

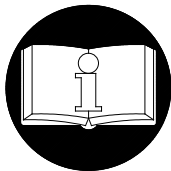
PARTS AND MAINTENANCE MANUAL

LCA375TIP3REA..-E Model

LCA375TIP3RNA..-E Model

LCA375TIP3REAR..-E Model

LCA400TIP3REAR..T1-E Model



READ THIS MANUAL BEFORE USING THESE PRODUCTS. This manual contains important safety, installation, operation information. Make this manual available to all persons responsible for the operation, installation of these products.

WARNING

Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this hoist in accordance with European or National Standards Safety Code and any other applicable safety codes and regulations.

Refer all communications to the nearest Ingersoll-Rand Material Handling Products Office or Distributor.

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This manual provides important information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read and understand this manual before operating the product.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in injury. The following signal words are used to identify the level of potential hazard.

DANGER

Danger is used to indicate the presence of a hazard which *will* cause *severe* injury, death, or substantial property damage if the warning is ignored.

WARNING

Warning is used to indicate the presence of a hazard which *can* cause *severe* injury, death, or substantial property damage if the warning is ignored.

CAUTION

Caution is used to indicate the presence of a hazard which *will* or *can* cause *minor* injury or property damage if the warning is ignored.

NOTICE

Notice is used to notify people of installation, operation or maintenance information which is important but not hazard-related.

Safety Summary

WARNING

- **Do not use this hoist or attached equipment for lifting, supporting, or transporting people or supporting loads over people.**
- **The supporting structures and load-attaching devices used in conjunction with this hoist must provide and adequate safety factor to handle the rated load, plus the weight of the hoist and attached equipment. This is the customer's responsibility. If in doubt, consult a qualified structural engineer.**

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized safety sources make a common point.

Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount : conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the line of force of any load.

To our interpretation, INGERSOLL-RAND Material Handling hoists are manufactured in accordance with the latest standards.

However, contrary to common belief, as we understand it, generally places the burden of compliance with the user, not the manufacturer. Many requirements are not concerned or connected with the manufactured product but are, rather, connected with the final installation. It is the owner's responsibility and user's responsibility to determine the suitability of a product for any particular use. Check all applicable industry, trade association, federal, state and local regulations. Read all operating instructions and warnings before operation.

Rigging : It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques.

NOTICE

- **INGERSOLL-RAND Replacement Parts are specifically designed to ensure optimum performance of your equipment. Use of other than genuine INGERSOLL-RAND Material Handling parts may adversely affect safe operation and will invalidate the warranty.**

SAFE OPERATING INSTRUCTIONS

The following warnings and operating instructions are intended to avoid unsafe operating practices which might lead to injury or property damage.

INGERSOLL-RAND recognizes that most companies who use hoists and trolley safety program in force at their facility. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

Refer to the hoist manual for additional precautions and instructions.

1. Only allow qualified people (trained in safety and operation) to operate the hoist.
2. Only operate a hoist and a trolley if you are physically fit to do so.
3. When a "DO NOT OPERATE" sign is placed on the hoist controls, do not operate the hoist until the sign has been removed by designated personnel.
4. Before each shift, the operator should inspect the hoist and the trolley for wear or damage.
5. Never use a hoist and a trolley that inspection indicates is defective.
6. Periodically, inspect the hoist and the trolley thoroughly and replace worn or damaged parts.
7. Lubricate the hoist and the trolley regularly.
8. Using the hoist, only lift loads less than or equal to the lower rated capacity of the trolley or hoist.
9. Only attach a hoist having a rated capacity equal to or less than the capacity of the trolley.
10. When using two hoists to suspend one load, select two trolleys each having a rated capacity equal to or more than the load. This provides adequate safety in the event of a sudden load shift or failure of one trolley.
11. Never place your hand inside the throat area of a hook
12. Only operate a hoist when the load is centered under the hoist. Do not "side pull" or "yard".
13. Pay attention to the load at all times when operating the trolley.
14. Make sure all people are clear of the load path. Do not lift a load over people.
15. Never use the hoist for lifting or lowering people, and never allow anyone to stand on a suspended load.
16. Do not swing a suspended load.
17. Never suspend a load for an extended period of time
18. Never leave a suspended load unattended.
19. Never weld or cut a load suspended by the trolley.
20. Always rig the load properly and carefully.
21. Remove all loads before performing any maintenance.
22. Avoid collision or bumping of hoist and trolley.
23. After use, properly secure hoist and all loads.

INSTALLATION

1 - STARTING

Connecting to air circuit :

- The connection to network of the hoist to the air hose is made on inlet port 1"1/4 G on the top of the control valve.
- The diameter of the feeding circuit must not inferior to 2" G.
- Before connecting the air inlet to the LCA375 or 400TIP, it is essential to expel the air in order to get rid of any dirt particles that might be inside the pipe.
- When installing or restarting the hoist, we recommended supplying air gradually in order to obtain a slow rotation of the motor and also running it in both directions for a few results.

Lubrication :

- For use in corrosive or moist atmospheres, it is recommended to put a " Filter-regulator-lubricator " near the hoist for air treatment.
- When filling up the oilier, air inlet must be closed :
recommended oil : SAE 30W or ISO VG100
minimum viscosity : 135 Cst at 40°C

2 - MAINTENANCE

Motor

- Fill the oil lubricator daily when the hoist is in constant use.

Hooks and load chain

- Inspect hooks, chain and stop buffers regularly.
- Each month, check the condition of hook anchoring points on the chain and on the hoist body.
- Lubricate the chain regularly with a thick oil for gears.
- When you put in a new chain, inspect the drive sprocket of the hoist. If necessary, replace these parts.

3 - LOAD CHAIN REPLACEMENT

- In all cases, we recommend to use only the manufacturer's chain for safety reasons.
- INGERSOLL-RAND chain is chosen according to DIN norm 5684-Grade 80 of the correct dimensions and tolerance to suit the load sprocket.
- INGERSOLL-RAND WARRANTY CAN NOT BE GIVEN WITHOUT RESPECTING THE ABOVE RECOMMENDATIONS.

Removing the chain :

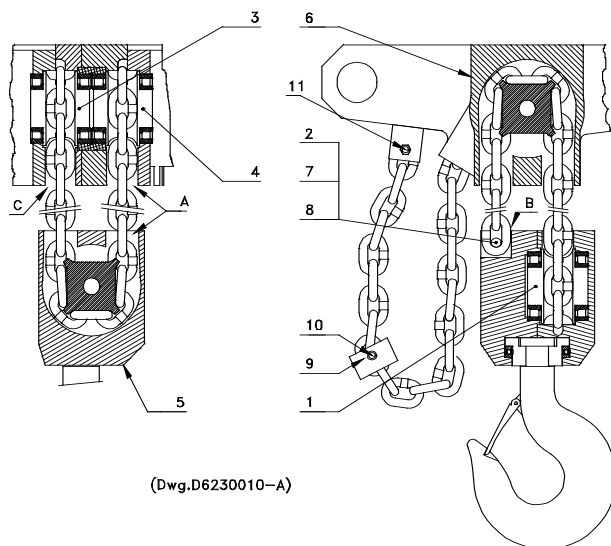
- Disconnect the chain end placed on the body of the hoist
- Dismount the sleeve fitted on the chain.
- Run the hoist in the lifting direction of the free chain fall until this one be at about 25 cm from the hoist.

Chaining up the hoist :

- Take a chain link (with same size) cut like a " C ".
- Join the new chain to the old with the link taking care of putting the cut and the welds of the links perpendicularly, facing outside as compared to the hoist axle.

- Run slowly the hoist on lowering direction until the new chain appears about 2 meters in A.

Mounting of chain bottom block :



(Dwg.D6230010-A)

- Proceed to manual mounting with a steel wire fixed to the extremity link of the chain extending of the hoist (in A) ; the end link must be necessary a link standing (perpendicular to the axle of hoist sprockets wheel).
- The rotation axle of the sprocket wheel (1) of bottom block (5) must be perpendicular to the rotation axle of hoist sprocket wheel (3 and 4) of the hoist.
- To introduce the extremity link of the chain in the opening to bottom block (A). The first link must be put in parallel to the rotation axle. The sprocket wheel of bottom block and the following standing links must have their welds turned in outside position with the axle. After be out put of the bottom block, introduce the extremity link of the chain in the opening (C) of the sprocket wheel (3) of the hoist, then introduce the extremity of the chain in the place of the bottom block and fixe it with the axle (2) with the screw (7) and the brake washer (8).

WARNING

The chain must not be twisted.

- On the other extremity of the chain fit the buffer (9) with the axle (10) onto the chain (this buffer sets in action the bottom switch limit).
- Place the buffer onto the 9th links at the minimum from the chain end.
- Secure the buffer on the chain link with two washers & retainer rings.
- Secure the last chain link on the hoist with the bolt (11).
- Check that the chain must not be twisted.

Inspection Load chain :

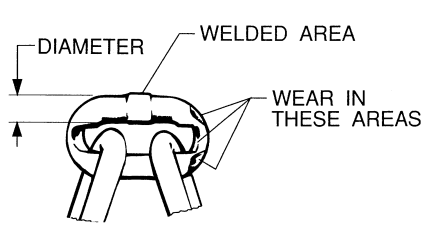
- Measure the chain for stretching by measuring across five (5) links sections all along the chain paying

particular attention to the most frequently reeved links. When any five links in the working length reached or exceeds the discard length, replace the entire chain.

Normal Length (5 Links) = 330 (+1,2 / - 0,5)

Discard Length = 336

- Examine each of the links for bending, cracks in weld areas or shoulders, traverse nicks and gouges, weld splatter, corrosion pits and chain wear, including bearing surfaces between chain links.



NOTICE

Excessive wear or stretching may not be apparent from visual observation. Also, inspect chain by measuring five (5) links. A worn load chain may cause the load sheave to wear rapidly. Inspect the load sheave and replace if damaged or worn.

NOTICE

NB : We recommend to oil abundantly the chain with a oil for gears, when using the chain for the first time.

4 HOISTS NOT IN REGULAR USE

Stopping of the hoist from 6 months to 1 year :

- Coat all the chain with oil
- Put into the air inlet hole some cm3 of oil
- Run the motor during 2 to 4 seconds
- Then close the air inlet hole of the hoist
- If necessary, pack the hoist in an oiled bag

Restarting :

After more than one month stopping period, we advice to clean and oil PALAIR motor as follows :

- Put into the inlet hole some cm3 of mineral oil or diesel oil.
- Run the motor during 10 seconds to eliminate impurities
- Put into the air inlet hole some cm3 of oil
- Run the motor during 2 to 4 seconds

Air chain hoist is ready to work.

5 - ADJUSTMENTS

A COMPLETE ANNUAL CHECK MUST BE DONE IN REPAIR SHOP

Hooks and load chain :

Foresee a check-up according to the local applying regulation.

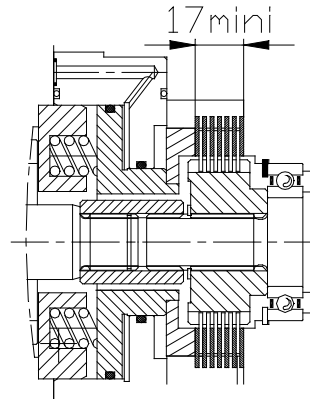
Brake assembly :

– **Type Mono disc gear box side** :The brake disc does not need any adjustment. The annual maintenance is limited to :

- a general cleaning
- greasing the brake spring washers
- replace the disc brake when its thickness is less than 13.5 mm (original thickness = 16 mm).

– **Type Multi discs pneumatic motor side**: The brake discs does not need any adjustment. The annual maintenance is limited to :

- a general cleaning
- the friction disc have a 0,2mm (0,079") deep groove on each side. Replace the friction disc if the grooves are no longer visible.
- Measure total friction discs & steel discs. Check that measurement is not less than minimum shown.

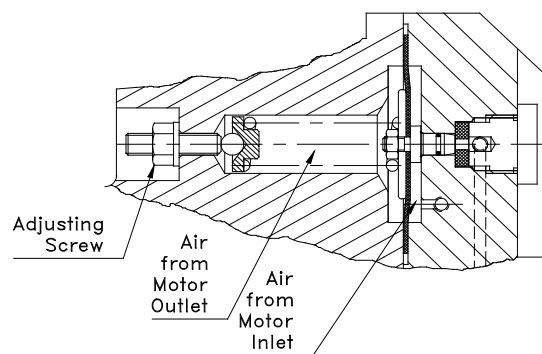


Over load Device :

- Connect the hoist to the air supply.
- Release the locknut and turn the adjustment screw in order to increase or decrease the SWL (increase the SWL by tightening the adjustment screw). The adjustment must be made for an overload of 20% maximum of the SWL.
- Tighten the locknut securing the adjustment screw.
- Check hoist operation at rated load. If necessary repeat the adjustment.

NOTICE

• Do not change factory settings unless hoist is tested and recertified at an authorized repair facility.



(Dwg. D4120413)

6 - LUBRICATION

Gear Box reducer pneumatic motor side:

The maintenance of the gear reducer is limited to :

- cleaning all components with mineral oil
- greasing the gears: Use half fluid extreme pressure grease at to Lithium, Grade NLGI 1, Ambient temperature – 25°C up to 120°C, ASTM penetration to 25°C: 325, Dropping point = 190°C. Capacity: 0,500 Kg, Type: Mobilux EP004
- put grease on wheel bearing: grease at to Lithium, Grade NLGI 2,

ASTM penetration to 25°C: 280
Dropping point = 280°C
Type: Mobil grease XHP 222 (Blue Color)

Gear Box reducer:

- The maintenance of the gear reducer is limited to :
 - cleaning all components with mineral oil
 - greasing the gears: Use half fluid extreme pressure grease at to Lithium, Grade NLGI 1, Ambient temperature – 25°C up to 120°C, ASTM penetration to 25°C: 325, Dropping point = 190°C. Capacity: 1,50 Kg, Type: Mobilux EP004
 - put grease on wheel bearing: grease at to Lithium, Grade NLGI 2, ASTM penetration to 25°C: 280 Dropping point = 280°C Type: Mobil grease XHP 222 (Blue Color)

NOTICE

If you use the hoist AT A TEMPERATURE LESS THAN -0°C, please refer to us.

ADJUSTMENT TROLLEY

WARNING

- Before installing read "SAFETY INFORMATION",
- Make sure trolley wheels are compatible with the beam. Tapered wheels are for use only with "I" beams (IPN) ; flat tread wheels are for use only with "H" type beams (IPE).

NOTICE

- Trolley wheels ride on the top of the lower flange of the beam.
- During assembly lubricate gears, nuts, capscrews, and all machined threads with applicable lubricants. Use of antiseize compound and/or thread lubricant on capscrew and nut threaded areas prevents corrosion.

Adjustment Trolley

Refer.Dwg.D6290012 for LCA...3REA.

Refer Dwg.D6290028 for LCA...3REAR

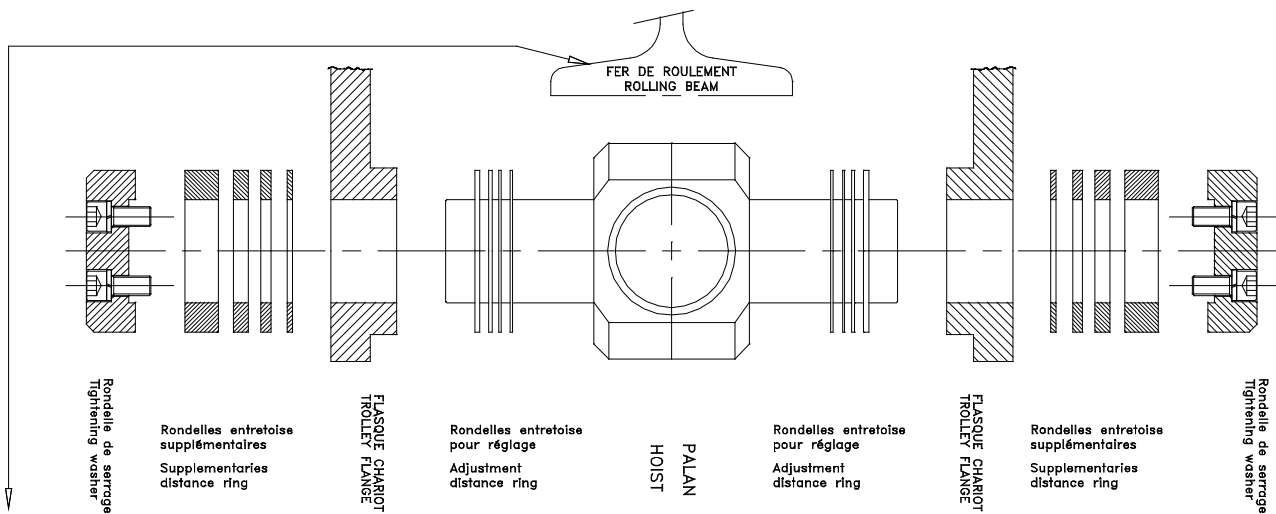
According to travelling beam used

The adjustment is realized with the distance washer :

2,5-3,5 - 5 - 10 - 15 and 34 mm thick

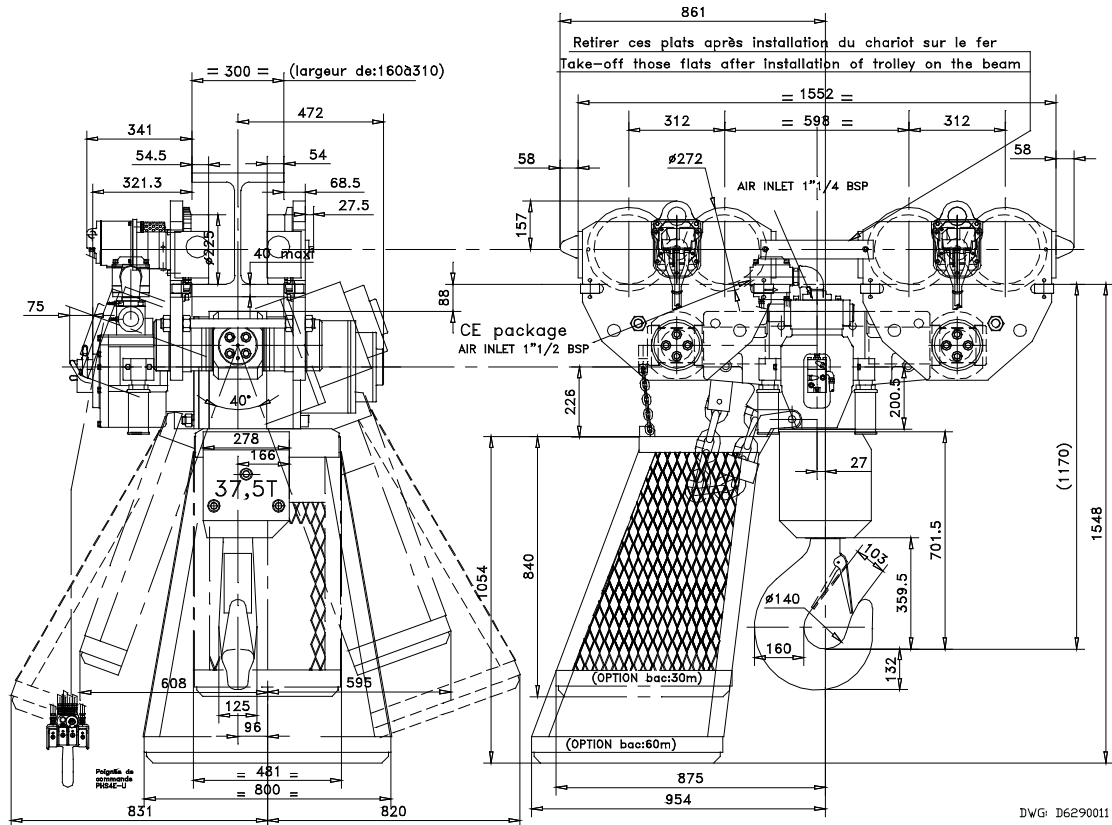
(Rep. 27-26-25-23-22-21).

1. Stack un the washers as notified on the following sheet.
2. Position the tightening washers Rep. 28 and tighten the screws with washers (Rep. 29 ant 30) at 24 mkg torque.
3. Tighten the nuts Rep. 18.



TYPE—largeur (mm) TYPE—Width	EPAISSEURS (mm) THICKNESS (mm)	EPAISSEURS (mm) THICKNESS (mm)	EPAISSEURS (mm) THICKNESS (mm)	EPAISSEURS (mm) THICKNESS (mm)
IPE 330-160	34+15+10+5+5+3.5+2.5	2.5	2.5	2.5+3.5+5+5+10+15+34
IPE 360-170	34+15+10+5+3.5+2.5	2.5+5	5+2.5	2.5+3.5+5+10+15+34
IPE 400-180	34+15+5+5+3.5+2.5	2.5+10	10+2.5	2.5+3.5+5+5+15+34
IPE 450-190	34+10+5+5+3.5+2.5	2.5+15	15+2.5	2.5+3.5+5+5+10+34
IPE 500-200	34+10+5+3.5+2.5	2.5+5+15	15+5+2.5	2.5+3.5+10+34
IPE 600-220	34+5+3.5+2.5	2.5+5+10+15	15+10+5+2.5	2.5+3.5+5+34
HE -240	15+10+5+2.5+2.5	3.5+5+34	34+5+3.5	2.5+2.5+5+10+15
HE -260	15+5+2.5+2.5	3.5+5+10+34	34+10+5+3.5	2.5+2.5+5+15
HE -280	15	2.5+2.5+3.5+5+5+10+34	34+10+5+5+3.5+2.5+2.5	15
HE -290	5+2.5+2.5	3.5+5+10+15+34	34+15+10+5+3.5	2.5+2.5+5
HE -300	2.5+2.5	3.5+5+5+10+15+34	34+15+10+5+5+3.5	2.5+2.5
HE -305	2.5	2.5+3.5+5+5+10+15+34	34+15+10+5+5+3.5+2.5	2.5
HE -310	0	2.5+2.5+3.5+5+5+10+15+34	34+15+10+5+5+3.5+2.5+2.5	0
IPN 400-155	34+15+10+5+5+3.5+2.5+2.5	0	0	2.5+2.5+3.5+5+5+10+15+34
IPN 450-170	34+15+10+5+3.5+2.5	2.5+5	5+2.5	2.5+3.5+5+10+15+34
IPN 500-185	34+10+5+5+3.5+2.5+2.5	15	15	2.5+2.5+3.5+5+5+10+34
IPN 550-200	34+10+5+3.5+2.5	2.5+5+15	15+5+2.5	2.5+3.5+5+10+34
IPN 600-215	34+5+3.5+2.5+2.5	5+10+15	15+10+5	2.5+2.5+3.5+5+34

LCA375TIP3REA SPECIFICATIONS



Technical datas of hoist

⇒ Rated capacity :	375 KN
⇒ Number load chain falls :	3
⇒ Power air motor :	10Hp
⇒ Working pressure	4 to 7Bar
⇒ Free air consumption at 6.3 Bar :	10Nm ³ /mn
⇒ Lifting speed at no load at 6.3 Bar :	2 m/mn
⇒ Lifting speed at rated load at 6.3 Bar	1,2 m/mn
⇒ Type of chain :	22 x 66
Breaking load	630 KN
Safety factor	5
Weight of chain per meter	10,7 kg

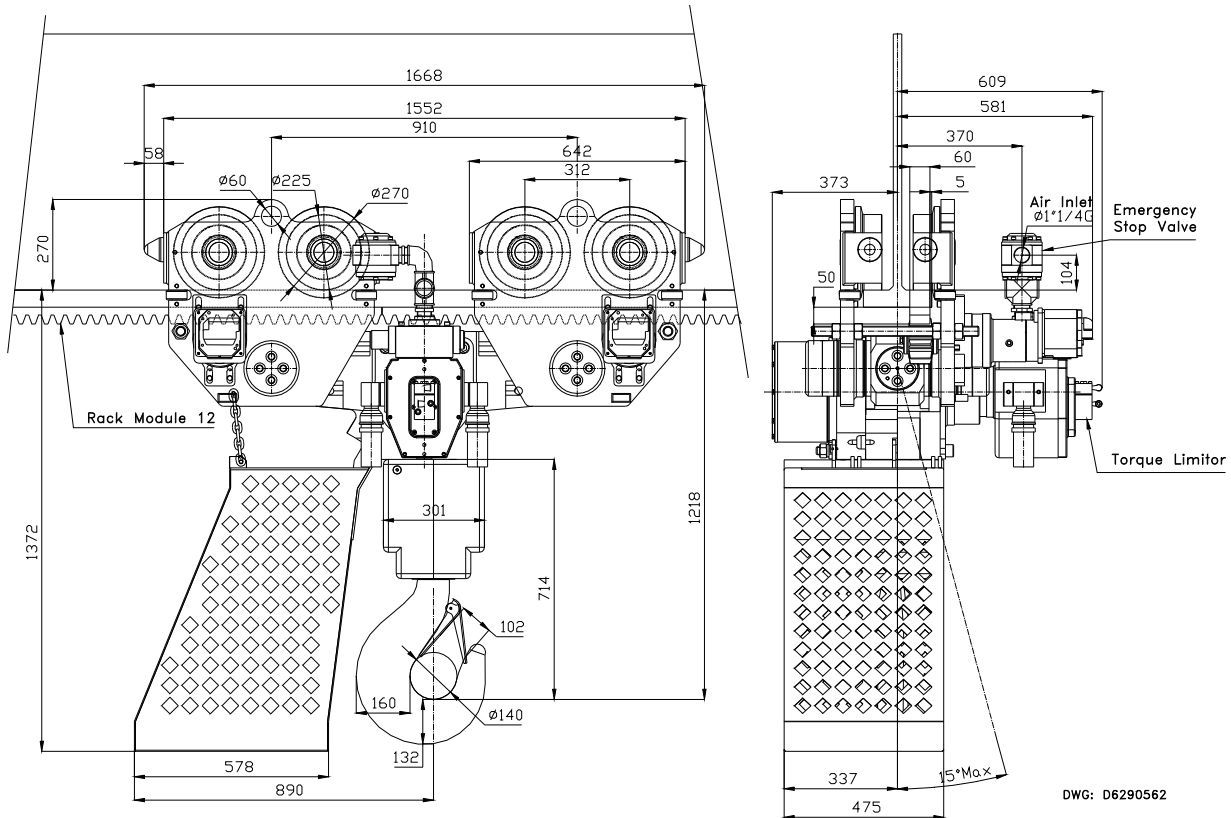
Technical datas of trolley

⇒ Width of beam	160 to 310
⇒ Traveling speed at 6.3 Bar	0 to 12 m/mn
⇒ Free air consumption at 6.3 Bar	2x1.9Nm ³ /m
⇒ Minimum turning radius	105m

Standard equipment of the hoist

- ◇ Protecting and low noise casing
- ◇ Automatic load holding brake
- ◇ Top and bottom limits switches
- ◇ One standard length of chain for a lifting height of 3m
- ◇ Progressive remote pendant type PHS4E-U

LCA400TIP3REAR SPECIFICATIONS



Technical datas of hoist

⇒ Rated capacity :	400 KN
⇒ Number load chain falls :	3
⇒ Power air motor :	10Hp
⇒ Working pressure	4 to 7Bar
⇒ Free air consumption at 6.3 Bar :	10Nm ³ /mn
⇒ Lifting speed at no load at 6.3 Bar :	2 m/mn
⇒ Lifting speed at rated load at 6.3 Bar	1,1 m/mn
⇒ Type of chain :	22 x 66
Breaking load	630 KN
Safety factor	4,7
Weight of chain per meter	10,7 kg

Technical datas of trolley

⇒ Width of beam	160 to 310
⇒ Traveling speed at 6.3 Bar	0 to 12 m/mn
⇒ Free air consumption at 6.3 Bar	2x1.9Nm ³ /m
⇒ Minimum turning radius	105m

Standard equipment of the hoist

- ◇ Protecting and low noise casing
- ◇ Automatic load holding brake
- ◇ Top and bottom limits switches
- ◇ One standard length of chain for a lifting height of 3m
- ◇ Progressive remote pendant type PHS4E-U

DESCRIPTION

Construction according to NFE 52115 – ISO 4301 – FEM 9 – 511 standards :

All steel, modular construction, made of tight sub-assemblies, designed for most adverse working conditions :

INGERSOLL-RAND compressed-air gear motor: 2 ways of rotation – its main characteristics being a very powerful starting torque at low gear and an excellent choice of action in delicate positions. All mechanical parts protected under cast iron casing.

Gear box : planetary system mounted on bearings, gears in high resistance treated steel, protected under tight casing.

Brake : automatic fail safe monodisc or multi discs brake, ensuring a permanent control when lifting or lowering the load. Stops immediately the load in case of air failure.

Load bearing suspension : ensured by the central part of the hoist – guiding the chain – made in high resistant piece supporting the driving sprocket wheel in high resistant treated steel – Mounted on sealed ball bearings. The bottom hook is also mounted on bearing.

Limit switches : top and bottom, stops automatically the load when reaching up and down position.

Air feeding : 1 main port $\varnothing 1''1/2$ G on the control valve – Internal piping is already realised. On the emergency stop valve $\varnothing 1''1/4$ G.

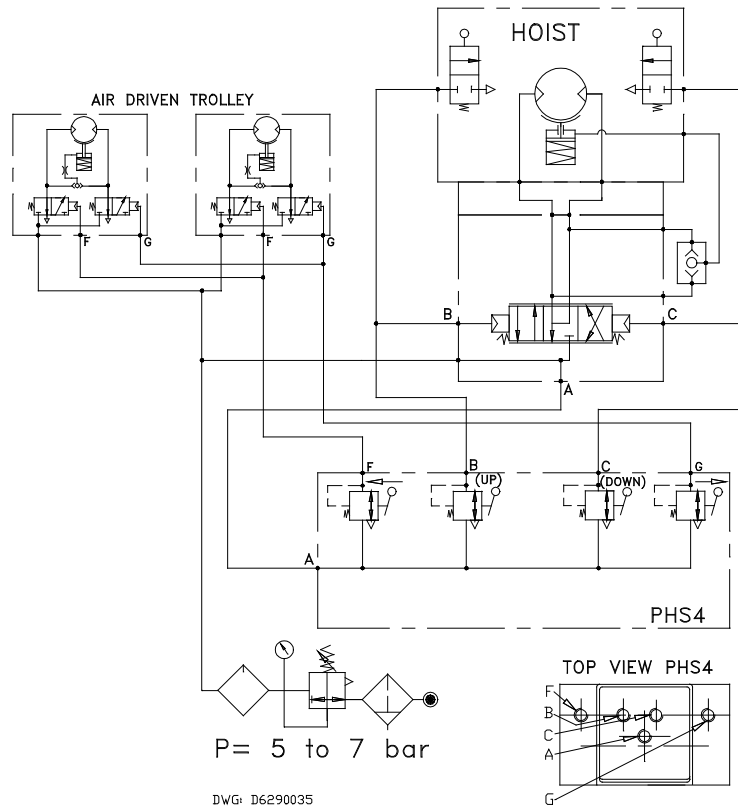
Progressive remote pendant control: type PHS4, connected hoist by remote pipes of small diameter, allowing to control :
Either the hoist, allowing to the operator to accelerate or decelerate the load with a high precision of positioning for tricky handling – The operator needs only 1 hand to suit this precision.

Accessories :
filter – regulator – lubricator set (F – R – L) $\varnothing 1''1/2$ G

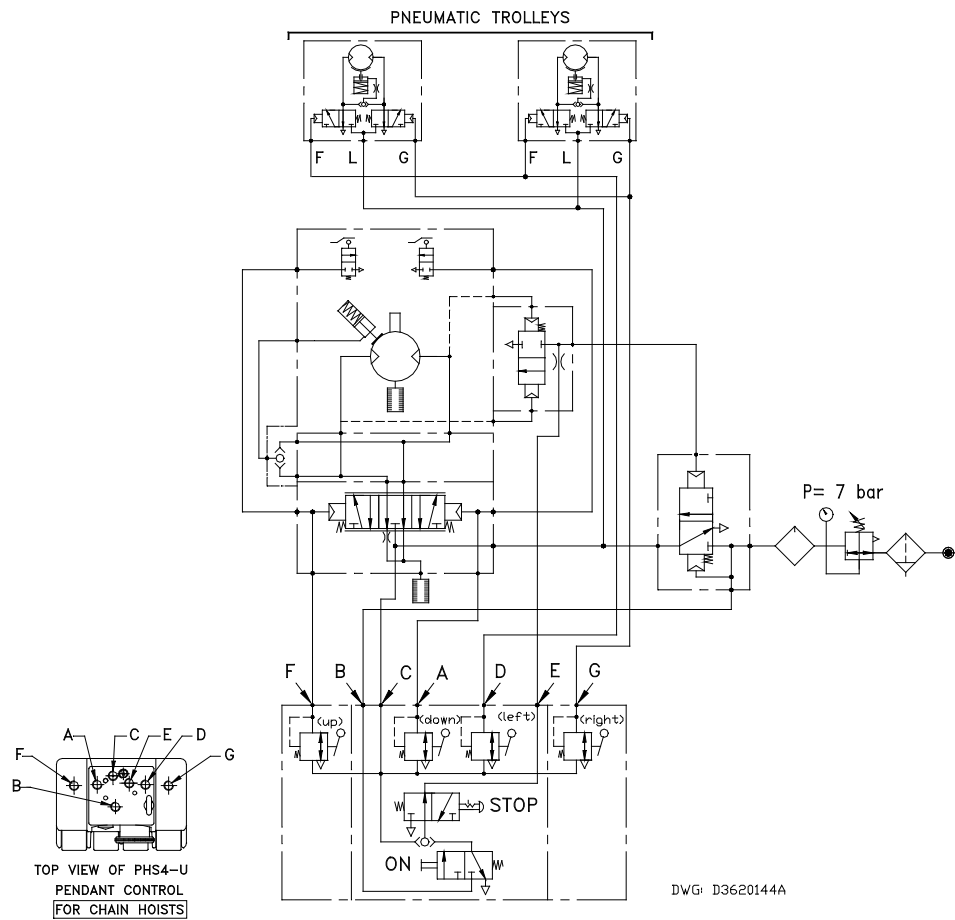
Options :
Chain container 30m / 60m capacity.
Marine paint.
Offshore paint.

PNEUMATIC SCHEME

LCA375TIP & 400TIP Model



LCA375TIP & 400TIP...-E Model



WARNING

- Never perform maintenance on the hoist while it is supporting a load. A falling load can cause injury or death of personnel and damage to property.
- Before starting maintenance, tag controls :
DANGER - DO NOT OPERATE EQUIPMENT BEING REPAIRED.
- Only allow qualified service personnel to perform maintenance.
- Disconnect all power supply from hoist and trolley prior to conducting maintenance.

NOTICE

- Proper use, inspections and maintenance increase the life and usefulness of your INGERSOLL-RAND production equipment. During assembly lubricate gears, nuts, capscrews and all machined threads with applicable lubricants. Use of antiseize compound and/or thread lubricant on capscrew and nut threaded areas prevents corrosion and allows for ease of disassembly of component.

General Assembly / Disassembly Instructions

1. During assembly/disassembly steps for installation and/or repair visually inspect components for distortion, wear and damage. Replace any item indicating damage, distortion and/or excessive wear.
2. **Do not** disassemble further than required to accomplish repair. A good part can be damaged during the course of disassembly.
3. **Do not** use excessive force to remove or install parts. Use proper tools for the installation of press fit parts. During disassembly, use a soft hammer to tap around the outside of parts that are stuck together due to corrosion.
4. **Do not** use a flame to heat a part for ease in installation. During disassembly, only use flame to heat a part that is damaged beyond repair; use a procedure that will not result in damage to other parts; and, use this option only after all other reasonable measures have been attempted.
5. **Always** use leather or copper-covered vise jaws to protect threaded and machined surfaces of parts being placed in the vise.
6. When installing bearings, **only** press on the bearing race contacting the component to be installed into. For shafts, press on the inner bearing race ; for housings, press on the outer bearing race.
7. **Do not** damage seating surfaces during gasket and 'O'ring removal. Use wood, plastic or brass removal tools to prevent scoring of machined sealing surfaces.
8. **Always** use only genuine INGERSOLL-RAND replacement parts. When ordering specify part number, part description, unit model and serial number.
9. **Do not** perform repairs to hoists in place. It is recommended that hoists be removed and repaired in a clean, safe work area.

GEAR MOTOR DISASSEMBLY

NOTICE

- Prior to disassembly of gear motor unit, don't separate the central part unit from trolleys.

(ref. Dwg. D61600001) for REA & REAR version.

1. Remove the muffler
2. Remove the screw (21), lock washer (20) and the connecting flange exhaust (7)
3. (Dwg:6170016)
 - Remove screws (5) and lockwasher (6).
 - Remove the control valve unit.
 - Extract the pipes (6).
 - Remove the screws (19), lockwasher (20).
 - Gently extract the gear motor unit.
 - For "REA" type only: Remove the drive gear (1), the retainer ring and extract the drive gear.
4. Remove the screw (26) on the rear end cover (2)
5. Gently extract the gears unit by pushing from the rear end cover
6. Remove the screw (26) on the front end cover (5)
7. Remove the front end cover (5)
8. Remove the retainer ring (28)
9. Extract the ball gearing (12) and the oil seal support (8)
10. Remove the screw (23), washer (24)
11. Remove the ball bearing (12)
12. Remove the screw (25), the cover (4) and the "O"ring (15)
13. Remove the nut (29) and extract the rotors (9) (10)
14. Extract the ball bearing (11)

MOTOR GEAR ASSEMBLY

-Assembly of the motor gear unit is the same as disassembly in opposite order.

- NB: -Replace all "O"Rings and check all bearings after disassembly
 - The screws (23),(26) and (25) will be mounted and tightened with LOCTITE 243 ®
 - The nuts (29) will be mounted and tightened with LOCTITE 243 ®
 - Lubricate the oil seal (13).

WARNING

Concerning the cleaning of parts of the gear motor, use preferably
MINERAL OIL, DIESEL OIL, ERGEOL
The motor parts must never be cleaned with trichlore.

BRAKE DISASSEMBLY

NOTICE

- Prior to disassembly of brake unit, don't separate the central part unit from trolleys.

LCA type "REA" with monodisc brake.

(ref. Dwg. D6230208 1-2)

1. Remove the chain and the bottom hook.
2. Carefully remove the screws (58) one half turn at a time each, until springs compression are relaxed.

3. Remove the spring washers (38).
4. Remove the Screws (60).
5. Extract the sub-assembly brake cover (17) and "O"ring (55).
6. Remove the retainer ring (77).
7. Extract the brake disc (20).
8. Extract the brake piston (21).
9. Remove the "O"rings (54)-(56).
10. Remove the brake disc (19).

BRAKE ASSEMBLY

Assembly of the reducing gear unit is the same as disassembly in opposite order.

- NB: -Replace all "O"Rings and check the spring washers after disassembly
 - The screws (58),(60) will be mounted and tightened with LOCTITE 243 ®
 - Lubricate the spring washers with grease.
 - Lubricate the "O"rings (54)-(56) with grease.

LCA type "REAR" with multidiscs brake.

(ref. Dwg. D6290559-1)

1. Remove the chain and the bottom hook.
2. Remove the gear motor.
3. Carefully remove the screws (60) one half turn at a time each, until springs compression are relaxed.
4. Remove the gear motor housing (1), "O"ring (22) and "O" rings (73).
5. Remove the distance ring (52) and springs (69).
6. Extract the brake housing assy (17).
 - 6.1. Extract the distance ring (61) to the piston.
 - 6.2. Extract the piston (21) to the brake housing.
 - 6.3. Remove "O"rings (77) & (36).
7. Remove the coupling (85).
8. Remove the retainer ring (76) and the gear wheel (76).
9. Remove the friction and steel discs (19)-(20).

BRAKE ASSEMBLY

Assembly of the reducing gear unit is the same as disassembly in opposite order.

- NB: -Replace all "O"Rings and check the springs after disassembly.
 - The screws (60) will be mounted and tightened with LOCTITE 243 ®.
 - Lubricate the springs with grease.
 - Lubricate the "O"rings (77)-(36) with grease.
 - Lubricate the internal splines of the coupling with grease.

WARNING

Concerning the cleaning of parts of the brake, use preferably
MINERAL OIL, DIESEL OIL, ERGEOL
The brake parts must never be cleaned with trichlore.

REDUCER MOTOR SIDE DISASSEMBLY

NOTICE

- Prior to disassembly of reducer unit, don't separate the central part unit from trolleys.

LCA type "REA" with monodisc brake.

(ref. Dwg. D6230208 1-2)

1. Remove the gear motor.
2. Remove the screws (105) and motor housing.
3. Remove the screws (59).
4. Remove the gear box cover (9).
5. Remove the retainer ring (78).
6. Extract the planet support assy (24).
 - 6.1. Remove the retainer ring (75), the thrust washer (50).
 - 6.2. Extract the planet (27).
 - 6.3. Remove the needle bearing (48), the thrust washer (50).
7. Extract the ring gear (91), the pin (71).

REDUCER MOTOR SIDE ASSEMBLY

Assembly of the reducing gear unit is the same as disassembly in opposite order.

-NB: -Replace all needle bearing after disassembly.

-The screws (59),(105) will be mounted and tightened with LOCTITE 243 ®

-Lubricate the reducer with grease.

-Lubricate the wheel bearing with grease.

LCA type "REAR" with multidiscs brake.

(ref. Dwg. D6290559 1-2)

1. Remove the gear motor.
2. Remove the screws (60)
3. Remove motor housing and multidiscs brake assy.
4. Remove the screws (59).
5. Extract the brake housing with sun gear.
 - 5.1. Remove retainer ring (76).
 - 5.2. extract the sun gear (26).
 - 5.3. Remove the internal retain ring (54).
 - 5.4. Extract the drive shaft (86) and the ball bearing (38).
6. Remove the retainer ring (78).
 - 6.1. Extract the planet support assy (24).
 - 6.2. Remove the retainer ring (75), the thrust washer (50).
 - 6.3. Extract the planet (27).
7. Remove the needle bearing (48), the thrust washer (50).
8. Extract the ring gear (91), the pin (71).

REDUCER MOTOR SIDE ASSEMBLY

Assembly of the reducing gear unit is the same as disassembly in opposite order.

-NB: -Replace all needle bearing after disassembly.

-The screws (59),(60) will be mounted and tightened with LOCTITE 243 ®

-Lubricate the reducer with grease.

-Lubricate the wheel bearing with grease.

WARNING

Concerning the cleaning of parts of the reducer, use preferably

MINERAL OIL, DIESEL OIL, ERGEOL

The reducer parts must never be cleaned with trichlore.

REDUCING GEAR DISASSEMBLY

NOTICE

- **Prior to disassembly of reduction gear unit, first separate reduction gear unit from central part unit.** (see Central Part Disassembly,)
- **Disassembly of the gear motor.**
- **Disassembly of the pneumatic brake.**
- **Disassembly of the reducer motor side.**

LCA type "REA" with monodisc brake.

(ref. Dwg. D6230208 1-2)

1. Remove the Screws (60)
2. Extract the sub-assembly brake housing with the cover and the piston.
3. Extract the brake disc (19).
4. Remove two screws (58) of the gear cover (18).
5. Extract the gear cover (18), the oil seal (52) and the "O"ring (57).
6. Extract the ring gear (16) and the keys (41).
7. Remove the retainer ring (79) of the sun gear (23).
8. Extract the sub-assembly planetary support (10) with the sun gear.

NOTICE

- **If the sun gear is difficult to move, gently tap it with soft hammer to loosen**
 - 8.1. Extract the bearings (43).
 - 8.2. Extract the planet axles (11).
 - 8.3. Remove the planet gears (13).
 - 8.3.1. Remove the needle bearings (49).
 - 8.3.2. Remove the distance rings (12).
 - 8.4. Remove the thrust needle bearing (45) and the thrust ring (51).
- 9. Extract the ring gear (15) and the retainer ring (83).
- 10. Extract the ring gear support (14).

REDUCING GEAR ASSEMBLY

For the two types of brake.

Assembly of the reducing gear unit is the same as disassembly in opposite order.

-NB: -Replace all needle bearing after disassembly.

-Replace all thrust bearings after disassembly.

-Replace oil seal after disassembly.

-The screws (58),(60) will be mounted and tightened with LOCTITE 243 ®

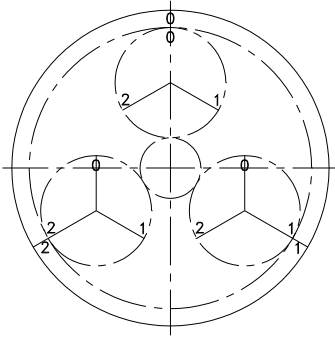
-Lubricate the reducer with grease.

-Lubricate the wheel bearing with grease.

-Lubricate the lip of oil seal with grease.

WARNING

- **Concerning the cleaning of parts of the reducer, use preferably: MINERAL OIL, DIESEL OIL, ERGEOL. The reducer parts must never be cleaned with trichlore.**
- **When assembling the planet support with the planet gear mounted in the gear box, line-up the repairs 0 – 1 – 2 of planet gear with the repairs 0 – 1 – 2 of the ring gear.**



(Dwg.D6230011)

LCA type "REAR" with multidiscs brake.

(ref. Dwg. D6290559 1-2)

1. Remove two screws (58).
2. Remove the gear cover (18) and the "O"ring (57).
3. Extract the ring gear (16) and the keys (41).
4. Extract the sub-assembly planetary support (10) with the sun gear.

NOTICE

- **If the sun gear is difficult to move, gently tap it with soft hammer to loosen**

- 4.1. Extract the bearings (43).
- 4.2. Extract the planet axles (11).
- 4.3. Remove the planet gears (13).
 - 4.3.1. Remove the needle bearings (49).
 - 4.3.2. Remove the distance rings (12).
- 4.4. Remove the thrust needle bearing (45) and the thrust ring (51).
5. Extract the ring gear (15) and the retainer ring (83).
6. Extract the ring gear support (14).

CENTRAL PART DISASSEMBLY

(ref. Dwg. D6230208 – D6290559)

1. Remove the chain and the bottom hook.
2. Remove the chain basket
3. Disconnect all hoses

TROLLEY DISASSEMBLY

(ref. Dwg. D6230208 - D6290012)

1. Remove the screw (121).
2. Remove the tightening washer (123).
3. Gently extract the trolleys of the central part.

(ref. Dwg. D6290012 – D6290028)

4. Remove the screw (29).
5. Remove the tightening washer (28).
6. Remove the nut (18) (1 external side of the flange)
7. Remove the sub assembly trolley flange (16)
8. Remove the spacers (21 to 27)
9. Remove another motorised trolley flange unit (7) with the suspension shaft (19)
10. For "REAR" type only. Remove screw (6) and washer (5).
 - 10.1. Extract the rack pinion (4) and the key.
11. Remove the screw (2) and extract the MRF assembly.
12. Remove the screw (33) and the lateral-rollers assembly.
13. Remove the circlips (11) & the distance ring (10).

14. Gently extract the teeth roller (8) & roller (14) for "REA" type.

- 14.1. Gently extract the roller (8) & (14) for "REAR" type only

15. Remove the circlips (12) and distance ring (13)

16. Gently extract the rollers bearings (15).

TROLLEY ASSEMBLY

Assembly of the trolley unit is the same as disassembly in opposite order.

-NB: -Replace all bearing after disassembly.

-The screws (33) will be mounted and tightened with LOCTITE 243 ®

-Lubricate the roller bearing with grease.

CENTRAL PART DISASSEMBLY

(ref. Dwg. D6230208 – D6290559)

1. Remove screw (124).
2. Gently extract the axles (120).
3. Remove the screws (63) ,lock washer (70) and nuts (65).
4. Gently extract the pneumatic motor gear unit and the gear box and brake units from the central part unit.
5. Remove the retainer ring (78).
6. Remove the planetary support unit (24).
7. Remove the retainer rings (79) LCA type "REA" only and external retainer ring (80).
8. Remove the sun gear (23) by pushing it from motor side. If the sun gear is difficult to move, gently tap it with soft hammer to loosen.
9. Remove the ball bearing (42).
10. Remove the retainer rings (81) and extract the inner race (47)
11. Remove the 1/2 chain guide motor side (34) and the roller bearing (44).
12. Extract the wheel (115).
13. Remove the 1/2 chain guide (110).
14. Remove the eccentric ring (114) and the roller bearing (44).
15. Remove the 1/2 chain guide gear box side (35) and the roller bearing (44).
16. Remove the chain guide (32) and the distance washer (3).
17. Extract the pin (72).
18. Extract the sprocket wheel (92).
19. Extract the roller bearing (44) to the eccentric ring (114)
20. Remove the retainer ring (112) and the pin (113).

CENTRAL PART ASSEMBLY

-Assembly of the central part unit is the same as disassembly in opposite order.

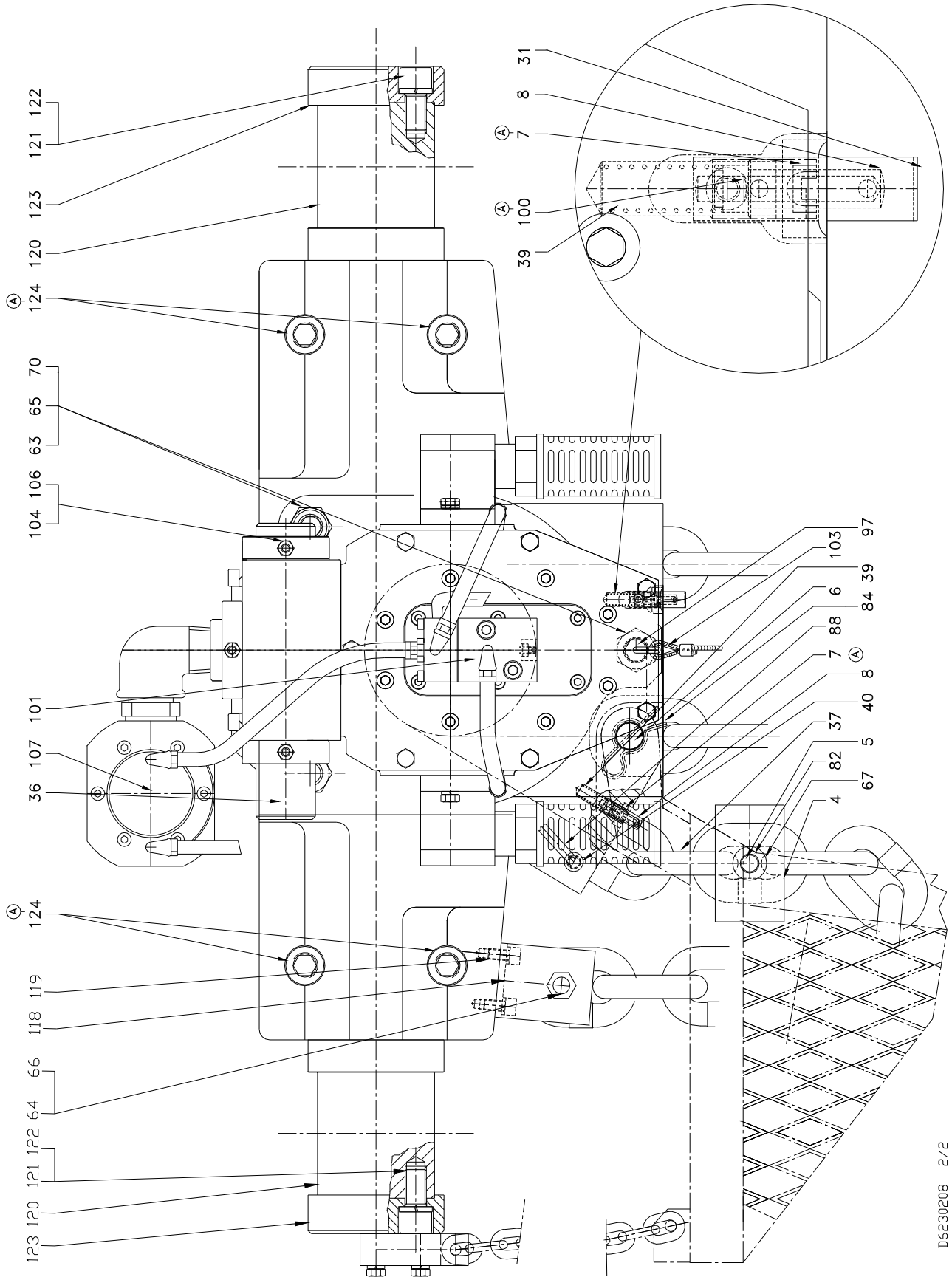
-NB: -Replace all "O"Rings and check all bearings after disassembly

-The screws (63) will be tightened at 30m.daN torque

-Lubricate the wheels roller bearing with grease.

"REA" "&" "REAR" AIR CHAIN HOIST ASSEMBLY DRAWING

MONO DISC BRAKE



"REA" "& "REAR" AIR CHAIN HOIST ASSEMBLY PARTS LIST

MONO DISC BRAKE

Rep Item	Désignation	Description	Qté. Qty.	CODE
1	Moteur pneumatique	Compressed air motor	1	36160000
2	Distributeur pneumatique	Air control valve	1	3617-0041
3	Rondelle entretoise	Distance washer	4	9623-0032
4	Manchon souple	Bored sleeve	1	9623-0035
5	Axe de manchon	Sleeve axle	1	9623-0036
6	Axe support	Support axle	1	96230038
7	Corps de fin de course	Limit switch housing	2	9623-0041
8	Poussoir de fin de course	Limit switch pusher	2	96230042
9	Couvercle	Cover	1	9623-0044
10	Porte satellite	planet support	1	9623-0052
11	Axe de satellite	Planet axle	3	9623-7053
12	Bague entretoise	Distance ring	3	9623-0054
13	Satellite	Planet gear	3	96230055
14	Flasque de couronne	Ring gear flange	1	9623-0056
15	Couronne	Ring gear	1	9623-0057
16	Couronne	Ring gear	1	9623-0058
17	Corps de frein	Brake casing	1	9623-0059
18	Couvercle de réducteur	Gear cover	1	9623-0060
19	Disque de frein	Brake disc	1	9623-0061
20	Disque de frein	Brake disc	1	9623-0062
21	Piston	Piston	1	9623-0063
22	Couvercle	Brake cover	1	9623-0064
23	Pignon arbré	Pinion shaft	1	9623-7094
24	Porte satellite	planet support	1	9623-0097
25	Flasque carter	Flange (motor side)	1	9623-0098
26	Pinion solaire	Pinion	1	9623-0099
27	Satellite	Planet	3	9623-0100
28	½ carter gauche	½ carter	1	9623-0109
29	½ carter droit	½ carter	1	9623-0110
30	Axe de satellite	Planet axle	3	9623-0115
31	Lame ressort	Spring leaf	1	9623-0116
32	Décolleur de chaîne	Chain guide	1	9623-0117
33	Carter de réducteur	Gear housing	1	9623-0118
34	½ carter guide de chaîne	½ Chain guide housing	1	9623-0129
35	½ carter guide de chaîne	½ Chain guide housing	1	9623-0162
36	Support	Support	1	9623-0039
37	Chaîne	Chain	1	69097532
38	Rondelle ressort	Washer	9	6915-9941
39	Ressort	Spring	2	6917-0632
40	Raccord droit	Fitting	3	6167-1932
41	Clavette	Key	3	9074-0117
42	Roulement à billes	Bearing	1	5017-0007
43	Roulement à billes	Bearing	2	5080-0012
44	Roulement à rouleaux	Bearing	4	5120-0020
45	Butée à aiguilles	Thrust needle bearing	6	5605-6545
46	Douille à aiguilles	Needle sleeve	1	5632-4020
47	Bague	Ring	1	5637-0732
48	Roulement à aiguilles	Bearing	3	5647-2316
49	Cage à aiguilles	Needle cage	6	5650-5936
50	Contre plaque	Plate	6	5730-8632
51	Rondelle butée	Thrust washer	6	5737-8832
52	Bague d'étanchéité à lèvres	Oil seal	1	5801-8330
53	Joint torique	O'Ring	6	5820-7229

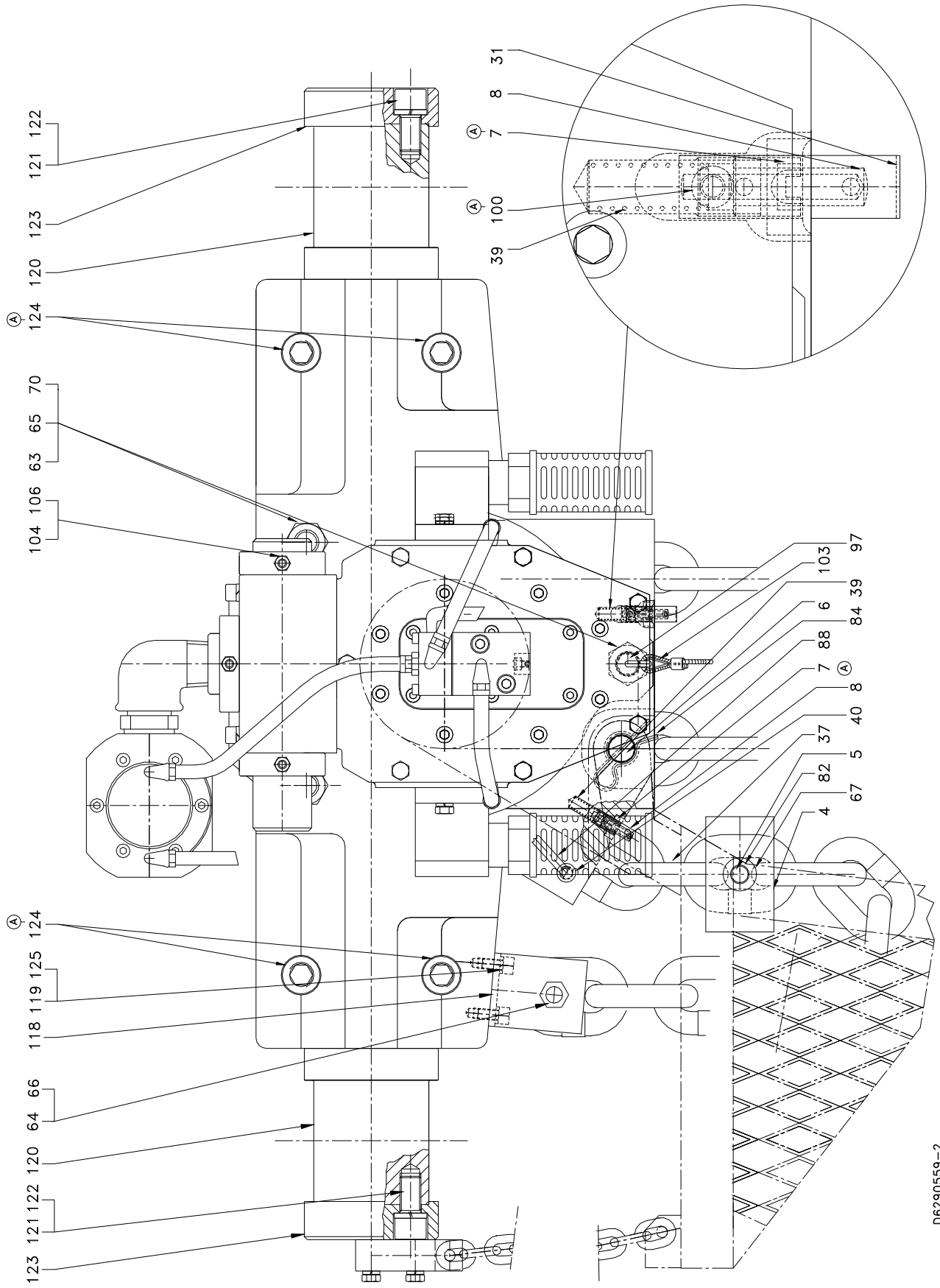
"REA" "& "REAR" AIR CHAIN HOIST ASSEMBLY PARTS LIST

MONO DISC BRAKE

REP Item	DESIGNATION	DESCRIPTION	QTE Qty	CODE
54	Joint torique	O'Ring	1	5820-7329
55	Joint torique	O'Ring	8	5821-4029
56	Joint torique	O'Ring	1	5822-4229
57	Joint torique	O'Ring	1	5822-5529
58	Vis CHc	Chc screw	10	4132-1806
59	Vis CHc	Chc screw	8	4132-4906
60	Vis CHc	Chc screw	8	4132-5006
62	Vis CHc	Chc screw	8	4131-1506
63	Vis CHc	Chc screw	3	4131-8806
64	Vis CHc	Chc screw	1	4131-5106
65	Ecrou	Nut	3	4300-0411
66	Ecrou frein	Lock nut	1	4370-1611
67	Rondelle	Washer	2	4500-1416
68	Rondelle frein	Split washer	8	4520-0008
70	Rondelle frein	Split washer	3	4520-0024
71	Goupille	Pin	1	4600-1316
72	Goupille	Pin	2	4640-6518
73	Goupille	Pin	1	4640-3818
74	Circlips	Circlip	3	4770-0013
75	Circlips	Circlip	3	4770-0015
76	Circlips	Circlip	1	4770-0022
77	Circlips	Circlip	1	4770-0030
78	Circlips	Circlip	1	4770-0032
79	Circlips	Circlip	1	4770-0035
80	Circlips	Circlip	1	4770-3072
81	Segment d'arrêt	Stop segment	2	4780-1539
82	Anneau expansif	Stop ring	2	4780-1639
83	Anneau expansif	Stop ring	1	4780-1739
84	Goupille	Split pin	1	4787-0832
88	Pneumotube	Air tube	6	9623-0072
91	Couronne dentée	Ring gear	1	9412-0062
92	Noix d'entraînement	Sproket wheel	1	9623-8001
96	Coude	Square fitting	3	6167-6232
97	Anneau de levage	Lifting eyes	1	6422-2332
100	Vis CHc	Chc screw	1	4132-1406
102	Vis CHc	Screw	1	41329306
103	Cosse coeur	Thimble	1	6932-5332
104	Busette	Fitting	3	51029
105	Vis	Screw	12	4100-6801
106	Adapteur	Adaptor	3	6823-7528
110	½ carter guide central	½ chain guide housing	1	9623-8164
111	½ carter guide central	½ chain guide housing	1	9623-8163
112	Circlips	Circlip	1	47703180
113	Goupille	Pin	1	46402418
114	Bague de centrage	Eccentric ring	1	9623-0043
115	Noix de renvoi	Wheel	1	9623-0003
118	Support de bac	Support	1	9623-0121
119	Vis CHc M12x20	Screw	2	4132-9306
120	Axe	Axle	2	9623-0149
121	Vis CHc	Screw	8	4131-1406
122	Rondelle frein	Washer	8	4520-0020
123	Rondelle d'arrêt	Stop ring	2	96230150
124	Vis CHc	Screw	4	4132-8306

"REAR" AIR CHAIN HOIST ASSEMBLY DRAWING

MULTI-DISCS BRAKE



D6290559-2

"REAR" AIR CHAIN HOIST ASSEMBLY PARTS LIST

MULTI-DISCS BRAKE

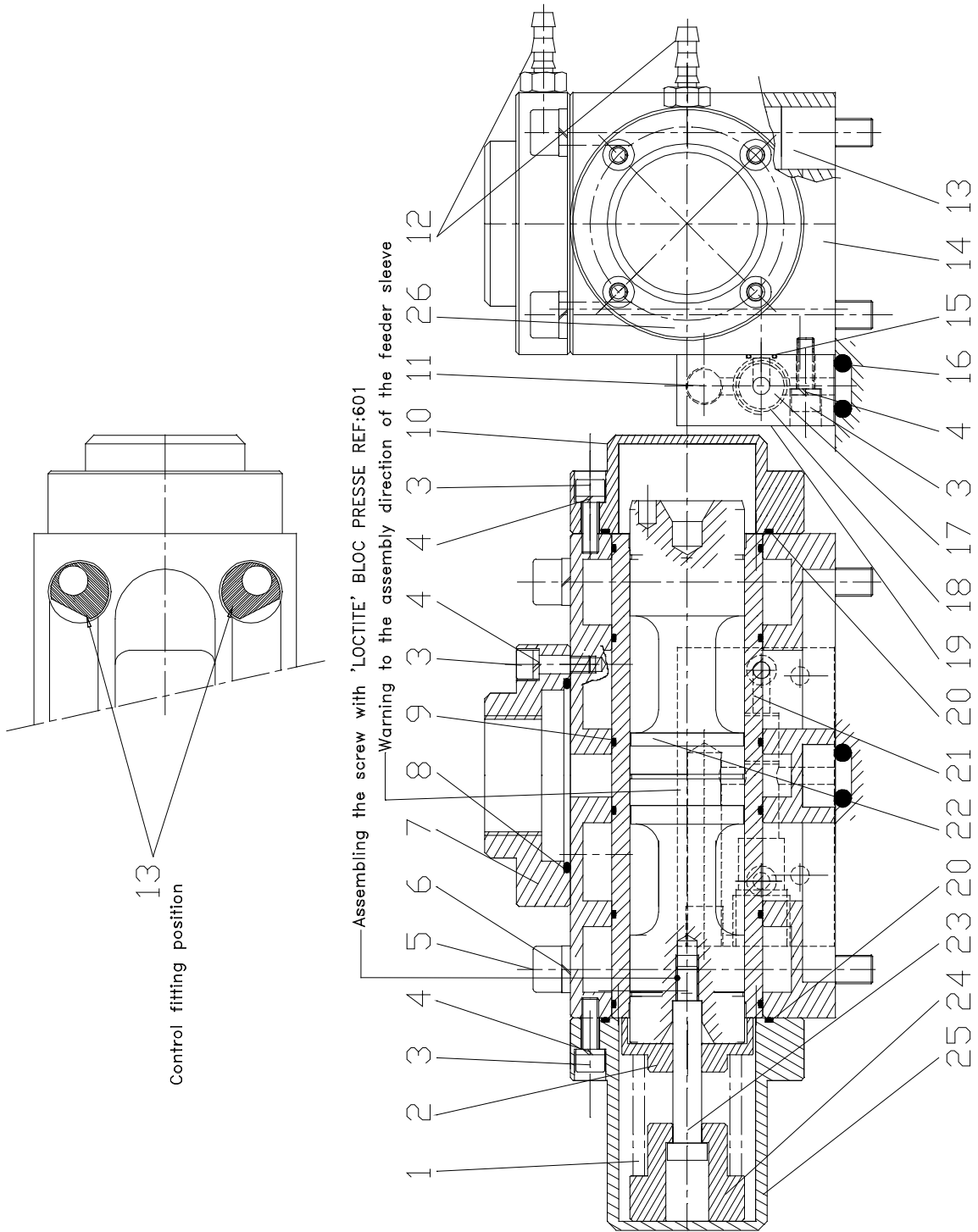
Rep Item	Désignation	Description	Qté. Qty.	CODE
1	Moteur pneumatique	Compressed air motor	1	76160000
2	Distributeur pneumatique	Air control valve	1	7617-0041
3	Rondelle entretoise	Distance washer	4	9623-0032
4	Manchon souple	Bored sleeve	1	9623-0035
5	Axe de manchon	Sleeve axle	1	9623-0036
6	Axe support	Support axle	1	96230038
7	Corps de fin de course	Limit switch housing	2	9623-0041
8	Poussoir de fin de course	Limit switch pusher	2	96230042
9	Couvercle	Cover	1	9623-0324
10	Porte satellite	planet support	1	9623-0052
11	Axe de satellite	Planet axle	3	9623-7053
12	Bague entretoise	Distance ring	3	9623-0054
13	Satellite	Planet gear	3	96230055
14	Flasque de couronne	Ring gear flange	1	9623-0056
15	Couronne	Ring gear	1	9623-0057
16	Couronne	Ring gear	1	9623-0058
17	Corps de frein	Brake casing	1	9615-0011
18	Couvercle de réducteur	Gear cover	1	9630-0003
19	Disque acier	Steel disc	6	6306-0032
20	Disque de friction	Friction disc	7	6305-9932
21	Piston	Piston	1	9615-0013
22	Joint torique @ 7.5-1.5	O'Ring	1	5821-2529
23	Pignon arbré	Pinion shaft	1	9623-0320
24	Porte satellite	planet support	1	9623-0097
25	Flasque carter	Flange (motor side)	1	9623-0321
26	Pignon solaire	Pinion	1	9623-0099
27	Satellite	Planet	3	9623-0100
28	½ carter gauche	½ carter	1	9623-0109
29	½ carter droit	½ carter	1	9623-0110
30	Axe de satellite	Planet axle	3	9623-0115
31	Lame ressort	Spring leaf	1	9623-0116
32	Décolleur de chaîne	Chain guide	1	9623-0117
33	Carter de réducteur	Gear housing	1	9623-0118
34	½ carter guide de chaîne	½ Chain guide housing	1	9623-0129
35	½ carter guide de chaîne	½ Chain guide housing	1	9623-0162
36	Joint torique @ 58-3	O'Ring	1	5822-2929
37	Chaîne 22-66 g8	Chain	1	69097532
38	Roulement à billes 6007-2RS	Bearing	1	5005-0007
39	Ressort	Spring	2	6917-0632
40	Raccord droit 1/4 @6/8	Fitting	2	6167-1932
41	Clavette	Key	3	9074-0117
42	Roulement à billes 6207-2RS	Bearing	1	5017-0007
43	Roulement à billes 16012	Bearing	2	5080-0012
44	Roulement à rouleaux NJ 220	Bearing	4	5120-0020
45	Butée à aiguilles AX 45-65	Thrust needle bearing	6	5605-6545
46	Douille à aiguilles HK 40-20	Needle sleeve	1	5632-4020
47	Bague 35-40-20	Ring	1	5637-0732
48	Roult à aiguilles NB 15-23-16	Bearing	3	5647-2316
49	Cage à aiguilles K 45-59-36	Needle cage	6	5650-5936
50	Contre plaque CP 15-28	Thrust washer	6	5730-8632
51	Contre plaque CP 3-45-65	Thrust washer	6	5737-8832
52	Bague de centrage	Distance Ring	1	9615-0012
53	Joint torique @ 160-3	O'Ring	6	5820-7229
54	Circlips I 62	Circlip	1	4770-3062
55	Joint torique @ 6-2	O'Ring	5	5821-4029

"REAR" AIR CHAIN HOIST ASSEMBLY PARTS LIST

MULTI-DISCS BRAKE

REP Item	DESIGNATION	DESCRIPTION	QTE Qty	CODE
56	Palier de frein	Brake Housing	1	9623-0324
57	Joint torique @ 240-3	O'Ring	1	5822-5529
58	Vis H M8-20	Screw	10	4102-0501
59	Vis CHc M 8-90	Chc screw	12	70926M
60	Vis H M8-80	Screw	12	70968M
61	Entretoise	Distance Ring	1	9615-0014
62	Vis CHc M8-10	Chc screw	8	4131-1506
63	Vis CHc M24-385	Chc screw	3	4131-8806
64	Vis CHc M16-70	Chc screw	1	4131-5106
65	Ecrou M24	Nut	3	4300-0411
66	Ecrou frein M16	Lock nut	1	4370-1611
67	Rondelle Z16	Washer	2	4500-1416
68	Rondelle frein W8	Split washer	8	4520-1008
69	Ressort 10-16-25	Spring	6	6916-7132
70	Rondelle frein W24	Split washer	3	4520-1024
71	Goupille @5-16	Pin	1	4600-1316
72	Goupille @12-50	Pin	2	4640-6518
73	Joint torique @ 115-3	O'Ring	2	5821-6929
74	Circlips E 13	Circlip	3	4770-0013
75	Circlips E 15	Circlip	3	4770-0015
76	Circlips E 22	Circlip	1	4770-0022
77	Joint torique @ 102-3	O'Ring	1	5821-0929
79	Manchon de liaison	Gear Wheel	1	9615-0007
80	Circlips I 72	Circlip	1	4770-3072
81	Segment d'arrêt @35	Stop segment	2	4780-1539
82	Anneau expansif @16	Stop ring	2	4780-1639
83	Anneau expansif SB 210	Stop ring	1	4780-1739
84	Goupille Beta @5	Split pin	1	4787-0832
85	Bague de liaison	Coupling	1	9615-0015
86	Pignon arbré	Drive Shaft	1	9615-0323
-	Pneumo-tube	Air pipe	6	9623-0072
91	Couronne dentée	Ring gear	1	9412-0062
92	Noix d'entraînement	Sprocket wheel	1	9623-8001
96	Raccord Coudé 1/4 @6/8	Square fitting	2	6167-6232
97	Anneau de levage	Eye Pad	1	6422-2332
100	Vis CHc M6-12	Chc screw	1	4132-4306
103	Cosse coeur	Thimble	1	6932-5332
104	Busette	Fitting	-	51029
106	Adapteur	Adaptor	-	6823-7528
110	½ carter guide central	½ chain guide housing	1	9623-8164
111	½ carter guide central	½ chain guide housing	1	9623-8163
112	Circlips I180	Circlip	1	47703180
113	Goupille @ 10-20	Pin	1	46402418
114	Bague de centrage	Eccentric ring	1	9623-0043
115	Noix de renvoi	Wheel	1	9623-0003
118	Support retour chaîne	Chain Support	1	96230121
119	Vis CHc M12x20	Screw	2	41329306
120	Axe	Axle	2	9623-0149
121	Vis CHc M20-40	Screw	8	4132-5506
122	Rondelle frein W20	Lock washer	8	4520-1020
123	Rondelle d'arrêt	Stop ring	2	96230150
124	Vis CHc M24-130	Screw	4	4132-8306
125	Rondelle frein W10	Lock washer	2	4520-1010

PNEUMATIC CONTROL VALVE ASSEMBLY DRAWING

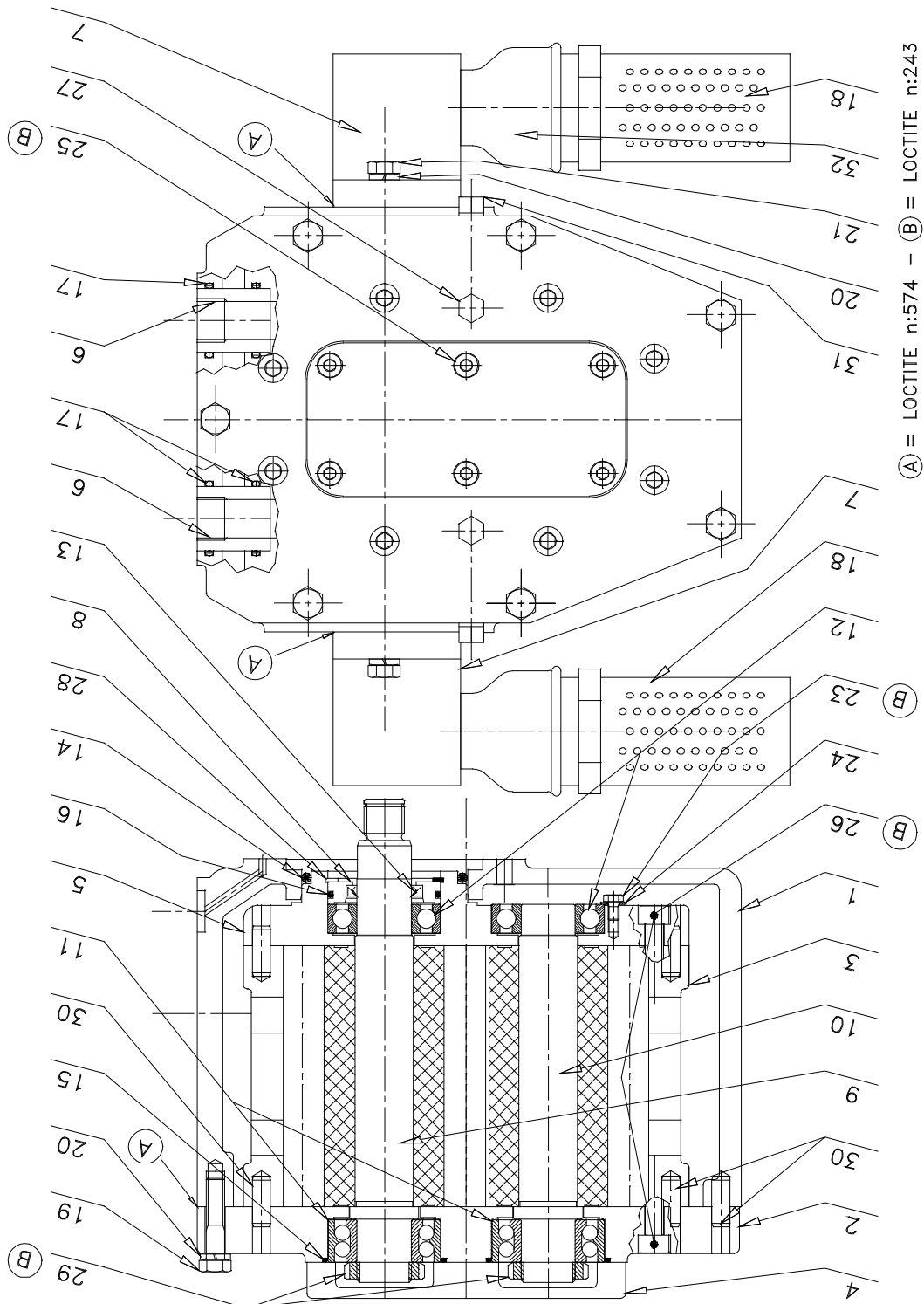


DWG: D6170016A

PNEUMATIC CONTROL VALVE ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Ressort	Spring	1	69129841
2	Butée	Thrust ring	1	96170105
3	Vis CHc M6x20	Screw	14	41322206
4	Rondelle élastique W6	Lockwasher	14	45201006
5	Vis CHc 10M6x110	Screw	4	41330706
6	Rondelle élastique W10	Lockwasher	4	45201010
7	Collecteur d'air	Inlet flange	1	96170107
8	Joint torique 62x3	O ring	1	58228029
9	Joint torique 47x2	O ring	6	58236429
10	Couvercle	Cover	1	96170109
11	Bouchon ¼	Plug	1	65125832
12	About	Fitting	3 3	51029 68237528
13	Rondelle	Ring	2	96170114
14	Corps de distributeur	Control valve body	1	96170103
15	Joint torique 7.5x1.5	O ring	2	58212529
16	Joint torique 10x6.5	O ring	6	58227729
17	Rouleau	Needle	1	69401525
18	Clapet	Spool	1	96170007
19	Bloc sélecteur	Shuttle valve	1	96170108
20	Joint torique 56x2	O ring	2	58235729
21	Chemise	Cylinder liner	1	96170101
22	Tiroir	Slide valve	1	96170102
23	Vis épaulée	Screw	1	65280532
24	Butée	Stop ring	1	96170106
25	Couvercle	Cover	1	96170104
26	Bouchon 1/4 ”	Plug	2	65125832
	Recommended Spare Parts			

PNEUMATIC GEAR MOTOR ASSEMBLY DRAWING



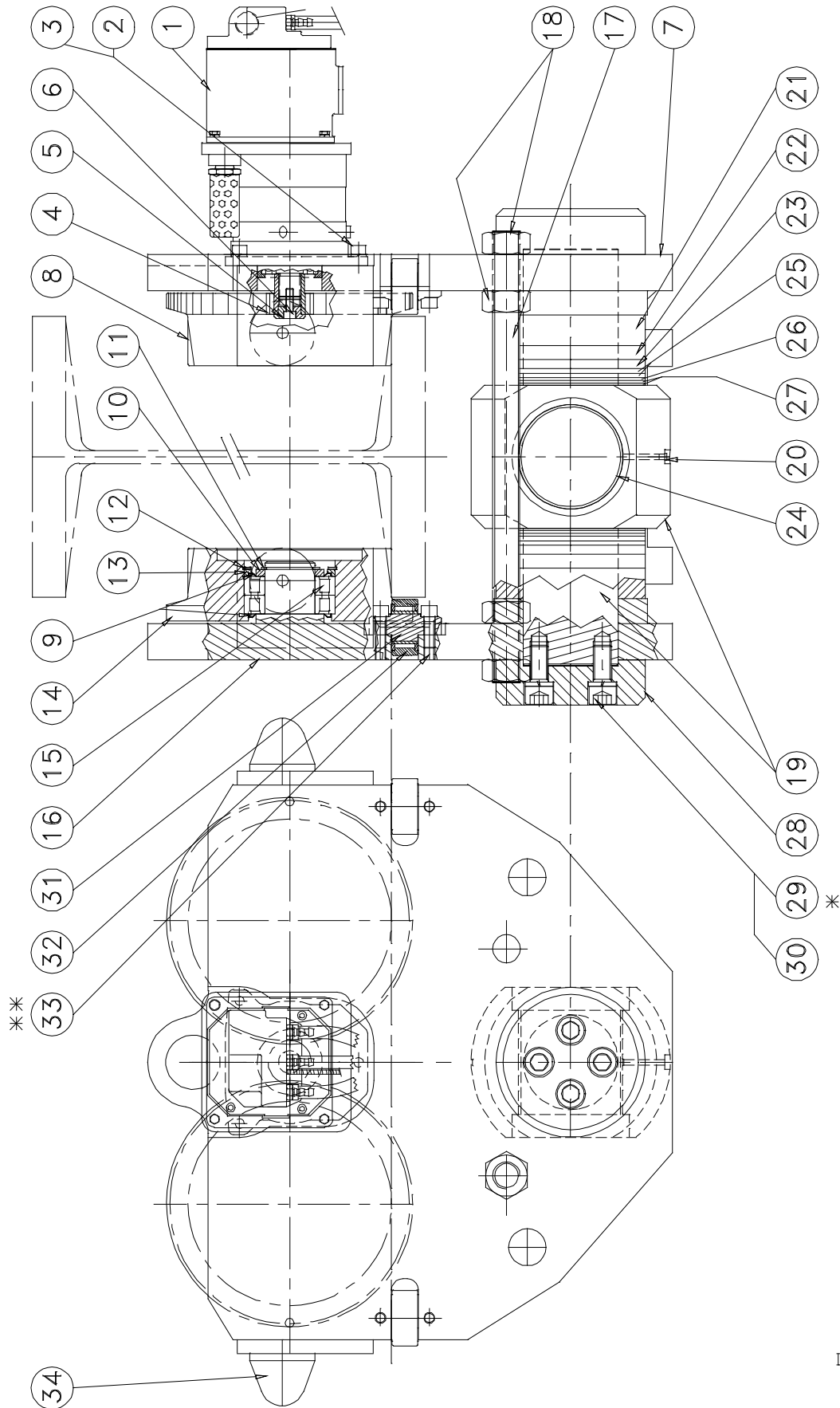
Ⓐ = LOCTITE n:574 - Ⓑ = LOCTITE n:243

DWG: D6160001A

PNEUMATIC GEAR MOTOR ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Carter moteur	Motor casing	1	96160001
2	Plaque arrière	Rear end cover	1	96160002
3	Corps moteur	Motor housing	1	96160003
4	Couvercle	Cover	1	96160004
5	Plaque avant	Front end cover	1	96160005
6	Tube	Pipe	2	96160006
7	Bride	Flange	2	96160007
8	Support de joint	Oil seal support	1	96160008
9	Rotor moteur	Drive gear	1	96160009
10	Rotor répulsion	Idle gear	1	96160010
11	Roulement à billes 6206Z	Ball bearing	2	50180906
12	Roulement à billes 5206	Ball bearing	2	50600006
13	Bague d'étanchéité	Oil seal	1	58013430
14	Joint torique @80x5.5	"O" ring	1	58208529
15	Joint torique @62x3	"O" ring	2	58210429
16	Joint torique @56x3	"O" ring	1	58224329
17	Joint torique R25	"O" ring	4	58200929
18	Silencieux	Muffler	2	68483532
19	Vis HM10x45	Screw	7	41008801
20	Rondelle élastique W10	Lock washer	11	45201010
21	Vis HM10x30	Screw	4	41000401
23	Vis HM6x10	Screw	1	41007601
24	Rondelle plate M6	Washer	1	45000106
25	Vis CHc M8x25	Cap screw	6	41324906
26	Vis CHc M10x30	Cap screw	16	41323506
27	Bouchon	Plug	2	65125832
28	Circlips I62	Retainer ring	1	47703062
29	Ecrou	Nut	2	57000006
30	Goupille	Pin	5	46000816
31	Bouchon 1/8G	Plug	2	65164532
32	Manchon réduit	Nipple	2	677
	Recommended Spare Parts			

TRU250REA PNEUMATIC TROLLEY ASSEMBLY DRAWING



** : Loctite frein fileet nr243
 * : Couple de serrage=24mDaN

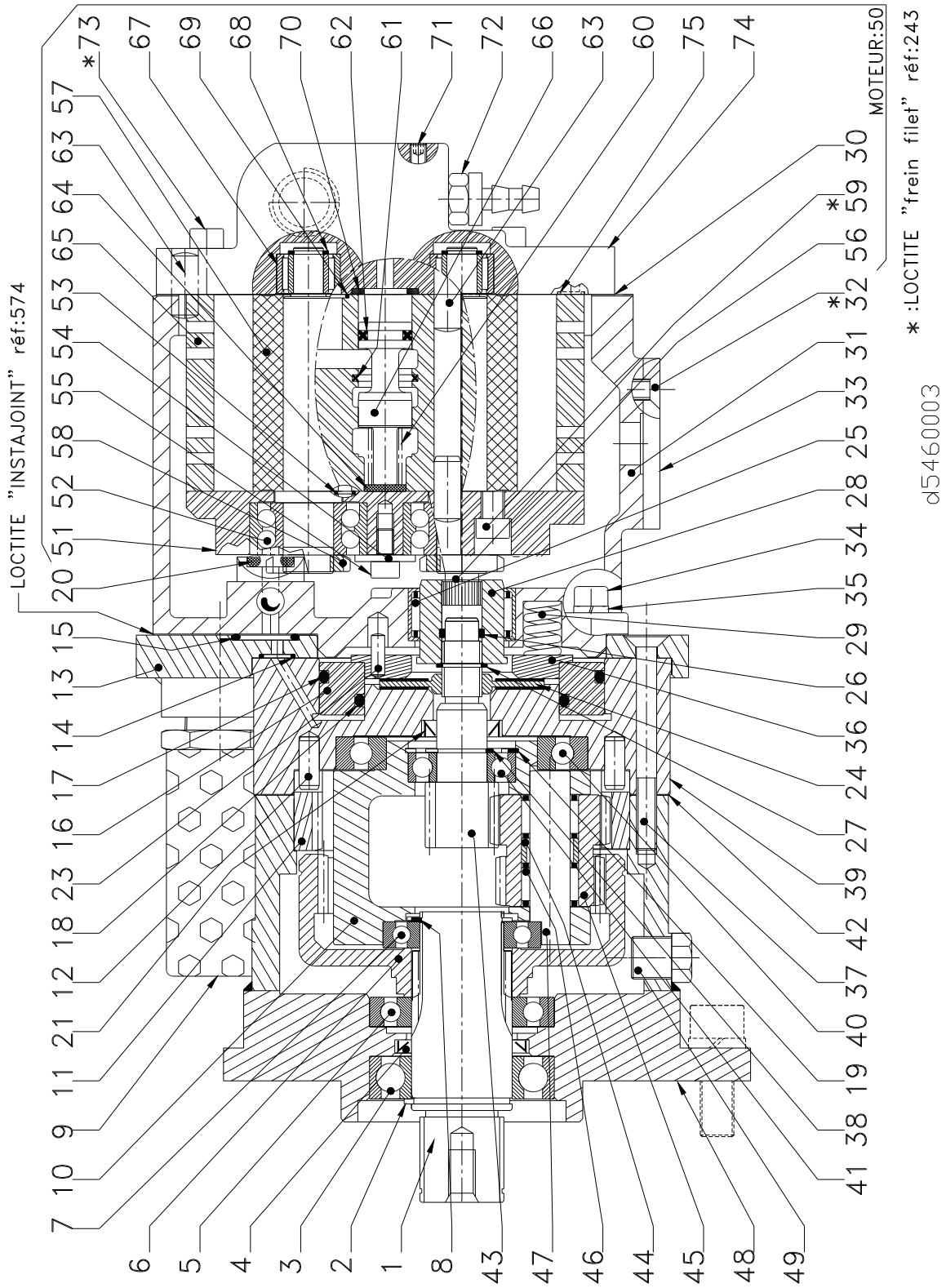
D6290012

TRU250REA PNEUMATIC TROLLEY ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Moto réducteur frein	Motor brake assembly		75460001
2	Vis CHc M10x30	Screw	3	41323506
3	Rondelle élastique W10	Lock washer	3	4521010
4	Pignon	Pinion gear	1	96290012
5	Rondelle	Washer	1	96290013
6	Vis CHc M8x25	Screw	1	41324906
7	Flasque chariot moteur	Trolley flange motor	1	96298046
8	Galet (IPN) Galet (IPE)	Teeth roller (IPN beam) Teeth roller (IPE beam)	2 2	96290021 96290019
9	Joint Nilos	Joint	8	58324111
10	Rondelle entretoise	Distance ring	4	95960045
11	Circlips	Retainer ring	4	47700055
12	Circlips	Retainer ring	4	47703100
13	Rondelle entretoise	Distance ring	4	95960044
14	Galet (IPN) Galet (IPE)	Roller (IPN beam) Roller (IPE beam)	2 2	96290022 96290020
15	Roulement à rouleaux	Roller bearing	8	51200011
16	Flasque chariot	Trolley flange	1	96298047
17	Tige fileté	Screw rod	1	96290031
18	Ecrou	Nut	4	43006711
19	Axe de liaison	Connecting axle	1	96297044
21	Rondelle (34mm)	Distance washer (34mm)	2	96290029
22	Rondelle (15mm)	Distance washer (15mm)	2	96290027
23	Rondelle (10mm)	Distance washer (10mm)	2	96290026
24	Coussinet	Bearing	1	59007626
25	Rondelle (5mm)	Distance washer (5mm)	4	96290024
26	Rondelle (3.5mm)	Distance washer (3.5mm)	2	96290028
27	Rondelle (2.5mm)	Distance washer (2.5mm)	4	96290023
28	Rondelle de serrage	Tightening washer	2	96290032
29	Vis CHc M20x45	Screw	8	41314706
30	Rondelle frein	Lockwascher	8	45201020
31	Axe de galet	Axle	4	96290045
32	Galet	Roller	4	69810341
33	Vis cHc	Screw	8	41312706
34	Ensemble butées	Pogressive stop assembly	1	36290012

Recommended Spare Parts

PNEUMATIC MRF2-100 for TRU250REA ASSEMBLY DRAWING



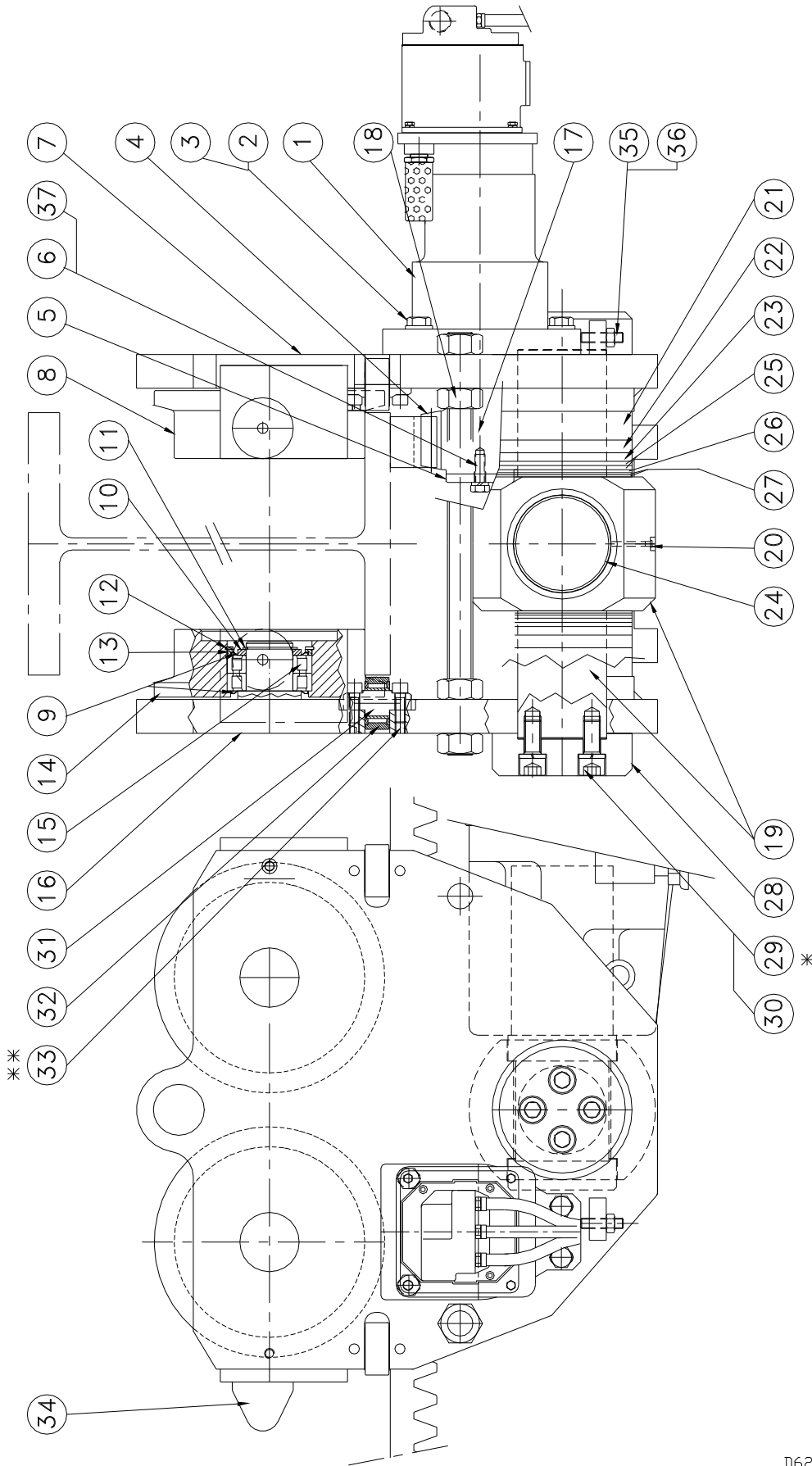
PNEUMATIC MRF2-100 for TRU250REA ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Arbre de sortie	Driving Shaft	1	95460008
2	Circlips exterieur	Circlip for shaft	1	47700030
3	Roulement à billes	Balls bearing	1	50050006
4	Bague d'étanchéité	Seal Washer	1	58017530
5	Roulement à billes	Balls bearing	1	50800006
6	Couronne	Ring gear	1	96090094
7	Roulement à billes	Balls bearing	1	50800005
8	Segment exterieur	Securing Ring	1	47802139
9	Silencieux	Muffler	2	68497432
10	Porte satellites	Planet Support	1	96090014
11	Couronne	Ring gear	1	96090038
12	Goupille cylindrique	Pin	2	46001116
13	Flasque bride	Fixing Flange	1	95460009
14	Joint torique	'O'Ring	1	58212529
15	Joint torique	'O'Ring	1	58218129
16	Piston de vérin	Cylinder piston	1	96090113
17	Joint torique	'O'Ring	1	58232329
18	Joint torique	'O'Ring	1	58232229
19	Circlips intérieur	Circlip For Bore	1	47703032
20	Joint torique	'O'Ring	2	58224929
21	Bague d'étanchéité	Seal Washer	1	58019830
23	Goupille cylindrique	Pin	1	46406118
24	Disque de frein	Friction Disc	1	96090049
25	Douille à aiguilles	Caged Needle Roller Bearing	1	56323225
26	Joint torique	'O'Ring	1	58218229
27	Circlips extérieur	Circlips For Shaft	1	47700012
28	Manchon d'accouplement	Coupling	1	96180014
29	Ressort	Spring	4	69165532
30	Joint papier	Paper Joint	1	96180066
31	Carter moteur	Motor Housing	1	96180015
32	Vis FHc M6-15	Screw	4	41104503
33	Couvercle	Cover	1	96180036
34	Vis Chc M6-16	Screw	4	41322606
35	Rondelle W6	Split Washer	4	45201006
36	Disque de frein	Brake Disc	1	96180012
37	Vis FHc M6-65	Screw	4	41103903
38	Circlips Extérieur	Circlips For Shaft	1	47700015
	Recommended Spare Parts			

PNEUMATIC MRF2-100 for TRU250REA ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
39	Corps de frein	Brake body	1	96180057
40	Roulement à billes	Balls Bearing	1	50800009
41	Roulement à billes	Balls Bearing	1	50000002
42	Joint	Paper Joint	1	96180042
43	Pignon arbré	Shaft Spindle	1	96180011
44	Bague entretoise	Distance Ring	2	96090095
45	Satellite Double	Double Planet Gear	2	96090096
46	Cage à aiguilles	Caged Needle Roller Bearing	4	56501513
47	Axe de satellite	Planet Axle	2	96090039
48	Carter réducteur	Gear Casing	1	95460007
49	Bouchon	Plug	2	65125832
50	Sous ensemble moteur	Motor Ass'y	1	76090437
51	Flasque moteur	Motor Flange	1	96090008
52	Roulement à billes	Bearing	2	50600002
53	Joint torique	'O'Ring	2	58222329
54	Rondelle	Washer	1	96090032
55	Vis CHc M5-20	Screw	1	41326306
56	Rotor Moteur	Driving Gear	1	96090031
57	Rotor répulsion	Idle Gear	1	96090030
58	Ecrou à encoches	Locknut	2	57000002
59	Vis CHc M6-80	Screw	4	41331306
60	Ressort de tiroir	Spring	2	94240224
61	Joint Quad-Ring	Quad-Ring	2	58231229
62	Joint Quad-Ring	Quad-Ring	2	58228929
63	Goupille	Pin	6	46000416
64	Butée arrière de tiroir	Rear Stop	2	94120030
65	Corps moteur	Motor Housing	1	96090277
66	Tiroir	Slide Valve	2	94240212
67	Roulement à aiguilles	Needle Bearing	2	56461912
68	Segment d'arrêt	Retainer Ring	2	47801339
69	Joint torique	'O'Ring	2	58205029
70	Butée de tiroir	Stop	2	96090042
71	Vis Hc	Screw	1	42007707
72	About 1/8 ''	Fitting	3	68237528 51029
73	Vis CHc M6-25	Screw	4	41312206
74	Couvercle moteur	Motor Cover	1	96090079
75	Joint torique	'O'Ring	2	58212229
	Bouchon 1/8"G	Plug	1	65107741
	Recommended Spare Parts			

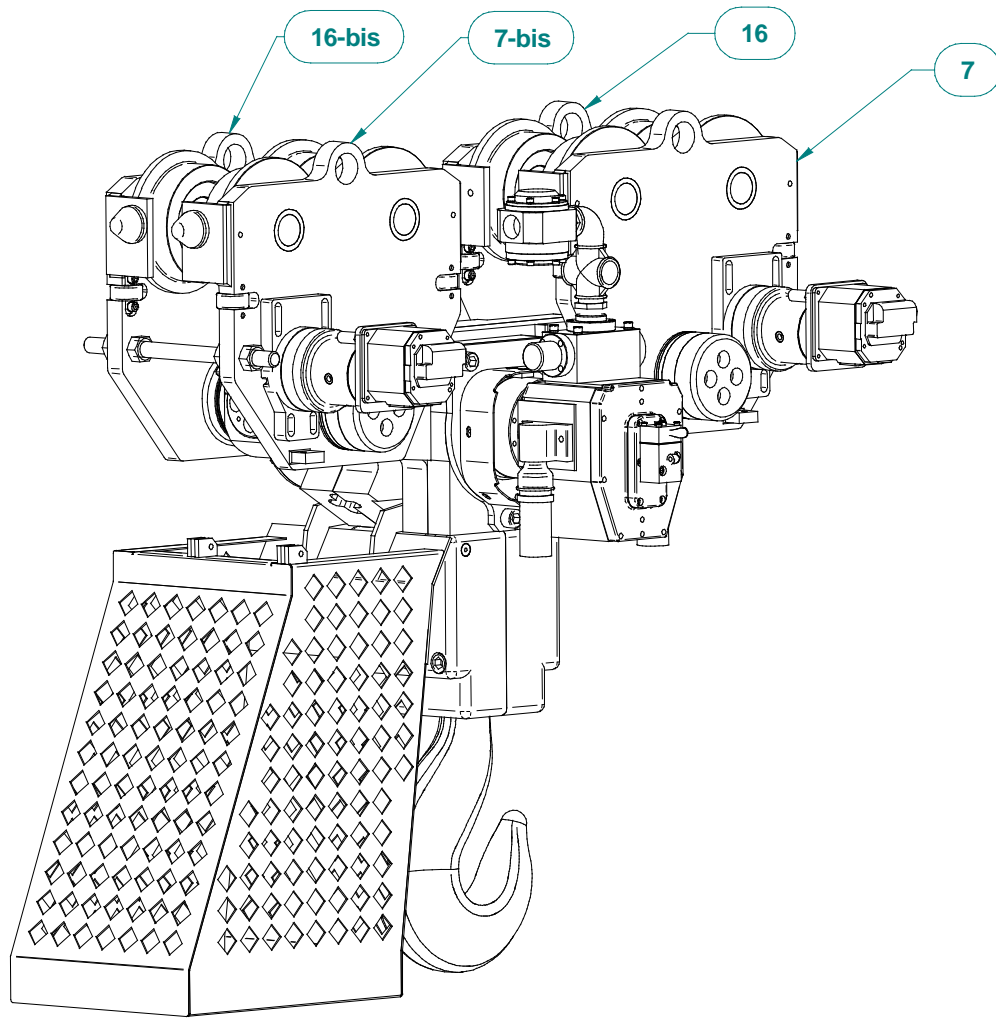
TRU250REAR PNEUMATIC TROLLEY ASSEMBLY DRAWING



** :Loctite frein fileet n:243
 * :Couple de serrage=24mDaN

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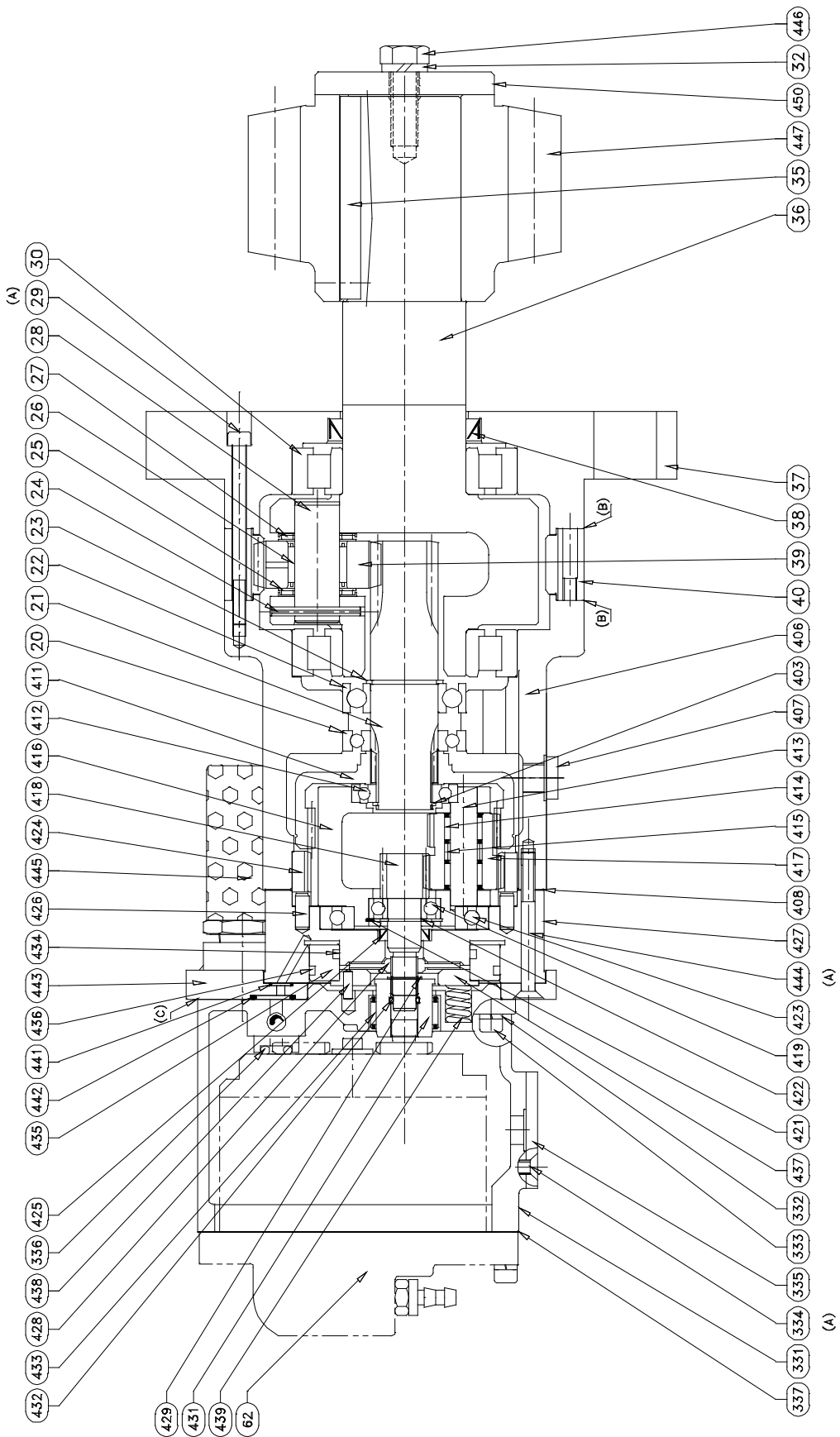
TRU250REAR PNEUMATIC TROLLEY ASSEMBLY DRAWING



TRU250REAR PNEUMATIC TROLLEY ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Moto réducteur frein	Motor brake assembly	1	75460011
2	Vis HM 16-60	Screw	4	41006501
3	Rondelle Plate M16 Rondelle frein W16	Washer Lockwasher	4 4	45001116 45201016
4	Pignon	Pinion gear	1	96430130
5	Rondelle	Washer	1	96430028
6	Vis HM 12-30	Screw	1	41003401
7	Flasque chariot de tête MRF	Front Trolley flange MRF	1	96430157
7-bis	Flasque chariot arrière MRF	Rear Trolley flange MRF	1	96430155
8	Galet (IPE)	Teeth roller (IPE beam)	2	96297054
9	Joint Nilos 6211-AV	Seal	8	58324111
10	Rondelle entretoise	Distance ring	4	95960045
11	Circlips E 55	Retainer ring	4	47700055
12	Circlips I 100	Retainer ring	4	47703100
13	Rondelle entretoise	Distance ring	4	95960044
14	Galet (IPE)	Roller (IPE beam)	2	96297054
15	Roulement à rouleaux NJ 211	Roller bearing	8	51200011
16	Flasque chariot de tête	Front Trolley flange	1	96430159
16-bis	Flasque chariot arrière	Rear Trolley flange	1	96430161
17	Tige fileté M30	Screw rod	1	96290031
18	Ecrou HM30	Nut	4	43006711
19	Axe de liaison	Connecting axle	1	96297044
20	Graisneur	Grease nipple	1	67100827
21	Rondelle (34mm)	Distance washer (34mm)	2	96290029
22	Rondelle (15mm)	Distance washer (15mm)	2	96290027
23	Rondelle (10mm)	Distance washer (10mm)	2	96290026
24	Coussinet	Bearing)	1	59007626
25	Rondelle (5mm)	Distance washer (5mm)	4	96290024
26	Rondelle (3.5mm)	Distance washer (3.5mm)	2	96290028
27	Rondelle (2.5mm)	Distance washer (2.5mm)	4	96290023
28	Rondelle de serrage	Tightening washer	2	96290032
29	Vis CHc M20x45	Screw	8	41314706
30	Rondelle frein W20	Lockwascher	8	45201020
31	Axe de galet	Axle	4	95237191
32	Galet	Roller	4	95237189
33	Vis CHc M12-35	Screw	4	41312706
34	Ensemble butées	Pogressive stop assembly	1	36290012
35	Vis Hc M12x55	Screw	1	42006007
36	Ecrou Hu M12	Nut	1	43003611
37	Rondelle frein W12	Lock washer	1	45201012
	Crémaillère module 12 Lg 1506	Rack		96430027
Recommended Spare Parts				

PNEUMATIC MRF2-15 for TRU250REAR ASSEMBLY DRAWING



Dwg.D546005B

- A) Loctite ® Frein filet 243
- (B) Loctite ® 586
- (C) Loctite ® 574

PNEUMATIC MRF2-15 for TRU250REAR ASSEMBLY PARTS LIST

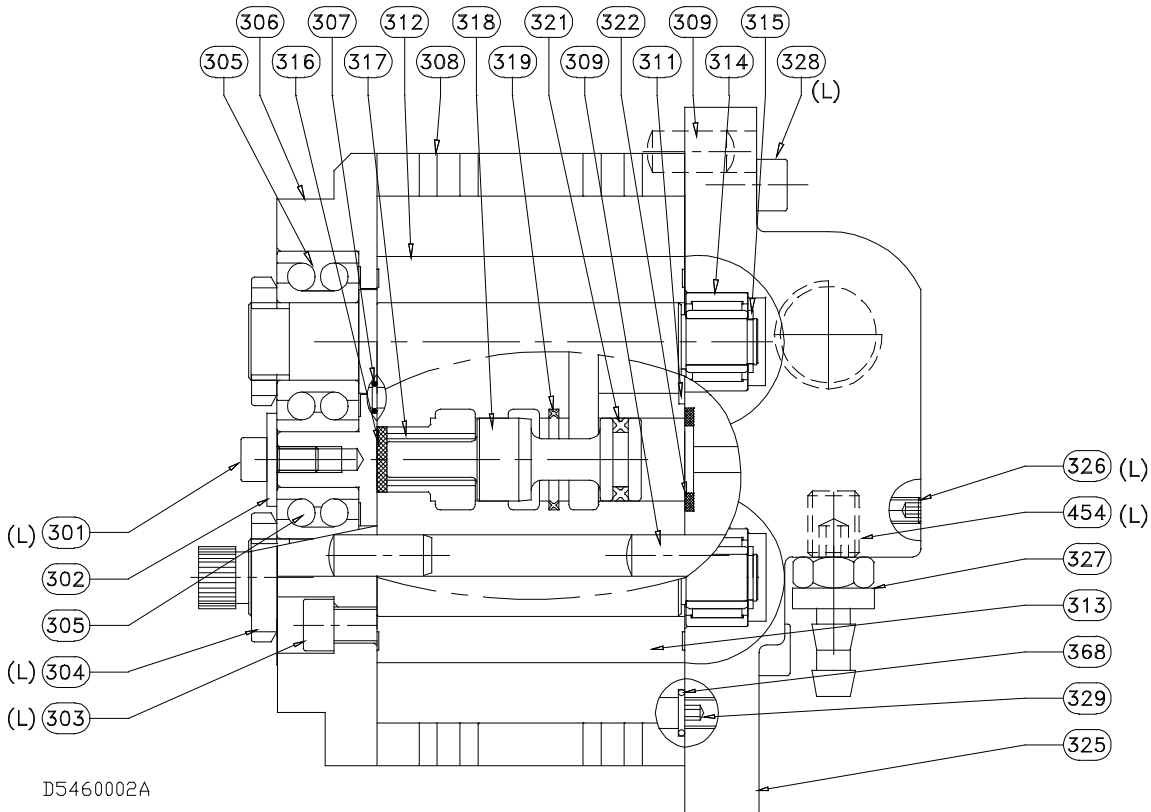
ITEM NO.	DESIGNATION PIECE	DESCRIPTION OF PART	TOTAL QTY	PART NO.
20	Roulement à billes 16006	Bearing	1	50800006
21	Pignon arbré	Shaft Spindle	1	96430095
22	Roulement à billes 6006	Bearing	1	50000006
23	Circlips extérieur Ø 30	Retainer Ring	1	47700030
24	Goupille élastique Ø 4x40	Pin	3	46504220
25	Contre plaque CP 20 35	Thrust Ring	6	57319832
26	Roulement à aiguilles K 20x26x20	Needle Bearing	3	56502620
27	Butée à aiguilles AX 20-35	Bearing	6	56053520
28	Axe de satellite	Planet Axle	3	96430008
29	Vis CHc M6x80	Screw	10	41331306
30	Roulement à rouleaux NJ211	Bearing	2	51200011
32	Rondelle W12	Lockwasher	3	45201012
35	Clavette	Key	1	60305524
36	Porte satellites	Planet Support	1	96430004
37	Flasque bride	Mounting Flange	1	96430005
• 38	Bague d'étanchéité à lèvres 55-68-8	Oil Seal	1	58007330
39	Satellite	Planet Gear	3	96430009
40	Couronne dentée	Ring gear	1	96430006
62	S/E moteur	Motor Ass'y	1	76090437
331	Carter moteur	Motor Housing	1	96180015
332	Rondelle W6	Lockwasher	4	45201006
333	Vis CHc M6x16	Screw	4	41322606
334	Vis FHc M6x15	Screw	4	41104503
335	Couvercle	Cover	1	96180036
• 336	Joint torique Ø 6x4	'O' Ring	2	58224929
• 337	Joint papier	Paper Joint	1	96180066
403	Segment extérieur	Retainer Ring	1	47802139
406	Carter réducteur	Gear housing	1	96430094
407	Bouchon	Plug	2	65110741
• 408	Joint papier	Paper Joint	1	96180042
411	Couronne dentée	Ring Gear	1	96090094
412	Roulement à billes 16005	Bearing	1	50800005
413	Axe de satellite	Planet Axle	2	96090039
414	Cage à aiguilles K12x15x13	Needle Bearing	4	56501513
415	Entretoise	Spacer	2	96090095
416	Porte satellites	Planet Support	1	96090014
417	Satellite double	Double Planet Gear	2	96090096
418	Pignon arbré	Shaft Spindle	1	96180011
419	Roulement à billes 6002	Bearing	1	50000002
421	Circlips intérieur Ø 32	Retainer Ring	1	47703032
422	Circlips extérieur Ø 15	Retainer ring	1	47700015
423	Roulement à billes 16009	Bearing	1	50800009
424	Couronne dentée	Ring Gear	1	96090038
• 425	Bague d'étanchéité Ø 15x24x5	Seal Ring	1	58019830
426	Goupille cylindrique Ø 6x16	Pin	2	46001116

PNEUMATIC MRF2-15 for TRU250REAR ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION PIECE	DESCRIPTION OF PART	TOTAL QTY	PART NO.
427	Corps de frein	Brake Housing	1	96180057
• 428	Disque de frein	Friction Disc	1	96090049
429	Circlips extérieur Ø 12	Retainer Ring	1	47700012
431	Manchon d'accouplement	Coupling	1	96180014
• 432	Joint torique Ø 10x2	'O' Ring	1	58218229
433	Douille à aiguilles HK 25x16 2RS	Needle Bearing	1	56323225
• 434	Joint torique Ø 78x3	'O' Ring	1	58232329
435	Piston de vérin	Cylinder piston	1	96090113
• 436	Joint torique Ø 58x3	'O' Ring	1	58232229
437	Disque de frein	Brake Disc	1	96180012
438	Goupille	Pin	1	46406118
439	Ressort	Spring	4	69165532
• 441	Joint torique Ø 7.5x1.5	'O' Ring	1	58212529
• 442	Joint torique Ø 15x2	'O' Ring	1	58218129
443	Flasque bride moteur	Flange	1	95460009
444	Vis FHc M6x65	Screw	4	41103903
• 445	Silencieux	Muffler	2	68497432
446	Vis H M12x30	Screw	1	41003401
447	Pignon de sortie Std Opt "R"	Pinion	1	96430026 96430130
450	Rondelle d'arrêt	Washer	1	96430028

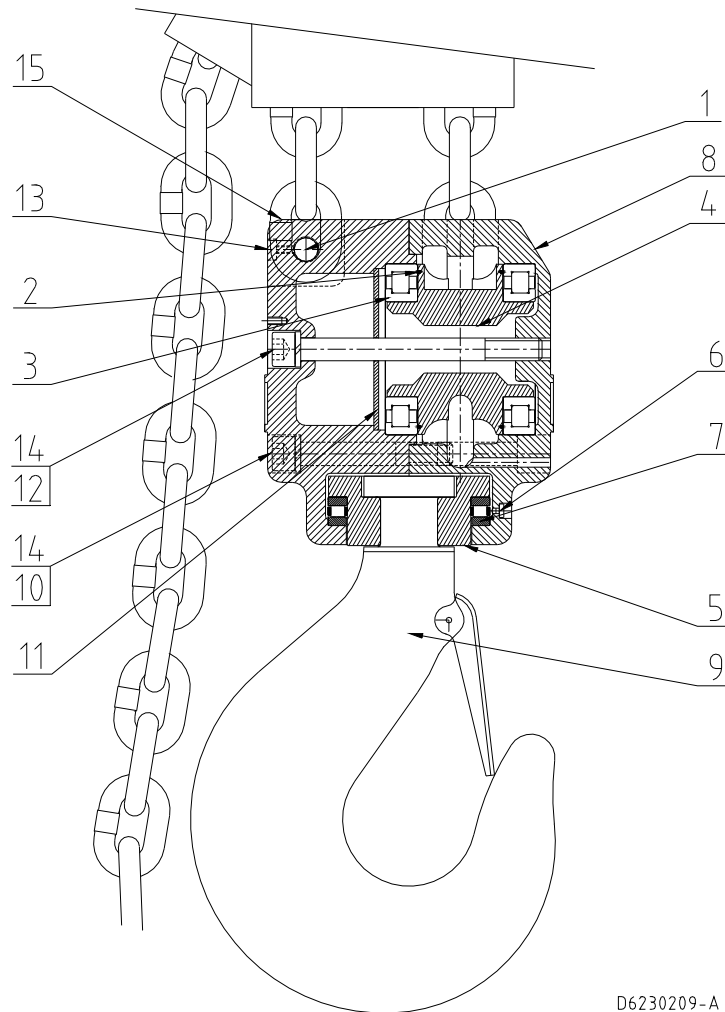
• Recommended Spare

2HP MOTOR ASSEMBLY DRAWING & PARTS LIST



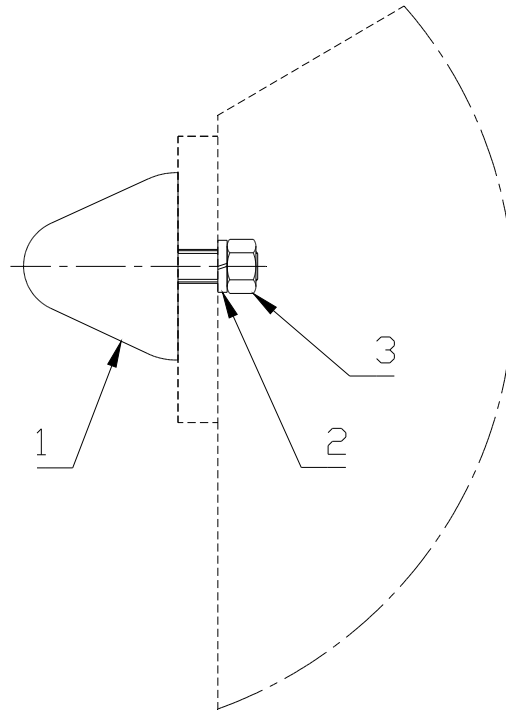
ITEM NO.	DESIGNATION PIECE	DESCRIPTION OF PART	TOTAL QTY	PART NO.
●	Sous ensemble moteur	Motor Ass'y	1	76090437
301	Vis CHcM5x20	Screw	1	41326306
302	Rondelle d'arrêt	Washer	1	96090032
303	Vis CHcM6x80	Screw	4	41331306
304	Ecrou à encoches M15x1	Locknut	2	57000002
305	Roulement à billes 5202	Bearing	2	50600002
306	Flasque avant moteur	Motor Flange	1	96090008
● 307	Joint torique Ø 4x1	'O' Ring	2	58222329
308	Corps moteur	Motor Housing	1	96090277
309	Goupille 8x20	Pin	6	46000416
● 311	Joint torique Ø 11x1.3	'O' Ring	2	58205029
312	Rotor répulsion	Idle Gear	1	96090030
313	Rotor moteur	Driving Gear	1	96090031
314	Roulement à aiguilles NKI 9x12	Needle Bearing	2	56461912
315	Segment d'arrêt Ø9	Retainer Ring	2	47801339
316	Butée arrière de tiroir	Slide Valve	2	94120030
317	Ressort	Spring	2	94240224
318	Tiroir	Slide Valve	2	94240212
● 319	Joint Quad-Ring 4017	Quad-ring	2	58231229
● 321	Joint Quad-Ring 4111	Quad-ring	2	58228929
322	Butée de tiroir	Stop	2	96090042
325	Plaque arrière	Motor Cover	1	96090079
326	Vis Hc M5x10	Screw	1	42007707
327	About 1/8"	Fitting	3	68237528 51029
328	Vis CHcM6x25	Screw	4	41312206
454	Bouchon Ø 1/8"G	Plug	1	65107741
●	Recommended Spare			

37,5 T & 40 T BOTTOM HOOK ASSEMBLY DRAWING AND PARTS LIST



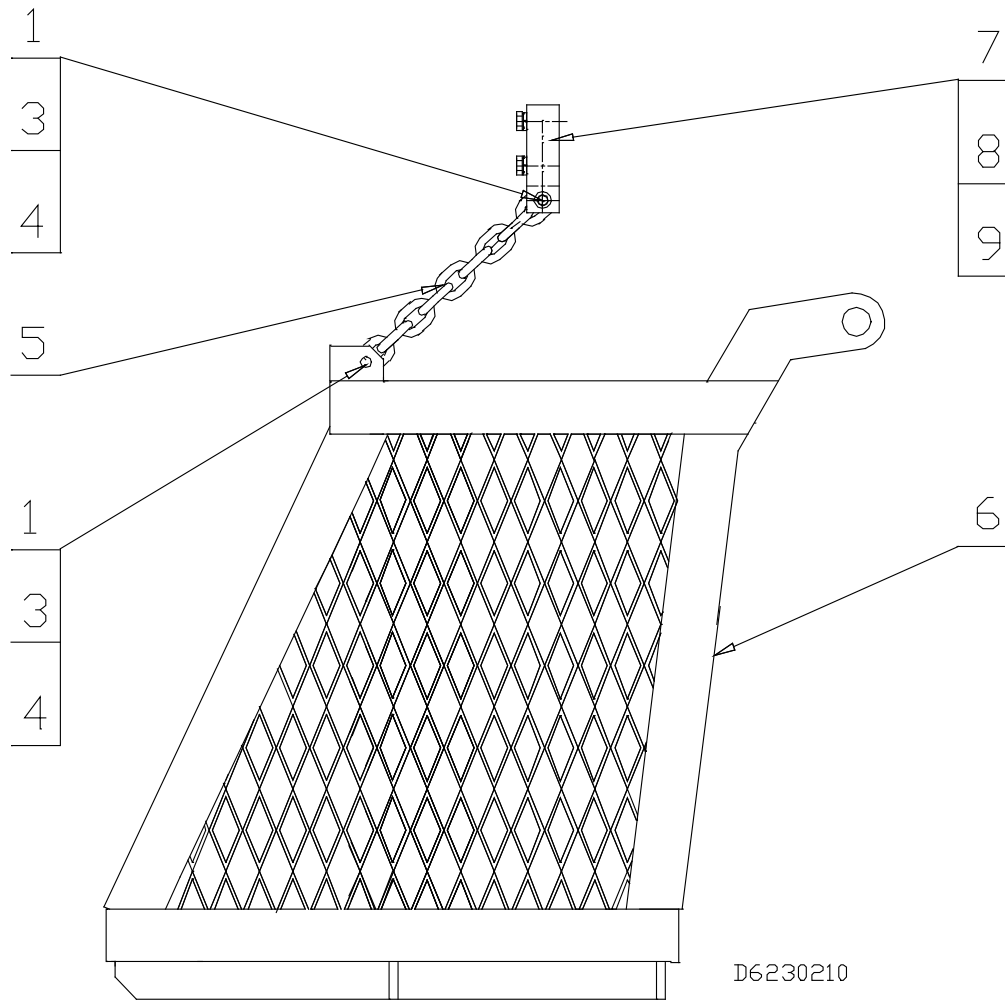
ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.	
				LCA375T	LCA400T
1	Axe support chaîne	Axle	1	96230033	
2	Joint torique Ø 160-3	"O"Ring	2	58207229	
3	Roulement à rouleaux NJ 211	Roller bearing	2	51200020	
4	Noix de renvoi	Chain Sprocket Wheel	1	96230004	
5	Bague épaulée	Ring	1	96230029	
6	Graisseur	Grease Nipple	1	67100827	
7	Butée à rouleaux	Bearing Stud	1	54700026	
8	Flasque de moufle Flasque de moufle Opt "T1"	Bottom Block Flange	1	96230022	96230243 96230326
9	Crochet Crochet Opt "T1"	Hook	1	96238027 96230227	
10	Vis CHc M24-160	Screw	2	41328706	
11	Plaque de fermeture	Plate	1	86230296	
12	Vis CHc M24-260	Screw	1	41331806	
13	Vis CHc M8-25 Rondelle élastique W8	Screw Lock Washer	1 1	41324906 45201008	
14	Rondelle élastique W24	Lock Washer	3	45201024	
15	Flasque de moufle Flasque de moufle Opt "T1"	Bottom Block Flange	1	96230023	96230244 96230327

BUMPER ASSEMBLY DRAWING AND PARTS LIST



ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Butée progressive	Bumper	4	59852532
2	Rondelle élastique W12	Lock washer	4	45201012
3	Ecrou HM12	Nut	4	43003611
	Recommended Spare Parts			

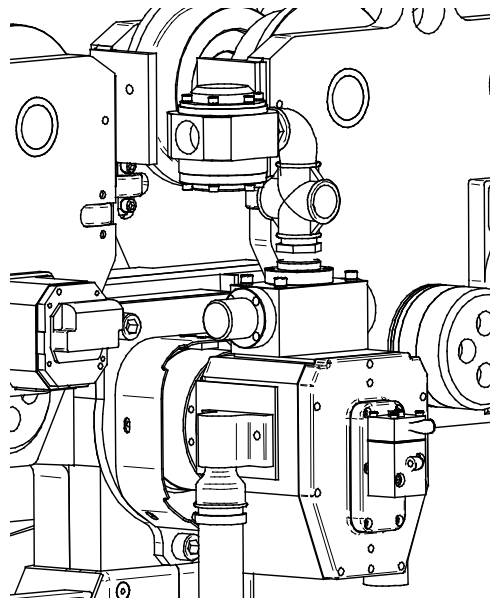
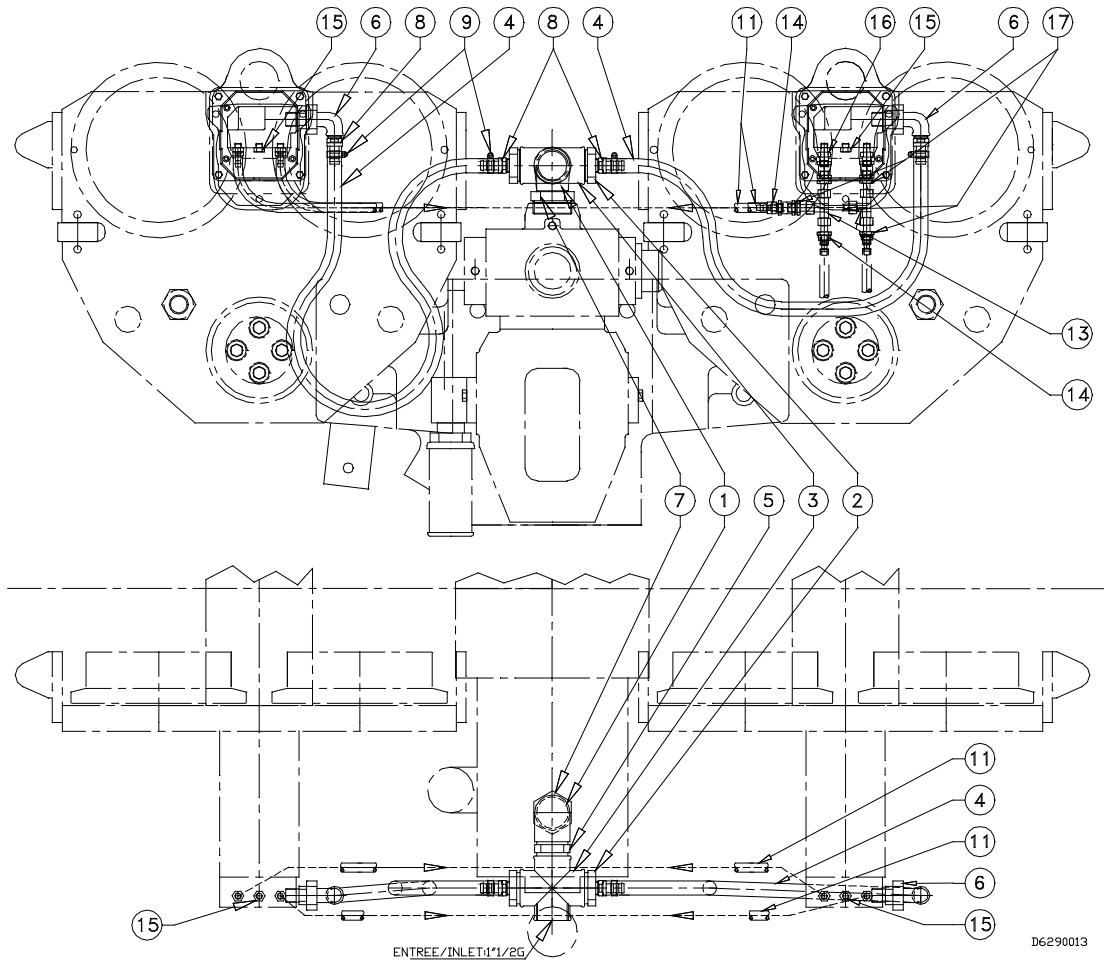
CHAIN BASKET ASSEMBLY DRAWING AND PARTS LIST



ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Vis CHc M10-70	Screw	4	41329406
2	Vis CHc M10-55	Screw	2	41325306
3	Ecrou frein HM10	Lock nut	3	75583M
4	Rondelle Plate	Washer	3	45001110
5	Chaîne 8x24	Chain	0.52	69089432
6	Bac à chaîne 30m	Chain basket	1	96230198
7	Support de bac	Support	1	96230196
8	Vis H M10-45	Screw	2	41008801
9	Rondelle frein W10	Washer	2	45201010

Recommended Spare Parts

CONNECTION ACCESSORIES DRAWING

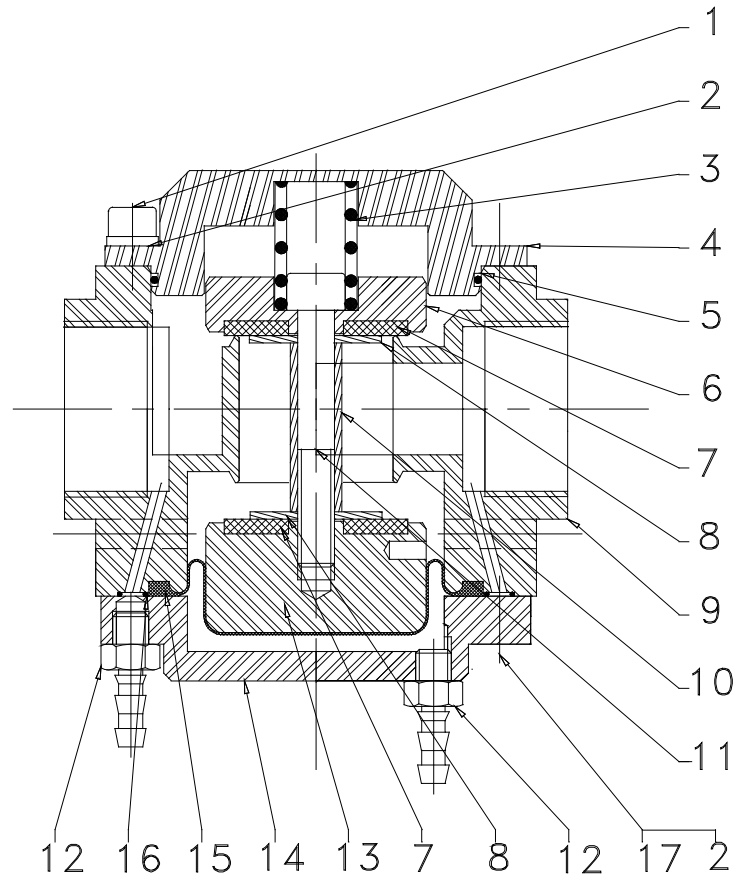


Air Inlet Connection for
LCA400TIP3"REAR"-E only

CONNECTION ACCESSORIES PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Coude MF 1'' 1/2G	Elbow	1	61316428
2	Mamelon de reduction	Reducing nipple	2	61320128
3	Croix	Cross	1	61320228
4	Flexible	Hose	2x1.5m	68031332
5	Mamelon MM 1'' 1/2G	Nipple	1	61316328
6	Coude union M/F 1/2G	Elbow	2	68144732
7				
8	About annele	Fitting	4	61631832
9	Collier de serrage	Locking ring	4	61131532
11	Flexible	Hose	2x1m	50923
13	Te	Tee	2	61394532
14	About annele	Fitting	4	51029
15	Bouchon 1/8''G	Plug	2	65107741
16	Mamelon MM1/8''	Reducer	2	61385232
17	Adapteur conique	Adapter	6	68237528
	Recommended Spare Parts			

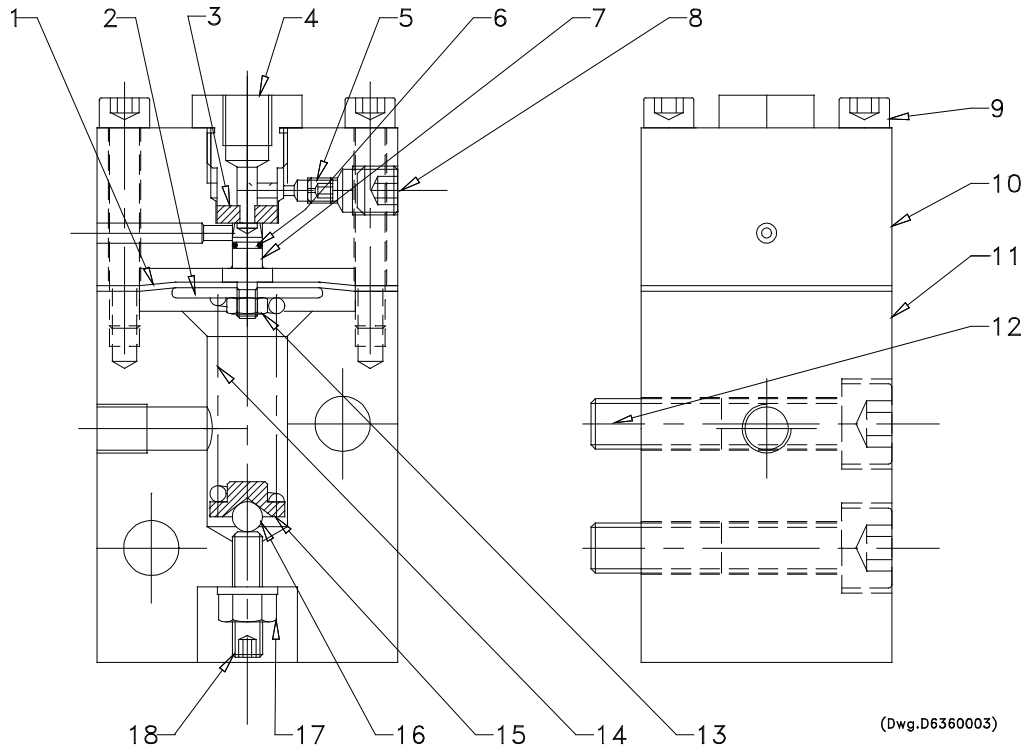
CONTROL VALVE 3/2 @1"1/2 ASSEMBLY DRAWING & PARTS LIST



(Dwg.D6170005)

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Vis CHcM8x20	Screw	6	41321806
2	Rondelle élastique W8	Lock washer	12	45201008
3	Ressort	spring	1	69120141
4	Couvercle	Cover	1	96170073
5	Joint torique @85x2.5	"O" Ring	1	58216129
6	Clapet	Valve cone	1	96170075
7	Joint plat	Seal washer	2	96170076
8	Rondelle LL10N	Washer	2	45700010
9	Corps	Body	1	96170072
10	Entretoise	Spacer	1	96170077
11	Vis CHcM10x70	Screw	1	41304706
12	About	Fitting	2	51029
			2	68237528
13	Clapet	Valve cone	1	96170078
14	Couvercle	Cover	1	96170074
15	Membrane	Diaphragm	1	67720041
16	Joint torique @5x1.5	"O" Ring	2	58209229
17	Vis CHcM8x25	Screw	1	41324906
	Recommended Spare Parts			

TORQUE LIMITOR ASSEMBLY DRAWING & PARTS LIST



ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART N° 76360004	PART N° 36360045	PART N° 36360046
				Std model	without nozzle	Special
1	Membrane	Diaphragm	1	96360020		
2	Rondelle	Washer	1	96360019		
3	Joint	Seal	1	96360021		
4	Vis	Screw	1	96360018		
5	Gicleur	Nozzle	1	96170071	//	//
6	Joint torique @4x1	"O" ring	1	58222329		
7	Clapet	Valve cone	1	96360017		
8	Bouchon	Plug	1	65107741		
9	Vis CHcM6x40	Screw	4	41327406		
10	Corps	Body	1	96360025	96360047	
11	Couvercle	Cover	1	96360024		
12	Vis CHcM10x45	Screw	2	41323206		
13	Ecrou HM4	Nut	1	43001111		
14	Ressort	Spring	1	69159432		
15	Siège de ressort	Spring receiver	1	96360023		
16	Bille	Ball	1	69400125		
17	Ecrou frein HM6	Lock nut	1	43707611		
	Joint	Seal	1	58404531		
18	Vis HcM6x25	Screw	1	42007107		
Recommended Spare Parts						

PARTS ORDERING INFORMATION

The use of replacement parts other than INGERSOLL-RAND Material Handling will invalidate the Company's warranty. For prompt service and genuine INGERSOLL-RAND Material Handling parts, provide your nearest Distributor with the following :

1. Complete model number and serial number as it appears on the nameplate.
2. Part number and part description as shown in this manual.
3. Quantity required.

For your convenience and future reference it is recommended that the following information be recorded.

Hoist Model Number

Hoist Serial Number

Date Purchased

Return Goods Policy

INGERSOLL-RAND will not accept returned goods for warranty or service unless prior arrangements have been made and written authorization has been provided from the location the goods were purchased.

NOTICE

Erreur! Signet non défini. **Continuing improvement and advancement of design may cause changes to this trolley which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition number on the front cover for the latest issue.**

When the life of the trolley has expired, it is recommended that the trolley be disassembled, degreased and parts separated as to materials so that they may be recycled. For additional information contact :

INGERSOLL-RAND Material Handling
529, avenue Roger Salengro
59450 Sin-le-Noble - France
Phone : (33) 27-93-08-08
Fax : (33) 27-93-08-00

NOTICE

Erreur! Signet non défini. **Mineral based oils are recyclable, however, some oils such as glycols may be extremely toxic and must be identified and disposed of at an approved waste or disposal site in accordance with all local, state and federal laws and regulations.**

GUARANTEE

See our general conditions of sales mentioned on our proposal, acknowledgement receipt, invoice.

INGERSOLL-RAND guarantees the equipment sold and supplied by itself against any defect or flaw in manufacture or operation under the conditions and within the limits hereafter.

- the guarantee is only valid if the customer has satisfied the general obligations of the present contract and, in particular, of settlement.

- the guarantee is strictly limited to INGERSOLL-RAND equipment. It does not extend to supplies and accessories which are not of its manufacture.

- the guarantee does not extend to assemblies or machines in which INGERSOLL-RAND equipment is incorporated and in particular to the performances of these assemblies or machines.

- when INGERSOLL-RAND equipment is incorporated into one or other assembly or machine by the customer, he alone is responsible for the adaptation, the choice and the suitability of the INGERSOLL-RAND equipment, INGERSOLL-RAND's diagrams, surveys and layouts being given only for guidance, unless there is a special stipulation in the acceptance of order, defined in the acknowledgment of receipt.

- INGERSOLL-RAND does not guarantee components and accessories it does not sell.

Defects in fitting, adaptation, design, connection and running of the assembly or part of the assembly put together by the customer are not covered by the guarantee. INGERSOLL-RAND equipment and material as well as the assemblies or machines set up by the customer or by a third party are assumed to be operated and used under the sole control of the customer or third party.

- The duration of the guarantee is for 6 months from the start up of the equipment by the customer. The start up must be made at the latest three months after dispatch of the equipment or its being made available.

- INGERSOLL-RAND has the right to demand from its customer proof of the date of start up.

- The guarantee period is reduced to half if the equipment is used day and night.

- The length of guarantee is neither prolonged nor interrupted by either amicable or litigious claims by the customer.

- At the expiry of this period, the guarantee ceases incontestably.

- The obligations of the INGERSOLL-RAND guarantee will only come into effect if the customer proves that the defect or flaw appeared during normal operating conditions for this type of material, or in the course of normal use as specified by INGERSOLL-RAND.

- It does not apply in the event of user's mistake, negligence, imprudence, faulty supervision or maintenance, inattention to the instructions or directions for use of low quality lubricants.

INGERSOLL-RAND liability is disclaimed for all damage brought about by loss or leaks of oil.

- No guarantee applies either for fortuitous incidents or force majeure, or for wear, replacements or repairs caused by normal use of the equipment.

- The guarantee is restricted to reconditioning in INGERSOLL-RAND's premises at its expense and as soon as

possible the equipment and parts recognized as faulty by its technical or after sales services, which are sent carriage paid and packing free, without there being any claim for damage arising, such as injury to personnel, damage to property other than that covered by the present contract, loss of possession, of production, commercial detriment or loss of profit.

- During the guarantee period, the cost of labour for dismantling and reassembling equipment outside INGERSOLL-RAND's premises, the cost of moving faulty, replaced or repaired equipment and the travelling and living expenses of INGERSOLL-RAND's engineers are covered exclusively by the customer.

- In order to obtain the advantages of the guarantee, the customer must advise INGERSOLL-RAND without delay and in writing of the defects and flaws in his equipment of which he is complained and furnish proof of their genuine nature. He must give INGERSOLL-RAND or its agents or technicians every facility to verify the defects or flaws and to put them right.

- The guarantee does not apply if the equipment is returned to INGERSOLL-RAND in a condition other than in which it broke down or if the seal has been removed, or if it has been dismantled, repaired or modified by a third party, or by the user or the customer.

- After having been duly informed of the defect or flaw in its equipment, INGERSOLL-RAND will put it right as quickly as possible, reserving the right, in certain cases, to modify the whole or part of the equipment so as to meet its obligations.

- The customer agrees that INGERSOLL-RAND will not be responsible for damage in the event that the customer has not fulfilled one or other of the obligations set out above.

- Parts replaced free of charge remain the property of INGERSOLL-RAND.

- The guarantee does not apply to wearing parts.

IMPORTANT NOTICE

It is our policy to promote safe delivery of all orders. This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while enroute is not to any action or conduct of the manufacturer.

Visible loss or damage

If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

Concealed loss or damage

When a shipment has been delivered to you in apparent good condition, but upon opening the crate or container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

Damage claims

You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the INGERSOLL-RAND invoice, nor should payment of INGERSOLL-RAND invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery. You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Locations**Atlanta, GA****For Order Entry and
Order Status :**

111 Ingersoll-Rand Drive
Chamblee, GA 30341
Phone: (404) 936-6230

**Ingersoll-Rand
Distribution Center**

P.O. Box 618
510 Hester Drive
White House, TN 37188
Phone: (615) 672-0321
Telex: 786573
Fax: (615) 672-0801

For Technical Support:**Ingersoll-Rand
Material Handling**

P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046
Phone: (206) 624-0466
Telex: 328795
Fax: (206) 624-6265

Detroit, MI

23192 Commerce Drive
Farmington Hills, MI 48335
Phone: (313) 476-6677
Fax: (313) 476-6670

Houston, TX

Suite 150
2500 East T.C. Jester
Houston, TX 77008
Phone: (713) 864-3700

Los Angeles, CA

5533 East Olympic Blvd.
Los Angeles, CA 90022
Phone: (213) 725-2826

Milwaukee, WI

12311 W Silver Sping Dr.
Milwaukee, WI 53225
Phone: (414) 461-0973

Philadelphia, PA

P.O. Box 425
900E. 8th Ave., Suite 103
King of Prussia, PA 19406
Phone: (215) 337-5930

International

Offices and distributors in principal cities throughout the world. Contact the nearest **Ingersoll-Rand** office for the name and address of the distributor in your country or write/fax to:

**Ingersoll-Rand
Material Handling**

P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046
USA
Phone: (206) 624-0466
Telex: 328795
Fax: (206) 624-6265

Canada**National Sales Office****Regional Warehouse****Toronto, Ontario**

51 Worcester Road
Rexdale, Ontario
M9W 4K2
Phone: (416) 675-5611
Fax: (416) 675-6920
Order Desk
Fax: (416) 674-6549

Regional Sales Offices**Calgary, Alberta**

333 11th Avenue S.W.
Calgary, Alberta
T2R 0C7
Phone: (403) 261-8652

Edmonton, Alberta

1340 Weber Center
5555 Calgary Trail N.W.
Edmonton, Alberta
T6H 5G8
Phone: (403) 438-5039
Fax: (403) 437-3145

Montreal, Quebec

3501 St. Charles Blvd.
Kirkland, Quebec
H9H 4S3
Phone: (514) 695-9040
Fax: (514) 695-0963

British Columbia

201-6351 Westminster Hwy

Richmond, B.C.
V7C 5C7
Phone: (604) 278-0459
Fax: (604) 278-2519

Latin America Operations**Ingersoll-Rand****Production Equipment****Group**

730 N.W. 107 Avenue
Suite 300, Miami, FL
33172-3107
Phone: (305) 559-0500
Telex: 441617TLS UI
Fax: (305) 559-7505

**Europe, Middle East and
Africa****Ingersoll-Rand Equipements
de Production S.A.**

111, avenue Roger Salengro
59450 Sin le Noble, France
Phone: (33) 27.93.08.08
Fax: (33) 27.93.08.00

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