



INSTRUCTION MANUAL

REGULEX[®]

FLOW REGULATOR

PROPORTIONING GUN

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TRANSLATION OF THE ORIGINAL MANUAL

IMPORTANT : before assembly and start-up, please read and clearly understand all documents relating to this equipment (professional use only).

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REGULEX®
FLOW REGULATOR PROPORTIONING GUN

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The specifications of the REGULEX® proportioning gun are available in a documentation enclosed to the manual.

Dear Customer,

You are the owner of our new REGULEX® gun and we would like to take this opportunity to thank you.

To make sure your investment will provide full satisfaction, special care has been taken by KREMLIN during all designing and manufacturing processes.

To obtain the best result, safe and efficient operation of your equipment, we advice you to read and make yourself familiar with this instruction and service manual. Indeed, the non-compliance with instructions and precautions stated in this manual could reduce the equipment working-life, result in operating trouble and create unsafe conditions.

1. GENERAL SAFETY INSTRUCTIONS



CAUTION : The equipment can be dangerous if you do not follow our instructions concerning installation and servicing described in this manual and in accordance with applicable European standards and local national safety regulations.

Please carefully read all the instruction literature before operating your equipment.

Only trained operators can use the equipment (To acquire an essential training, please contact the "KREMLIN REXSON University" training center - Stains).

The foreman must ensure that the operator has understood the safety instructions for this equipment as well as the instructions in the manuals for the different parts and accessories.

Read carefully all instruction manuals, label markings before operating the equipment.

Incorrect use may result in injury. This equipment is for professional use only. It must be used only for what it has been designed for. Never modify the equipment. The parts and accessories supplied must be regularly inspected. Defective or worn parts must be replaced.

Never exceed the equipment components' maximum working pressure.

Comply with regulations concerning safety, fire risks, electrical regulations in force in the country of final destination of the material. Use only products or solvent compatible with the parts in contact with the material (refer to data sheet of the material manufacturer).



**Refer to 'Installation and safety instructions' document
(doc. 578.001.130)**

2. DESCRIPTION

The REGULEX[®] system consists of a REGULEX[®] proportioning gun and a control bay.

The REGULEX[®] proportioning gun is designed to dispense mastic beads or single or two-component adhesive beads.

The REGULEX[®] system is normally mounted on a robot or a multi-axis table. The manipulator sends a signal to the control bay to provide the necessary output to dispense the bead.

The flow as well as the proportioning are programmable and electronically controlled thanks to the control bay.

The following applications can be carried out :

- Constant diameter at constant speed.
- Variable diameter at constant speed.
- Constant diameter at variable speed.
- Variable diameter at variable speed.

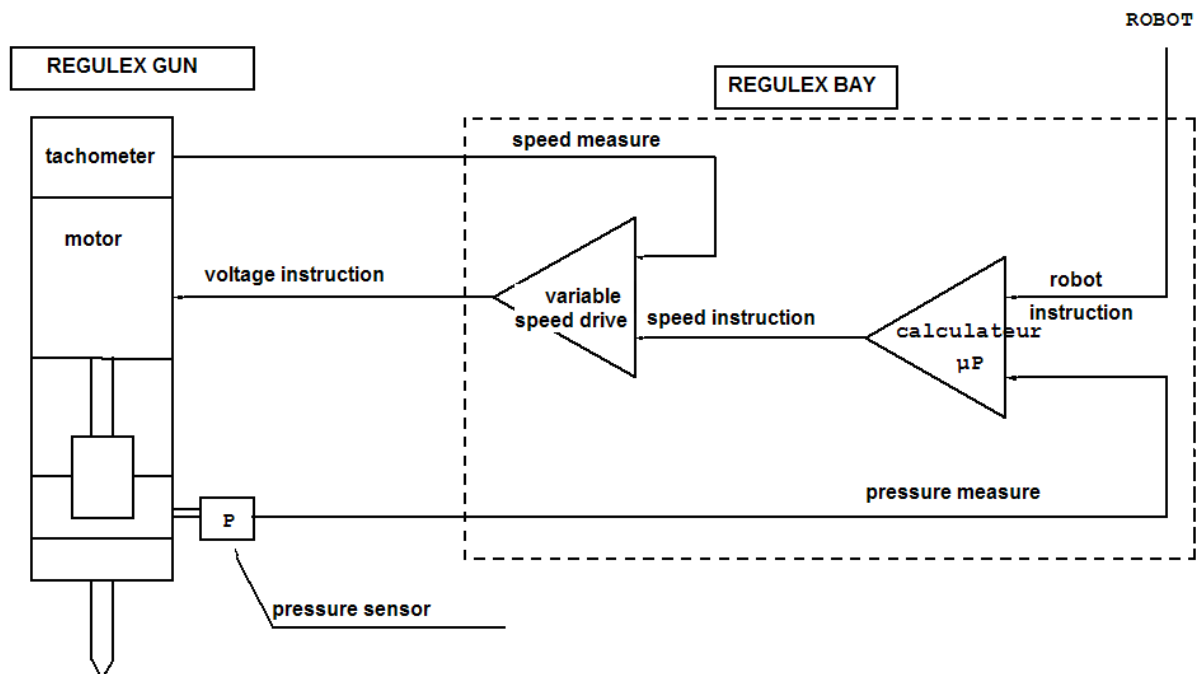
The materials can be applied cold or hot depending upon the use conditions and the kind of REGULEX[®] gun.

- ☞ The heating kit enables to maintain the temperature, the fluid must be heated first by means of the filling pump and of the heated hoses.

■ PRINCIPLE OF THE REGULEX[®] SYSTEM

The main function of the REGULEX[®] system is to control and regulate the dispensing of the material bead.

As it is in relation with the robot and depending upon the flow information that is sent periodically by the robot, it will act on the piston of the chamber to give in the shortest time possible the flow asked by the robot.



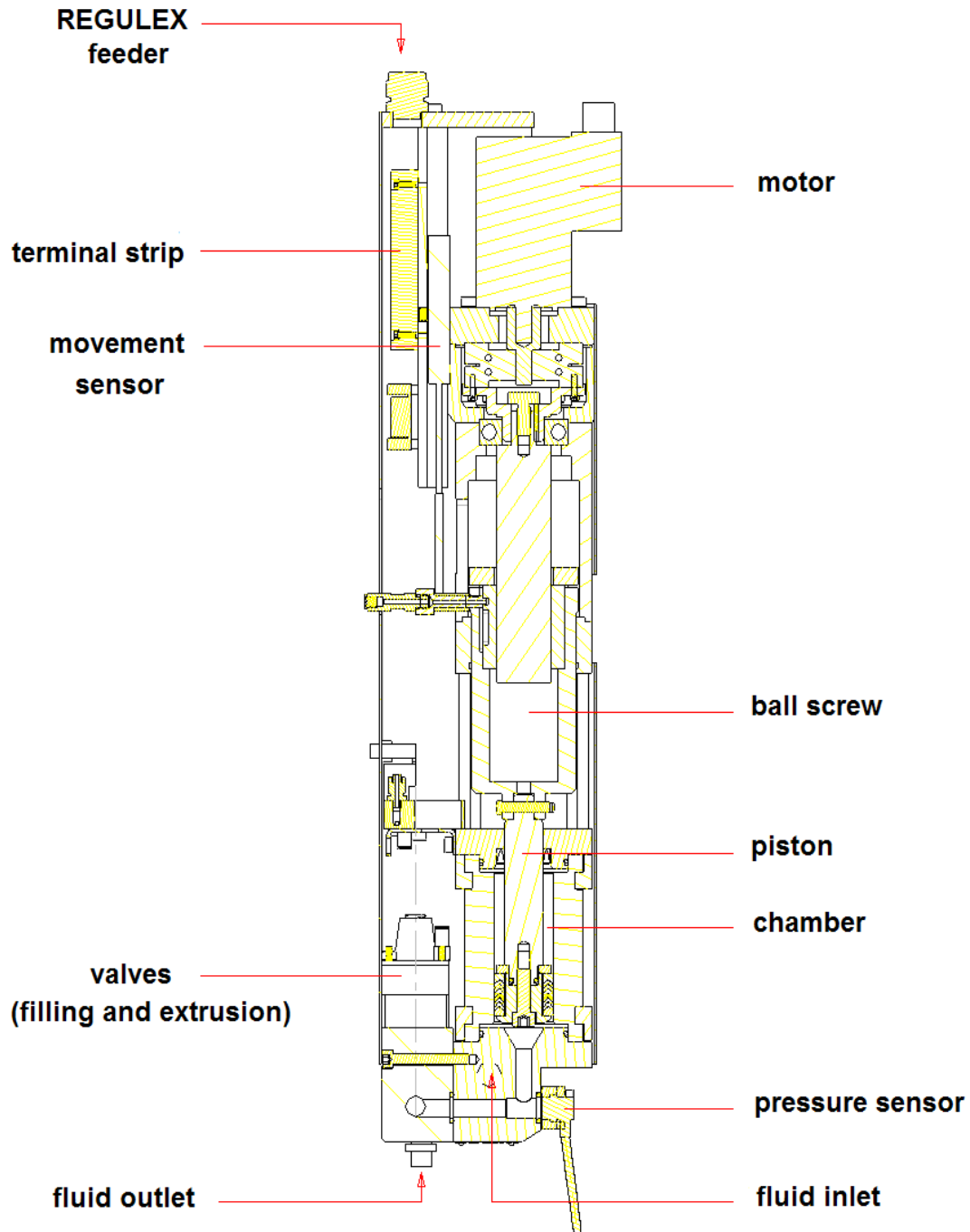
■ PRINCIPLE OF THE REGULEX® GUN

The gun consists of a chamber which contains the exact volume of material necessary to the dispense of the bead. The chamber has two means of access :

- an inlet which allows material to enter,
- an outlet which allows the dispensing of material.

The piston movement is carried out by a servo-feed model "brushless", piloted by a digital servo amplifier.

The REGULEX® proportioning gun has its own sensors (pressure and movement) so that the REGULEX® Electronic Bay can regulate the volume of the dispensed material.



3. INSTALLATION

■ PNEUMATIC CONNECTIONS

Install an HP hose between the fluid outlet of the filling pump and the fluid inlet of the mastic regulator (if there is one) and an HP hose between the fluid outlet of the mastic regulator and the fluid inlet of the proportioning gun. The hose can be a heating hose for easier fluid flow.

Install a plastic hose (Ø 4x6) to supply the gun valves. Connect the gun to the compressed air network via a pressure reducing valve. Adjust the pressure to 6 bar / 87 psi.

Connect the filling pump air motor to the compressed air network via a pressure reducing valve. Adjust the pressure between 2 and 5 bar / 29 and 72.5 psi (clean air).

■ ELECTRIC CONNECTIONS

Connect the 3 electric cables between the REGULEX® bay and the proportioning gun (cables fitted with connectors : HARTING 15 pins, JAEGER 6 pins, JAEGER 4 pins).

Connect the electric cable of the heating kit (if there is one) between the temperature regulation box and the proportioning gun (cable fitted with 8 pins JAEGER connector).

Connect the interface electric cables between the REGULEX® bay and the robot control bay.

Connect the REGULEX® bay to the mains.

4. OPERATING

■ BEFORE STARTING UP

The start-up is carried out from the REGULEX® control bay (or at any other control box which has the same functions).

(refer to chapter «operating» of the control bay instruction manual).

Before starting up the REGULEX® :

- correct the offsets (see «Offset Page» - Bay instruction manual)

- check the values of the parameters and change them if necessary (see «Parameter page» - Bay instruction manual)

The parameters are entered at the factory before the bay is released for delivery. For each parameter, a value is given for the first operating.

Caution : Some parameters must correspond to the kind of REGULEX® proportioning gun controlled by the bay.

The values of the other parameters must be modified to get an optimal operating of the REGULEX® system.

Offset patching procedure

The bay must be "switched on", but not into service.

⇒ The variable speed drive must not be supplied "with power".

⇒ The REGULEX® proportioning machine must **not be in pressure**.

Display the "OFFSET" page on the screen of the bay to reach the parameters (refer to bay instruction manual).

Pressure offset correction :

Select "sensor pressure Regulex A" ⇒ display : xx bar / xx psi

xx bar / xx psi is the pressure that the sensor measures. The value of that pressure must be contained in - 4 bar / 59 psi and + 4 bar / 59 psi to make the validation possible (otherwise, fault of the pressure sensor).

xx bar / xx psi + ↵ key → pressure 0

Position offset correction :

Select "sensor position Regulex A"
⇒ display : xx mm

By means of a screwdriver, lift up the end of the potentiometer (13) that is on the lubricator ring (28) and raise it to the top of the light.

The value of that position must be contained in 0 to + 4 mm to make the validation possible (otherwise, fault of the movement sensor).

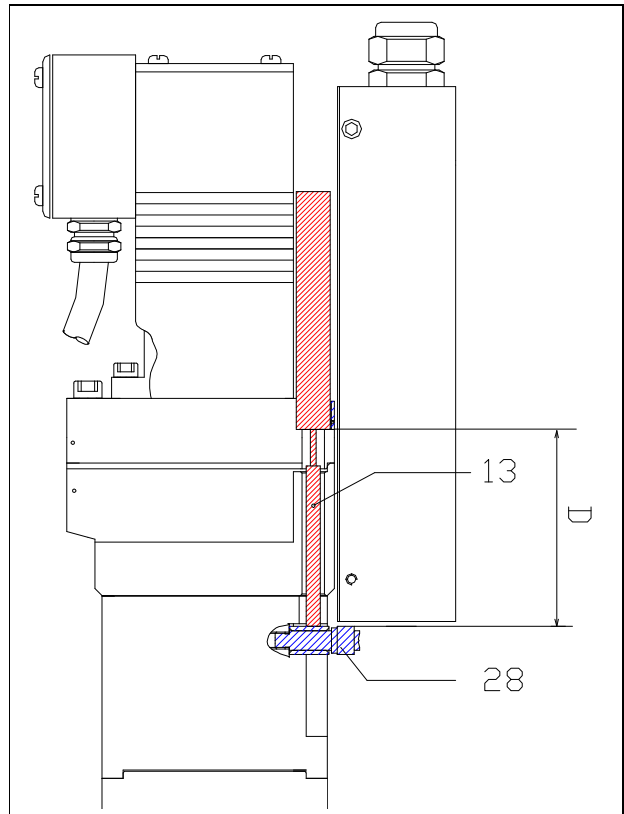
xx mm + ↵ key → position 0

Important :

Dimension of the position sensor with lock-nut (sensor to stop) :

- Regulex® proportioning machine, type compacted : D = 69,5 mm
- Regulex® proportioning machine, type reinforced : D = 123 mm

Example above : proportioning machine, version compacted 5cc



■ PRIMING STAGE

When starting-up for the first time, you must prime the REGULEX® proportioning gun :

Come to move down the REGULEX® gun piston to low position.

Pressurize the filling pump.



WARNING : the fluid pressure at the inlet of the REGULEX® gun must be lower or the same than the maximum pressure of the REGULEX® (refer to REGULEX® features).

An overpressure must lead to a bad operating of the equipment.

Pressurize the filling and exhaust valves (maximum 6 bar / 87 psi).

- The filling and exhaust valves are open.
- The fluid is forced through the hoses then through the REGULEX® chamber.
- Let the fluid flow out from the outlet of the REGULEX®.

Close the REGULEX® valves.

End of the **PRIMING** operation, beginning of the **WORKING** operation.

The working operation consists of 3 functions : **FILLING - REGULATION - EXTRUSION.**

■ FILLING STAGE

The exhaust valve is closed.

The filling valve is open.

The REGULEX® gun chamber is filled by servo-controlling the ascent of the piston to the pressure of the chamber.

■ REGULATION STAGE

The gun is filled.

The filling and exhaust valves are closed.

At the end of the filling operation, the piston is at its upper position. The system measures, controls and regulates the informations : position of the piston, pressure inside the chamber, flow instruction.

■ EXTRUSION STAGE

The gun is filled.

The filling valve is closed.

The robot controls the extrusion of the seal.

The exhaust valve opens.

The motor, via the ball screw, drives the piston. The material is exhausted to a constant flow (for a constant instruction).

The REGULEX® piston comes down in the chamber ⇒ Dispensing of the bead.

If the REGULEX® gun is fitted with an heating kit :

Start up the control unit that controls the temperature.

Program the temperature regulators :

- || Instruction temperature.
- || Low alarm temperature.
- || High alarm temperature.

☞ **Do not prime the REGULEX® gun as long as the fluid is not at the required temperature.**

IMPORTANT

During the programming of the trajectory, begin the dispense of the bead where it will have the most constant diameter.

At the end of the bead :

- Maintain a constant flow at the end of the trajectory,
- Program a null flow at the instant preceding the covering of the bead,
- Then program the closing of the exhaust valve.

WARNING

Before any action on the cables connected to the REGULEX® bay, you must switch it off.

5. REGULEX® SHUTDOWN

Guards (air motor cover, coupling shields, housings ...) have been designed for safe use of the equipment.

The manufacturer will not be held responsible for bodily injury or failure and / or damage to property due to removal or partial removal of the guards

■ SHUTDOWN SUPERIOR TO 5 MM

The REGULEX® proportioning gun must fall back.

A null flow must be programmed.

The nozzle must come stemming in a receptacle full of oil (or any other appropriate material) or positioning itself in a tip.

■ EXTENDED SHUTDOWN (EXAMPLE : NIGHT)

Carry out the previous stage.

Switch off the bay.

Shut off the compressed air on the filling shift.

Leave compressed air on the REGULEX® gun valves.

■ STARTING UP

Put air on the filling shift.

Switch on the REGULEX® bay.

From the REGULEX® bay, drain the REGULEX® gun before continuing an automatic cycle.

6. MAINTENANCE

Guards (air motor cover, coupling shields, housings ...) have been designed for safe use of the equipment.

The manufacturer will not be held responsible for bodily injury or failure and / or damage to property due to removal or partial removal of the guards

■ WEEKLY CARE

Check the hoses.

Check that there is no leak from the fittings.

Drain the REGULEX® gun after an extended shutdown.

Clean the nozzle or change it (clogging or bead fault).

■ MONTHLY CARE

Check the parameters of the REGULEX® bay (refer to bay instruction manual).

Check the wear of the friction ring at the lubrication level. Give the ring a quarter turn or change it if necessary.



Lubricate the screw ball (every 300 hours).
(KLUBER grease - P.N°. NB 52)
(screw ball duration : 500 000 cycles)

■ HALF-YEARLY CARE

Remove the gun fluid part :

- Clean the valves, the fluid chamber. Change the valves, if necessary.
- Change the seals and the defective parts.
- Check the piston condition.

Define the offsets on the REGULEX® bay (refer to § 5 and to bay instruction manual).

■ YEARLY CARE

Check the electrovalves.

Check the screw ball.



Lubricate the outside and inside teeth of the reducer and of the bearings
(HARMONIC DRIVE grease - P.N°. SK1A)

7. TROUBLESHOOTINGS

If a problem occurs during the operating of the REGULEX®, the fault will be displayed on the display unit (refer to bay instruction manual).

8. DISASSEMBLY- ASSEMBLY

Guards (air motor cover, coupling shields, housings ...) have been designed for safe use of the equipment.
The manufacturer will not be held responsible for bodily injury or failure and / or damage to property due to removal or partial removal of the guards

Before removing the REGULEX® proportioning gun :

- Shut off the pump air supply (pump into service).
- Drain the REGULEX®.
- Open the pump drain cock.
- Shut off the REGULEX®.
- Disconnect all the electrical connection beads.
- Put aside the REGULEX® proportioning gun.