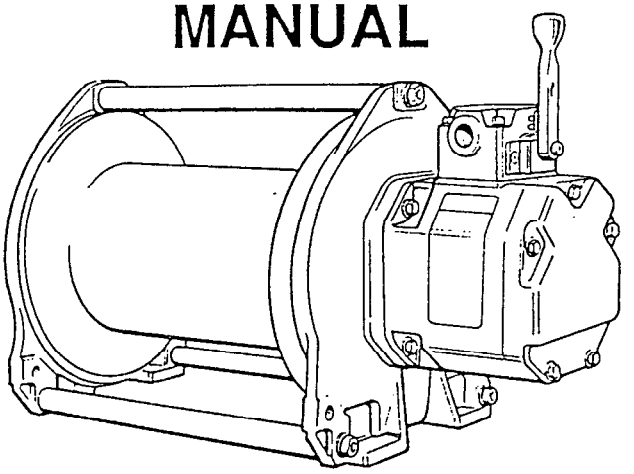
Form SAM0037

# LIFTSTAR LS 1200 R AIR WINCH

## PARTS, OPERATION AND MAINTENANCE MANUAL



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 SECURITY RULES and any other applicable safety codes and regulations.

Refer all communications to the nearest IR/SAMIIA Material Handling Products Office or Distributor.

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SAMIIA®

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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 winch for lifting, supporting, or transporting people or supporting loads over people.**
**• The supporting structures and load-attaching devices used in conjunction with this winch must provide and adequate safety factor to handle the rated load, plus the weight of the winch and attached equipment. This is the customer's responsibility. If in doubt, consult a qualified registered engineer.**

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.

IR/SAMIIA winches are manufactured in accordance with the most recent standards during the production process.

It is the owner's responsibility and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association, federal, state and local regulations be checked. 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**

**• Using other than genuine IR/SAMIIA Material Handling parts will void the warranty.**

## SAFE OPERATING INSTRUCTIONS

The following warnings and operating instructions have been adapted to the European Safety Standards and are intended to avoid unsafe operating practices which might lead to injury or property damage.

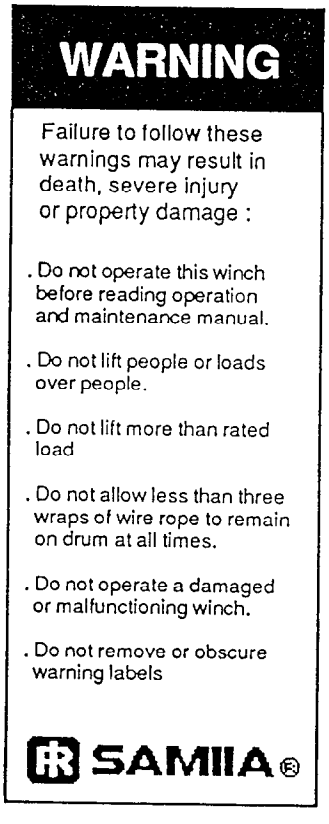
IR/SAMIIA recognizes that most companies who use winches have a safety program in force in their plants. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

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.

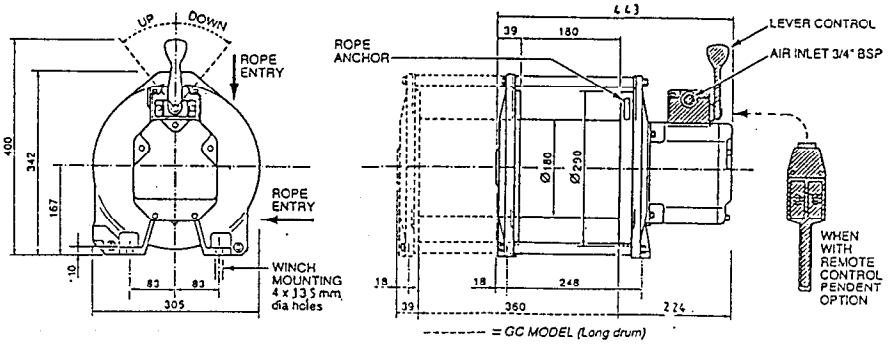
1. Only allow personnel trained in safety and operation to operate and maintain a winch.
2. Only operate a winch if you are physically fit to do so.
3. When a "DO NOT OPERATE" sign is placed on the winch, do not operate the winch until the sign has been removed by designated personnel.
4. Before each shift, check the winch for wear or damage.
5. Never lift a load greater than the rated capacity of the winch. See warning labels attached to winch.
6. Keep hands, clothing, etc., clear of moving parts.
7. Never place your hand in the throat area of a hook or in the vicinity of the wire rope as it spools onto the drum.
8. Always rig loads properly and carefully.
9. Be certain the load is properly seated in the saddle of the hook. Do not tipload the hook as this leads to spreading and eventual failure of the hook.
10. Do not "side pull" or "yard".
11. Make sure everyone is clear of the load path. Do not lift a load over people.
12. Never use the winch for lifting or lowering people and vener allow anyone to stand on a suspended load.
13. Ease the slack out of the wire rope when starting a lift. Do not jerk the load.
14. Do not swing a suspended load.
15. Never suspend a load for an extended period of time.
16. Never leave a suspended load unattended.
17. Pay attention to the load at all times when operating the winch.
18. After use, properly secure winch and all loads.
19. The operator must maintain an unobstructed view of the load at all times.
20. Never use the winch wire rope as a sling.

## WARNING TAG

Each winch is supplied from the factory with the warning tag shown. If the tag is not attached to your unit, order a new tag and install it. See the parts list for the part number. Read and obey all warnings and other safety information attached to this winch. Tag may not be shown actual size.



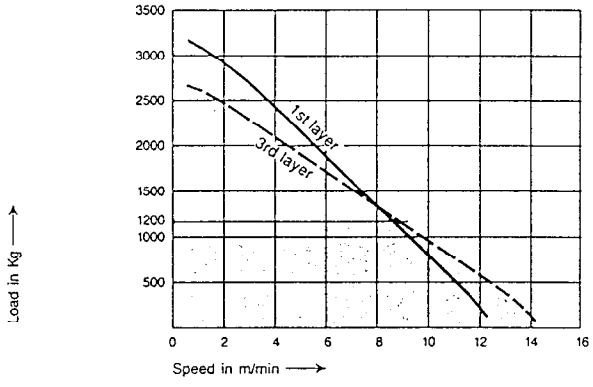
# SPECIFICATIONS




(Dwg. D6310030)

| | | | |
|---|---|---|---|
| Nominal load - Rated all layers (kg) | | 1200 | |
| Working pressure (bar) | | 4 to 7 | |
| Max. free air consumption (m3/min) | | 3.5 | |
| Rules and safety factors | Drum dia. / Rope dia. = Factor R ≥ | 20 | 18 |
| | Rope breaking / Nominal effort = Factor K ≥ | 6 | 5 |
| Recommended rope diameter (mm) | | 9 | 10 |
| Minimum breaking load (kg) | | 7200 | 6000 |
| Recommended rope grade (kg/mm2) | | 220 | 180 |
| Weight of std. model - without rope (kg) | | 58,5 | |
| Weight of GC model - without rope (kg) | | 68,5 | |

Performance at 90 psi - 3/8 in. (10 mm) wire rope

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Cumulative rope capacity

| Number of layers | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Capacity (m) Standard model | rope 9 mm dia. | 10 | 22 | 35 | 49 | 64 | 80 |
| | rope 10 mm dia. | 9 | 20 | 32 | 45 | 58 | -- |
| Capacity (m) GC model | rope 9 mm dia. | 22 | 46 | 73 | 101 | 132 | 165 |
| | rope 10 mm dia. | 20 | 42 | 66 | 92 | 121 | -- |
| | | | | | *Rating limit* | | |

# HOW TO ORDER

Specify complete model code as shown. To order factory fitted options, add the appropriate letter suffix to the standard model number. For non-standard "PH" models, select PH base (no hose) and add full length of control.
Example:

**LS** | **1200 R** | **GC - PH** | **5M** | **P G**

**Série**
*LS = Liftstar*

**Capacity**
*1200 R = 1200 kg*
*R = air*

**Drum**
*No letter = standard*
*GC = long drum*

**Control**
*L = lever (control)*
*PH = precision pendent, alloy, type PHS*
*PHR = brass precision pendent*
*PB = simple brass Mine type*

**Control length**
*5 M = 5 metres pendent*

**Options and factory mounted accessories**
*P = marine paint finish*
*Z = sandblast preparation and primer*
*Q = offshore paint*
*G = drum guard*

## DESCRIPTION

**Construction :** made of 4 tight sub-assemblies, designed for most adverse conditions.
a) one motor
b) one brake gear built in the drum
c) one frame mainly made of two flanges
d) one drum

**Winch mechanism** : manufactured accordIing to the most recent standards (FEM-DIN-ISO)

• Classification according to FEM section IX

| | |
|---|---|
| Mechanism group | : 1Bm |
| Load spectrum | : 2 |
| Working classification | : V 0,5 |
| Average speed | : 8,5 m/mn |
| Cubic mean value | : 0,63 |
| Power | : const. |

• Classification according to DIN - Gearing calculation rules

| | |
|---|---|
| Classification of operating time | : T3 |
| Lifting classification | : H1 |
| Standard classification | : S2 |

• Classification according to ISO

| | |
|---|---|
| Mechanism group | : M3 |
| Working classification | : T3 |
| Load spectrum | : L2 |

**Motor :** Air motor with two ways of rotation
**Gear box :** planetary system, gears in high resistance special treated steel, mounted on bearings. The whole is in the winch drum under tight casing.
**Brake :** Multidisc brake in oil bath, generously designed, allowing a permanent control of the load when lifting and lowering. It is a fail safe brake which stops automatically the load in case of feeding failure. This brake allows a constant braking torque and is not sensitive to external pollutions.
**Drum :** in steel, fastening of rope by wedge box.
**Frame :** two steel flanges with distance piece. Fastening on floor by 4 holes Ø 13,5 mm.
**Motor feeding :** by 1 hole Ø 3/4" BSP located on the distributor
**Control :** Control is easy, by only one lever on the winch, which allows fine speed variation. This lever returns automatically to neutral position stopping the load in case of operator's error. Control handle optionnal.

## INSTALLATION

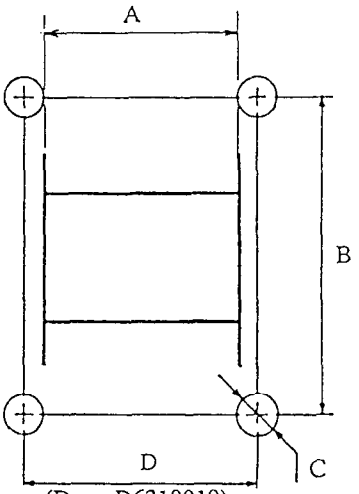
Prior to installing the winch, carefully inspect it for possible shipping damage.

**⚠ CAUTION**

**• 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

1. If winch is to be mounted in one position be sure the mounting surface is even and of sufficient strength to handle the rated load and prevent possible binding of the winch.
2. Make sure the mounting surface is flat to within 1/32 inch (0.8 mm). Shim if necessary.
3. Mounting bolts must be 1/2 in. (12 mm) diameter, Grade 8 or better. Use self-locking nuts or nuts with lockwashers.
4. Tighten mounting bolts evenly and torque to 30 lb.ft. (40N-m) dry. If the fasteners are plated, lubricated or a thread locking compound is used torque to 23 lb. ft. (31N-m).



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5. Maintain a fleet angle between the sheave and winch of no more than 1-1/2 degrees. For every inch of drum length, the lead sheave must be at least 1.6 feet (0.5 m) from the drum.
6. Do not weld to any part of the winch

**Bolt Hole Dimensions**

| | | |
|---|---|---|
| "A" | 7-1/16 in. (180 mm) | 14-3/16 in. (360 mm) |
| "B" | 6-17/32 in. (166 mm) | 6-17/32 in. (166 mm) |
| "C | 17/32 in. (13.5 mm) | 17/32 in. (13.5 mm) |
| "D" | 9.76 in. (248 mm) | 16.85 in. (428 mm) |

## Wire rope

**⚠ CAUTION**

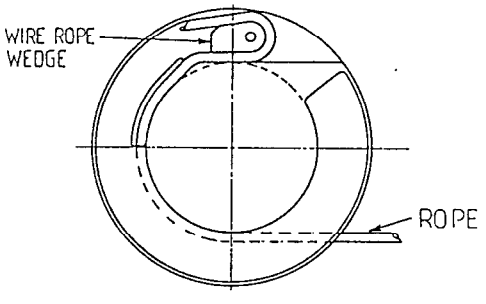
**• Maintain at least 3 wraps of wire rope on the drum at all times.**
**• Install the wire rope to come off the drum in an underwind position as indicated on the direction of rotation tag.**

### Wire Rope Selection

Consult a reputable wire rope manufacturer or distributor 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, trade association, state and local 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. Wire rope diameter for lifting is 3/8 in. (10 mm). Maximum wire rope diameter is limited by the wire rope anchor.

### 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 smaller anchor hole in the wire rope drum and pull through approximately one foot (0.3 m) of wire rope.
3. Tuck the end of the wire rope back into the wire rope anchor pocket forming a loop in the wire rope.
4. Insert the wire rope anchor and pull the wire rope through the slot tightening the wire rope around the wire rope anchor.

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**⚠ CAUTION**

**• Make sure the first wrap of wire rope is flush against the drum flange.**

5. Pull the wire rope anchor into position in the drum anchor pocket.

### Wire Rope Spooling

To compensate for uneven spooling and decrease in line pull capacity as the drum fills up, use as short a wire rope as practical. To rewind wire rope apply tension to eliminate slack. This helps achieve level winding and tight spooling.

### Safe Wire Rope Handling Procedures

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

### Rigging

Make sure all wire rope blocks, tackle and fastenings have sufficient safety margin to handle the required load. Do not allow wire rope to contact sharp edges or make sharp bends which will cause damage to wire rope, use a sheave. Refer to wire rope manufacturer's handbook for proper sizing, use and care of wire rope.

## Safe Installation Procedures

1. Do not use wire rope as a ground for welding.
2. Do not attach a welding electrode to winch or wire rope.
3. Never run the wire rope over a sharp edge. Use a correctly sized sheave.
4. When a lead sheave is used, it must be aligned with the center of the drum. The diameter of the lead sheave must be at least 18 times the diameter of the wire rope.
5. Always maintain at least three full wraps of wire rope on the drum.

## Air Supply

The air supply must be clean and free from moisture.

### Air Lines

The inside diameter of the winch air supply lines should not be smaller than 3/4 in. (19 mm) for flexible lines and 5/8 in. (17 mm) for connectors. Before making final connections, all air supply lines should be purged before connecting to system inlet. 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

Always use an line lubricator with these motors. Use a lubricator having an inlet and outlet at least as large as the inlet on the motor. Install the lubricator in the air line just ahead of the motor.

**NOTICE**

**• Lubricator should be located no more than 10 ft. (3m) from the motor.**

The air line lubricator should be replenished daily and set to provide 2 to 3 drops per minute of SAE 30W oil (minimum viscosity 135 Cst at 104° F (40°C)).

Winches are delivered with the gear box filled with oil.

### Motor

For optimum performance and maximum durability of parts, operate air motor at 90 psi at 70 scfm (6.3 bar/630 kpa at 3.5 cu.m/min) air pressure and volume. The winch should be installed as near as possible to the compressor or air receiver.

### 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.

For winches that have been in storage for a period of more than one month the following start-up procedure is recommended.

1. Pour a small amount of gasoline fluid in the motor inlet port.
2. Operate the motor for 10 seconds to flush out any impurities.
3. Pour small amount of oil in the motor air inlet port.
4. Operate the motor for an additional 2 to 3 seconds. The winch is now ready to work.

## OPERATION

The four most important aspects of winch operation are :

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

**⚠ WARNING**

**• The LIFTSTAR 1200 R Winch is not designed or suitable for lifting, lowering or moving persons. Never lift loads over people.**

### Winch Control

The winch spring loaded manual control throttle is mounted to the air motor.

When viewed from the air motor end move the control throttle handle to the right (clockwise) to pay out wire rope.

When viewed from the air motor end move the control throttle handle to the left (counterclockwise) to haul in wire rope.

To ensure smooth operation of the winch sudden movements of control valve should be avoided.

### Remote Pilot Pendant Throttle (optional)

The pendent control throttle is equipped with two separate levers for winch operation. Pilot pressure from the pendant throttle activates the winch control valve. Direction of drum rotation is controlled by whichever lever is depressed.

**⚠ CAUTION**

**• To avoid damage to the rigging, the structure supporting the rigging and the winch, do not "two-block" the end of the wire rope.**

# LUBRICATION

**Wire Rope**
Refer the wire rope manufacturer's recommendations. At a minimum observe the following :

1. Clean with a brush or steam if there is dirt, rock dust or other foreign material on the surface of the wire rope

**⚠ CAUTION**

**• Do not use an acid-based solvent or other cleaning fluid.**

2. Apply a wire rope lubricant or SAE 30W oil.
3. Brush, drip or spray lubricant weekly, or more frequently, depending on severity of service.

**Reduction Gear Assembly**
Winches are delivered with the gear box filled with oil. Replace the oil in the reduction housing at least once every year. If the winch is used at a normal frequency, the oil in the reduction housing is suitable for one years operation without changing. However, when the winch is used at a high frequency, the oil may need to be changed on a more frequent basis.

To ensure correct performance, highest efficiency and long life, it is essential that the lubricating oil be maintained at the correct level. The recommended grade of oil must be used at all times since the use of unsuitable oil may result in excessive temperature rise, loss of efficiency and possible damage of the gears.

The reduction gear assembly is filled and shipped with SAE 80W90 oil having a kinematic viscosity of 145 mm2/s at 40°C (104°F) from the factory. Use only high quality lubricants in the reduction gear assembly such as high grade EP type oil or the equivalent.

Fill the reduction gear assembly until the oil is level with the working rim.
Oil capacity : 0.13 gall (0.5 Ltrs)

| | | |
|---|---|---|
| Below 32°F (0°C) | SAE 50W | EP4 |
| 32° to 80°F (0° to 27°C) | SAE 90 | EP4 |
| Above 80°F (27°C) | SAE 140 | EP4 |

**Drum Bushings**
Lubricate grease fittings monthly with 2 or 3 pumps of a grease gun. Rotate the drum slowly as grease is being applied. For temperatures -20° to 50°F (-29° to 10°C) use a multipurpose lithium-based EP1 grease. For temperatures 30° to 120°F (-1° to 49°C) use a multipurpose lithium-based EP2 grease.

**NOTICE**

The oils containing molybdenum are to be absolutely proscribed.

**Seals and Bearings**
If winch is disassembled, clean all parts thoroughly and coat bearings and seals with clean grease. Use sufficient grease to provide a good protective coat.

**Storage**
For exchange winches or winches that will not be operated for extended periods pour a small amount oil into the motor inlet port or supply line. Operate the motor for 2 to 4 seconds to lubricate the motor parts then plug the air inlet port.

# INSPECTION

There are two types of inspection, the frequent inspection performed by the operator while using the winch and periodic inspections performed by personnel trained in the operation and maintenance of this winch. 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.
Any deficiency revealed through inspection 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.

## Frequent Inspection

On a winch in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

1. OPERATION. Check for visual or abnormal noises which could indicate a defect. Do not operate a winch unless the wire rope feeds onto the winch drum smoothly. If wire rope binds or jumps, clean and lubricate the wire rope. If problem persists, replace the

wire rope. Do not operate the winch until all defects have been corrected.

2. AIR SYSTEM. Check air lines, valves and other components for leakage. Repair if necessary.

3. WIRE ROPE. Wire rope is a consumable item which must be replaced when worn. The following list is a guide to the accepted standards by which wire rope must be judged and is not presented as a substitute for an experienced inspector:

   a. Damage, such as bird cages, kinking, core protrusion, crushing, heat damage, and main strand displacement.
   b. Corrosion and nicking.
   c. Wear of crown wires. Replace at 1/3 wear of any crown wire.
   d. Broken wires or strands, particularly at connections. Replacement is necessary if one wire is broken at a connection; six wires broken within one lay; three wires broken in one strand within one lay.
   e. Lubrication.

Replace wire rope if any doubt exists as to wire rope serviceability.

4. WIRE ROPE REEVING. Check reeving and ensure wire rope is properly secured to the drum.

5. CONTROLS. See that controls function properly and control handle returns to neutral center when released.

## Periodic Inspection

The frequency of periodic inspection depends on the severity of usage : NORMAL, yearly; HEAVY, semi-annually; SEVERE, quarterly.
Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in a frequent inspection plus the following:

1. FASTENERS. Check, capscrew, nuts, pins and other fasteners on winch and air system. Replace if missing and tighten or secure if loose.

2. ALL COMPONENTS. Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearings, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.

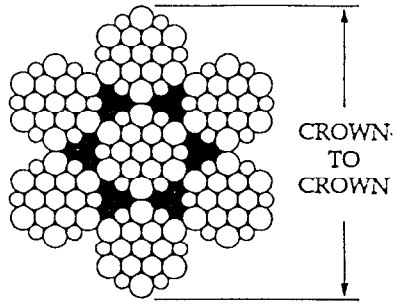
3. DRUM AND SHEAVES. Check for damage or excessive wear. Replace if necessary.

4. BRAKE. Perform functional load test on winch. Check ability of the brake to hold rated load.

5. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.

6. WIRE ROPE. Besides the items in a frequent inspection, inspect for the following :

   a. Build-up of dirt and corrosion. Clean if necessary.
   b. Loose or damaged end connection. Replace if loose or damaged.
   c. Check wire rope anchor is secure.
   d. Changes in the size of the wire rope diameter. Periodically measure the diameter of the wire rope from crown-to-crown throughout the life of the wire rope. The actual diameter should be recorded when the wire rope is under equivalent loading and in the same operating section. If the actual diameter of the wire rope has decreased more than 1/64 in. (0.4 mm) 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.
   (ref. Dwg. D6310012)




(Dwg. D6310012)

7. FOUNDATION. Check for the continued ability to handle the imposed loads.

### Winches Not in Regular Use

A winch which has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming with the requirements of "Frequent Inspection" before being placed into service.
A winch which has been idle for a period of over six months shall be given a complete inspection conforming with the requirements of "Periodic Inspection". Standby winches shall be inspected at least semi-annually in accordance with the requirements of "Frequent Inspection". If abnormal operating conditions apply, winches may require a more frequent inspection.

# TROUBLESHOOTING

This section provides the information necessary for troubleshooting this winch. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of this winch. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

| SYMPTOM | CAUSE | REMEDY |
|---|---|---|
| Winch will not operate. | No air supply to winch. | Check connections and hoses in air supply line. |
| | Winch is overloaded. | Reduce load to within rated capacity. |
| Load continues to move when winch is stopped. | Brake is slipping. | Check brake friction discs and springs See "MAINTENANCE"section. |
| | Winch is overloaded. | Reduce load to within rated capacity. |
| Winch will not lift load or does not lift rated capacity. | Winch is overloaded. | Reduce load to within rated capacity. |
| | Motor may be damaged. | Inspect motor. See "MAINTENANCE" section. |
| | Brake is not releasing. | Check brake release pilot hole is not restricted. Check seals on brake piston are not damaged. |
| | Insufficient air supply. | Check air supply pressure and volume. |
| Oil leaks from drum bushing area. | Reduction assembly is leaking. | Disassemble winch and inspect reduction assembly seals. |
| Low power. | Low air pressure at the inlet. | Check air pressure at the inlet while winch is running. |
| | Worn or damaged motor gears. | Inspect motor. See "MAINTENANCE" section. |
| | Improper lubrication or dirt building up in the motor. | Lubricate as instructed in "LUBRICATION" section. If this does not help, flush the motor as instructed in the "INSTALLATION" section. |
| | Winch binds during operation. | Check winch mounting surface is flat and does not distort during winch operation. |
| Motor does not operate smoothly. | Worn or broken rotor bearings. | Examine each bearing. Install new bearings as necessary. |

**⚠ WARNING**

- **Never perform maintenance on the winch while it is supporting a load.**
- **Before performing maintenance, tag controls : DANGER - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.**
- **Only allow service personnel trained in the operation and service of this winch to perform maintenance.**
- **After a routine maintenance operation, test this winch before returning to service. (See § "testing").**
- **Do not use Trichloroethylene to clean parts.**

## Disc Brake (ref. Dwg. D6310008)

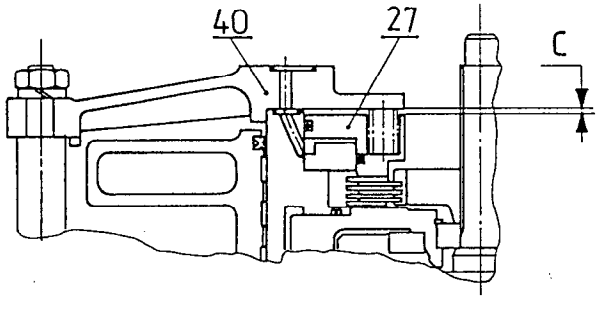
### Adjustment

No brake adjustment is required.

### Inspection

If brake slippage occurs during tests prior to placing winch in service or during normal use of the winch, the following procedure is required.

1. Turn off air system, depressurize air lines and disconnect the air hose.
2. Move the winch to a suitable repair area and stand in a vertical position so rear end cover (65) is down.
3. Remove the four screws which secure the motor assembly (31) to the mounting flange (32) and pull off the motor straight away from the winch.
4. Remove the four screws (33) which secure the mounting flange (32) to the front end cover (40). Remove the mounting flange using two jacking screws HM6-25 metric thread length one inch (25 mm) to extract the mounting flange.
5. Remove the gear wheel (39).
6. Check dimension "C" from the brake piston (27) to the front end cover (40) as shown in Dwg. D6310003. If this dimension is greater than 0.16 in. (4 mm), the brake discs (21 and 22) must be replaced by following the winch disassembly procedure.




(Dwg. D6310003)

## General Disassembly Procedures

The following instructions provide the necessary information to disassemble, inspect, repair, and assemble the winch. Refer to the winch assembly drawing provided in the Parts Section.
If a winch is being completely disassembled for any reason, follow the order of the topics as they are presented.

It is recommended that all maintenance work on the winch be performed on a bench in a clean dust free area.
In the process of disassembling the winch, observe the following:

1. Never disassemble the winch any further than is necessary to accomplish the needed repair. A good part can be damaged during the course of disassembly.
2. Never use excessive force when removing parts. Tapping gently around the perimeter of a cover or housing with a soft hammer, for example, is sufficient to break the seal.
3. Do not heat a part with a flame to free it for removal, unless the part being heated is already worn or damaged beyond repair and no additional damage will occur to other parts.

In general, the winch is designed to permit easy disassembly and assembly. The use of heat or excessive force should not be required.

4. Keep the work area as clean as practical, to prevent dirt and other foreign matter from getting into bearings or other moving parts.
5. All seals and 'O' rings should be discarded once they have been removed. New seals and 'O' rings should be used when assembling the winch.
6. When grasping a part in a vise always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
7. Do not remove any part which is press fit in or on a subassembly unless the removal of that part is necessary for repairs or replacement.

## Disassembly Instructions

### Winch Disassembly (ref. Dwg. D6310008)

1. Disconnect and tag the air lines.
2. Remove winch from its mounting and set in a clean work area on a sturdy work bench.
3. Position the winch vertically with the motor end down.
4. Remove the nuts (2) and lock washers (3).

5. Remove the rear end-cover (65):
   5.1 Extract the exhaust washers (66) and the rings (67).
   5.2 Pull bearing (68) from rear end cover (65).

6. Pull the drum (64) from the winch.
   6.1 Remove the quad ring (1) and the drum bushings (47) if they require replacement.

7. Remove the reduction gear and brake assembly from the drum.
8. Remove the oil drain plug (6) and drain the oil from the gear casing.
9. Remove the four screws which secure the motor (31) to the mounting flange (32) and pull off the motor straight away from the winch. For disassembly of the motor and the valve, follow the corresponding procedure.
10. Remove the gasket (37) and the 'O' ring (29) and drain the oil from the brake through the mounting flange bore.
11. Remove the three nuts (2) and lock washers (3) and remove the three tie rod spacers (4).
12. Remove the gearbox and brake assembly from the output shaft (5).

13. Disassembly of the front end-cover (40):
   13.1 Remove screws (33).
   13.2 Remove the mounting flange (32). Extract the oil seal (36), bearing (35) and the pins (28).

**NOTICE**

**The oil seal has been installed with Loctite ® 460 on the backside of the seal.**

   13.3 Remove the gasket (38) and the 'O' ring (29).
   13.4 Remove the gear wheel (39) and the spacer (44).
   13.5 Remove the screws (42).
   13.6 Remove the front end cover (40).

14. Disassembly of the brake:
   14.1 Remove the 'O' ring (26).
   14.2 Remove the springs (49).
   14.3 Extract the brake piston (27) by using low pressure compressed air in brake release port.
   14.4 Remove the 'O' rings (24 and 25).
   14.5 Remove screws (43).
   14.6 Extract the stop ring (23) by using jacking screws in the three M6 threated holes.

**NOTICE**

**Stop ring (23) has been installed with Loctite ® Instajoint 574.**

   14.7 Remove friction discs (21), steel discs (22) and stop ring (46).

15. Disassembly of the gear box:
   15.1 Remove screws (55) and lock washers (56).
   15.2 Extract the gear box cover by using jacking screws in the two M4 threated holes.
   15.3 Press out the output shaft (5) and the output annular gear (58).
   15.4 Remove the bearings (59 and 61), oil seal (60) and the 'O' ring (9).
   15.5 Remove the bearing (10), spring washer (57) and the output annular gear (58).
   15.6 Remove the satellite support assembly.
   15.7 Push out the satellite axles (11).
   15.8 Remove the satellites (15), bearing studs (12) and stop rings (13).
   15.9 Remove the needle bearings (14) and the spacers (16).
   15.10 Disassembly of the fixed annular gear (19):
      - compress the 'O' ring (20) by using the special tool M6313400.
      - remove the retainer ring (17).
      - push out the fixed annular gear (19).
      - remove the 'O' ring (9).
      - remove the pins (28).
      - remove the 'O' ring (20).
   15.11 Disassembly of the shaft spindle (18):
      - remove the retainer ring (45).
      - push out the shaft spindle (18) and remove the coupling sleeve (51).
   15.12 Remove the retainer ring (48).
   15.13 Remove the bearing (52).

Inspection

1. Inspect all gears for worn, cracked, or broken teeth.
2. Inspect all bushings for wear, scoring, or galling.
3. Inspect all bearings for play, distorded races, pitting and roller or ball wear or damage. Inspect bearings for freedom of rotation.
4. Inspect shafts for ridges caused by wear. If ridges caused by wear are apparent on shafts, replace the shaft. Inspect all surfaces on which oil seal lips seat. These surfaces must be very smooth to prevent damage to the seal lip.
5. Inspect all threaded items and replace those having damaged threads.
6. 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.
7. Smooth out all nicks, burrs, or galled spots on shafts, bores, pins, or bushings.
8. Examine all gear teeth carefully, and remove nicks or burrs.
9. Polish the edges of all shaft shoulders to remove small nicks which may have been caused during handling.
10. Remove all nicks and burrs caused by lockwashers.
11. Replace all gaskets, oil seals, and 'O' rings any time the winch is disassembled for repair.
12. Inspect drum bushings (47) for wear, if thickness is less than 0.039 in. (1 mm), replace drum bushings.

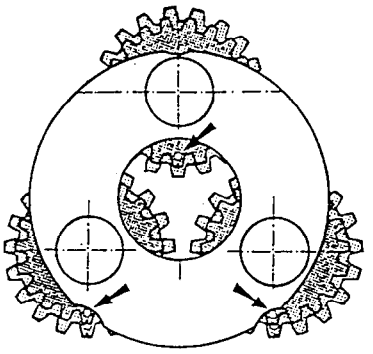
13. Inspect brake discs (21 and 22) for wear, if thickness less than 0.354 in. (9 mm), replace them.

### Winch Assembly

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

**⚠ CAUTION**

**• For correct assembly of planet gears, each planet gear must be positioned with the timing mark as shown on drawing D6310013.**



(Dwg. D6310013)

1. After assembly of satellite support (54) with the fixed annular gear (19) and the shaft spindle (18) , check for good indexing of planet gears and repeat the above operation if necessary.
2. Stop ring (23) assembly:
   2.1 On the face of the stop ring (23) which makes contact with the gear box (53) apply a bead of Loctite ® instajoint No. 574 around the fixing holes and the external diameter.
3. Oil seal (36) assembly:
   3.1 Clean the mounting flange (32) bore and apply a bead of Loctite ® No. 460 on the backside of the oil seal. Install oil seal.
4. Drum bushing (47) assembly:
   4.1 Scrape old Loctite ® from the drum bushing bore and apply a bead of Loctite ® 406 on the smooth face of drum bushings (47).
   4.2 Install drum bushing in drum bushing bore by taking care to adjust the gaps of the drum bushings to 3.9 ins. (100 mm) do not allow any clearance between drum bushings and drum.
   4.3 Lubricate drum bushings with grease.
   4.4 Install the drum on the gear box assembly.
   4.5 Lift out the drum to check for good positioning of drum bushings.

**NOTICE**

**• Periodic lubrication of drum bushings can be done by applying grease through nipple (28) at the bottom of motor casing.**

Carefully clean exhaust washers (66)with petroleum and compressed air.
Fill up the gear box with oil SAE 80W90
kinematic viscosity 145 mm²/s at 40°C (104°F)
capacity of gear box : 0.13 gall (0.5 Ltrs)

### Control Valve Disassembly (ref. Dwg. D6310006)

1. Remove screws (10) and lock washers (11).
2. Remove the valve assembly from the motor.
3. Tap out the pin (8).
4. Extract the control lever (1).
5. Remove screws (7).
6. Remove stop (9).
7. Remove the return spring (4).
8. Pull out the rotary valve (6).

**NOTICE**

**• Localize the mounting position of the rotary valve in the valve housing.**

9. Remove 'O' ring (5).

### Inspection

Worn or damaged parts must be replaced, polish the edges of rotary valve to remove small nicks if necessary.

### Control Valve Assembly

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

**NOTICE**

**• Mounting of rotary valve must be done carefully to avoid damage. Lubricate rotary valve before assembly.**

Lubricate spring (4).
Screws (7) must be installed with Loctite ® No. 243.

### Air Gear Motor Removal (ref. Dwg. D6310005)

1. Stand winch in a vertical position on the rear end cover.
2. Remove the 4 screws which secure the motor to the mounting flange.
3. Remove motor and control valve assembly.
4. Remove the 4 screws which secure the control valve to the motor and remove the control valve.

### Air Gear Motor Disassembly

1. Remove the screws (1) and lock washers (2).
2. Remove the motor housing (29).
3. Remove the 'O' ring (16).
4. Remove the gasket (15).
5. Remove screws (26).
6. Remove the motor cover (14).
   - remove the 'O' rings (9).
   - remove the exhaust washer (7) and the plug (8).
   - remove the needle bearings (5 and 11) if they have to be changed.
   - remove pins (3).

7. Immobilize the motor rotors with an pin between the teeth and remove nuts (18 and 23).
8. Remove the motor rotors (13 and 4) .
   - remove the shaft segment (6) and the internal ring.
9. Remove the screw (21) and the washer (20).
10. Remove ball bearings (17 and 24).
11. Remove the spacer (12).
12. Remove the stopper (25), the spring (19) and the rear stop (22).

**Inspection**
- inspect gears and remove nicks or burrs
- inspect and replace bearings if necessary
- inspect motor body and smooth out all nicks or burrs
- inspect the valve and smooth out all nicks or burrs

**Air Gear Motor Assembly**
Assembly of motor is the same as disassembly in opposite order.

**NOTICE**

**• To correctly assemble the exhaust washer, spacer, valve and the spring, carefully follow instructions:**

- Take the motor body and put it in the same position as mounting on the winch and view from the backside of the motor body, stopper, spring, valve and the spacer must be mounted in the left bore. Check for good functioning of the valve.
- The exhaust washer must be mounted on the same side as the valve in the left bore.
- Before assembly lubricate bearing with grade 2 grease.
- Install ball bearings so markings on bearing remain visable.
- After assembly of the air motor, it must turn smothly in both direction.
- The screws (21 and 26) the nuts (18 and 23) must be secured with LOCTITE ® 243, secure the nuts with a center punch.

**Valve Disassembly Optional Remote Control**
(ref. Dwg. D6310026)

1. Remove screws (3).
2. Remove the valve assembly from the motor.
3. Remove the cover (4) from the valve body (10).

**NOTICE**

**• The cover (4) has been installed with Loctite ® instajoint No. 574.**

4. Remove screws (1) and lock washers (2)
5. Remove the end caps (7) and and the rear stops (8).
6. Remove the slide valves (9) and return spring (5).
   6.1 Remove the quad rings (12).
7. Remove the quad rings (6) from the valve body.

**Valve Assembly Optional Remote Control**
Assemby of optional valve assembly is the same as disassembly in opposite order.

**NOTICE**

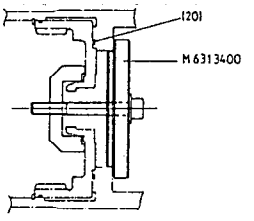
**• Screws (3) must be secured with Loctite ® No. 243.**

**Pendant Control Disassembly** (Ref. Dwg. D6310027)
1. Remove the male fittings (1) and the ring (9).
2. Remove the retainer ring (2).
3. Put out the rear covers (4) with the 'O' ring (5).
4. Remove the springs (3).
5. Remove the "slide valve assemblies" (6) with the quad ring (8).
6. Remove the springs (7).
7. Remove the valve cone assemblies (10).
8. Remove the screws (12).
9. Take out the pin (11) in order to remove the levers (13).

**Pendant Control Assembly** (ref. Dwg. D6310027)
1. Assembly of the pendant control is the same as disassembly in opposite order.
2. Adjustment
   2.1 Connect the inlet of the pendant to 100 psi (7 bar) pressure air supply.
   2.2 Connect a manometer at the outlet of the lever to be adjusted.
   2.3 Put some Loctite ® No. 243 on the adjustment screw.
   2.4 Tighten the adjustment screw to obtain a pressure of 15 psi (1 bar) without actioning the lever.
   2.5 Release the adjustment screw by a half turn (pressure must fall down to zero).
   2.6 Push the lever.
   Check that pressure reaches $93^{\pm 7}$ psi ($6.5^{\pm 0.5}$ bar).
   Check that there is no leak at exhaust.
   2.7 Release the lever, exhaust must occur by rapid pressure reduction.
   2.8 Repeat operations "2.6 and 2.7" from 2 to 3 times.
   2.9 Disconnect the manometer. Check that there is no leak when the lever is not actuated.
   2.10 Repeat the operations from 2.1 to 2.9 with each lever.

## ACCESSORIES

Tooling installation M6313400
(Dwg. D6310031)



## Testing

### Operational Tests

Prior to initial use, all new, altered or repaired winches shall be tested to ensure proper operation.

1. Operate winch in both directions with no load.
2. Check operation of free wheel and brake.
3. Check operation of limit switches and other safety devices when provided.
4. Check all winch mounting bolts are secure.

### Load Test

Prior to initial use, all new, extensively repaired, or altered winches shall be load tested by or under the direction of a person trained in the operation and service of this winch, and a written report furnished confirming the rating of the winch. The minimum load tests for European countries are according to the chart below. If not found below you should use the tests recommended by the FEM.

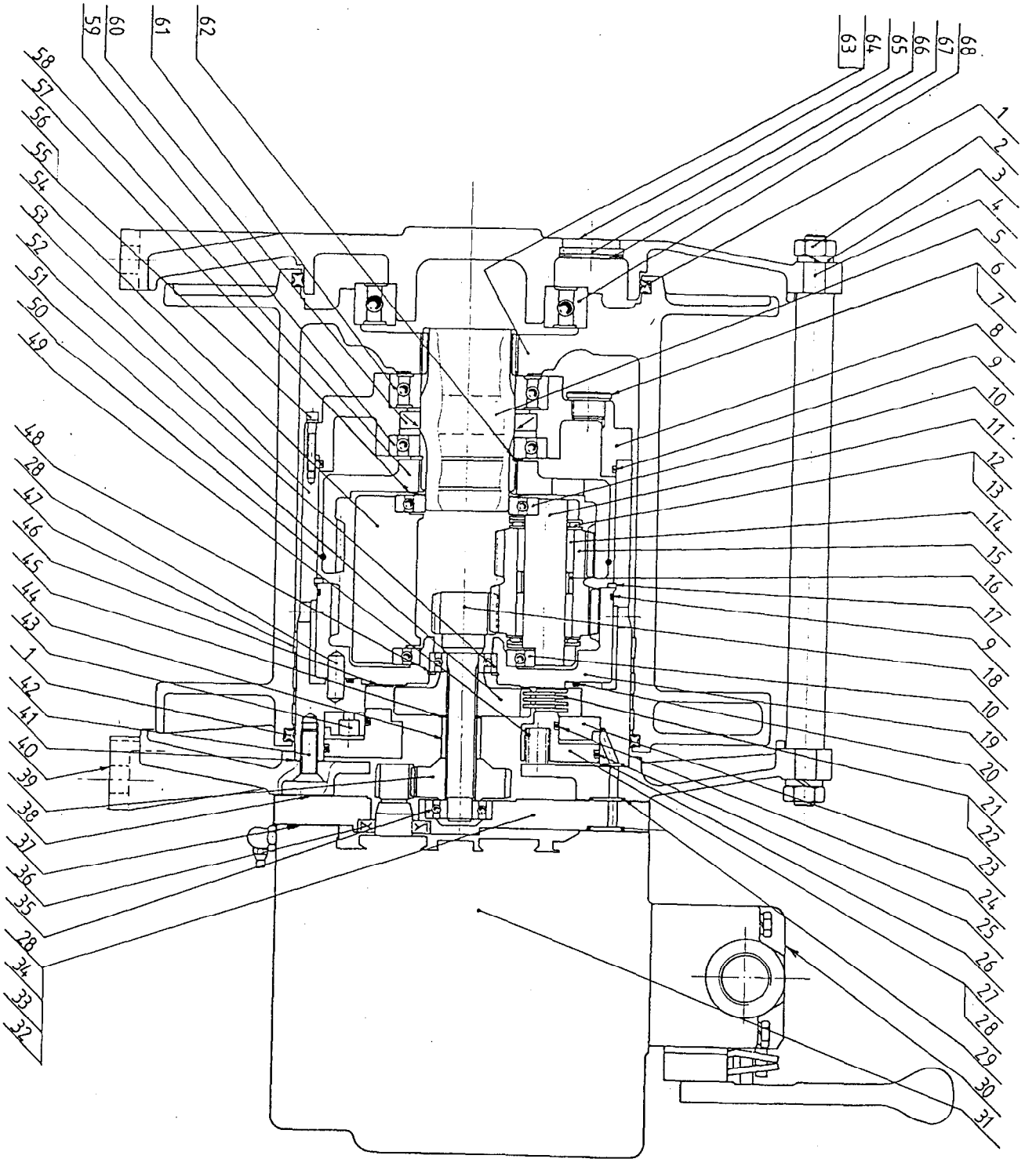
The dynamic test shall be carried out with an overload coefficient $\rho 1 = 1,2$, i.e. with a load equal to 120 % of the safe working load. All motions shall be carefully operated in turn, without checking speeds of temperature rises in the motors (see clause 2.3.3.c).

The static test shall be carried out with an overload coefficient $\rho 2 = 1,4$, i.e. with a load equal to 140 % of the safe working load. The test must be carried out under still conditions and consists in hoisting the safe working load to a small distance above the ground and then adding the required surplus without shock (see clause 2.3.3.c).

TEST LOADS FOR CRANES IN SOME EUROPEAN COUNTRIES

| Country | Dynamic tests | Static tests | Comments |
|---|---|---|---|
| AUSTRIA | 125 % up to 25 t<br>110 % over 25 t | | |
| BELGIUM | Up to 20 t ..... 125 %<br>From 20 to 50 t .... + 5 t<br>Over 50 t ..... 110 % | 25 t ..... 140<br>25 to 50 t ..... 10 t<br>50 t ..... 120 % | |
| SUITZERLAND | | | According to DIN 15030 |
| GERMANY | PK = 1,25 P (H1 and H2)<br>Pg = 1,33 P<br>Pk = 1,25 P<br>Pk = 1,25 P1 + 0,25 Po | Pg = 1,50 P (H3 and H4)<br><br>Pg = 1,33 P - 1,4 P | DIN 15018 part 1<br><br>DIN 15019 part 1<br>DIN 15030 |
| FRANCE | 120 %<br>(exculding builder's tower cranes and some dismountable appliances : 110 %) | 150 %<br>(excluding builder's tower cranes and some dismountable appliances : 133 %) | |
| GREAT BRITAIN | 125 % of the SWL | | |
| ITALY | 128 % self propelled cranes<br>120 % tower cranes<br>110 % other lifting appliances | | During 15 min. |
| NETHERLANDS | Up to 20 t ..... 125 %<br>From 20 to 50 t ... + 5 t | Not compulsory | |
| NORWAY | Up to 20 t ..... 125 %<br>From 20 to 50 t ... + 5 t<br>Over 50 t ..... 110 %<br>OR FEM | FEM | |
| SWEDEN | Up to 5 t ..... 125 %<br>From 5 to 20 t ..... 120 %<br>From 20 to 50 t ... 115 %<br>Over 50 t ..... 110 % | | |

# WINCH ASSEMBLY DRAWING



(Dwg. D6310004)

## WINCH ASSEMBLY PARTS LIST

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Quad ring | 2 | 5823-1029 |
| 2 | Nut | 6 | 4300-0211 |
| 3 | Lock washer | 6 | 4520-0010 |
| 4 | Tie rod spacer (14-3/16 in. lg drum) | 3 | 9631-0052 |
| | Tie rod spacer (7-1/16 in. lg drum) | | 9631-0008 |
| 5 | Output shaft | 1 | 9631-0026 |
| • 6 | Plug | 2 | 6511-9732 |
| 7 | Copper joint | 2 | 5840-3431 |
| 8 | Gear box cover | 1 | 9631-0005 |
| • 9 | 'O' ring | 2 | 5823-1129 |
| 10 | Bearing | 2 | 5080-0008 |
| 11 | Satellite axle | 3 | 9620-0060 |
| 12 | Bearing stud | 6 | 5605-3520 |
| 13 | Stop ring | 6 | 5731-9832 |
| 14 | Needle bearing | 6 | 5650-2620 |
| 15 | Satellite | 3 | 9620-0075 |
| 16 | Spacer | 3 | 9619-0024 |
| • 17 | Retainer ring | 1 | 4784-7832 |
| 18 | Shaft spindle | 1 | 9631-0009 |
| 19 | Fixed annular gear | 1 | 9620-0030 |
| • 20 | 'O' ring | 1 | 5821-0929 |
| 21 | Friction disc | 4 | 6305-9932 |
| 22 | Steel disc | 3 | 6306-0032 |
| 23 | Stop ring | 1 | 9631-0072 |
| • 24 | 'O' ring | 1 | 5823-0929 |
| • 25 | 'O' ring | 1 | 5821-2829 |
| • 26 | 'O' ring | 1 | 5821-2529 |
| 27 | Brake piston | 1 | 9631-0073 |
| 28 | Pin | 8 | 4600-0416 |
| • 29 | 'O' ring | 2 | 5822-6629 |
| 30 | Air control valve | 1 | |
| 31 | Air gear motor | 1 | |
| 32 | Flange | 1 | 9631-0074 |
| 33 | Screw | 4 | 4130-0206 |
| 34 | Plug | 1 | 6517-2032 |
| 35 | Bearing | 1 | 5010-0001 |
| • 36 | Oil seal | 1 | 5802-0030 |
| • 37 | Gasket | 1 | 9631-0076 |
| • 38 | Gasket | 1 | 9631-0046 |
| 39 | Gear wheel | 1 | 9631-0069 |
| 40 | Front end cover | 1 | 9631-0002 |
| • 41 | Gasket | 1 | 9631-0077 |
| 42 | Screw | 6 | 4110-2203 |
| 43 | Screw | 3 | 4131-6706 |
| 44 | Spacer | 1 | 9631-0075 |
| • 45 | Retainer ring | 1 | 4770-0015 |
| ■ 46 | Stop Ring | 1 | 9631-0071 |
| 47 | Bushing | 3 | 9631-0014 |
| • 48 | Retainer ring | 1 | 4770-3032 |
| 49 | Spring | 11 | 6916-5532 |

■ Item cancelled from Serial number: 93-07-09

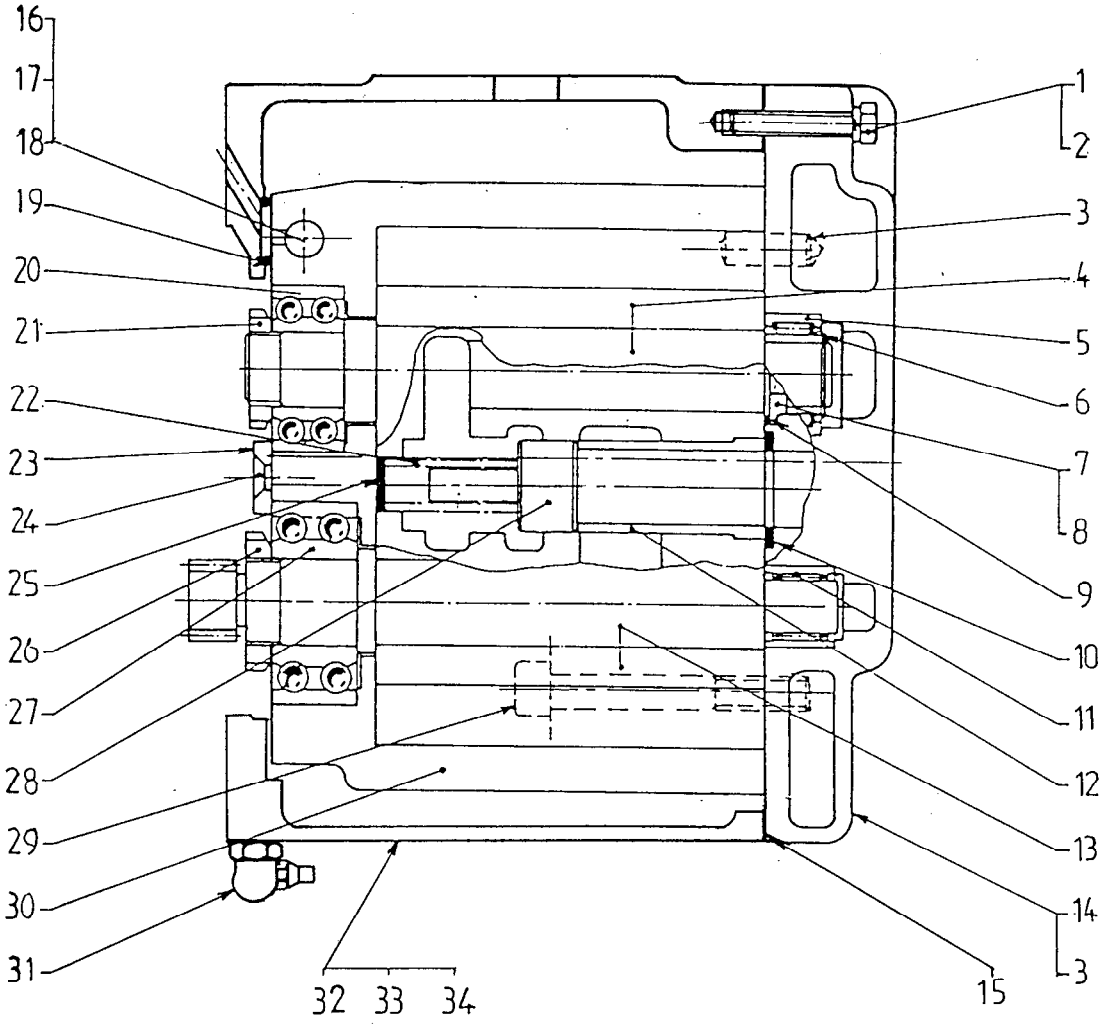
## WINCH ASSEMBLY PARTS LIST

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| • 50 | 'O' ring | 1 | 5820-7129 |
| 51 | Coupling sleeve | 1 | 9631-0070 |
| 52 | Bearing | 1 | 5000-0002 |
| 53 | Gear box | 1 | 9631-0004 |
| 54 | Satellite support | 1 | 9620-0010 |
| 55 | Screw | 6 | 4131-1106 |
| 56 | Lock washer | 6 | 4520-0004 |
| 57 | Spring washer | 1 | 6917-2132 |
| 58 | Output annular gear | 1 | 9620-0031 |
| 59 | Bearing | 1 | 5080-0009 |
| • 60 | Oil seal | 1 | 5801-2130 |
| 61 | Bearing | 1 | 5005-0009 |
| 62 | Retainer ring | 1 | 4770-0045 |
| 63 | Wipe rope wedge | 1 | 9631-0023 |
| 64 | Drum (14-3/16 in. long 360 mm) | 1 | 9631-0050 |
| | Drum (7-1/16 in. long 180 mm) | | 9631-0001 |
| 65 | Rear end-cover | 1 | 9631-0003 |
| • 66 | Exhaust washer | 9 | 6760-0303 |
| • 67 | Ring | 9 | 4780-0639 |
| 68 | Bearing | 1 | 5005-0014 |
| 69 | Drum guard (14-3/16 in. long drum) | 1 | 7631-0010 |
| | Drum guard (7-1/16 in. long drum) | | 7631-0009 |
| 70 | Steel lubricator 3/4" BSP | 1 | 7397-1909 |
| 71 | Steel air filter 3/4" BSP | 1 | 7428-2079 |
| 72 | Filter - Lubricator (F.L.) 3/4" BSP | 1 | 7999-0067 |
| 73 | Filter - Regulator - Lubricator | 1 | 7999-0066 |
| | (F.R.L.) 3/4" BSP | | |
| 74 | Galvanized wire rope | | |
| | • 9 mm Ø - Break load 7330 kg - Per m. | 1 | 6972-0009 |
| 75 | • 10 mm Ø - Break load 9070 kg - Per m. | 1 | 6972-0010 |
| 76 | • 10 mm Ø - Break load 9800 kg - Per m. | 1 | 6975-0010 |
| 77 | Thimble mount on rope | 1 | 6972-9999 |
| 78 | Hook mounted on thimble | 1 | 6972-9998 |
| 79 | Warning tag | 1 | 9631-0066 |
| 80 | Nameplate | 1 | 6676-7232 |

[•] Recommended spare

* Optional parts and accessories not shown on drawing

# AIR GEAR MOTOR ASSEMBLY DRAWING



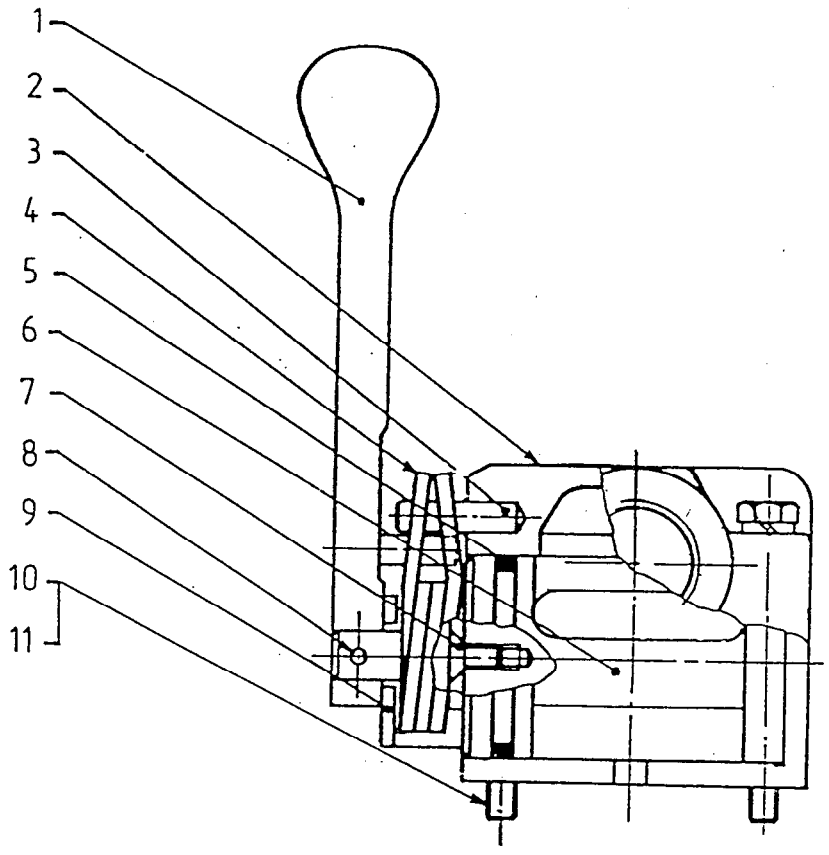

(Dwg. D6310005B)

## AIR GEAR MOTOR ASSEMBLY PARTS LIST

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Screw | 5 | 4101-9001 |
| 2 | Lock washer | 5 | 4520-0006 |
| 3 | Pin | 4 | 4600-0416 |
| 4 | Repulsion rotor | 1 | 9620-0026 |
| 5 | Bearing | 1 | 5646-2813 |
| • 6 | Shaft segment | 1 | 4783-6732 |
| 7 | Exhaust washer | 1 | 9620-0045 |
| 8 | Plug | 1 | 9631-0049 |
| • 9 | 'O' ring | 2 | 5822-5929 |
| 10 | Rear stop | 2 | 9620-0069 |
| 11 | Bearing | 1 | 5649-2213 |
| 12 | Spacer | 1 | 9631-0018 |
| 13 | Motor rotor assembly | 1 | 9620-0093 |
| 14 | Motor cover | 1 | 9631-0042 |
| • 15 | Gasket | 1 | 9631-0045 |
| 16 | Selector stop | 1 | 9609-0223 |
| • 17 | Ball | 1 | 6940-1625 |
| • 18 | 'O' ring | 1 | 5821-2229 |
| • 19 | 'O' ring | 1 | 5822-1729 |
| 20 | Bearing | 1 | 5060-0003 |
| • 21 | Nut | 1 | 5700-0003 |
| 22 | Spring | 1 | 6914-3932 |
| 23 | Washer | 1 | 9631-0054 |
| 24 | Screw | 1 | 4110-3403 |
| 25 | Rear stop | 1 | 9412-0030 |
| • 26 | Nut | 1 | 5700-0004 |
| 27 | Bearing | 1 | 5060-0004 |
| 28 | Stopper | 1 | 9631-0017 |
| 29 | Screw | 4 | 4130-2206 |
| 30 | Motor housing | 1 | 9620-0008 |
| 31 | Grease nipple | 1 | 6710-2227 |
| 32 | Motor housing | 1 | 9631-0078 |
| 33 | Screw | 4 | 4100-0101 |
| 34 | Lock washer | 4 | 4520-0006 |

[•] Recommended spare

# CONTROL VALVE ASSEMBLY DRAWING AND PARTS LIST

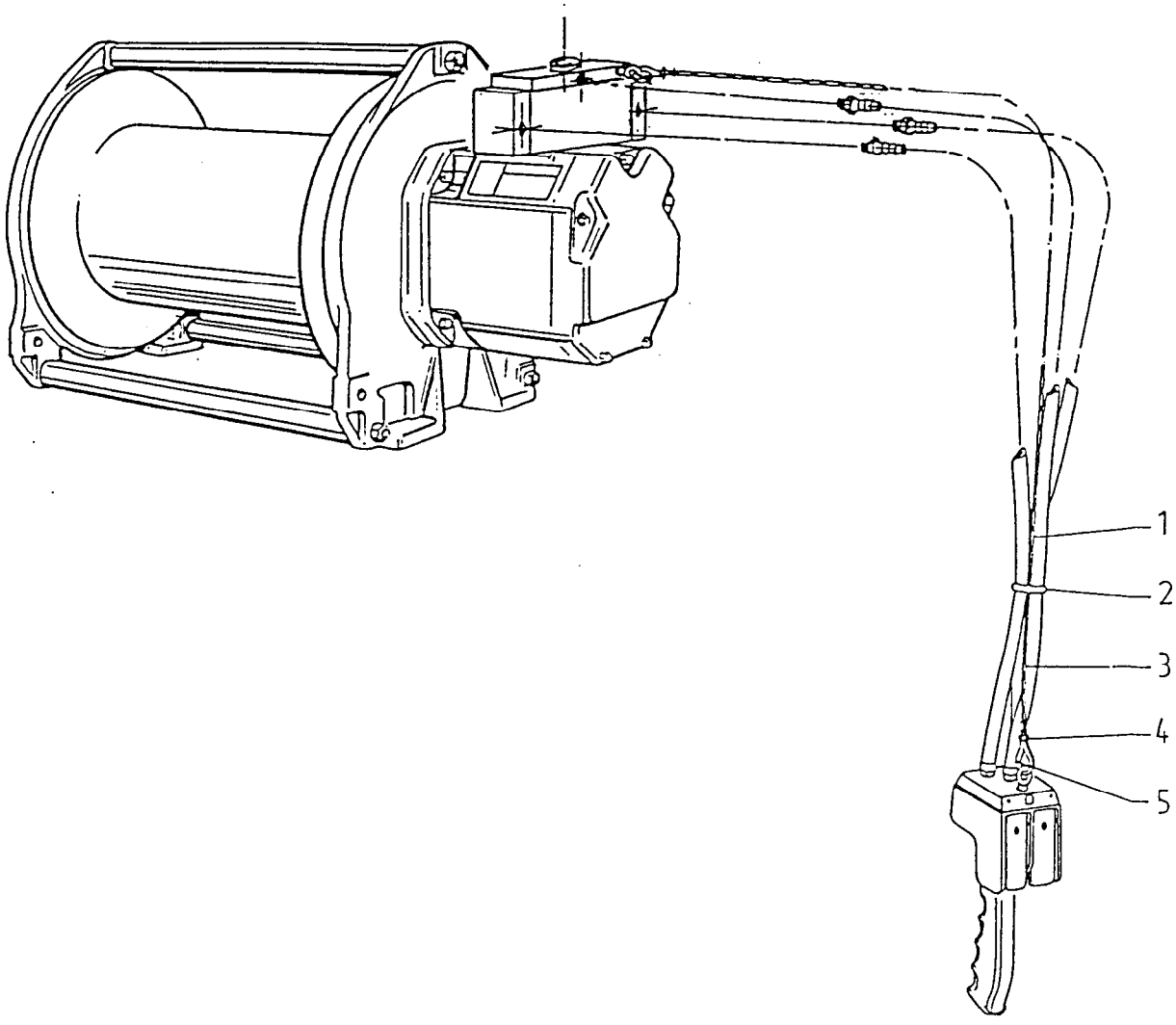



(Dwg. D6310006)

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Control lever | 1 | 9618-0031 |
| 2 | Valve housing | 1 | 9631-0021 |
| 3 | Pin | 2 | 4600-1216 |
| 4 | Return spring | 1 | 9618-0035 |
| • 5 | 'O' ring | 1 | 5821-0229 |
| • 6 | Rotary valve | 1 | 9631-0022 |
| 7 | Screw | 2 | 4110-3403 |
| 8 | Pin | 1 | 4650-7220 |
| 9 | Stop | 1 | 9618-0034 |
| 10 | Screw HM | 4 | 4101-6601 |
| 11 | Lock washer | 4 | 4520-0006 |

[•] Recommended spare

# OPTIONAL CONTROL ASSEMBLY DRAWINGS AND PARTS LIST

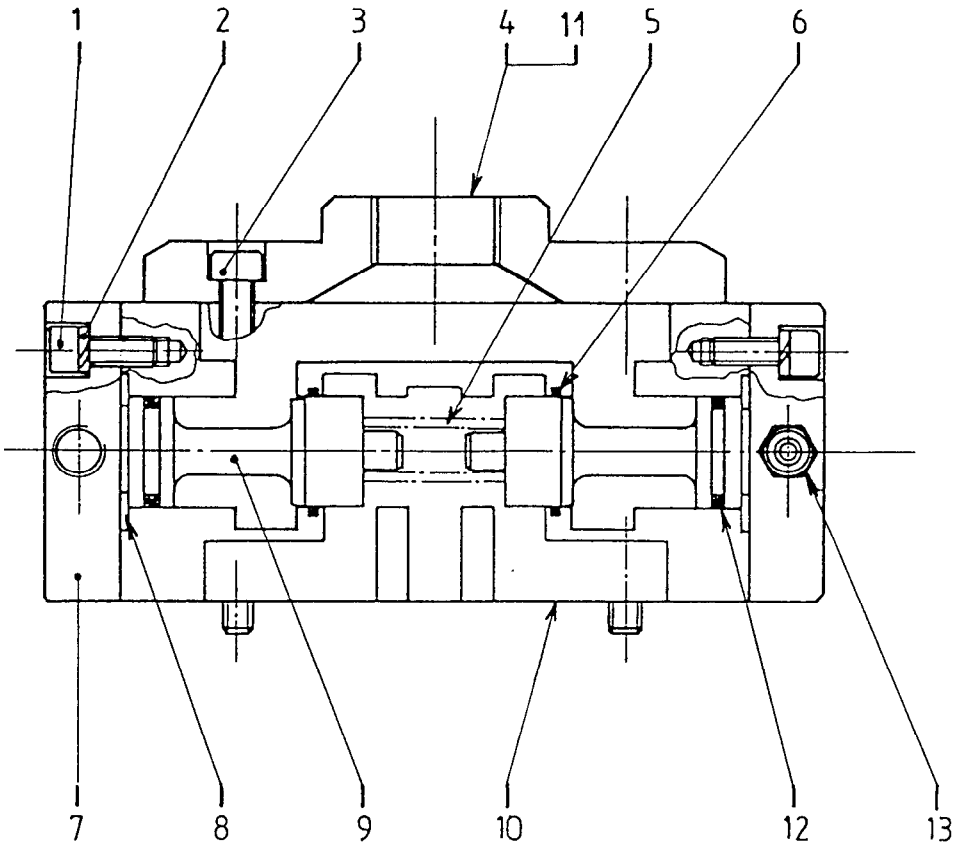



(Dwg. D6310028. A)

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Hose | * 1,1 | 6802-4232 |
| 2 | Clamp collar | * 1 | 6112-5132 |
| 3 | Rope | * 0,35 | 6972-0004 |
| 4 | Clamp collar | 4 | 6112-5032 |
| 5 | Thimble | 2 | 6932-5332 |

* Quantity to be multiplied by the number of meters of remote control

# OPTIONAL VALVE ASSEMBLY DRAWING AND PARTS LIST

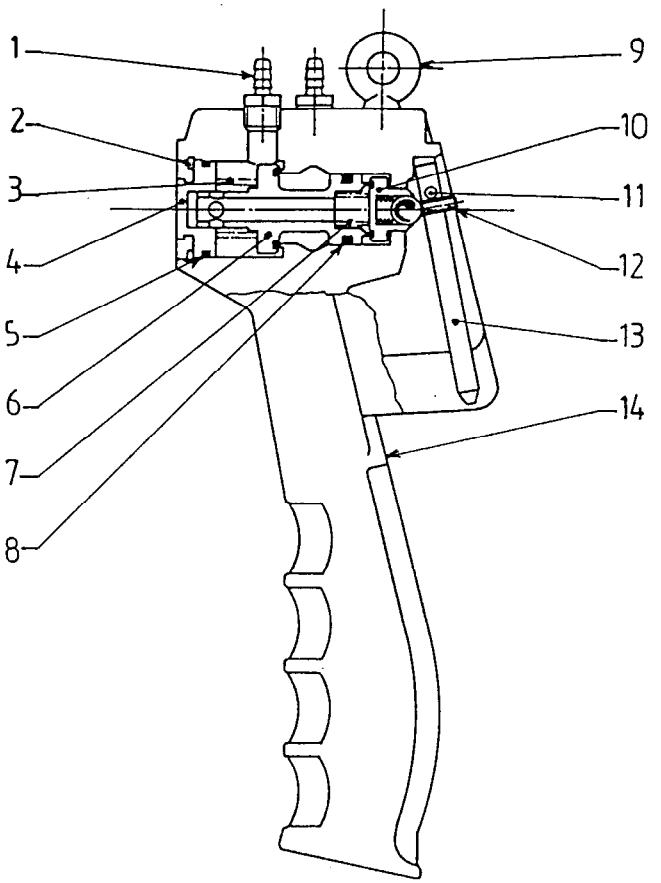



(Dwg. D6310026. A)

| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Screw | 8 | 4130-0206 |
| 2 | Lock washer | 8 | 4520-0006 |
| 3 | Screw | 4 | 4130-5906 |
| 4 | Cover | 1 | 9617-0050 |
| 5 | Return spring | 1 | 9412-0289 |
| • 6 | Quad ring | 2 | 5823-2429 |
| 7 | End cap | 2 | 9617-0049 |
| 8 | Rear stop | 2 | 9412-0031 |
| 9 | Slide valve | 2 | 9617-0047 |
| 10 | Valve body | 1 | 9617-0046 |
| 11 | Ring | 1 | 6422-2332 |
| • 12 | Quad ring | 2 | 5822-9029 |
| 13 | Fitting | 3 | 6165-2632 |

[•] Recommended spare

# PENDANT CONTROL ASSEMBLY DRAWING AND PARTS LIST




(Dwg. D6310027)

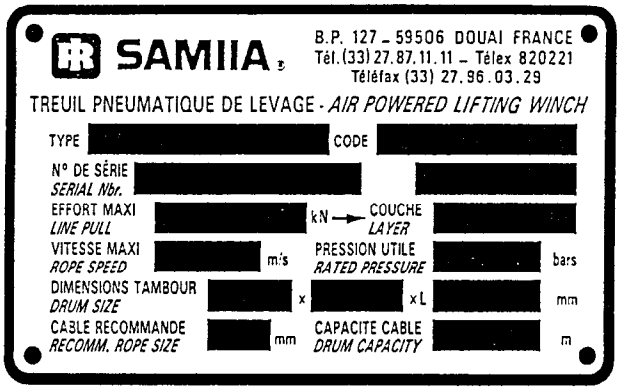
| ITEM NO. | DESCRIPTION OF PART | QTY TOTAL | PART NO. |
|---|---|---|---|
| 1 | Fitting | 3 | 6165-2632 |
| 2 | Retainer ring | 2 | 4770-3028 |
| 3 | Spring | 2 | 6915-8732 |
| 4 | Rear cover (aluminium version) | 2 | 9579-0037 |
| | Rear cover (bronze version) | | 9579-0053 |
| • 5 | 'O' ring | 2 | 5820-3729 |
| • 6 | Side valve assy (aluminium version) | 2 | 9579-0035 |
| | Side valve assy (bronze version) | | 9579-0051 |
| 7 | Spring | 2 | 6915-8632 |
| • 8 | Quad ring | 2 | 5823-0229 |
| 9 | Ring | 1 | 6422-2332 |
| • 10 | Valve cone assy (aluminium version) | 2 | 9579-0036 |
| | Valve cone assy (bronze version) | | 9579-0052 |
| 11 | Pin | 1 | 9579-0040 |
| 12 | Screw | 2 | 4200-7407 |
| 13 | Lever | 2 | 9579-0038 |
| 14 | Valve casing (aluminium version) | 1 | 9579-0034 |
| | Valve casing (bronze version) | | 9579-0050 |

• Recommended spare

# PARTS ORDERING INFORMATION

The use of replacement parts other than IR/SAMIIA Material Handling will invalidate the Company's warranty. For prompt service and genuine IR/SAMIIA 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**

IR/SAMIIA 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:

IR/SAMIIA Material Handling
111, 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.**

# GUARANTEE

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

IR/SAMIIA 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 IR/SAMIIA equipment. It does extend to supplies and accessories which are not of its manufacture.
- the guarantee does not extend to assemblies or machines in winch IR/SAMIIA equipment is incorporated and in particular to the performances of these assemblies or machines.
- When IR/SAMIIA 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 IR/SAMIIA equipment, IR/SAMIIA '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.
- IR/SAMIIA 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. IR/SAMIIA 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.
- IR/SAMIIA 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 lenght of guarantee is neither prolonged nor interrupted by either amicable or litigous claims by the customer.
- At the expiry of this period, the guarantee ceases incontestably.
- The obligations of the IR/SAMIIA 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 IR/SAMIIA.
- It does not apply in the event of user's mistake, negligence, imprudence, faultly superintendence or maintenance, inattention to the instructions or directions for use of low quality lubricants.
IR/SAMIIA' 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 IR/SAMIIA'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 personel, 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 IR/SAMIIA's premises, the cost of moving faulty, replaced or repaired equipment and the travelling and living expenses of IR/SAMIIA's engineers are covered exclusively by the customer.
- In order to obtain the advantages of the guarantee, the customer must advice IR/SAMIIA 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 IR/SAMIIA 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 IR/SAMIIA 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, IR/SAMIIA will put it right as quickly as possible, whilst 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 IR/SAMIIA 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 IR/SAMIIA.
- 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 immediatly.

**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 IR/SAMIIA invoice, nor should payment of IR/SAMIIA 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.

SAMIIA®

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TELEX 820 221
TELEFAX (33) 27.93.08.00

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