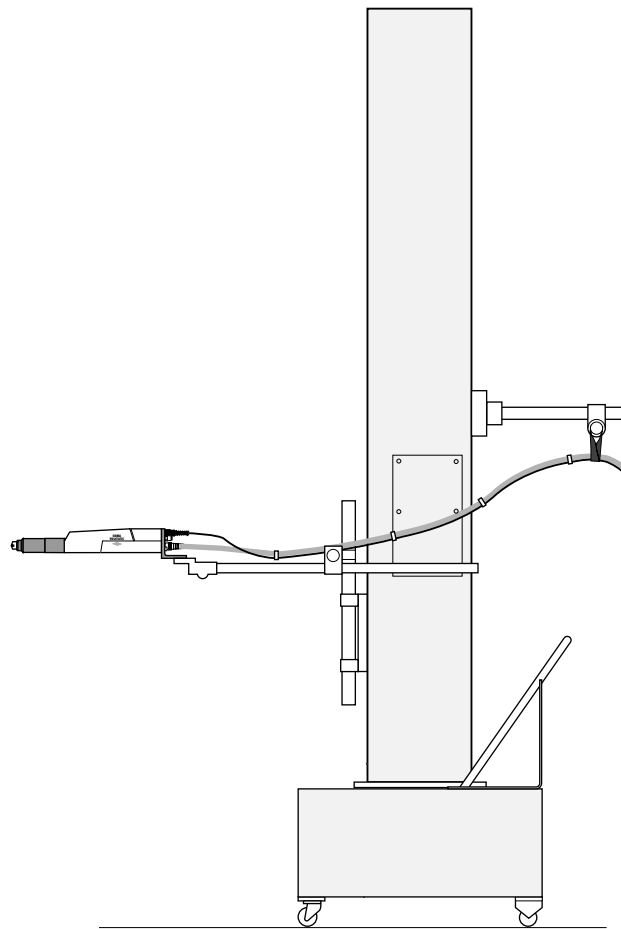


Operating Instructions and Spare Parts List

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 counterweight.

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 - $\varnothing 30 / \varnothing 30$ mm
- 16 Tube - $\varnothing 30 \times 600$ mm
- 17 Tube - $\varnothing 30 \times 1000$ mm
- 18 Rubber strap

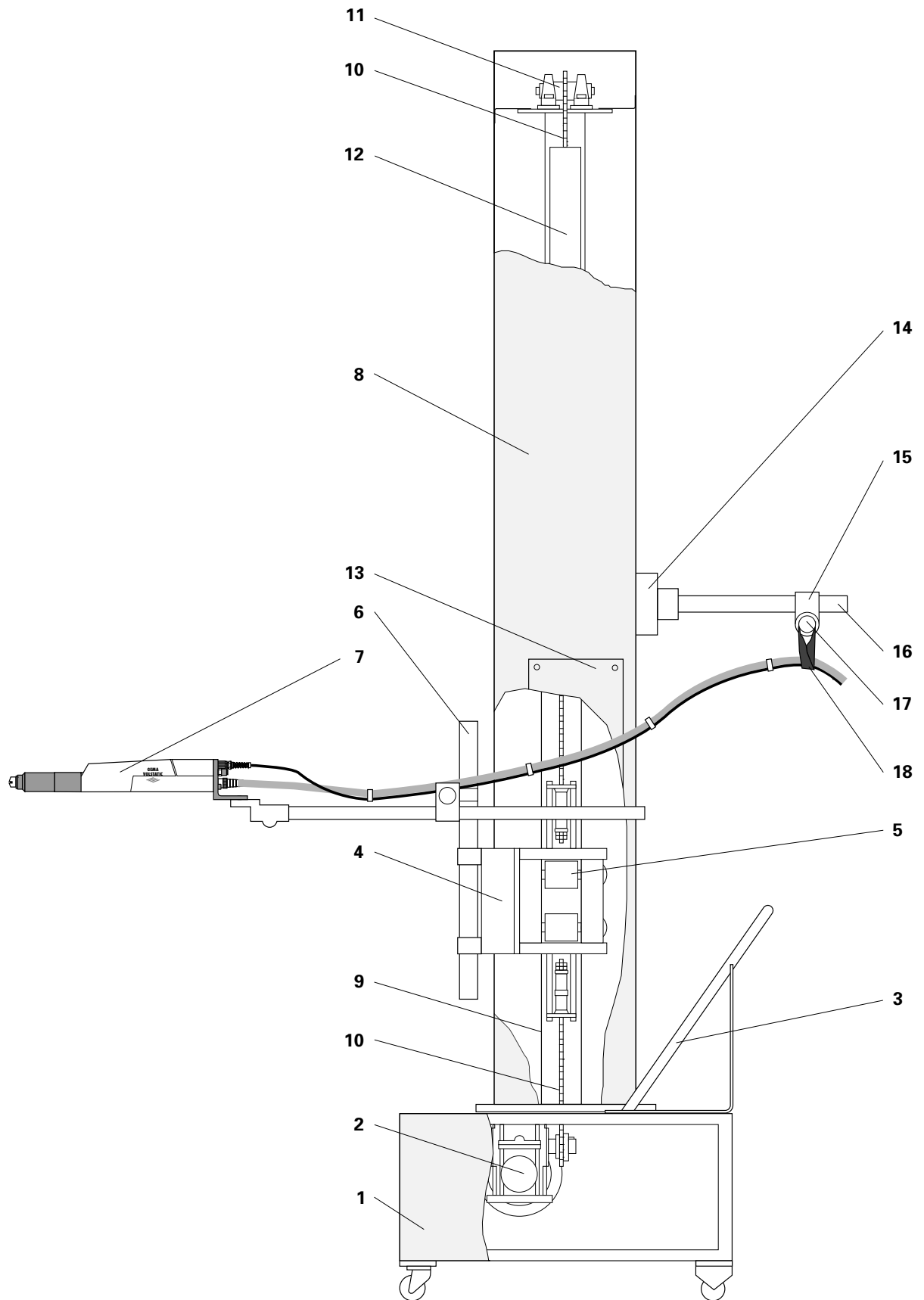


Figure 1

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

Type of reciprocator	ACR- 1/09/30	ACR- 1/13	ACR- 1/18/30	ACR- 1/21	ACR- 1/23/30	ACR- 1/26
Stroke adjustment from: Min. to: Max.	0.0 m 0.9 m	0.0 m 1.3 m	0.0 m 1.8 m	0.0 m 2.1 m	0.0 m 2.3 m	0.0 m 2.6m
Stroke speed adjustment from: to:	0.0 m/s 0.6 m/s	0.0 m/s 0.6 m/s	0.0 m/s 0.6 m/s	0.0 m/s 0.6 m/s	0.0 m/s 0.6 m/s	0.0 m/s 0.6 m/s
Dwell time at the reversing points Adjustable from: to:	0.0 25.5 s	0.0 25.5 s	0.0 25.5 s	0.0 25.5 s	0.0 25.5 s	0.0 25.5 s
Counterweight:	30 kg	15 kg	30 kg	15 kg	30 kg	15 kg
Maximum load of the Z Carriage:	30 kg	15 kg	30 kg	15 kg	30 kg	15 kg
Height of reciprocator:	2.6 m	2.6 m	3.4 m	3.4 m	3.9 m	3.9 m

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).
4. Mount the T-clamp blocks (17) on the 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).

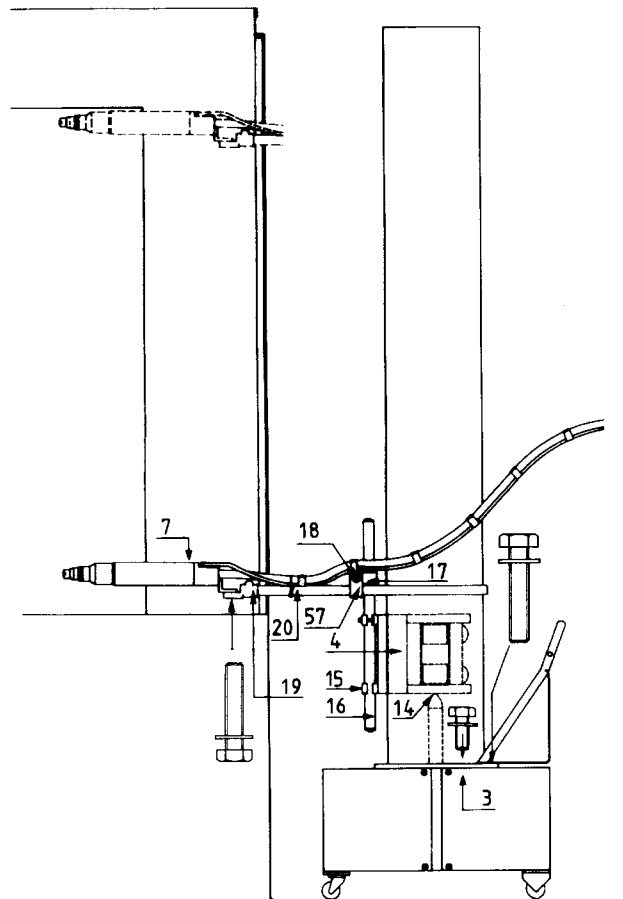


Figure 2

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.

	Page
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.	10
• Strong vibration on the guns. Carriage has play.	
– Adjust the rollers.	13
2. Dismantle and clean the gun and handrail.	5
3. Dismantle and clean the reciprocator column panels.	ETL 2
4. Replace the rubber strips if badly worn.	ETL 2
5. Check the drive chain, replace when necessary.	8
6. Check sprockets and pedestal bearings, replace when necessary.	9
7. Check the counterweight rollers, replace when necessary.	10
8. Check the carriage rollers, replace when necessary.	12, 13
9. Thoroughly tighten all screws and nuts.	
10. Assemble the reciprocator panels	ETL 2
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.

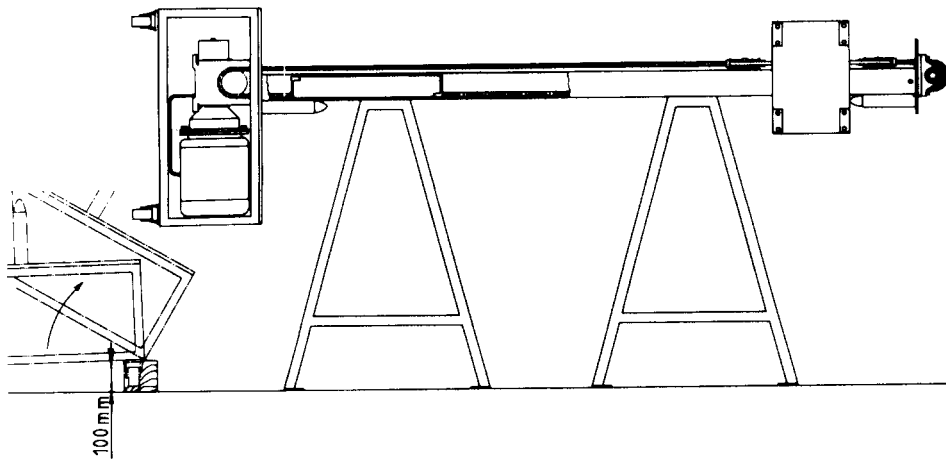


Figure 3

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.

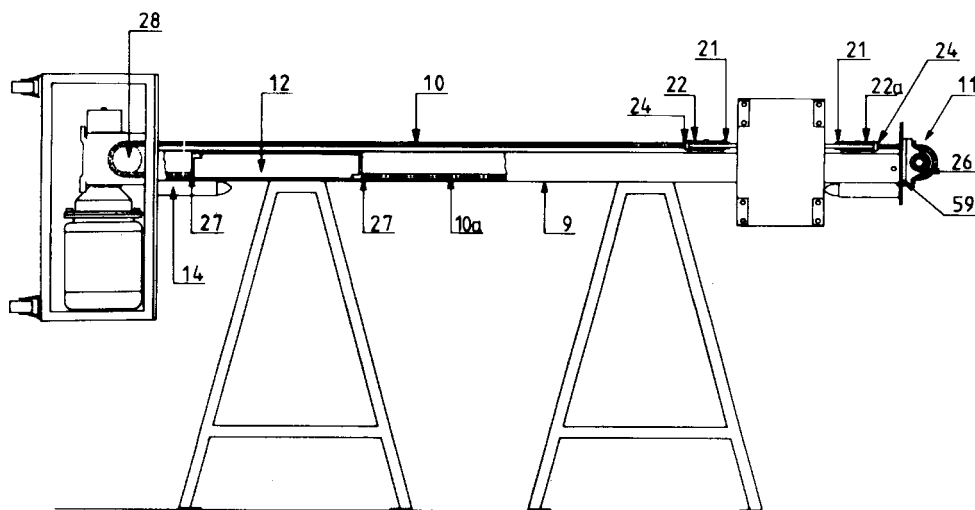


Figure 4

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.

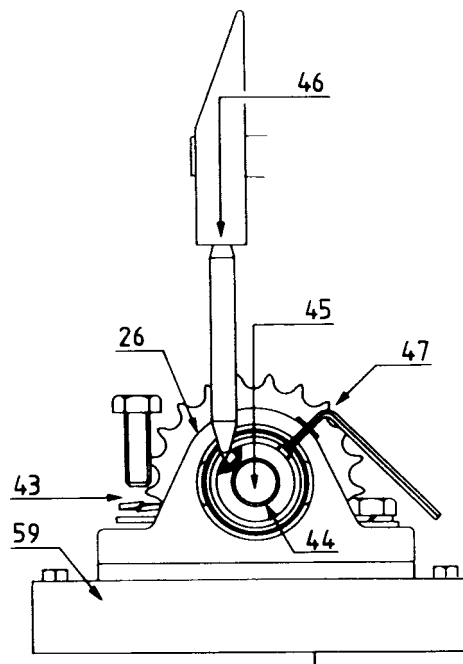


Figure 5

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).

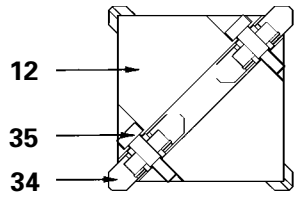


Figure 6

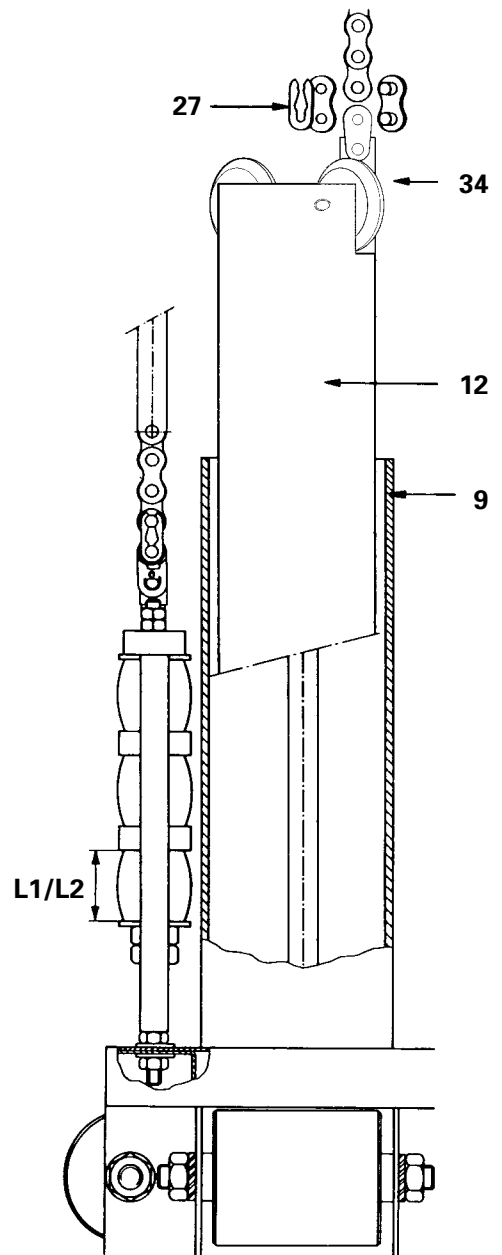


Figure 7

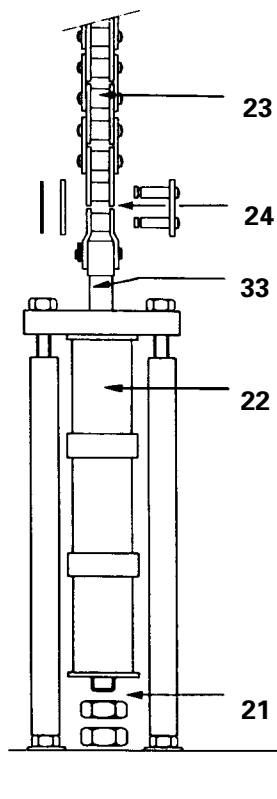


Figure 8

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-carriage 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).

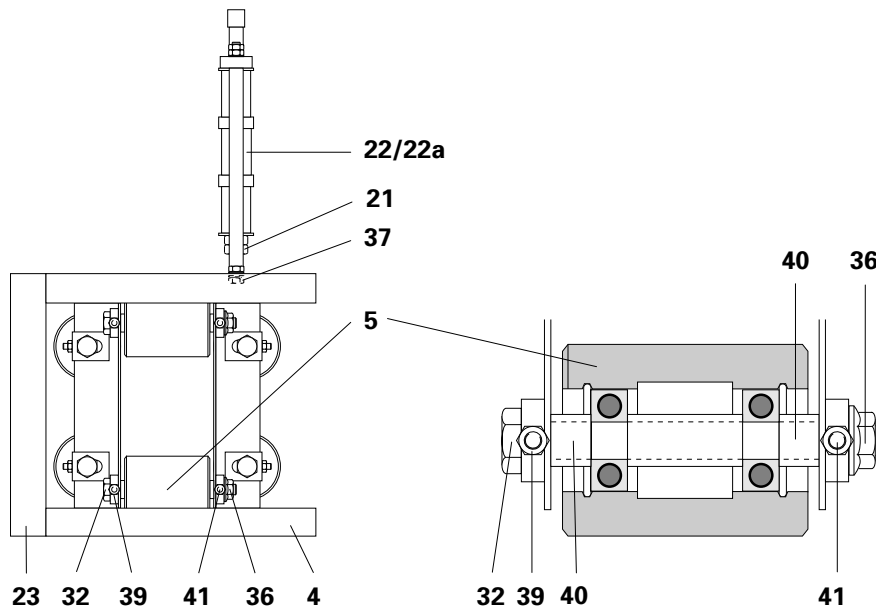


Figure 9

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.**

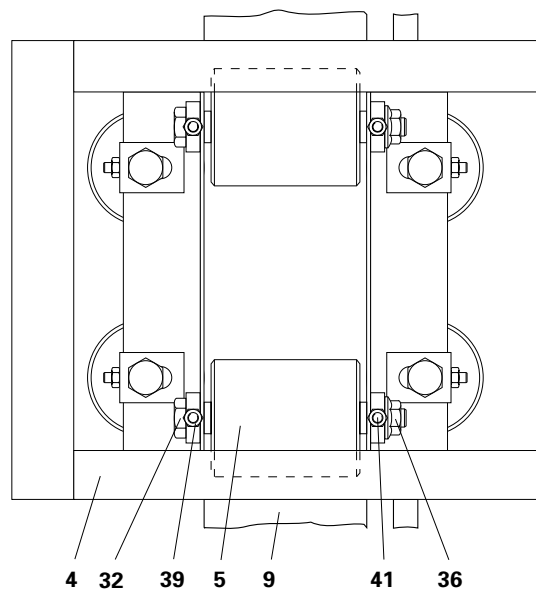


Figure 10

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



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:

Colour	Terminal	Function
Green	7	Ch. A
Yellow	15	Ch. B
Pink	-	Not used
Brown	8	+Ub
White	16	0 V
Grey	6	Housing

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 grub screw 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!!*

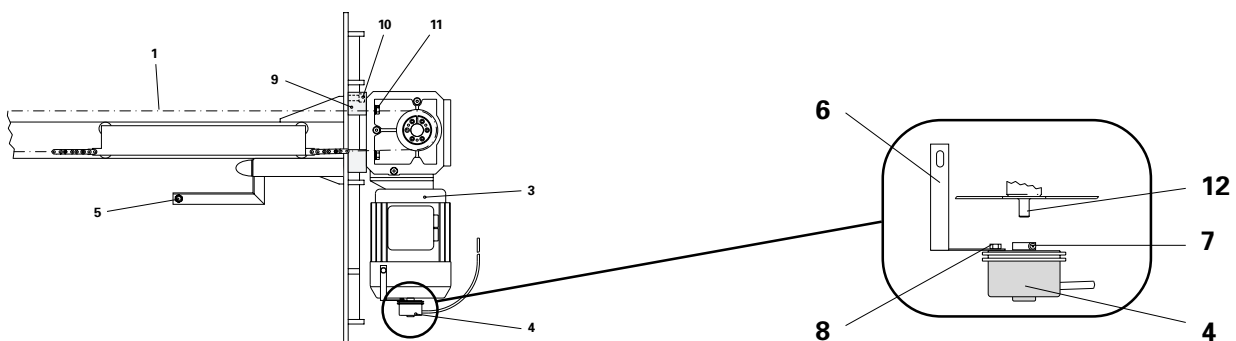


Figure 11

Spare Parts List

ACR Reciprocator

Spare Parts List

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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. - \emptyset 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

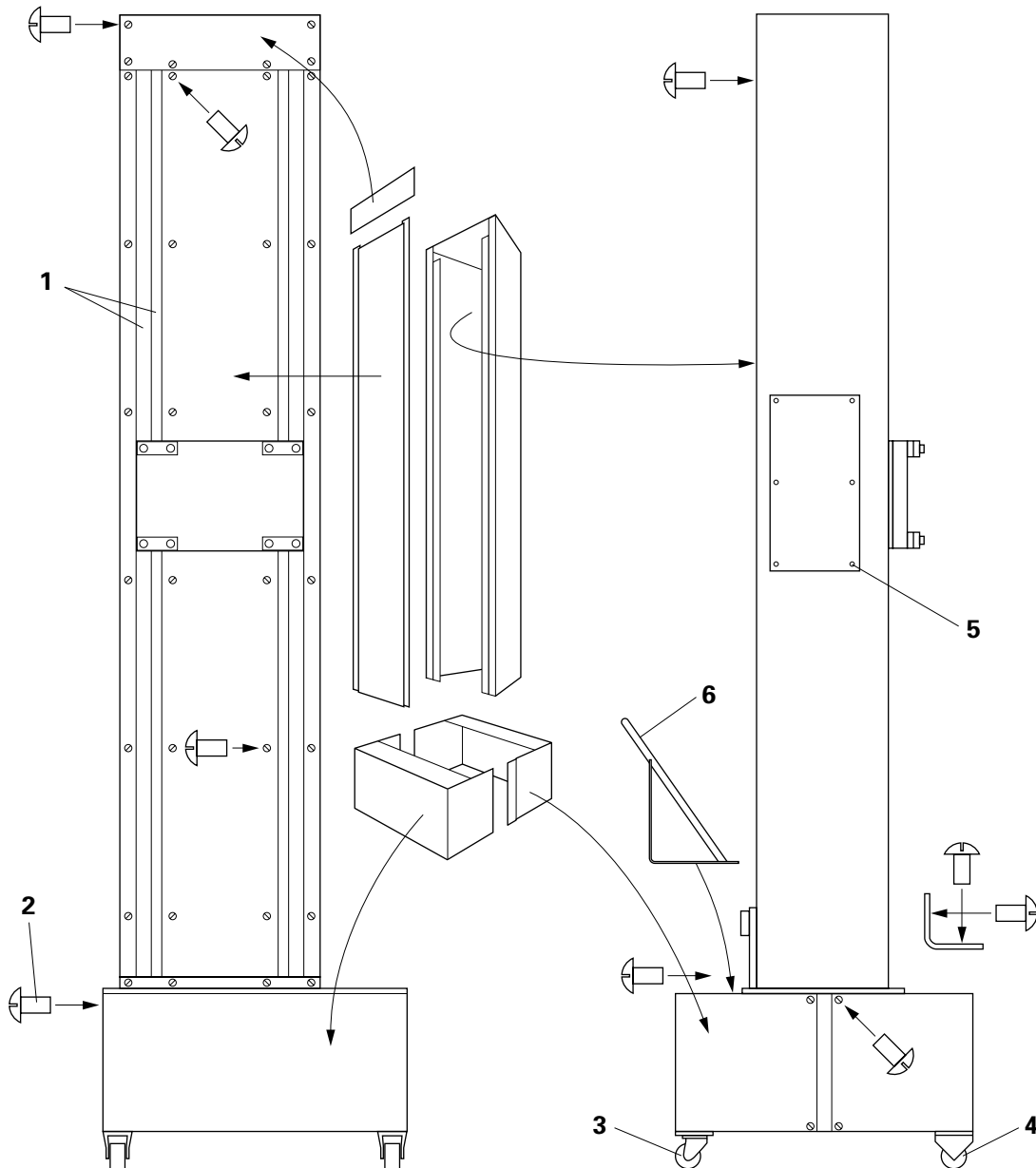


Figure 1

Wear part

Hose support

1	Support bracket	242 667
2	T-Clamp block - $\varnothing 30 / \varnothing 30$ mm	363 952
3	Tube - $\varnothing 30 \times 600$ mm	337 528
4	Tube - $\varnothing 30 \times 1000$ mm	337 544
5	Rubber strap (1 per Gun/Hose)	347 418

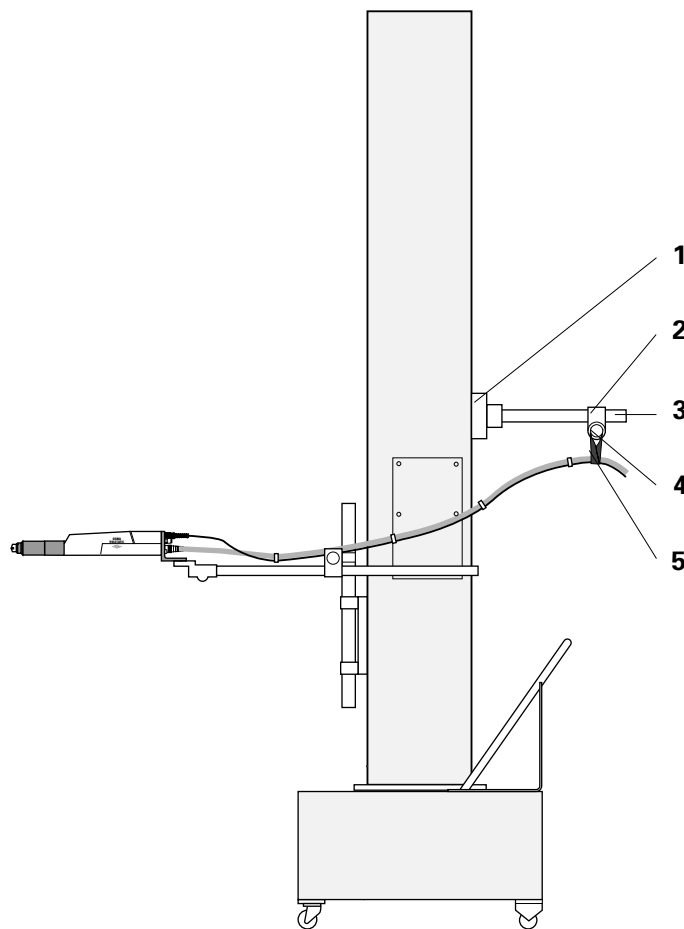


Figure 2

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 (<i>with</i> Items 4, 6, 7, 7.1)	371 866
	Motor drive unit - complete (<i>without</i> 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)	215 961
11.2	Washer - \varnothing 10.5 / 21 x 2 mm (for Item 11)	215 821

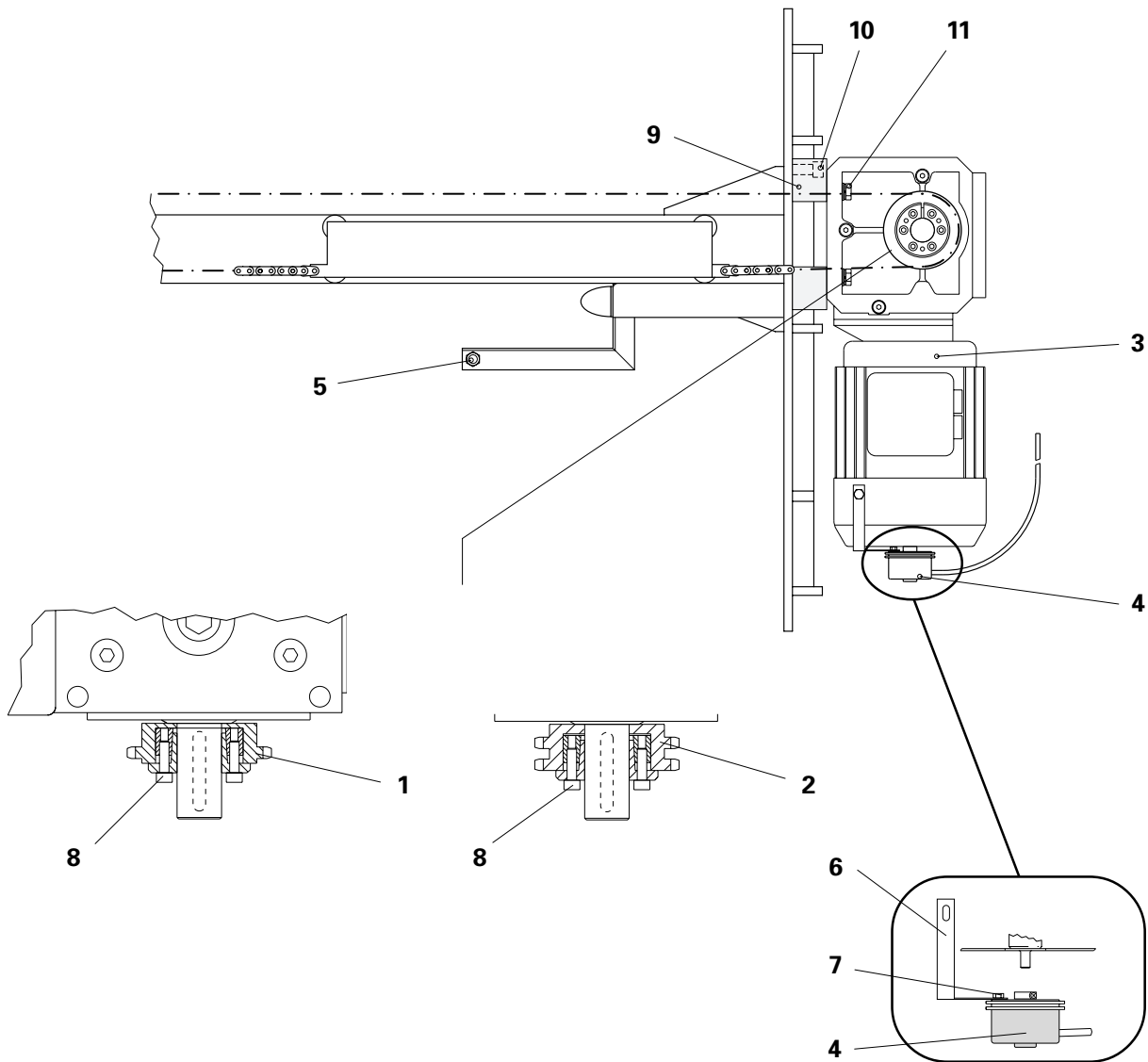


Figure 3

Wear part

Pedestal Bearing

1	Sprocket 1/2" T=21 (single)	306 630#
2	Bearing (incl. Item 6)	201 375#
3	Tension block	221 694#
4	Sprocket 1/2" T=21 (duplex)	317 446#
5	Shaft	320 102#
6	Collar	

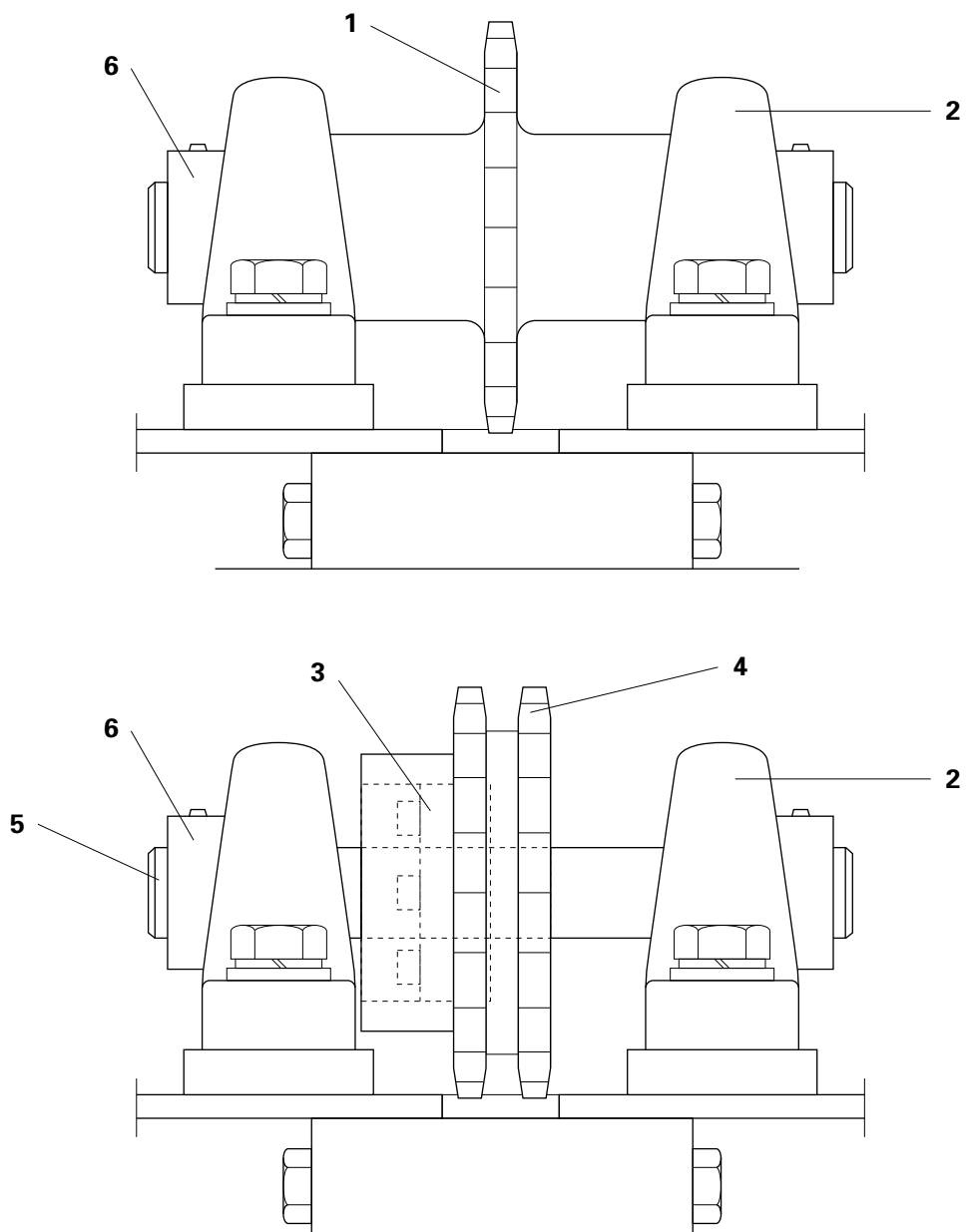


Figure 4

Wear parts

Z Carriage

1	Reciprocator column with base plate			353 981
	ACR-1/09/30; ACR-1/13			353 990
	ACR-1/18/30; ACR-1/21			354 007
	ACR-1/23/30; ACR-1/26			309 354
2	Holder (single : 230 mm)			309 079
	Holder (double : 460 mm)			211 664
3	Rubber buffer			310 050
4	Z Carriage - complete (single : 230 mm)			310 131
	Z Carriage - complete (double : 460 mm)			307 165
5	Roller - complete			216 135
6	Seeger ring			308 021
7	Tube			201 359
9	Ball race			308 013
10	Sleeve			234 656
11	Nut - M 10			214 221
12	Bolt - M 10 x 110 mm			215 589
13	Nut - M 10			215 899
14	Washer			308 129
15	Spacing sleeve - ACR-1/09/30; ACR-1/13			308 145
	Spacing sleeve -			210 919#
	ACR-1/18/30; ACR-1/21; ACR-1/23/30; ACR-1/26			
16	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		
17	Spacing ring			307 181
18	Plate			308 110
19	Nut - M 6			205 095
20	Tension screw (single) - ACR-1/13			308 170
	Tension screw (single) - ACR-1/21; ACR-1/26			308 161
	Tension screw (duplex) - ACR-1/09/30			317 420
	Tension screw (duplex) - ACR-1/18/30; ACR-1/23/30			324 566
21	Connecting link (single)			201 413#
	Connecting link (duplex)			317 438#
22	Connecting link (single)			201 405#
	Connecting link (duplex)			221 708#
23	Roller chain -			
	<i>Type</i>	<i>Length</i>		
	ACR-1/09/30	1.41 m (duplex)	lower	239 810#
		1.38 m (duplex)	upper	on request
	ACR-1/13	1.72 m (single)	lower	201 391#
		1.72 m (single)	upper	201 391#
	ACR-1/18/30	2.23 m (duplex)	lower	239 828#
		2.18 m (duplex)	upper	on request
	ACR-1/21	2.53 m (single)	lower	211 400#
		2.53 m (single)	upper	211 400#
	ACR-1/23/30	2.72 m (duplex)	lower	239 836#
		2.68 m (duplex)	upper	on request
	ACR-1/26	3.04 m (single)	lower	224 464#
		3.04 m (single)	upper	224 464#
24	Studding - M6 - ACR-1/09/30			308 137
	Studding - M6 - ACR-1/18/30; ACR-1/21; ACR-1/23/30; ACR-1/26;			308 153

Wear Parts

Z Carriage

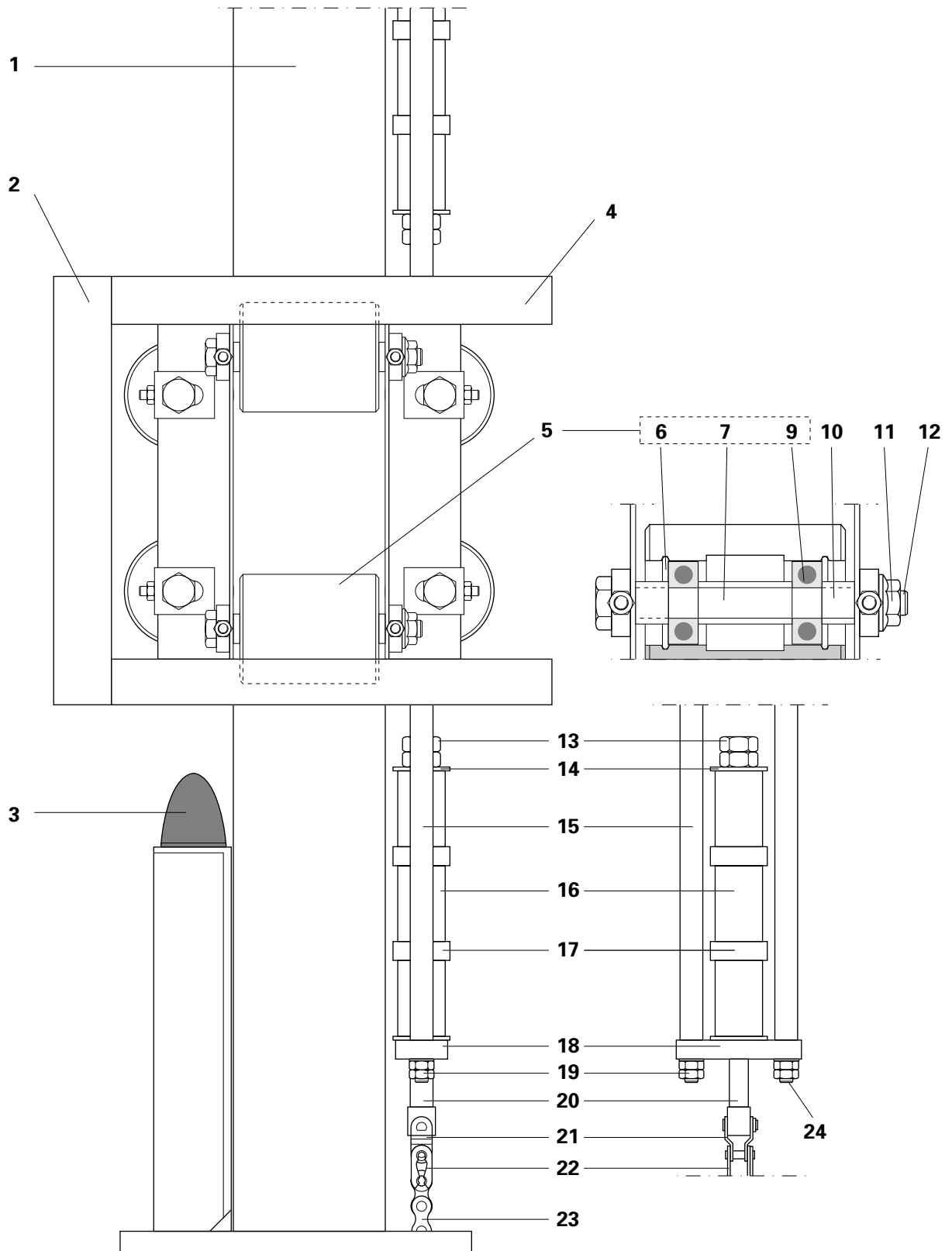


Figure 5

Counterweight

Counterweight complete. - 15 kg (with rollers)	309 346
Counterweight complete.- 15 kg (with rollers - without Item 7.1 - duplex)	317 462
Counterweight complete. - 30 kg (with rollers - without Item 7.1)	321 400
1 Counterweight - 15 kg	362 808
1.1 Counterweight - 15 kg (duplex)	364 274
1.2 Counterweight - 30 kg (duplex - without Item 7.1)	362 700
2 Roller	362 786#
2.1 Roller - (with Items 2, 4 and 5) complete.	363 804#
3 Spacer ring	362 794
4 Ball bearing - \varnothing 6 mm / 19 x 6 mm	252 832#
5 C-Ring	252 840
6 Shoulder screw - \varnothing 6 mm / M5 x 12 mm	252 808
7 Connecting link (single)	201 413#
7.1 Connecting link (duplex)	317 438#
8 Connecting link (single)	201 405#
8.1 Connecting link (duplex)	221 708#

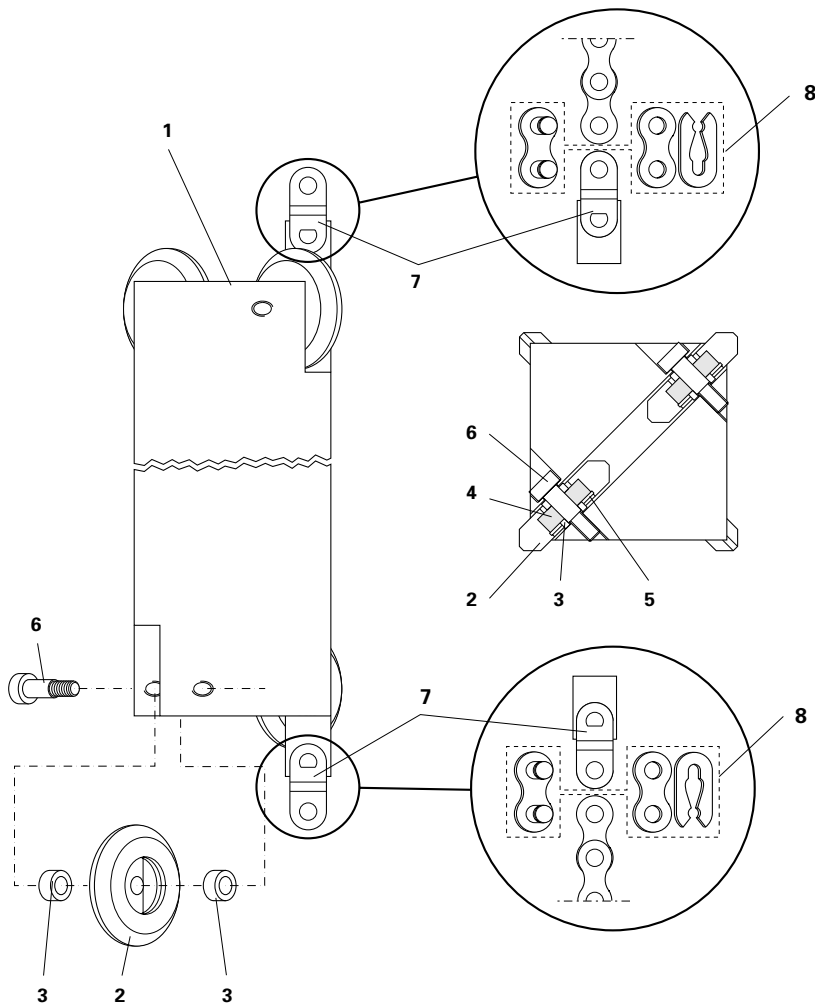


Figure 6

Wear parts

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 mm ² (Screened)	103 810*
12	Cable - 5 x 0.34 mm ² (Screened)	100 625*
13	Frequency converter (Power section)	248 231

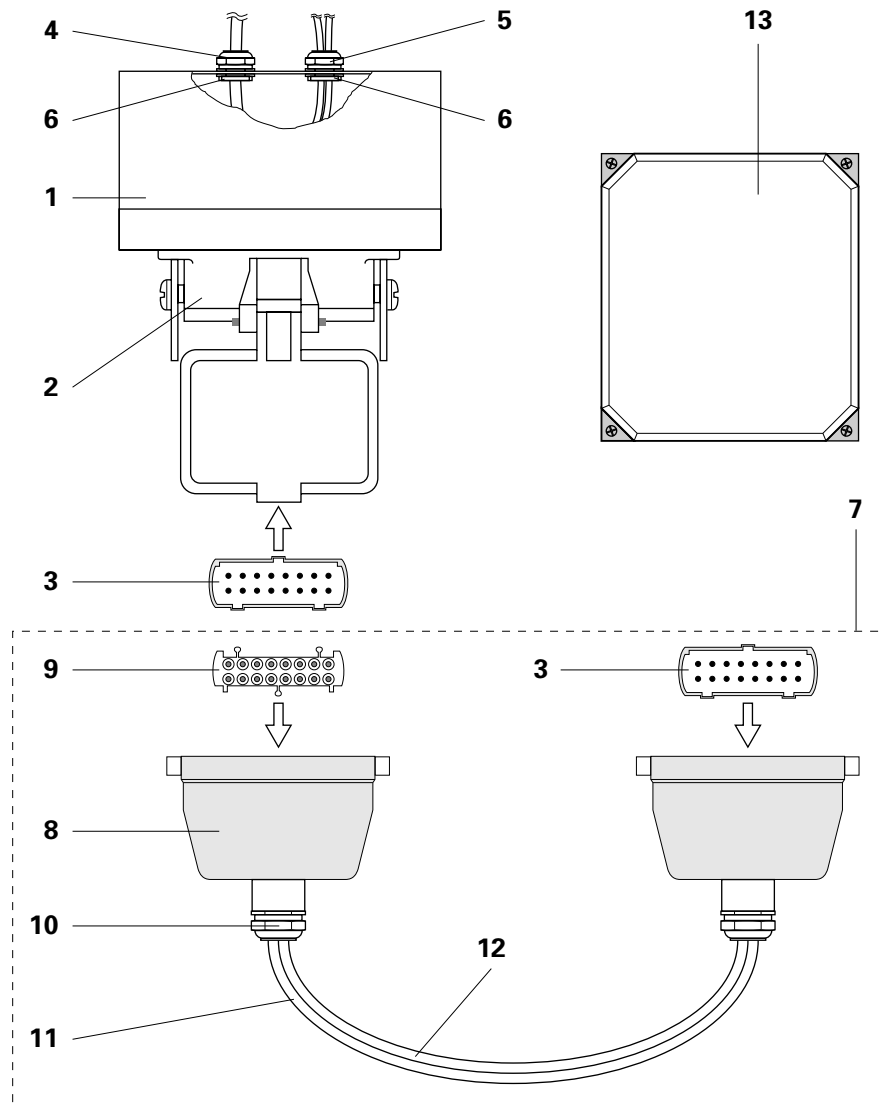
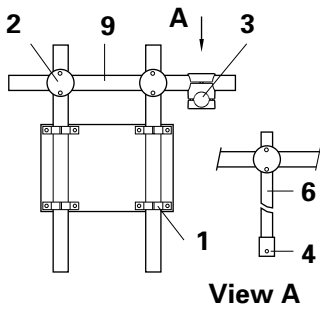


Figure 7

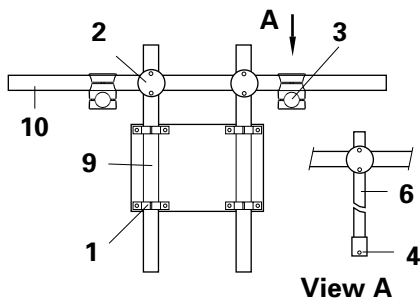
* Indicate length required

Gun carrier for 1-4 Guns



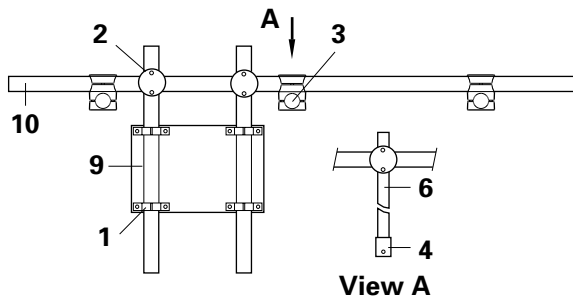
Gun carrier for 1 Gun

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



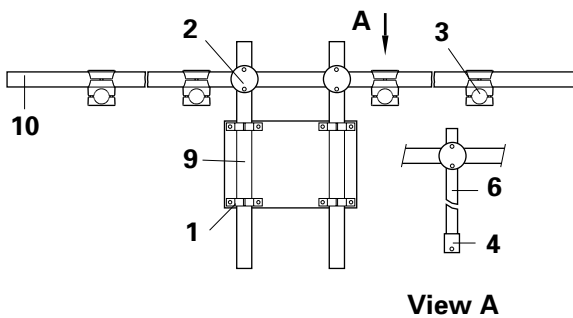
Gun carrier for 2 Guns

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



Gun carrier for 3 Guns

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



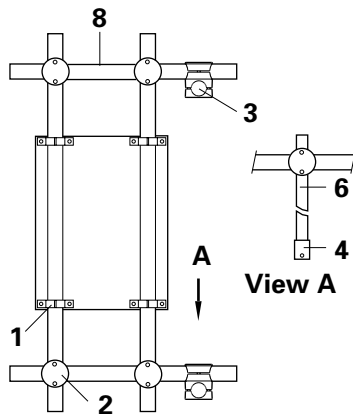
Gun carrier for 4 Guns

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

Figure 8

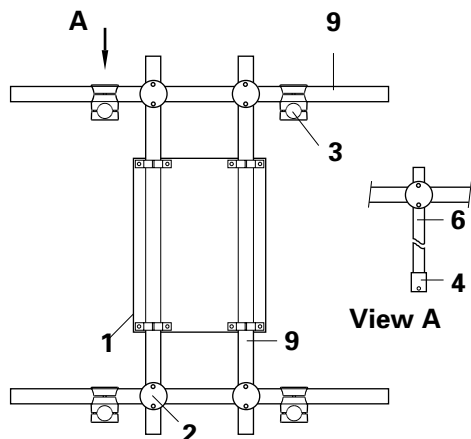
◇ Reinforced glass fibre

Gun carrier for 2 x 1-4 Guns



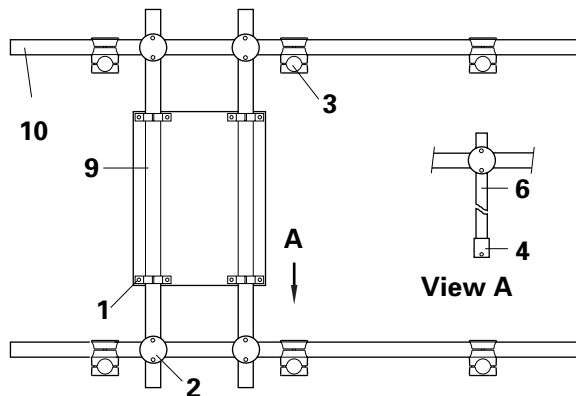
Gun carrier for 2 x 1 Gun

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



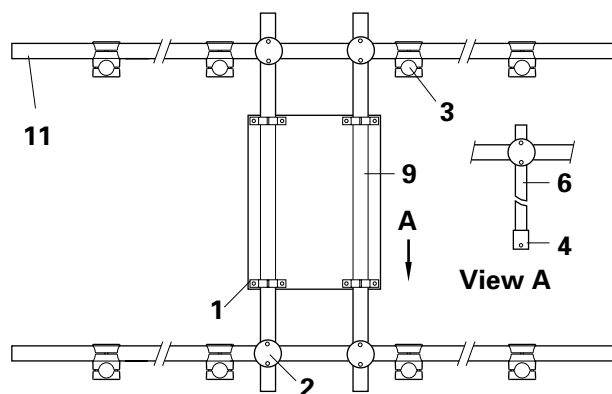
Gun carrier for 2 x 2 Guns

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



Gun carrier for 2 x 3 Guns

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



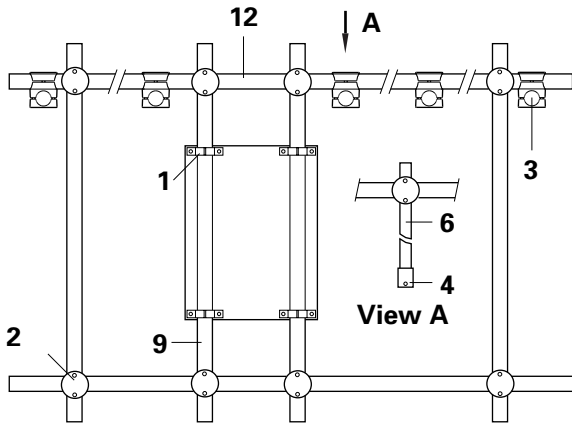
Gun carrier for 2 x 4 Guns

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

Figure 9

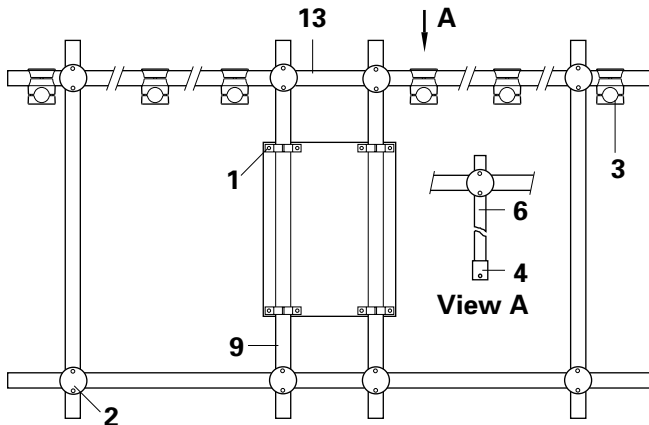
◊ Reinforced glass fibre

Gun carrier for 5-8 Guns



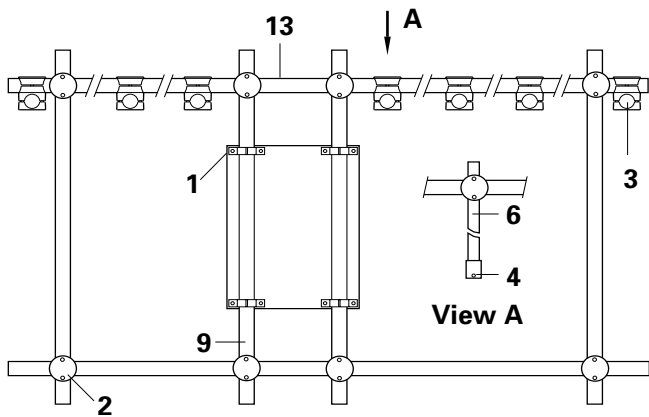
Gun carrier for 5 Guns

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



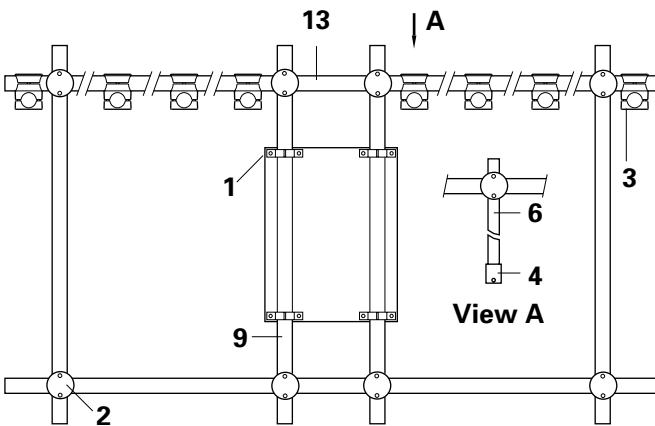
Gun carrier for 6 Guns

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



Gun carrier for 7 Guns

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



Gun carrier for 8 Guns

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

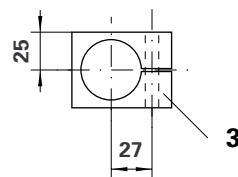
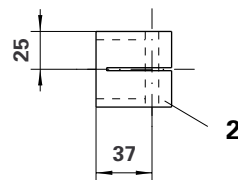
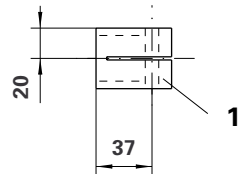
Figure 10

◇ Reinforced glass fibre

Gun fixtures and Collision protection

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

Gun fixtures



Collision protection

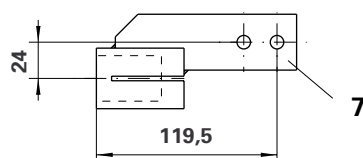
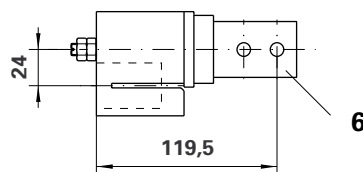
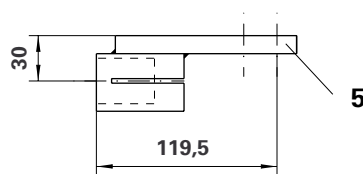
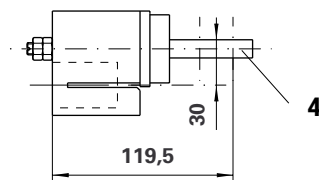


Figure 11

Documentation ACR Reciprocator

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