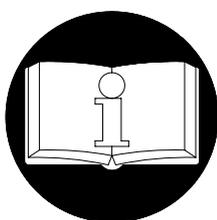


# PARTS, OPERATION AND MAINTENANCE MANUAL for:

## PNEUMATIC WINCHES

# LS5000R / LS5000RGC PS10000R / PS10000RGC

## Models



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

### **WARNING**

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

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

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

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## SAFETY INFORMATION

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.

**Ingersoll-Rand** Material Handling hoists are manufactured in accordance with the latest FEM rules standards.

Generally the burden of compliance to most standards is 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 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.

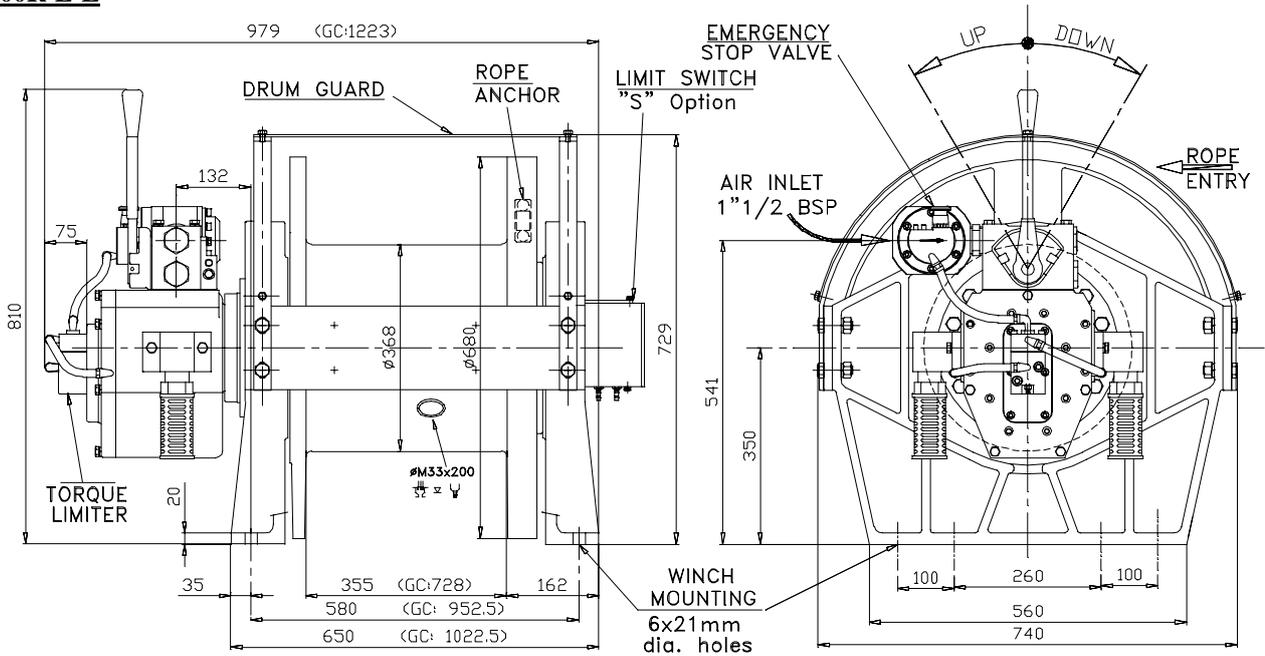
**Rigging** : It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques.

#### NOTICE

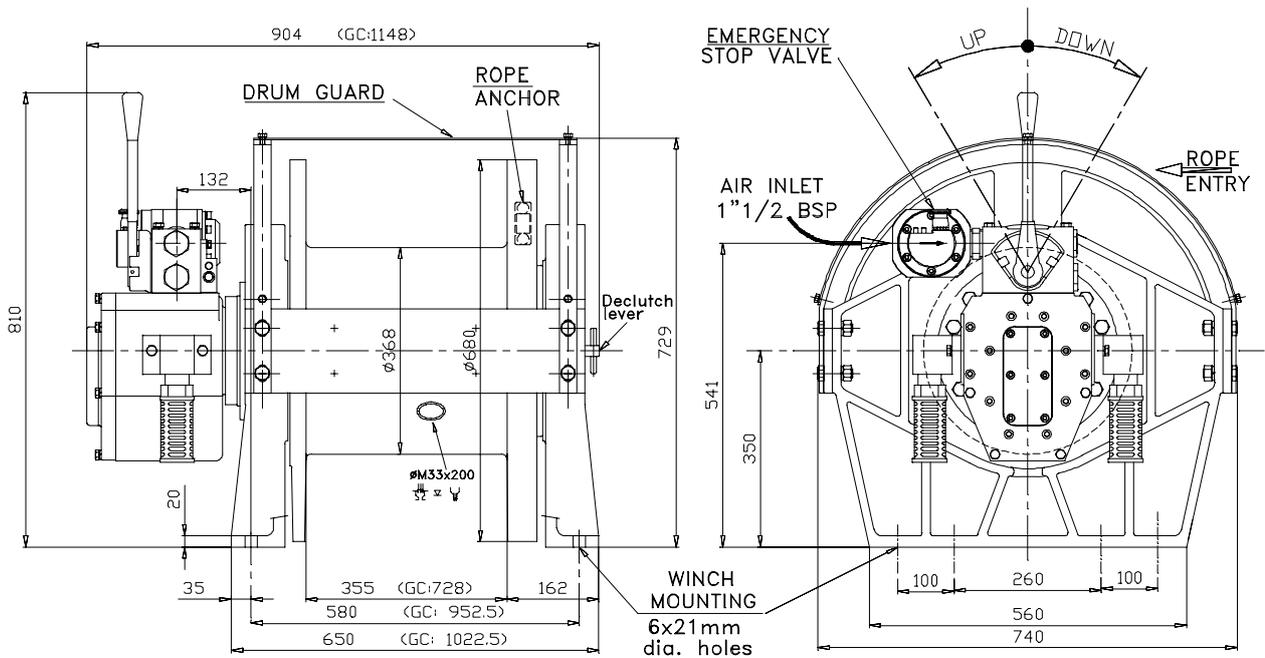
- **Ingersoll-Rand Replacement Parts are specifically designed to ensure optimum performance of your equipment. Use of other than genuine Ingersoll-Rand Material Handling parts may adversely affect safe operation and may invalidate the warranty.**

# SPECIFICATIONS

## LS5000R-L-E



## PS10000R-L-E



DWG: D6320706

## DESCRIPTION

- Compact design
- Heavy duty steel construction -5/1 design factor for lifting. (LS5000R only)
- Designed in conformity with the latest European standards (FEM class 1BM) (LS5000R only)
- Automatic brake: an disc brake on the motor shaft.
- Reliable gear type air motor in composite material.
- Flameproof by nature.
- High efficiency planetary gear box.
- Low noise level, quiet operation
- Variable speed and precise positioning through direct control lever.
- Offshore paint.
- Torque limiter with emergency stop valve for LS5000R « CE » model. Only
- Emergency stop valve for PS10000R « CE » model. Only
- Drum guard for CE model.

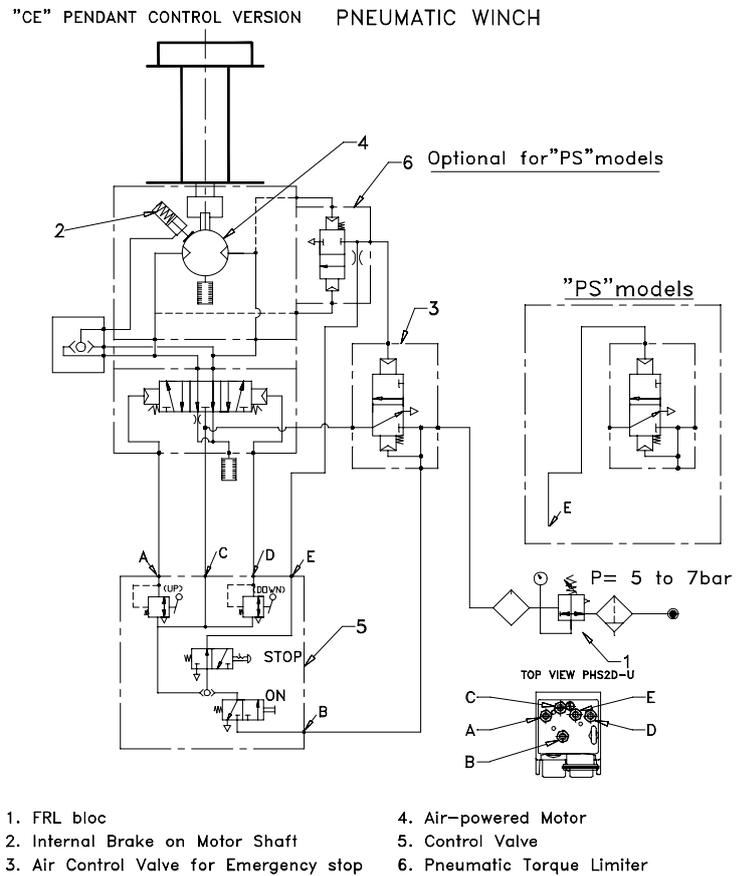
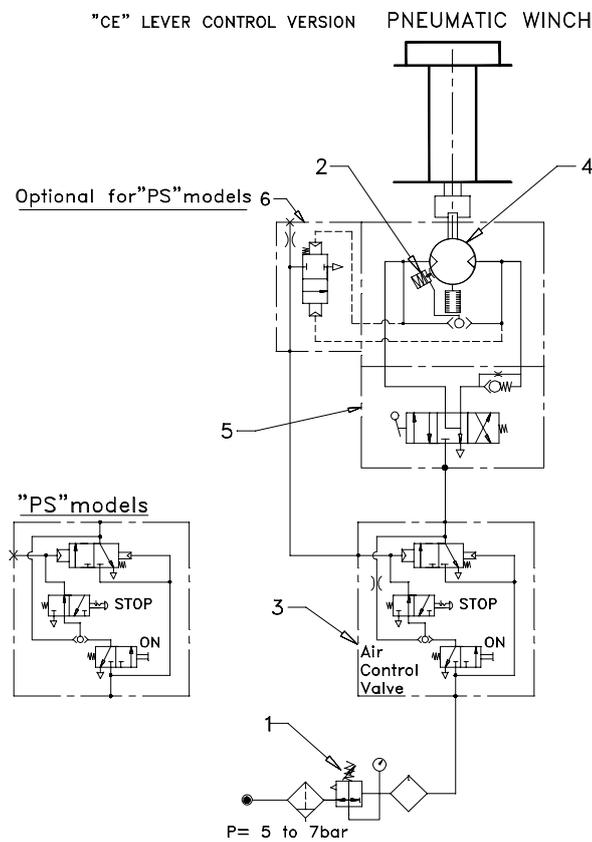
# PERFORMANCES

Model	LS5000R		PS10000R	
	Standard	GC	Standard	GC
Rated working load (metric ton)	5*	5*	10**	10**
Motor Power (hp)	10	10	10	10
Working pressure (bar)	4 to 7	4 to 7	4 to 7	4 to 7
Average hoisting speed (m/min)	0 to 10	0 to 10	0 to 10	0 to 10
air consumption (m <sup>3</sup> /min)	0 to 12	0 to 12	0 to 12	0 to 12
Weight without rope (kg)	≅ 640	≅ 750	≅ 640	≅ 750
Rope diameter (mm)	19/20	19/20	19/20	19/20
Breaking load (metric ton)	≅ 25	≅ 25	≅ 25	≅ 25

\* 5<sup>th</sup> layer for LS5000R

\*\* 1<sup>st</sup> layer for PS10000R

# SCHEMATIC



## INSTALLATION

- Prior to installing the winch, carefully inspect it for possible shipping damage.
- Winches are supplied fully lubricated from the factory.
- Check oil levels and adjust as necessary before operating winch. Refer to "LUBRICATION" section for recommended oils.

### WARNING

• Owners and users are advised to examine specific, local or other regulations which may apply to a particular type of use of this product before installing or putting winch to use.

### MOUNTING WINCH

Mounting winch so the axis of the drum is horizontal. If the winch is to be mounted in an inverted position or if the winch axis will be tilted more than 10° from horizontal, contact your distributor or the nearest service repair center for additional installation information.

1. The winch mounting surface must be flat and of sufficient strength to handle the rated load plus the weight of the winch and attached equipment. An inadequate foundation may cause distortion or twisting of the winch end covers and spacers resulting in winch damage.
2. Make sure the mounting surface is flat to within 1mm. Shim if necessary.
3. Mounting bolts must be Grade 8-8 or better. Use self-locking nuts or nuts with lockwashers.
4. Maintain a fleet angle between the sheave and winch of no more than 1-1/2 degrees. The lead sheave must be on a center line with the drum and for every 25mm of drum length be a least 0.5 meter from the drum.
5. Do not weld to any parts of the winch.
6. Foundation bolting dimensions: Refer to "SPECIFICATION" section for dimensions.

### WIRE ROPE

### CAUTION

• Maintain at least 3 wraps of wire rope on the drum at all times.

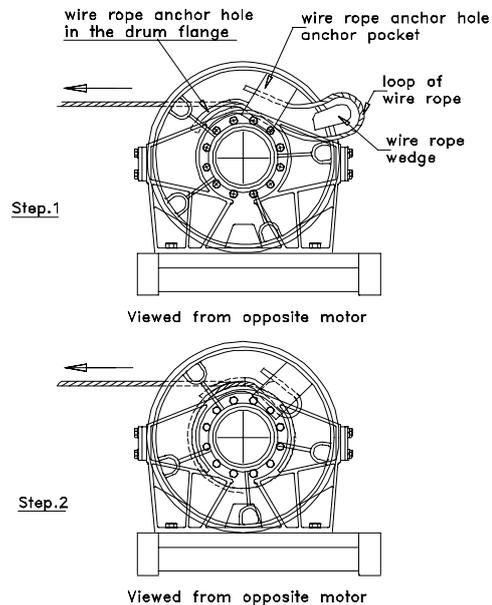
### Wire Rope Selection

- Consult a reputable wire rope manufacturer for assistance in selecting the appropriate type and size of wire rope and where necessary a protective coating. Use a wire rope which provides an adequate safety factor to handle the actual working load and meets all applicable industry regulations.
- When considering wire rope requirements the actual working load must include not only the static or dead load but also loads resulting from acceleration, retardation and shock load. Consideration must also be given to the size of the winch wire rope drum, sheaves and method of reeving.
- For winches used in lifting applications ensure that the rope top layer is at least a distance from the top of the drum flange equal to (2) times the diameter of the wire rope.
- As a general rule for lifting applications a minimum of 5:1 wire rope design factor is required with an 18:1 wire rope to drum diameter ratio.

### Installing Wire Rope

1. Cut wire rope to length in accordance with the wire rope manufacturer's instructions.

2. Feed the end of the wire rope into the rope anchor in the flange of the drum.
3. Wrap the end of the rope with wire a distance from the end equal to the wedge length plus 25mm. Forming a large loop with the rope, insert the end back into the top of the cable anchor.
4. Pull the wire rope into position in the drum anchor pocket.



### CAUTION

- Make sure the first wrap of rope is tight and lays flush against the drum flange.
- Install the rope to come off the drum in only the direction indicated by the label attached to the winch.

### Wire Rope Spooling

To compensate for uneven spooling and decrease in line pull capacity as the drum fills up, use as short a rope as practical. When rewinding apply tension to the end of the rope to eliminate line slack.

### Safe Wire Rope Handling Procedures

1. Always use gloves when handling wire rope.
2. Never use rope which is frayed or kinked.
3. Never use rope as a sling.
4. Always ensure rope is correctly spooled and first layer is tight against the drum.

### Safe Installation Procedures

1. Do not use rope as a ground for welding.
2. Do not attach a welding electrode to winch or rope.
3. Never run the rope over a sharp edge. Use a correctly sized sheave.
4. Always maintain at least (3) full tight wraps of wire rope on the drum.

### Air Supply

The air supply must be clean, lubricated and free from moisture. A minimum of 6.3 bar/630 kpa (90psig) at the winch motor is required during operation to provide rated winch performance.

The compressed air temperature must not exceed 149° F (65° C) at the motor air inlet. Contact the factory for higher temperature use.

### **Air Lines**

The inside diameter of the winch air supply lines must not be less than the size recommended in the "SPECIFICATIONS" section. Before making final connections to winch inlet, all air supply lines should be purged with clean, moisture free air or nitrogen. Supply lines should be as short and straight as installation conditions will permit. Long transmission lines and excessive use of fittings, elbows, tees, globe valves, etc, cause a reduction in pressure due to restrictions and surface friction in the lines.

### **Air Line lubricator**

The air motor may be operated without lubrication. If an air line lubricator is used, it should be replenished daily and set to provide 2 to 3 drops per minute of ISO VG100 (30W) oil (minimum viscosity 135 Cst at 104°F (40°C)). The lubricator must have an inlet and outlet at least as large as the inlet on the motor. Install the lubricator as close to the air inlet on the motor as possible.

## **CAUTION**

- **Lubricator must be located no more than 3m from the motor.**
- **Shut off air supply before filling air line lubricator.**

### **Air line filter**

The air line strainer/filter should be installed as close before the lubricator, to prevent dirt from entering the valve and motor. The strainer/filter should provide 40 microns minimum filtration, a moisture trap and a steam trap but check the strainer/filter periodically to maintain its operating efficiency.

### **Moisture in Air Lines**

Quality of air to the winch motor including condensate content is a primary factor in determining the length of time between service overhauls. Moisture traps can help to eliminate moisture. Other methods, such as an air receiver which collects moisture before it reaches the motor or an aftercooler at the compressor that cools the air prior to distribution through the supply lines are also helpful.

### **Muffler**

Make sure mufflers are installed in winch exhaust ports and are functioning correctly.

### **Motor**

For optimum performance and maximum durability of parts, provide an air supply of 90 PSI (6.3 bar/630 kpa) at the flow recommended in the "SPECIFICATIONS" section, as measured at the motor inlet. The winch should be installed as near as possible to the compressor or air receiver.

### **Start-up Procedures**

For winches that have been in storage the following start-up procedures are required.

1. Give the winch an inspection conforming to the requirements of "Winches Not in Regular Use" in the "INSPECTION" section.
2. Pour a small amount of 10W oil in the motor air inlet port.
3. Operate the motor for 10 seconds in both directions to flush out any impurities.
4. The winch is now ready to work.

## OPERATION

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating the hoist.
2. Allow only people trained in safety and operation of this product to operate the hoist.
3. Subject each hoist to a regular inspection and maintenance program .
4. Be aware of the hoist capacity and weight of load at all times.

### WARNING

- Winches are not designed or suitable for lifting, lowering or moving persons. Never lift loads over people.

### Initial Operating Checks

Winches are tested for proper operation prior to leaving the factory. Before the winch is placed into service the following initial operating checks should be performed.

1. When first running the motor some light oil should be injected into the inlet connection to allow good lubrication.

2. When first operating the winch it is recommended that the motor be driven slowly in both directions for a few minutes.

### Winch Controls

The spring loaded, motor mounted, live air manual throttle control valve is supplied as a standard feature on the winch. Optional remote throttle controls may be available on some models. The throttle controls provide operator control of the motor speed and direction of the drum rotation.

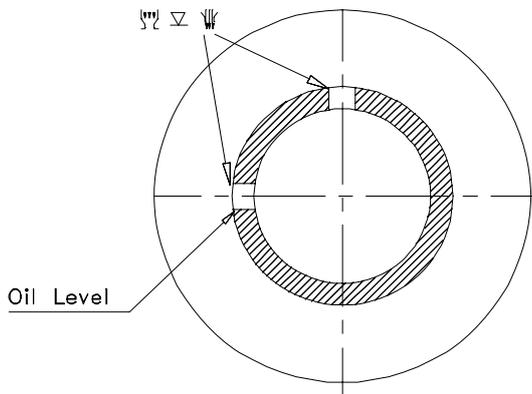
### Winch Brake

#### Automatic discs brake

The automatic disc brake is a spring applied, air released brake. When the winch is in the neutral or haul-in positions the brake air is vented and the brake spring reapplies the brake. The springs, acting on the pressure plate, compress the brake friction and separator plates and engage the brake to prevent drum rotation in the payout direction.

## LUBRICATION

- Winches are supplied from the factory filled WITH oil.
- Check oil and all lubrication levels prior to operating winch.
- The gear and brake assemblies share a common oil bath.
- Fill and drain through plugs screwed into the drum.



- Capacity : 6L
- Recommended Reduction gear EP Oil:
  - Temperature below 0°C  
Use 75W ISO VG30 oil :
  - Temperature 0°C to 40°C  
Use 90W ISO VG150 oil :  
kinematic viscosity 145mm<sup>2</sup>/s at 40°C.
- Recommended Grease (seals bearings):
  - Temperature -30°C to 0°C  
Use EP1 multipurpose lithium based grease.
  - Temperature 0°C to 40°C  
Use EP2 multipurpose lithium based grease.

### NOTICE

- Replace the oil in the reduction gear at least once every year.
- However when the winch is used at a high frequency the oil may need to be changed on a more frequent basis.

## WARNING

- **All new, altered or modified equipment should be inspected and tested by personnel instructed in safety, operation and maintenance of this equipment to ensure safe operation at rated specifications before placing equipment in service.**
- **Never use a winch when inspection indicates is damaged.**

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or service personnel during routine winch operation. Periodic inspections are thorough inspections performed by personnel trained in inspection of the winch. Inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.

Deficiencies revealed through inspection, or noted during operation, must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the winch.

### Records and Reports

Some form of inspection record must be maintained for each winch, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each winch. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for review.

### Wire Rope Reports

Records should be maintained as part of a long-range wire rope inspection program. Records should include the condition of wire rope removed from service. Accurate records will establish a relationship between visual observations noted during frequent inspections and the actual condition of wire rope as determined by periodic inspections.

### Frequent Inspection

On equipment in continuous service, frequent inspection should be made by operators at the beginning of each shift. In addition, visual inspections should be conducted during regular operation for indication of damage or evidence of malfunction (such as abnormal noises).

1. **WINCH.** Prior to operation, visually inspect winch housings, controls, brakes and drum for indications of damage. Do not operate the winch unless the wire rope feeds into the drum smoothly. Any discrepancies noted must be reviewed and inspected further by authorized personnel instructed in the operation, safety and maintenance of this winch.
2. **WIRE ROPE.** Visually inspect all wire rope which can be expected to be in use during the day's operations. Inspect for wear and damage indicated by distortion of wire rope such as kicking, "birdcaging", core protrusion, main strand displacement, corrosion, broken or cut strands. If damage is evident, do not

operate winch until the discrepancies have been reviewed and inspected further by personnel instructed in the operation, safety and maintenance of this winch.

## NOTICE

- **The full extent of wire rope wear cannot be determined by visual inspection. At any indication of wear inspect the wire rope in accordance with instructions in "Periodic Inspection."**

3. **AIR SYSTEM.** Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks or damage. Check and clean filters if equipped. Check lubricator operation.
4. **CONTROLS.** During operation of winch, verify response to control is quick and smooth. If winch responds slowly or movement is unsatisfactory, do not operate winch until all problems have been corrected.
5. **BRAKES.** During winch operation test brake. Brake must hold load without slipping. Brake must release when winch motor throttle is operated. If brake do not hold load, or do not release properly, the brakes must be inspected or repaired.
6. **WIRE ROPE REEVING.** Check reeving and ensure wire rope is properly secured to the drum.
7. **LUBRICATION.** Refer to the "LUBRICATION" section for recommended procedures and lubricants.

### Periodic Inspection

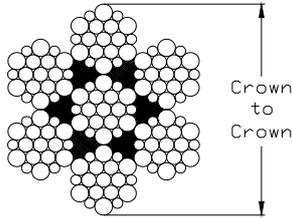
Frequency of periodic inspection primarily depends on the severity of usage :

<b>NORMAL</b>	<b>HEAVY</b>	<b>SEVERE</b>
yearly	semi-annually	quarterly

Disassembly may be required for **HEAVY** or **SEVERE** usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all items listed in "Frequent Inspection". Also inspect the following :

1. **FRAME and UPRIGHT.** Check for deformed, or cracked or corroded main components. If external evidence indicates the need for additional inspection return winch to your nearest Ingersoll-Rand service repair center.
2. **FASTENERS.** Check retainer rings , split pins, capscrews, nuts, and other fasteners on winch, including mounting bolts. Replace if missing or damaged and tighten if loose.
3. **DRUM AND SHEAVES.** Check for cracks, wear or damage. Replace if necessary.
4. **WIRE ROPE.** In addition to Frequent Inspection requirements, also inspect for the following:
  - a) Build-up of dirt and corrosion. Clean with steam or a stiff wire brush to remove dirt and corrosion if necessary.
  - b) Loose or damaged end connection. Replace if loose or damaged
  - c) Check wire rope anchor is secure in drum.
  - d) Verify wire rope diameter. Measure the diameter of the wire rope from crown-to-crown throughout the life of the rope. Recording of the actual diameter should only be done with the

wire rope under equivalent loading and in the same operating section as accomplished during previous inspections. If the actual diameter of the wire rope has decreased more than 0.4 mm (1/64inch) a thorough examination of the wire rope should be conducted by an experienced inspector to determine the suitability of the wire rope to remain in service.(Refer to Dwg.D6310012).



(Dwg.D6310012)

5. **ALL COMPONENTS.** Externally inspect for wear, damage, distortion, deformation and cleanliness. Clean, replace or lubricate as required.
6. **BRAKE.** Test brake to ensure proper operation. Brake must hold a 125% rated load with full drum without slipping; If poor operation or visual damage, return winch to a authorized service center for repair; Check

all brake surfaces for wear, deformation or foreign deposits. If brake lining thickness appears to be worn, contaminated or damaged brake band should be replaced. Clean and replace components as necessary.

7. **FOUNDATION OR SUPPORTING STRUCTURE.** Check for distortion, wear and continued ability to support winch and rated load. Ensure winch is firmly mounted and that fasteners are in good condition and tight.
8. **LABELS AND TAGS.** Check for presence and legibility of labels. Replace if damaged or missing.

### Winches Not in Regular Use

1. Equipment which has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming to the requirements of "Frequent Inspection" before being placed into service.
2. Equipment which has been idle for a period of over six months shall be given a complete inspection conforming with the requirements of "Periodic Inspection" before being placed into service.
3. Standby equipment shall be inspected at least semi-annually in accordance with the requirements of "Frequent Inspection". In abnormal operating conditions equipment should be inspected at shorter intervals.

## WARNING

- Never perform maintenance on the winch 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 personnel trained to service this equipment to perform maintenance.
- Disconnect all power supply from winch prior to conducting maintenance.

## NOTICE

- Proper use, inspections and maintenance increase the life and usefulness of your I-R 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 will help prevent corrosion and allows for ease of disassembly of component.

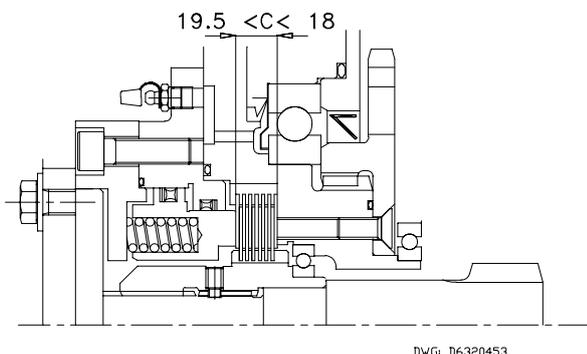
## ADJUSTMENT

### Brake adjustment

No brake adjustment is required.

Annual Maintenance is limited to:

1. A general cleaning.
2. The friction discs have a 0.2mm deep groove on each side. Replace the friction discs if the grooves are no longer visible.
3. Measure total brake and steel plate stack up. Check that measurement is not less than minimum shown.

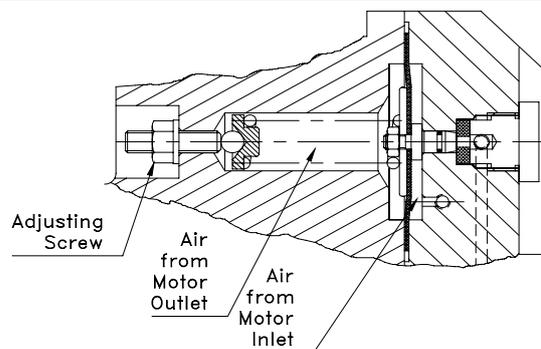


### Over load Device :

1. Connect the winch to the air supply.
2. 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.
3. Tighten the locknut securing the adjustment screw.
4. Check hoist operation at rated load. If necessary repeat the adjustment.

## NOTICE

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



(Dwg.D4120413)

## 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 **I-R** replacement parts. When ordering specify part number, part description, unit model and serial number.
9. **Do not** perform repairs to winchs in place. It is recommended that winchs be removed and repaired in a clean, safe work area.

## WINCH ASSEMBLY / DISASSEMBLY INSTRUCTIONS

(Ref. Dwg. D6320448)

1. Unwind wire rope from the drum if required.
2. Remove drum guards if required
3. Remove rope and the wedge (21).
4. Disconnect and tag the air lines.
5. Remove winch from its mounting and set in a clean work area on a sturdy work bench.

## Control valve disassembly

(Ref. Dwg.D6170560)

1. Disconnect the brake hose.
2. Remove screws (21) and lockwashers (17)
3. Remove the valve assembly from the motor.
4. Tap out pin (15) and extract the control lever assy (3, 10 and 23).
5. Remove the spring (9).
6. Remove screws (22), lockwashers (18) and screws (20).
7. Remove the flange (1) with 'O' rings (24) and (25).
8. Carrefully slide out the rotary valve (11).
9. If necessary, remove plug (5), valve (6) and spring (14).
10. Remove screws (19), if required to remove the rear end cover (2) and 'O' rings (24), (26).
11. Remove stop selector (4) to reach the ball (28).

## Control valve assembly

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

Lubricate the rotary valve (11) before assembling it in valve housing (12).

### NOTICE

- Replace all "O"Rings after disassembly.
- Secure screws (19) and (20) with Loctite® 243 (or equivalent) on the threads .
- Lubricate 'O' rings.
- The plug (5) and selector stop (4) will be mounted and tightened with LOCTITE TUBETANCH 577® or équivalent.

## Motor disassembly

(Ref. Dwg. D61600001)

**Stand the winch in a vertical position with the motor end down.**

1. Remove muffler (18).
2. Remove screws (21), lockwashers (20) and remove connecting flanges (7).
3. Remove the control valve unit.
4. Extract the pipes (6).
5. Remove the screws (19), lockwashers (20).
6. Gently extract the gear motor unit from motor casing (1).
7. Remove the retainer ring (73) and extract the gear wheel (80), (refer Dwg.D6320561).
8. Remove screws (25), the cover (4) and the "O" ring (15).
9. Immobilize the motor rotors with a rod between the teeth and remove nuts (29).
10. Extract the gears unit by taping gently of the rear end cover (2).
11. Remove the screw (26) on the front end cover (5).
12. Separate the motor housing (3) from the cover (5).
13. Remove the idle gear (10) and drive gear (9) from front end cover (5).
14. Remove the retainer ring (28), the screw (23) and washer (24).
15. Extract ball bearings (12) and the oil seal support (8) with joints.
16. Extract ball bearings (11) from rear end cover (2).

## Motor assembly

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

## NOTICE

- Replace all "O"Rings and check all bearings after disassembly.
- Secure screws (23), (25) and (26) with Loctite® 243 (or equivalent) on the threads.
- The nuts (29) will be mounted and tightened with LOCTITE 243® (or equivalent).
- Lubricate the oil seal (13) and 'O' rings.
- Torque screws (26) and (19) to 40 m.N.
- Torque screws (25) and (19) to 20 m.N.

## Reducer of entry disassembly

(ref. Dwg. D6320561)

**Stand the winch in a vertical position with the motor end down**

1. Remove the gear motor as previously described.
2. Remove screws (84) and motor housing (67).
3. Remove screws (72).
4. Extract the gear box cover (81).
5. Remove the retainer ring (33).
6. Extract the planet support assy (36).  
If necessary
  - 6.1. Remove retainer rings (79) and thrust washers (78).
  - 6.2. Extract planet gears (80).
  - 6.3. Remove needle bearings (27) and thrust washers (78).
7. Extract the ring gear (37) with the pin (59).

## Reducer of entry assembly

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

### NOTICE

- Check all bearings after disassembly.
- Secure screws (72) and (84) with Loctite® 243 on the threads or equivalent.
- Torque screws (72) and (84) to 20 m.N.

## Brake disassembly

(ref. Dwg. D6320561)

**Stand the winch in a vertical position with the motor end down**

1. Remove the reducer of entry.
2. Carefully remove the flange screws (32) one half turn at a time each until spring (70) compression is relaxed.
3. Remove the motor flange (5).
4. Remove springs (70).
5. Extract the piston (20) and remove 'O' rings (57) and (58).
6. Remove brake housing (20) and 'O' rings (54) and (55).
7. Remove friction discs (65) and steel discs (66).

## Brake assembly

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

### NOTICE

- Install friction and steel discs, beginning with a friction disc and alternating with a steel disc, until the discs are used.
- Lubricate all the 'O' rings and springs.

- Secure screws (32) with Loctite® 243 (or equivalent) on the threads.
- Torque flange screws (32) to 40 m.N.

### Reducer disassembly

(ref. Dwg. D6320561)

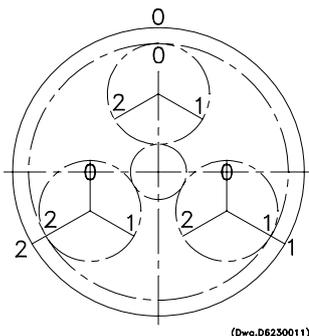
1. Remove plugs (68) to drain the gear unit oil .
1. Disassemble motor, reducer of entry and brake unit as previously described.
2. Remove screws (26), front side plate support (23).
3. Remove screws (28) and extract stop cover (8).
4. Extract the front bearing (25), support drum (12) with shaft (7) ass'y (Use two eyebolts M16).
  - 4.1. Remove retainer ring (56) and push out the shaft (7) and splined hub (4).
  - 4.2. Extract ball bearing (43) and (44).
  - 4.3. Remove "O"Ring (60).
  - 4.4. Remove screws (29), extract ring gear support (14) and 'O'Ring (53).
  - 4.5. Remove screws (28), stop cover (13) and 'O' Ring (51).
  - 4.6. Extract oil seal (49) from stop cover.
  - 4.7. Extract the support drum (12) and ball bearing (45) from front bearing (25).
  - 4.8. Remove ball bearing (45) and "Nilos" ® ring (61).
  - 4.9. Remove "V" ring (63).
5. Extract ring gear (16) from drum.
6. Remove retainer ring (42) if necessary.
7. Using the 2 puller screws holes M10 provided in the planetary support (19) to extract planetary support unit from drum.
  - 7.1. Extract drive pin (39) completely through to the inside of the planetary support.
  - 7.2. Push out planet axles (17).
  - 7.3. Remove planet gears (18), needle bearings (47) and distance rings (9).
  - 7.4. Remove thrust rings (46), bearing (48).
8. Extract gear ring (15).
9. Remove claw of positive clutch (11).
  - 9.1. Remove retainer ring (40).
  - 9.2. Extract ball bearing (44).

### Reducer assembly

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

### WARNING

Time gears as shown in drawing D6230011. Using a separate ring gear tool to maintain gear position during installation of planetary assembly is helpful. Tap down until planetary assembly is fully seated.



- Lubricate 'O' rings (60).

- Lubricate oil seals (49), ball bearing (45) and "V" ring (63) with grease "EP2".
- Secure screws (29), (28), (33) with Loctite® 243 (or equivalent) on the threads.
- Torque oil seal cover screws (28) to 8 m.N.
- Torque ring gear support screws (29) to 25 m.N.
- Torque side plate support screws (26) to 190 m.N.

### Rear bearing disassembly

(Ref. Dwg. D6320561)

### NOTICE

- Dismounting the rear bearing doesn't need to empty the reducer block.
- Set and fix the winch on the front flange.

1. Remove screws (26) and lockwashers (38) front side plate support (23).
2. Extract rear bearing (6).
  - 2.1. Remove "V" ring (63).
  - 2.2. Remove the oil seal (63) if required.
3. Remove screws (28) and extract stop cover (24).
4. Remove 'Nilos' ring (61).
5. Extract ball bearing (45).
6. Remove oil seal (50).

### Rear bearing assembly

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

### NOTICE

- Lubricate oil seals (50), ball bearing (45) and "V"ring (63) with grease "EP2".
- Lubricate 'O' rings (71).
- Secure screws (28) with Loctite® 243 (or equivalent) on the threads.
- Torque screws (28) to 8 m.N.
- Torque side plate support screws (26) to 190 m.N.

### CLEANING, INSPECTION AND REPAIR

Use the following procedures to clean, inspect and repair the components of the winch.

### CAUTION

- Bushings that rotate in the frame or are loose or worn must be replaced. Failure to observe this precaution will result in additional component damage.

Clean all winch component parts in solvent (except for the friction discs). If bushings have been removed, it may be necessary to carefully scrape old "LOCTITE®" from the bushing bores. Dry each part using low pressure, filtered compressed air.

All disassembled parts should be inspected to determine their fitness for continued use. Pay particular attention to the following:

1. Inspect all gears for worn, cracked or broken teeth.
2. Inspect all bushings for wear, scoring or galling.
3. Inspect shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace the shaft.
4. Inspect all threaded items and replace those having damaged threads.

5. Measure the thickness of the friction discs. Replace the friction discs if the grooves are no longer visible.

Actual repairs are limited to the removal of small burrs and other minor surface imperfections from gears and shafts. Use a fine stone or emery cloth for this work.

1. Worn or damaged parts must be replaced. Refer to the application Parts listing for specific replacement parts information.
2. Inspect all remaining parts for evidence of damage. Replace or repair any part which is in questionable

condition. The cost of the part is often minor in comparison with the cost of redoing the job.

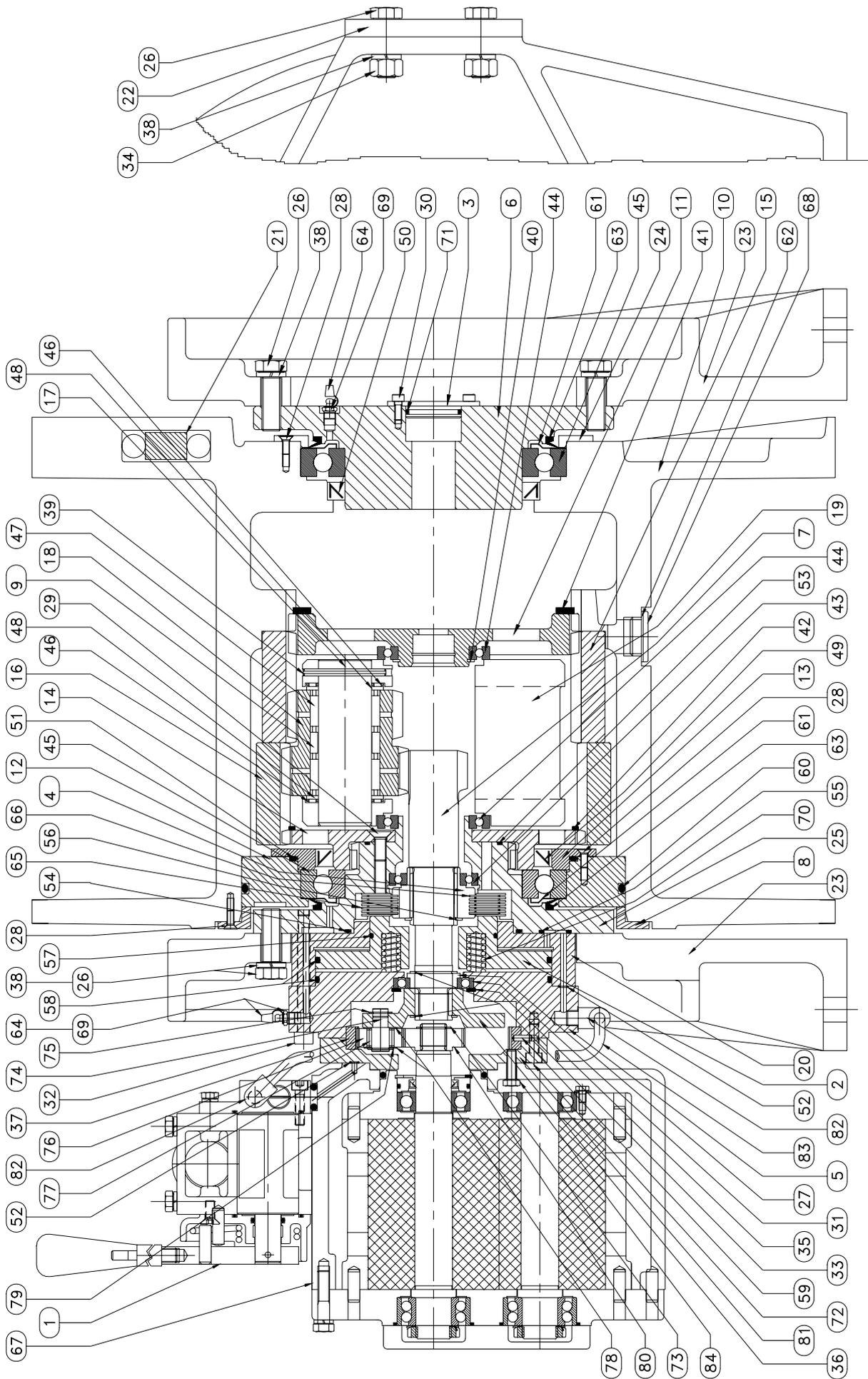
3. Smooth out all nicks, burrs or galled spots on shafts, bores, pins or bushings.
4. Examine all gear teeth carefully and remove nicks or burrs.
5. Polish the edges of all shaft shoulders to remove small nicks which may have been caused during handling.
6. Remove all nicks and burrs caused by lockwashers.

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(\*) For PHS model see manual SAM0139

# WINCH ASSEMBLY DRAWING



(Dwg.D6320561)

## WINCH ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Distributeur pneumatique	Control valve	1	36170000
2	Piston de frein	Brake piston	1	96320018
3	Obturateur	End cover	1	96190013
4	Moyeu de frein	Splined hub	1	96320039
5	Flasque bride	Motor flange	1	96320131
6	Palier arrière	Rear bearing	1	96320068
7	Arbre d'entrée	Shaft	1	96320129
8	Couvercle d'arrêt	Stop cover	1	96320044
9	Bague entretoise	Spacer	3	96320043
10	Tambour court Tambour long	Short Drum Long Drum	1 1	96320067 96320211
11	Clabot	Claw of positive clutch	1	96320037
12	Palier de roulement	Support drum	1	96320036
13	Couvercle d'arrêt	Stop cover	1	96320035
14	Porte couronne	Ring gear support	1	96320034
15	Couronne 48 Dts	Ring gear	1	96320033
16	Couronne 50Dts	Ring gear	1	96320032
17	Axe de satellite	Planet axle	3	96320031
18	Satellite	Planet gear	3	96320030
19	Porte- satellite	Planetary support	1	96320029
20	Corps de frein	Brake housing	1	96320017
21	Coin	Wedge	1	96320022
22	Entretoise Tambour court Entretoise Tambour long	Side rail Short Drum Side rail Long Drum	2 2	96320070 96320016
23	Flasque bati Flasque bati (Trancannage)	Side plate support Side plate support (Spooling device)	2 2	96320012 96320296
24	Couvercle d'arrêt roult.	Stop cover for bearing	1	96320011
25	Palier avant	Front bearing	1	96320008
26	Vis HM16x50	Capscrew	38	41003901
27	Bague épaulée	Spacer	1	96320130
28	Vis F/Hc M6	Screw	18	41101603
29	Vis F/Hc M10	Screw	6	41103303
30	Vis CHc M6x16	Capscrew	1	41322606
31	Roulement à billes 16008	Ball bearing	1	50800008
32	Vis CHc M10x100	Capscrew	8	41327006
33	Circlips E32	Retainer ring	2	47700032
34	Ecrou HM16	Nut	8	43001011
35	Circlips I68	Retainer ring	1	47703068
36	Porte satellite	Planetary support	1	96230097
37	Couronne 86Dts	Ring gear	1	94120062
38	Rondelle élastique W16	Lockwasher	38	45200016
39	Goupille élastique	Roll pin	3	46507320
40	Circlips E60	Retainer ring	1	47700060
41	Circlips I230	Retainer ring	1	47703230
42	Anneau expansif SB 240	Expansive ring	1	47802339
43	Roult. à billes 16009	Ball bearing	1	50800009
44	Roult. à billes 16012	Ball bearing	2	50800012
45	Roult. à billes 16030	Ball bearing	2	50800030

## WINCH ASSEMBLY PARTS LIST

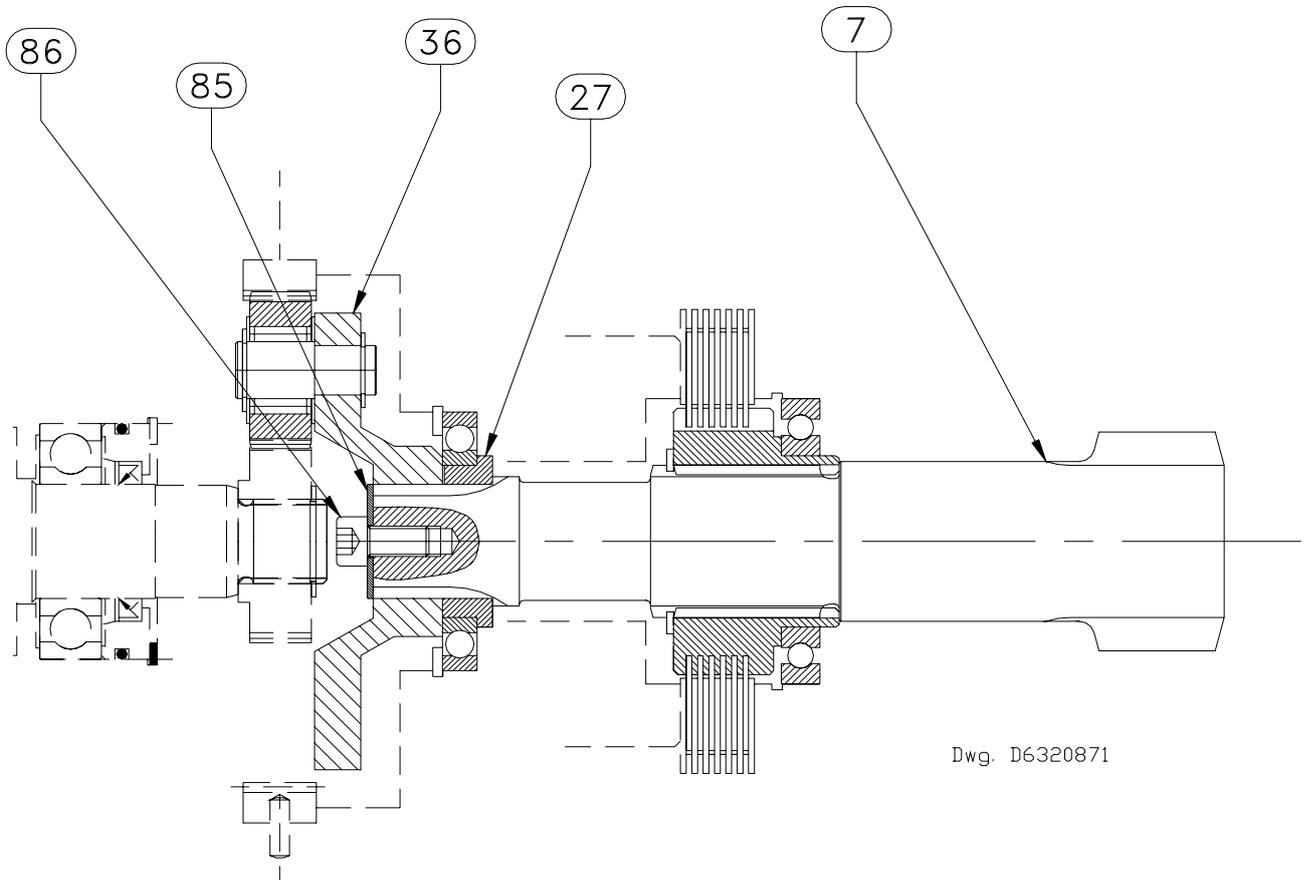
ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
46	Butée à aiguilles	Thrust needle roller	6	56056545
47	Cage à aiguilles	Radial needle roller	6	56505936
48	Contre plaque	Thrust washer	6	57378832
49	Bague BA 170x200x15	Oil seal	1	58019130
50	Bague BA 150x180x15	Oil seal	1	58019230
51	Joint torique 230x5	O-ring	1	58205729
52	Joint torique 5x1.5	O-ring	1	58209229
53	Joint torique 108x3	O-ring	1	58215729
54	Joint torique 142x4	O-ring	1	58218829
55	Joint torique	O-ring	1	58200429
56	Circlips E40	Retainer ring	1	47700040
57	Joint torique	O-ring	1	58210929
58	Joint torique	O-ring	2	58229129
59	Goupille	Pin	1	46001316
60	Joint torique R81	O-ring	1	58229829
61	Joint Nilos	Nilos ring	2	58314030
62	Joint cuivre JC 33	Copper joint	2	58402731
63	Joint Vring 190L	V-ring	2	58409531
64	Bouchon	Plug	2	61017128
65	Disque de friction	Friction disc	7	63059532
66	Disque acier	Steel disc	6	63059632
67	Moteur pneumatique	Air motor	1	36160000
68	Bouchon	plug	2	65134841
69	Graisseur hydraulique	Hydraulic greaser	2	67301727
70	Ressort de compression	Spring	12	69159432
71	Joint torique40x3	O-ring	1	58224229
72	Vis Chc M8x25	Capscrew	8	41324906
73	Circlips E22	Retainer ring	1	47700022
74	Axe de satellite	Planet axle	3	96230115
75	Circlips E13	Retainer ring	3	47700013
76	Satellite	Planet gear	3	96230100
77	Roulement à aiguilles	Roller bearing	3	56472316
78	Contre plaque	Thrust washer	6	57308632
79	Circlips E15	Retainer ring	3	47700015
80	Pignon solaire	Pinion	1	96230099
81	Couvercle	Cover	1	96230044
82	Raccord équerre	Sqare fitting	2	61676232
83	Pneumo-tube 6/8	Hose	1	96320021
84	Vis H. M8x25	Capscrew	12	41006801

 Pièces de rechange recommandées

Recommended Spare

## DRIVING SHAFT ASSEMBLY DRAWING AND PARTS LIST

*This new version of the driving shaft has been used on winches from June 2009*

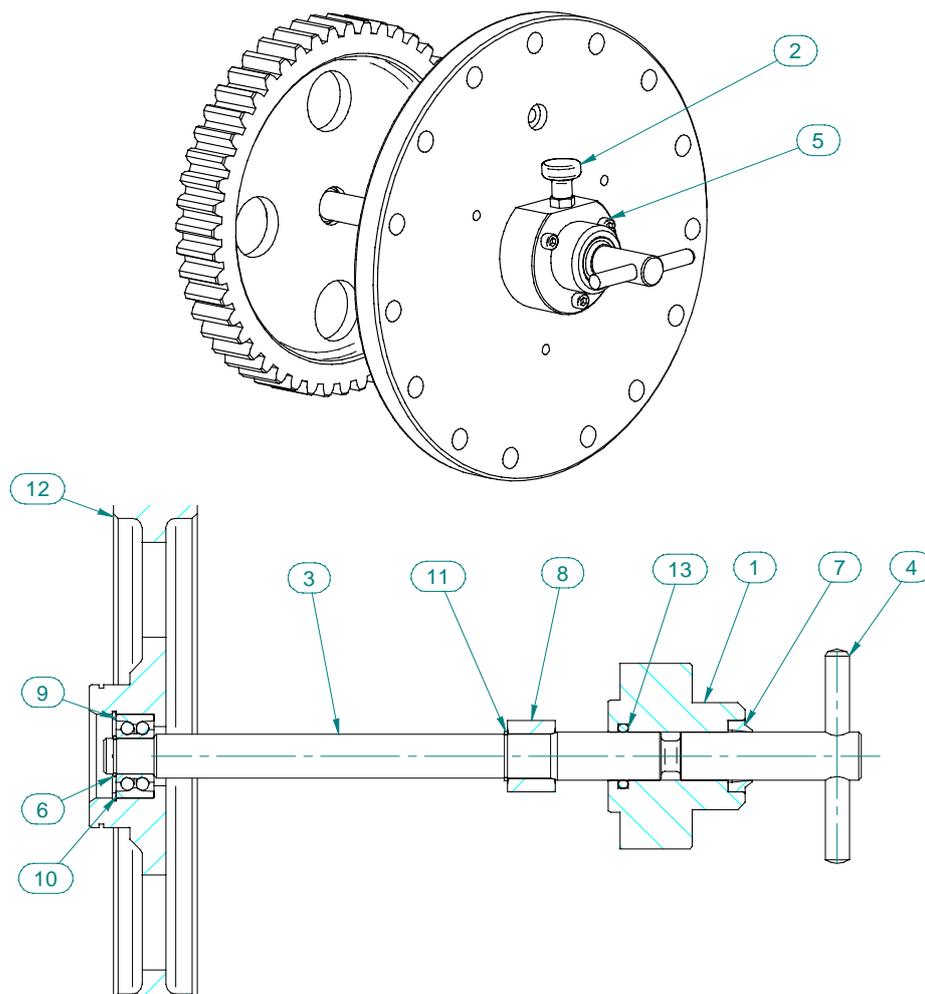


Dwg. D6320871

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
	Essemble arbre d'entrée (inclus item 7-27-36-85-86)	Driving Shaft Ass'y (incl's item 7-27-36-85+86)		36320416
7	Arbre d'entrée	Shaft	1	96320414
27	Bague épaulée	Spacer	1	96320415
36	Porte satellite	Planetary support	1	96230097
85	Rondelle plate	Washer	1	45701008
86	Vis CHc M8x16	Capscrew	1	41301306

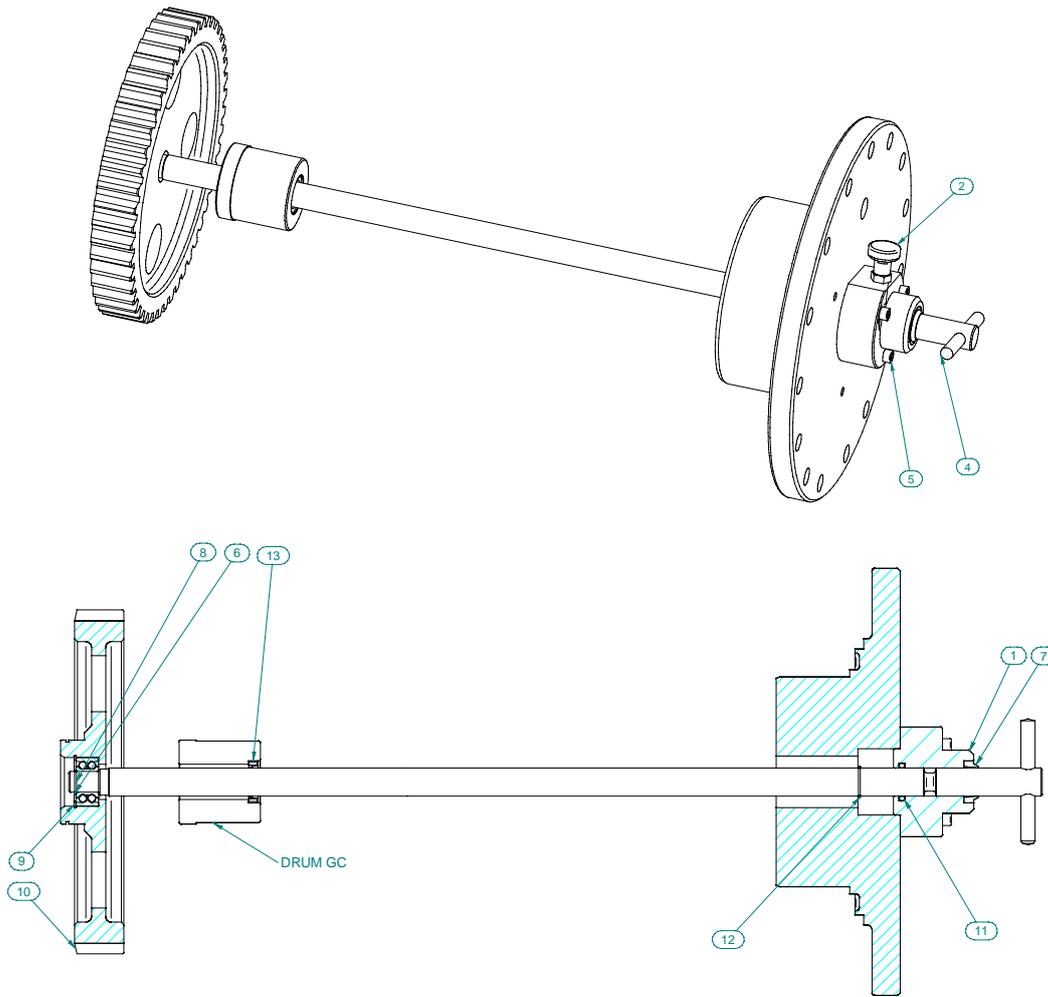
secured with Loctite®243 for item 86

## CLUTCH ASSEMBLY PARTS LIST (PS10000R)



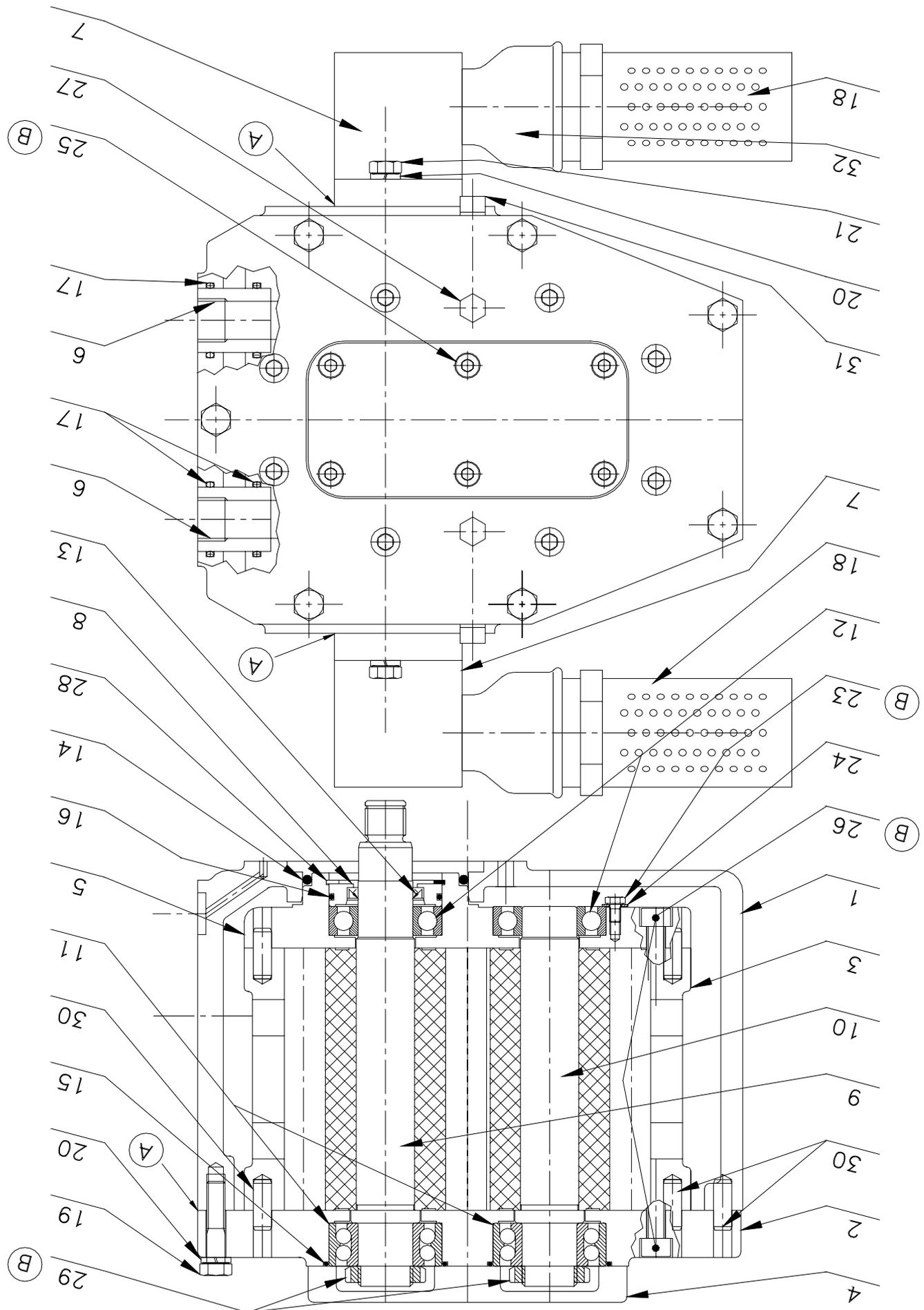
Item N°	Description of part	Description	total Qty	Part N°
1	Cluth Body	Obturateur	1	96150059
2	Plunger	Vis d'indexage M12 x 1.5	1	66287341
3	Clutch Axle	Axe de crabotage	1	96320069
4	Pin	Goupille cylindrique Ø10 Lg90	1	46001516
5	Screw	Vis CHC M6x40	3	41327406
6	Retainer Ring	Circlips E15	1	47700015
7	Seal Ring	Joint racleur 20x30x7/10	1	58016730
8	Stop Ring	Butée	1	96150120
9	Ball Bearing	Roulement à billes 5202	1	50600002
10	Retainer ring	Circlips I-35	1	47703035
11	Retainer Ring	Circlips E19	1	47700019
12	Claw of positive Cluth	Clabot	1	96320037
13	"O" Ring	Joint torique R16	1	58200429

## CLUTCH ASSEMBLY PARTS LIST (PS10000RGC)



Item N°	Description of part	Description	total Qty	Part N°
1	Cluth Body	Obturateur	1	96150059
2	Plunger	Vis d'indexage M12 x 1.5	1	66287341
3	Clutch Axle	Axe de crabotage	1	96320050
4	Pin	Goupille cylindrique Ø10 Lg90	1	46001516
5	Screw	Vis CHC M6x40	3	41327406
6	Retainer Ring	Circlips E15	1	47700015
7	Seal Ring	Joint racleur 20x30x7/10	1	58016730
8	Ball Bearing	Roulement à billes 5202	1	50600002
9	Retainer ring	Circlips I-35	1	47703035
10	Claw of positive Cluth	Clabot	1	96320037
11	"O" Ring	Joint torique R16	1	58200429
12	Retainer Ring	Circlips E20	1	47701020
13	Oil Seal	Bague d'étanchéité	1	58012130

# AIR MOTOR ASSEMBLY DRAWING



## AIR MOTOR ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
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 en Cover	1	96160005
6	Tube	Pipe	2	96160006
7	Bride	Flange	2	96160007
8	Support de Joint	Joint Support	1	96160008
9	Rotor Moteur	Drive gear	1	96160009
10	Rotor repulsion	Idle gear	1	96160010
11	Roulement à Billes	Ball Bearing	2	50600006
12	Roulement à Billes	Ball Bearing	2	50180906
13	Bague d'étanchéité	Oil seal	1	58013430
14	Joint torique	'O' Ring	1	58208529
15	Joint torique	'O' Ring	2	58210429
16	Joint torique	'O' Ring	1	58224329
17	Joint torique	'O' Ring	4	58200929
18	Silencieux	Muffler	2	68483532
19	Vis H M	Screw	7	41020901
20	Rondelle W10	Lockwasher	11	45201010
21	vis HM	Screw	4	41020401
23	Vis HM	Screw	1	41007601
24	Rondelle plate	Washer	1	45000106
25	Vis CHC	Screw	6	41324906
26	Vis CHC	Screw	16	41323506
27	Bouchon	Plug	2	65125832
28	Circlips	Retainer ring	2	47703062
29	Ecrou	Nut	2	57000006
30	Goupille	Pin	5	46000816
31	Bouchon	Plug	2	65164532
32	Manchon réduit	Reducer sleeve	2	61353528

Pièces de rechange recommandées

Recommended Spare



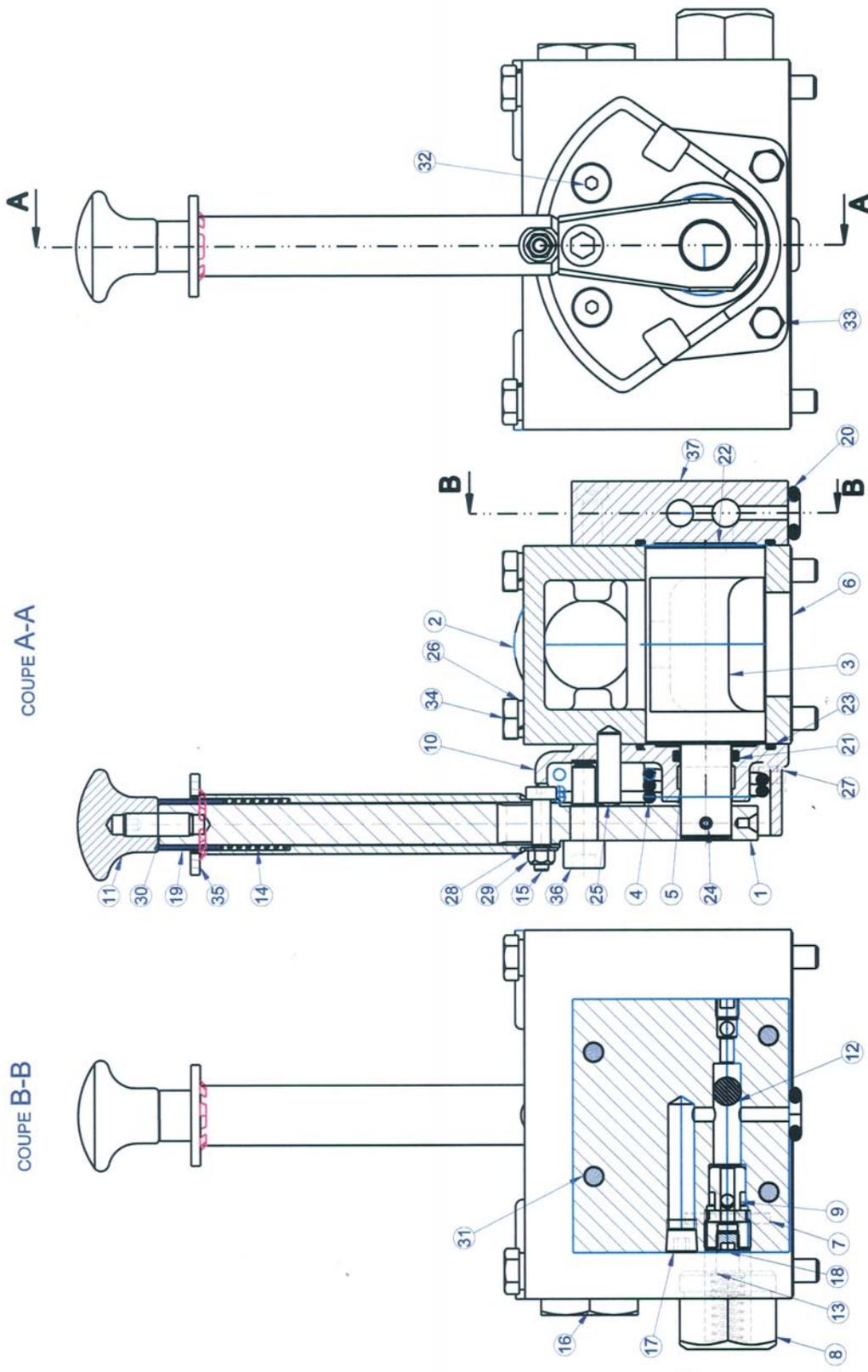
## OLD LEVER CONTROL VALVE ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Flasque avant	Front end cover	1	96170003
2	Flasque Arrière	Rear end cover	1	96170004
3	Butée	Stop	1	96170005
4	Butée de sélecteur	Selector stop	1	96170007
5	Bouchon clapet	Plug	1	96170008
6	Clapet	Valve	1	96170009
7	Joint	Joint	1	96170010
8	Bague de guidage	Guiding Ring	1	96170011
9	Ressort de rappel	Return Spring	1	96170028
10	Levier	Lever	1	96170029
11	Carotte	Rotary Valve	1	96170168
12	Corps	Housing	1	96170031
13	Bouchon	Plug	1	65137132
14	Ressort	Spring	1	69167032
15	Goupille Elastique	Pin	1	46502020
16	Goupille	Pin	1	46001916
17	Rondelle W10	Lockwasher	4	45201010
18	Rondelle W8	Lockwasher	4	45201008
19	Vis CHC	Screw	4	41325006
20	Vis FHC	Screw	2	41105203
21	Vis H M	Screw	4	41018101
22	Vis H M	Screw	4	41002301
23	Poignée de manoeuvre	Handle	1	57426232
24	Joint Torique	"O" Ring	2	58204729
25	Joint Torique	"O" Ring	1	58224429
26	Joint Torique	"O" Ring	2	58212529
27	Joint Torique	"O" Ring	1	58227729
28	Bille	Ball	1	69401725

Pièces de rechange recommandées

Recommended Spare

# NEW LEVER CONTROL VALVE ASSEMBLY DRAWING



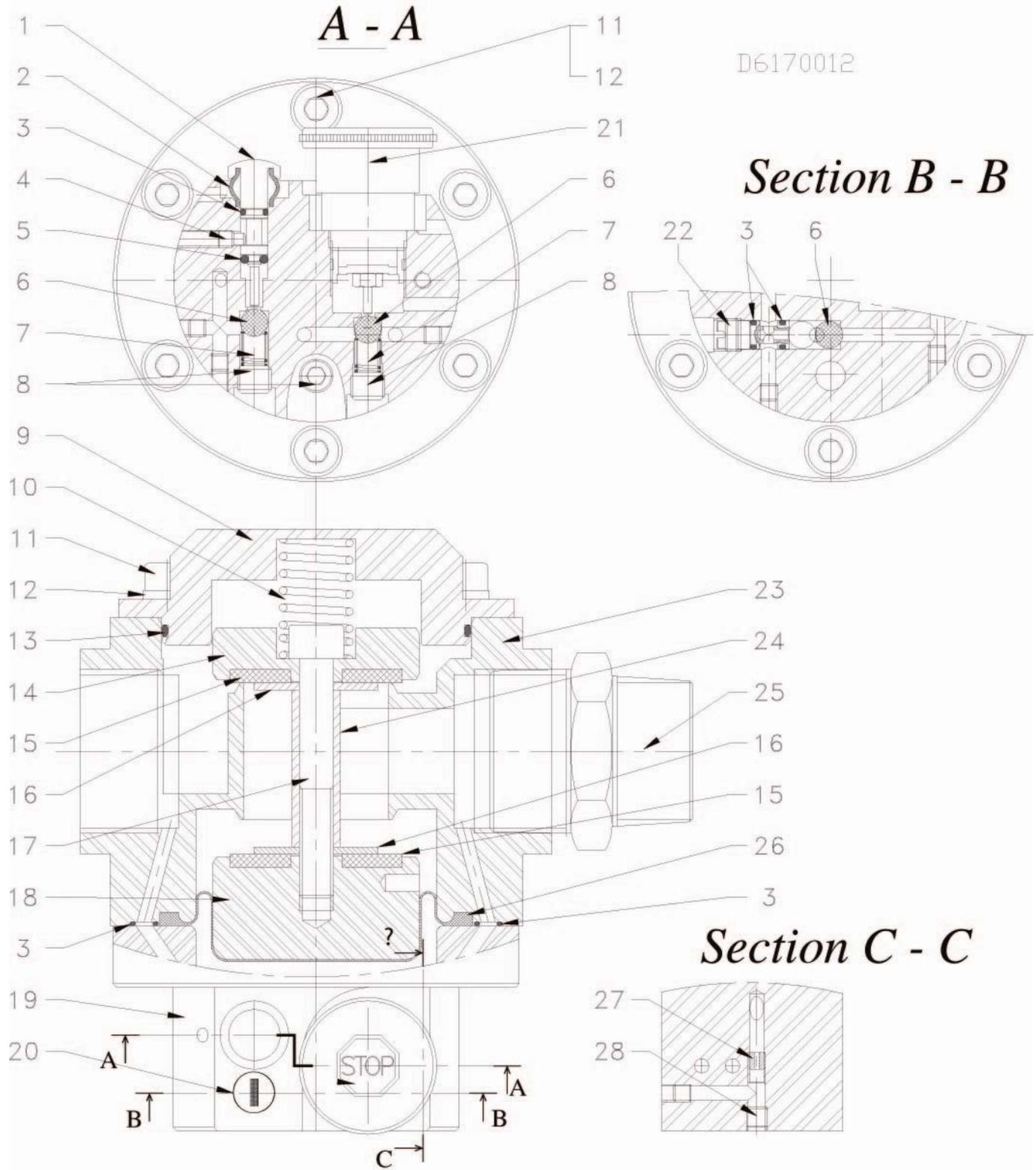
## NEW LEVER CONTROL VALVE ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Levier	Lever	1	96170190
2	Corps	Housing	1	96170031
3	Carotte	Rotary Valve	1	96170030
4	Ressort de rappel	Return Spring	1	96170028
5	Bague de guidage	Guiding Ring	1	96170011
6	Joint	Joint	1	96170010
7	Clapet	Valve	1	96170009
8	Bouchon clapet	Plug	1	96170008
9	Butée de sélecteur	Selector stop	1	96170007
10	Flasque avant	Front end cover	1	96170003
11	Poignée de manoeuvre	Handle	1	57426232
12	Bille	Ball	1	69401725
13	Ressort	Spring	1	69167032
14	Ressort	Spring	1	69105442
15	Vis	Screw	1	65205342
16	Bouchon	Plug	1	65137132
17	Bouchon	Plug	1	65125832
18	Bouchon	Plug	1	65107741
19	Bague	Ring	1	59105326
20	Joint Torique	"O" Ring	1	58227729
21	Bague	Ring	1	58224429
22	Joint Torique	"O" Ring	2	58212529
23	Joint Torique	"O" Ring	2	58204729
24	Goupille Elastique	Pin	1	46507120
25	Goupille	Pin	1	46001916
26	Rondelle W10	Lockwasher	4	45201010
27	Rondelle W8	Lockwasher	4	45201008
28	Vis	Screw	1	45001106
29	Ecrou frein	Lock nut	1	43707611
30	Vis HC	Screw	1	42004207
31	Vis CHC	Screw	4	41325006
32	Vis FHC	Screw	2	41105203
33	Vis H M	Screw	2	41020501
34	Vis H M	Screw	4	41018101
35	Levier	Lever	1	96170192
36	Vis	Screw	1	96170193
37	Flasque Arrière	Rear end cover	1	96170004

Pièces de rechange recommandées

Recommended Spare

**EMERGENCY STOP VALVE « LEVER ACTUATION » ASSEMBLY DRAWING**



(Dwg.D6170012)

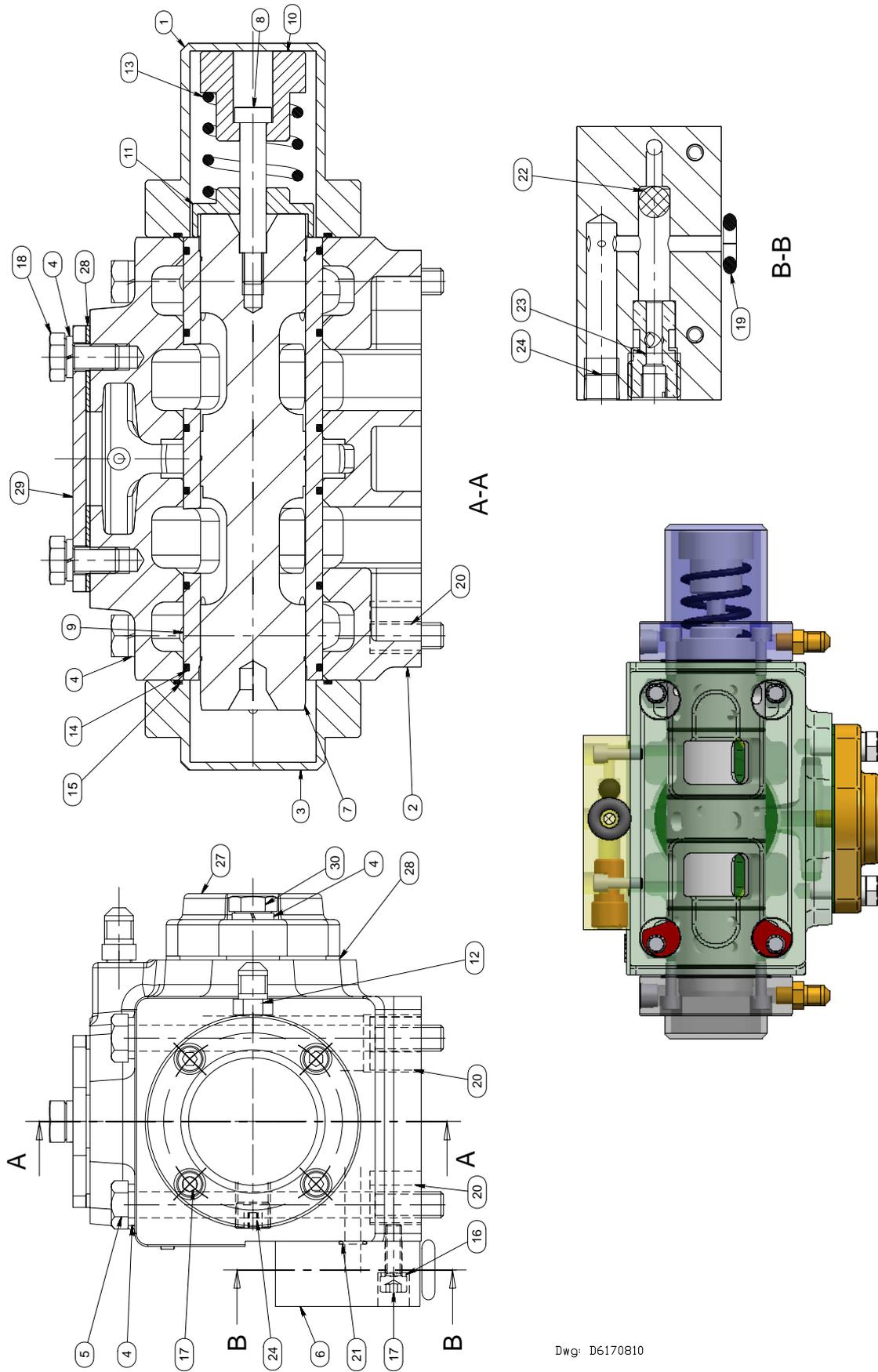
## EMERGENCY STOP VALVE « LEVER ACTUATION » ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Poussoir	Spool	1	95790104
2	Protecteur	Protector	1	95790107
3	Joint torique	'O' ring	5	58209229
4	Vis	Screw	1	42008307
5	Joint torique	'O' ring	1	58235329
6	Bille	Ball	3	69401625
7	Ressort	Spring	2	69128541
8	Bouchon	Plug	3	65107741
9	Couvercle	Cover	1	96170073
10	Ressort	Spring	1	69120141
11	Vis	Screw	12	41321806
12	Rondelle frein	Lockwasher	12	45201008
13	Joint torique	'O' ring	1	58216129
14	Clapet	Valve cone	1	96170075
15	Joint	Joint	2	96170076
16	Rondelle plate	Washer	2	45700010
17	Vis	Screw	1	41329406
18	Clapet	Valve cone	1	96170078
19	Couvercle	Cover	1	96170111
20	Autocollants	Label kit	1	95790111
21	Bouton d'arrêt d'urgence	Emergency stop bottom	1	95790108
22	Obturateur	Obturator	1	95790106
23	Corps	Body	1	96170072
24	Entretoise	Spacer	1	96170077
25	Mamelon	Nipple	1	61320628
26	Membrane	Diaphragm	1	67720041
27	Gicleur	Nozzle	1	96170071
28	Vis	Screw	1	42007807

 Pièces de rechange recommandées

Recommended Spare

# PENDANT CONTROL VALVE ASSEMBLY DRAWING

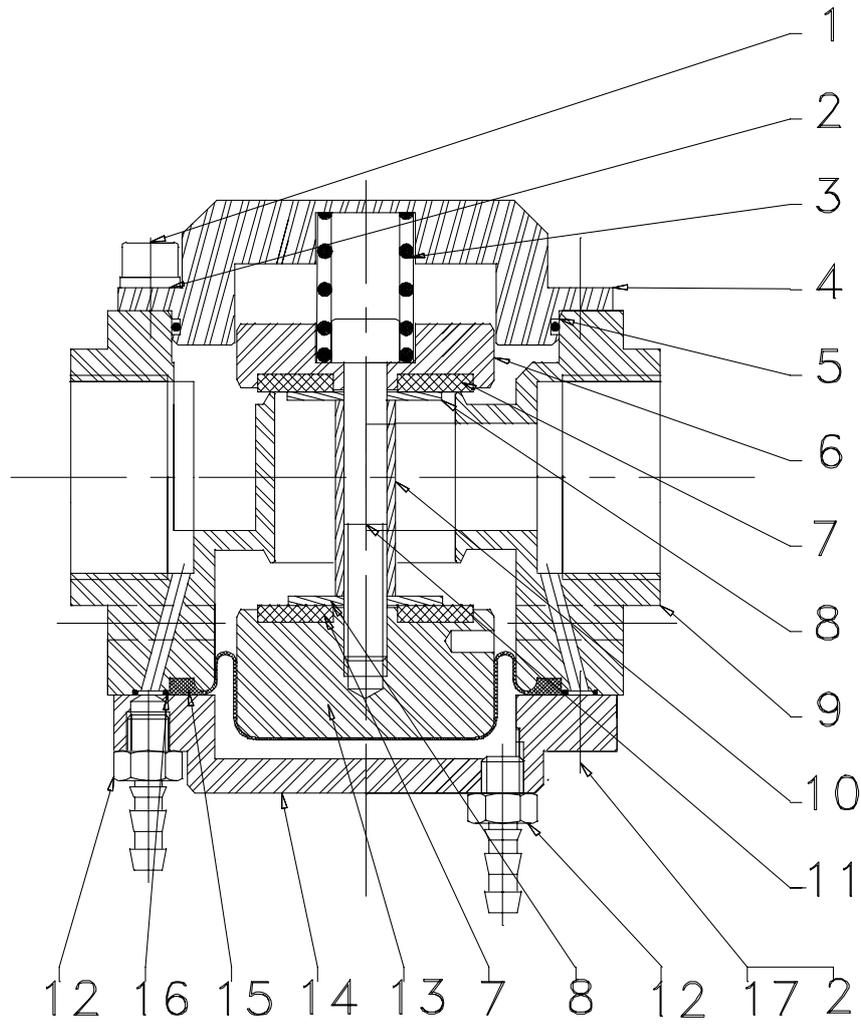


## PENDANT CONTROL VALVE ASSEMBLY PARTS LIST

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Couvercle	Cover	1	96170104
2	Corps de distributeur	Valve housing	1	96170184
3	Couvercle	Cover	1	96170109
4	Rondelle frein	Lockwasher	8	45201010
5	Vis H M10x120	Screw	4	41023601
6	Bloc sélecteur de circuit	Shuttle valve housing	1	96170108
7	Tiroir	vvalve	1	96170102
8	Vis épaulée	Screw	1	65280532
9	Chemise	Cylinder liner	1	96170101
10	Butée	Stop ring	1	96170106
11	Butée	Stop ring	1	96170105
12	Adapteur	Adapter	3	68237528
13	Ressort	Spring	1	69129841
14	Joint torique 47x2	'O' ring	6	58236429
15	Joint torique 56x2	O ring	2	58235729
16	Rondelle frein	Lockwasher	10	45201006
17	Vis CHC M6x20	Screw	10	41322206
18	Vis H m10x20	Screw	2	41023101
19	Joint torique 10x6.5	'O' ring	1	58227729
20	Rondelle de régulation	Air control washer	2	96170114
21	Joint torique 7.5x1.5	'O' ring	2	58212529
22	Bille plastique	Ball	1	69401725
23	Clapet	Check valve	1	96170007
24	Bouchon ¼	Plug	3	65125832
27	Bride 1"1/4	Flange 1"1/4	1	68958028
28	Joint de bride	Joint	1	58539929
29	Bride de fermeture	End flange	1	96170188
30	Vis H M10x30	Screw	2	41020401

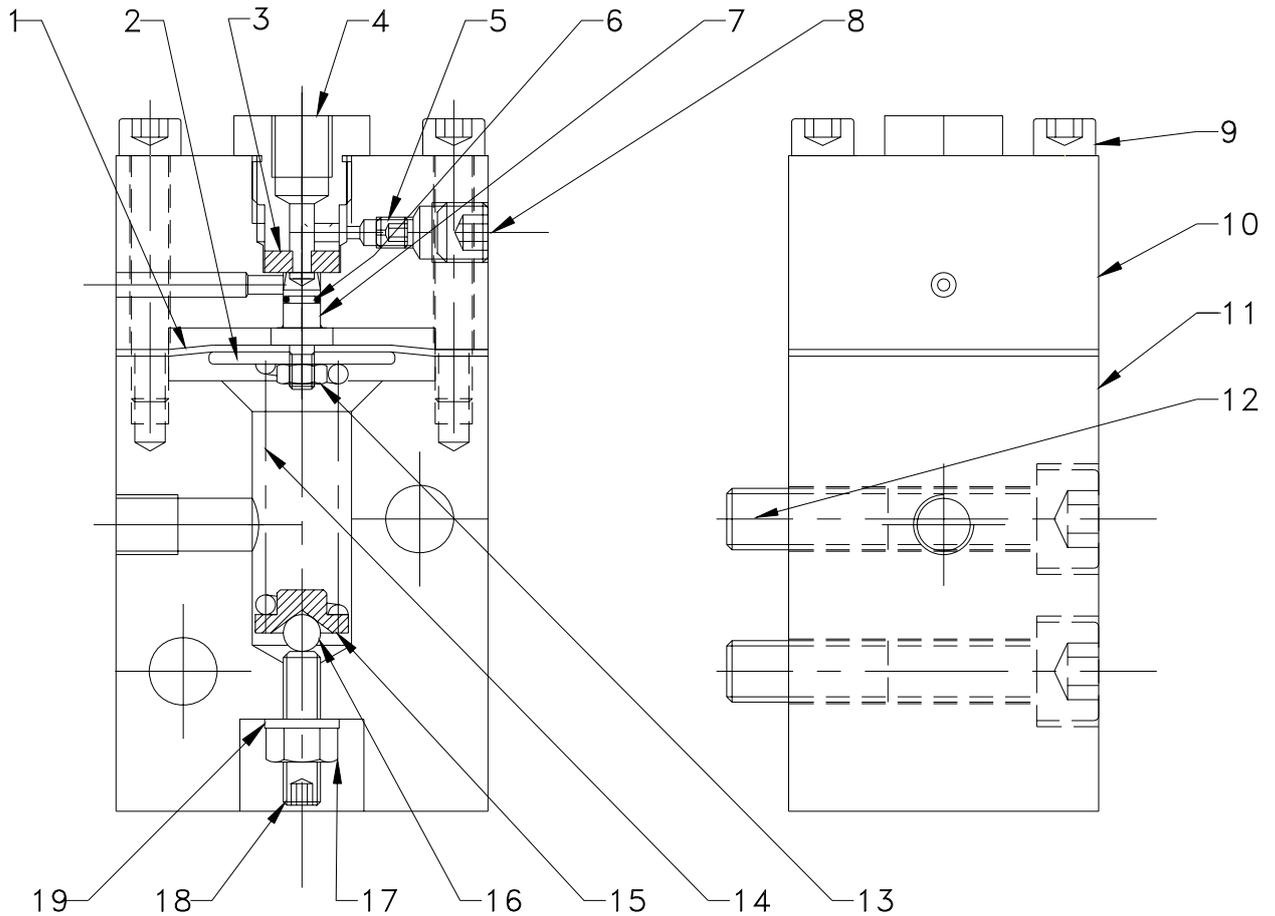
Recommended Spares

**EMERGENCY STOP VALVE « PNEUMATIC ACTUATION »  
ASSEMBLY DRAWING & PARTS LIST**



REPÈRE ITEM	DESIGNATION	DESCRIPTION	QUANTITE QUANTITY	CODE
1	Vis Chc	Screw	6	4130.1406
2	Rondelle Grower	Lockwascher	12	4520.0008
3	Ressort	Spring	1	6912.0141
4	Couvercle	Cover	1	9617.0073
5	Joint torique	'O' Ring	1	5821.6129
6	Clapet	Valve	1	9617.0075
7	Joint	Gasket	2	9617.0076
8	Rondelle LL 10 N	Washer	2	4570.0010
9	Corps	Body	1	9617.0072
10	Entretoise	Distance ring	1	9617.0077
11	Vis Chc	Screw	1	4130.4706
12	About	Fitting	2	6165.2632
13	Clapet	Valve	1	9617.0078
14	Couvercle	Cover	1	9617.0074
15	Membrane	Diaphragm	1	6772.0041
16	Joint torique	'O' Ring	2	5820.9229
17	Vis Chc	Screw	6	4130.1506

## TORQUE LIMITER ASSEMBLY DRAWING & PARTS LIST

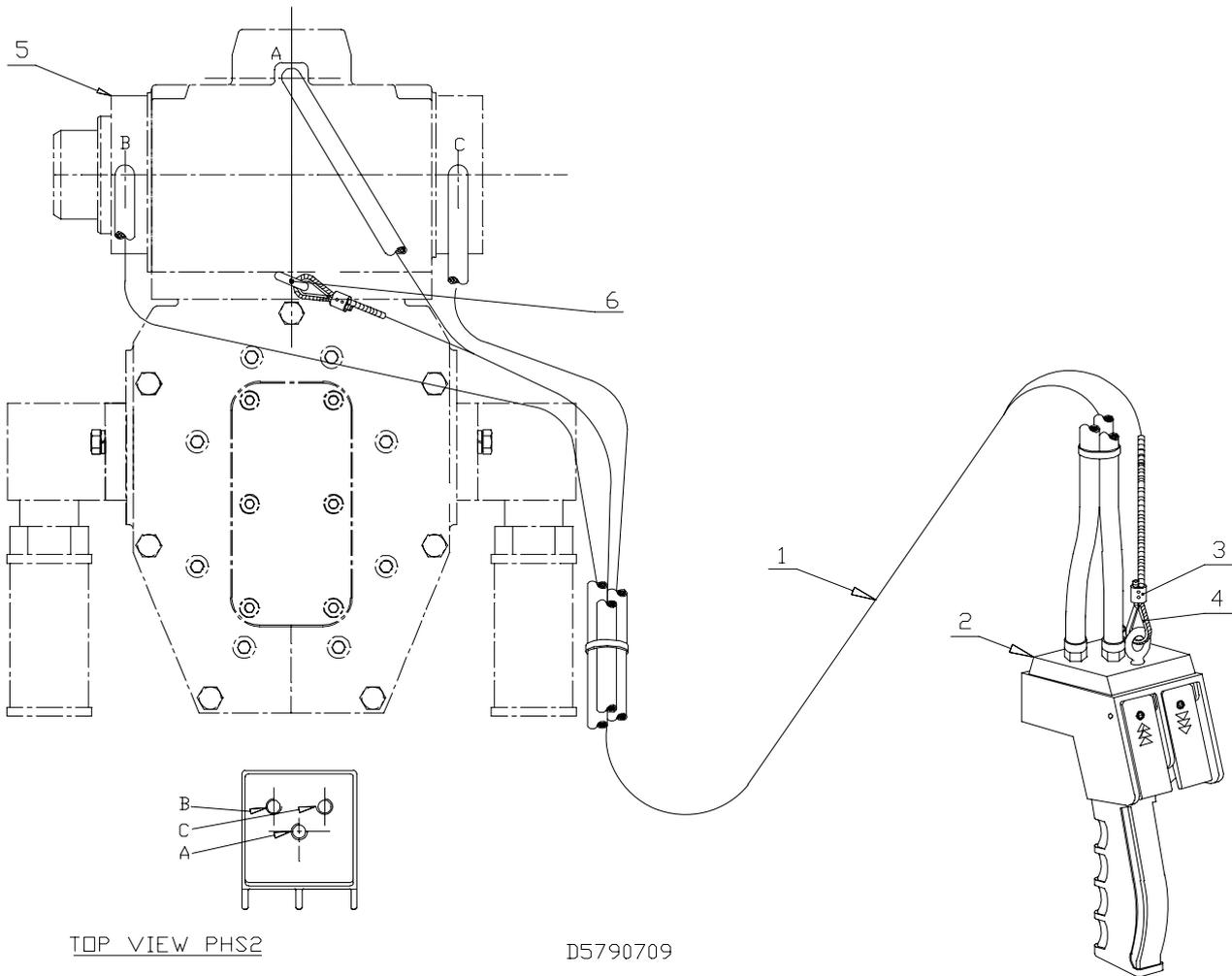


(Dwg.D6360003)

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
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
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
18	Vis HcM6x25	Screw	1	42007107
19	Joint	Seal	1	58404531

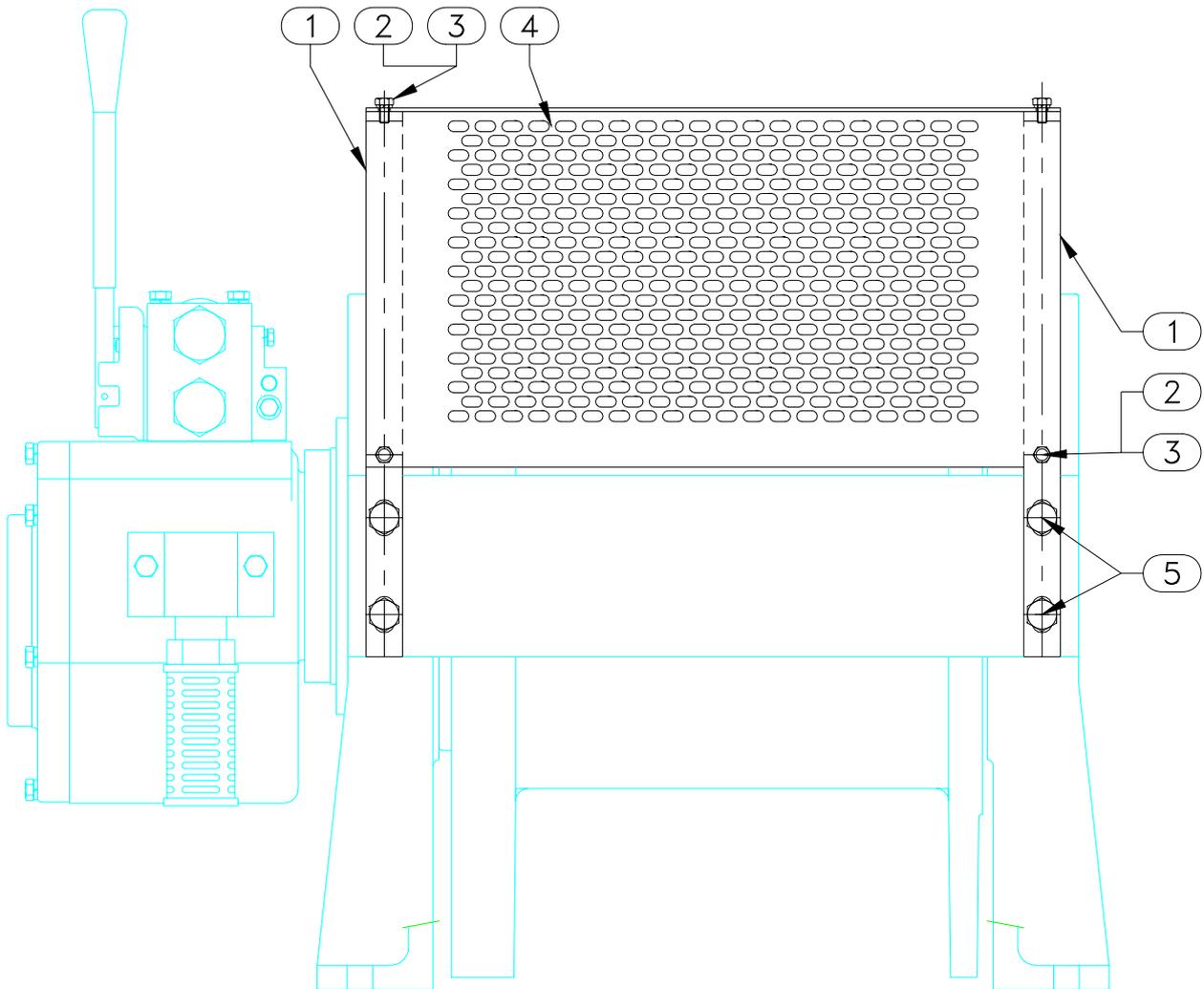
Recommended Spare Parts

# LS5000/PS1000R WINCH & PHS2 PENDANT CONTROL DRAWING & PARTS LIST



ITEM NO.	DESIGNATION	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Mètre de télécommande	Meter of control	(*)	33870031
2	PHS2	PHS2 Pendant assembly	1	See SAM139
3	Serre cable	Sleeve clamp	2	61125032
4	Cosse	Thimble	2	69325332
5	Distributeur pneumatique	Control valve assembly	1	76170041
6	Anneau	Lifting Eye	1	64222332

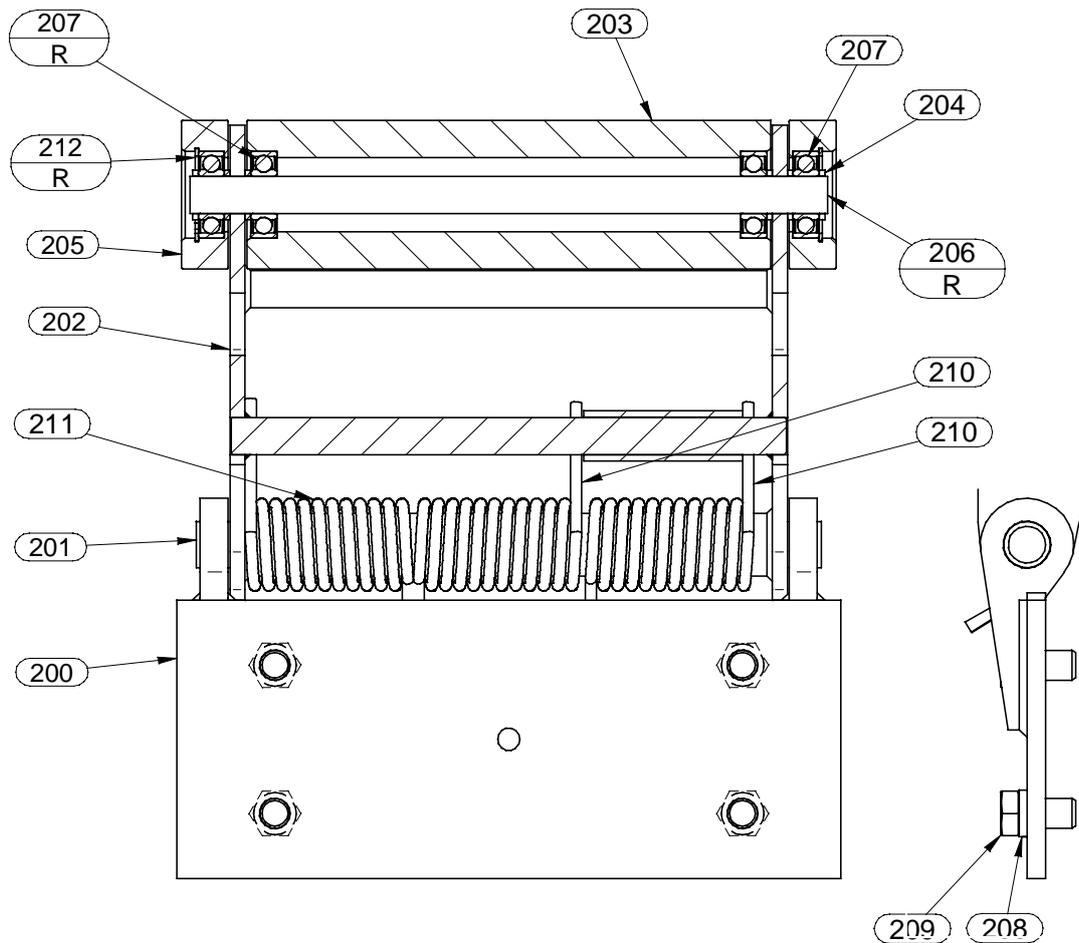
## DRUM GUARD ASSEMBLY DRAWING AND PARTS LIST



(Dwg.D6320569)

ITEM NO.	DESIGNATION	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Arceau	Drum guard bow	2	96320159
2	Vis H M8	Screw	4	41019201
3	RondelleW8	Lockwasher	4	45201008
4	Capot Tambour court Capot Tambour long	Drum guard Short Drum Drum guard Long Drum	1	96320330 96320329
5	Vis H M16	Screw	8	41006301

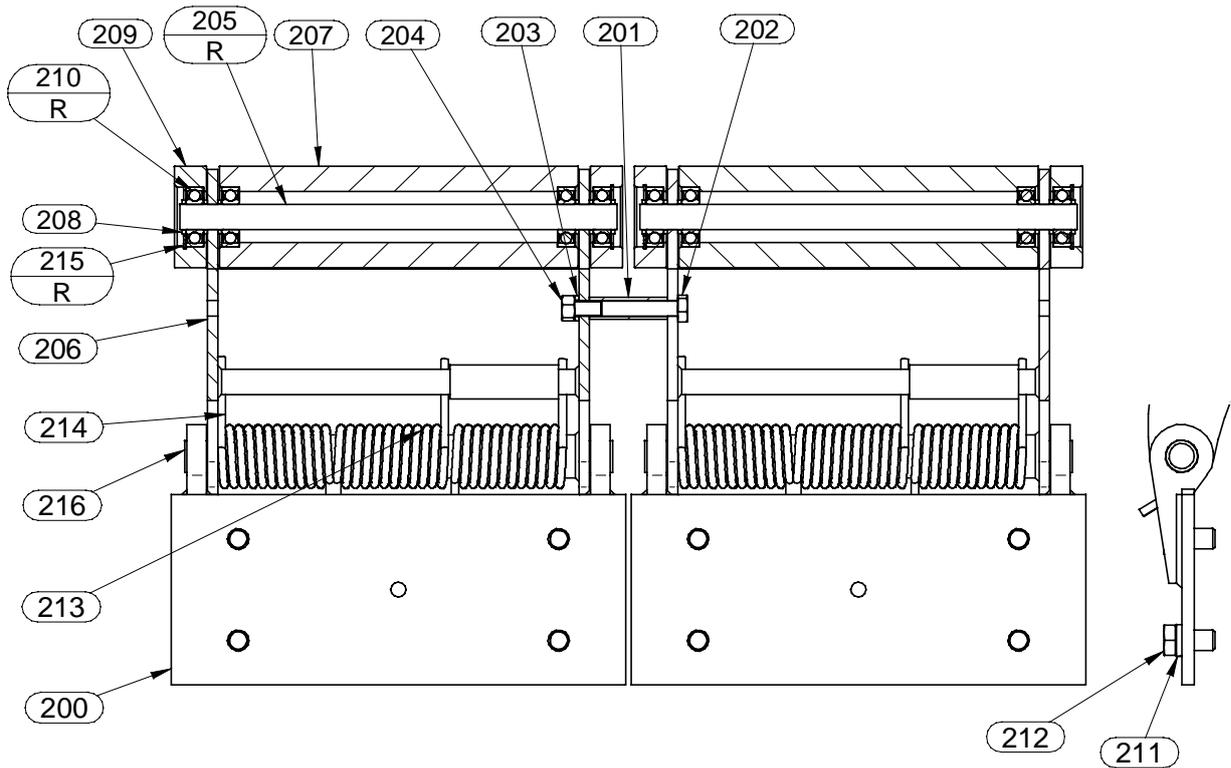
# PRESS ROLLER LS5000R/PS10000R ASSEMBLY DRAWING & PARTS LIST



Item N°	Description of part	Description	Total Qty	Part N°
200	Support	Entretoise rouleau presseur	1	96320059
201	Roller Axle	Axe rouleau	1	96320056
202	Roller Support	Porte rouleau	1	96320054
203	Roller	Rouleau central	1	96320057
204	Distance Ring	Entretoise	6	95060135
205	Roller	Rouleau latéral	2	96320058
206	Roller Axle	Axe rouleau	1	96320055
207	Ball Bearing	Roulement à billes 6204-2RS	4	50150004
208	Lock washer	Rondelle élastique W16	4	45201016
209	Screw	Vis HM16x30	4	41004101
210	Spring	Ressort pas à gauche	2	93200004
211	Spring	Ressort pas à droite	1	93200003
212	Internal Retainer Ring	Circlips I-47	2	47703047

(R) Recommended spare parts

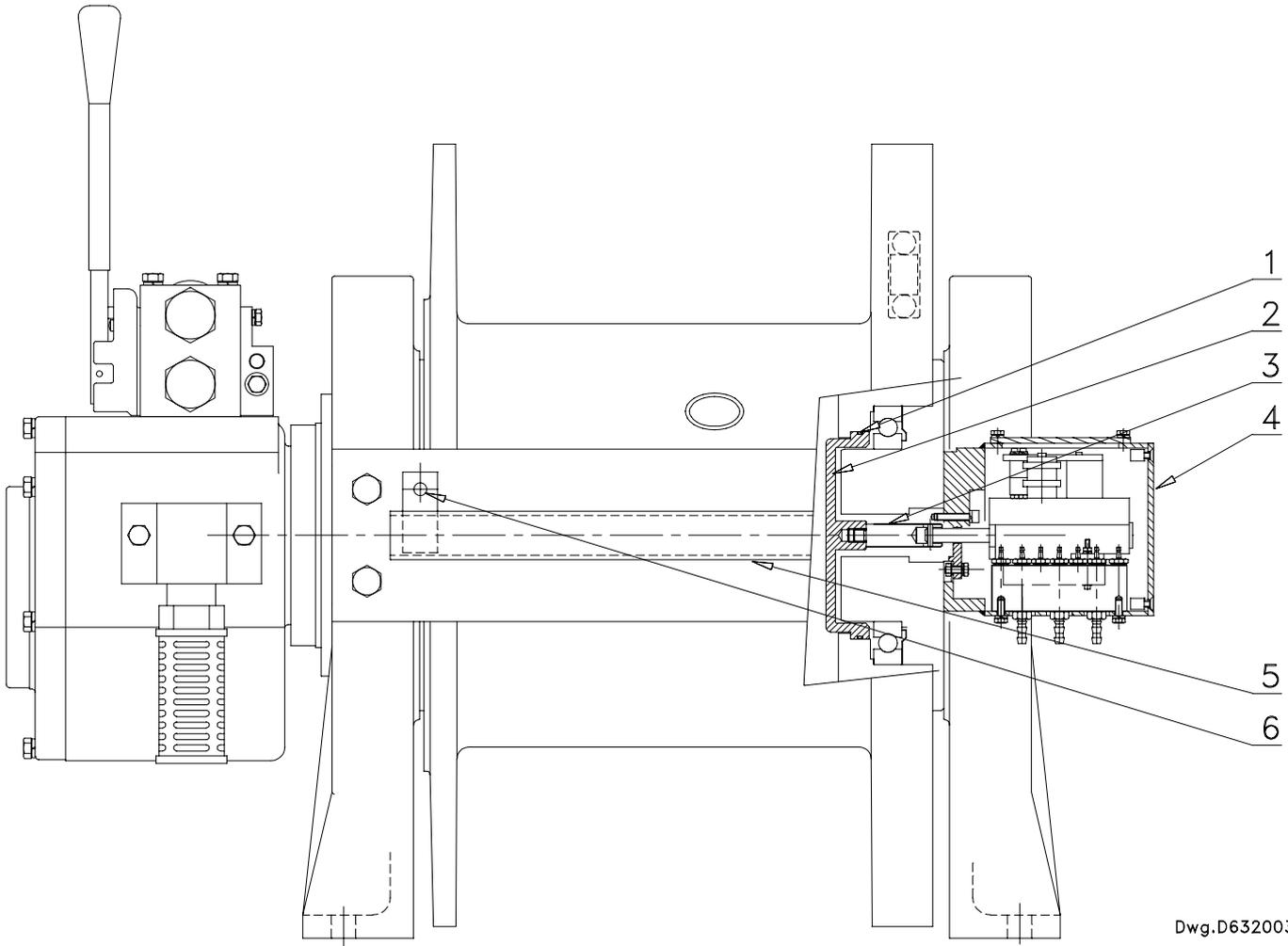
**PRESS ROLLER LS5000RGC/PS10000RGC ASSEMBLY DRAWING & PARTS LIST**



Item N°	Description of part	Description	Total Qty	Part N°
200	Support	Entretoise rouleau presseur	2	96320059
201	Distance Ring	Entrtoise	1	96320060
202	Screw	Vis H M12x90	1	41009401
203	Lock Washer	Rondelle Elastique W12	1	45201012
204	Nut	Ecrou H M12	1	43003611
205	Roller Axle	Axe rouleau	2	96320055
206	Roller Support	Porte rouleau	2	96320054
207	Roller	Rouleau central	2	96320057
208	Distance Ring	Entretoise	12	95060135
209	Roller	Rouleau latéral	4	96320058
210	Ball Bearing	Roulement à billes 6204-2RS	8	50150004
211	Lock washer	Rondelle élastique W16	8	45201016
212	Screw	Vis HM16x30	8	41004101
213	Spring	Ressort pas à gauche	4	93200004
214	Spring	Ressort pas à droite	2	93200003
215	Internal Retainer Ring	Circlips I-47	4	47703047
216	Roller Axle	Axe rouleau	2	96320056

(R) Recommended spare parts

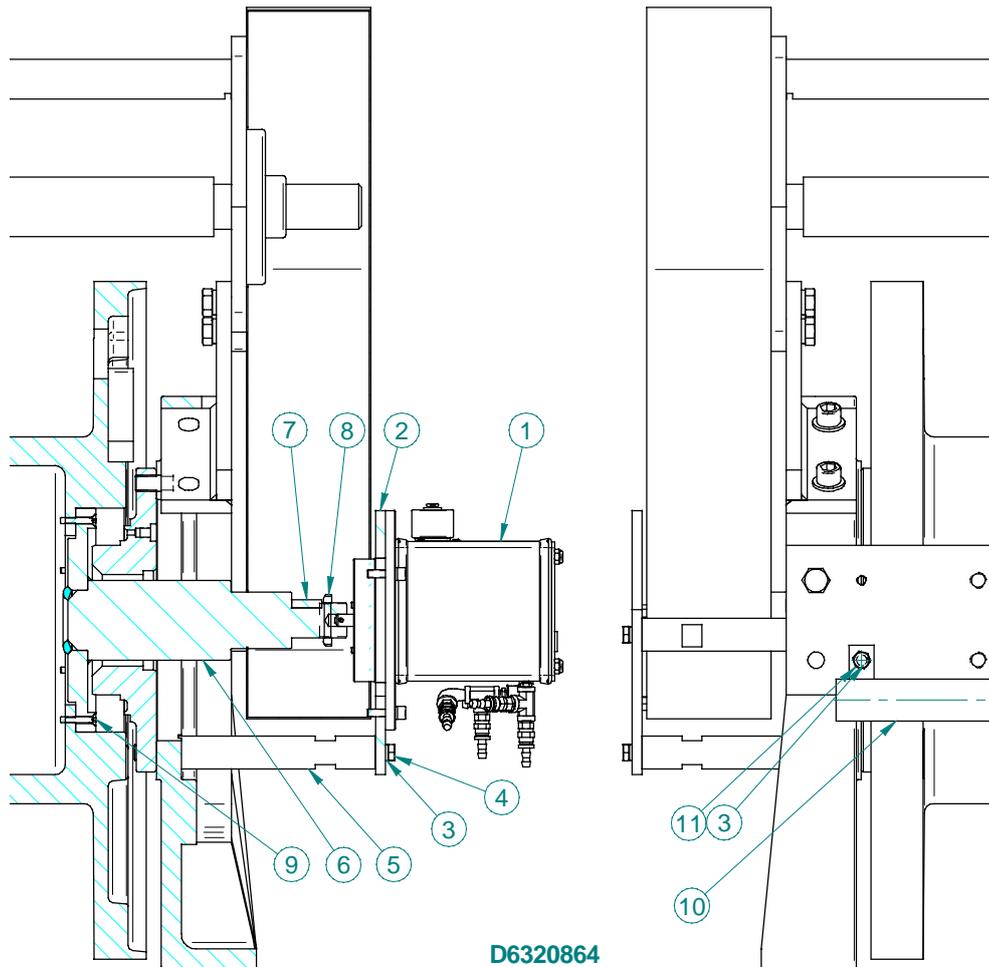
# PNEUMATIC LIMIT SWITCHES



Dwg.D6320031

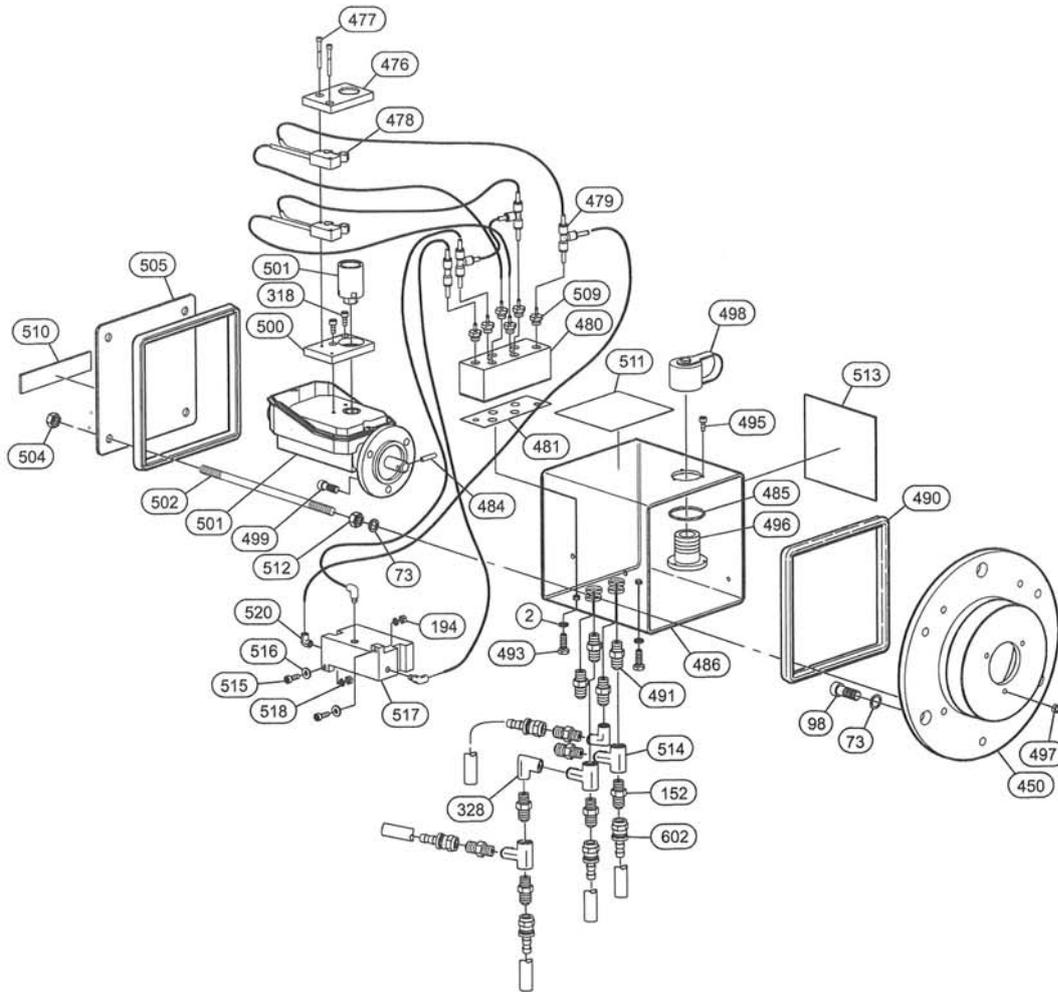
Rep Item	Désignation	Description	Qté. Qty.	CODE	
				"STD"	"GC"
1	JOINT TORIQUE	"O" RING	1	58207329	
2	PALIER D'ENTRAINEMENT	CLUTCH	1	96320146	
3	AXE DE LIAISON	AXLE	1	96150258	
4	S/E FIN DE COURSE	LIMIT SWITCHES ASSY	1	36150564	
5	SUPPORT FLEXIBLES	PROTECTOR HOSES	1	96150263	96320215
6	VIS HM10x20	SCREW	2	41006201	
	RONDELLE W10	LOCK WASHER	2	45201010	

## PNEUMATIC LIMIT SWITCHES & SPOOLING DEVICE



Item N°	Designation	Description of part	Total Qty.	Part N°
				"Spooling device" & "Limit switches"
1	S/E FIN DE COURSE	LIMIT SWITCHES ASSY	1	36150564
2	FLASQUE INTERMEDIAIRE	FLANGE	1	96320408
3	VIS HM10x25	SCREW	5	41020701
4	RONDELLE W10	LOCK WASHER	3	45201010
5	PLOT DE FIXATION	STUD	3	96320407
6	PALIER D'ENTRAINEMENT	CLUTCH	1	96320406
7	CLAVETTE 10X8X30	KEY	1	60204524
8	ECROU A ENCOCHES M35x1.5	NUT	1	57000007
9	VIS FHc M6x35	SCREW	6	41104903
10	SUPPORT FLEXIBLE (STD)	PROTECTOR HOSES	1	96150263
	SUPPORT FLEXIBLE (GC)			96320215
11	VIS HM10x20	SCREW	2	41023101

# LIMIT SWITCHES ASSEMBLY DRAWING



(Dwg. MHP2730)

## LIMIT SWITCHES ASSEMBLY PARTS LIST

**LIMIT SWITCH ASSEMBLY PN: 36320404 INCLUDED (i=250):**

Item N°	Description of part	Total Qty.	Part N
2	Wascher	2	45201006
73	Lockwasher	7	45201008
98	Capscrew	3	41325006
152	Fitting adapter	6	68237528
194	Stop nut	2	43001111
318	Capscrew	2	41313606
328	Fitting elbow	2	68280132
450	Adapter limit switch	1	96470018
476	Upper support block	1	96150556
477	Capscrew	2	41332006
478	Control valve	2	68558741
479	Fitting hose tee	3	61691741
480	Connection block	1	96150558
484	Pin	1	46503420
485	O -Ring	1	58215129
486	Housing	1	96150553
490	Gasket	2	96150572
491	Fitting connector	3	61385232
493	Capscrew	2	41020301
495	Screw	3	41201704
496	Fitting access port	1	96470232
498	Cap	1	61058128
499	Capscrew	3	41322606
500	Lower support block	1	96150555
501	Spindle switch assembly	1	95060150
502	Rod	4	96150670
504	Nut	4	43706511
505	Cover housing	1	96150566
508	Tube (bulk)	(m)	68045328
509	Fitting adapter	5	61694932

Recommended spares

**LIMIT SWITCHES ASSEMBLY PARTS LIST****LIMIT SWITCH ASSEMBLY PN: 36320404 INCLUDED (i=250):**

<b>Item N°</b>	<b>Description of part</b>	<b>Total Qty.</b>	<b>Part N</b>
<b>510</b>	Label limit switch configuration	1	96150427
<b>511</b>	Labelkit limit switch instruction	1	96150462
<b>512</b>	Nut	4	43003511
<b>513</b>	Label	1	96150477
<b>514</b>	Fitting tee	3	61394532
<b>515</b>	Capscrew	2	41331406
<b>516</b>	Washer	4	45201004
<b>517</b>	Air pilot valve assembly	1	68523441
<b>518</b>	Washer	2	45001104
<b>602</b>	Hose end barded	6	51029





## NOTES

## PARTS ORDERING INFORMATION

The use of replacement parts other than **Ingersoll-Rand** Material Handling may result in decreased winch performance, and may 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.

**Winch Model Number** .....

**Winch 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

- **Continuing improvement and advancement of design may cause changes to this winch 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 winch has expired, it is recommended that the winch 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

- **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.**

## HOIST AND WINCH LIMITED WARRANTY

*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 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 acknowledgement 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 superintendence 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 major, 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 recognised 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 its engineers **INGERSOLL-RAND** 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 due 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

### For Order Entry, Order Status and Technical Support

**Ingersoll-Rand  
Material Handling**  
P.O. Box 24046  
2724 Sixth Avenue South  
Seattle WA 98124-0046  
Phone: (206) 624-0466  
Fax: (206) 624-6265

**Ingersoll-Rand  
Distribution Center**  
P.O. Box 618  
510 Hester Drive  
White House, TN 37188  
Phone: (615) 672-0321  
Fax: (615) 672-0801

**Web Site:**  
[www.ingersoll-rand.com](http://www.ingersoll-rand.com)

### Regional Sales Offices

**Chicago, IL**  
888 Industrial Drive  
Elmhurst, IL 60126  
Phone: (630) 530-3800  
Fax : (630) 530-3891

**Detroit, MI**  
23192 Commerce Drive  
Farmington Hills, MI 48335  
Phone: (248) 476-6677  
Fax: (248) 476-6670

**Houston, TX**  
450 Gears Road  
Suite 210  
Houston, TX 77067-4516  
Phone: (281) 872-6800  
Fax: (281) 872-6807

**Los Angeles, CA**  
11909 E. Telegraph Road  
Santa Fe Springs,  
CA 90670-0525  
Phone: (562) 948-4189  
Fax : (562) 948-1828

**Philadelphia, PA**  
P.O. Box 425  
900E. 8th Ave., Suite 103  
King of Prussia, PA 19406  
Phone: (610) 337-5930  
Fax: (610) 337-5912

## International Office Locations

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  
Fax: (206) 624-6265

**Canada  
National Sales Office  
Regional Warehouse  
Toronto, Ontario**  
51 Worcester Road  
Rexdale, Ontario  
M9W 4K2  
Phone: (416) 213-4500  
Fax: (416) 213-4510  
**Order Desk**  
Fax: (416) 213-4506

**Regional Sales Offices  
Edmonton, Alberta**  
1430 Weber Center  
5555 Calgary Trail N.W.  
Edmonton, Alberta  
T6H 2P9  
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**  
1200 Cliveden Avenue Delta,  
B.C.  
V3M 6G4  
Phone: (604) 523-0803  
Fax: (604) 523-0801

**Latin America Operations  
Ingersoll-Rand  
Production Equipment  
Group**  
730 N.W. 107 Avenue  
Suite 300, Miami, FL USA  
33172-3107  
Phone: (305) 559-0500  
Fax: (305) 222-0864

**Europe, Middle East and  
Africa  
Ingersoll-Rand Material Handling  
Douai Operations**  
529, avenue Roger Salengro  
59450 Sin le Noble, France  
Phone: (33) 03-27-93-08-08  
Fax: (33) 03-27-93-08-00

**Asia Pacific Operations  
Ingersoll-Rand**  
Suite 1201-3 12/F  
Central Plaza  
18 Harbour Road  
Wanchai, Hong Kong  
Phone: (852) 9794 1673  
Fax: (852) 9794 7895

**Russia  
Ingersoll-Rand**  
Kuznetsky Most 21/5  
Entrance 3  
Moscow, 103895  
Russia  
Phone: (7) 501 923 9134  
Fax : (7) 501 924 4625