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Operating Instructions

XT Horizontal Axis
with
PRC 4 Powder Reciprocator Control Unit

ITW Gema

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XT Horizontal Axis Unit with PRC 4 Powder Reciprocator Control

Operating Instructions

1. Field of Application

The XT Horizontal Axis unit is used where workpieces of various widths are to be coated in a single job run or where job runs with workpieces of different widths are changed fairly frequently. The XT Horizontal Axis unit can be used with ACR, and ZA 1 Reciprocators

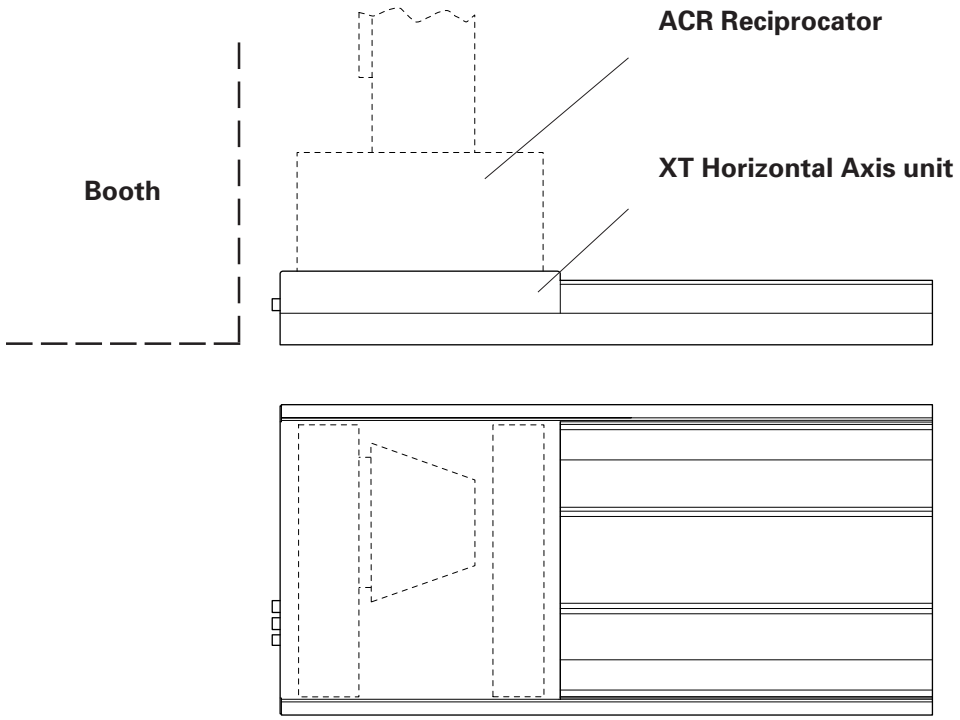

Fig. 1 XT Horizontal Axis with ACR Reciprocator

2. Description

The XT Horizontal Axis unit is an axis which is controlled by end switches.
The end switches are mounted in the base of the unit and can be positioned along a rail wherever required. There are a total of 6 (six) end switches which represent Positions 0-5.
There are no other end switches or reference point switches.
The switches should not be positioned closer than 70 mm because of their design.
On assembly the switches must fitted at such a height that they actuate properly.
The motor used is an AC motor. An external mechanical break is fitted directly onto the motor.

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PRC 4 Axis Control Unit

The control fits into a standard drawer unit and requires no maintenance.

Motor control :

The XT is an simple system and, therefore does not have a frequency converter or any other equipment for controlled acceleration and ramp travel.
This means that the motor is switched directly forwards or backwards (by contactors). When the axis is started, then the control unit waits about 1 (one) second before the contactor is activated. In this time the axis has the opportunity to come to rest directly after movement has just taken place. Because of this delay any jerky movements, which have been induced by switching, are minimized.

CONTINUOUS Mode :

The Continuous Mode is an operating mode, which if selected (Switch - S7), gives the axis the possibility to be moved freely. When the Push button - S0 is pressed and Position 0 is not yet approached, the axis moves in reverse (outwards, away from the booth). If the Push button - S5 is pressed, the axis moves inwards (towards the booth) until it reaches Position 5.

BY STEP Mode :

The STEP Mode or Incremental operation permits the axis to travel directly to individually selected positions. The axis travels (automatically) to the last selected position. Switching during travel is possible.

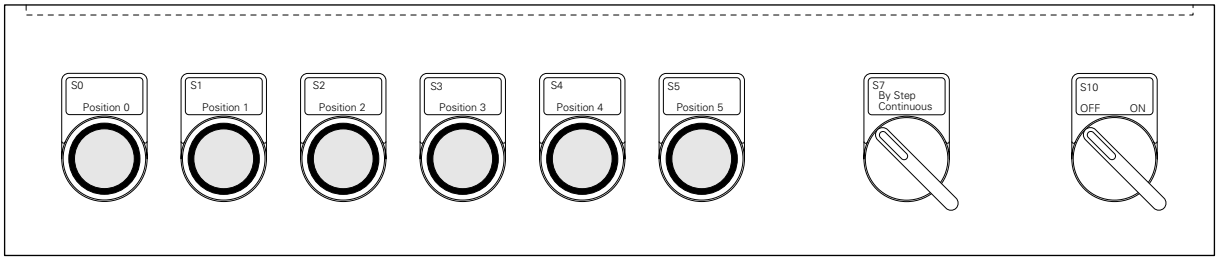


Fig. 2 Front panel of the PRC 4 Powder Reciprocator Control

3. Operating Mode

The PRC 4 Axis Control unit is mounted in a standard drawer unit in the control cabinet and has six green illuminating push buttons, and two switches fitted in a row on the front panel of the drawer unit. The push buttons are consecutively numbered from S0 to S5. These push buttons correspond to the end switches fitted in the XT Horizontal Axis Unit base. The respective push buttons illuminate either when they are pressed or when the horizontal carriage overrides the corresponding end switch.
One of the two switches is the ON-OFF switch for the PRC 4 Axis Control unit and is designated - S10. The other switch is designated - S7 and switches to one of the two operating modes - By Step mode (Fixed incremental movements of the horizontal carriage from one end switch to another selected end switch) or Continuous mode (The horizontal carriage travels in one direction until the push button is released).

The initial positions of the end switches are set at the factory, but these can be easily reset by the customer to suit job requirements. The end switches will not operate if set closer together than 70 mm (2 3/4”). This is due to the lever action radius required by the switches. The end switches are set out so that the Position 0 end switch (corresponding to Push button - S0) is always the one farthest position away from the booth, and Position 5 end switch (corresponding to Push button - S5) is always the one nearest to the booth. When the End switch - 5 is set at the extreme end position on the rail (inside the axis base - nearest to the booth) the powder guns will be well inside the booth. The maximum depth of penetration into the booth is dependent on the length of the gun carrier tubes, plus the length of the powder gun.

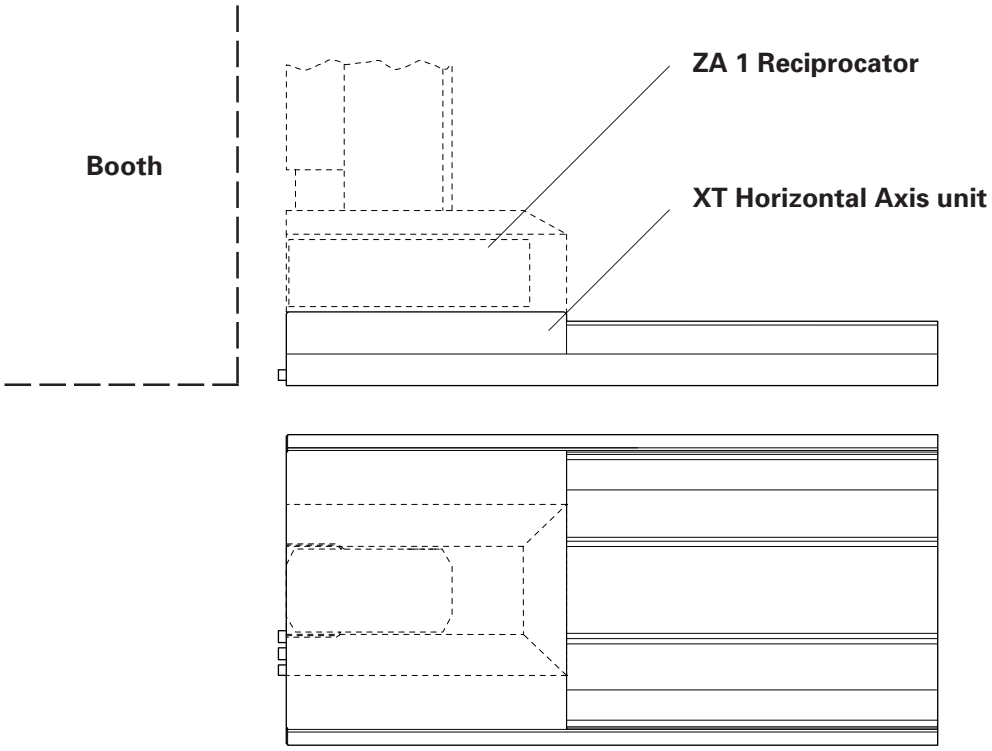
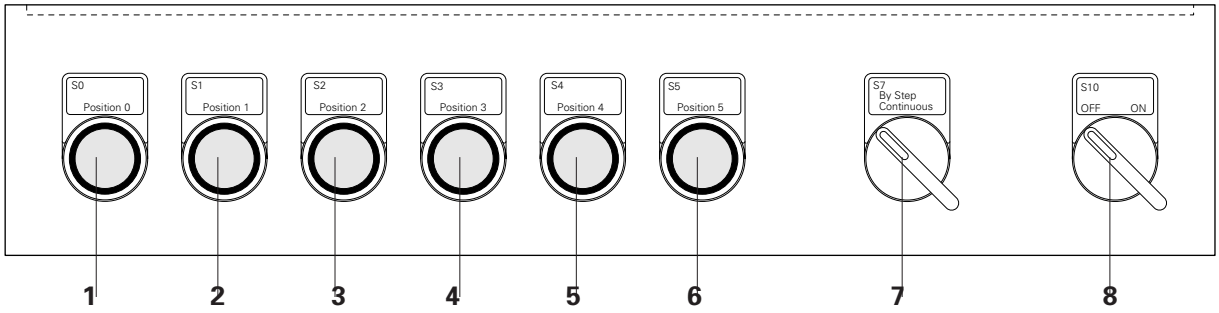


Fig. 3 XT Horizontal Axis with ZA 1 Reciprocator

4. Preparation for starting up



1	Push button SO (Position 0*)	5	Push button S4 (Position 4*)
2	Push button S1 (Position 1*)	6	Push button S5 (Position 5*)
3	Push button S2 (Position 2*)	7	Switch S7 - BY STEP / CONTINUOUS
4	Push button S3 (Position 3*)	8	Switch S10 - ON /OFF

***** The corresponding end switch position

Fig. 4 The PRC 4 Axis control unit showing the Push button (green) / Switch designation

Setting the end switches

1. Switch on the Main switch on the Control cabinet.
2. Switch on the Key switch - SO.1 on the Control cabinet.
3. Switch on the PRC 4 Axis control unit with the ON-OFF Switch - S10. The horizontal carriage travels automatically to Position 0, regardless of which setting the Switch - S7 is set.
4. Switch off the Key switch - SO.1.
5. Remove the screws holding the axis cover plate.
6. Carefully remove the cover plate from the unit and place away from the unit.

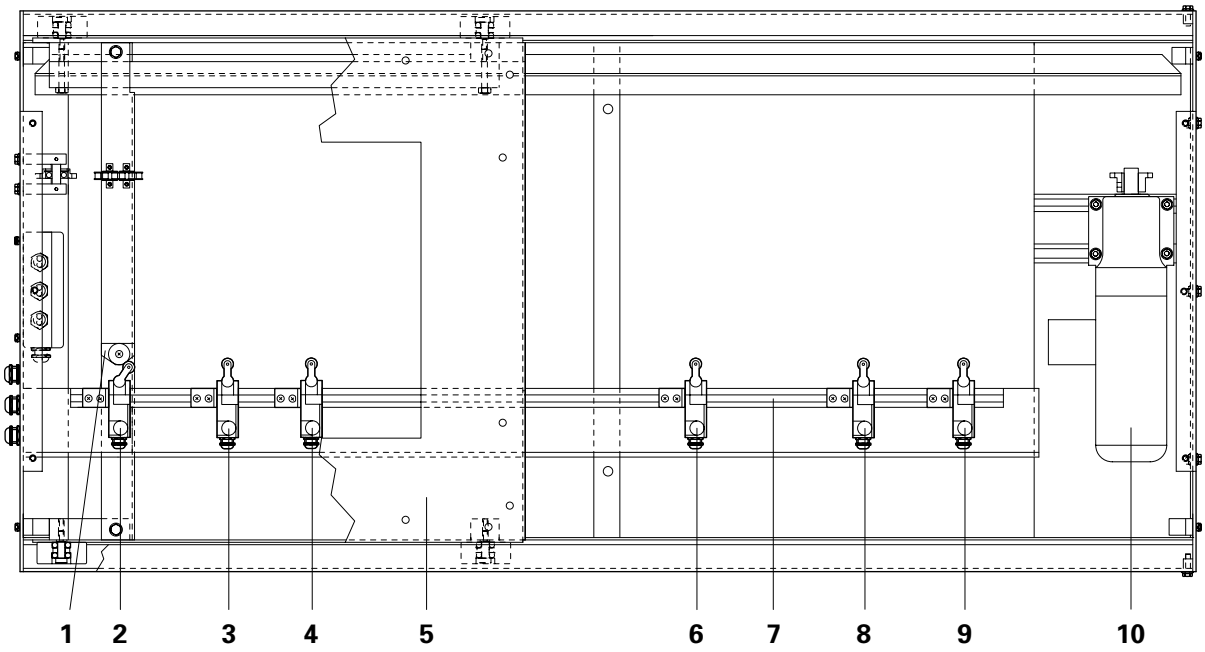
⚠ WARNING

Do not stand inside the unit or under the vertical carriage. Danger of accident !!!

7. The setting positions of the end switches should be carefully selected to cover the widest range of workpiece widths so that this operation does not have to be repeated every time a job series changes.
8. The end switches are positioned by releasing the two screws holding the end switch holder bracket and sliding it to the desired position.
9. Check the distances between the end switches so that they are not closed together than 70 mm (2 3/4").
10. Retighten the screws.
11. Ensure that End switch - 5 is positioned so that it does not to permit the gun carrier on the vertical carriage to collide with the booth or workpieces inside the booth. (Always make allowances for the length of the tubes, and the guns on the carrier).

⚠ IMPORTANT

It will be necessary to move the horizontal carriage to reposition those end switches covered by the carriage when it is in Position 0.



1	End switch tripping cam	6	End switch - Position 3
2	End switch - Position 0	7	End switch rail
3	End switch - Position 1	8	End switch - Position 4
4	End switch - Position 2	9	End switch - Position 5
5	Carriage (Cut away)	10	AC Drive Motor

Fig. 5 XT Horizontal Axis (without cover plate) showing the end switch rail.

Moving the horizontal carriage to the one end of the axis unit rail

⚠ WARNING

Do not stand inside the unit or under the vertical carriage. Danger of accident!!!

1. Switch on the Key switch - SO.1 on the Control cabinet again.
2. Turn the Switch - S7 to the BY STEP position (the white marking on the switch pointing to the right).
3. As the horizontal carriage is already in Position 0 it is only necessary to press the Push button - S5 until the horizontal carriage reaches Position 5.
   When the horizontal carriage is in this end position the remaining end switches can be repositioned on the end switch rail.
4. Turn the Switch - S7 to the CONTINUOUS position (the white marking on the switch pointing to the left).

Checking the reset end switch positions :

5. Press the Push button - S4, and when the carriage has overridden this end switch and stopped, repeat this procedure for push buttons - S3, S2, S1, and S0 to check the relative positions of the guns to the workpieces inside the booth.
6. Readjust the end switch position(s), if necessary.
7. When all the end switches are correctly positioned the cover plate can be replaced.

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Positioning with the BY STEP Mode Function

1. Switch on the Main switch on the Control cabinet.
2. Switch on the Key switch - SO.1 on the Control cabinet.
3. Switch on the PRC 4 Axis Control unit with the ON-OFF Switch - S10. The horizontal carriage travels automatically to Position 0, regardless to which setting the Switch - S7 is set.
4. Turn the Switch - S7 to the By Step position (the white marking on the switch pointing to the right).
5. Press a push button (S1, S2, S3, S4 or S5) to give the horizontal carriage a relative position to travel to.

   If, for example, S4 is chosen, each push button will illuminate when the corresponding end switch is overridden. The Push button - S4 will blink all the time until the horizontal carriage overrides this end switch and stops.

Positioning with the CONTINUOUS Mode Function.

- Once the end switches are set it is not necessary to make any adjustments to the end switches for this function.
- With the Continuous mode function it is only necessary to press either of the Push buttons - S0 or S5 to position the horizontal carriage.

Example :

1. Switch on the Main switch on the Control cabinet.
2. Switch on the Key switch - SO.1 on the Control cabinet.
3. Switch on the PRC 4 Axis control unit with the ON-OFF - Switch - S10. The horizontal carriage travels automatically to Position 0, regardless of which setting the Switch - S7 is set.
   The Push button - S0 remains illuminated until Push button - S5 is pressed.
4. Turn the Switch - S7 to the Continuous mode position (the white marking on the switch pointing to the left).
5. If the horizontal carriage has to be initially positioned between two end switch positions then the Push button - S5 must be pressed until the horizontal carriage overrides the “first” end switch of the desired position, which then illuminates.
6. As soon as the desired position is reached the push button must be released and the horizontal carriage will stop.
7. If the horizontal carriage is to be closer to the “second” position than the “first”, then the Push button - S5 must be pressed again and released fairly quickly.

⚠ IMPORTANT **The horizontal carriage will only move approximately 1 second after the push button has been pressed.**

- Positioning accuracy is approximately 20 mm using this method. Very accurate positioning will depend greatly on the skill of the individual operator.
- If the horizontal carriage overrides the “second” end stop the horizontal carriage can be brought back by pressing the push button - S0 for a short time. The one second delay is also valid for this push button. If the horizontal carriage has reached the Position - 5, then Push button - S5 will illuminate. The horizontal carriage will now only move when Push button - S0 is pressed.

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NOTES:

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Documentation XT Horizontal Axis / PRC 4 Powder Reciprocator Control

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