Operating Instructions and Spare Parts List

ACR Reciprocator
Safety Recommendations

1. The ACR Reciprocator should only be started up after carefully reading this operating manual. Incorrect setting of the PRC (or MRC) Control unit and the ACR Reciprocator can cause accidents, damage, and faulty operation of the equipment.

2. **ATTENTION !!** The (motor drive) power of the axis is very much stronger than that of any human being!
   
   The axis must be made inaccessible during operation (see local safety regulations). When the reciprocator is switched off the carriage can fall to the lowest reversing point under its own weight, therefore, **never stand under the carriage** when the reciprocator is switched off.

3. The plugs, and sockets of the PRC (or MRC) control module, power unit, and the ACR Reciprocator should only be unplugged when the control module is disconnected from the Mains.

4. The connecting cables between the control unit and the reciprocator must be laid out so that they cannot be damaged during operation of the axis.
   
   All movable hoses and cables must also be laid out so that they are neither subjected to any excessive loads nor hang on other parts, even when the reciprocator is at the maximum height of its stroke. Please observe local safety regulations.

5. The upper stroke limit must always be set according to the maximum height of the reciprocator. If the wrong stroke height is set (too high/low) this can cause damage to the booth and/or the reciprocator.

6. When replacing spare parts or carrying out repairs the PRC (or MRC) Control unit must be disconnected from the Mains according to local safety regulations.

7. **Only original** ITW Gema Spare Parts should be used. Use of spare parts from other manufactures will invalidate the ITW Gema guarantee conditions.
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Spare Parts List
1. ACR Reciprocator

1.1 Field of application

Objects are coated with powder with the aid of the ACR Reciprocator controlled by a PRC (or an MRC) control unit.
Objects are electro-statically coated with powder as they move horizontally on a chain conveyor system past spray guns moving automatically up and down on the ACR Reciprocator.

1.2 Operating mode

The Z Carriage (4) runs up and down on rollers (5) on the outside of the column (9) and the counterweight (12) moves up and down on the inside of the column. Depending on the number of guns (normally for 5 guns or more), twice the weight is required for the counter-weight.
The Z Carriage (4) and the counterweight (12) are connected to the drive chain (10). This drive chain (10) leads from the reversing plate (11) sprocket and is driven by the sprocket of the drive motor.
The drive unit (2) consists of an AC motor, a worm gear drive, and an incremental pulse generator which transmits the spindle position to the PRC (or MRC) unit.
Speeds, dwell time at the reversing points, and the positions of the reversal points are determined in the PRC (or MRC) Control unit.

Key to the diagram opposite:

1. Base
2. Drive
3. Hose carrier
4. Z Carriage
5. Roller
6. Gun carrier
7. Gun
8. Panelling
9. Column
10. Chain
11. Reversing plate
12. Counterweight
13. Service panel
14. Support bracket
15. T-Clamp block - ø 30 / ø 30 mm
16. Tube - ø 30 x 600 mm
17. Tube - ø 30 x 1000 mm
18. Rubber strap
Figure 1
1.3 Technical Data

Single Phase AC : 220 V (with Transformer 110 V / 240 V)
50 / 60 Hz
1.1 kVA

Power requirement : 220 V (with Transformer 110 V / 240 V)
50 / 60 Hz
1.5 kVA

Tolerance : +10% / -15%

Protective system : IP 54

Temperature range for the whole installation : 10 °C to +40 °C (50 °F to +104 °F)
ambient temperature

<table>
<thead>
<tr>
<th>Type of reciprocator</th>
<th>ACR– 1/09/30</th>
<th>ACR– 1/13</th>
<th>ACR– 1/18/30</th>
<th>ACR– 1/21</th>
<th>ACR– 1/23/30</th>
<th>ACR– 1/26</th>
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<tr>
<td>to:</td>
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<td>25.5 s</td>
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<td>3.4 m</td>
<td>3.4 m</td>
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<td>3.9 m</td>
</tr>
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</table>

1.4 Preparation for start-up

**NOTICE**
Both reciprocator axes must be perpendicular before starting the plant so that the carriage and the counterweight can move without obstruction.

1. Fit the handrail (Page 5).
2. Set the Main switch to 0 and connect the cable of the reciprocator and the PRC (or MRC).
3. Set the reciprocator in operation according to the PRC (or MRC) Operating Instruction.

**CAUTION**
The gun slot must be at least 150 mm higher than the upper reversing point and 150 mm lower than the lower reversing point, otherwise reduce the maximum stroke (see PRC or MRC Operating Instructions).
1.5 Assembling the spray gun carrier and handrail

1. Slide the Z Carriage (4) to the lower stop (14).
2. Assemble the tube holders (15) on the Z Carriage (4).
3. Assemble both vertical tubes (16).
5. Slide the horizontal tubes (18) through the T-clamp blocks (17).
6. Fit the T-clamp block (57) on the horizontal support tubes (18).
7. Slide the gun tube(s) (20) into the T-clamp block (57) and lock.
8. Mount the spray gunholder tube (20) on the adjustable clamp plate (19).
9. Fit the automatic gun(s) (7) on the adjustable clamp plate (19).
10. Screw on the handrail (3).

Figure 2
2. Reciprocator maintenance

Blow off the outside of the reciprocator with compressed air or wipe down with a soft cloth once every week.

Service:  Annually - when working single shift (Normal operation).
Half yearly - when working three shifts.

The following checks and maintenance work are to be carried out:

1. Start-up the reciprocator and check the Z Carriage for quiet running.
   • The drive chain touches the column (metallic noise).
     – Replace the plastic tension pads or re-tension the drive chain.
   • Strong vibration on the guns. Carriage has play.
     – Adjust the rollers.
2. Dismantle and clean the gun and handrail.
3. Dismantle and clean the reciprocator column panels.
4. Replace the rubber strips if badly worn.
5. Check the drive chain, replace when necessary.
6. Check sprockets and pedestal bearings, replace when necessary.
7. Check the counterweight rollers, replace when necessary.
8. Check the carriage rollers, replace when necessary.
9. Thoroughly tighten all screws and nuts.
10. Assemble the reciprocator panels
11. Grease the drive chain with normal lubricating grease.
2.1. Placing the reciprocator on trestles

1. Remove the handrail (3 - Fig. 1).
2. Unscrew the gun carriers (6 - Fig. 1).
3. Remove the column panels (8 - Fig. 1).
4. Tilt the reciprocator on wooden blocks and lay it on trestles.

Figure 3
2.2 Replacing the drive chain

Always replace the drive chains, and sprockets at the same time!

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see Page 7.
2. Loosen the nuts (21 - Fig. 8) of both plastic tension pads (22/22a - Fig. 8) = Tension the drive chain (10) and drive chain (10a).
3. Remove the connecting links (24 - Fig. 8) between the drive chain (10) and the tensioning bolt (33 - Fig. 8) = Drive chain (10) released.
4. Unscrew the reversing plate (11) and fit a new sprocket, see Page 9.
5. Remove the counterweight (12) and drive chain (10).
6. Release the connecting link (27 - Fig. 7) of the chains (10/10a) from the counterweight (12), see page 11.
7. Pass a wire through the column (9).
8. Fix the new drive chain (10) to the wire and pull it through the column (9).
9. Fit the other end of the drive chain to the counterweight (12).
10. Fit the reversing drive chain to the counterweight (12) and pass the drive chain with the counterweight into the column.
11. Fit the drive chain (10) on the tensioning bolt (33 - Fig. 8).
12. Screw the reversing plate (11) in to place.
13. Fit both chains (10/10a) on to the sprockets (26/28).
14. Fit the end of the reversing chain (10a) to the upper tensioning bolt (33 - Fig. 8).
15. Tighten the nuts (21 - Fig. 8) of both plastic tension pads (22/22a) until both chains (10/10a) can no longer be pressed on to the column (9) with the hand.

Figure 4
2.3 Replacing the upper sprocket and pedestal bearing

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see page 7.
2. Loosen the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) = Tension of the drive chain (10 - Fig. 4) and drive chain (10a - Fig. 4) is released.
3. Remove the connecting links (24 - Fig. 8) between the drive chain (10 - Fig. 4) and the tensioning bolt (33 - Fig. 8) = Drive chain (10 - Fig. 4) released.
4. Loosen the screws (43).
5. Unscrew the Allen grub screw (47) with an Allen key.
6. Release the collar (44) with a hammer and punch (46).
7. Remove the collar (44) from the end of the shaft.
8. Remove both pedestal bearings from the old sprocket and fit the new sprocket.
9. Align the sprocket correctly on the reversing plate (59) and screw the four bolts (43) tight.
10. Slide the collar (44) over the end of the shaft and tighten with the hammer and punch (46). Secure the grub screw (47).
11. Fit the drive chain (10a - Fig. 4) onto the sprocket (26 - Fig. 4).
12. Fit the drive chain (10a - Fig. 4) on the upper plastic tension pad (22a - Fig. 9).
13. Tighten the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) until the drive chains (10/10a - Fig. 4) can no longer be pressed onto the column (9 - Fig. 4) with the hand.

Figure 5

2.4 Replacing the lower sprocket

1. Remove the sprocket with the aid of a bearing extractor or have it removed by trained personnel.
2.5 Replacing the plastic tension pads

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see page 7.
2. Loosen the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 6) = Tension of the drive chain (10/10a - Fig. 4) is released.
3. Remove the tension bolt (33 - Fig. 9) and the old plastic tension pads (22/22a - Fig. 6) and replace the pads
4. Slide the tension bolt (33 - Fig.9) into the new pads.
5. Tighten the nuts (21 - Fig. 6) of both plastic tension pads (22/22a - Fig. 6) until the drive chain (10/10a - Fig. 4) can no longer be pressed onto the column (9 - Fig. 8) by hand.

2.6 Replacing the counterweight rollers

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see page 7.
2. Loosen the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) = Tension of the drive chain (10/10a - Fig. 4) is released.
3. Dismantle the reversing plate (59 - Fig. 5). Loosen the screws (43 - Fig. 5). See page 9.
4. Remove the connecting link (24 - Fig. 8) between the lower plastic tension pads (22 - Fig. 8) and the drive chain (23 - Fig. 8).
5. Fit a wire to the loose end the drive chain (23 - Fig. 8) to prevent it from falling inside the column.
6. Remove the counterweight (12 - Fig. 7) from the column (9 - Fig.7).
7. Replace the worn rollers (34 - Fig. 6).
   1. Remove the shoulder screw (35 - Fig. 6).
   2. Replace the roller (34 - Fig. 6).
   3. Refit the shoulder screw (35 - Fig. 6).
8. Slide the counterweight (12 - Fig. 7) into the column.
9. Pull the drive chain (23 - Fig. 8) out with the aid of a wire.
10. Refit the reversing plate (59 - Fig. 5). Tighten the screws (43 - Fig. 5), see page 9.
11. Fit the chain onto the sprockets (26/28 - Fig. 4).
12. Connect the drive chain (23 - Fig. 8) to the plastic tension pads (22 - Fig. 8).
13. Tighten the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) until the drive chain (10/10a - Fig. 4) can no longer be pressed onto the column (9 - Fig. 4) by hand.

2.7 Tensioning the drive chain

1. Open the service panel (13 - Fig. 1) in order to tighten the nuts (21 - Fig. 9) of the plastic tension pads (22/22a - Fig. 9).
L 1 = First tension to 33 mm
L 2 = Then tension to 30 mm
2.8 Replacing the Z Carriage

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see page 7.
2. Loosen the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) = Tension of the drive chains (10/10a - Fig. 4) is released.
3. Unscrew the reversing plate (59 - Fig. 5), see page 9.
4. Remove the upper stop (14a - Fig. 4).
5. Remove the connecting links (24 - Fig. 8) between the plastic tension pads (22 - Fig. 8) and the drive chain (10/10a - Fig. 4) = Upper and lower drive chains (10/10a - Fig. 4) released.
6. Run out the Z Carriage (4).
7. Dismantle both plastic tension pads (22/22a - Fig. 9) by loosening the nuts (37 - Fig. 9) and fit to the Z Carriage (4).
8. Dismantle the cover plate (23 - Fig. 9) and fit to the new Z Carriage (4).
9. Slide the new Z Carriage (4 - Fig. 9) on to the column (9 - Fig. 4).
10. Fit the upper stop (14a - Fig. 4) and the reversing plate (11 - Fig. 4).
11. Place the drive chain on the sprocket (26 - Fig. 5).
12. Fit the drive chain on to the plastic tension pads again.
13. Tighten the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) until the drive chain (10/10a - Fig. 4) can no longer be pressed onto the column (9 - Fig. 4).

2.9 Replacing the carriage rollers

1. Tilt the reciprocator on wooden blocks and lay it on trestles, see page 7.
2. Remove the cover plate (23 - Fig. 9)
3. Loosen the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) = Releases the tension on the drive chain (10 - Fig. 4) and drive chain (10a - Fig. 4).
4. Loosen the locking nuts (39 - Fig. 9) and screw out the locking screws (41 - Fig. 9) until the roller can be moved freely.
5. Unscrew the nut (36 - Fig. 9) completely from the roller spindle bolt (32 - Fig. 9) and pull the bolt out of the roller.
6. Remove the roller (5 - Fig. 9) from the Z-carrriage body. Take care not to lose the spacing sleeves (40 - Fig. 9).
7. Replace with a new complete roller with the spacing sleeves (40 - Fig. 9) in place on each side of the roller.
8. Push the roller spindle bolt (32 - Fig. 9) through the roller and screw on the nut (36 - Fig. 9).
9. Adjust the rollers according to the next section "2.10 Adjusting the carriage rollers - Points 3-8".
10. Tension the drive chains as follows:
    Tighten the nuts (21 - Fig. 9) of both plastic tension pads (22/22a - Fig. 9) until the drive chain (10/10a - Fig. 4) can no longer be pressed onto the column (9 - Fig. 4).
2.10 Adjusting the carriage rollers

1. Loosen the nut (36 - Fig. 10) slightly.
2. Loosen the locking nut (39 - Fig. 10).
3. Turn both locking screws (41 - Fig. 10) equally in a clock-wise direction with corresponding Allen keys.
4. The roller (5 - Fig. 10) moves against the column (9 - Fig. 10) until it rests flat on the column. **Attention:** It should not be possible to turn the roller manually.
5. Tighten both locking nuts (39 - Fig. 10) firmly on each side of the roller (5 - Fig. 10).
6. Firmly tighten the nut (36 - Fig. 10) at the side of the roller (5 - Fig. 10), use a second spanner to hold the roller spindle bolt (32 - Fig. 10).
7. Adjust the remaining rollers (5 - Fig. 10) according to the Points 1-6 above.
8. **Z Carriage must roll freely the whole length of the stroke without any play.**
2.11 Replacing the drive unit

1. Tilt the reciprocator on wooden blocks and lay it on the trestles. See page 7.
2. Release the drive chain (1 - Fig. 11) from the plastic tension pads (22 - Fig. 9).
3. Loosen the four screws (11 - Fig. 11) on the base plate and replace the complete drive (9 - Fig. 11).
4. Fit the new drive unit and connect the incremental pulse generator.
5. Tighten the base plate screws (11 - Fig. 11).
6. Tension the lower drive chain.

2.12 Replacing the incremental pulse generator

**CAUTION** When disconnecting the incremental pulse generator cable, note the exact positions of the wires in the terminal block in the socket housing of the reciprocator and replace the wires of the new incremental pulse generator accordingly.

DANGER OF SHORT CIRCUITING !!

The following table shows the terminal allocations of the incremental pulse generator. Please note that some connections have two wires connected in the same hole:

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<thead>
<tr>
<th>Colour</th>
<th>Terminal</th>
<th>Function</th>
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<tr>
<td>Green</td>
<td>7</td>
<td>Ch. A</td>
</tr>
<tr>
<td>Yellow</td>
<td>15</td>
<td>Ch. B</td>
</tr>
<tr>
<td>Pink</td>
<td>-</td>
<td>Not used</td>
</tr>
<tr>
<td>Brown</td>
<td>8</td>
<td>+Ub</td>
</tr>
<tr>
<td>White</td>
<td>16</td>
<td>0 V</td>
</tr>
<tr>
<td>Grey</td>
<td>6</td>
<td>Housing</td>
</tr>
</tbody>
</table>

1. Carefully disconnect the wires of the incremental pulse generator cable from the terminal block in the socket housing of the reciprocator.
2. Remove the defect incremental pulse generator from the drive unit as follows:
   Unscrew the screw holding the incremental pulse generator bracket (6 - Fig. 11) on the motor fan housing.
   Loosen the grubscrew holding the clamping collar (7 - Fig. 11) on the shaft (12 - Fig. 11) and pull the incremental pulse generator off the shaft.
   Unscrew the two screws (8 - Fig. 11) holding the incremental pulse generator on the bracket (6 - Fig. 11).
3. Fit the bracket (6 - Fig. 11) to the new incremental pulse generator with the two screws (8 - Fig. 11).
4. Fit the new incremental pulse generator (4 - Fig. 11) onto the drive shaft of the drive unit.
5. Carefully tighten the grub screw on the hollow shaft collar (7 - Fig. 11) so that the hollow shaft firmly grips the drive shaft of the drive unit and rotates with it. Make quite sure that the collar clamping action is effective, otherwise serious damage can be caused to the reciprocator.
6. Connect the wires of the incremental pulse generator cable in the correct positions in the terminal block in the socket housing of the reciprocator. Make sure that the incremental pulse generator cable cannot get caught in the chain drive!!

Figure 11
Spare Parts List

ACR Reciprocator
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<td>Pedestal Bearing</td>
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<td>Gun carrier for 2 x 1-4 Guns</td>
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<tr>
<td>Gun carrier for 5-8 Guns</td>
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</tr>
<tr>
<td>Gun fixtures and Collision protection</td>
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Spare Parts List

Ordering Spare Parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

1. Type and serial no of your powder coating equipment.
2. Order number, quantity, and description of each spare part.

Example:

1. **Type**: ACR-1/xxx, **Serial no**: xxxx.xxxx

2. **Order no**: 230 057, 1 piece, 16 pole Socket housing

When ordering cable or hose material the length required must also be given. The spare part number of this yard/metre ware is always marked with an *. The spare part number of yard/metre ware always begin with 1.. ...

All wear parts are marked with a #.

All dimensions of plastic hoses are given as external, and internal diameters:

e.g. - ø 8 / 6 mm = 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d).
Panelling

1 Rubber strip
   Type
   ACR–1/09/30 306 665
   ACR–1/13 306 665
   ACR–1/18/30 306 657
   ACR–1/21 306 657
   ACR–1/23/30 314 560
   ACR–1/26 314 560

2 Panel screw 216 224
3 Swivel wheel 236 314
4 Fixed wheel 236 306
5 Quick-release service panel 205 982
6 Handrail 360 015

Figure 1
## Hose support

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<td>Support bracket</td>
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<td>T-Clamp block - ø 30 / ø 30 mm</td>
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<tr>
<td>3</td>
<td>Tube - ø 30 x 600 mm</td>
<td>337 528</td>
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<tr>
<td>4</td>
<td>Tube - ø 30 x 1000 mm</td>
<td>337 544</td>
</tr>
<tr>
<td>5</td>
<td>Rubber strap (1 per Gun/Hose)</td>
<td>347 418</td>
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![Figure 2](image.png)
## Drive unit

1. Lower sprocket - 1/2" T=21 (single) 368 626#
2. Lower sprocket - 1/2" T=21 (duplex) 368 636#
3. Motor drive unit - complete *(with Items 4, 6, 7, 7.1)* 371 866
   Motor drive unit - complete *(without Items 4, 6, 7, 7.1)* 369 233
4. Incremental pulse generator 248 851
5. Proximity switch 229 180
6. Incremental pulse generator bracket 371 874
7. Screw - M4 x 8 mm 213 713
7.1. Spring washer - M4 (for Item 7) 205 680
8. Clamp collar (for Items 1 and 2) 256 960
9. Mounting fixture 369 241
10. Screw - M12 x 35 mm 257 460
11. Screw - M10 x 45 mm 218 081
11.1. Spring washer - M10 (for Item 11) 215 081
11.2. Washer - ø 10.5 / 21 x 2 mm (for Item 11) 215 821

---

**Figure 3**

# Wear part
# Wear parts

<table>
<thead>
<tr>
<th>Wear part</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestal Bearing</td>
<td></td>
</tr>
<tr>
<td>1 Sprocket 1/2&quot; T=21 (single)</td>
<td>306 630#</td>
</tr>
<tr>
<td>2 Bearing (incl. Item 6)</td>
<td>201 375#</td>
</tr>
<tr>
<td>3 Tension block</td>
<td>221 694#</td>
</tr>
<tr>
<td>4 Sprocket 1/2&quot; T=21 (duplex)</td>
<td>317 446#</td>
</tr>
<tr>
<td>5 Shaft</td>
<td>320 102#</td>
</tr>
<tr>
<td>6 Collar</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4
Z Carriage

1. Reciprocator column with base plate
   ACR–1/09/30; ACR–1/13  
   ACR–1/18/30; ACR–1/21  
   ACR–1/23/30; ACR–1/26  
   353 981
   353 990
   354 007

2. Holder (single : 230 mm)
   Holder (double : 460 mm)
   309 354
   309 079

3. Rubber buffer
   211 664

4. Z Carriage - complete (single : 230 mm)
   Z Carriage - complete (double : 460 mm)
   310 050
   310 131

5. Roller - complete
   307 165

6. Seger ring
   210 359

7. Tube
   308 021

8. Ball race
   308 013

9. Sleeve
   234 656

10. Nut - M 10
    214 221

11. Nut - M 10
    215 589

12. Bolt - M 10 x 110 mm
    215 899

13. Washer
    308 013

14. Spacing sleeve - ACR–1/09/30; ACR–1/13
    Spacing sleeve -
    ACR–1/18/30; ACR–1/21; ACR–1/23/30; ACR–1/26
    308 129
    308 145

15. Plastic tension pads
    ACR–1/09/30; ACR–1/13
    2 x 2 Pads
    ACR–1/18/30; ACR–1/21; ACR–1/23/30; ACR–1/26
    2 x 3 Pads
    210 919

16. Spacing ring
    308 181

17. Plate
    205 095

18. Nut - M 6
    211 400

19. Tension screw (single) - ACR–1/13
    Tension screw (single) - ACR–1/21; ACR–1/26
    201 391
    317 420

20. Tension screw (duplex) - ACR–1/09/30
    Tension screw (duplex) - ACR–1/18/30; ACR–1/23/30
    239 828
    324 566

21. Connecting link (single)
    201 413

22. Connecting link (duplex)
    317 438

23. Connecting link (single)
    201 405

24. Connecting link (duplex)
    221 708

25. Roller chain -
<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Type</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACR–1/09/30</td>
<td>1.41 m (duplex)</td>
<td>lower</td>
<td>239 810</td>
</tr>
<tr>
<td></td>
<td>1.38 m (duplex)</td>
<td>upper</td>
<td>on request</td>
</tr>
<tr>
<td>ACR–1/13</td>
<td>1.72 m (single)</td>
<td>lower</td>
<td>201 391</td>
</tr>
<tr>
<td></td>
<td>1.72 m (single)</td>
<td>upper</td>
<td>201 391</td>
</tr>
<tr>
<td>ACR–1/18/30</td>
<td>2.23 m (duplex)</td>
<td>lower</td>
<td>239 828</td>
</tr>
<tr>
<td></td>
<td>2.18 m (duplex)</td>
<td>upper</td>
<td>on request</td>
</tr>
<tr>
<td>ACR–1/21</td>
<td>2.53 m (single)</td>
<td>lower</td>
<td>211 400</td>
</tr>
<tr>
<td></td>
<td>2.53 m (single)</td>
<td>upper</td>
<td>211 400</td>
</tr>
<tr>
<td>ACR–1/23/30</td>
<td>2.72 m (duplex)</td>
<td>lower</td>
<td>239 836</td>
</tr>
<tr>
<td></td>
<td>2.68 m (duplex)</td>
<td>upper</td>
<td>on request</td>
</tr>
<tr>
<td>ACR–1/26</td>
<td>3.04 m (single)</td>
<td>lower</td>
<td>224 464</td>
</tr>
<tr>
<td></td>
<td>3.04 m (single)</td>
<td>upper</td>
<td>224 464</td>
</tr>
</tbody>
</table>

26. Studding - M6 - ACR–1/09/30
    308 137

27. Studding - M6 - ACR–1/18/30; ACR–1/21; ACR–1/23/30; ACR–1/26;
    308 153

# Wear Parts
Z Carriage

Figure 5
### Counterweight

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Counterweight - 15 kg</td>
<td>362 808</td>
</tr>
<tr>
<td>1.1</td>
<td>Counterweight - 15 kg (duplex)</td>
<td>364 274</td>
</tr>
<tr>
<td>1.2</td>
<td>Counterweight - 30 kg (duplex - without Item 7.1)</td>
<td>362 700</td>
</tr>
<tr>
<td>2</td>
<td>Roller</td>
<td>362 786#</td>
</tr>
<tr>
<td>2.1</td>
<td>Roller - (with Items 2, 4 and 5) complete.</td>
<td>363 804#</td>
</tr>
<tr>
<td>3</td>
<td>Spacer ring</td>
<td>362 794</td>
</tr>
<tr>
<td>4</td>
<td>Ball bearing - ø 6 mm / 19 x 6 mm</td>
<td>252 832#</td>
</tr>
<tr>
<td>5</td>
<td>C-Ring</td>
<td>252 840</td>
</tr>
<tr>
<td>6</td>
<td>Shoulder screw - ø 6 mm / M5 x 12 mm</td>
<td>252 808</td>
</tr>
<tr>
<td>7</td>
<td>Connecting link (single)</td>
<td>201 413#</td>
</tr>
<tr>
<td>7.1</td>
<td>Connecting link (duplex)</td>
<td>317 438#</td>
</tr>
<tr>
<td>8</td>
<td>Connecting link (single)</td>
<td>201 405#</td>
</tr>
<tr>
<td>8.1</td>
<td>Connecting link (duplex)</td>
<td>221 708#</td>
</tr>
</tbody>
</table>

---

**Wear parts**

Figure 6
Reciprocator socket unit

1. Housing 328 502
2. Socket housing - 16 pole 230 049
3. Socket insert - 16 pole 221 864
4. Lead-through - PG 16 204 366
5. Lead-through - PG 16/2 204 374
6. Lock nut - PG 16 204 412
7. Connecting cable - complete:
   Frequency converter/Reciprocator 327 522
8. Plug housing - 16 pole 230 057
9. Socket plate - 16 pole 202 150
10. Lead-through - PG 21/2 243 272
11. Cable - 4 x 1 mm² (Screened) 103 810*
12. Cable - 5 x 0.34 mm² (Screened) 100 625*
13. Frequency converter (Power section) 248 231

* Indicate length required

Figure 7
Gun carrier for 1-4 Guns

**Gun carrier for 1 Gun**
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing◊ - ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 600 mm 337 552

**Gun carrier for 2 Guns**
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing◊ - ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 600 mm 337 552
10. Tubing - ø 40 x 1000 mm 337 560

**Gun carrier for 3 Guns**
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing◊ - ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 600 mm 337 552
10. Tubing - ø 40 x 1500 mm 337 579

**Gun carrier for 4 Guns**
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing◊ - ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 600 mm 337 552
10. Tubing - ø 40 x 2000 mm 337 587

Figure 8

◊ Reinforced glass fibre
Gun carrier for 2 x 1-4 Guns

Gun carrier for 2 x 1 Gun
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing - ø 30 x 800 mm - RGF 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 600 mm 337 552
9. Tubing - ø 40 x 1000 mm 337 560

Gun carrier for 2 x 2 Guns
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing - ø 30 x 800 mm - RGF 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
10. Tubing - ø 40 x 1500 mm 337 579

Gun carrier for 2 x 3 Guns
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing - ø 30 x 800 mm - RGF 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
11. Tubing - ø 40 x 2000 mm 337 587

Gun carrier for 2 x 4 Guns
1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing - ø 30 x 800 mm - RGF 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
11. Tubing - ø 40 x 2000 mm 337 587

Figure 9

◊ Reinforced glass fibre
Gun carrier for 5-8 Guns

**Gun carrier for 5 Guns**

1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
12. Tubing - ø 40 x 2500 mm 103 314
12.1 Tube cap - ø 40 mm 236 381

**Gun carrier for 6 Guns**

1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
13. Tubing - ø 40 x 3000 mm 103 314
13.1 Tube cap - ø 40 mm 236 381

**Gun carrier for 7 Guns**

1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
13. Tubing - ø 40 x 3000 mm 103 314
13.1 Tube cap - ø 40 mm 236 381

**Gun carrier for 8 Guns**

1. Pipe clamps - ø 40 mm 355 291
2. T-clamp blocks - ø 40 / 40 mm 363 910
3. T-clamp blocks - ø 40 / 30 mm 363 936
4. See page 13 - Gun fixtures etc
6. Tubing - ø 30 x 800 mm 337 536
6.1 Tube cap (for Item 6 - ø 30 mm) 236 373
6.2 Tubing ø 30 x 800 mm 366 269
6.3 Tube cap 255 653
9. Tubing - ø 40 x 1000 mm 337 560
13. Tubing - ø 40 x 3000 mm 103 314
13.1 Tube cap - ø 40 mm 236 381

◊ Reinforced glass fibre
### Gun fixtures and Collision protection

1. Gun fixture - ø 30 mm  
   - 350 150
2. Gun fixture - ø 40 mm  
   - 354 317
3. Gun fixture - ø 40 mm (Transverse)  
   - 356 670
4. Collision protection - ø 30 mm (for ZA Axis)  
   - 364 215
5. Adapter piece complete. - ø 30 mm (for ZA Axis)  
   - 364 231
6. Collision protection - ø 30 mm (for YT Axis)  
   - 364 223
7. Adapter piece complete. - ø 30 mm (for YT Axis)  
   - 364 240

**Gun fixtures**

1. ![](gun_fixture_1.png)
2. ![](gun_fixture_2.png)
3. ![](gun_fixture_3.png)

**Collision protection**

4. ![](collision_protection_4.png)
5. ![](collision_protection_5.png)
6. ![](collision_protection_6.png)
7. ![](collision_protection_7.png)

---

Figure 11