

PANDROL



User Manual

HYDRAULIC JACK



Revision 01

Partners in excellence



Revision History

Version	Date	Author	Comments
01	29-05-20	C.CHA	Original emission

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1. Explanation of symbols



DANGER

it refers to dangers dealing with the described activity. When there is “DANGER” we refer to activities that could occur while using the machine and could endanger people.



ATTENTION

it refers to dangers dealing with the described activity. When there is “ATTENTION” we refer to activities that could occur while using the machine and could endanger the machine.








WARNING








We refer to integrations or suggestions for a correct use of the machine and to illustrate basic characteristics.

1.1 Security's pictograms

Pictograms inside a triangle indicate DANGER.

Pictograms inside a circle impose a PROHIBITION/OBLIGATION.

Pictograms	Description
	Danger electric tension.
	Arms crushing.
	Hitching on.
	Dragging.
	Generic danger.

Pictograms	Description
	No entry for not authorized personnel.
	Don't remove security devices.
	Don't clean, oil, grease, repair or adjust working parts by hand.
	Don't execute works before remove tension.
	Obligatory protection gloves.
	Obligatory safety footwear.
	Obligatory safety helmet.

1.2 Unified symbols on the machine


Unified symbols that follows indicate danger operation or situations that could occur while using the machine.

ATTENTION



If the decals (illustrated above) are not legible, you have to substitute them with new ones.

Table 1: Unified symbols and meanings

Meaning	Symbol
This symbol indicates that you have to consult the manual.	

1.3 Responsibility

Pandrol is dispensed from any responsibility and obligations about any kind of accident to people and things, that could occur for:

- Failed observance of the instructions written in this manual concerning the condition, the transport, the use and the maintenance of the machine
- Violent actions or incorrect maneuvers during the transport, use and maintenance of the machine
- Any modifications to the machine made without PANDROL authorization
- Events that does not deal with the normal and correct use of the machine

Anyway, if the user would attribute the accident to a machine's fault, would have to demonstrate that the occurred damage was a main and direct consequence of this "fault".

The responsibility of the formation, education, training and retraining of the personnel that uses the machine described in this manual, is exclusively dependent on owner/user of the machine.

ATTENTION



For the maintenance and repairs you have to use only original spare parts. Pandrol declines all the responsibility for damages that could occur for non-fulfilment for what said before.

The machine is guaranteed according to contract stipulated during the sales.

Warranty is null if rules and instructions written in this manual haven't been obeyed.

2. General safety instructions

2.1 General warning

- The operator and all the personnel that interact with the machine must be equipped of specific individual protection's devices (DPI).
- Machine's placement and use are reserved only for in charge personnel.
- Never use the instrument when its poor condition is evident. Remove all the instruments that has visible deformations. Constantly check the instrument's status.
- Do not use the machine to lift people.
- Avoid overloading and check that the load never exceeds the rated capacity stated on the label if the application is made on the head and 70% of that value if the application is done on foot (only for models 16 and 20t).
- Do not use shims between the head or the arm of the machine and the load to be lifted
- Always check that the load is centered.
- The load to be lifted must be guided laterally, so that the foot of the jack, in operation, cannot rotate about the axis during the climb.
- For use on the foot is necessary that at least 3 teeth of the foot are in contact with the load.
- Never work under a lifted load.
- Do not bump the load being lifted.
- Do not lift loads that can deform or having parts not securely fastened to each other.
- Never leave the lifted load unattended.
- Before starting the manoeuvres, you have to assure that in the sphere of activity of the machine there aren't people. If you need, signal the start of the operation.
- During the lifting operations remain outside the zone of action of the machine to avoid being affected by a possible fall of the load.
- Lift the machine carefully avoiding the use of the control lever.
- Adequately light the working area.

ATTENTION



It is impossible to list all the possible safety rules, so we entrust operator good sense, who, if he works with care and caution, guarantees the best safety against every kind of accident.

2.2 Environmental conditions

The machine in standard configuration is designed to be used in these environmental conditions:

- Work temperature: + 25°C
- Max temperature: + 40°C
- Min temperature: - 20°C
- Relative damp: 20% - 80% (without moisture)

The machine in standard configuration must work only in these environmental conditions

ATTENTION



It is forbidden the use of the machine in standard execution in areas that are different from the listed above. The eventual use of the machine in non-suitable places can cause the malfunctioning or the breaking of the machine's hydraulic components.

2.3 Prohibited uses

- Use the machine for aims that are different from those it is designed for
- Not correctly or moved and started according to its safety/service rules
- Carelessness and/or absence of maintenance as prescribed or use of non-original spare parts
- Use of the machine out of allowable environmental conditions
- Use the machine with excluded or damaged safety devices
- Use the machine modified in any of its parts without a written PANDROL authorization
- Use of the machine on rails without respect the rules of the railway body owner of the railway
- Use of the machine on rails open to traffic
- Use of the machine on track circuit
- Use the machine in presence of a third rails
- Use the machine in presence of inclination superior or equal to 40%
- Go away from the machine leaving the engine running
- Not under the influence of drugs or alcohol.

2.4 Allowed uses

- Use the machine built only with the compatible equipment, in specific working conditions.
- Use the machine only on non-open traffic rails.

2.5 Care and maintenance

To execute maintenance and repairs, you have to move the machine in a place authorized by the team leader of the yard.

To maintain the machine clean, never use liquids easy flammable and corrosive products.

For the maintenance it is necessary the use of suitable tools

ATTENTION



It is impossible to list all the possible safety rules, so we entrust operator good sense, who, with care and caution, guarantees the best safety against every kind of accident.

2.6 Residual risk

Dangers that could not be deleted from safety measures adopted by the manufacturer couldn't be caused by an incorrect use of the machine or by a failed respect, due to the user, of the rules described in this manual.

The personnel in charge of the machine must be equipped of specific individual protection's devices required by law.

ATTENTION



During every kind of work pay attention of high voltage line, if you are next to them could cause DEATH.

2.7 Required operator's training

Every operator must read entirely with full attention this manual and respect what is written.

The Employer is obliged to verify that the operator owns all the abilities required for the operation of the machine and has carefully reviewed the manual and has to give to machine's user devices for personal protection (gloves, shoes, clothes, etc.) according to rules in force.

2.8 Expected use

The machine has been designed and manufactured by Pandrol to execute lifting operations.

There must be carefully respected safety prescriptions passed from Railway Administrations for works on rails and near them. You must start working only after the officials in charge for safety have given their go ahead.

You have quickly and carefully executed the guidelines conveyed by the Site Manager or the safety responsible. Always leave devices and material in a way that these ones cannot collide with other railway vehicles. In case of use in the presence of the third rail, it is essential to make sure that the third rail is isolated otherwise do not work.

2.9 Not expected use



Not observe the prescribed limits is equivalent to an improper use of the machine. If this happens, PANDROL will not assume any liability for accidents to persons or damage to property or the machine itself.

2.10 Safety work

Pandrol does not answer for accidents, working's anomalies and/or damages during the machine's use, due to user's nonobservance of laws, prescriptions, dispositions, and rules in force.

The use of the machine is allowed only at the trained personnel. Only authorized people can stay near the machine. You have always to stay by safety distances from mobile parts and check that during its work normal safety prescriptions are respected. You always must assure that advertisement given to other people are understand and executed.

Dangers that could not be deleted from safety measures adopted by the constructor couldn't be caused by an incorrect use of the machine or by a failed respect, due to the user, of the rules described in this manual.

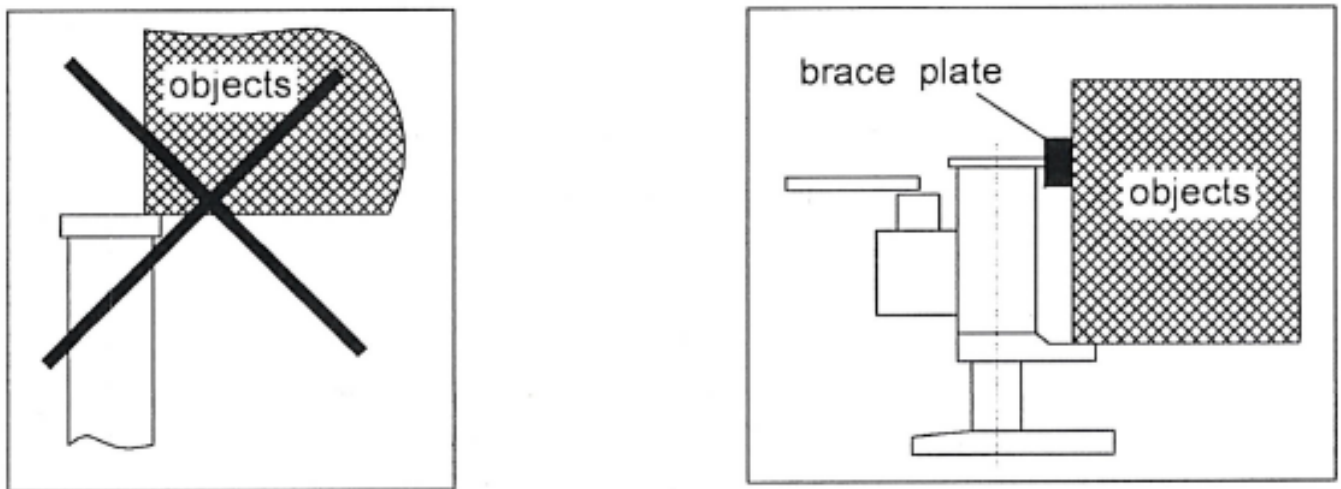
3. Presentation

3.1 General

The machine has been designed and manufactured by Pandrol for the lifting in both railway field and industrial field. The machine has been made of high-quality materials and guarantees high performances.

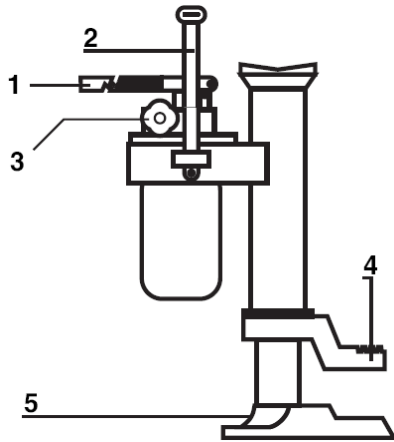
The adequate length of the lever, the tap for the fall, the valve that limits the overload guarantee the precision during the work with the minimum effort and the maximum safety for the operator. The structure, that has a rotation capacity of 360°, is made to support the load is on the foot on the head of the machine.

Figure 1: Positioning of the machine



Never use the side of jack's head to lift loads. The load should be in contact with the black surface as per the following pictures.

Figure 2: Technical characteristics view 1



1. Operating lever
2. Handle flow
3. Exhaust valve
4. Mobile foot lifting
5. Base of support

Figure 3: Technical characteristics view 2

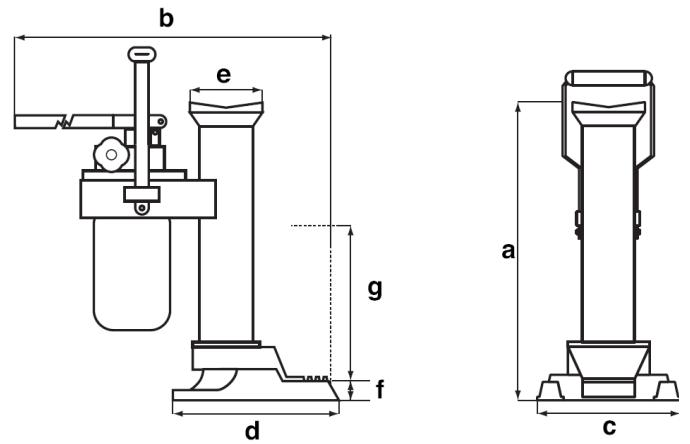


Table 2: General characteristics

Model	Flow (t)	Stroke (mm)	Stroke from foot (mm)	Stroke from head (mm)	Dimensions					Max effort on lever [daN]	Weight [kg]
					A	B	C x D	E	F		
5t	5	205	25 to 230	368 to 573	368	700	140 x 213	76 x 76	25	45	25
10t	10	230	30 to 260	420 to 650	420	745	170 x 205	91 x 91	30	50	35
25t	25	215	58 to 273	505 to 720	505	1305	210 x 420	155 x 155	58	58	109

4. Use

4.1 Transport and movement

The lifting of the components of machine can be done only by using highlighted devices' grips that are on the machine.

ATTENTION



We recommend using expected personal safety devices as: gloves, safety footwear with steel toe and overalls.

DANGER



Bump and crushing danger. During the lifting and moving you have to operate carefully.

4.2 Put to use

4.2.1 First start up

At the first start of the machine you must execute checks that follow:

1. Verify that the machine has:
 - a. Declaration of conformity CE
 - b. Operation and Maintenance manual
2. General visual check of the machine
3. Check and verification of the presence of identification's plate and of safety labels
4. Painting check
5. Running test-load operation, making sure that the lever moves without too much effort
6. After the necessary tests to check if there are losses.

ATTENTION



Before starting the machine, the operator in charge must read completely this manual

4.2.2 Checks at the beginning of every working day

Before the start of every working day you must check:

7. General visual check of the machine
8. Check and verify the presence of identification's plate and of safety labels
9. Painting check
10. Running test-load operation, making sure that the lever moves without too much effort
11. After the necessary tests to check if there are losses.

If one or more described points are damaged, do not use the machine and provide for re-establish the machine in efficiency conditions.

If there are any anomalies that the operator could not solve, contact PANDROL.

4.3 Protection and storing

1. Put the machine in a way that can guarantee the adequate safety
2. Cover the machine with protective oil
3. If possible, store the machine in a cover place, air, dry and non-dusty, or protect the machine with a plastic sheet to avoid storm damages

4.3.1 Reclamation after a long inactivity

1. Carefully clean the machine

4.4 Lifting the machine

Machine's lifting could be done just by using grip devices that are on the components of the machine and indicated by special pictograms.

ATTENTION



We recommend using expected personal safety devices as: gloves, safety footwear with steel tip and overalls.

DANGER



Bump and crushing danger. During the lifting and moving you have to operate carefully.

5. Machine use

5.1 How to use the machine

The movement of the machine in lifting is obtained by operating the control lever. In case of failure, screw, by hand, the exhaust valve.

The lifting operation can be interrupted at any position of the lever without that the load is affected by uncontrolled movements.

To make the descent of the load, is sufficient to open a left turn, by hand, the drain valve.

The descent of the load can be stopped at any position by screwing the button for manoeuvre of the exhaust valve.

To prevent overturning of the jack during the ascent, it is necessary to insert a shim in the wood between the body of the jack and the load which must be as close as possible to the head, as shown in the diagram shown here.

The machine is equipped with a safety valve that limits the overload. The calibration of this valve is performed in the factory and requires no adjustment. The modification or deletion of this device is strictly prohibited.

DANGER



User that does not follows the instruction exposes to potential danger situations

ATTENTION



We recommend using expected personal safety devices as: gloves, safety footwear with steel tip and overalls.

ATTENTION



PANDROL is not responsible for damages that could occur to people or things because of an incorrect use of the machine that does not follows the indications that are in the manual.

5.2 Lighting

Use the machine only in a well lighted environment.

6. Maintenance

6.1 Search for break down

Table 3: Search for break down

Break down	Possible causes	Remediation
The load does not lift	Lowering valve open	Check the valve and screw it down
	The load to be lifted exceeds the capacity of the machine	Ensure the load

6.2 Preface

ATTENTION



Maintenance operations must be executed only by PANDROL Customer Service or by qualified personnel

In order to obtain best performances and to assure all the elements the maximum life, is necessary that use and maintenance's rules are carefully followed by the operators in charge. For this we suggest to Customers, in their interest, to carefully read these notes and to consult the manual every time they need suggestions to avoid eventual drawbacks. As the machine normally works closet o water, sand, ground, etc, a rational lubrication is necessary, that assumes a vital importance for the long use of the machine and to contain its exercise's cost.

For further clarifications call up our customer care:

- Ordinary maintenance includes all the necessary information for the good functioning and preservation of the machine.
- We suggest to let the same operator do maintenance's operations, who knows by heart how the machine works and has to know what it's here in the manual.

Ordinary maintenance's operations indicated on the table that follows must have the same frequency of the machine's working hours indicated on the column at the right, under "PERIOD".

Table 4: Maintenance table

Number	Operation	Period
1	Make PANDROL check the machine	Once a year
2	Lubricate the rack and the sliding	When necessary

6.3 Substitution of the hydraulic oil

The hydraulic oil tank must be emptied at least once a year (more often in case of intensive use). DO NOT EVER DISPERDER THE HYDRAULIC OIL IN THE GROUND OR IN SEWERS.

After a few hours of use of a new jack, replace the hydraulic oil content into the new oil. This is because after the first use, the oil may have collected the impurities resulting from the break made in the early hours of operation. This phenomenon is normal. To do this, proceed as follows:

- unscrew the four screws on the lid duct the control lever;
 - Remove the plate that acts as a cap;
 - attention to the gasket. At the time of replacement is recommended to replace
 - drain the oil into a container.
- fill the tank with solvent such as oil, gasoline, solvents, except acetone and derivatives, and derivatives of trichlorethylene, followed by shaking and empty the tank again.
 - Fill the tank with 0,8 l of oil as HLP 50 or TELLUS 23, be very careful not to introduce foreign matter into the tank.

6.4 Fire

In case of start of a fire, use a CO2 extinguisher (not supplied) according to guidelines in force.

In case of machine's fire or if the machine is near a fire, give the alarm in the yard and call up the firemen.

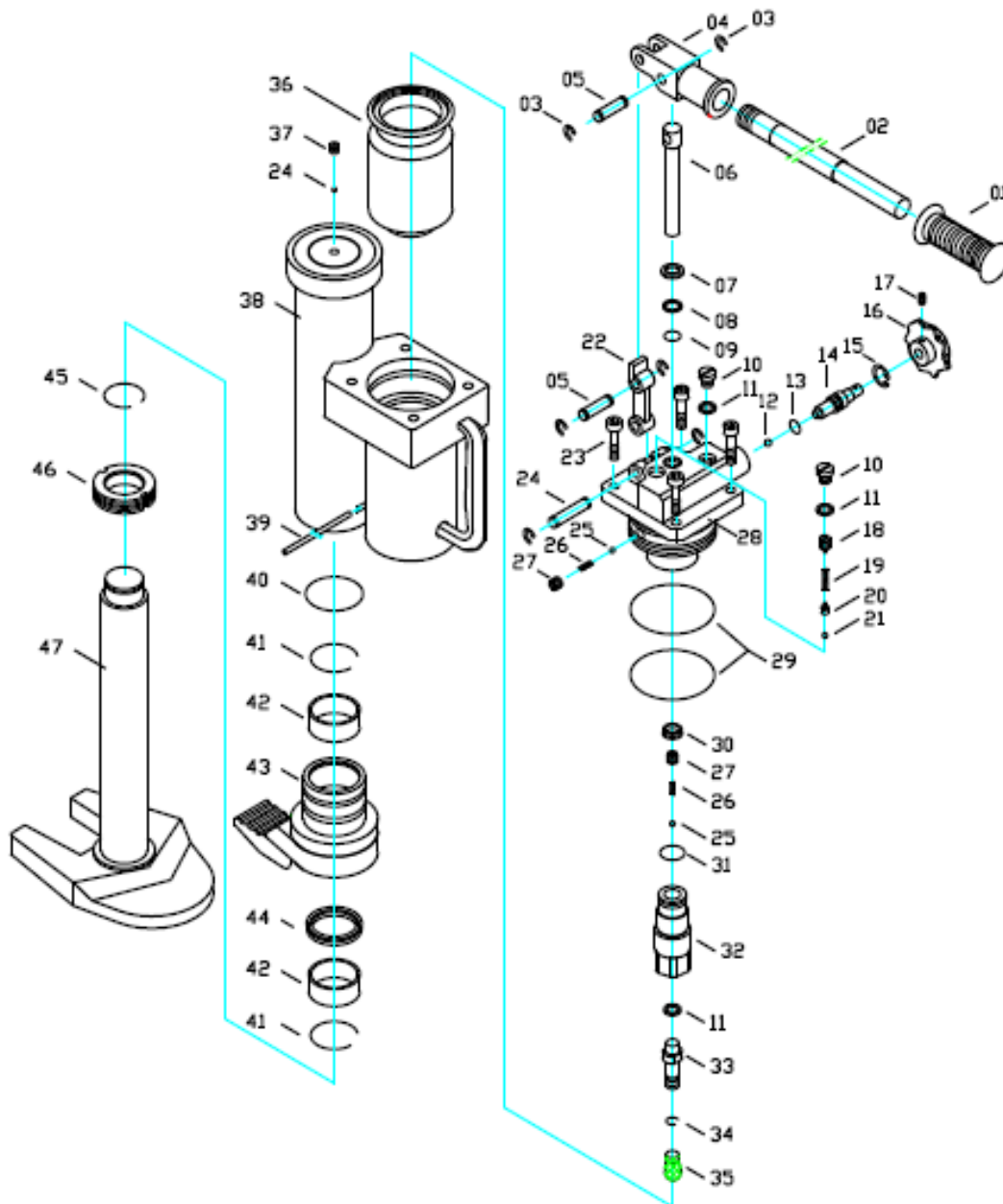
6.5 Breaking up and disposal

At the end of machine's life, remember that the owner of the mean must provide for the breaking up and for the machine's disposal according to guidelines in force and throughout authorized disposer for each component of the machine.

Remember that every time that you substitute oil, hose, and every machine's detail prone to different disposal, you always need to make reference to rules in force and to authorized disposals

7. Spare parts

Figure 4: Exploded view



Item	Description
1	Grip
2	Handle
3	Seeger ring
4	Compass
5	Pin
6	Piston
7	Seal

Item	Description
8	Sealing ring
9	O-ring
10	Screw
11	Gasket
12	Ball
13	O-ring
14	Return lever
15	Seeger
16	Drain handle
17	Screw
18	Adjusting screw
19	Spring
20	Ball housing
21	Ball
22	Connection
23	Screw
24	Pin
25	Ball
26	Spring
27	Screw
28	Pump body
29	O-ring
30	Y-ring
31	O-ring
32	Throttle
33	Oil tube
34	Seeger
35	Filter
36	Oil tank
37	Screw
38	Cylinder assembly
39	Piston
40	O-ring
41	Seeger
42	Bushing
43	Fork
44	Y-ring
45	Seeger
46	Limit switch
47	Pillar
49	Gasket

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