology for pilots.. In addition to our customers operating on Brazilian air, we have intensified the joint work with our neighbors with the exchange of experiences and reciprocal support. Aircraft with Zanoni gates are already operating in countries such as Paraguay, Argentina, Bolivia and Chile.

This document contains some instructions for installation of the gate on the AT 402, AT 502, AT 602 and AT 802 aircraft. For more technical information about the product, contact the Zanoni team.

Videos and reports on the operation of the Zanoni gate can be accessed on our YouTube channel or on our website:



INTRODUCTION

The gate is a device that allows the quick dumping of the aircraft hopper, being fixed below it through a flange. Through the dumping of the hopper, it is possible to carry out a flame retardant discharge over the desired area, contributing to the fight against fires. In addition to its use for this activity, the gate can also be used in agriculture for the dispersion of solids over crops, such as fertilizers and seeds.

The Zanoni gate is moved by an electro-hydraulic plant that is installed together in the aircraft and has a magnetic sensor that allows the regulation of the amplitude of its opening.

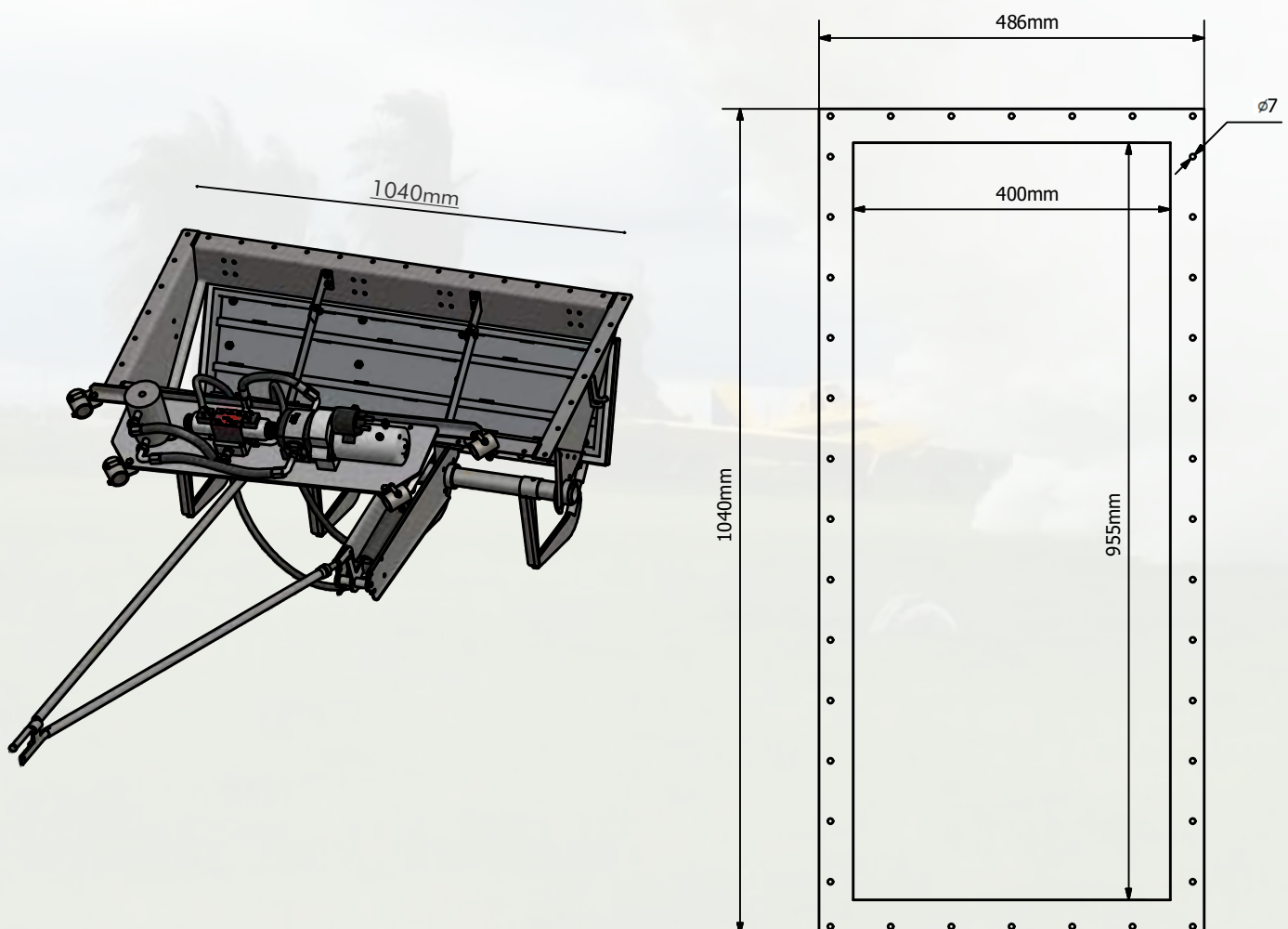
This document provides instructions for installation on Air Tractor 402, 502, 602 and 802 aircraft. The images contained here are merely illustrative, given that each aircraft has its own characteristics. For more information on this product line, consult the technical team of Zanoni Equipamentos.

The instructions must be read in full before carrying out any technical intervention on the equipment.

TECHNICAL SPECIFICATIONS

WEIGHT:

- Gate: 36,39 kg;
- Hydraulic plant: 15,21 kg;
- Complete set: 51,60 kg.



FIRE GATE BOX
W/ ELECTRO-HYDRAULIC DRIVE
 AIR TRACTOR AT 402 and AT 502 (Z 40208H)
 AIR TRACTOR AT 602 and AT 802 (Z 80208H)
 THRUSH 510 (Z 51008H)



Image for illustrative purposes (there are some slight variations in the gate models for each aircraft).

ELECTRO-HYDRAULIC PLANT
 Z 40208H-03

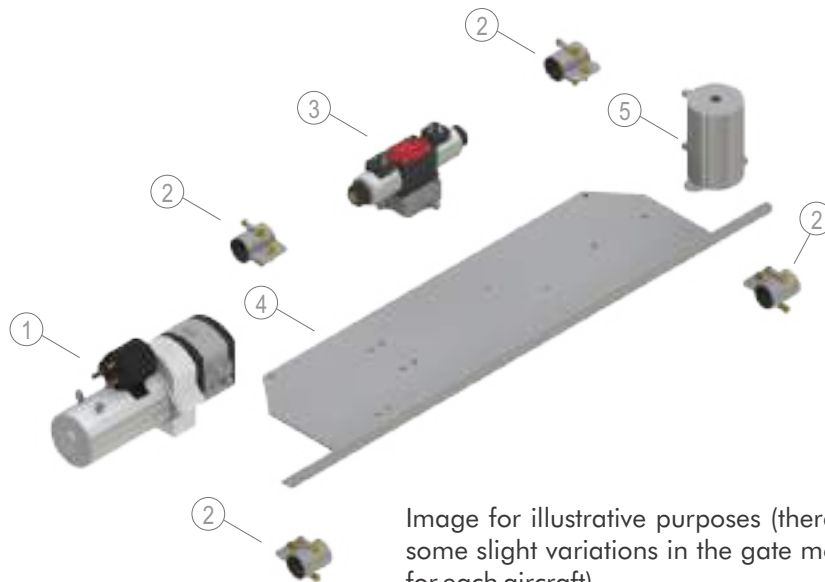


Image for illustrative purposes (there are some slight variations in the gate models for each aircraft).

ITEM	PN	PRODUCT
1	Z 40208H-03-01	ENGINE
2	Z 40208H-02-11	CLAMP
3	Z 40208H-02-02	DIRECTIONAL VALVE
4	Z 40208H-02-04	BASE
5	Z 40208H-02-03	HYDRAULIC RESERVOIR



Fork Joint
Z 40208H-01-11



Rod for Manual Dumping
(for emergency)
Long: Z 40208H-07
Short: Z 40208H-08



Control Rod
Z 40208H-01-01



Circuit Breaker PDLM-150
Z 40208H-12



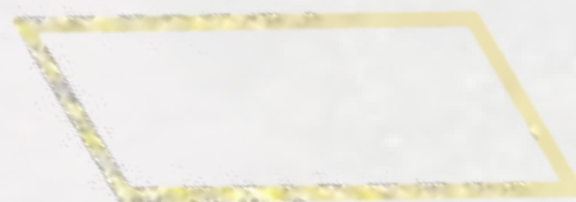
Air Inlet
Z 50208I-02



Spray Pump Mount
Z 40231EH



Silicon Seal
Z 40208H-01-02-03



Gasket
Z 40208-22

OTHER COMPONENTS OF THE GATE

Sensor for opening adjustment
Wires
Switch (to install in the cockpit)
Spring for piston support

FIRE GATE BOX
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The gate and the engine (hydraulic plant) are placed on the aircraft independently of each other before the installation of the system.

GATE POSITIONING



- 1) Remove the original gate box from the aircraft and remove the damaged gaskets;
- 2) Clean the hopper base;
- 3) Attention: leave the shut-off valve suspended and make sure that the gate will not be installed over its metal cable.
- 4) Put the gaskets in the water and wait for about 40 minutes;
- 5) Remove the gate box lid (to facilitate installation, as it reduces its weight);
- 6) Distribute polyurethane (PU) on the edges of the gate, place the gaskets and distribute PU over them.

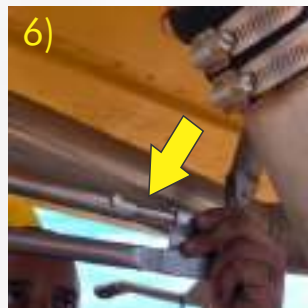
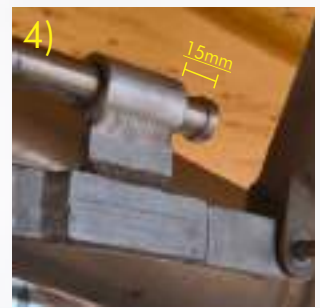
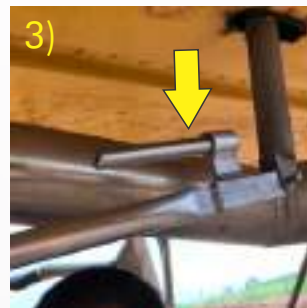


- 7) Screw the gate into the aircraft with 1/4" screws.



CONTROL ROD

- 8) Install the smaller rod on the piston lock of the gate (first image) and on the dumping command of the aircraft (second image).
- 9) Place the complement (pin) of the larger rod in the "guide hole" of the smaller rod (third image), adjusting it with 15mm (fourth image).
- 10) Install the larger rod in the gate control command (fifth image) and on the the complement (pin), which was installed on the smaller rod (sixth image). For putting it on the complement (pin), it is necessary to drill a 3/16", in order to fit the screw.
- 11) Make sure that when activating the emergency opening command (inside the cockpit), the smaller rod releases the piston lock (seventh and eighth images).

AIR INLETS

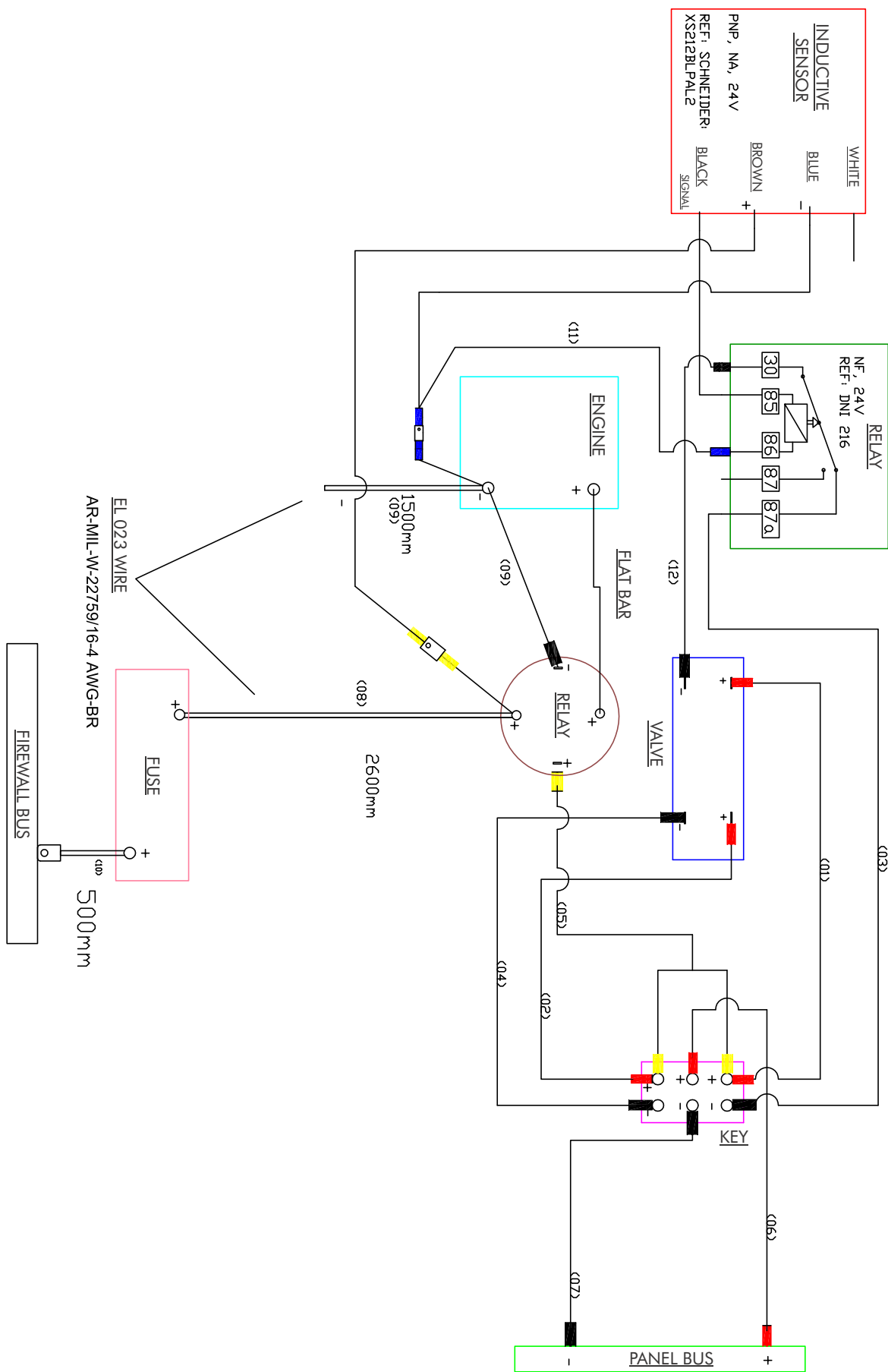
- 12) Cut the hopper cover and install the air inlets.

Increasing the number of air inlets may represent an increase in the speed of the dumping



GENERAL SCHEME OF ELECTRICAL INSTALLATION

ELECTRICAL INSTALLATION - Z 40208H

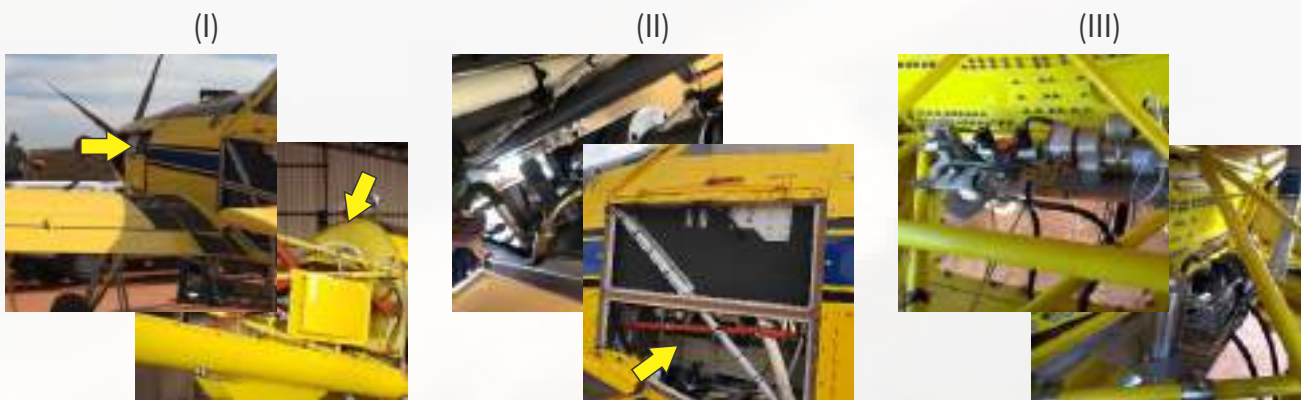


ELECTRICAL INSTALLATION

The following pictures of the wiring and positioning of the hydraulic power plant are only suggestions. The passage of cables through the aircraft is at the mechanic's discretion, as each customer has a preference for a specific type of installation and each aircraft can count on specificities that alter the electrical installation, which must follow the general connection scheme available on the previous page. Any doubts related to the electrical installation can be solved by contacting the technical team of Zanoni Equipamentos.

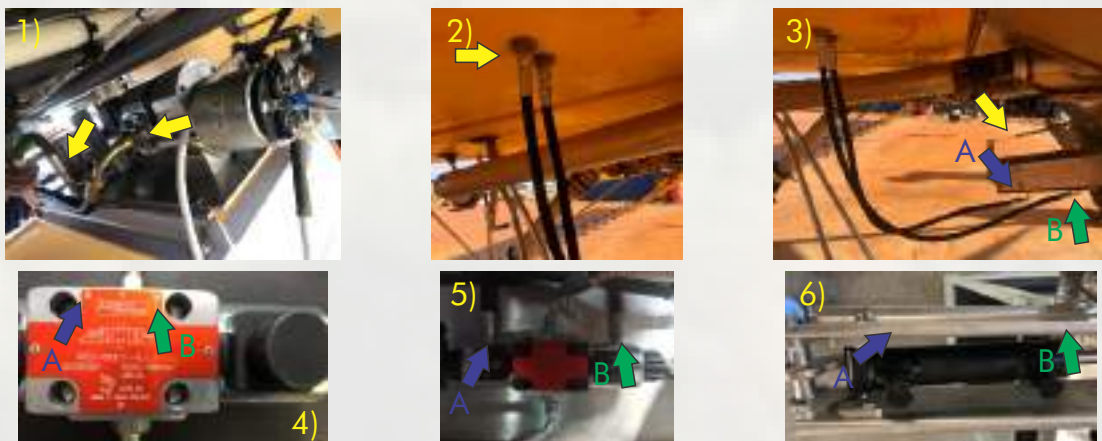
HYDRAULIC PLANT POSITIONING

The hydraulic power station can be positioned in three places, depending on the aircraft: (I) at the front, close to the turbine/engine (AT 802); (II) at the bottom, under the cabin (AT602); or (III) at the rear, behind the wing stringer (AT402 and AT502). Note: There may be changes in the aircraft according to their year of manufacture, which requires a change in positioning



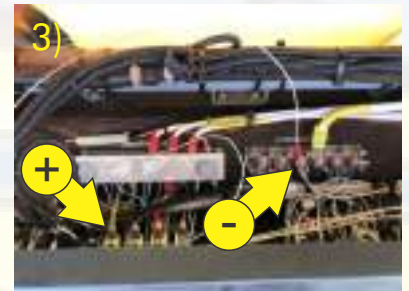
HYDRAULIC INSTALLATION

- Connect the hoses to the hydraulic plant (the image below is figurative, as the hydraulic plant may vary according to the type of aircraft);
- Pierce the aircraft fairing and secure the hose connections. Install the piston hoses to the connections, and the connections to the hydraulic plant (images 2 and 3);
- Check that the hoses are connected to the correct location in the gate (images 3, 4, 5 and 6): A connection of the hydraulic valve to the A connection of the gate (blue) and B connection of the hydraulic valve to the B connection of the gate (green).
- Lock the spring that holds the piston (image 3, yellow);
- Hydraulic oil used: SH 68-AD, ISO VG 68 (always check the level in the reservoir - it is recommended to complete it every thousand dumpings).



ELECTRICAL INSTALLATION

- Position the switch key in the cockpit at the location of your choice. We recommend placing it on the left side (first image).
- Connect the switch using the fuse of the hopper washer/gauge (second and third images).



- Attach the circuit breaker (fourth image);
- Connect it (fifth image) and then run a cable to the hydraulic unit;
- Ground the hydraulic plant on the fire wall.



WIRING

As previously mentioned, the way of passing the cabling is under the preference of the mechanic and they must follow the general scheme of the connection presented above.



GATE WIRING



SENSOR WIRING



GATE WIRING

INSTALLING THE SPRAY PUMP

In the AT 602 and AT 802 aircraft, the gate outlet for the spray pump is at its front, while at the AT 402 and AT 502 aircraft it is at its rear.

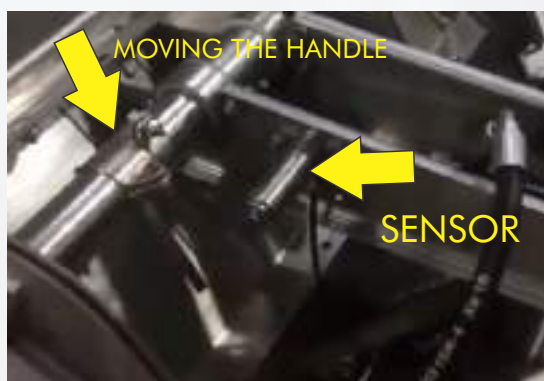
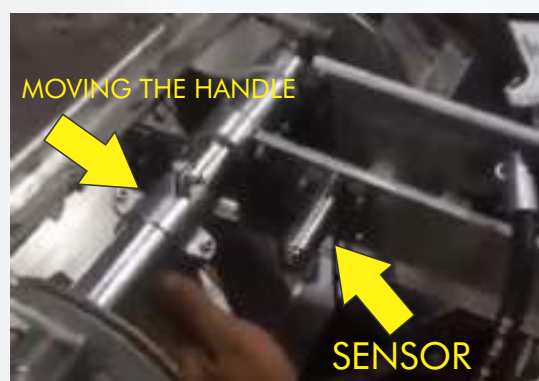
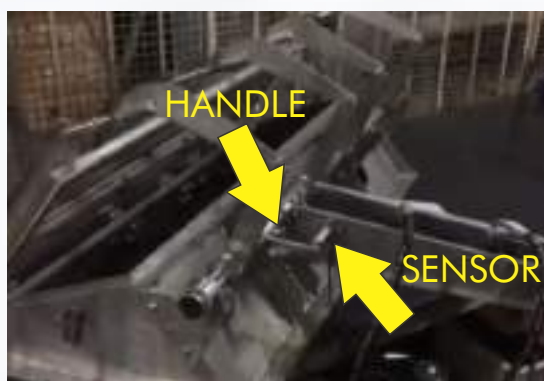


OPENING SENSOR

The Zanoni gate has a magnetic sensor that allows the regulation of its opening, thus enabling the work of dispersing solids. For its electrical installation, refer to the general diagram presented earlier in this document.

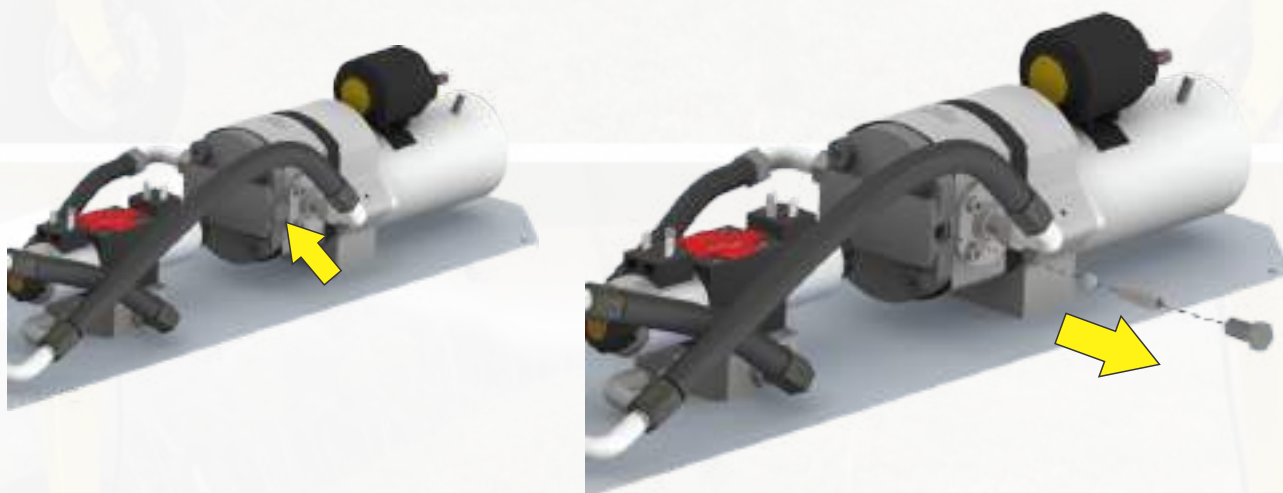
For its adjustment (made with the aircraft landed, on the ground) it is necessary to move the handle that is close to the sensor and find the desired opening, as shown in the images below. The sensor is adaptable to other Zanoni electro-hydraulic gates, consult the company's technical team if you are interested in installing it on your aircraft.

An automated system is under development by the company and it will be possible to integrate it with the gates already installed.

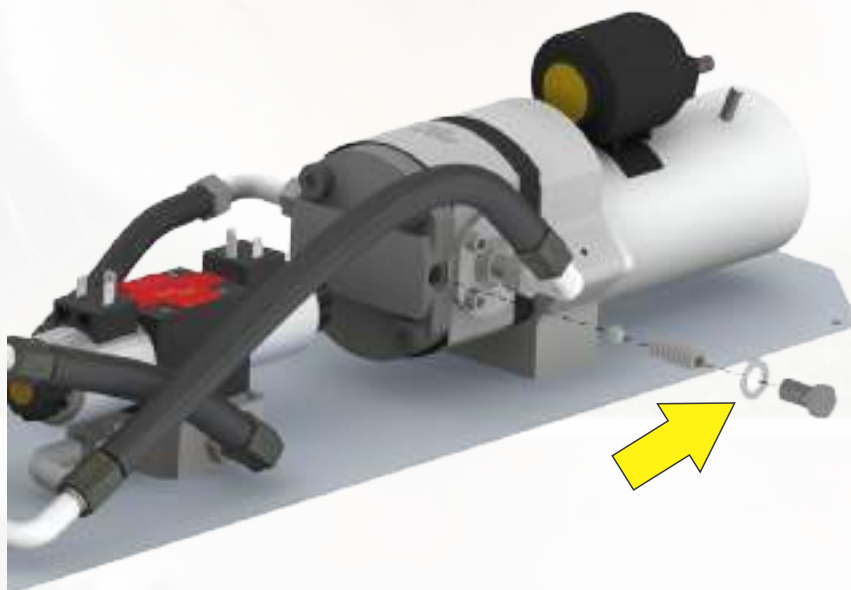


REGULATION OF THE HYDRAULIC PLANT VALVE

If the gate is not opening at the ideal speed, the hydraulic central valve bypass may require adjustment, which is carried out using a screw, indicated below.



Remove the screw that locks the spring and the ball of the relief valve on the hydraulic unit (as shown in the figure above).



Place a washer (shim) of a maximum of 1 mm on the screw (7/16" diameter). Insert the ball, spring and screw again.

Attention: the washer must not be larger than this dimension, under the risk of seriously damaging the equipment.



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