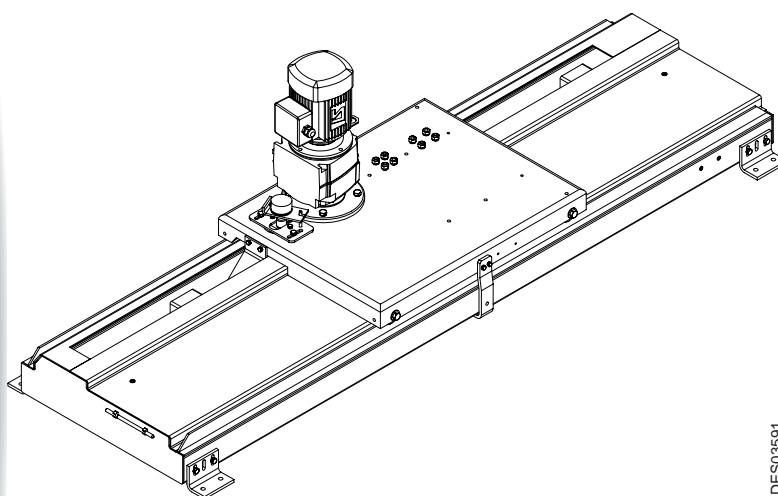




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DES03591

User manual

RFV Reciprocator In/Out Positioner

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RFV Reciprocator

In/Out Positioner

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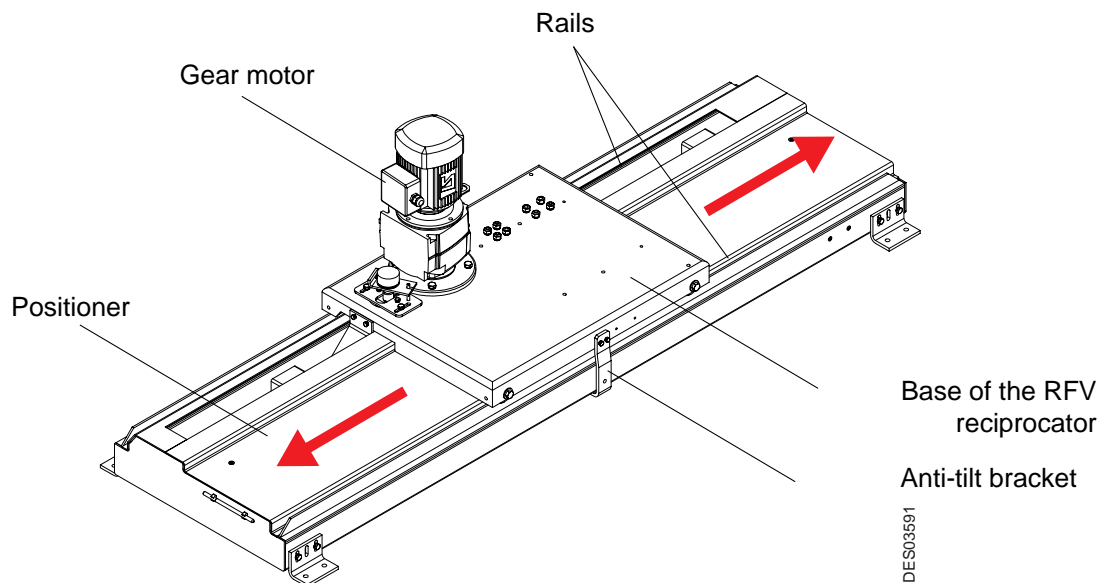
1. Introduction

The **RFV reciprocator in/out positioner** is a module placed under the RFV reciprocator that allows it to move on a second axis.

The in/out positioner is controlled by a Programmable Logic Controller or, if necessary, an REV 600, independently of the RFV reciprocator.

The positioner takes the form of a horizontal chassis. The reciprocator moves by means of four V-groove casters attached to the reciprocator's base, which sit on two rails welded to the positioner. The base of the RFV reciprocator is secured on the positioner by two anti-tilt brackets that prevent tipping.

Forwards and backwards motion (in/out positioning) is provided by the following: a gear motor (comprising an asynchronous motor and reduction gears) pre-fitted to the base of the RFV reciprocator, a rack and pinion assembly and a potentiometer that ensures the movement is driven by the control system.



2. Characteristics and dimensions

Travel adjustment*	0 to 1100 mm
Speed of movement	continuously adjustable
Maximum load	500 kg
Power according to gear motor used	
Europe gear motor for powder	0.25 kW
Europe gear motor for liquids	0.25 kW
US gear motor	0.75 kW



WARNING : With this gear motor for powder, do not use conductive powders.

2.1. Dimensions

Mechanism

	1100 mm travel
Overall height	3.23 m + lifting ring*.
Footprint	550 x 2010 mm (Overall: 670 x 2020 mm)

3. Unpacking

Due to the large size when assembled, the positioner modules are supplied detached from the robots.

4. Installation

- **Step 1:** Install the in/out positioner at the location specified by the customer.
- **Step 2:** Secure the positioner to the ground using eight M10 bolts, ensuring correct orientation.



WARNING : The narrower cover must be on the left hand side of the positioner when looking towards the item to be painted.

- **Step 3:** Place the RFV reciprocator on the positioner and secure the two anti-tilt brackets.

4.1. Electrical connections

Electrical connections are made:

- By a connector for the potentiometer.
- By two cable glands for the motor (power supply and temperature sensor).

These items are attached to a bulkhead union plate attached to the RFV reciprocator.

4.1.1. Motor connection

The motor power supply is provided by a flexible shielded cable with a minimum cross-section of 1.5 mm² and a minimum voltage rating of 750V. The connections are made via the cable gland to the terminals U, V, W and earth in the motor casing. The motor coupling must be full-voltage (triangle) (factory setting).

The temperature sensor must be connected using a flexible, non-shielded cable of cross-section 1 mm². The connections are made via the cable gland to the terminals in the motor casing.

4.1.2. Potentiometer connection.

The connection is made using a flexible shielded cable of cross-section 0.75 mm² using the connector provided.

5. Routine maintenance

5.1. Mechanism

- **Check play in the rack and pinion.** If the play exceeds 0.2 or 0.3 mm, it must be corrected using the four M8 x 50 bolts which hold the rack in place.
- **Check the tension on the potentiometer chain.** If the chain deflection exceeds 5mm between the two pinions, tension it by moving the potentiometer assembly attached to the robot base.
- **Chain lubrication.** Wipe with an oil-soaked rag (SAE 10 to 30) every 2000h.
- **Lubrication of the rack and pinion assembly.** Put several drops of oil on the rack teeth over a length of approximately 300mm. Move the positioner to coat the pinion teeth. Wipe off excess oil.
- **Gear motor maintenance:**
 - There is no recommended maintenance for the gear motor, which is oiled-for-life.

6. Troubleshooting

Incidents	Probable causes	Corrective actions
Jotting at start-up	Play in the rack and pinion	Readjust.
Positioner hits an end buffer	Incorrect potentiometer adjustment	Readjust.
	Potentiometer failure	Replace.

7. Replacing the potentiometer

After 3000 to 5000 hours of service, or if it is accidentally damaged, it may be necessary to change the servo potentiometer (Item 4 [see § 8.2 page 9](#)). Warning: it is fragile, especially around the terminals.

7.1. Description

The potentiometer is supported on its axis by a pinion whose bore receives the potentiometer axis and is locked in place by two radial screws. The body of the potentiometer is prevented from rotating on its base by a lock pin and the wiper thus moves on the track as the pinion rotates.

Three Allen head screws attach the body to its support.

The three terminals of the potentiometer are distinguished by three numbers (11, 12, 13) marked on the body. Terminal '12' is connected to the wiper.

7.2. Replacing the potentiometer

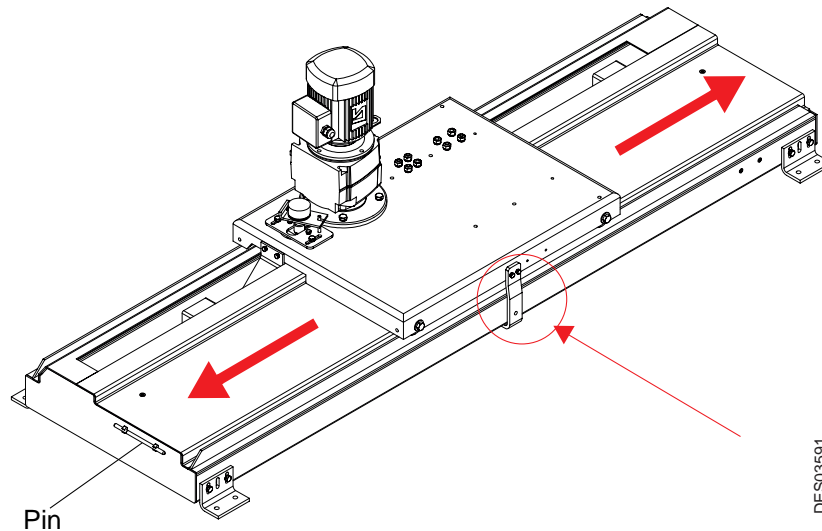
- Disconnect the potentiometer connector.
- Unscrew the two radial screws nearest the potentiometer which lock its axis. It can now be removed.
- Warning: the two Allen head screws nearest to the pinion must not be loosened.
- Separate the potentiometer from its support by unscrewing the three Allen head fixing screws.
- Fit the new potentiometer to the support, paying attention to the foolproofing pin.
- Rest the new potentiometer on the mechanism, ensuring the positioning pin is correctly engaged in the support slot. Lock the axis using the two radial screws.
- Connect the new connector.

7.2.1. Angular adjustment of the potentiometer

The angular adjustment of the potentiometer is factory set.

It is designed to centre the angular movement of the wiper in relation to the extremities of the potentiometer track. If the adjustment is accidentally disturbed, follow the procedure below.

- Put the RFV reciprocator in its central position.
- Insert the 8 mm diameter pin (P/N: 738537) through the hole in the anti-tilt bracket on its right hand (when facing the object to be painted) and into the hole in the chassis, (see illustration below).



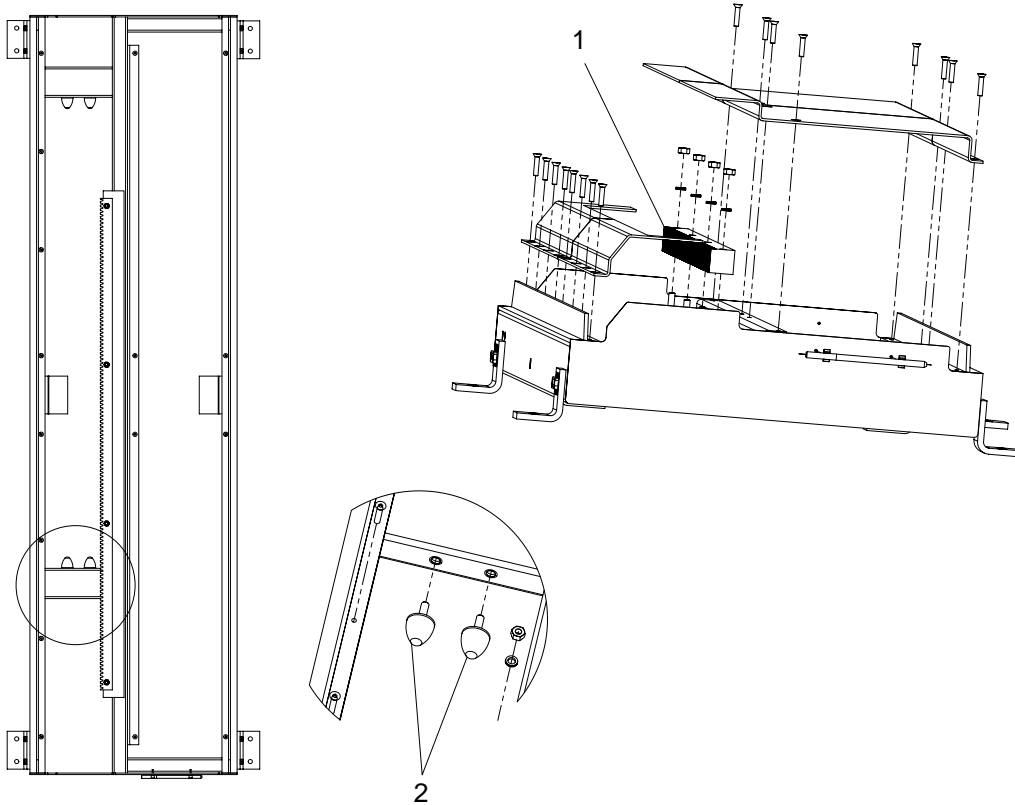
- Loosen the two Allen head screws closest to the pinion.
- Use an ohmmeter.
Adjust the axis until the resistance values between the wiper (centrally positioned on the track) and each of the two ends are equal.
- Retighten the two Allen head screws closest to the pinion.



WARNING : The potentiometer can be damaged by currents above 10mA. Some ohmmeters can generate such currents when measuring resistance.

8. Spare parts

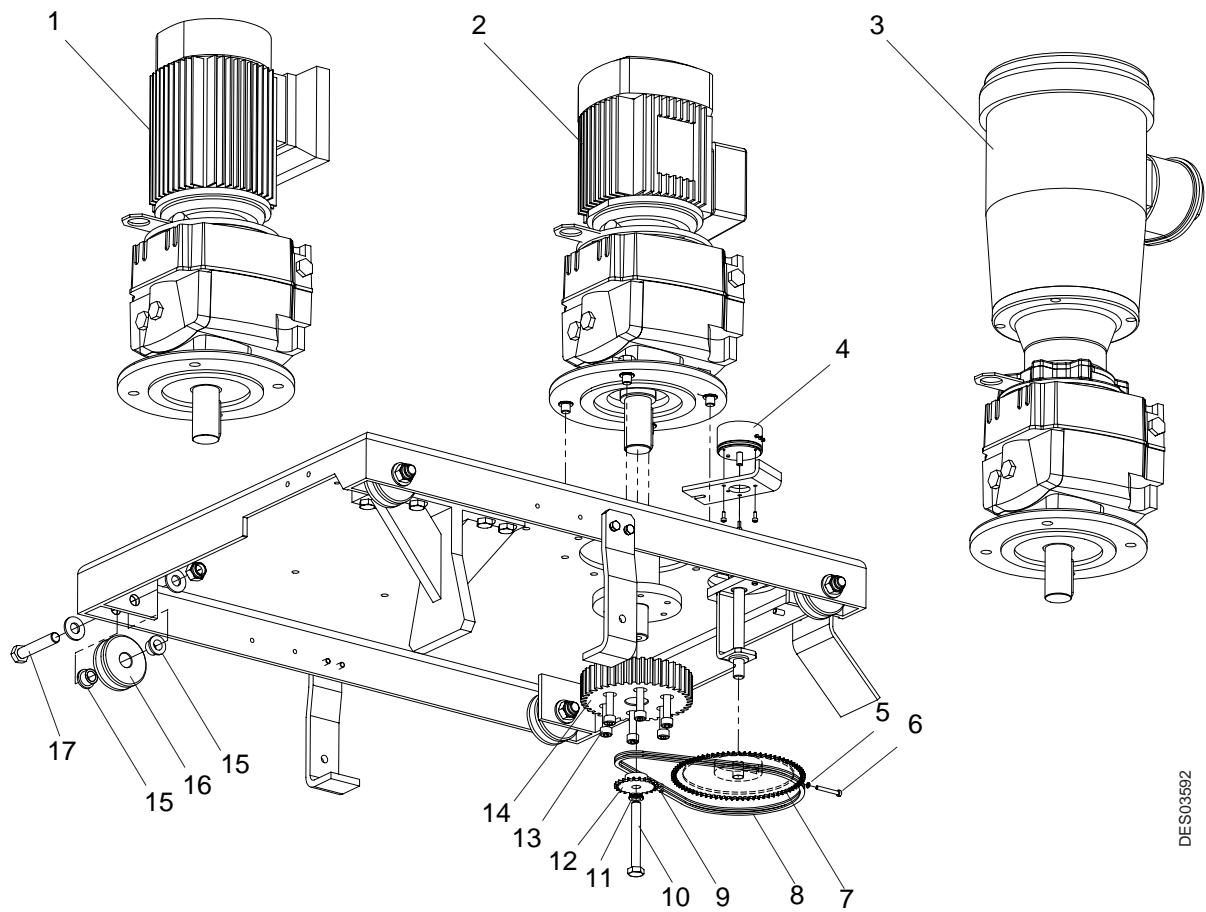
8.1. In/out positioner



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Item	Part number	Description	Qty	Unit of sale	Top priority	Wear
1	1306314	Rack	1	1	-	-
2	Q4BPGS056	Conical buffer 30 mm diameter	4	1	-	X

8.2. Positioner to RFV reciprocator adaptor



DES03592

Item	Part number	Description	Qty	Unit of sale	Top priority	Wear
1	900001497AT	Europe gear motor for liquids	1	1	X	
2	900005143	Europe gear motor for powders	1	1	X	
3	900001159	USA gear motor	1	1	X	
4	743678	Potentiometer	1	1	X	
5	X2BDVX004	Star washer	1	1	-	-
6	X2BVCB125	M4 x 30 galvanized steel Allen head screw	1	1	-	-
7	900006720	Toothed wheel 32x6.35	1	1		X
8	K4CSPR810	Roller chain	1	1		X
9	K4CATR217	Roller chain connecting link P:6	1	1		X
10	X4FVHA341	M10 x 80 hex head bolt (stainless steel)	1	1	-	-
11	X3CDSP782	Self-locking washer D:10	13	1	-	-
12	900006778	Potentiometer pinion	1	1		X
13	X3AVSY286	M8 x 35 galvanized steel Allen-head screw	6	1	-	-
14	900001532	Motor pinion	1	1		X
15	K6CABC033	Self-lubricating bushing	10	1		X
16	1402531	V groove wheel	4	1		X
17	X3AVSY384	Chc M12x 70 screw	4	1		X

Nota: With gear box for powders (P/N: 900005143), do not use conductive powders.