



TW X-93

Tyre fitting
machine

twinbusch.de



INSTALLATION, OPERATION AND MAINTENANCE MANUAL



Read this entire manual carefully before installation or operation of the TWX-93.
Follow the instructions strictly.

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TWIN BUSCH GMBH

INDEX

1. Introduction/ Application	3
2. Safety precautions	3
3. Warnings	3
4. Technical Data	4
5. Transport	4
6. Unpacking	4
7. Workplace	4
8. Product diagram	5
9. Assembly instructions	5
10. Pneumatic and electrical connections	6
11. Function test	7
11.1 Pedal function	
11.2 Swing arm	
12. Tyre fitting Instructions	8-10
12.1 Loosening the tyre bead	
12.2 Locking the rim	
12.3 Demounting the tyre	
12.4 Mounting the tyre	
13. Tyre inflation	11
14. Storage	11
15. Maintenance	12
16. Trouble shooting	13
17. Explosion diagram/ spare parts	14-23
18. Electric Diagram	24
19. Pneumatic Diagram	24

1. Introduction/application

This automatic tyre machine is especially designed for the removal and fitting of tyres. The robust design also enables the mounting of larger heavier wheels from 254 to 762 mm, due to the extendable middle cone as an aid for lifting the rim.

This method also reduces the damage factor as the rim is fixed in the centre and not in the conventional way around the outer rim like earlier models.

Attention: This machine is only designed for the removal and fitting of tyres, under no circumstances should you use this machine for any other purpose. The manufacture will not accept any responsibility for damage or injury caused by misuse.

Warning:

Please read this manual carefully before operating the TW-X93 and keep this manual safe for future reference.

Guarantee will be void if any technical changes are made to the construction of the TW-X93 without the approval of the manufacture.

2. Safety precautions

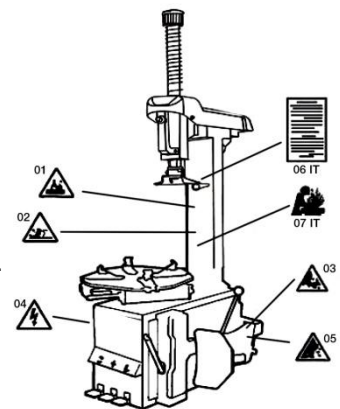
Only trained qualified personnel are allowed to operate the TW-X93 tyre fitting machine.

If the machine is damaged or needs parts replacement, work should be stopped immediately. For advice and repairs please contact the manufacture or dealer for further information.

The manufacture offers one year guaranty after buying for any repair within a normal usage, damage caused by misuse will not be covered. Spare parts can be ordered according to the parts list in this manual.

3. Safety warning

- 01 Keep hands clear of the mounting head during operation.
- 02 Keep hands clear of the rim clamp during operation.
- 03 Use extreme caution when operating the bead breaker, keep hands and feet clear.
Always stand to one side and be sure that the wheel is securely clamped to avoid the wheel jumping out.
- 04 Please make sure that the TW-X93 is correctly earthed.
- 05 Always wear protective clothing and safety glasses during operation.
- 06 Take note of all warnings!
 - The TW-X93 is equipped with a mechanical protection against tyre explosion.
 - Tyres and rims should always have the same sizes and have no signs of damage.
 - Never overinflate, always make sure of the correct tyre pressure as over inflation can lead to explosions which can cause serious injury or even death.
 - Take care when inflating tyres not to trap fingers.

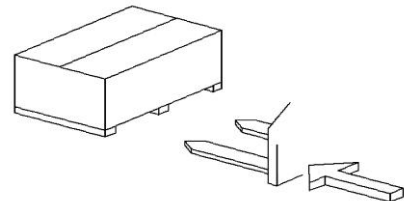


4. Technical Data

Technical Data	TW X-93
Ø Rim (max.)	45" (1143 mm)
Rim diameter (max.)	16" (406 mm)
Pressing weight	2500 kg
Pneumatic connection	8 bar
Input power	400 V
Motor output	0,75 kW
Noise level	<70 dB
Net weight (ca.)	269 kg

5. Transport

To transport the TW-X93 a fork lift should be used and please take note of the lifting points (see diagram below)



6. Packing

Remove carefully the packing and make sure all needed parts for assembly (see pack list) are available. Should any parts be missing or damaged please don't hesitate to contact the manufacture or dealer.

7. Required work space

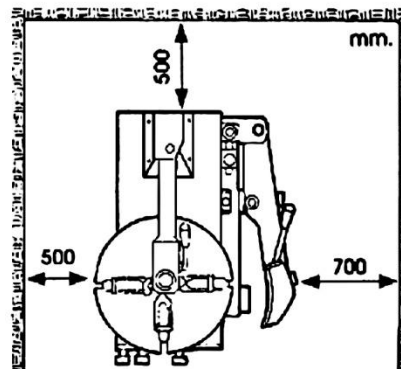


Fig. 2

Choose the designated work place for the TW-X93 according to the safety regulations. The power and air supply should be connected according to the instructions. The work place should be dry and the floor level to mount the machine, and a distance should be kept between walls (see Fig. 2).

Warning:

The TW-X93 should not be used in areas where there are dangers of explosions.

8. Product diagram



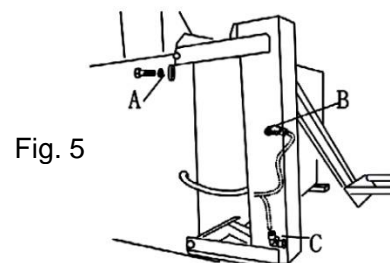
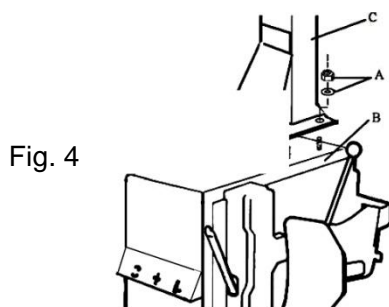
- | | | |
|-----------------------|--------------------------|----------------|
| 1. Turntable pedal | 9. Roller | 17. Turntable |
| 2. Lift pedal | 10. Joystick swing arm | 18. Lift arm |
| 3. Bead breaker Pedal | 11. Hexagonal column | 19. Wheel lift |
| 4. Rubber protection | 12. Mount arm-adjustment | |
| 5. Bead breaker shoe | 13. Air pressure gauge | |
| 6. Spindle | 14. Wing nut | |
| 7. Main post | 15. Cone | |
| 8. Mounting head | 16. Turntable rubber | |

Attention: Keep hands and body away from moving parts, always wear protective clothing and glasses.

9. Assembly instructions

Prepare the needed tools and remove the machine from the packing. Place the TW-X93 in the said position (see work place) check that the machine is level and fix to the floor with appropriate raw plugs and bolts.

Mount the main post C (Fig. 4) With the nut A, Mount the wheel lift on the left side of the machine (Fig. 5) with the bolt A. Connect the pneumatic hose (Fig. 5) with connectors B+C.



10. Pneumatic and electrical connections

1. Connect the pressure gauge to the designated connector at the back of the machine.
2. Connect the TW-X93 to the compressed air supply over the regulator on the right hand side.
(Pipe/inside diameter 7~8 mm), recommended air pressure 8~10 bar.
3. Air pressure above 10 bar is not permitted and could damage the machine which would result in a refusal of guaranty from the manufacture.

Attention: If the pressure in the workshop is more than 10 bar an extra regulator should be installed.

Before the machine is connected to the power source please check that the voltage is equivalent to that of the ID plate at the back of the machine. **IMPORTANT the machine must be earthed** and connected with a 30A circuit breaker.

Attention: Check the ID plate for the correct voltage.

All electrical connections must be carried out by a qualified electrician.

The manufacture will take no responsibility through disregard to the manual.

Warning: Warning stickers should be kept clean and replaced when unreadable or damaged.

The machine should not be used when the stickers are missing.

Do not obstruct the stickers they should be readable at all times.

11. First function test

11.1 Pedal function

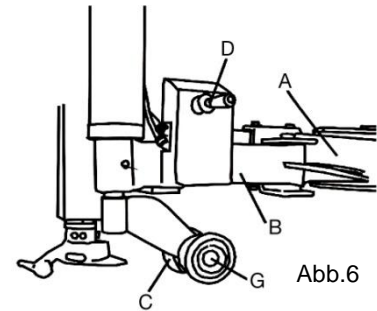
After all connections have been made and all bolts have been tightened all functions should be checked.

- Press the turntable pedal (1), the turntable should turn clockwise.
Pull up the pedal (1), the turntable should turn anti-clockwise.
- Hold the lever on the bead breaker and press the pedal (3).
The bead breaker closes and presses against the tyre.
- Press the pedal (2) to work the wheel lift.

11.2 Swing arm

The swing arm and the components are as follows.

- A Main arm
- B Swing arm
- C Roller C
- D Joystick swing arm
- G Roller G



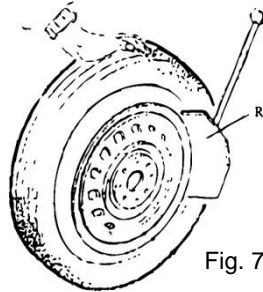
The swing arm works as follows:

The Joystick D is used to adjust the roller (C, G) in order to press down the tyre when fitting.

12. Tyre fitting instructions

Attention: Remove all weights from the rim before you start working with the machine.

12.1 Breaking the bead



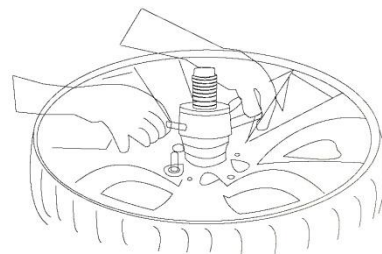
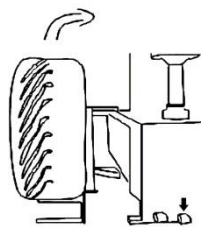
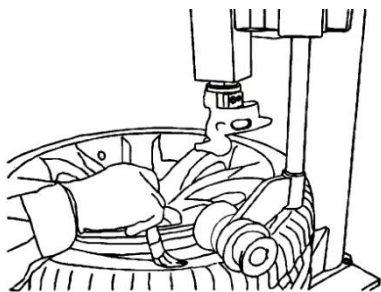
Please take care when using the bead breaker, the arm presses with a force of 2500 kg and moves with a great jolt. This could lead to injury if wrongly operated.

- Be sure to let the air completely out of the tyre by removing the valve core before trying to press off the tyre.
- Open the arm with the lever by hand and roll the wheel in up to the desired point. Press the rim against the rubber support on the machine, and place the shoe (R Fig. 7) 10mm away from the rim.

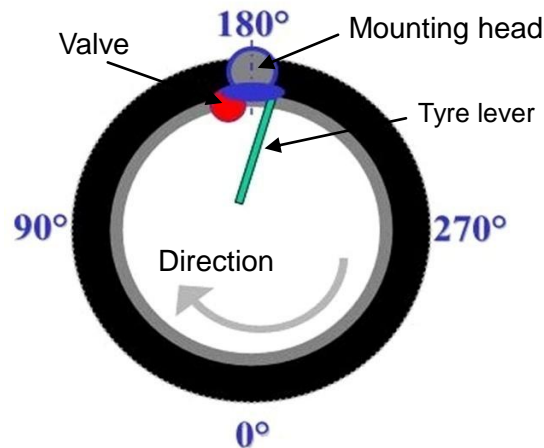
Press the pedal (3) and the shoe will press against the tyre, repeat this action in various positions on both sides of the rim until the tyre is completely free from the rim.

12.2 Clamping the rim

- Be sure all weights are removed from the rim.
- If needed the wheel lift can be used to aid lifting. Place the wheel on the lift and press the pedal (1) to lift wheel.
- Remove the quick release wing nut from the turntable (turn left).
- Tip the wheel onto the turntable and place the correct cone over the spindle, tighten the quick release wing nut.
- Use tyre paste to lubricate to help the tyre slip from the rim.



12.3 How to remove the tyre



To avoid accidents always keep hands away from moving parts.

- Place the mounting head on the rim using the swing arm and adjust the distance, press the button on the swing arm to fix the position. The mounting head will automatically lift 2 or 3 mm.
- Insert the tyre lever between the tyre and right side of the mounting head and pull the tyre over the mounting head. (See Fig. 8) if necessary the tyre must be pressed under the rim opposite to the mounting head.



Caution:

If the wheel is fitted with an inner tube it is recommended to place the valve approximately 10 cm to the left of the mounting head to avoid damage to the tube.

- Hold the tyre lever in position (Fig. 8) and press the pedal (1), the turntable will turn clockwise and the tyre will be forced over the mounting head. Keep pedal pressed until the tyre is completely removed from the rim.
- When fitted remove the inner tube.
- Repeat the steps to dismount the back side of the tyre and remove from rim.

12.4. Mounting the tyre

Check the tyre and rim:

Attention: Be sure that the sizes of both tyre and rim are correct. An attempt to fit wrong sizes could result in severe injury.

Check that there are no damages to either tyre or rim, paying extra attention to aluminium rims as they can have hairline cracks which are difficult to see. Damaged parts should be not be used.

- Replace the valve.
- Lubricate the tyre with appropriate paste.
- Clamp the rim, if it was removed.
- Turn the valve to the top position next to the mounting head.
- Place the tyre according to the markings in the right direction of rotation over the rim.
- Adjust the mounting head as in description 12.3.
- Be careful not to trap fingers when mounting tyres, keep hands away from the rim when turning the wheel.
- Place the tyre over the front side of the mounting head and push the tyre down over the rim. (Fig. 14)
- Press the turntable pedal until the tyre drops completely over the rim.
- If an inner tube is fitted then replace it before continuing with the front side of the tyre.
- Repeat the steps (9) for the front side of the tyre and use the roller (C) to press the tyre down (Fig.15).



Fig. 13



Fig. 14

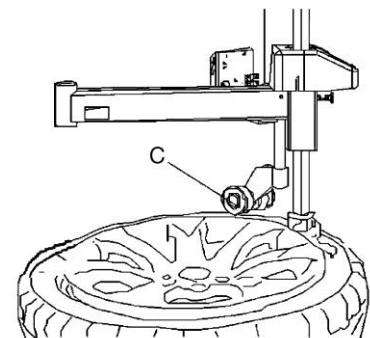


Fig. 15

13. Inflating the tyre

Important: Inflating tyres can be very dangerous, always follow safety instruction to avoid serious injury.

Tyres can explode due to the following:

- The rim and tyre are different sizes.
- The tyre or rim is damaged.
- The tyre pressure is over the maximum manufactures recommendation.

Using a pressure gauge

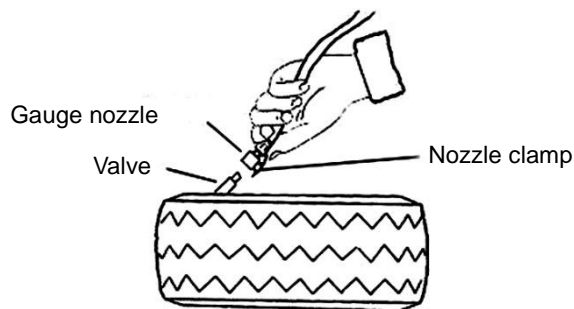


Abb. 16

- Remove the valve cap and take out the valve core.
- Hold and push the nozzle clamp over the valve completely and release the clamp.
Pump the tyre up to approximately 3 bar to ensure that the tyre is properly seated and sealed not forgetting to constantly check the pressure to avoid over inflating.
- Check that the tyre is evenly seated use tyre guidelines if available, replace the valve core and inflate to manufactures recommended pressure.

14. Storage

If the machine is not used for longer periods of time, disconnect the power and air supply. Rest air should be let out of the machine by pressing the bead breaker until empty. Any water residue should be let out of the pressure reducer. All moving parts should be cleaned and oiled. Cover the machine to prevent dust.

15. Maintenance

Attention: Only qualified trained personnel are allowed to service the machine. Before working on the machine, turn off the power and keep the plug under observation to avoid accidents.

Disconnect the air supply and let out rest air by pressing the bead breaker until empty.

To prolong the life of the TW-X93 it is recommended that regular service be carried out according to the user handbook.

With regular service expensive repairs and accidents can be avoided.

- Keep the TW-X93 Machine clean and moving parts free from dust.
- Keep the hexagonal shaft clean and well oiled. Assure that it moves freely.
- All other moving parts should be checked and oiled weekly.
- Check the oil level weekly and refill with (SAE30).
- Condense water should be emptied daily. (Fig 17)
- Check the drive belt tension every 6 months. (Fig. 18).
- Check and clean the bead breaker valve every 6 months.

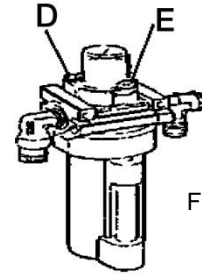


Fig. 17

If the swing arm is not moving correctly or the distance between the mounting head and rim is more or less than 2-3mm.

Adjust as follows:

- Disconnect air supply.
- Remove the protective cover.
- Adjust the two nuts on the locking plate. (Fig. 19)

Reconnect the air supply and check the adjustment.

Bead breaker and clamp Valves.

- Remove the cover.
- Remove cushion valve (Fig. 20)

Clean the valve by blowing compressed air through or replace when necessary.

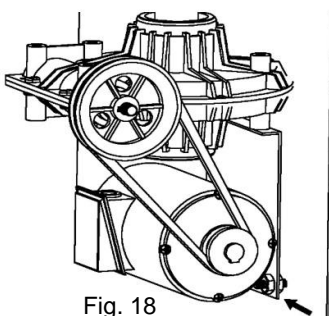


Fig. 18

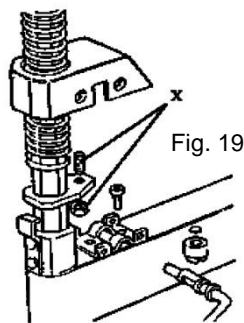


Fig. 19

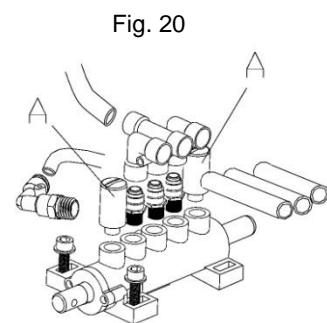
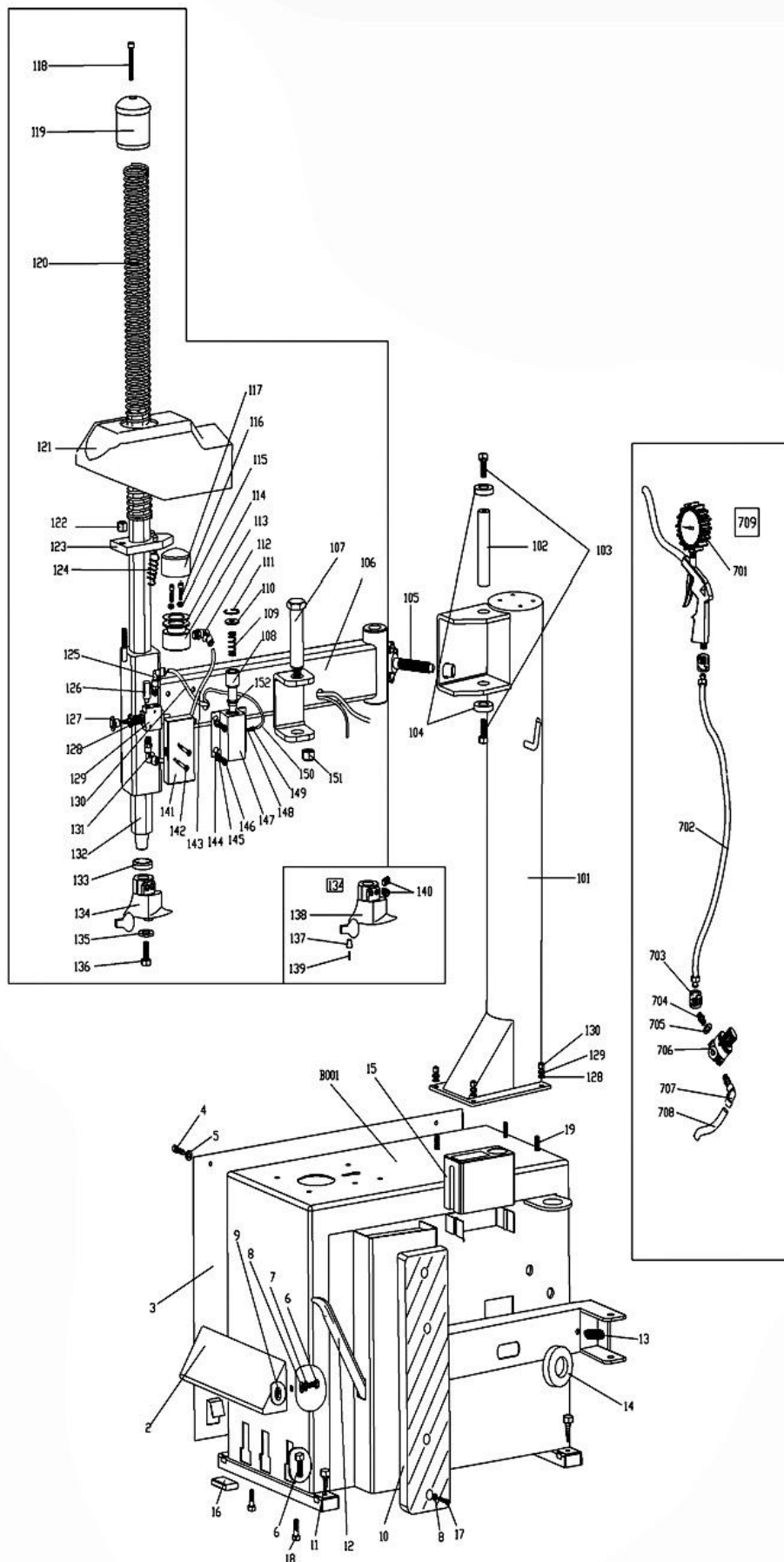


Fig. 20

16. Trouble shooting

Problem	Cause	Solution
The turntable turns only one way or not at all.	Switch defect.	Replace.
	Drive belt loose.	Adjust.
	Motor defect.	Adjust cable, Replace motor
The clamp opens or closes to slow.	Compressed air leakage.	Reseal or replace.
	Cylinder defect.	Replace.
	Cushion valve is not working.	Clean or replace according to handbook.
The mounting head is touching the rim	The locking plate needs adjusting	Replace or adjust.
Bead breaker doesn't return to its original position.	Pedal return spring is broken.	Replace.
Bead breaker is too slow.	Cushion valve jammed or broken washer.	Clean or replace.

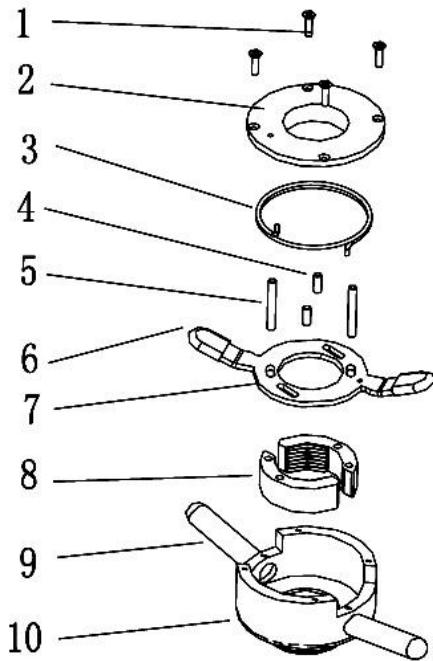
17. Explosion diagram



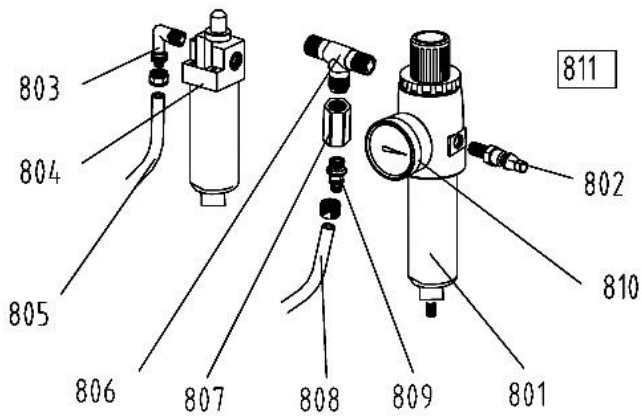
Technical changes for purposes of a technical advancement as well as deviation in colour, errors and printing mistakes are reserved.

2	front cover
3	left cover
4	screw M6*10
5	flat washer $\phi 6*14*1.2$
6	screw M8*15
7	Spring washer
8	flat washer $\phi 8*22*2$
9	nut
10	rubber buffer
11	screw M6*40
12	lifting lever
13	spring
14	rubber support
15	box
16	Rubber foot
17	screw M8*20
18	screw M10*55
102	column pin
103	screw M14*30
104	flat washer $\phi 14.5*47*10$
105	adjust handle
106	swing arm
107	pin
108	spring support
109	spring
110	washer
111	snap ring
112	L-union 1/8- $\phi 6$
113	cylinder piston
114	V-seal 60*50*6.5
115	flat washer $\phi 6*14*1.2$
116	screw M6*55
117	cylinder cover $\phi 60$
118	screw M8*50
119	knob
120	spring

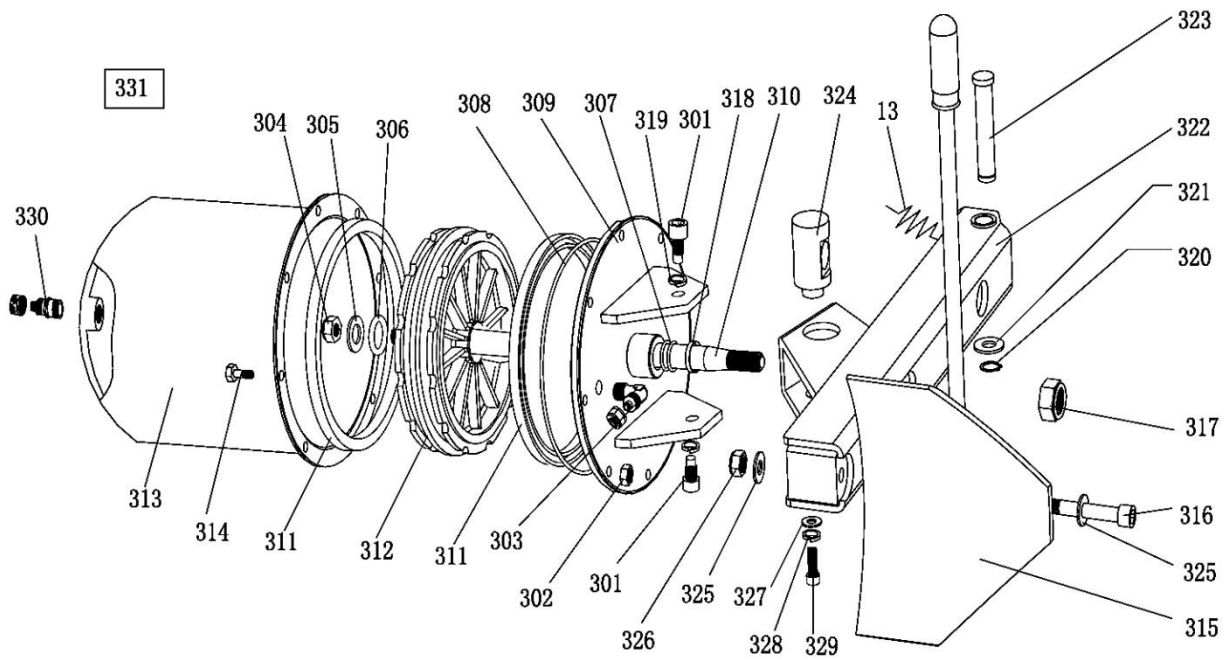
121	plastic cover
122	self-locking nut M8
123	locking plate
124	spring
125	L-union 1/8- $\phi 6$
126	silencer 1/8"
127	locking button
128	nut
129	valve
130	hose 6*4
131	L-union 1/8- $\phi 6$
132	hexagonal vertical arm
133	buffer bush
134	complete mounting head
135	washer
136	screw M10*25
137	pulley
138	mounting head
139	pin
140	screw M12*16
141	plastic cover
142	screw M4
143	hose 6*4
144	flat washer $\phi 8$
145	spring washer $\phi 8$
146	screw M6
147	pneumatic locking valve
148	O-seal
149	union M5- $\phi 4$
150	hose 4
151	self-locking nut M16*1.5
152	O-seal



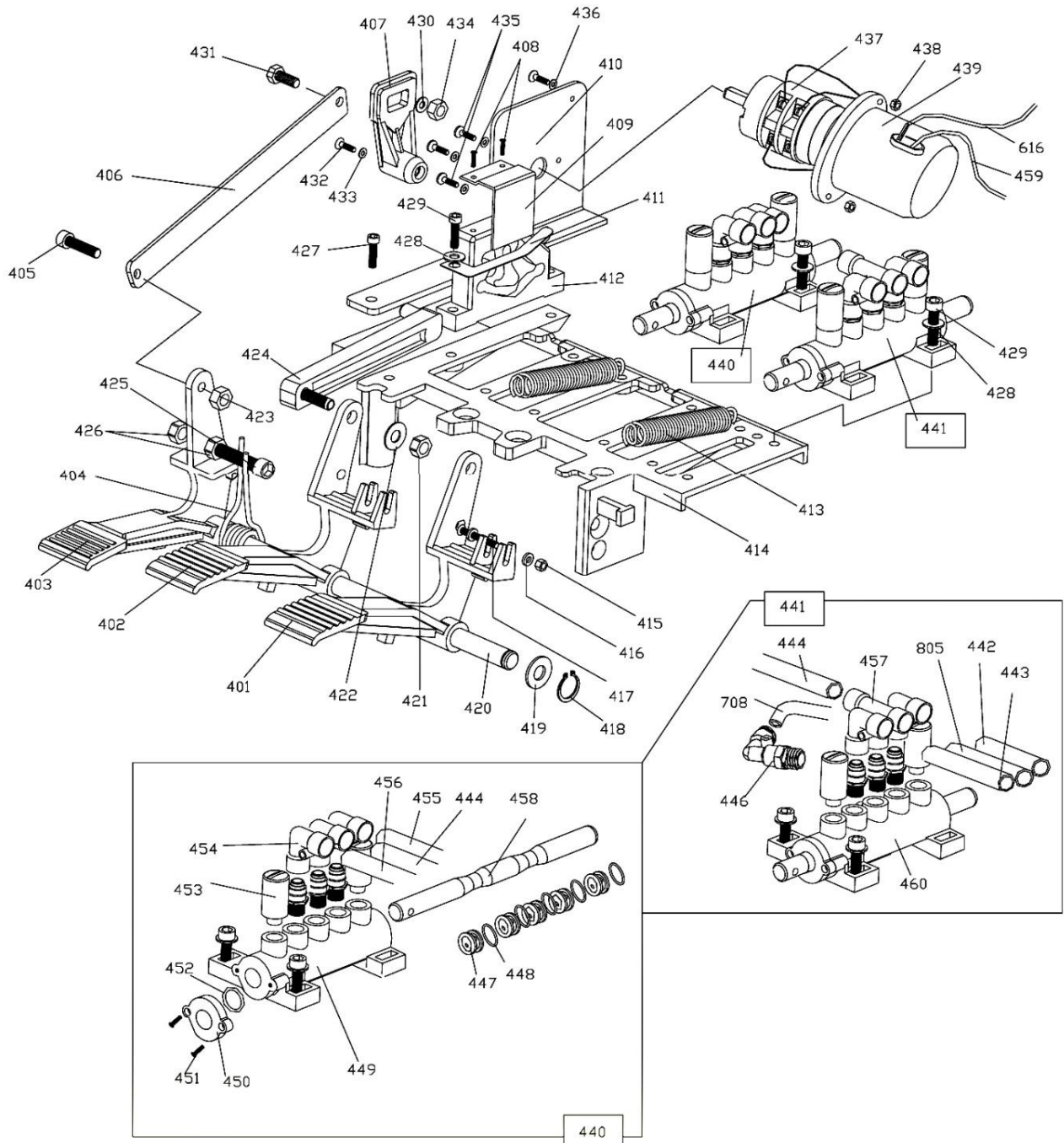
1	Screw ST4.2*16
2	Cover
3	Spring
4	Short pin
5	Long pin
6	Sleeve for handle
7	Handle
8	Nut
9	Handle
10	Nut body



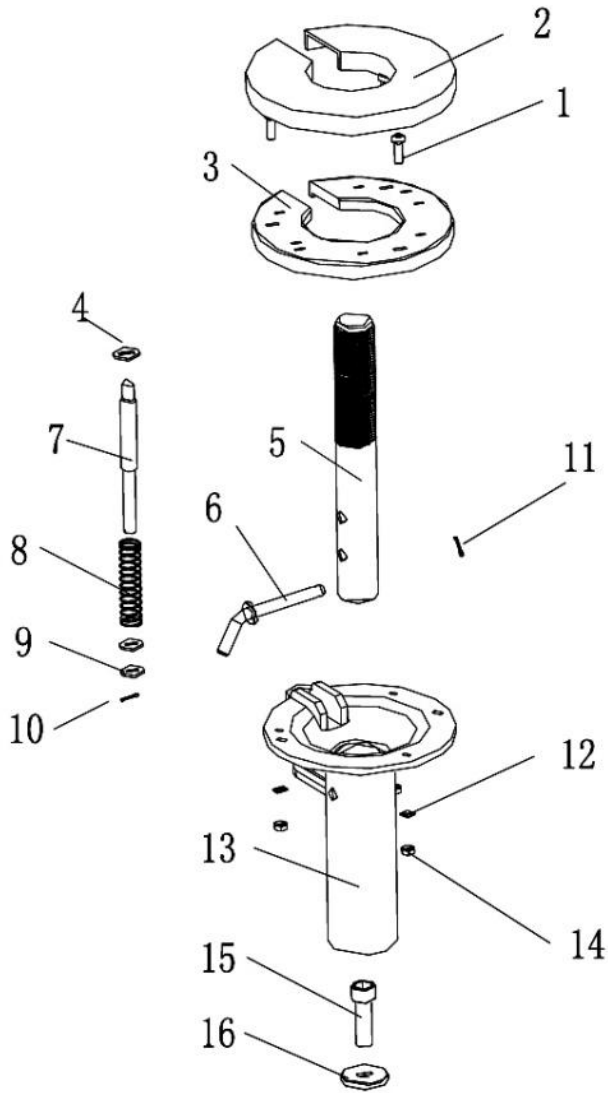
801	relief pressure filter
802	quick nozzle
803	L-union
804	oil fog maker
805	hose 5*8
806	big T-joint
807	union 1/4-1/4
808	hose 5*8
809	union 1/8-φ8
810	manometer
811	oil fog maker assembly



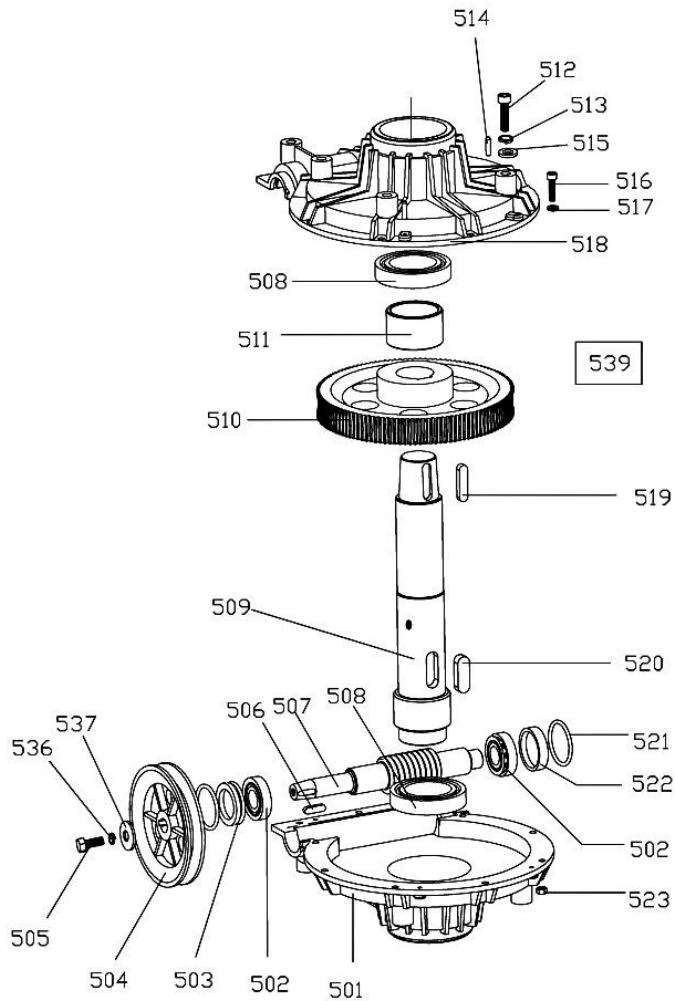
301	screw M14*30	316	screw M12*100
302	self-locking nut M6	317	self-locking nut M16
303	L-union 1/4-φ8	318	guide belt
304	nut M16*1.5	319	spring washer φ14
305	flat washer φ16*28*2	320	snap ring φ16
306	O-seal 16*2.65	321	flat washer φ16*28*2
307	O-seal 20*2.65	322	bead breaker
308	O-seal 180*3.5	323	pin
309	bead breaker cylinder lid(front)	324	rotating pin
310	bead breaker rod	325	flat washer φ12*25*2
311	V-seal 185*168*11.5	326	self-locking nut M12
312	piston	327	flat washer φ8*30*3
313	bead breaker cylinder barrel	328	spring washer φ8
314	screw M6*20	329	screw M8*20
315	shovel	330	union 1/8-φ8
	screw M14*30	331	self-locking nut M16



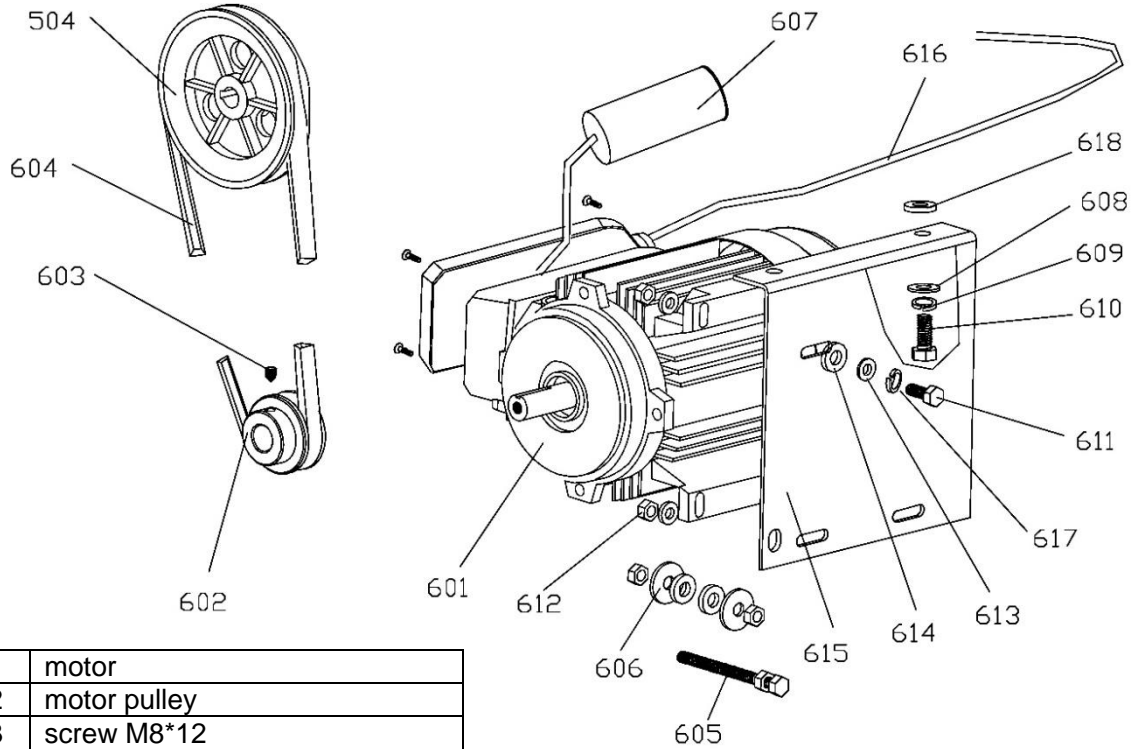
401	pedal	431	screw M6*20
402	pedal	432	screw M4*30
403	pedal	433	flat washer \varnothing 4
404	twist spring	434	self-locking nut M6
405	screw M8*20	435	screw M4*16
406	connecting rod	436	flat washer \varnothing 4
407	switch handle	437	switch
408	tap screw ST2.9*12	438	nut M4
409	cam cover	439	switch cover
410	switch support	440	complete 5-way valve
411	flat washer	441	complete 5-way valve
412	cam	442	hose 5*8
413	spring	443	hose 5*8
414	pedal support	444	hose 5*8
415	self-locking nut M4	445	hose 5*8
416	flat washer \varnothing 4	446	L-union 1/8- \varnothing 8
417	screw M4*30	447	spacer
418	retainer ring \varnothing 12	448	O-seal 12*20*4
419	flat washer \varnothing 12*25*2	449	5-way valve
420	pedal shaft	450	valve cover
421	self-locking nut M8	451	tap screw ST2.9*16
422	flat washer \varnothing 8*17*1.2	452	O-seal 12*20*4
423	self-locking nut M8	453	silencer 1/8
424	connecting rod	454	L-union 1/8- \varnothing 8
425	screw M8*50	455	hose 5*8
426	nut M8	456	hose 5*8
427	screw M6*16	457	T-union 1/8-2* \varnothing 8
428	flat washer \varnothing 6*12*1	458	valve pole
429	screw M6*20	459	wire 3*1.5
430	flat washer \varnothing 6*12*1	460	5-way valve



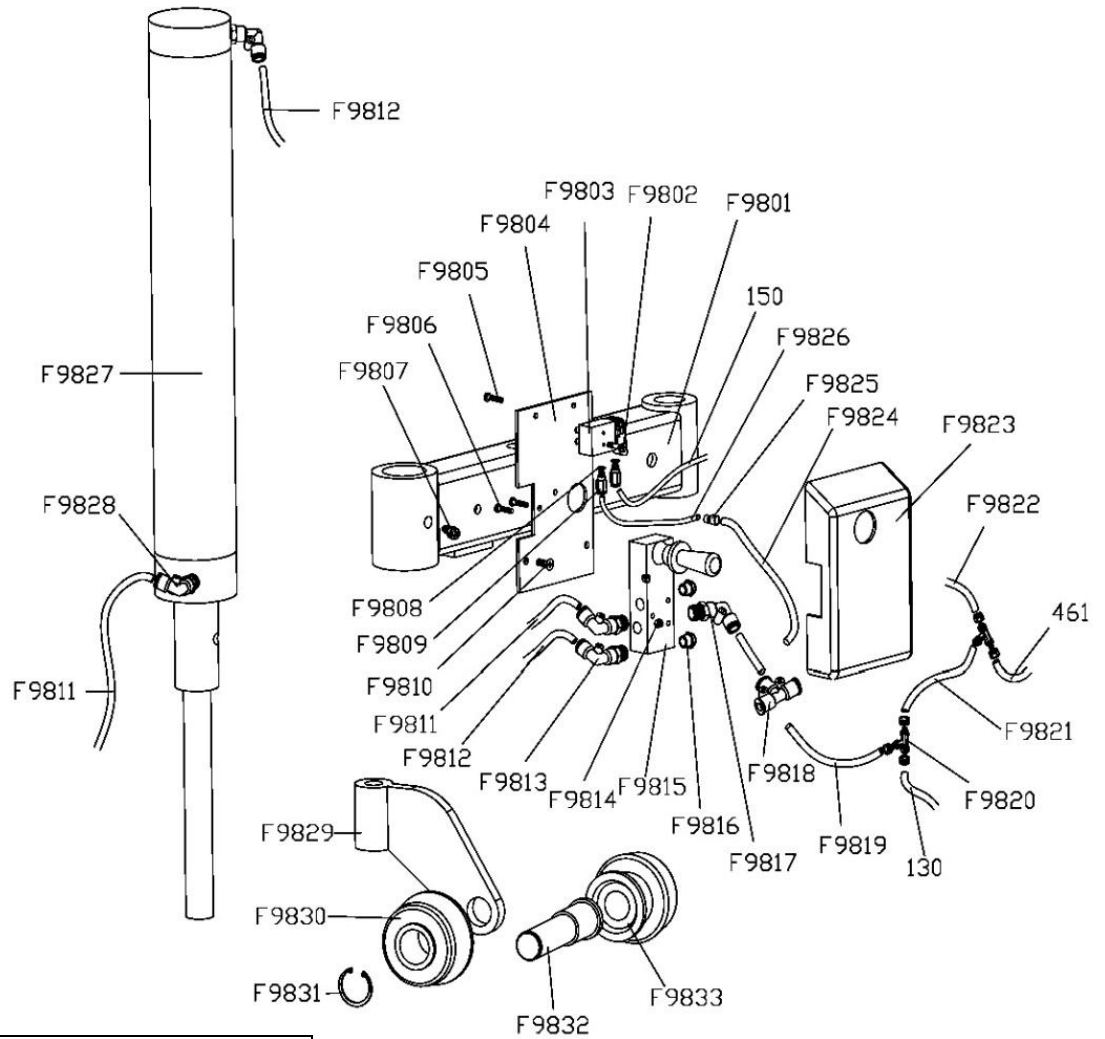
1	Screw M8*20
2	Rubber washer
3	Washer
4	Ring
5	Pin
6	Pin
7	Rotating help shaft
8	Spring
9	Ring
10	Pin2*25
11	Pin
12	Washer $\varnothing 8$
13	Screw bush
14	Nut M8
15	Screw
16	Washer M16



501	bottom cover	516	screw M6*20
502	bearing 30204	517	flat washer $\phi 6 \times 14 \times 1.2$
503	seal $\phi 20 \times 35 \times 8$	518	upper cover
504	pulley	519	key 10*40
505	screw M8*20	520	key 14*40
506	key 6*20	521	O-seal $\phi 27.8 \times 3.1$
507	worm screw	522	seal
508	bearing 6010	523	self-locking nut M6
509	worm gear shaft	524	rotating union mandrel
510	worm gear	525	screw M4*6
511	spacer		
512	screw M10*55		
513	spring washer $\phi 10$		
514	pin 6*20		
515	flat washer $\phi 10 \times 20 \times 2$		



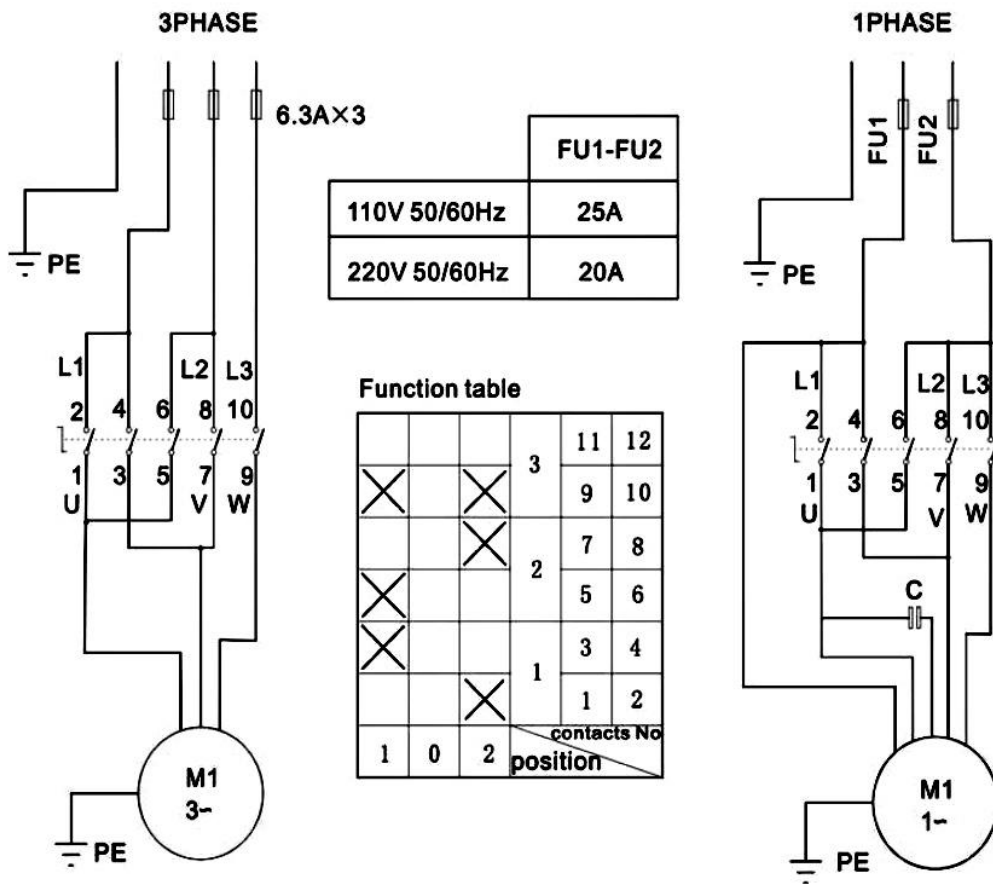
601	motor
602	motor pulley
603	screw M8*12
604	belt A-28
605	screw M8*70
606	flat washer $\phi 8.5*30*3$
607	capacitor
608	flat washer $\phi 10*20*2$
609	spring washer $\phi 10$
610	screw M10*25
611	screw M8*25
612	nut M8
613	flat washer $\phi 8*22*1.5$
614	rubber washer
615	motor support
616	wire 5*1
617	spring washer $\phi 8$
618	rubber washer



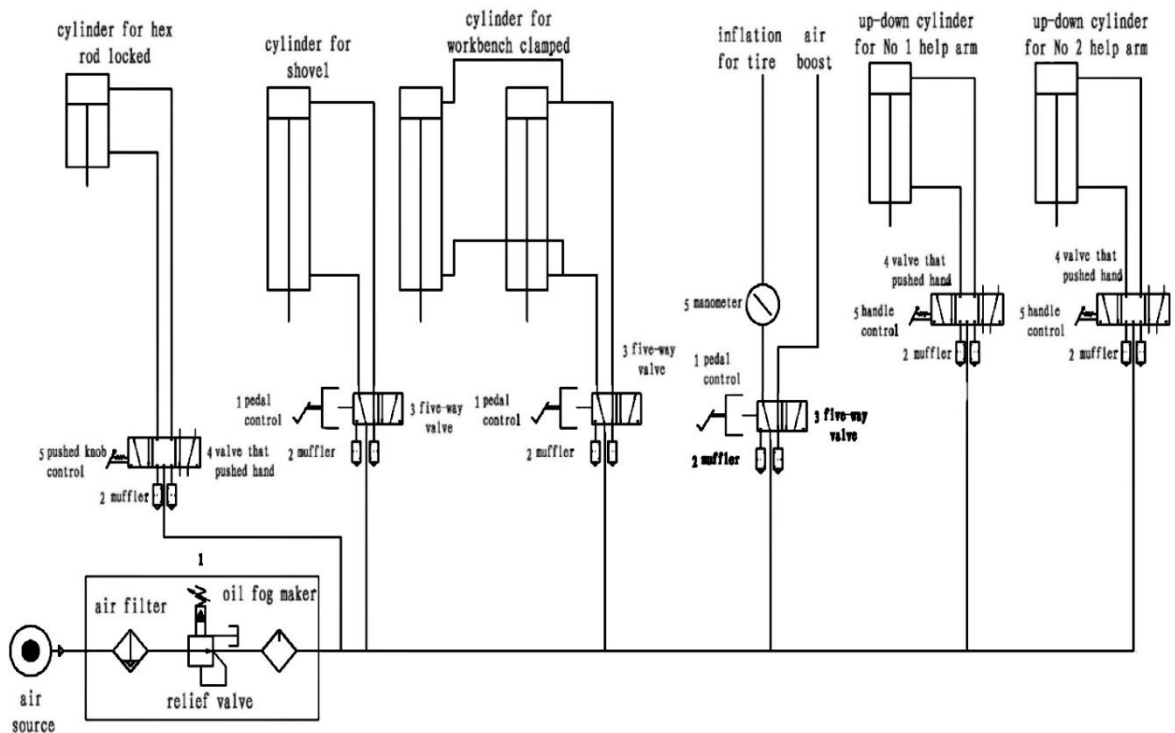
F9801	tire pressing arm
F9802	screw M4
F9803	tire pressing block
F9804	switch panel
F9805	screw M4*16
F9806	screw M4*30
F9807	screw M10
F9808	O-seal
F9809	union M5-φ4
F9810	screw M5*10
F9811	hose 6*4
F9812	hose 6*4
F9813	L-union 1/4-φ6
F9814	white nut M4
F9815	control valve
F9816	silencer
F9817	L-union 1/4-φ6
F9818	T-union 3-φ6
F9819	hose 6*4

F9820	T-union 1/8-2*φ6
F9821	hose 6*4
F9822	hose 6*4
F9823	control valve shield
F9824	hose 6*4
F9825	quick change adapter
F9826	hose 4
F9827	cylinder
F9828	L-union 1/4-φ6
F9829	tire pressing roller support
F9830	tire pressing roller 1
F9831	seeger ringer
F9832	roller shaft
F9833	tire pressing roller 2

18. Circuit diagram



19. Pneumatic Diagram



Technical changes for purposes of a technical advancement as well as deviation in colour, errors and printing mistakes are reserved.



The company

Twin Busch GmbH | Amperestr. 1 | D-64625 Bensheim

declares hereby, that the **vertical tyre changer**

TW X-93
(TW 1893)

serial no.

in the configuration placed on the market by us, meets the relevant safety and health requirements, as required by the following EC directive(s) in it's/their current version(s).

EG-directive(s)

2006/42/EC machine

Applied harmonized standards and regulations

EN 60204-1/A1:2009 part 1 Safety of machinery - Electrical equipment of machines

CE Certificate

CE-C-1201-11-84-01-2B

date of issue:

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technical file no.:

TF-C-1201-11-84-01-2A

Certification body

CCQS UK Ltd.,

Level 7, Westgate House, Westgate Road,

London W5 1YY UK

Notified Body Appointment No. 1105

Any alteration to the equipment, improper use or installation void this declaration.

Authorized person to compile technical documentation is: Michael Glade (adress as below)



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Authorized signatory: Michael Glade

Bensheim, 08.12.14 Qualitätsmanagement

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Instruction video

<http://www.youtube.com/watch?v=UYc6FXK-5LM>



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App**



Official Youtube Channel
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