



A 2024 LL

Code 4-130270 - 11/2012

Italiano

Manuale d'uso

English

Operator's manual

Français

Manuel d'utilisation

Deutsch

Betriebsanleitung

Español

Manual de uso

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Thank you for choosing our Tyre Changer

CORGHI

Dear Purchaser

Thank you for purchasing your Corghi Tyre Changer.

Your Tyre Changer has been designed to provide years of safe and dependable service, as long as it is used and maintained in accordance with the instructions provided in this manual.

All persons who will use and/or maintain this Tyre Changer must read, understand and follow all warnings and instructions provided in this manual, and be properly trained.

This Owner's Manual should be considered an internal part of your Tyre Changer and should remain with the Tyre Changer. However, nothing in this manual, and none of the devices installed on the Tyre Changer, substitute for proper training, careful operation, good judgement and safe work practices.

Always be sure that your Tyre Changer is in optimum working order. If you suspect that anything is not working properly, or that a dangerous situation may exist, immediately shut down the Tyre Changer and remedy any condition before you proceed.

If you have any questions concerning the proper use or maintenance of your Tyre Changer, please call your authorized Corghi representative.

Sincerely,
Corghi SpA

OWNER INFORMATION

Owner
Name _____
Owner
Address _____
Model
Number _____
Serial
Number _____
Date
Purchased _____
Date
Installed _____
Service and Parts
Representative _____
Phone
Number _____
Sales
Representative _____
Phone
Number _____

TRAINING CHECKLIST

	Trained	Declined
<u>Safety Precautions</u>		
Warning and Caution Labels	<input type="checkbox"/>	<input type="checkbox"/>
Pinch Points and Other Potential Hazards	<input type="checkbox"/>	<input type="checkbox"/>
Safe Operating Procedures	<input type="checkbox"/>	<input type="checkbox"/>
<u>Maintenance and Performance Checks</u>		
Mounting Head Inspection	<input type="checkbox"/>	<input type="checkbox"/>
Adjustment and Lubrication	<input type="checkbox"/>	<input type="checkbox"/>
<u>Clamping</u>		
Steel / Alloy Wheels	<input type="checkbox"/>	<input type="checkbox"/>
Reverse Drop Centre Wheels	<input type="checkbox"/>	<input type="checkbox"/>
Steel Jaw Internal/External Clamping	<input type="checkbox"/>	<input type="checkbox"/>
<u>Bead Breaking</u>		
Standard Wheels	<input type="checkbox"/>	<input type="checkbox"/>
Low Profile Wheels	<input type="checkbox"/>	<input type="checkbox"/>
<u>Demounting</u>		
Standard Wheels with Bead Lever and Plastic Sleeve Protector	<input type="checkbox"/>	<input type="checkbox"/>
Full Seating of Mount/Demount Head to Prevent Head Failure	<input type="checkbox"/>	<input type="checkbox"/>
Bead Lubrication During Removal of Low Profile Tyres	<input type="checkbox"/>	<input type="checkbox"/>
Reverse Drop Centre Wheels	<input type="checkbox"/>	<input type="checkbox"/>
<u>Mounting</u>		
Standard Wheels	<input type="checkbox"/>	<input type="checkbox"/>
Mounting of Stiff, Low Profile Tyres	<input type="checkbox"/>	<input type="checkbox"/>
Reverse Drop Centre Wheels	<input type="checkbox"/>	<input type="checkbox"/>
Proper Bead Lubrication for Mounting Protection	<input type="checkbox"/>	<input type="checkbox"/>
<u>Inflation</u>		
Safety Precautions	<input type="checkbox"/>	<input type="checkbox"/>
Lubrication and Removal of Valve Core	<input type="checkbox"/>	<input type="checkbox"/>
Bead Sealing and Seating	<input type="checkbox"/>	<input type="checkbox"/>

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TABLE OF CONTENTS

1. GETTING STARTED	7
1.1 INTRODUCTION	7
1.1.a. Purpose of the manual	7
1.2 FOR YOUR SAFETY	7
1.2.a. General warning and instructions	8
1.2.b. Decal placement.....	11
1.2.c. Electrical and pneumatic connections.....	15
1.2.d. Technical data	17
1.2.e. Air pressures.....	18
1.3 SPECIAL RIM/TYRE CONSIDERATIONS.....	18
1.4 INTENDED USE OF THE MACHINE.....	18
1.5 EMPLOYEE TRAINING.....	19
1.6 PRE-USE CHECKS	19
1.7 DURING USE.....	19
2. TRANSPORT, STORAGE AND HANDLING	20
3. UNPACKING/ASSEMBLY	21
4. HOISTING/HANDLING	24
4.1 INSTALLATION CLEARANCES.....	24
5. A 2024 LL DESCRIPTION	25
6. OVERALL DIMENSIONS	27
7. EQUIPMENT COMPONENTS	27
8. OPTIONAL ACCESSORIES	29
9. BASIC PROCEDURES - USE	30
9.1 PRELIMINARY CHECKS	30
9.2 DECIDING FROM WHICH SIDE OF THE WHEEL THE TYRE MUST BE	
DEMOUNTED	31
9.3 BEAD BREAKING	31

9.4 CLAMPING THE WHEEL	33
9.5 TYRES WITH SOFT WALLS	35
9.5.a. Demounting	35
9.5.b. Mounting	38
9.6 APPROVED UHP AND RUN FLAT TYRE DEMOUNTING AND MOUNTING PROCEDURE	40
9.7 LOW PROFILE TYRES	40
9.7.a. Demounting	40
9.7.b. Mounting	42
9.8 TYRES INFLATION	43
9.8.a. Safety indications	43
9.8.b. Inflating tyres	45
9.8.c. Inflating tubeless tyres (TI versions only)	46
10. TROUBLESHOOTING	48
11. MAINTENANCE	51
12. INFORMATION ABOUT SCRAPPING	53
13. ENVIRONMENTAL INFORMATION	53
14. INFORMATION AND WARNINGS CONCERNING HYDRAULIC FLUID	54
15. FIREFIGHTING MEANS USABLE	55
16. GLOSSARY	55
17. GENERAL ELECTRIC LAYOUT DIAGRAMS	59
18. PNEUMATIC SYSTEM DIAGRAM	62

1. GETTING STARTED

1.1 INTRODUCTION

1.1.a. PURPOSE OF THE MANUAL

The purpose of this manual is to provide the instructions necessary for optimum operation, use and maintenance of your machine. If you sell this machine, please deliver this manual to the new owner. In addition, so we can contact our customers with any necessary safety information, please ask the new owner to complete and return to Corghi the change of ownership form attached to the previous page of this manual. Alternatively, the new owner can send an email to service@corghi.com.

This manual presumes that the technician has a thorough understanding of rim and tyre identification and service. He/she must also have a thorough knowledge of the operation and safety features of all associated tools (such as the rack, lift, or floor jack) being utilized, and have the proper hand and power tools necessary to work in a safe manner.

The first section provides the basic information to safely operate the A 2024 LL tyre changer family. The following sections contain detailed information about equipment, procedures, and maintenance. "Italics" are used to refer to specific parts of this manual that provide additional information or explanation.

These references should be read for additional information to the instructions being presented. The owner of the tyre changer is solely responsible for enforcing safety procedures and arranging technical training. The tyre changer is to be operated only by a qualified and trained technician. Maintaining records of personnel trained is solely the responsibility of the owner or management.

The A 2024 LL tyre changer family is intended for mounting, demounting, and inflating tyres of lightweight vehicles (cars, not trucks or motorcycles) with maximum dimensions of 43 inches in diameter and 14 inches in width.

Copies of this manual and of the documents accompanying the machine may be obtained from Corghi by specifying the type of machine and its serial number.

NOTICE: Design details are subject to change. Some illustrations may vary slightly in appearance from the machine you have.

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1.2 FOR YOUR SAFETY

HAZARD DEFINITIONS

These symbols identify situations that could be detrimental to your safety and/or cause equipment damage.

	DANGER
	DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

NOTICE: Used without the safety alert symbol, indicates a potentially hazardous situation, which, if not avoided, may result in property damage.

1.2.a. GENERAL WARNING AND INSTRUCTIONS



WARNING

Avoid Personal Injury. Carefully read, understand and follow the warnings and instructions given in this manual. This manual is an essential part of the product. Keep it with the machine in a safe place for future reference.

1. If the use and maintenance procedures provided in this manual are not properly performed, or the other instructions in this manual are not followed, an accident could occur. Throughout this manual reference is made that “an accident” could occur. Any accident could cause you or a bystander to sustain severe personal injury or death, or result in property damage.
2. Overinflated tyres can explode, producing hazardous flying debris that may result in an accident.
3. Tyres and rims that are not the same diameter are “mismatched.” Never attempt to mount or inflate any tyre and rim that are mismatched. For example, never mount a 16.5” tyre on a 16” rim and vice versa. This is very dangerous. A mismatched tyre and rim could explode, resulting in an accident.

WARNING

Avoid Personal Injury. Carefully read, understand and follow the warnings and instructions given in this manual. This manual is an essential part of the product. Keep it with the machine in a safe place for future reference.

- Never exceed the bead setting pressure provided by the tyre manufacturer, as stated on the sidewall of the tyre. Carefully monitor the gauge on the air hose.
- If tires being mounted require more than the tire manufacturer's maximum bead seating pressure and , the wheel should be removed from the tire changer, placed in an inflation cage, and inflated per manufacturer's instructions
- The use of inflation devices (e.g. guns) connected to power sources outside of the machine is not permitted
- Never place your head or any part of your body over a tyre during the inflation process or when attempting to seat beads. This machine is not intended to be a restraining device for exploding tyres, tubes or rims.
- Always stand back from the tyre changer when inflating, never lean over.



DANGER

An exploding tyre and rim may be propelled upward and outward with enough force to cause serious injury or death.

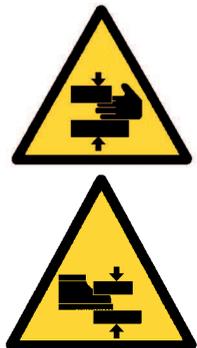
Never mount any tyre unless the tyre size (molded into the sidewall) matches the rim size (stamped into the rim) exactly or if the rim or tyre are defective.

Never exceed the tyre pressure recommended by the tyre manufacturer.

This tyre changer is not a safety device and will not restrain exploding tyres and rims. Keep the area clear of bystanders.

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- Crushing Hazard. Moving Parts Present. Contact with moving parts could result in an accident.
 - Only one operator may work with the machine at a time.
 - Keep all bystanders clear of tyre changer.
 - Keep hands and fingers clear of rim edge during the demounting and mounting process.
 - Keep hands and fingers clear of mount/demount head during operation.
 - Keep hands, feet and other body parts away from moving parts.
 - Do not use tools other than those supplied with tyre changer.
 - Use proper tyre lubricate to prevent tyre binding.
 - Pay attention while moving tyre/rim or lever.
- Electric Shock Hazard.



- Never hose down or power wash electric tyre changers.
- Do not operate the machine with a damaged power cord
- If an extension cord is necessary, a cord with a current rating equal to or greater than that of the machine must be used. Cords rated for less current than the machine can overheat, resulting in a fire.
- Care should be taken to arrange the cord so that it will not be tripped over or pulled.



11. Risk of Eye Injury. Flying debris, dirt and fluids may be discharged during bead seating and the inflation process. Remove any debris from the tyre tread and wheel surfaces. Wear OSHA, CE or other approved safety glasses during mount and demount procedures.



12. Always inspect the machine carefully before using it. Missing, broken, or worn equipment (including warning stickers) must be repaired or replaced prior to operation.

13. Never leave nuts, bolts, tools or other equipment on the machine. They may become trapped between moving parts and cause a malfunction.

14. NEVER install or inflate tyres that are cut, damaged, rotten or worn. NEVER install a tyre on a cracked, bent, rusted, worn, deformed or damaged rim.

15. If a tyre becomes damaged during the mounting process, do not attempt to finish mounting. Remove from the service area and properly mark the tyre as damaged.

16. To inflate tyres, use short bursts while carefully monitoring the pressure, tyre, rim and bead. NEVER exceed the tyre manufacturer's pressure limits.

17. This equipment has internal arcing or sparking parts which should not be exposed to flammable vapours (gasoline, paint thinners, solvents, etc.). This machine should not be located in a recessed area or below floor level.

18. Never operate the machine if you are under the effects of alcohol, medications and/or drugs. If you are taking prescription or over the counter medication, you must consult a medical professional regarding any side effects of the medication that could hinder your ability to operate the machine safely.



19. Always use OSHA, CE or other approved and mandated Personal Protective Equipment (PPE) during use of the machine. See your supervisor for more instructions.



20. Remove jewellery, watches, loose clothing, ties and restrain long hair before using the machine.

21. Wear non-slip safety footwear when operating the tyre changer.



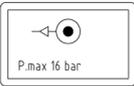
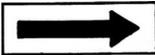
22. Wear proper back support and employ a proper lifting technique when placing, moving, lifting or removing wheels from the tyre changer.

23. This machine may only be used, maintained or repaired by properly trained employees of your company. Repairs should only be performed by qualified personnel. Your CORGHI service representative is the most qualified person. The employer is responsible for determining if an employee is qualified to safely make any repairs to the machine should repair be attempted by users.

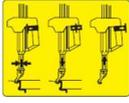
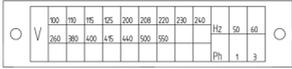
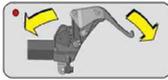
24. The user should understand all warning decals affixed to this equipment before operating.

25. Lock the rim on the turntable during inflation.

1.2.b. DECAL PLACEMENT

No.	Part Number	Drawing	Description
1	460384		DECAL, CORGHI LOGO (FRONT SIDE)
2	461236		DECAL, CORGHI LOGO (LEFT SIDE)
3	4-110866		DECAL, A 2024 LL TI
4	446429		DECAL, MAX. INLET PRESSURE 16 BAR
5	446442		DECAL, WARNING UNDER PRESSURE TANK
6	450022		DECAL, FILTER
7	446598		DECAL, DISCONNECT POWER SUPPLY
8	432740		DECAL, EXPLOSION HAZARD
9	418135		DECAL, DIRECTION OF ROTATION



No.	Part Number	Drawing	Description
10	446433		DECAL, HAND CRUSHING HAZARD
11	446435		DECAL, HAND CRUSHING HAZARD
12	446434		DECAL, TILTING BACK HAZARD
13	450007		DECAL, SAFETY INSTRUCTIONS
14	435150		DECAL, INFLATING PEDAL
15	446437		DECAL, CONTROL HANDLE
16	446388		DECAL, CORRECT FEEDING NETWORK
17	446431		DECAL, HAND/FOOT CRUSHING HAZARD
18	446438		DECAL, TILTING BACK REGULATION
19	450005		POSTER, SAFETY INSTRUCTIONS
20	4-103904		DECAL, LEVER LESS CONTROL
21	4-100901		DECAL, 2-SPEED

DANGER WARNING DECALS



part nr 446433. Crushing Hazard.



part nr 446435. Crushing hazard.



part nr 446431. Crushing hazard.



part nr 446434. Never stand rear the machine.
Only one operator may operate and use the machine.



part nr 446442. EXPLOSION HAZARD. Do not puncture
Danger - pressurised container.



part nr 425211A. Risk of electrical shock.



part nr 432740. Explosion hazard.



part nr 450005. Safety instructions.
Must be applied near the tire changer in a prominent
position by the operator.



part nr 450007. Safety instructions.



part nr 425083. Earth ground terminal.

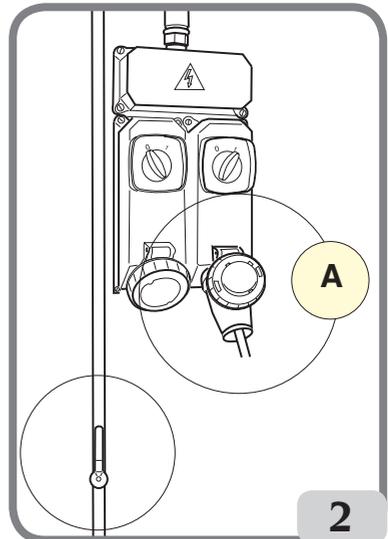
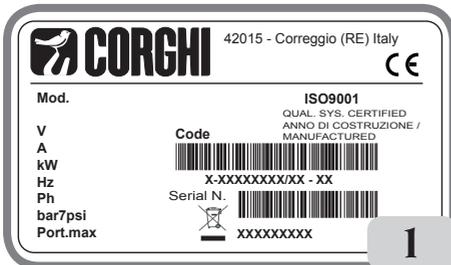
1.2.c. ELECTRICAL AND PNEUMATIC CONNECTIONS

The dimensions of the electric hook-up used must be suitably sized in relation to:

- the electric power absorbed by the machine, indicated on its data plate (Fig. 1);
- the distance between the machine and the power supply hook-up point, so that voltage drops under full load do not exceed 4% (10% during start-up) compared with the rated voltage specified on the data plate.

- The operator must:

- fit a power plug on the power supply lead in compliance with the relevant safety standards;
- connect the machine to its own electrical connection - A, Fig. 2 - and fit a differential safety circuit-breaker with 30 mA residual current;
- fit fuses to protect the power supply line, rated as indicated on the general wiring diagram in this manual;
- connect the machine to an industrial socket; the machine must not be connected to domestic sockets.



NOTICE

An effective grounding connection is essential for correct operation of the machine.

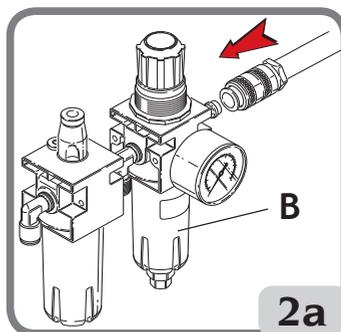
Make sure the available pressure and the rendered capacity of the compressed air system are compatible with those required for correct machine operation - see the "Technical Data" section. For correct machine operation, the compressed air supply line must provide a pressure range from no less than 8.5 bar to no more than 16 bar and guarantee an air flow rate greater than the average consumption of the machine, which is equal to 187 Nl/min.

NOTICE

For correct equipment operation, the air produced must be suitably treated (not above 5/4/4 according to ISO 8573-1)

Check that the Lubricator unit B fig. 2a contains air lubricating oil; top up if necessary. Use SAE20 oil.

The customer must provide an air cut-off valve upstream of the air treatment and regulator device supplied with the machine.

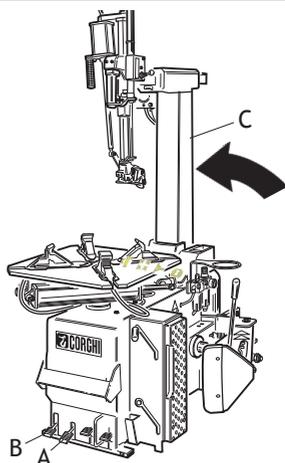


DANGER



Before making the electrical and pneumatic hook-ups, make sure that the machine is configured as described below:

- pedals A and B (if present) in fully depressed position.
- column C vertical (not tilted).



1.2.d TECHNICAL DATA

- Turntable clamping capacity
 - internal clamping..... from 13"
 - external clamping..... from 10" to 24"
- Rim width from 3.5" to 14"
- Maximum tyre diameter..... 1100 mm (43")
- Maximum tyre width 360 mm (14")
- Bead breaker aperture:
 - normal position..... from 45 mm to 300 mm
 - racing position from 125 mm to 380 mm
- Bead breaking force 15000 N (pressure 10 bar)
- Power supply voltage
 - single-phase..... 115-230±10%Volt 50/60Hz
 - three-phase..... 230-400±10%Volt 50/60Hz
 - DV..... 230±10%Volt 1ph 50/60Hz
- Operating pressure 8 - 10 bar
- Weight..... 244 Kg (TI version 258 Kg)
- Noise levels in operating conditions < 70 dB (A)

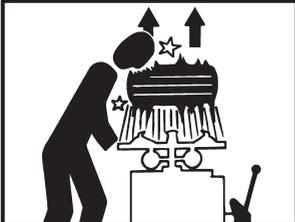
Model	Motor rating	kW	Rotation speed rpm	Torque Nm	Weight of electric/electronic part kg
A2024LL	400Volt/3ph 50Hz	0.75	8.5	1200	11.5
	200/230Volt/3ph 60Hz	0.75	8.5	1200	11.5
	200/230Volt/3ph 50Hz	0.75	8.5	1200	11.5
	200/230Volt/1ph 50Hz	0.75	8.5	800	11.5
	200/230Volt/1ph 60Hz	0.75	8.5	800	11.5
	115Volt/1ph 60Hz	0.75	8.5	800	11.5
	200/230Volt/1ph 50/60Hz DV	0.75	6-15	1200	10.2
	AIR MOTOR	/	6.5	800	/



The noise levels indicated correspond to emission levels and do not necessarily represent safe operating levels. Although there is a relationship between emission levels and exposure levels, this cannot be used reliably to establish whether or not further precautions are necessary. The factors which determine the level of exposure to which the operator is subject to include the duration of the exposure, the characteristics of the workplace, other sources of noise, etc. The permitted exposure levels may also vary according to the country. However, this information will enable machine users to make a more accurate assessment of hazards and risks.

1.2.e. AIR PRESSURES

The machine is equipped with an internal pressure limiting valve to minimize the risk of over inflating the tyre.

	<table border="1"><tr><td data-bbox="387 233 1000 300"> DANGER</td></tr><tr><td data-bbox="387 300 1000 448"><ul style="list-style-type: none">• EXPLOSION HAZARD• Never exceed the tyre pressure recommended by the tyre manufacturer. Never mismatch tyre size and rim size.• Avoid personal injury or death</td></tr></table>	 DANGER	<ul style="list-style-type: none">• EXPLOSION HAZARD• Never exceed the tyre pressure recommended by the tyre manufacturer. Never mismatch tyre size and rim size.• Avoid personal injury or death
 DANGER			
<ul style="list-style-type: none">• EXPLOSION HAZARD• Never exceed the tyre pressure recommended by the tyre manufacturer. Never mismatch tyre size and rim size.• Avoid personal injury or death			

1. Never exceed these pressure limitations:

- Supply line pressure (from compressor) is 220 psi (15 bar).
- Operating pressure (gauge on regulator) is 145 psi (10 bar).

Bead setting pressure (gauge on hose) is the tyre manufacturer's maximum pressure as stated on the sidewall of the tyre

2. Activate air inflation jets only when sealing the bead.

3. Bleed air pressure system before disconnecting supply line or other pneumatic components. Air is stored in a reservoir for operation of inflation jets.

4. Only activate the air inflation jets if the rim securing device is locked in place and the tyre is properly clamped (when possible).

1.3. SPECIAL RIM/TYRE CONSIDERATIONS

NOTICE

Wheels equipped with low tyre pressure sensors or special tyre and rim designs may require special procedures. Consult wheels and tyre manufacturers' service manuals.

1.4. INTENDED USE OF THE MACHINE

This machine must be used only to remove and replace an automotive tyre on an automotive rim, using the tools with which it is equipped. Any other use is improper and can result in an accident.

The machine can not work on motorcycle wheels.

1.5. EMPLOYEE TRAINING

1. The employer is obligated to provide a programme to train all employees who service rim wheels in the hazards involved in servicing those rim wheels and the safety procedures to be followed. Service or servicing means the mounting and demounting of rim wheels, and related activities such as inflating, deflating, installing, removing and handling.

- The employer shall insure that no employee services any rim wheel unless the employee has been trained and instructed in correct procedures of servicing the type of wheel being serviced, and in safe operating procedures.
- Information to be used in the training programme shall include, at a minimum, the applicable information contained in this manual.

2. The employer shall ensure that each employee demonstrates and maintains the ability to service rim wheels safely, including performance of the following tasks:

- Demounting tyres (including deflation).
- Inspecting and identifying rim wheel components.
- Mounting tyres.
- Using any restraining device, cage, barrier, or other installation.
- Handling rim wheels.
- Inflating the tyre.
- Understanding the necessity to stand back from the tyre changer during tyre inflation and during inspection of the rim wheel following inflation, never leaning over.
- Installing and removing rim wheels.

3. The employer shall evaluate each employee's ability to perform these tasks and to service rim wheels safely, and shall provide additional training as necessary to assure that each employee maintains his or her proficiency.

1.6. PRE-USE CHECKS

Before beginning work, carefully check that all components of the machine, especially rubber or plastic parts, are in place, in good condition and working properly. If the inspection reveals any damage or excessive wear, no matter how slight, immediately replace or repair the component.

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1.7. DURING USE

In the event you hear any strange noise or feel unusual vibration, if a component or system is not operating properly, or if there is anything unusual at all, stop using the machine immediately.

- Identify the cause and take any necessary remedial action.
- Contact your supervisor if necessary.

Never allow any bystander to be within 20 feet of the machine during operation.

To stop the machine in an emergency:

- disconnect the power supply plug;
- cut off the compressed air supply network by disconnecting the shut-off valve (snap coupling).

2. TRANSPORT, STORAGE AND HANDLING

Conditions for transporting the machine

The tyre changer must be transported in its original packing and stowed in the position shown on the packing itself.

- Packing dimensions:
 - width 800 mm
 - depth 1140 mm
 - height 970 mm
- Weight of wooden packing:
 - STD version kg 269
 - TI version kg 283
- Weight of carton packing:
 - STD version kg 259
 - TI version kg 273

Machine storage and shipping specifications

Temperature: -25° - +55°C.

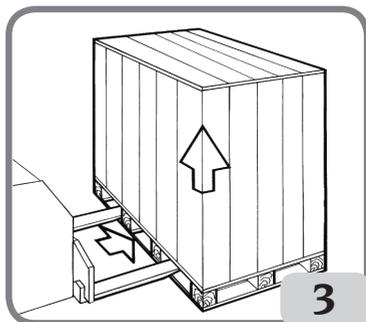
NOTICE

Do not stack other goods on top of the packing or damage may result.

Handling

To move the packing, insert the tines of a fork-lift truck into the slots on the base of the packing itself (pallet) (Fig.3).

Before moving the machine, refer to the HOISTING/HANDLING section.



NOTICE

Keep the original packing in good conditions to be used if the equipment has to be shipped in the future.

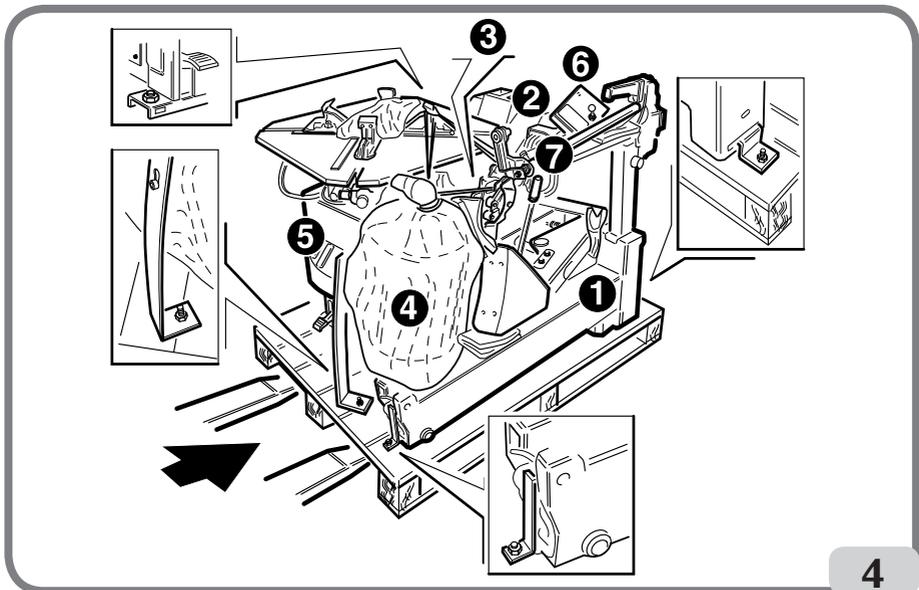
3. UNPACKING/ASSEMBLY

WARNING

Take the utmost care when unpacking, assembling, hoisting and installing the machine as described below.

Failure to observe these instructions can damage the machine and compromise the operator's safety.

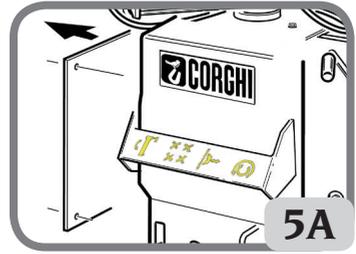
- Remove the upper part of the packing and make sure that the machine has not suffered damage in transit; identify the points at which the machine is anchored to the pallet.
- The machine comprises five main units (fig.4):
 - 1 head
 - 2 column guard
 - 3 box with pressure gauge and standard equipment
 - 4 air tank (TI version only)
 - 5 body
 - 6 LL head control valve
 - 7 handle + cylinder mount



- After removing the tower 1, it is advisable to place it in a horizontal position to prevent it from falling and getting damaged.

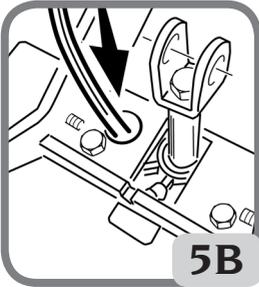
Assemble the different parts of the machine:

- Remove the side cover (Fig. 5A).



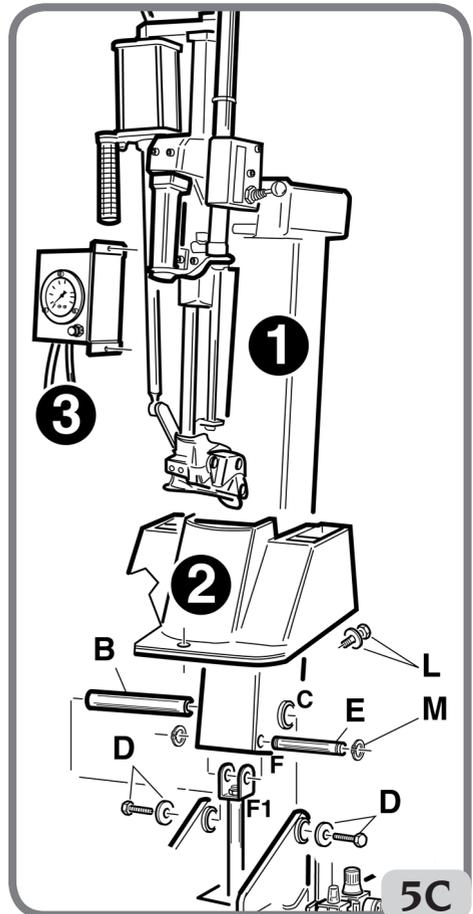
5A

- Insert the air pipe, into hole behind the column tilting cylinder (Fig. 5B).

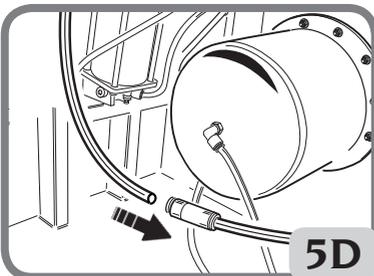


5B

- Assemble head I, insert pin B into hole C and lock it with the screw and washer D (see Fig. 5C).
- Insert pin E into hole F and in the U-bolt F1 of the column tilting cylinder and lock it with ring M (see Fig. 5C).
- Assemble the box with pressure gauge 3 on column I and lock it with the screw and washer S (see Fig. 5C).
- Assemble the column guard 2 and lock it with the screws and washers L (see Fig. 5C).
- Connect pipe to the intermediate union connected to the column lifting valve (Fig. 5D).

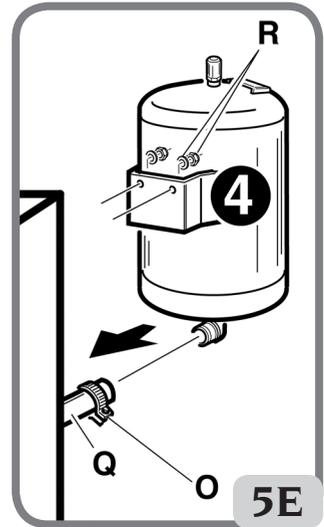


5C

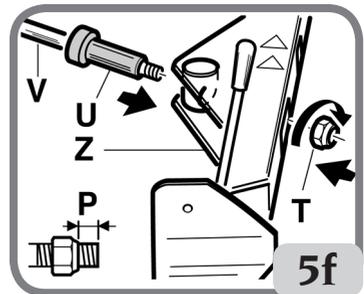


5D

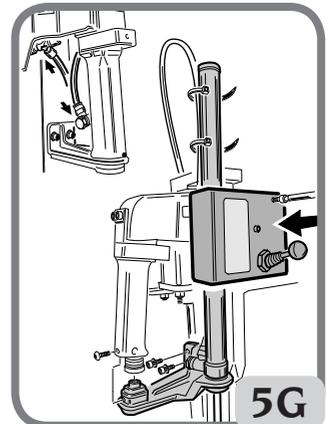
- Fit the hose connector of the tank 4 into hose Q, fasten the tank 4 to the machine with nuts and washers R, and tighten the clamp O onto the hose Q (see Fig. 5E).
(TI version only).



- Open the bead breaker arm Z (Fig. 5F).
- Insert the spacer pad U on the bead breaker cylinder pin V, re-close the bead breaker arm by making the bead breaker cylinder pin pass through the adjustable block (Fig. 5F).
- The T nut is to be screwed on to bead break cylinder pin V only when the machine is installed and hooked up to the compressed air line. Tighten the nut T until P is 3-4mm (Fig. 5F).



- install the LL head control valve and the handle + cylinder mount, then connect the air supply hoses. (see Fig. 5G)

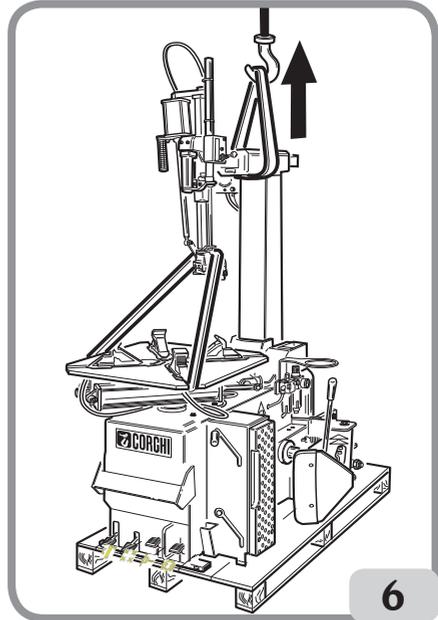


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4. HOISTING/ HANDLING

In order to remove the machine from the pallet, hook it as shown in fig.6.

This hoisting point must be used whenever you need to change the installation position of the machine. Do not attempt to move the machine until it has been disconnected from the electricity and compressed air supply systems.



4.1 INSTALLATION CLEARANCES

WARNING

The machine must be installed in accordance with all applicable safety regulations, including but not limited to those issued by OSHA.

DANGER

RISK OF EXPLOSION OR FIRE. Never use the machine in an area where it will be exposed to flammable vapours (gasoline, paint thinners solvents, etc.). Never install the machine in a recessed area or below floor level.

IMPORTANT: for the correct and safe operation of the machine, the lighting level in the place of use should be at least 300 lux.

NOTICE

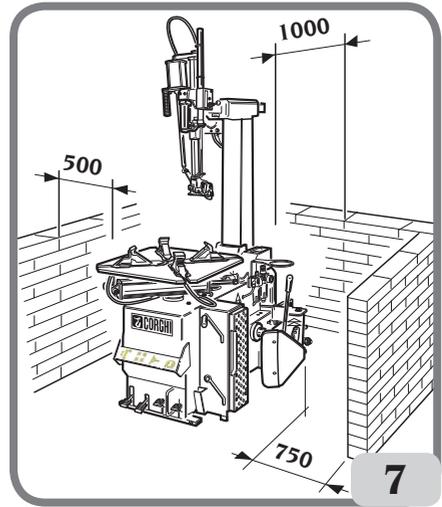
Do not install the machine outdoors. It is designed for use in an indoor, sheltered area.

Install the tyre changer in the chosen work position, complying with the minimum clearances shown in Fig.7.

The surface must have a load-carrying capacity of at least 1000 kg/m².

Work environment conditions

- Relative humidity 30% - 95% without condensation.
- Temperature 0°C - 50°C.



WARNING

Each time the machine remains disconnected from the pneumatic line for long periods, check the direct operation of the controls with the relative arm, following the pressure restoration procedure. Carry out the first control operation very slowly.

5. A 2024 LL DESCRIPTION

The A 2024LL is an electro-pneumatic tyre changer.

The machine is compatible with any type of drop-centre single-piece rims with the dimensions and weights indicated in the paragraph TECHNICAL DATA.

The sturdily constructed machine operates with the wheel in a vertical position for bead breaking and in a horizontal position for mounting and demounting tyres. All functions are controlled by the operator via pedals and hand-operated valves and levers.

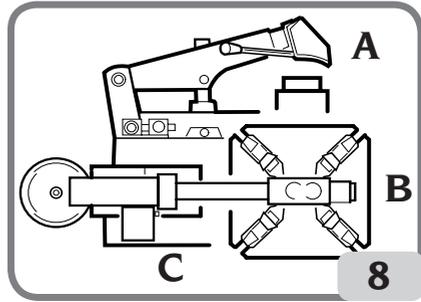
This tyre changer has been designed exclusively for mounting and demounting tyres, using the tools with which they are equipped as described in this manual.

The machine is equipped with an inflation system independent of all the other functions described above. Take great care when using it (read the INFLATION chapter).

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Figure 8 shows the operator's positions during the various work phases:

- A Bead breaking
- B Tyre demounting and mounting
- C Inflation area.



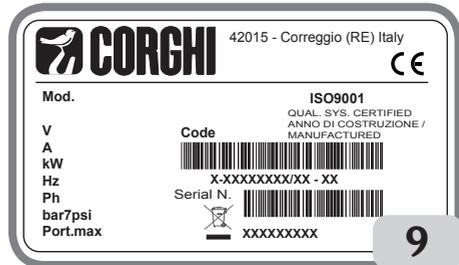
WARNING

RISK OF CRUSH INJURY. Column tilting must be performed from work position B (fig.8), keeping the hands away from moving machine parts.

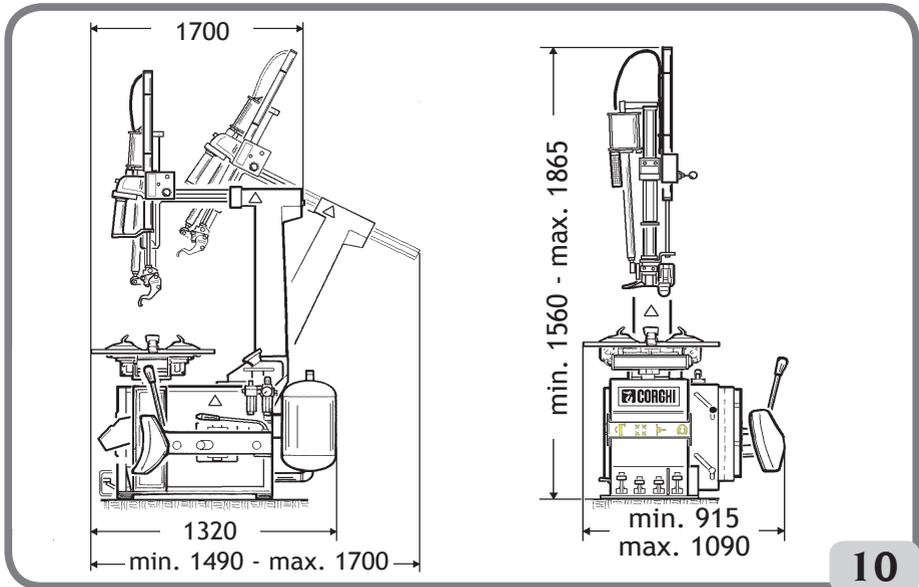
Each machine has a data plate Fig. 9, with information about the machine and some technical data.

As well as the manufacturer's details, the plate indicates:

- Mod. - Machine model;
- V - power supply voltage in Volts;
- A - Input voltage in Amperes;
- kW - Absorbed power in kW;
- Hz - Frequency in Hz;
- Ph - Number of phases;
- bar - Operating pressure in bar;
- Serial No. - Machine serial number;
- ISO 9001 - Certification of the company's Quality System;
- EC - EC marking.



6. OVERALL DIMENSIONS



7. EQUIPMENT COMPONENTS

(MAIN WORKING ELEMENTS OF THE MACHINE)

WARNING

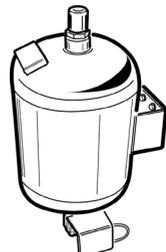
Get to know your machine: knowing exactly how the machine works is the best way to guarantee safety and machine performance. Learn the function and location of all commands. Carefully check that all controls on the machine are working properly. The machine must be installed properly, operated correctly and serviced regularly in order to prevent accidents and injuries.

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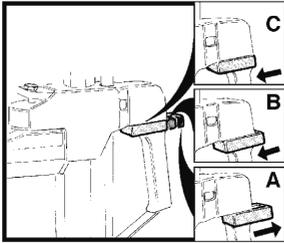
WARNING

EXPLOSION HAZARD

For technical characteristics, warnings, maintenance and any other information about the air tank (optional), consult the relevant operator and maintenance manual provided with the accessory documentation.

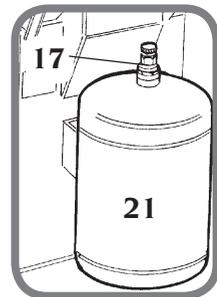
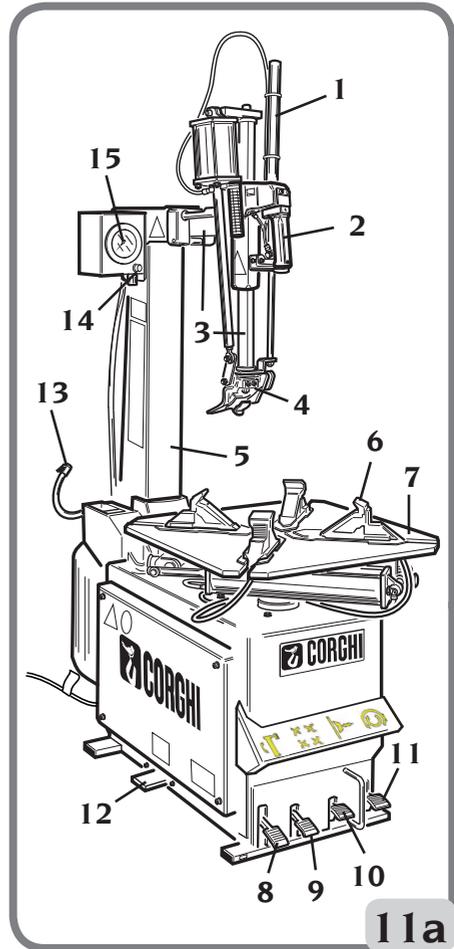


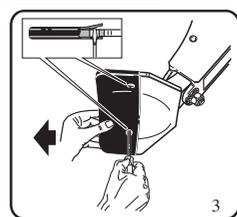
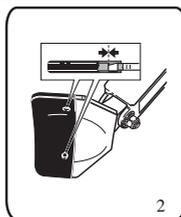
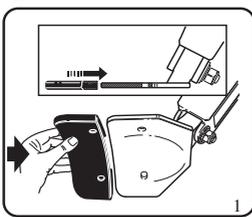
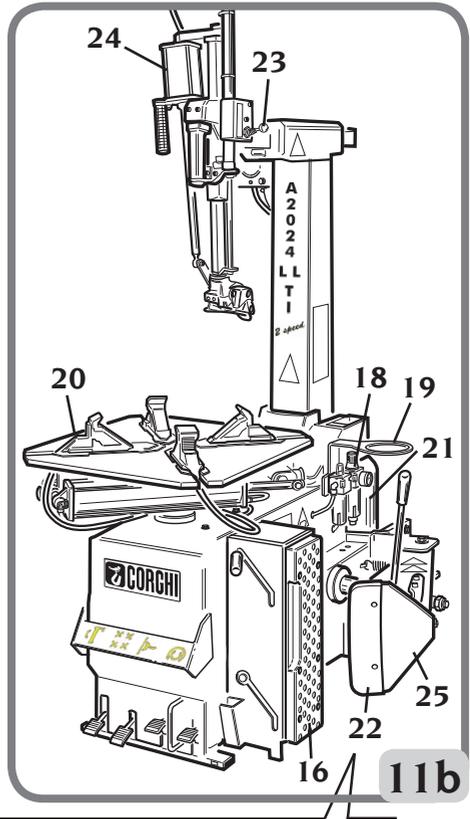
- 1 Vertical arm actuator cylinder.
- 2 Clamping button: three position button.



- A) Up
B) Down
C) Locked

- 3 Vertical and horizontal arm.
- 4 'Leva la leva' (Without lever) mounting/demounting tool.
- 5 Tilting movable column.
- 6 Clamp gripper.
- 7 Turntable.
- 8 Movable column control pedal (5).
- 9 Clamp gripper (6) aperture/closure pedal.
- 10 Bead breaker pedal.
- 11 Turntable (7) rotation control pedal:
 - Position 0 (stable) turntable stationary.
 - Pressed downwards rotate clockwise.
 - Lifted rotate anti-clockwise.
- 12 Inflation pedal (two-position pedal on STD model, three-position pedal on TI version).
- 13 Doyfe connector.
- 14 Deflation button.
- 15 Pressure gauge.
- 16 Rim support.
- 17 Safety relief valve (max. pressure 12 bar) (TI versions only).
- 18 Filter Regulator + Lubricator Unit.
- 19 Grease container.
- 20 Inflation nozzles (TI version only).
- 21 Air tank (TI version only).
- 22 Shoe guard.
- 23 LL head control valve
- 24 Hook actuator cylinder
- 25 Bead breaker shoe.





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8. OPTIONAL ACCESSORIES

For a complete list of optional accessories supplied on request, see the document "ORIGINAL ACCESSORIES FOR TIRE CHANGER"

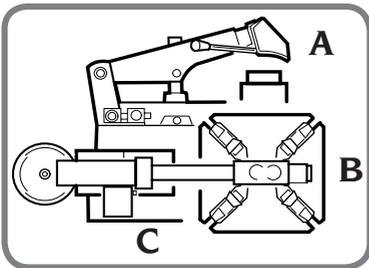
9. BASIC PROCEDURES - USE

WARNING

CRUSHING HAZARD:

Some parts of the machine, such as the head, arms, legs, the bead breakers and turntable move by themselves.

Keep hands and all body parts away from moving parts of the machine.



The tilting post operation must be performed to work position B.

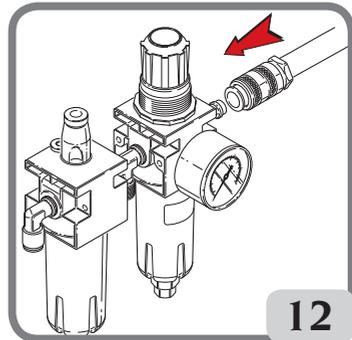


WARNING

AVOID PERSONAL INJURY

Before working on the machine:

- disconnect the power supply plug;
- isolate the compressed air line by disconnecting the shutoff valve (quick-release connector) (fig. 12).



9.1. PRELIMINARY CHECKS

Check that there is a pressure of at least 8 bar on the Filter Regulator pressure gauge. If the pressure is lower, the operation of some automatic procedures is not guaranteed. After the correct pressure has been restored, the machine will function properly. Check that the machine has been adequately connected to the power mains.

9.2. DECIDING FROM WHICH SIDE OF THE WHEEL THE TYRE MUST BE DEMOUNTED

See Fig. 13. Find the position of rim well A on the wheel rim. Find the largest width B and the smallest width C. The tyre must be mounted and demounted with the wheel on the turntable with the smallest width side C facing upwards.

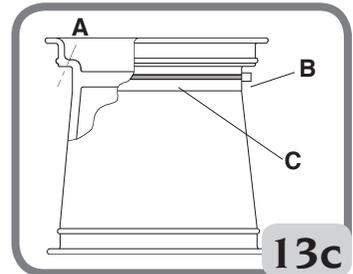
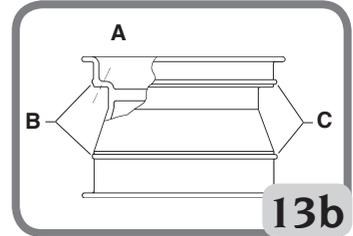
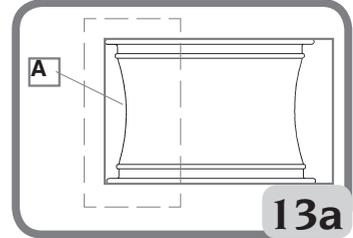
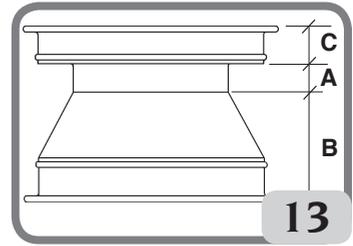
Special wheels

Alloy rim wheels: some alloy rim wheels have minimal rim wells A or no rim wells at all - Fig. 13a. These rims are not approved by DOT (Department of Transportation) standards.

The initials DOT certify that tyres comply with the safety standards adopted by the United States and Canada (these wheels cannot be sold on these markets).

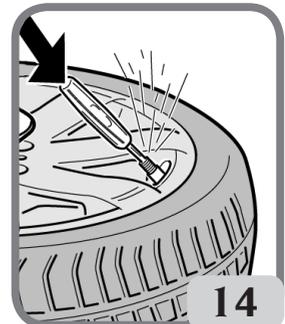
High-performance wheels (asymmetric curvature) - Fig. 13-b: Some European wheels have rims with a very pronounced curvature C, except in the area of the valve hole A where the curvature is less pronounced B. On these wheels the bead must first be broken in the area of the valve hole, on both the top and bottom sides.

Wheels with pressure sensor - Fig. 13c. To operate correctly on these wheels and avoid damaging the sensor (which is incorporated in the valve, fixed with the belt, glued inside the tyre, etc.) appropriate mounting/demounting procedures should be followed (ref. Approved mounting/demounting procedure for runflat and UHP tyres)

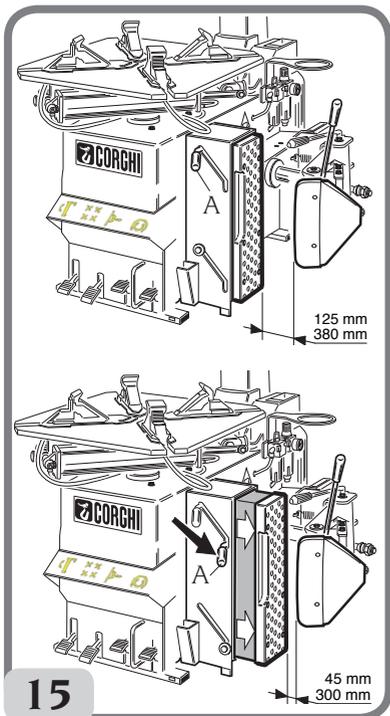


9.3. BEAD BREAKING

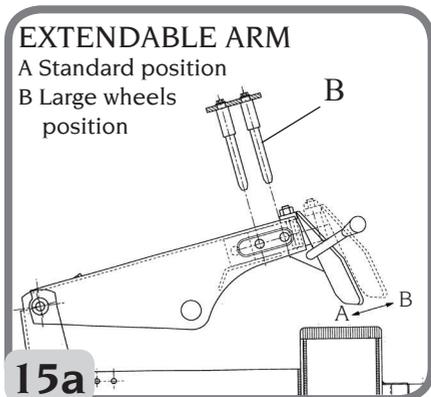
- Fully deflate the tyre, removing the valve (Fig. 14).



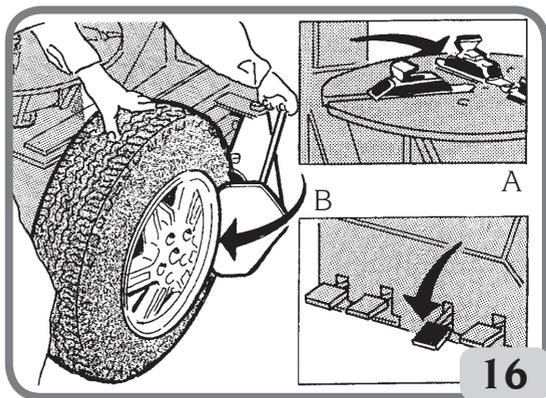
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- In addition to operating the lever A, fig.15 to move the rim support into the correct position for the width of the rim on which you are working, the position of the show must be adjusted appropriately for the size of the tyre, using the pins B, fig.15a.

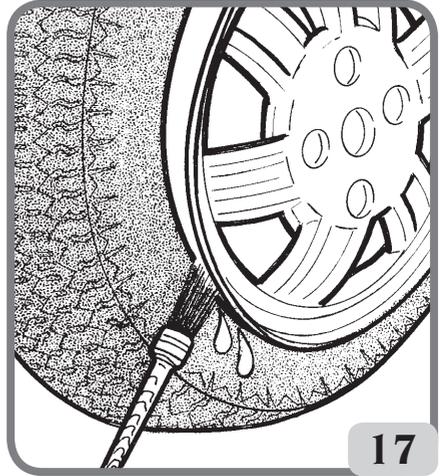


- Position the wheel as shown in fig.16 and move the bead breaking shoe near the rim edge. **IMPORTANT:** During the bead breaking operation, you are advised to keep the turntable closed (clamp gripper towards the centre) (A, fig.16).





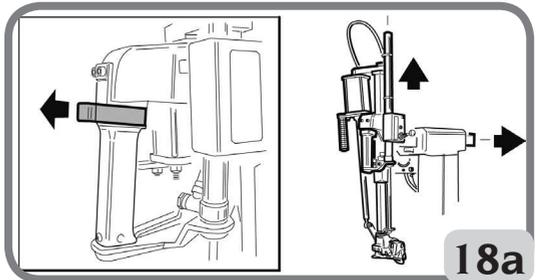
- Press the pedal (B, fig. 16) to operate the bead breaker and detach the bead.
 - Repeat this operation on the other side of the wheel.
- After detaching the beads, remove the old balancing weights.
- Thoroughly lubricate the sides of the tyre around the entire circumference of the lower and upper bead (fig. 17).



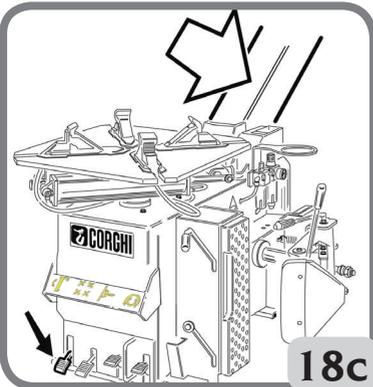
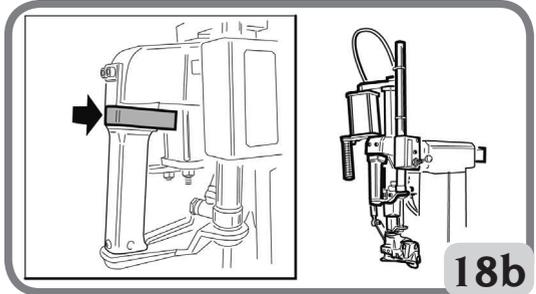
9.4. CLAMPING THE WHEEL



- Release the lock button (Fig. 18a) to move the arms in "not working position" (all the way UP and BACK).



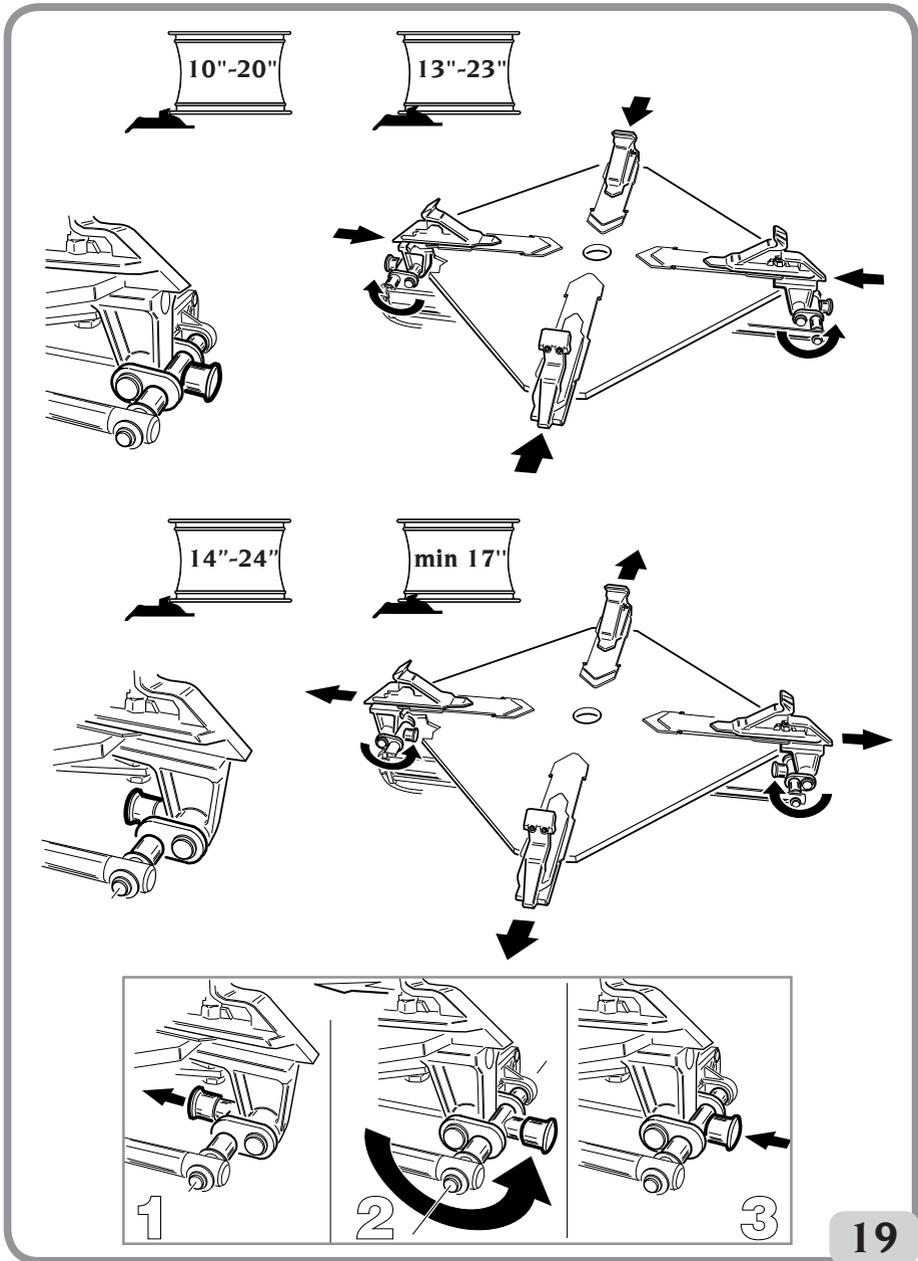
- Press the button (Fig. 18b) to lock the arms in this position.



- Press pedal (Fig. 18c) to tip the column back.

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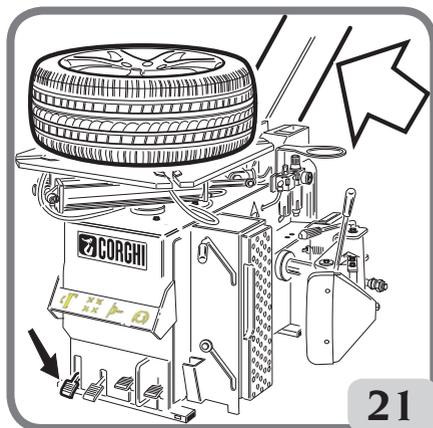
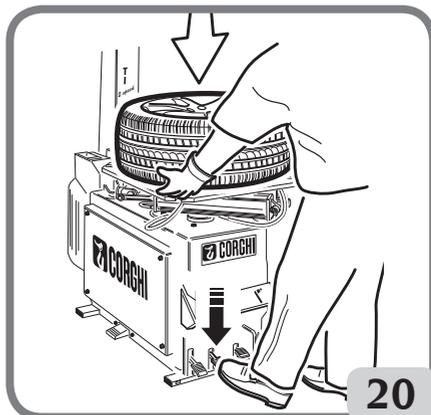
- Place the grippers in an open or closed position (fig.19).



- Place the wheel on the turntable (with the narrow part of the rim structure facing upwards), push lightly downwards and use



the control pedal  to clamp the wheel into position (fig.20).

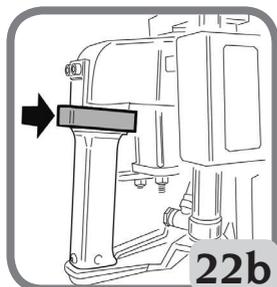
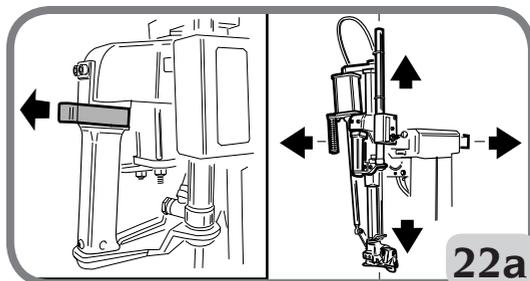


- Press pedal  to move the column forward (fig.21).

9.5. TYRES WITH SOFT WALLS

9.5.a DEMOUNTING

- Release the lock button  , releasing both the vertical and horizontal arm (fig 22a).



- Press the button  in middle position (Fig. 22b) to move the mounting/demounting device correctly against the rim

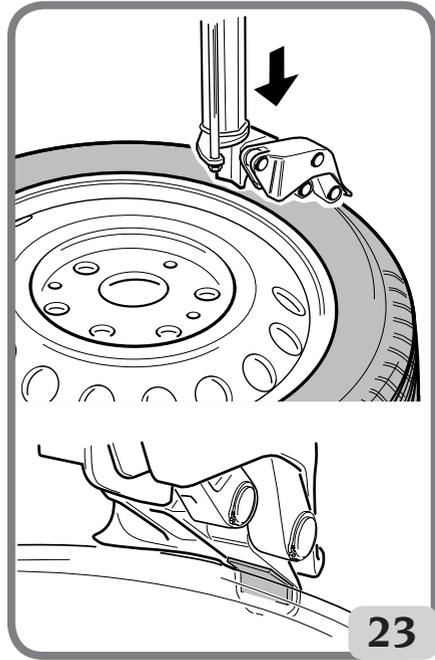
edge (fig.23).



IMPORTANT: pressing the button locks both the vertical and horizontal arms simultaneously.

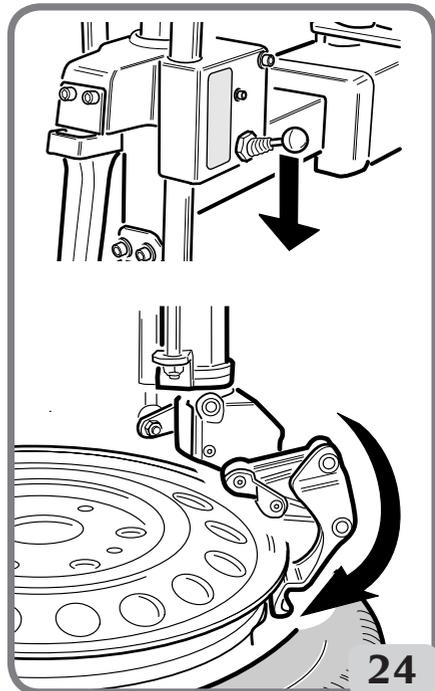
This space between the rim and the vertical slide will be maintained for as long as the button is in the locking position.

The operator can tilt the tower freely (e.g. when demounting wheels of the same size) without repositioning the vertical slide.

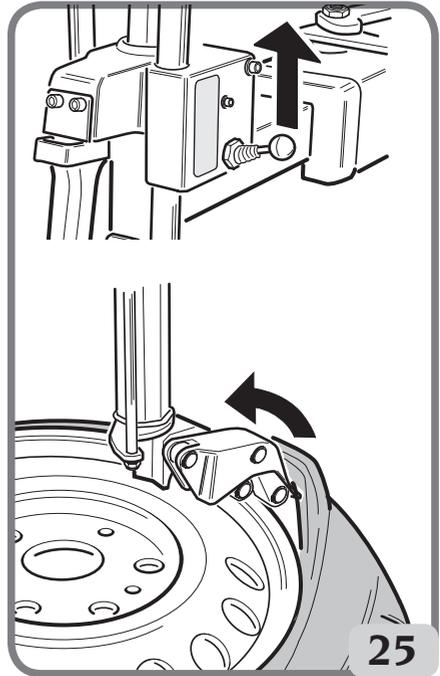


- push the pneumatic control lever down (Fig. 24) to place the hook under the bead (Fig. 24).

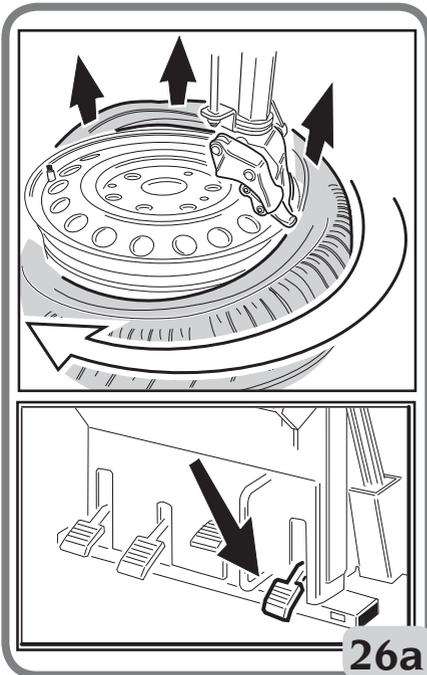
Ensure that the bead of the lower side of the tyre has not been re-mounted back onto the rim.



- Push the pneumatic control lever up (Fig. 25) to lift the bead over the demounting head.



25

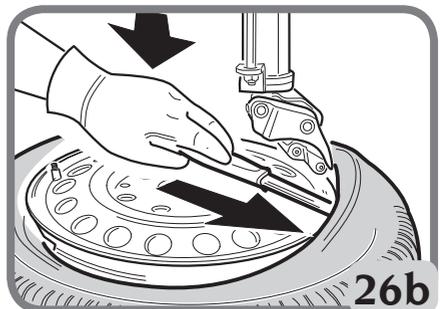


26a

- Press the turntable pedal , making the wheel turn clockwise. The upper bead will be automatically guided up and over the rim edge (Fig.26a).

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- With tyres with soft walls, the lever supplied may also have to be inserted to facilitate demounting (fig. 26b).



26b



WARNING

Avoid unintended lever movement and injury. Grip the lever firmly when using.

- Lift the second bead manually over the head, then turn the turntable clockwise until the tyre has been completely demounted from the rim.



- Press pedal to tilt the column backwards.

NOTICE

For tyres with an air chamber, after disassembling the upper bead, tilt the column backwards and remove the air chamber before continuing to disassemble the lower bead. The rotation of the turntable can be stopped at any moment by releasing the drive pedal. For rotation in the opposite direction, just lift the pedal.

9.5.b MOUNTING



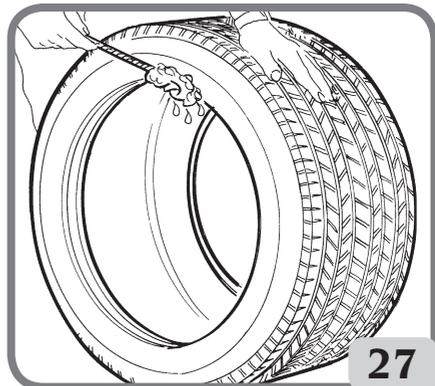
WARNING

EXPLOSION HAZARD. Always check that the tyre/rim combination is correct in terms of compatibility (tubeless tyre on tubeless rim, tube type tyre on tube type rim) and geometrical size (keying diameter, cross-section width, Off-Set and shoulder profile) before mounting.

AVOID PERSONAL INJURY OR DEATH.

Also check that rims are not deformed, that their fixing holes have not become oval, that they are not encrusted or rusty and that they do not have sharp burrs on the valve holes. Check that the tyre is in good condition with no signs of damage.

- Before you start with tyre mounting operations, lubricate the beads (fig.27).



- Check that the tyre is in good condition with no signs of damage.
- Place the tyre over the wheel and press pedal



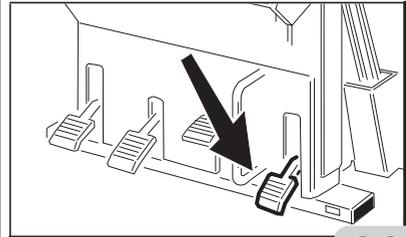
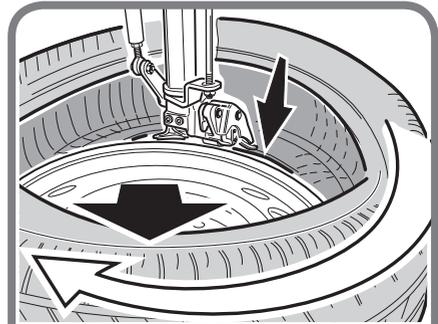
to tilt the tower forward.

- Place the lower bead (fig.28) under the right hand part of the head.



- Press the turntable control pedal to rotate clockwise and mount the bead.

- Taking advantage of the drop centre, press on the right hand tyre wall head to reduce tension on the bead as the wheel rotates (fig.28).

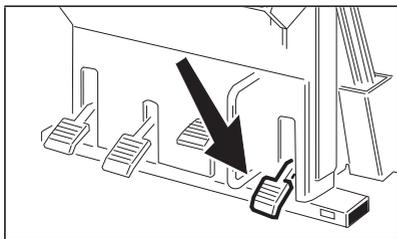
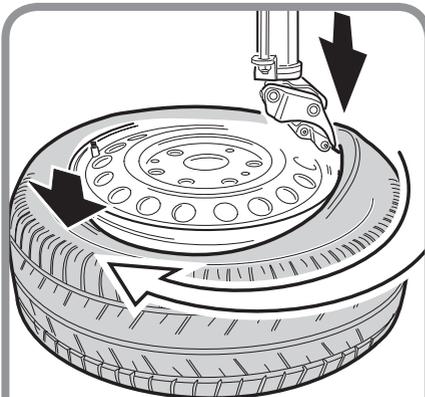


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- Once you have mounted the bottom bead, repeat the same steps for the upper bead (fig.29).

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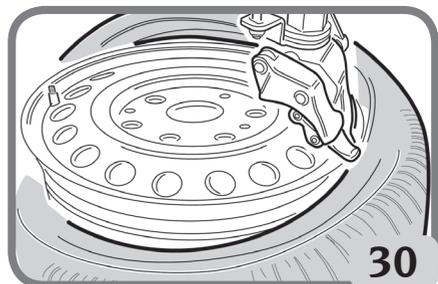
- Ensure that the bead passes over the tail of the head (Fig. 30)



29



- Press pedal to tilt the column backwards, release the wheel and remove it from the tyre changer.



30

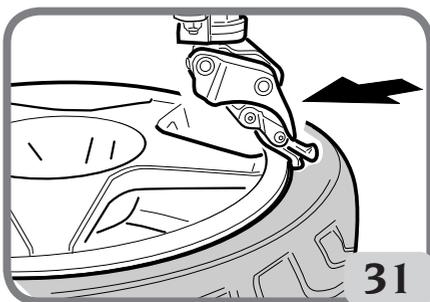
9.6. APPROVED UHP AND RUN FLAT TYRE DEMOUNTING AND MOUNTING PROCEDURE

For a detailed description of the UHP and RUN FLAT tyre mounting/demounting procedure, please refer to the instructions in the manual prepared by WDK (German Tyre Industry Association).

9.7. LOW PROFILE TYRES

9.7.a DEMOUNTING

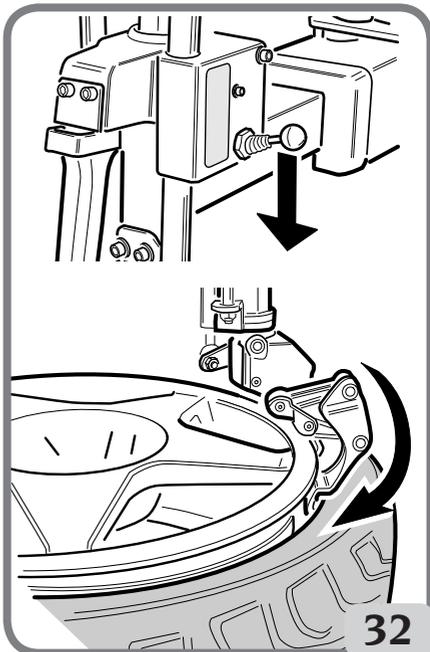
- Position the mounting/demounting tool correctly against the edge of the rim (Fig. 31), as described for soft-walled tyres.



- push the pneumatic control lever down (Fig. 32) to place the hook under the bead (Fig. 32).

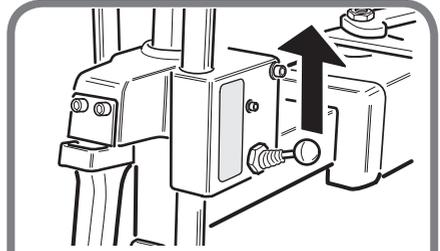


Ensure that the bead of the lower side of the tyre has not been re-mounted back onto the rim.

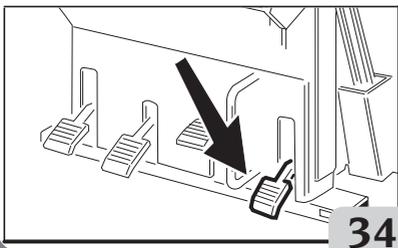
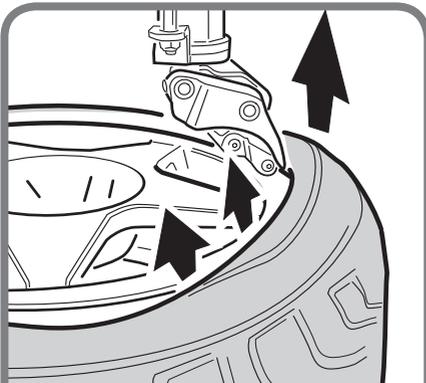
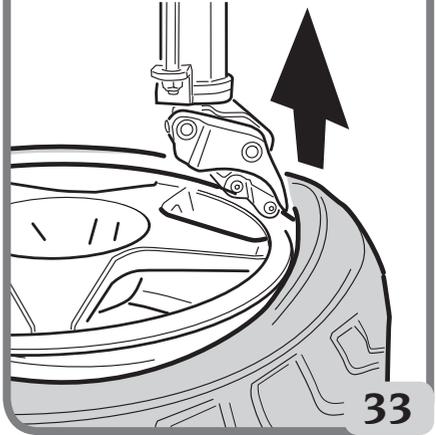




- Push the pneumatic control lever up (Fig. 33) to lift the bead over the demounting head.



- Press the turntable control pedal , making the wheel turn clockwise. The upper bead will be automatically guided up and over the rim edge (Fig.34).



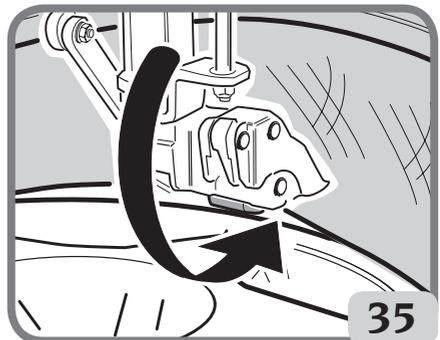
- Lift the second bead manually over the

head , then press the pedal to turn the turntable clockwise until the tyre has been completely demounted from the rim.

UK

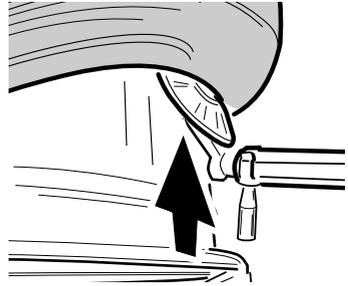


- Press pedal to tilt the column backwards.



NOTICE

When working with wide wheels (13" - 14"), the disc (SP2000 - SP 300 - SP 2300 - SP 3000) must be used to lift the second bead onto the mounting/demounting tool.



9.7.b MOUNTING

! WARNING

EXPLOSION HAZARD. Always check that the tyre/rim combination is correct in terms of compatibility (tubeless tyre on tubeless rim, tube type tyre on tube type rim) and geometrical size (keying diameter, cross-section width, Off-Set and shoulder profile) before mounting.

AVOID PERSONAL INJURY OR DEATH.

Also check that rims are not deformed, that their fixing holes have not become oval, that they are not encrusted or rusty and that they do not have sharp burrs on the valve holes. Check that the tyre is in good condition with no signs of damage.

- Ensure that the tyre is in good condition and undamaged, then lubricate the beads (see chapter relative to soft-walled tyres).



- Place the tyre over the wheel and press pedal to tilt the tower forward.

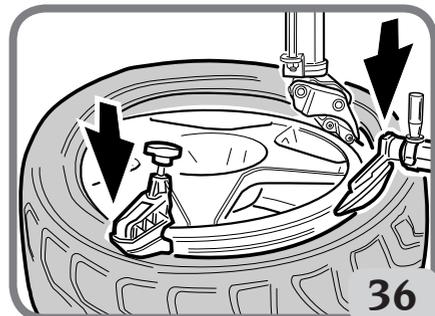
- Mount the lower bead, proceeding as described for soft-walled tyres.

Proceed as follows to mount the upper bead:

- Use the disc to create a large enough gap to first insert the edge guard and then fit the clamp onto the edge guard itself (see Fig. 36).



- press the pedal to turn the turntable clockwise until the upper bead is completely mounted.



Ensure that the bead passes over the tail of the head.



- Press pedal to Tilt the column backwards, release the wheel and remove it from the tyre changer.

9.8. TYRE INFLATION

9.8.a. SAFETY INDICATIONS



DANGER

- **EXPLOSION HAZARD**
- Never exceed tire pressure recommended by tire manufacturer. Never mismatch tire size and rim size.
- Avoid personal injury or death



DANGER

The use of inflation devices (e.g. guns) connected to power sources outside of the machine is not permitted.

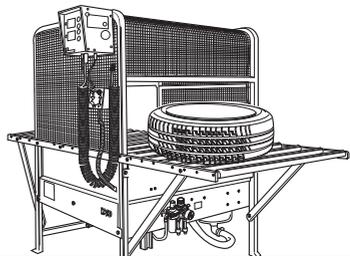
NOTICE

Always comply with national safety regulations as they could be more restrictive than what is indicated in the manual, according to the principle that a more restrictive standard takes precedence over the less restrictive one.



DANGER

If tires being mounted require more than the tire manufacturer's maximum bead seating pressure and , the wheel should be removed from the tyre changer, placed in an inflation cage, and inflated per manufacturer's instructions.



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Verify that both upper and lower tyre beads and the rim bead seat have been properly lubricated with an approved mounting paste.
Safety goggles with plain lenses and safety footwear must be worn.

Step down partially on the pedal to inflate the tyre and seal beads with the inflation hose. Frequently stop to check bead seating pressure on the gauge.



WARNING

Avoid personal injury. Carefully read, understand and observe the following instructions.

1. Overinflated tyres can explode, producing hazardous flying debris that may result in an accident.
 2. Tyres and Rims that are not the same diameter are “mismatched”. Never attempt to mount or inflate any tyre and rim that are mismatched. For example, never mount a 16” tyre on a 16.5” rim (or vice versa). This is very dangerous. A mismatched tyre and rim could explode, resulting in an accident.
 3. Never exceed the bead setting pressure (gauge on hose) provided by the tyre manufacturer, as stated on the sidewall of the tyre.
 4. Never place your head or any part of your body over a tyre during the inflation process or when attempting to seat beads.
- This machine is not intended to be a restraining device for exploding tyres, tubes or rims.**
5. Always stand back from the tyre changer when inflating, never lean over.



WARNING



During this operation, noise levels assessed at 85 dB(A) may occur. Wear hearing protection devices.



DANGER

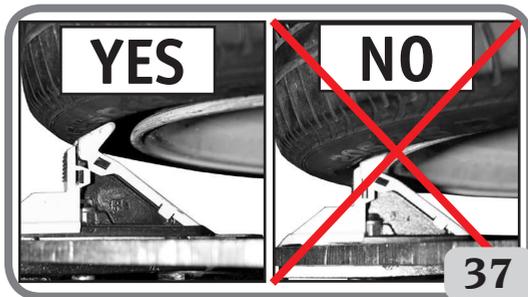
EXPLOSION HAZARD. An exploding tyre and rim may be propelled upward and outward with enough force to cause serious injury or death.

Do not mount any tyre unless the tyre size (molded into the sidewall) matches the rim size (stamped into the rim) exactly or if the rim or tyre are defective or damaged.

This tyre changer is not a safety device and will not restrain exploding tyres and rims. Keep the area clear of bystanders.

9.8.b. INFLATING TYRES

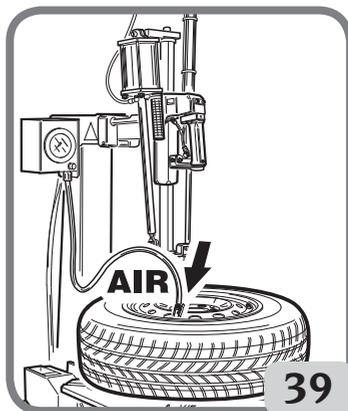
- Release the wheel from the sliding clamps on the table top (Fig. 37).



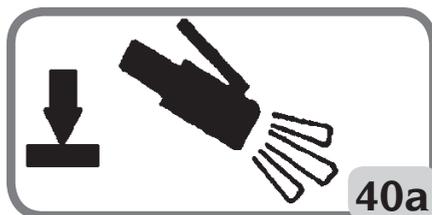
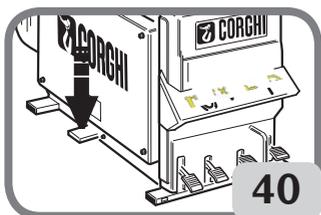
- Bring the horizontal arm to the fully extended position.
- Lower the vertical rod until it touches the rim (Fig. 38).
- Lock the horizontal arm and the vertical rod in this position.



- Connect the Doyfe connector on the air hose to the valve stem (Fig. 39).



Inflate the tyre by operating the proper pedal (Fig. 40-40a) at short intervals; check the pressure gauge frequently to make sure that the pressure **NEVER** exceeds the maximum pressure specified by the tyre manufacturer.



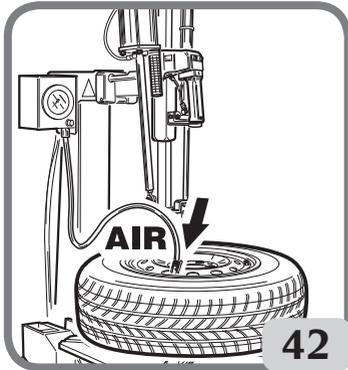
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9.8.c. INFLATING TUBELESS TYRES (TI VERSION ONLY)

WARNING

Before carrying out the operations described below, always make sure that there is no dirt, dust or other impurities on the jaws near the air outlet holes.

- Make sure that the wheel is secured to the table top with inside clamping (Fig. 41).



- Connect the Doyfe connector on the air hose to the valve stem (Fig. 42).

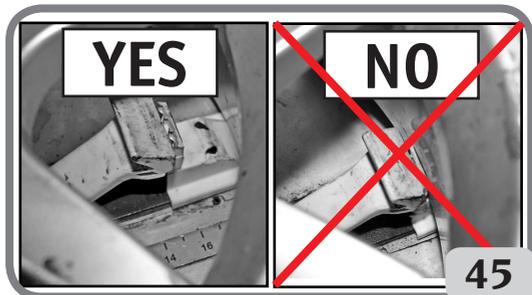


- Hold the tyre with your hands and lift it until there is a slight gap between the lower bead and bottom edge of the rim in order to close the upper bead and the top of the rim (fig. 43).



- Fully press the inflation pedal down for a short period to the bead seating position (fig. 44). The tyre will expand and the beads will seat.

- Release the wheel from the sliding clamps on the table top (Fig. 45).



- Bring the horizontal arm to the fully extended position.
- Lower the vertical rod until it touches the rim (Fig. 46).
- Lock the horizontal arm and the vertical rod in this position.

Inflate the tyre by operating the proper pedal (Fig. 47) in inflation position (average) (Fig. 48) at short intervals; check the pressure gauge frequently to make sure that the pressure **NEVER** exceeds the maximum pressure specified by the tyre manufacturer.



NOTICE

To increase the effectiveness of the inflation jets, always liberally lubricate beads and raise the lower bead while activating inflation jets.

NOTICE

To improve the operation of the tubeless tyre inflation system the compressed air line pressure must be between 8/10 bar.

UK

Step down on the pedal to inflate tire and seal beads with inflation hose. Frequently stop to check bead seating pressure gauge.

WARNING

Explosion hazard. Do not exceed the manufacturer's maximum pressure as stated on the sidewall of the tyre when seating beads.
If tires being mounted require more than the tire manufacturer's maximum bead seating pressure and , the wheel should be removed from the tire changer, placed in an inflation cage, and inflated per manufacturer's instructions.

Reinstall valve stem core into the valve stem after beads have been seated, and then inflate tire to vehicle manufacturer recommended pressure.



WARNING

Activate air inflation jets only when sealing the bead. Do not point jets towards people.

Bleed air pressure from system before disconnecting supply line or other pneumatic components. Air is stored in a reservoir for operation of inflation jets.



WARNING

Only activate the air inflation jets if the rim securing device is locked in place and the tire is properly clamped.



WARNING

ESPLOSION HAZARD. Never mount a tire to a rim that is not the same diameter (e.g., 16 1/2 inch tire mounting on a 16 inch rim).

If the tyre is over-inflated, air may be removed from the tyre by pressing the brass manual air release button located below the air pressure gauge.

Disconnect the inflation hose from the valve stem.

10. TROUBLESHOOTING

Turntable will not turn

Earth line wire.

- ➔ Check the wiring.

Motor in short-circuit.

- ➔ Replace the fuses.
- ➔ Replace the motor.

Rotation control pedal fails to return to central position

Control spring broken.

- ➔ Replace the command spring.

Bead breaker pedal and table top pedal do not return to home position

Control spring broken.

- ➔ Replace the pedal return spring.

No oil in lubricator.

- ➔ Top up lubricator with SAE20 non-detergent oil.

Air leak inside the machine

Air leak from bead breaker cock.

- Replace the cock.
- Replace the bead breaker cylinder.

Air leak from the table top cock.

- Replace the turntable cylinder.
- Replace the swivel connector.

Bead breaker cylinder lacks force, fails to break beads and leaks air

Silencer plugged.

- Replace the silencer.

Cylinder gaskets worn.

- Replace the gaskets.
- Replace the bead breaker cylinder.

Bead breaker cylinder leaks air around the rod

Air gaskets worn.

- Replace the gaskets.
- Replace the bead breaker cylinder.

Turntable will not rotate in either direction

Inverter faulty.

- Replace the inverter.

Belt broken.

- Replace the belt.

Gear unit clamped.

- Replace the gear unit.

Gear unit noisy. The turntable makes 1/3 of a spin and then stops

Gear unit seizing.

- Replace the gear unit.

Turntable fails to clamp rims

Turntable does not clamp rim.

- Replace the turntable cylinder.

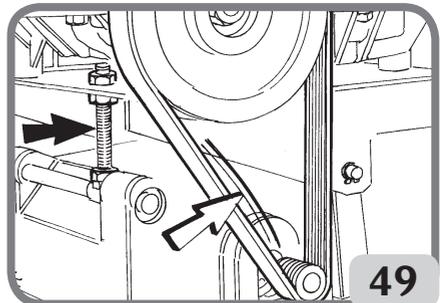
Clamp grippers are worn.

- Replace the clamp grippers.

Turntable mounts or demounts wheels with difficulty

Insufficient belt tension.

- Adjust belt tension (fig.49) or replace it.



Vertical head does not raise or does it too far from rim

Clamping plate not adjusted.

- ➔ Adjust the plate.

Vertical slide ascends under strain

Defective clamping plate.

- ➔ Replace the plate.

Clamping plate not adjusted.

- ➔ Adjust the plate.

When the column tilts back, the arm and vertical slide slip to their limit stops

Defective clamping plate.

- ➔ Replace the plate.

Clamping plate not adjusted.

- ➔ Adjust the plate.

Vertical and horizontal limit stops do not operate

No air passage through cock.

- ➔ Replace the cock.

Column not tilted

Faulty tower tilt cylinder.

- ➔ Replace the column tilting cylinder.

No air supply to cylinder.

- ➔ Replace the cock.

Air escapes from cock.

- ➔ Replace the cock or column tilting cylinder.

Air leaks from the vertical and horizontal arm locking cock

Valve seal damaged.

- ➔ Replace the handle cock.

Clamping arm cylinders leak air

Faulty piston or gaskets.

- ➔ Replace the pistons and gaskets.

The column tilts violently or too slowly

Incorrect outlet regulator setting.

- ➔ Adjust the outlet regulators.
 - Hare: speed increase.
 - Tortoise: speed reduction.

Tyre pressure gauge needle fails to return to 0

Pressure gauge faulty or damaged.

- Replace the pressure gauge.

WARNING

Avoid personal injury or death.

The “Spare parts” handbook does not authorise the user to carry out any work on the machine other than the operations specifically described in the User Manual, and is only intended to enable the user to provide the technical assistance service with precise information in order to minimise response times.

11. MAINTENANCE

WARNING

Do not attempt to modify the pressure settings for relief valves or the pressure limiter for any reason whatsoever.

WARNING



Before adjusting or servicing the machine, disconnect the electricity and compressed air supplies and ensure that all moving parts are suitably immobilised.

UK

WARNING



Do not remove or alter any part of this machine (only technical assistance personnel is permitted to do so).

WARNING



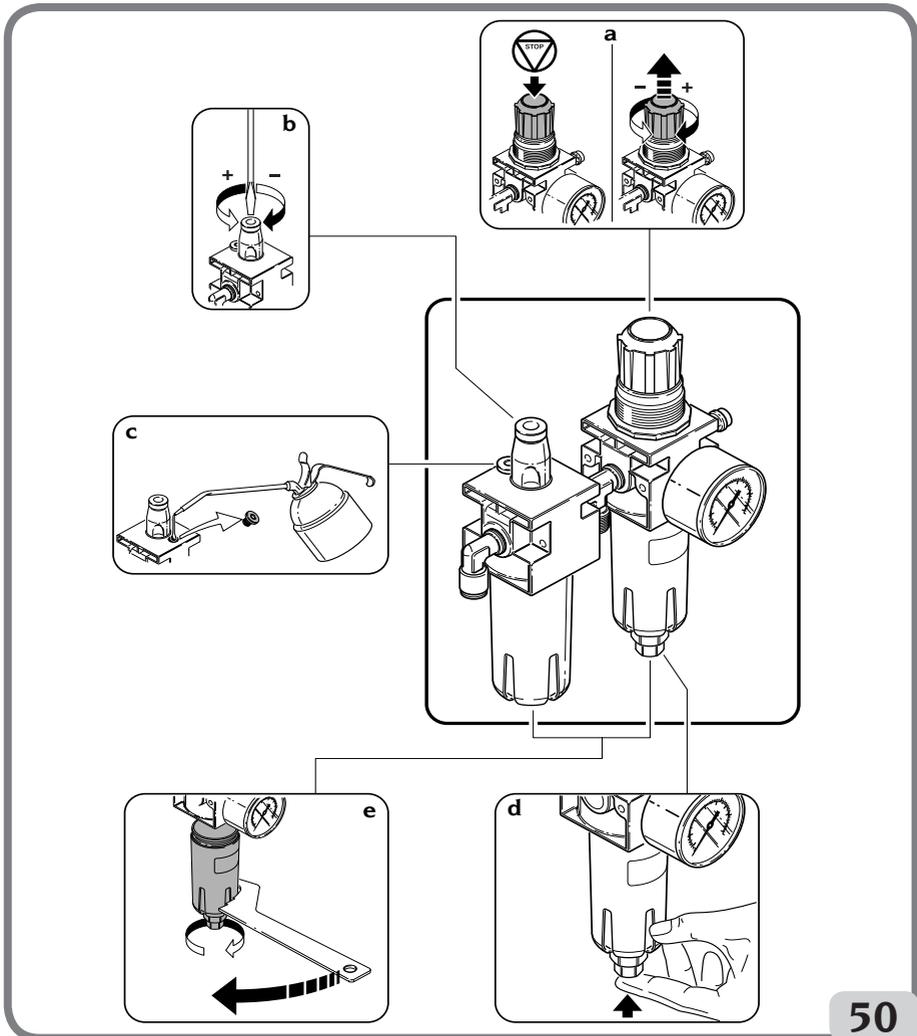
When the machine is disconnected from the air supply, the devices bearing the sign shown above may remain pressurised.

WARNING

Before carrying out any maintenance operation or topping up with lubricant, disconnect the machine from the compressed air supply line.

The purpose of the regulator filter unit plus lubricator (FRL) is to filter the air, adjust the pressure and lubricate it.

The “FRL” unit supports a maximum input pressure of 18 bar and has an adjustment range of 0.5 to 10 bar. The setting may be modified by pulling the handle out and then turning. After adjusting, return the handle to the locked position by pushing down (fig.50a).



50

The lubricant flow-rate is adjusted by turning the screw on part “L”, (fig.50b); normally this unit is precalibrated to a pressure of 10Bar, with SAE20 viscosity lubricant in order to make a drop of lubricant come out, which can be seen from the specific cover, every 4 times the bead breaker is operated.

Periodically check the lubricant level through the specific windows and top up as shown in fig.50c. Top up only with non-detergent SAE20 oil equal to 50cc.

The filter regulator “FR” has an automatic condensation drain system, therefore in conditions of normal use special maintenance is not required. The condensate may however be drained manually at any time (fig.50d).

Normally the cups do not need to be removed, but check if this is necessary for maintenance operations after a long period of use. If a manual operation is not sufficient, use the specific key provided (fig.50e).

Clean with a dry cloth. Avoid contact with solvents.

NOTICE

Keep the work area clean.

Never use compressed air, water jets or solvents to remove dirt or deposits from the machine. When cleaning the area, take steps to avoid building up and raising dust as far as possible.

12. INFORMATION ABOUT SCRAPPING

If the machine is to be scrapped, remove all electrical, electronic, plastic and metal parts. Dispose of them separately, as provided for by local regulations in force.

13. ENVIRONMENTAL INFORMATION

The following disposal procedure must be applied to the machines having the crossed-

out bin symbol on their data plate



This product may contain substances that can be hazardous to the environment and to human health if it is not disposed of properly.

We therefore provide you with the following information to prevent releases of these substances and to improve the use of natural resources.

Electrical and electronic equipment should never be disposed of in the usual municipal waste but must be separately collected for their proper treatment.

The crossed-out bin symbol, placed on the product and on this page, reminds the user that the product must be disposed of properly at the end of its life.

This prevents the inappropriate disposal of the substances which this product contains, or the improper use of some of them, from having hazardous consequences for the envi-

ronment and human health. Furthermore, this helps to recover, recycle and reuse many of the materials contained in these products.

To this end, electrical and electronic manufacturers and distributors have set up proper collection and treatment systems for these products.

At the end of life your product contact your distributor to have information on the collection arrangements.

When buying this new product your distributor will also inform you of the possibility to return free of charge another end of life equipment as long as it is of equivalent type and has fulfilled the same functions as the supplied equipment.

Anyone disposing of the product otherwise than as described above will be liable to prosecution under the legislation of the country where the product is scrapped.

We also recommend you to adopt more measures for environment protection: recycling of the internal and external packaging of the product and proper disposal of used batteries (only if contained in the product).

With your help it is possible to reduce the amount of natural resources used to produce electrical and electronic equipment, to minimise the use of landfills for the disposal of the products and to improve the quality of life by preventing that potentially hazardous substances are released in the environment.

14. INFORMATION AND WARNINGS CONCERNING HYDRAULIC FLUID

Disposing of spent fluid

Do not dispose of used oil in sewers, storm drains, rivers or streams; collect it and consign it to an authorised disposal company.

Fluid leaks or spills

Contain the spilt product from spreading using soil, sand or any other absorbent material. The contaminated zone must be degreased with solvent, taking care not to allow vapours to form or stagnate, and the residual material from the cleaning process must be disposed of as envisaged by law.

Precautions for the use of hydraulic fluid

- Avoid contact with the skin.
- Avoid the formation or spreading of oil mists in the atmosphere.
- The following fundamental health precautions must therefore be adopted:
 - avoid spatters (suitable clothing, protective shields on machines);
 - wash frequently with soap and water; do not use cleaning products or solvents that irritate the skin or remove its natural protective oil;
 - do not dry your hands using soiled or greasy rags;
 - change your clothes if soaked and, in any case, at the end of the work shift;
 - do not smoke or eat with greasy hands.

- Also adopt the following preventive and protective equipment:
 - mineral oil resistant gloves with plush lining;
 - goggles, in case of spatters;
 - mineral oil resistant aprons;
 - protective shields, in case of spatters.

Mineral oil: first aid indications

- Swallowing: go to Casualty with the characteristics of the type of oil swallowed.
- Inhalation: in case of exposure to strong concentration of vapours or mists, take the affected person out into the open air and then to Casualty.
- Eyes: rinse with plenty of water and go to Casualty as soon as possible.
- Skin: wash with soap and water.

15. FIREFIGHTING MEANS USABLE

For guidance on the most suitable type of extinguisher, refer to the table below:

	Dry materials	Inflammable liquids	Electrical equipment
Water	YES	NO	NO
Foam	YES	YES	NO
Powder	YES*	YES	YES
CO2	YES*	YES	YES

YES* **Use only if more appropriate extinguishers are not on hand or when the fire is small.**

WARNING

The indications given in this table are of a general nature and should be used as a general guide. All the applications of each type of extinguisher must be obtained from the relevant manufacturer.

UK

16. GLOSSARY

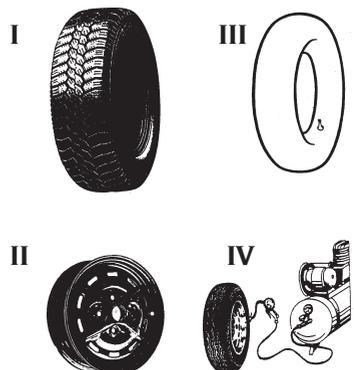
Tyre

A tyre consists of: **I-the actual tyre**, **II- the rim** (wheel), **III-the air chamber** (in tube type tyres), **IV-pressurised air**.

The tyre must:

- withstand a load,
- ensure driving power,
- steer the vehicle,
- aid handling and braking,
- aid vehicle suspension.

I - Tyre The actual tyre is the main part of the overall tyre in contact with the road and is therefore designed



to withstand internal air pressure and all other stress arising from use.

A tyre section shows the various parts it consists of:

1 - *The tread.* This is the part in contact with the ground when the tyre rolls. It comprises a rubber compound and a "pattern" that is suitable for ensuring good resistance to abrasion and good grip in dry and wet conditions, as well as quiet operating conditions.

2 - *Edge or bracing.* This is a metal fabric or textile insert, in the area of the outer bead part. It protects the casing plies from rubbing against the rim.

3 - *Casing.* This is the resistant structure and comprises one or more layers of rubber plies. The way the plies comprising the casing are arranged give the structure its name. The following structures are possible:

Conventional: the plies are inclined and arranged so that the strands comprising a ply overlap with those of the adjacent ply. The tread, which is the part of the tyre in contact with the ground, is part of the sidewalls and so during rolling, sidewall flexure is transmitted to the tread.

Radial: the casing consists of one or more plies with the cords in a radial direction.

A radial casing in itself is quite unstable. To make it stable and prevent bad tread movement in the area of contact with the ground, the casing and the undertread are reinforced with an annular structure, usually called belt. The tread and sidewall work with different, independent rigidities, so during rolling, sidewall flexure is not transmitted to the tread.

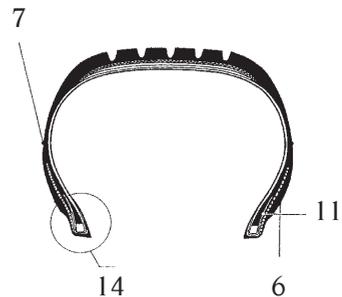
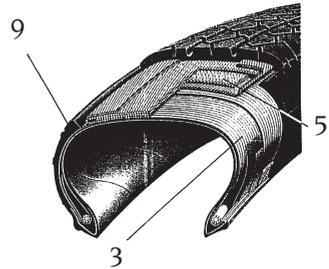
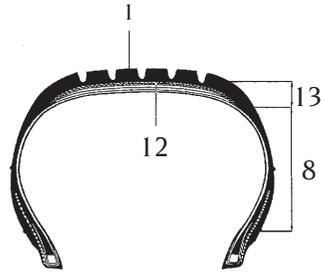
4 - *Side ring.* This is a metal ring comprising several steel strands. The casing plies are secured to the side ring.

5 - *Belt.* This is a non-flexible circumferential structure comprising cross-plys at very low angles, positioned below the tread, to stabilise the casing in the footprint area.

6 - *Centring band.* This is a small marking which indicates the circumference of the top part of the bead and is used as a reference to check exact tyre centring on the rim after mounting.

7 - *Protective band.* This is a circumferential marking in the area of the sidewall which is more exposed to accidental rubbing.

8 - *Sidewall.* This is the area between the shoulder and the centring band. It consists of a more or less thin layer of rubber, which protects the casing plies from lateral impact.



9 - *Liner*. This is a vulcanised, compound sheet, impermeable to air, inside tubeless tyres.

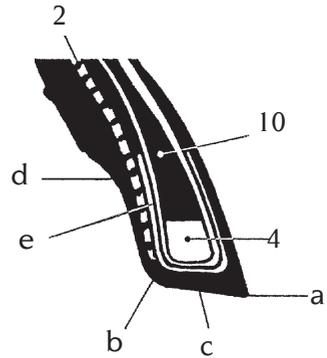
10 - *Filling*. This is a generally triangular rubber profile, above the side ring; it provides rigidity for the bead and gradually offsets the abrupt uneven thickness caused by the side ring.

11 - *Flap*. This is the part of the casing ply around the side ring and placed against the casing, to secure the ply and prevent it from slipping.

12 - *Foot*. This is the innermost layer of the tread in contact with the belt, or if the latter is not present (conventional tyre) with the last casing ply.

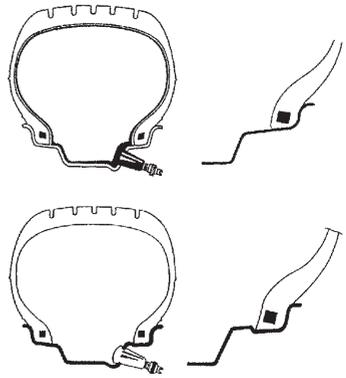
13 - *Shoulder*. This is the outer part of the tread, between the corner and start of the sidewall.

14 - *Bead*. This is the part joining the tyre to the rim. The bead point (a) is the inner corner. The spur (b) is the outer part of the bead. The base (c) is the area resting against the rim. The groove (d) is the concave part against which the rim shoulder rests.



Tube type tyres. As a tyre has to contain pressurised air for a fairly long time, an air chamber is used. The valve for adding air and maintaining, controlling and restoring air pressure is part of the chamber in this case.

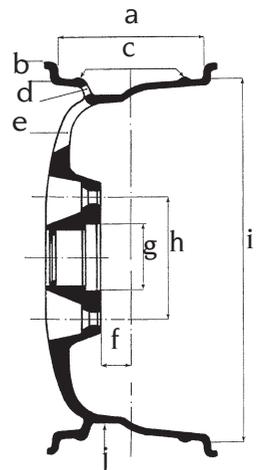
Tubeless tyres. Tubeless tyres consist of a tyre with inner sidewall lined with a thin layer of special impermeable rubber, called *liner*. This liner helps to maintain air pressure in the casing. This kind of tyre must be mounted on a specific rim, to which the valve is directly fixed.



II - Rim (Wheel). The wheel is the rigid metal part which connects the vehicle hub to the tyre, on a fixed but non-permanent basis.

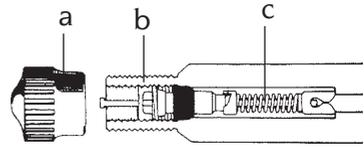
Rim profile. The rim profile is the form of the section in contact with the tyre. It comprises different geometric forms, which ensure: easy tyre mounting (bead insertion in the rim well); safe driving, in terms of the bead anchored in its seat.

The rim section shows its various parts: a) rim width – b) shoulder height – c) tubeless anchoring (HUMP) – d) valve hole – e) ventilation opening – f) offset – g) central hole diameter – h) attachment hole centre to centre i) keying diameter – j) rim well.



III - Air chamber (tube type tyres). The air chamber is a closed ring-like rubber structure with valve, which contains pressurised air.

Valve. The valve is a mechanical device to inflate/deflate the tyre and maintain air pressure inside the air chamber (or tyre in the case of tubeless tyres). It consists of three parts: the valve closing cap (a) (to protect the internal mechanism from dust and guarantee air tightness), an internal mechanism (b) and the base (c) (the outer lining).



Tubeless Inflator. Inflation system that makes the inflation of tubeless tyres easier.

Beading. Operation which takes place during inflation and ensures perfect centring between the bead and the rim edge.

Bead pressing gripper. A tool intended for use when mounting the upper bead. It is fitted so that it grips the shoulder of the rim and holds the tyre upper bead inside the rim well. It is generally used for mounting low profile tyres.

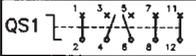
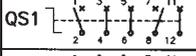
Air delivery regulator. Union allowing regulation of the air flow.

Bead breaking. Operation that allows the tyre bead to be detached from the rim edge.

17. GENERAL ELECTRIC LAYOUT DIAGRAMS

1Ph Tyre changer (Fig. 51)

- XS1 Power supply socket
- QS1 Inverter
- M1 Motor
- R1 Resistor
- C1 Capacitor

Posizione / Position	Situazione	Situation
A QS1 	Pedale abbassato Rotazione antioraria del motore Rotazione oraria del piatto autocentrante	Pedal depressed Motor anti-clockwise rotation Turntable clockwise rotation
B QS1 	Pedale alzato Rotazione oraria del motore Rotazione antioraria del piatto autocentrante	Pedal lifted Motor clockwise rotation Turntable anti-clockwise rotation
Neutral QS1 	Pedale in posizione orizzontale Motore spento Piatto autocentrante fermo	Pedal in horizontal position Motor off Turntable still

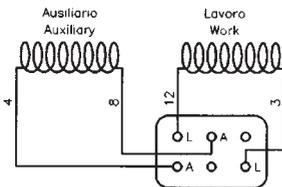
Solo versione CSA – CSA version only

115V 50–60Hz	220V 50–60Hz
C1=40uF 450V	C1=30uF 450V
R1 = 330K 1W	R1 = 330K 1W

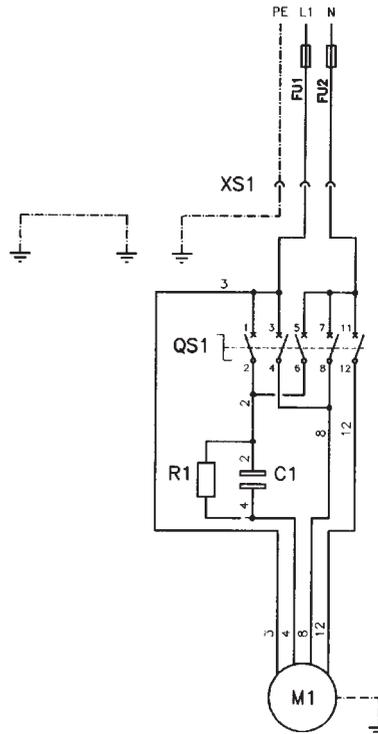
Versione standard – Standard version

115V 60Hz	220V 50–60Hz
C1=45uF 450V	C1=35uF 500V
R1 = 330K 1W	R1 = 330K 1W

FU1–FU2	
110V 50/60Hz	25A
220V 50/60Hz	20A



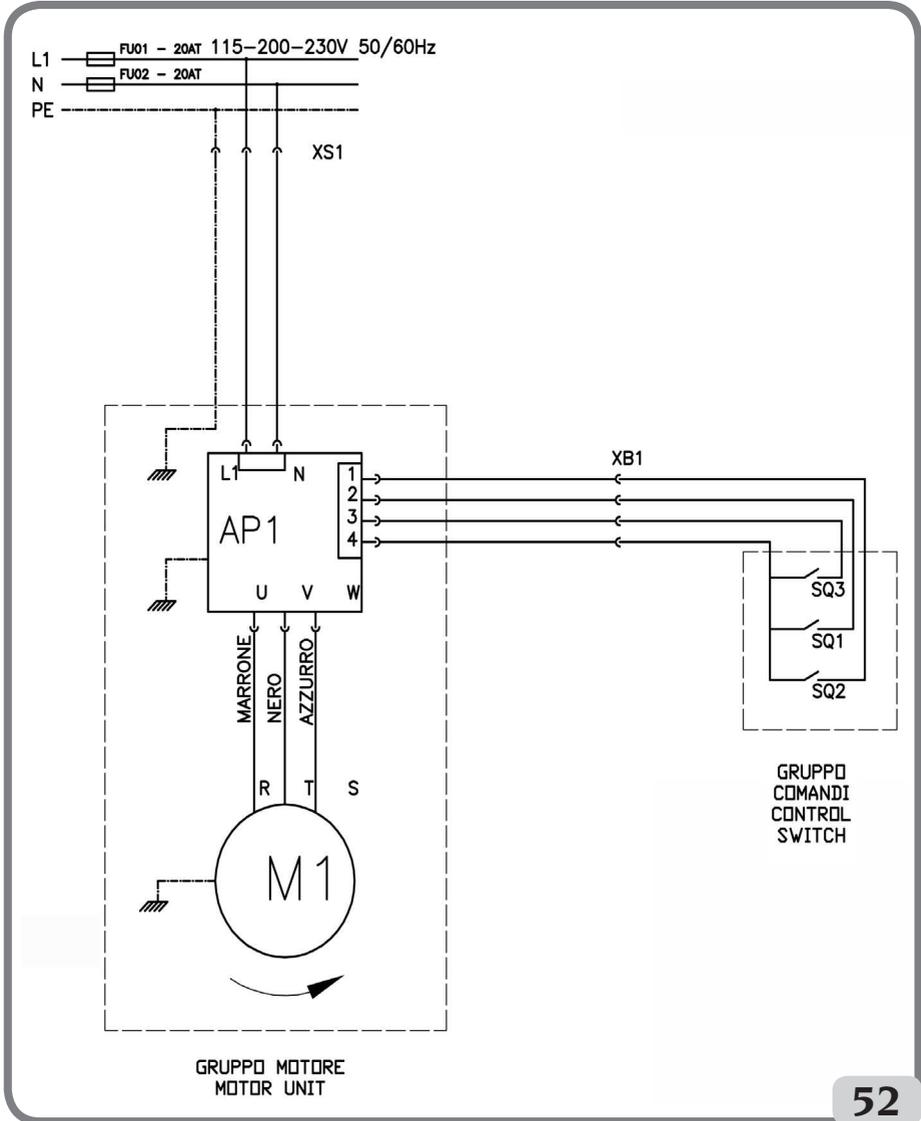
Schema cablaggio morsettiere
Wiring diagram terminal-blok



51

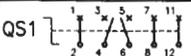
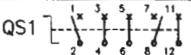
100-115-200-230V DV Tyre changer (Fig. 52)

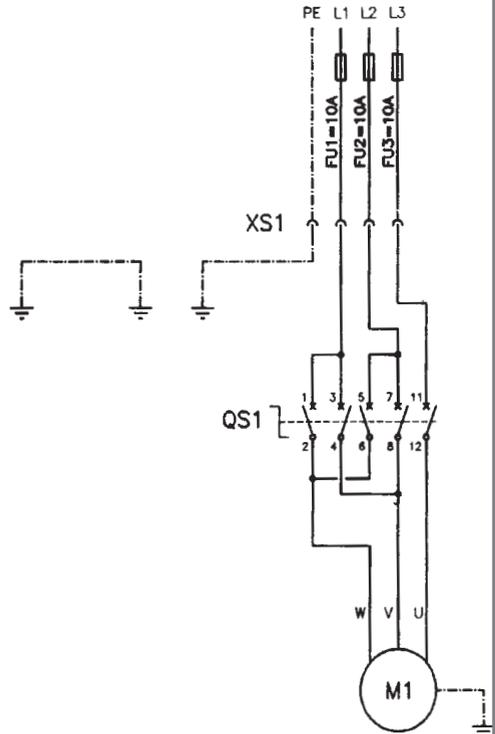
- XS1 Power supply socket
- AP1 Single / two-speed motor
- M1 Motor
- SQ1 Two-speed micro-switch
- SQ2 Microswitch (CLOCKWISE rotation)
- SQ3 Microswitch (ANTICLOCKWISE rotation)



3Ph Tyre changer (Fig. 53)

- XS1 Power supply socket
- QS1 Inverter
- M1 Motor

Posizione / Position	Situazione	Situation
A 	Pedale abbassato Rotazione antioraria del motore Rotazione oraria del piatto autocentrante	Pedal depressed Motor anti-clockwise rotation Turntable clockwise rotation
B 	Pedale alzato Rotazione oraria del motore Rotazione antioraria del piatto autocentrante	Pedal lifted Motor clockwise rotation Turntable anti-clockwise rotation
Neutral 	Pedale in posizione orizzontale Motore spento Piatto autocentrante fermo	Pedal in horizontal position Motor off Turntable still

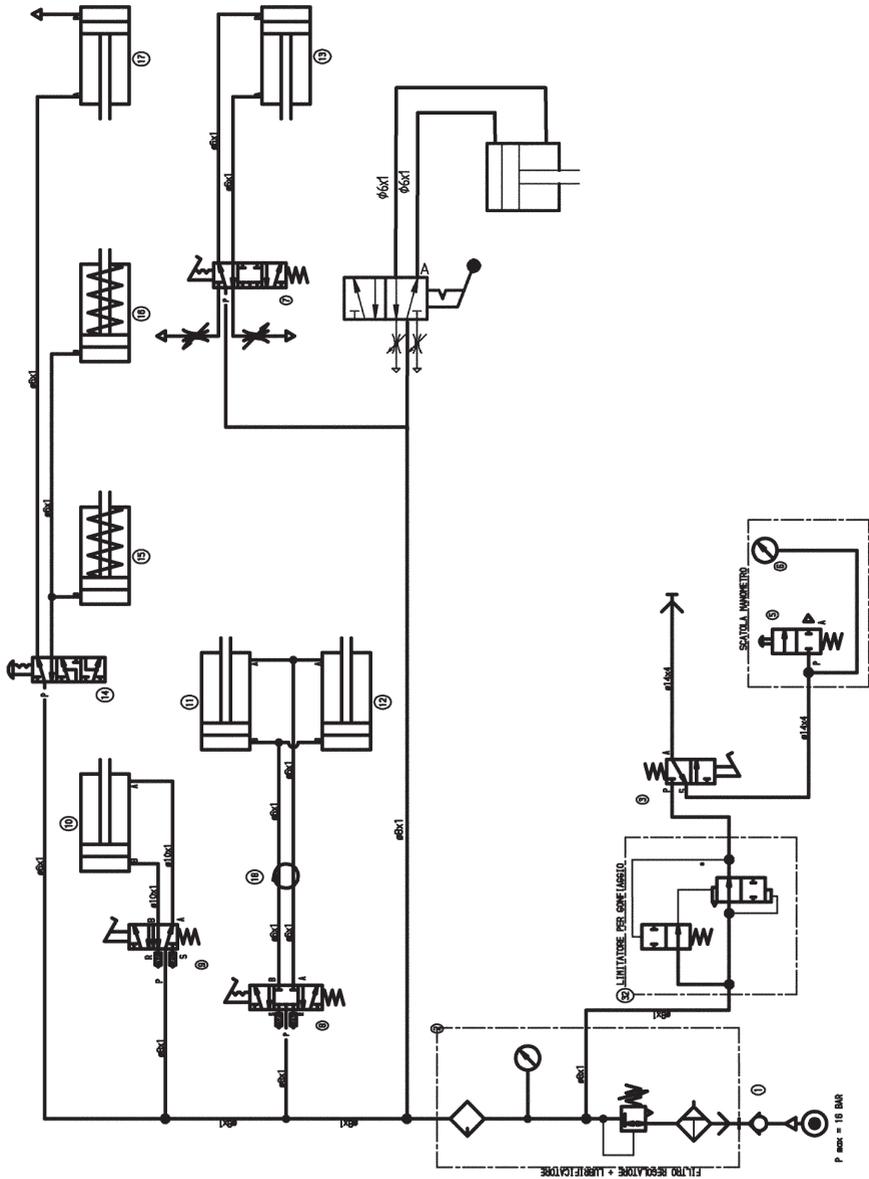


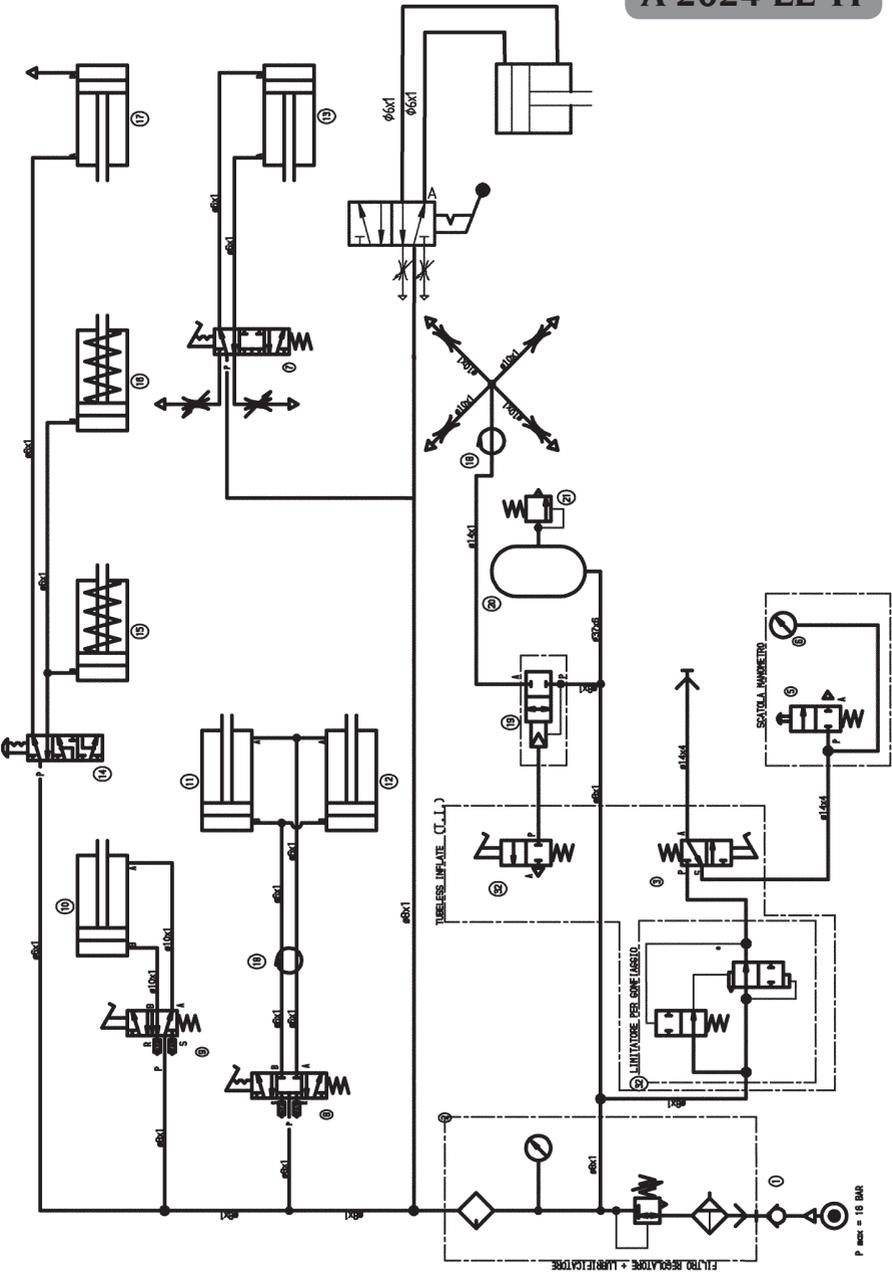
53

UK

18. PNEUMATIC SYSTEM DIAGRAM

- 1 Snap coupling
- 2 Filter regulator unit
- 3 Inflation pedal
- 4 Air pressure gun
- 5 Deflation push-button.
- 6 Pressure Gauge
- 7 Column translation valve
- 8 Turntable valve
- 9 Bead breaker valve
- 10 Bead breaker cylinder
- 11 Right turntable cylinder
- 12 Left turntable cylinder
- 13 Column tilting cylinder
- 14 Clamping handle valve
- 15 Front clamping cylinder
- 16 Rear clamping cylinder
- 17 Column translation cylinder
- 18 Swivel connector
- 19 Delivery valve
- 20 Tank
- 21 Relief valve
- 22 5/2 NO Valve
- 23 Tool actuator cylinder
- 32 Inflation limiter unit





P max = 18 BAR



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