OPERATION AND MAINTENANCE MANUAL

FOR THE

AIR POWERED MAN-RIDING WINCH

THE MANRIDER 1 TON
FG1 MR 19

READ THIS MANUAL BEFORE USING THESE PRODUCT. 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 product.

WARNING

"As regards man-riding winches, it is the responsiblity of the owner or user of the winch to determine whether the winch conforms with local regulations for personel use"

Always operate, inspect and maintain this winch in accordance with National Standards Safety Code of the country where the material is used and respect the other applicable safety codes and particular regulations.

Refer all communications to the nearest INGERSOLL-RAND Material Handling Products Office or Distributor.

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INGERSOLL-RAND
MATERIAL HANDLING

INGERSOLL-RAND MATERIAL HANDLING	TREUIL DE LEVAGE "PERSONNEL" PNEUMATIQUE *DRUCKLUFT-HUBWINDE FUER PERSONENTRANSPORT* AIR POWERED MAN-RIDING WINCH **THE MANRIDER 1 TON**	NUMERO DE NOMENCLATURE **7615-8017** NUMERO DU DOCUMENT 92,04,38 D 18 LE CHEF DU BUREAU D'ETUDES

SUMMARY

INGERSOLL-RAND
MATERIAL HANDLING

TREUIL DE LEVAGE "PERSONNEL" PNEUMATIQUE
DRUCKLUFT-HUBWINDE FUER PERSONENTRANSPORT
AIR POWERED MAN-RIDING WINCH

THE MANRIDER 1 TON

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A - SAFETY INFORMATION AND TRAINING

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 must read understand this manual before operating the product.**
Training must be done by a qualified person to any personnel involved with an air powered man-riding winch

Danger, Warning, Caution and Notice
Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. 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* personal 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* personal 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* personnal 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.

CAUTION

"MAN-LIFTING with this winch is STRICTLY LIMITED to off-shore marine applications specifically approved by maritime regulatory bodies. Regulatory bodies, not manufacturer, have determined suitable use. DO NOT USE FOR MAN-LIFTING applications not specifically approved by regulatory bodies.

The use of a winch to lower, lift or suspend personnel should be permitted only when other means of reaching the worksite, such as ladders, stairways, aerial (bucket-type) lifts or scaffolds, are not feasible because of site conditions.

Presently *MANRIDER* winches are available built to specifications published by :
Det Norske Veritas : Winches type approved and/or certified by Det norske Veritas (DNV) to meet Norwegian Maritime Directorate (NMD) or Norwegian Petroleum Directorate (NPD) requirements.

In furnishing customers MANRIDER winches, Ingersoll-Rand does not warrant the suitability of these winches for any particular use. It is the owner and user's responsibility to determine the suitability of a MANRIDER winch for a particular application. Further, it is the owner and user's responsibility to check and satisfy all local, state, federal and country requirements pertaining to the lifting and lowering of persons.

WARNING

Many agencies require additional redundant safety devices on winches that Ingersoll-Rand does not furnish. Additional devices are often required to bring the system up to elevator code standards.

Winches manufactured by Ingersoll-Rand as an approved MANRIDER to DEn and/or NMD/NPD requirements are furnished with limitations ; approval for use in Man-Riding applications automatically terminates for any of the following reasons :

1 - Winch does not meet other applicable codes or standards.
2 - Winch is not part of an approved system.
3 - Winch is not properly maintained in a new condition with all parts intact and properly adjusted.
4 - Winch is used in applications not approved by codes and regulations, or applications inconsistent with manufacturer's operating and maintenance manual.
5 - Changes in DEn or NMD/NPD standards or regulations after Ingersoll-Rand's initial shipment of the product.
6 - More than one winch is used to attach to a common load.

WARNING

Be sure to check all regulations, local, state, federal and country, that may apply to the use of a winch or winch system for lifting and lowering people before using a MANRIDER winch.

7 - The personel platform shall be designed by a properly qualified engineer competent in this area.

NOTICE

Using other than genuine Ingersoll-Rand Material Handling parts will result in the void of warranty.

B - SAFE OPERATING INSTRUCTIONS

WARNING

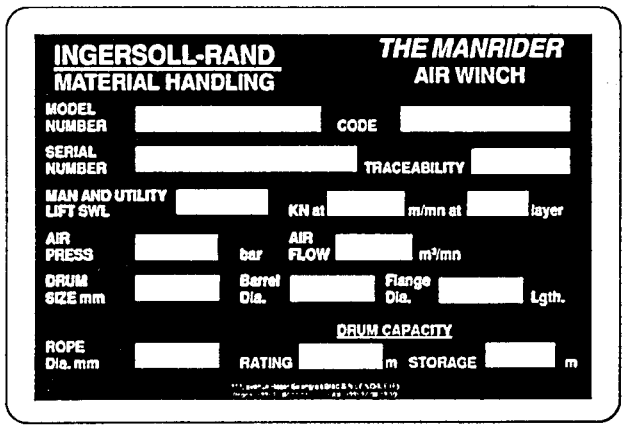
Failure to folow these rules will result in termination of all applicable warranties. Ingersoll-Rand assumes no liability for any loss or damage resulting from operation of MANRIDER winches if these operating instructions are not followed.

1 - Winch operator must be in a position to always see the personnel from transfer point to landing area.
2 - Personnel operating the winch or being transferred are to have sufficient instruction/training concerning that operation before any movement takes place.
3 - Lifting and lowering of personnel should be carried out above the open sea whenever possible. All personnel should wear life jackets approved by the appropriate regulatory agency and a standby vessel should be in the vicinity of the transfer.
4 - Hoisting of personnel by means of a winch should only take place when other means of accomplishing this work are not practical.
5 - The winch installation must be specially arranged and accepted for personnel handling.
6 - Prior to any personnel movement, the entire system should be inspected by the person in charge. It is that individual's responsibility to instruct and appoint the winch operator.
7 - The lifting apparatus (basket, etc...) shall be inspected and certified for personnel lifting prior to use.
8 - Do not operate without a surveyor's site approval.
9 - Do not overload.
10 - Do not operate without testing. (See "Inspection and Testing" procedures)
11 - Do not operate winch in a damaged condition.
12 - Do not operate winch that has not been properly maintained or equipped.
13 - Do not attach winch to unsafe foundation. All bolts and foundations for winch attachment should have a higher load carrying capacity than the wire rope on the winch.
14 - Do not operate winch with any personnel near the line of force or capable of coming into contact with moving parts.
15 - All signs and warning notices must be posted permanently on the winch.
16 - Always maintain three or more wraps of wire rope on the drum.
17 - Never leave an unattended load suspended.
18 - Wire rope must spool off drum from the top away from the operator.

C - LABELLING - MARKING

The maximal lifting rated capacity of the winch is noticed on one part of the winch.

On every air powered man-riding winch a sheet is clinched as this model :



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

MAN-RIDING WINCH WARNING

Failure to follow these warnings may result in death, severe injury or property damage :

. Do not operate this winch before reading operation and maintenance manual.

. It is responsibility of the owner or user to determine whether the winch conforms with local regulations for personnel use

. Do not lift more than rated load

. Do not allow less than three wraps of wire rope to remain on drum at all times.

. Do not operate a damaged or malfunctioning winch.

. Do not remove or obscure warning labels

INGERSOLL-RAND
Material Handling

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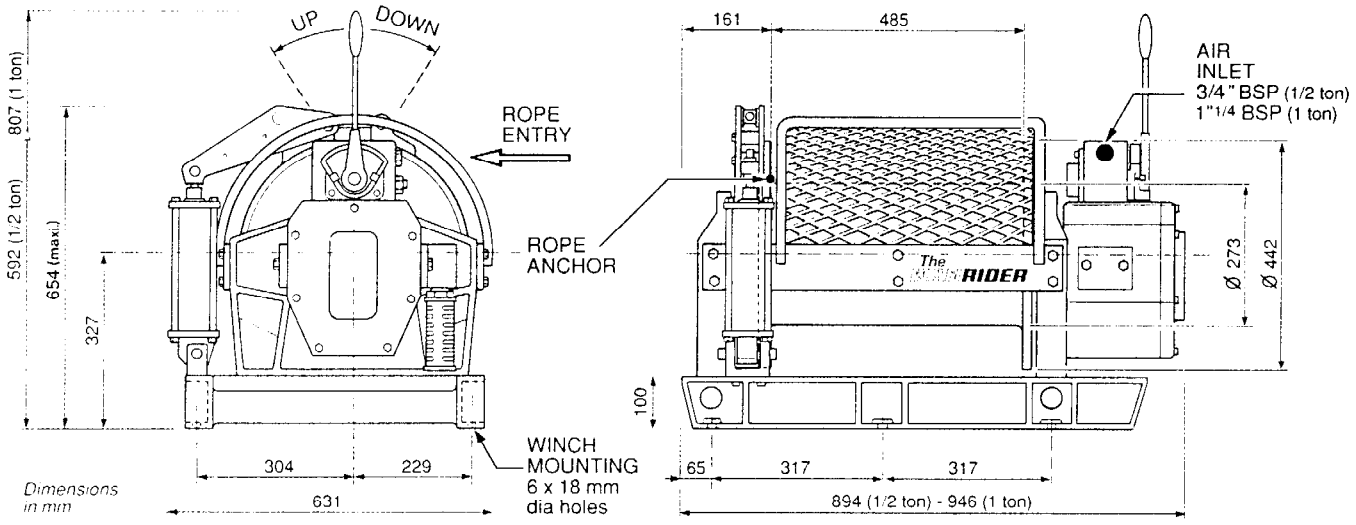
D - SPECIFICATIONS

The MANRIDER® 500/1000

Air powered personnel lifting winch, 0.5 & 1 metric ton capacity



Specifications

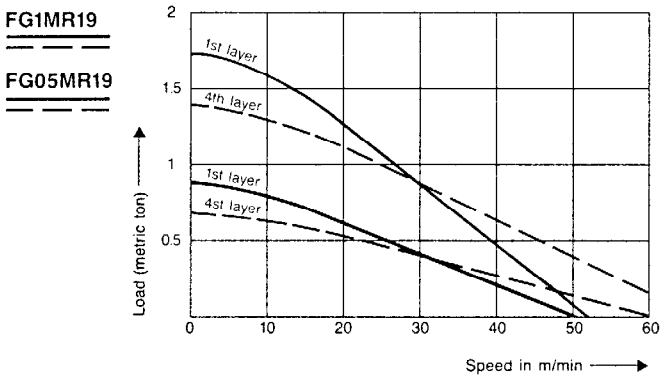
Model No.	FG05MR19	FG1MR19
Rated working load (metric ton) (1)	0.5	1
Motor power (hp)	3	6
Working pressure (bar)	6.3	6.3
Average hoisting speed (m/min) (2)	0 to 24	0 to 24
Air consumption (m³/min)	0 to 3.5	0 to 7
Weight without rope (kg)	300	340
Rope diameter (mm)	13	13

1) On 4th layer with 13 mm rope diameter
2) At rated load

Wire rope specifications & drum capacity

Recommended wire rope size (mm)		13	
Breaking load (metric ton)		11.1	15.3
Rope grade (kg/mm²)		180	220
Cumulative rope capacity (m)	1st layer	31	
	2nd layer	65	
	3rd layer	102	
	4th layer	142	
Rating limit	5th layer	185	
	6th layer	230	

Performance at 6.3 bar (90 PSI)



Additional options/accessories available

- Top and bottom limit switches
- Emergency stop valve mounted on air line
- Press roller on drum
- Pneumatic overload protection acting on the drum brake when exceeding the rated overload
- Emergency lowering device in the event of power failure
- Slack wire detector
- Grooved drum
- Filter, lubricator and pressure regulator
- Wire rope and accessories

- Material certificates according to DIN 50049
- Type approval certificates

INGERSOLL-RAND®

MATERIAL HANDLING

E 191001A - Printed in France
CPN 00802751

Distributor

INGERSOLL-RAND MATERIAL HANDLING	TREUIL DE LEVAGE "PERSONNEL"PNEUMATIQUE *DRUCKLUFT- HUBWINDE FUER PERSONENTRANSPORT* AIR POWERED MAN-RIDING WINCH **THE MANRIDER 1 TON**	NUMERO DE NOMENCLATURE NUMERO DU DOCUMENT 9,2,0,4,3,8 ⌊⌋ 8/8 LE CHEF DU BUREAU D'ETUDES

DESCRIPTION

The "Manrider" winches have been designed and built for the "oil and offshore" industry and more specifically to conform with specifications asked for the Norwegian Oil Ministry and the British Department of Energy.
There are no norms for the use of "MANRIDER" except those currently demanded by the offshore industry.
Thus it is the responsibility of the user to determine the adaptability of this material for specific use and to ensure that it conforms to any rules which may be applicable.

Nomenclature of winch : FEM 4 M (ISO M 7) - Safety load of stress FEM 2 (ISO L 2)
This winch is supplied with a Tracability list for the main parts which are under load together with a DNV "Type Approval Certificate" S944.
Construction : the winch has 4 constituent parts designed for the most difficult tasks :
a) an engine block
b) a brake-control reducer block within the drum
c) a frame constructed mainly of two strutted flanges
d) a drum
Motor : Air motor with two ways of rotation
Reducer : rotary gear system with gears of specially treated high grade steel mounted on roller bearings. This mecanism is enclosed within the winch drum forming the oil sump.
Brake : multidisc in large oil bath ensuring constant control of the load when lowering. It works by decompression thus ensuring automatic function of the brake in case of air failure. This "wet brake" ensures a constant level of braking and is unaffected by exterior conditions.
Brake : direct on to a large drum ensuring constant control of the load while lifting or lowering. It works by decompression thus ensuring automatic function of the brake in case of air failure.
Drum : made of steel with cable fixing by a wedged box.
Frame : made of two strutted flanges.
Air supply to motor : by one hole ϕ1"1/4 BSP located on the distributor
Control : the winch is controlled by a single lever on the winch distributor which allows any speed variation determined by the operator. This lever returns automatically to zero thus stopping the load in the event of failure of the operator.
Chassis skid : made of welded steel with 6 18 diameter fixing holes and 4 40 diameter holes for handling.

Anti-spin device : a free wheel within the multidisc brake. This prevents any slippage of the drum during the realease of the air-compressed overload device.
* protecting wire casing fixed on to the distance pieces

Accessories :

DESIGNATION	CODE	CPN
oil atomizer 1" 1/4 BSP	3422-2025	38530895
filter-lubricator set (F - L) 1" 1/4 BSP	3999-0071	38529756
filter-regulator lubricator set (F - R - L) 1" 1/4 BSP	3999-0070	38529749
13 mm diameter anti-giratory cable (breaking load 111 KN at 1770 N/mm2)	6974-0013	38531000
13mm diameter high resistance cable (breaking load 153 KN at 2160 N/mm2)	6975-0013	38531018
thimble sleeved loop, fixed at end of cable	6972-9999	38520672
safety hook fixed onto thimble-sleeved loop	6612-7932	38520664

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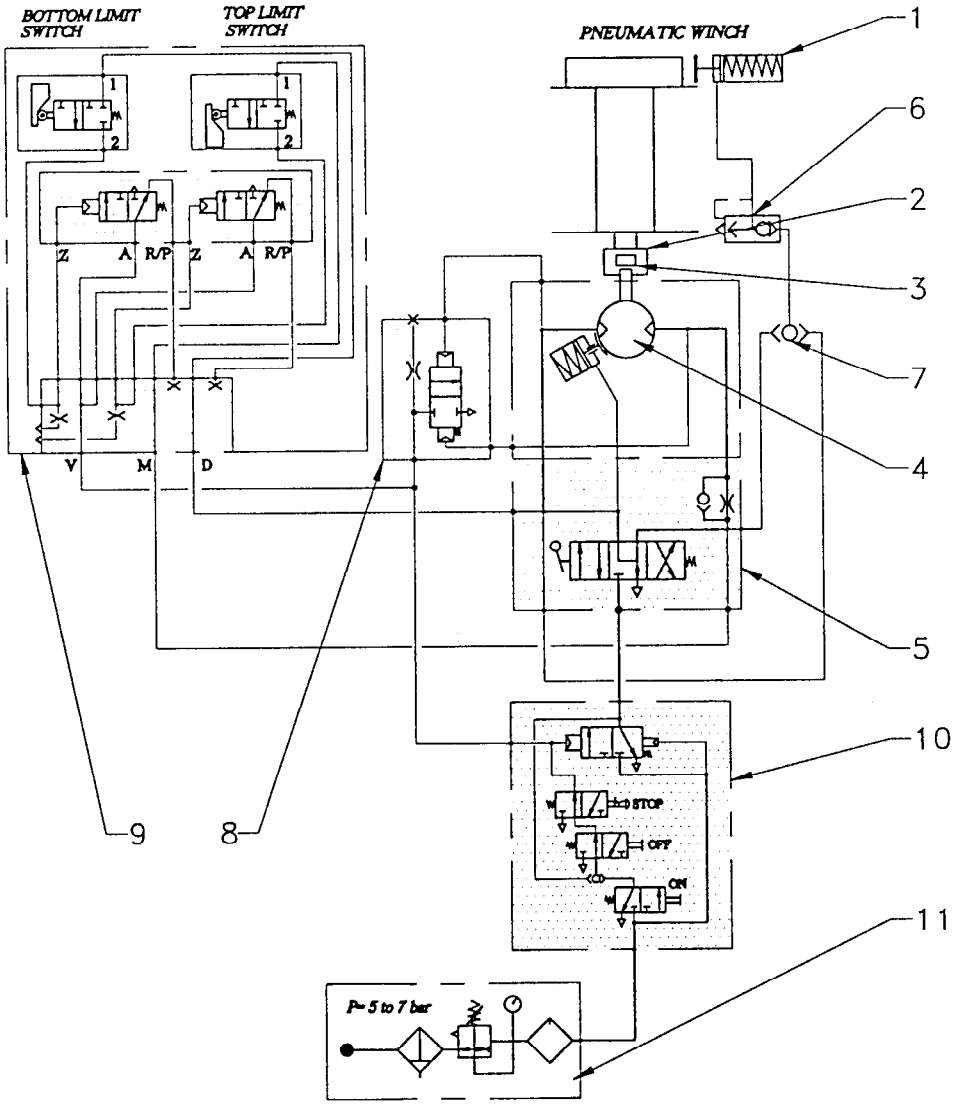
Options :

* manual spindle locking of drum
* marine paint protection
* Lifting and lowering limit switch (detecting device with at lesat 3 coils)
* load lowering device in case of power failure
* emergency stop system
* Air overload protection : device acting directly on the air feeding of the external band brake. Adjustment SWL < F4 < 1,3 SWL

AIR CONNECTION DRAWING



IDENTIFICATION OF COMPONENTS

1 - Direct band brake on drum
2 - Multidisc brake on shaft motor
3 - Anti-spin device with free wheel on shaft motor
4 - Air-powered motor with reversible horizontal motor
5 - Air control valve with stop-load gasket
6 - Fast exhaust valve
7 - Circuit selector
8 - Torque limitor option
9 - Air limit switch option
10 - **Option** : FRL block ø 1"1/4 G option

E - INSTALLATION

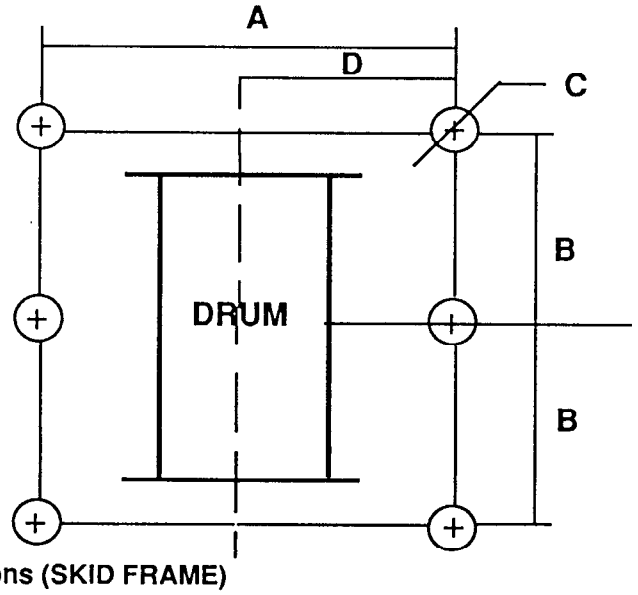
Prior to installing the winch, carefully inspect it for possible hipping damage.

CAUTION

Owner and users are advised to examine specific, load 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 product 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 5/8 in. (16 mm) diameter, Grade 8.8 (classe 8.8) or better. Use self-locking nuts or nuts with lockwashers.
4 - Torque mounting bolts evenly.
5 - Maintain a fleet angle between the sheave and winch of no more than 1-1/2 degrees. For every inch of drum lengh, 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 (SKID FRAME)
"A" 29.99 in. (533 mm)
"B" 12.48 in. (317 mm)
"C" 0.71 in. (18 mm)
"D" 9.02 in. (229 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 overwind 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 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 or lowering 1/2 in. (13 mm) imperative.

Installing Wire Rope

1 - Cut wire rope to length in accordance with the wire rope manufacturers 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 - Truck 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.

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.

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.

Wire Rope Spooling

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

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 manufacturers 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 must not have an inside diameter smaller than 1"1/2 IN. (38 mm) for flexible lines and 1-1/4" in. (32 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.

CAUTION

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

The air line lubricator should be replenished daily and set to provide 5 to 6 drops per minute of GRADE ISO 68 oil (minimum viscosity 61,2 Cst at 40° C).

Motor
For optimum performance and maximum durability of parts, operate air motor at 90 PSI at 254 cfm (6,3 bar/630 kpa at 7,2 cu.m/min) air pressure. The air motor 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.
a - When first running the motor some light oil should be injected into the inlet connection to allow good lubrication.
b - 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 more than one month the following start-up procedure is required.
1 - Pour a small amount of gasoline fluid in the motor inlet port.
2 - Operate the motor fot 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.

F - OPERATION

The four most important aspects of winch operation are :
1 - Follow all safety instructions when operating the winch.
2 - Allow only qualified people 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

"As regard manriding winches, it is responsibility of the owner or user of the winch to determine wether the winch conforms with local regulations for personnel use"

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.

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.

G - LUBRICATION

Wire rope
Refer the wire rope manufacturers 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 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
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 oil from the factory. Use only high quality lubricants in the reduction gear assembly such as high grade EP type oil or their equivalents. Fill the reduction gear assembly until the working rim is covered.
Oil capacity : 3 litres.

Recommended oil :
GRADE SAE 80 W 90 - Kinematic
Viscosity : 145 mm2/s at 40°C

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.
Grease features : semi-fluid extreme pressure for ambient temperature from -15°C to +40°C, ASTM at 25 °C penetration.

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.

H - INSPECTION

There are two types of inspection, the frequent inspection performed by the operator while using the winch and periodic inspections performed by qualified personnel.
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 to authorized personnel.

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 return to neutral when released.

PERIODIC INSPECTION

Frequency of periodic inspection depends on the severity of usage : NORMAL, yearly ; HEAVY, semiannually ; SEVERE, quarterly.
Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative records of périodic 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.

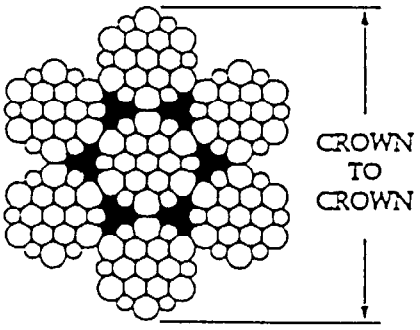
2 - ALL COMPONENTS. Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearings, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.

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
a - Loose or damaged end connection. Replace if loose or damaged.
b - Changes in the size of the rope cross section. Measure crown-to-crown.



7 - FOUNDATION. Check for the continued ability to sustain 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 semiannually in accordance with the requirements of "Frequent Inspection". If adnormal operating conditions apply, winches may require a more frequent inspection.

I -TROUBLE SHOOTING

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

SYMPTOM	TROUBLE	POSSIBLE 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
The winch doesn't run at no load when lifting	The free wheel is mounted upside down	Check the mounting of the free wheel See "MAINTENANCE" Section
Load continues to move when winch is stopped	Brake is slipping	Check brake friction discs, springs and band brake See "MAINTENANCE"section
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. Please contact your nearest INGERSOLL-RAND agent.
	Brake is not releasing	Check brake release pilot hole is not restricted Check seals on cylinder piston are not damaged
	Insufficient air supply	Check air supply
	Air overload protection is disturbed or the using conditions of the winch are not respected	Check overload protection and make its adjustment if necessary See "MAINTENANCE" section
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
	Worn or damaged motor	Inspect motor. Please contact your nearest INGERSOLL-RAND agent
	Improper lubrication or dirt building up in the motor	Lubricate as instructed under "LUBRICATION" if this does not help flush the motor as instructed in the "INSTALLATION" Section
Motor does not operate smoothly		Inspect motor. Please contact your nearest INGERSOLL-RAND agent

J -MAINTENANCE

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 qualified service personnel to perform maintenance.
. After performing any maintenance on the winch, test winch to 125% of its rated capacity before returning to service.
. Do not use Trichloroethylene to clean parts.

General Disassembly Procedures

The following instructions provide the necessary information to disassemble, inspect, repair, and assemble the winch. Refer 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 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 torch to free it for removal, unless the part being heated is already worn or damaged beyond repair.
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 leathercovered 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 necessay for repairs or replacement.

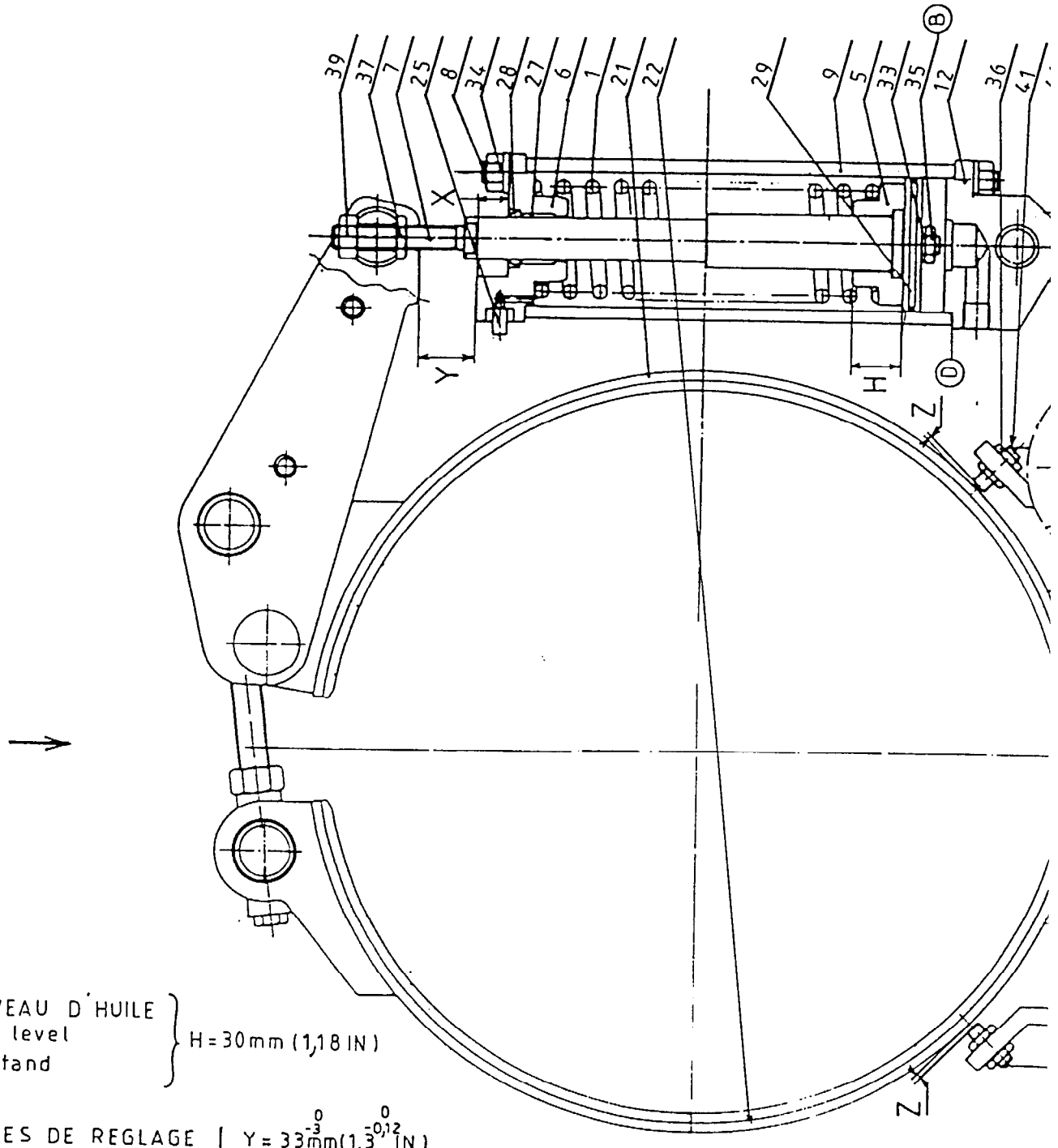
INGERSOLL-RAND MATERIAL HANDLING	TREUIL DE LEVAGE "PERSONNEL"PNEUMATIQUE *DRUCKLUFT- HUBWINDE FUER PERSONENTRANSPORT* AIR POWERED MAN-RIDING WINCH **THE MANRIDER 1 TON**	NUMERO DE NOMENCLATURE NUMERO DU DOCUMENT 9,2,0,4,3,8 ⌊⌋ 18/18 LE CHEF DU BUREAU D'ETUDES

K - PARTS

INGERSOLL-RAND
MATERIAL HANDLING

EXTERNAL BAND BRAKE
ASSEMBLY DRAWING

NUMERO DE NOMENCLATURE
L615
NUMERO DU DOCUMENT
92-04-08 A 1 / 6
Ph. Demeese
LE CHEF DU BUREAU D'ETUDES



NIVEAU D'HUILE
Oil level
Ölstand
} H = 30 mm (1,18 IN)

CÔTES DE REGLAGE
Adjusting dimensions
Passungsmaß

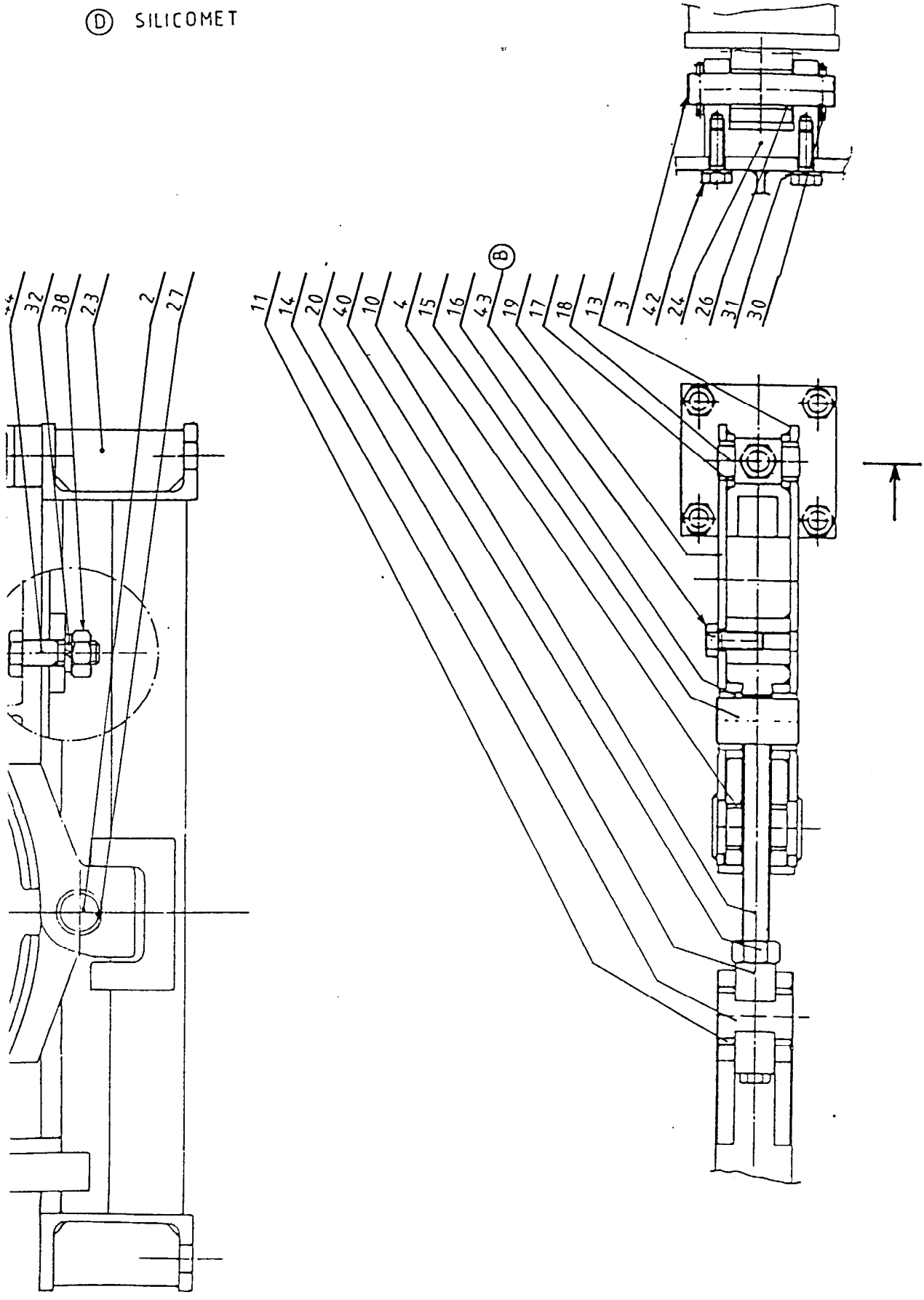
Y = 33^{0}_{-3} mm ($1,3^{0}_{-0,12}$ IN)
X = 18 mm (0,71" IN)
Z = 1,5 mm (0,059 IN)

Ⓐ LOCTITE INSTAJOINT 574

Ⓑ LOCTITE FREIN FILET 243

Ⓒ LOCTITE TUBETANCHE 577

Ⓓ SILICOMET



INGERSOLL-RAND
MATERIAL HANDLING

EXTERNAL BAND BRAKE

NUMERO DE NOMENCLATURE
L615
NUMERO DU DOCUMENT
9204084 A 26

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
1	Ressort	Spring	Feder	1	9430-0046	38530044
2	Axe de bande de frein	Brake band axle	Bremsbandachse	1	9539-7022	38531273
3	Axe de chape	Cover axle	Abdeckungsachse	1	9539-8024	38531265
4	Bague	Ring	Ring	2	9539-0048	38530051
5	Rondelle d'appui	Sill washer	Washer	1	9539-0053	38530069
6	Nez de vérin	Cylinder nose	Zylindersnase	1	9539-0054	38530077
7	Tige de vérin	Cylinder rod	Zylinderspindel	1	9539-7055	38531430
8	Tirant	Tension piece	Spannstange	4	9539-8057	38531281
9	Chemise de vérin	Cylinder casing	Zylinderbüchse	1	9539-0058	38530085
10	Vis de réglage	Setting screw	Stellschraube	1	9539-7061	38531299
11	Bague	Ring	Ring	2	9539-0071	38530093
12	Fond de vérin	Cylinder bottom	Zylinderboden	1	9539-0087	38530101
13	Demi levier	Half lever	Halbhebel	1	9615-8028	38531307
14	Noix lisse	Smooth wheel	Glatte Nuß	1	9615-7029	38531315
15	Noix filetée	Screwed sprocket wheel	Schrausennuß	1	9615-7030	38531323
16	Bague	Ring	Ring	2	9615-0031	38530119
17	Bague	Ring	Ring	2	9615-0032	38530127
18	Noix lisse	Smooth wheel	Glate nuß	1	9615-7033	38531331
19	Demi levier	Half lever	Halbhebel	1	9615-8034	38531349
20	Entretoise	Distance ring	Distanzring	1	9615-0035	38530135
21	Demi bande de frein	Half brake band	Halbbremsband	1	9615-8036	38531356
22	Demi bande de frein	Half brake band	Halbbremsband	1	9615-8037	38531364
23	Chassis	Frame	Rahmen	1	9615-8038	38531372
24	Chape	Cover	Abdeckung	1	9615-0057	38530150
25	Silencieux	Muffler	Schalldämpfer	1	6848-9232	38529996
26	Bague auto-lubrifiante	Self-lubricating ring	Selbstschmierender Ring	2	5910-5226	38530325
27	Bague auto-lubrifiante	Self-lubricating ring	Selbstschmierender Ring	2	5910-5426	38530333
28	Bague d'étanchéité	Sealing ring	Dichtring	1	5810-5830	38530309

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND
MATERIAL HANDLING

EXTERNAL BAND BRAKE

NUMERO DE NOMENCLATURE
L615
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92 04 08 A 36
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REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
29	Piston	Piston	Kolben	1	5811-0730	38530317
30	Goupille fendue	Split pin	Stift	2	4630-1119	38530457
31	Rondelle grower	Split washer	Scheibe	2	4520-0010	38522223
32	Rondelle Grower	Split washer	Scheibe	4	4520-0016	38526901
33	Rondelle MU	Washer	Scheibe	1	4500-0112	38525523
34	Ecrou frein	Lock nut	Bremsschraube	8	4370-1411	38530440
35	Ecrou Hm	Thin Nut	Mutter	1	4320-0112	38525515
36	Ecrou Hm	Thin nut	Mutter	4	4320-2112	38530416
37	Ecrou Hm	Thin nut	Mutter	1	4320-2312	38530424
38	Ecrou H	Nut	Mutter	4	4300-1011	38526893
39	Ecrou H	Nut	Mutter	1	4300-5811	38530408
40	Ecrou H	Thin nut	Mutter	1	4300-5911	38531448
41	Vis Hc	Screw	Schraube	2	4200-4207	38530390
42	Vis H	Screw	Schraube	2	4100-0401	38528667
43	Vis H	Screw	Schraube	2	4100-3401	38530028
44	Vis H	Screw	Schraube	4	4100-3901	38530341

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Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

EXTERNAL BAND BRAKE

NUMERO DE NOMENCLATURE

NUMERO DU DOCUMENT
192 040 8 A 4/6

LE CHEF DU BUREAU D'ETUDES

DISASSEMBLY INSTRUCTIONS (Direct Brake on Drum)

- Unwind drum cable
- Position at the top the holes ϕ 40 mm for handling forecast on the drum

1 - Disassembly of brake cylinder

1.1 - Stripping down of the whole of brake cylinder

1.1.1 - Release nut ITEM 40 (wrench : 27 mm on flat sides)
1.1.2 - Slightly pilot the drum on the lowering direction and unscrew the adjustment screw
1.1.3 - Remove nut ITEM 39 (wrench 22 mm on flat sides)
1.1.4 - Remove clamp collar
1.1.5 - Disconnect hose ITEM 7

1.1.6 - Remove one split pin ITEM 30
1.1.7 - Remove cover axle ITEM 3
1.1.8 - Strip down the whole of brake cylinder

1.2 - Disassembly of the whole of brake cylinder

1.2.1 - Removal of spring ITEM 1
- Remove 2 to the 4 tension pieces ITEM 8 (wrench : 19 mm on flat sides)
- Assembly 2 screw rods M12 Lg 400 mm with nuts M12
- Remove the 2 last tension pieces ITEM 8 (wrench : 19 mm on flat sides)
- Decompress spring ITEM 1
- Remove the 2 screw rods
- Remove cylinder nose ITEM 6
- Remove spring ITEM 1

1.2.2 - Drain oil from cylinder casing (ITEM 9)
1.2.3 - Strip down the whole of the cylinder rod ITEM 7, Piston ITEM 29 and sill washer ITEM 5
NB : Nut ITEM 35 will be fixed and tightened with Blue LOCTITE (ref. 243) and with 2 mk torque
1.2.4 - Expel cylinder casing ITEM 9 from cylinder bottom ITEM 12

2 - Disassembly of band brake

2.1 - Stripping down of the winch from skid frame

2.1.1 - Strip down the whole of brake cylinder (see 1.1)
2.1.2 - Disconnect limit switch hoses if the winch is fetted with any (see : strip down air compressed limit switch
2.1.3 - Disconnect hoses Rep : 44-32-38
2.1.4 - Remove fixing screws on winch (clé de 24 s/plats)
2.1.5 - Strip down the winch from skid frame (Rep 23)

2.2 - Stripping down of the whole of the both half brake bands

2.2.1 - Open the brake band unscrewing the setting screw ITEM 10
2.2.2 - Strip down the whole of the both half brake bands ITEM 21 and ITEM 22 from the winch

2.3 - Disassembly of the whole of the both half brake bands

2.3.1 - Remove brake band axle ITEM 2
2.3.2 - Removal of smooth wheel ITEM 14

- Remove nut ITEM 40 from setting screw (ITEM 10) (wrench : 27 mm on flat sides)
- Remove Distance ring ITEM 20
- Remove Setting screw ITEM 10
- Remove Smooth wheel ITEM 14

2.3.3 - Disassembly of the both half levers ITEM 13 and ITEM 19

- Remove srews ITEM 43 (wrench : 19 mm on flat sides)
- Remove sprocket wheel ITEM 15
- Remove Smooth wheel ITEM 18
- Remove the both half levers ITEM 13 and ITEM 19

Inspection and repair

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

CAUTION

A bearing that appears loose or rotates roughly must be replaced. Failure to observe this precaution will result in bearing and/or winch component damage.

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

1 - Inspect all the self-lubricating rings - All internal diameter ovalisations require their replacement

IMPORTANT NOTE : Every self-lubricating rings are stopped in translation by several centre mark.

2 - Inspect all the axles :
- Smooth wheel (ITEM 14)
- Smooth wheel (ITEM 18)
- Sprocket wheel (ITEM 15)
- Brake band axle (ITEM 2)
- Cover axle (ITEM 3)
- Cylinder rod (ITEM 7)

All external diameter damage require their replacement

3 - Inspect welded axles on the half levers - All external diameter damage require their replacement

4 -Inspect the half brake bands
- Nominal thickness of linings = 5 mm
- Minimum thickness = 2 mm

If this dimension is lower, change the half brake band (ITEM 21, ITEM 22)

5 - Inspect brake cylinder joints and the internal diameter surface condition of wrapper cylinder - replace them if necessary.

6 - Check the spring condition ITEM 1 - If after a large period of use an important diminution of its efficiency is established, make its replacement.
(F theoretical = 100 daN under deflection f = 76 mm)

INGERSOLL-RAND MATERIAL HANDLING	EXTERNAL BAND BRAKE	NUMERO DE NOMENCLATURE NUMERO DU DOCUMENT 92040 8 A 6/6 LE CHEF DU BUREAU D'ETUDES

ASSEMBLY INSTRUCTIONS (Direct Brake on Drum)

- Assembly of brake cylinder

1.1 - The reassembling of the brake cylinder has to be carried out in the opposite direction to the one used for dismantling
(see : 1.2 - Disassembly of the whole of brake cylinder)

NB : - Sealing between cylinder casing ITEM 9 and cylinder bottom ITEM 12 will made by joint of "SILICOMET" (chamfer 2x45°)
- See NB on 1.2.2 for nut ITEM 35
- Before closing the brake cylinder, full in the spring housing with oil SP 150 type (see winch assembly drawing) Level H=30 mm and stock brake cylinder in vertical position for the following operations
- Grease the inside of the sealing ring ITEM 28
- Nuts ITEM 34 will be tightened with 4,5 m kg torque

1.2 - The reassembling of the whole of brake cylinder has to be carried out in the opposite direction to the one used for dismantling (see : 1.1 - Stripping down of the whole of brake cylinder)

NB : - Sealing of all nipples will made by "LOCTITE TUBETANCHE 577"

2 - Assembly of band brake

Reassembly will have to be carried out in the opposite direction to the one used for dismantling (see 2 - Disassembly of hand brake)

NB : - Grease all axles
- Screws ITEM 43 will be fixed and tightened with BLUE LOCTITE (ref. 243) and with 6,8 m kg torque, only after light tensioning of brake cylinder
- Stop screws rep 41 before the mounting of the winch on this skid frame
- Screws ITEM 44 will be tightened with 16 m kg torque

3 - Adjusting of band brake

The adjusting dimensions are pointed out on the winch assembly drawing

- Y=33° 3 (mm) : his adjusting is done by using the adjusting screw ITEM 10 and of the clamping of the nut ITEM 40 at the couple of 10 m kg
- X=18 mm : his adjusting is done by the slightly guidance of the brake jackscrew in the lowering direction and by blocking the nuts ITEM 37 and 39
- Z=1,5 (mm) : Clearance of both half brake band(wrench : 17 mm on flat sides and hexagonal-hollow head wrench 5 mm)

INGERSOLL-RAND
MATERIAL HANDLING

PLAN D'ENSEMBLE du TREUIL
WINCH ASSEMBLY DRAWING
WINDEZEICHNUNG
THE MANRIDER 1 T

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L 615
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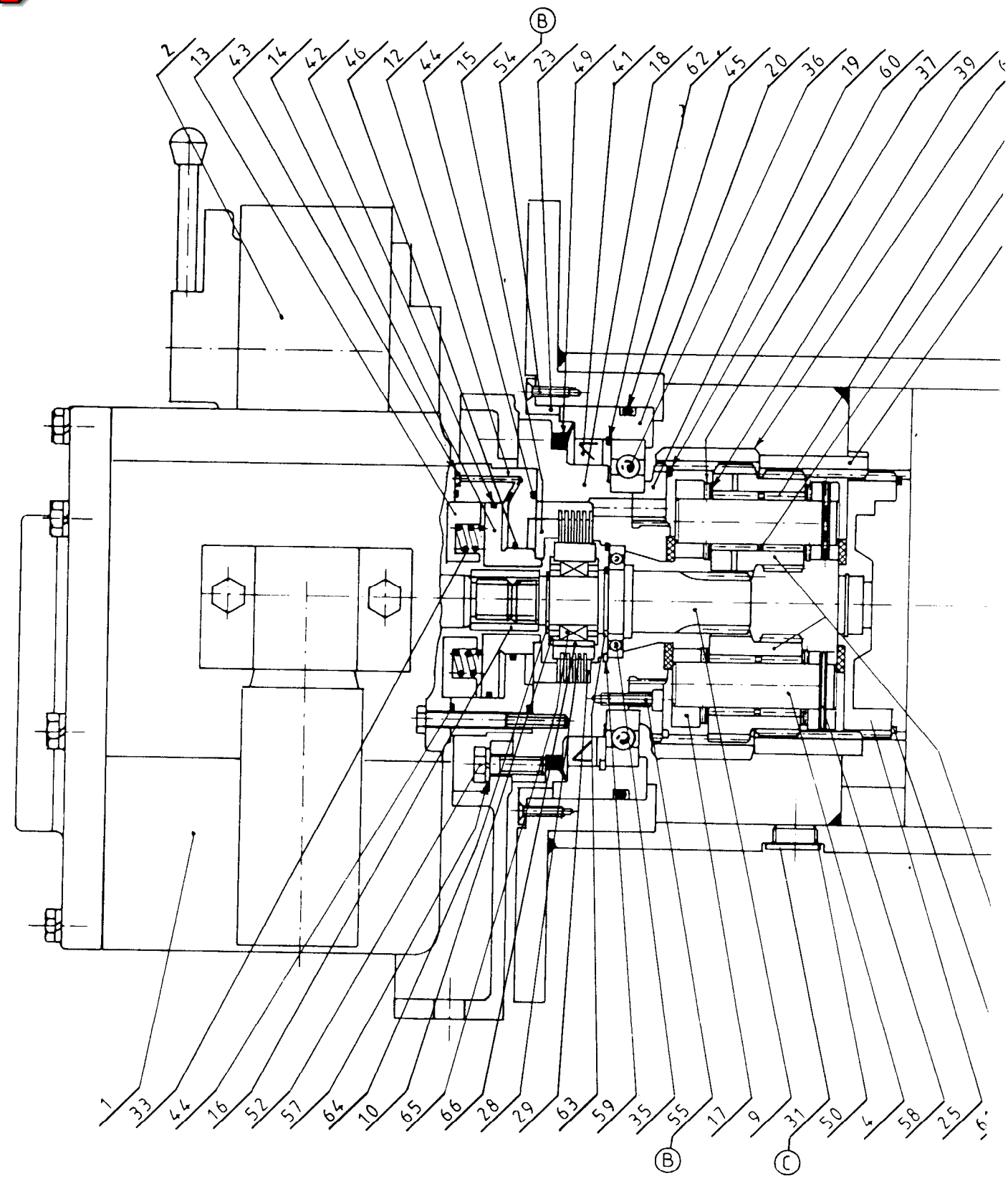
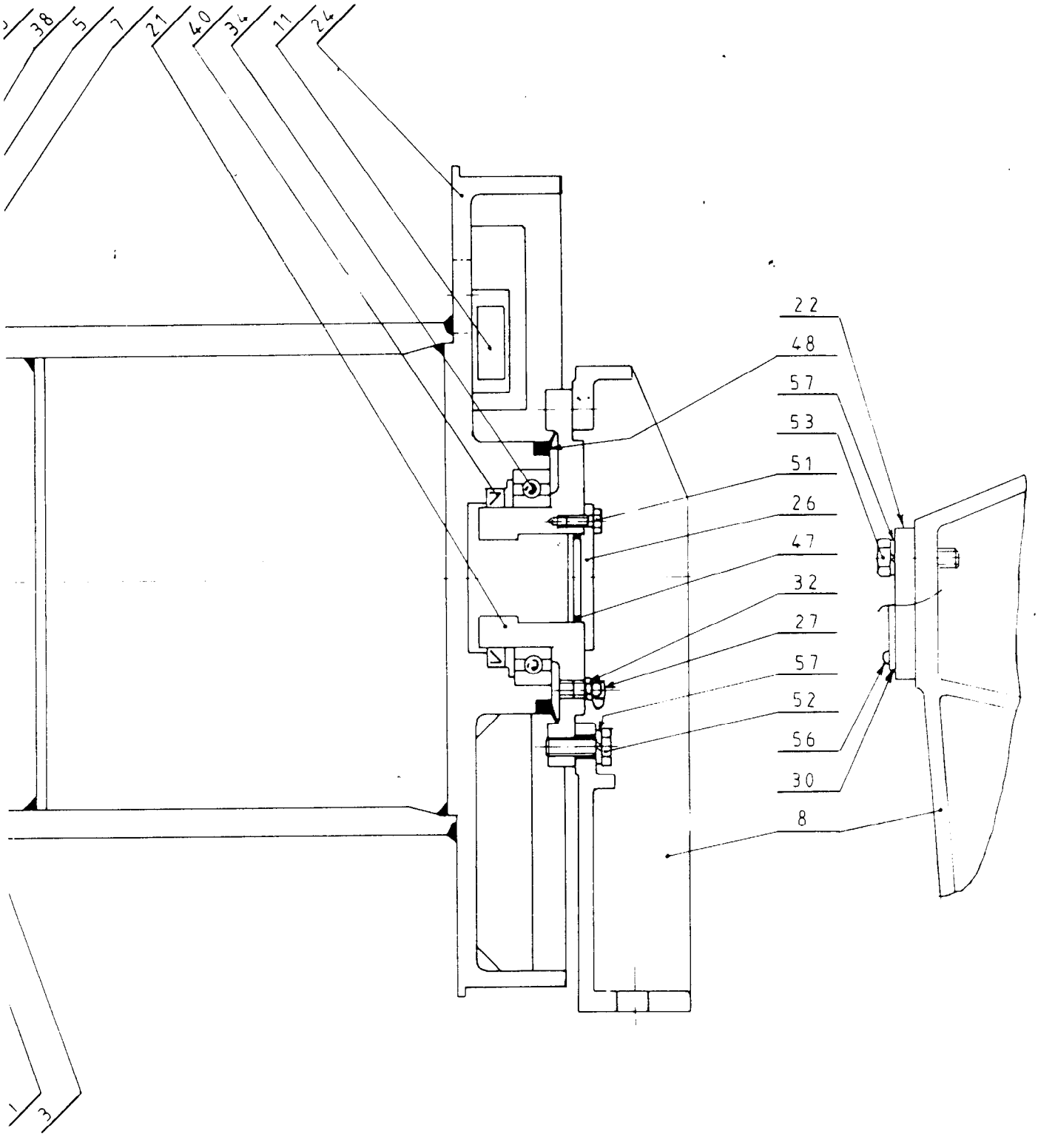
9 2 0 4 0 9 | A | 1/8

LE CHEF DU BUREAU D'ETUDES

Par suite de l'évolution constante de la technique, nous pouvons être amenés à modifier sans préavis la conception et les caractéristiques de nos appareils ou accessoires
Wir behalten uns vor im Zuge der technischen Entwicklung Bauart und technische Daten unserer Maschinen und des Zubehörs zu ändern
In our continous policy of improvement the right is reserved to make any change we think of benefit for our customers



Ⓐ LOCTITE INSTAJOINT 574
Ⓑ LOCTITE FREIN FILET 243
Ⓒ LOCTITE TUBETANCHE 577



INGERSOLL-RAND
MATERIALHANDLING

TREUIL DE LEVAGE "PERSONNEL" PNEUMATIQUE
DRUCKLUFT HUBWINDE FUER PERSONENTRANSPORT
AIR POWERED MAN-RIDING WINCH

MANRIDER 1 TON

NUMERO DE NOMENCLATURE

L 615

NUMERO DU DOCUMENT

9 2 0 4 0 9 B 2/8

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
1	Moteur pneumatique	Compressed air motor	Druckluft motor	1	3616-0006	38533824
2	Distributeur pneumatique	Air control valve	Pneumatisches Steuerventil	1	3617-0008	38533329
3	Satellite	Satellite	Trabant	4	9573-0018	38527941
4	Axe de satellite	Satellite axle	Trabantenachse	4	9573-8019	38531208
5	Entretoise	Distance ring	Distanzring	4	9573-0021	38527966
6	Couronne 60 dents	60 teeth-ring gear	Zahnkranz 60 Zähne	1	9573-0055	38527974
7	Couronne 57 dents	57 teeth-ring gear	Zahnkranz 57 Zähne	1	9573-0056	38527990
8	Flasque	Flange	Flansch	2	9615-7002	38531232
9	Pignon moteur	Driving pinion	Abtriebszahnrad	1	9615-8019	38533832
10	Bague de centrage	Eccentric ring	Zentrierring	2	9619-0017	38530218
11	Coin	Wedge	Keil	1	9615-0009	38528014
12	Corps de frein	B rake housing	Bremsgehäuse	1	9615-0011	38528097
13	Bague de centrage	Eccentric ring	Zentrierring	1	9615-0012	38528105
14	Piston	Piston	Kolben	1	9615-0013	38528113
15	Entretoise	Distance ring	Distanzring	1	9615-0045	38528113
16	Bague de liaison	Connecting ring	Verbindungsring	1	9615-8124	38540985
17	Porte satellite	Satellite support	Satellitenträger	1	9615-0023	38533840
18	Palier avant	Front bearing	Vorwärtslager	1	9615-8042	38531240
19	Porte couronne	Ring gear support	Zahnkranzträger	1	9615-0043	38528048
20	Palier de roulement	Rolling bearing	Walzlager	1	9615-0044	38528055
21	Palier arrière	Rear bearing	Lager hinten	1	9615-8049	38531257
22	Entretoise	Distance ring	Distanzring	2	9615-0050	38529822
23	Butée	Stop	Anschlag	1	9615-0051	38528071
24	Tambour	Drum	Trommel	1	9615-8052	38531224
	Tambour rainuré	Grooved Drum	GerillteTrommel	1	9615-8253	38544391
25	Sous ensemble clabot	Claw of positive cluth	Klaue einer Fuppelmuffe	1	3573-0001	38529764
26	Obturateur	Blind washer	Dichtung	1	9619-0013	38528816

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Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND
MATERIALHANDLING

TREUIL DE LEVAGE "PERSONNEL" PNEUMATIQUE
DRUCKLUFT HUBWINDE FUER PERSONENTRANSPORT
AIR POWERED MAN-RIDING WINCH

MANRIDER 1 TON

NUMERO DE NOMENCLATURE
L 615
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9 2 0 4 0 9 B 3/8
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REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
27	Bouchon	Plug	Stopfen	1	6101-7128	38528329
28	Disque de friction	Friction disc	Reibcheibe	6	6305-9932	38528352
29	Disque acier	Steel disc	Stahlscheibe	5	6306-0032	38528360
30	Plaque d'identification	Identification plate	Typenschild	1	9615-0153	38540993
31	Bouchon	Plug	Stopfen	2	6516-0932	38528337
32	Graisseur hydraulique	Hydraulic greaser	Hydraulisher Schmiernippel	1	6730-1727	38528345
33	Ressort	Spring	Feder	9	6916-7132	38528378
34	Roulement à billes	Ball bearing	Kugellager	1	5005-0015	38523346
35	Roulement à billes	Ball bearing	Kugellager	1	5080-0007	38526208
36	Roulement à billes	Ball bearing	Kugellager	1	5080-0024	38528477
37	Butée à aiguilles	Needle stop	Nadelanschlag	8	5605-4225	38528485
38	Cage à aiguilles	Needle cage	Nadelkäfig	8	5650-3324	38528493
39	Contre plaque	Thrust washer	Druckscheibe	8	5731-2632	38528501
40	Bague d'étanchéité	Sealing ring	Dichtring	1	5800-0830	38528519
41	Bague d'étanchéité	Sealing ring	Dichtring	1	5801-9230	38528527
42	Joint torique	O'ring	O'ring	1	5821-0929	38528584
43	Joint torique	O'ring	O'ring	1	5821-2529	38522660
44	Joint torique	O'ring	O'ring	2	5821-6929	38528535
45	Bague	Ring	Ring	1	5821-7929	38528543
46	Joint torique	O'ring	O'ring	1	5822-2929	38522710
47	Joint torique	O'ring	O'ring	1	5822-4229	38528592
48	Joint V-ring	Joint	Dichtung	1	5840-4831	38528550
49	Joint V-ring	Joint	Dichtung	1	5840-5831	38528568
50	Joint cuivre	Copper joint	Kupferdichtung	2	5840-8031	38528576
51	Vis H	Screw	Schraube	3	4100-0201	38522751
52	Vis H	Screw	Schraube	24	4100-0401	38528667
53	Vis H	Screw	Schraube	8	4100-6701	38533071

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INGERSOLL-RAND
MATERIALHANDLING

TREUIL DE LEVAGE "PERSONNEL" PNEUMATIQUE
DRUCKLUFT HUBWINDE FUER PERSONENTRANSPORT
AIR POWERED MAN-RIDING WINCH

MANRIDER 1 TON

NUMERO DE NOMENCLATURE

L 615

NUMERO DU DOCUMENT

L 9 20 4 0 9 J L B J L 4/8 J

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
54	Vis FHc/90	Screw	Schraube	6	4110-1603	38528675
55	Vis CHc	Screw	Schraube	4	4130-1006	38523593
56	Rivet	Rivet	Niete	4	4460-0821	38528683
57	Rondelle grower	Split washer	Scheibe	24	4520-0010	38522223
58	Goupille élastique	Elastic pin	Elastisches Stift	4	4650-4220	38528709
59	Circlips intérieur	Circlips	Seegerring	1	4770-3062	38527149
60	Anneau expansif	Expansive ring	Expansives Ring	1	4783-6832	38528717
61	Anneau expansif	Expansive ring	Expansives Ring	1	4784-7832	38528758
62	Anneau expansif intérieur	Internal expansive ring	Inneres Espansives Ring	1	4785-3932	38528725
63	Circlips extérieur	Circlips	Seegerring	1	4770-0035	38524070
64	Circlips intérieur	Circlips	Seegerring	1	4770-0028	38520465
65	Roue libre	Free wheel	Freilauf	1	5596-5932	38530283
66	Bague extérieure de roue libre	External ring of free wheel	Außenring des Freilaufes	1	9619-0018	38530226

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

DISASSEMBLY INSTRUCTIONS (Winch)

- Unwind drum cable
- Strip down the set of limit switch if the winch is fitted with any (see : strip down air compressed limit switch)
- Point drum plug downwards in order to empty the reducer
- Strip down the whole of the winch and skid frame from its support
- Strip down band brake (cf. Diasassembly Instructions for Direct brake on drum)
- Drain oil from reducer ; use hexagonal-hollow head wrench 14 mm
- Tip the winch on the rear flange

1 - Stripping down of multiple brake disc

1.1 - Disconnect the control valve and motor hoses
1.2 - Remove the whole of air control valve
1.3 - Remove the whole of air motor rep. 1 (see "remove the whole of air motor" on disassembly instructions air motor
1.4 - Remove centring ring rep 13 and springs rep 33
1.5 - Remove O'ring ITEMS 43 and ITEM 44
1.6 - Strip down the whole of the brake housing ITEM12, piston ITEM 14 and distance ring ITEM 15
  1.6.1 - Expel distance ring ITEM 15 from ITEM 14 (Warning : restrained shrink on + "Blocpresse")
  1.6.2 - Expel piston ITEM 14 from ITEM 12
  1.6.3 - Remove 0'rings rep 42 and 46
1.7 - Remove O'rings ITEM 44
1.8 - Strip down connecting ring Item 16
1.9 - Remove circlips ITEM 64
1.10 - Strip down the whole of free wheel : ITEM 10, ITEM 65 and ITEM 66
1.1.1 - Strip down the whole of brake set ITEM 28 AND 29

2 - Multiple brake disc assembly

Reassembly will have to be caried out in the opposite direction to the one used for dismantling

Importants remarks :
- Direction of assembling of the free wheel : external ring ITEM 10 blocked in rotation with free rotation of gear ITEM 9 in counterclockwise (side view of pneumatic motor)
- Use LOCTITE BLOC PRESSE 601 for introduction of ITEM 15 in ITEM 14

3 - Disassembly gearing block

3.1 - Remove air control valve rep. 2 and air motor rep 1
3.2 - Remove the whole multiple brake disc (see front of paragraph)
3.3 - Remove screws ITEM53 and washers ITEM 57 from Distancepiece ITEM 22
  (wrench : 17 mm on flat sides)
3.4 - Remove screws ITEM 52 and washers ITEM 57 from Front Flange ITEM 8
  (wrench : 17 mm on flat sides)
3.5 - Remove front flange ITEM 8
3.6 -Strip down screws rep 54 and remove stop rep 23
3.7 - Strip down the whole of the front bearing ITEM 16, Rolling bearing ITEM 18 and Ring gear support ITEM 19 (Extraction equipment - Code M 615-1300)
  3.7.1 - Remove screws ITEM 55 from Ring gear support (ITEM 19)
  (Hexagonal-hollow head wrench 5 mm)
  3.7.2 - Remove ring gear support ITEM 19
  3.7.3 - Remove front bearing ITEM 18 and joint ITEM 49
  3.7.4 - Remove circlips ITEM 59

3.7.5 - Remove circlips ITEM 63
3.7.6 - Strip down the whole of driving pinion ITEM 9 and ball-bearing ITEM 35
3.7.7 - Expel Sealing ring ITEM 41 from Rolling bearing (ITEM 20)
3.7.8 - Remove circlips ITEM 62
3.7.9 - Expel Ball bearing ITEM 36 from Rolling bearing (ITEM 20)
3.8 - Remove Expansive ring ITEM 60 and Ring gear ITEM 6
3.9 - Strip down the whole of the satellite support ITEM 17 and satellite ITEM 3
3.9.1 - Push out pins ITEM 58 from satellite support (ITEM 17) (pin punch ϕ4)
3.9.2 - Push out satellites axles ITEM 4
3.9.3 - Remove satellites ITEM 3
3.9.4 - Remove needles bearings ITEM 38 and Distance rings ITEM 5
3.9.5 - Remove needles stop ITEM 37 and thrust-washers ITEM 39
3.10 - Remove ring gear ITEM 7
3.11 - Remove claw of positive cluth ITEM 25
3.12 - Remove expansive ring ITEM 61

4 - Dismantling of rear side of winch

Dismantling of rear side of winch is separate from the rest of the dismantling of the winch
4.1 - Remove screws ITEM 53 and Waschers ITEM 57 from Distance ring (ITEM 22)
(Wrench : 17 mm on flat sides)

4.2 - Remove screws ITEM 52 and Waschers ITEM 57 from Rear flange (ITEM 8)
(Wrench : 17 mm on flat sides)
4.3 - Remove rear flange ITEM 8
4.4 - Strip down the whole of the rear bearing ITEM 21 and blind washer ITEM 26
4.5 - Remove Joint ITEM 48
4.6 - Remove Ball bearing ITEM 34
4.7 - Remove Sealing ring ITEM 40

N.B. - Reassembly will have to be carried out in the opposite direction to the used for dismantling
- Screws ITEM 52 from rear Flange ITEM 8 will be tightened with 4,83 m kg torque
- Screws ITEM 53 from Distance ring ITEM 9 will be tightened to torque 4,83 m kg only after winch has been put on skid frame.

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

Cleaning

CAUTION

A bearing that appears loose or rotates roughly must be replaced. Failure to observe this precaution will result in bearing and/or winch component damage.

Clean all winch component parts in solvent. The use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments in the drum and reduction assembly. Dry each part using low pressure, filtered compressed air.

Inspection

All disassembly parts should be inspected to determine the 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 all bearings for play, distorted races, pitting and roller or ball wear or damage. Inspect bearings or 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 - The multidisc brake does not require any adjustment. The maintenance being limited to the check of brake discs.
- nominal size of piling up 16 ± 0,5
- wearing size of brake discs : 14 mm at minimum

Important nota :
. No friction disc must have a smooth friction surface
. Grooves have a nominal depth of 0,2 mm on each face of the discs

Repair

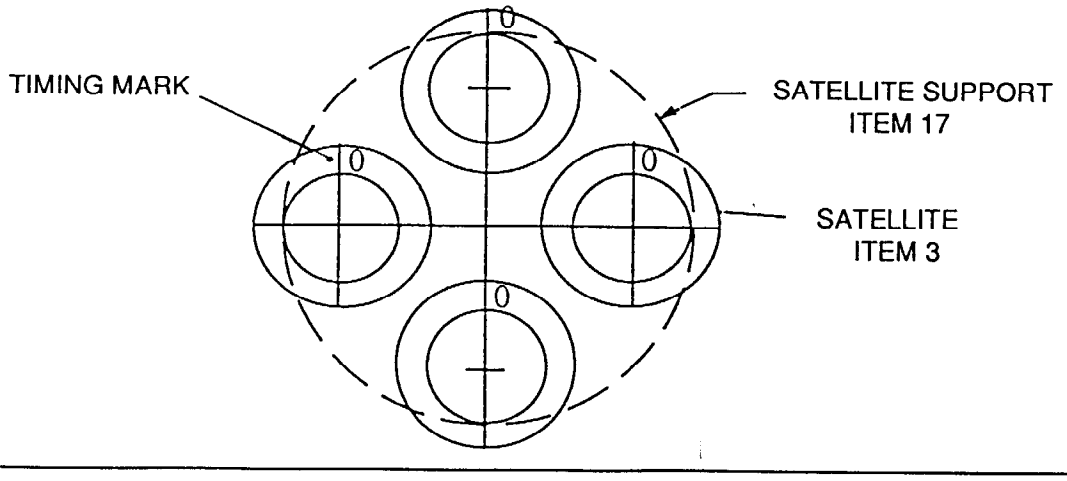
Actual repairs are limited to the removal of small burrs and other minor surface imperfections from gears and shafts. Use a fine stone or emery cloth for this work.
Do not use steel wool.

1 - Worm or damaged parts must be replaced. Refer to the apllicable 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.
7 - Replace all gaskets, oil seals, and O'rings any time the winch is disassembled for repair.

ASSEMBLY INSTRUCTIONS (Winch)

1 - Reducer assembly

1.1 - Orientation of satellites
1.1.1 - Assemble the 4 satellites on to the support
1.1.2 - Adjust the 4 satellites as shown on drawing below



1.1.3 - Clutch in Ring gear ITEM 6
1.1.4 - Assemble driving pignon ITEM 9 to adjust the 4 satellites then remove ring gear ITEM 6

1.2 - The reassembling of the reducer has to be carried out in the opposite direction to the one used for dismantling

N.B. - Screws ITEM 54 and 55 will be be fixed and tightened with blue LOCTITE (ref. 243)
- Screws ITEM 52, from front Flange ITEM 8, will have to be tightened with 4,83 mkg torque
- Screws ITEM 53, from Distance ring ITEM 22, will have to be tightened to torque 4,83 mkg only after winch has been put on skid frame

2 - Brake system assembly
(see 2 - Stripping down of brake system).

3 - Motor assembly
(see 1 - Stripping down of motor)

4 - Winch assembly

4.1 - Reassemble Reduction Gear
4.2 - Reassemble multiple brake disc

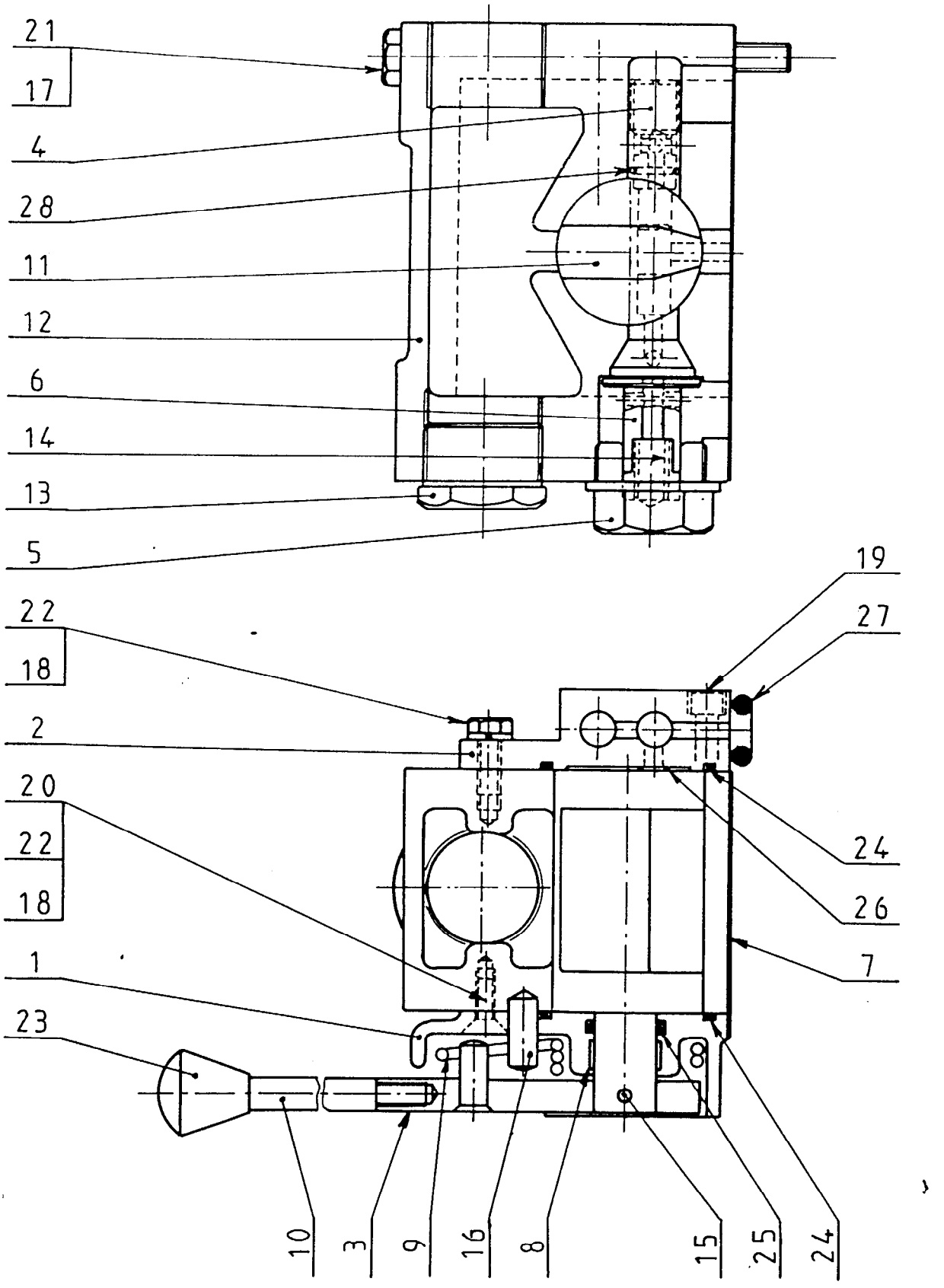
4.3 - Reassemble compressed air motor
4.4 - Reassemble Air control valve
4.5 - Reassemble band brake
4.6 - Reassemble winch on skid frame
4.7 - Connect all air hoses as described in pneumatic scheme

INGERSOLL-RAND
MATERIAL HANDLING

DISTRIBUTEUR PNEUMATIQUE
AIR CONTROL VALVE
PNEUMATISHES STEUERVENTIL
THE MANRIDER 1 TON

NUMERO DE NOMENCLATURE
L 615
NUMERO DU DOCUMENT
9 2 0 4 1 0 1/3

LE CHEF DU BUREAU D'ETUDES



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INGERSOLL-RAND
MATERIAL HANDLING

DISTRIBUTEUR PNEUMATIQUE
PNEUMATISCHES STEUERVENTIL
AIR CONTROL VALVE

NUMERO DE NOMENCLATURE

NUMERO DU DOCUMENT
92041 0 2/3

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
1	Flasque avant	Front end-cover	AeuBeres Seitenteil	1	9617-0003	38528261
2	Flasque arrière	Rear end-cover	Inneres Seitenteil	1	9617-0004	38528303
3	Butée	Stop	Anschlag	1	9617-0005	38528279
4	Clapet	Stopper	Klappe	1	9617-0044	38534913
5	Bouchon clapet	Plug	Stopfen	1	9617-0043	38534921
6	Clapet	Stopper	Klappe	1	9617-0042	38528956
7	Joint	Joint	Dichtung	1	9617-0010	38528220
8	Bague de guidage	Guiding ring	Führungsring	1	9617-0011	38528238
9	Ressort de rappel	Return spring	Rückholfeder	1	9617-0028	38528287
10	Levier	Lever	Hebel	1	9617-0029	38528295
11	Carotte	Rotary valve	Umsteuerküken	1	9617-0030	38528246
12	Corps	Casing	Gehäuse	1	9617-0031	38528253
13	Bouchon	Plug	Stopfen	1	6513-7132	38528444
14	Ressort	Spring	Feder	1	6916-7032	38528436
15	Goup. Elastiq.	Elastic pin	Elastisches Stift	1	4650-2020	38528808
16	Goupille DIN	DIN pin	DIN Stift	1	4600-1916	38528790
17	Rondelle grower	Washer	Scheibe	4	4520-0010	38522223
18	Rondelle grower	Washer	Scheibe	4	4520-0008	38523171
19	Vis CHc	Screw	Schraube	2	4130-1606	38527040
20	Vis FHc/90	Screw	Schraube	2	4110-3803	38528782
21	Vis H	Screw	Schraube	4	4101-8101	38528766
22	Vis H	Screw	Schraube	4	4100-2301	38528774
23	Poignée de manoeuvre	Handle	Griff	1	5742-6232	38528659
24	Joint torique	O'ring	O-ring	2	5820-4729	38528600
25	Joint torique	O'ring	O-ring	1	5822-4429	38528626
26	Joint torique	O'ring	O-ring	2	5821-2529	38522660
27	Joint torique	O'ring	O-ring	1	5822-7729	38528634
28	Joint torique	O'ring	O-ring	1	5820-0329	38533337

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND MATERIAL HANDLING	DISTRIBUTEUR PNEUMATIQUE *PNEUMATISCHES STEUERVENTIL* AIR CONTROL VALVE	NUMERO DE NOMENCLATURE NUMERO DU DOCUMENT 9 2 0 4 1 0 ⌊⌋ 3 B LE CHEF DU BUREAU D'ETUDES

DISASSEMBLY INSTRUCTIONS (air control valve)

1 - Stripping-down the whole of air control valve

1.1 - Disconnect the two hoses rep 2 and 3
Nota : See scheme : air powered accessories
1.2 - Remove screws rep 21 (wrench : 17 mm on flat sides)
1.3 - Strip down the whole of control valve
1.4 - Strip down the paper joint rep 7
1.5 - Strip down the O'ring rep 27

2 - Dismantling control valve

2.1 - Remove elastic pin ø 5 rep 15
2.2 - Strip down the control lever rep 10 and 3
2.3 - Strip down the spring rep 9
2.4 - Remove screws rep 19 wrench 6PC 6mm and rep 22 wrench 13 on flat sides rear end-cover
- 2.4.1 - Strip down the flat side rep 2
- 2.4.2 - Strip down the O'ring rep 24
- 2.4.3 - Strip down the O'rings rep 26

2.5 - Remove screws Rep 20 and 22 wrench 6PC 5 mm on front end cover
- 2.5.1 - Strip down the whole rotary valve rep 11 and front end cover rep 1
- 2.5.2 - Strip down O'ring (rep 24)

2.6 - Remove rotary valve on front bearing
- 2.6.1 - Strip down the guiding ring rep 8
- 2.6.2 - Strip down the O'ring rep 25

2.7 -Screw off the valve cone plug rep 5
- 2.7.1 - Strip down spring rep 14
- 2.7.2 - Strip down holding valve cone rep 6

2.8 - Screw off the valve cone plug rep 4
- 2.8.1 - Strip down O'ring rep 28

ASSEMBLY INSTRUCTIONS

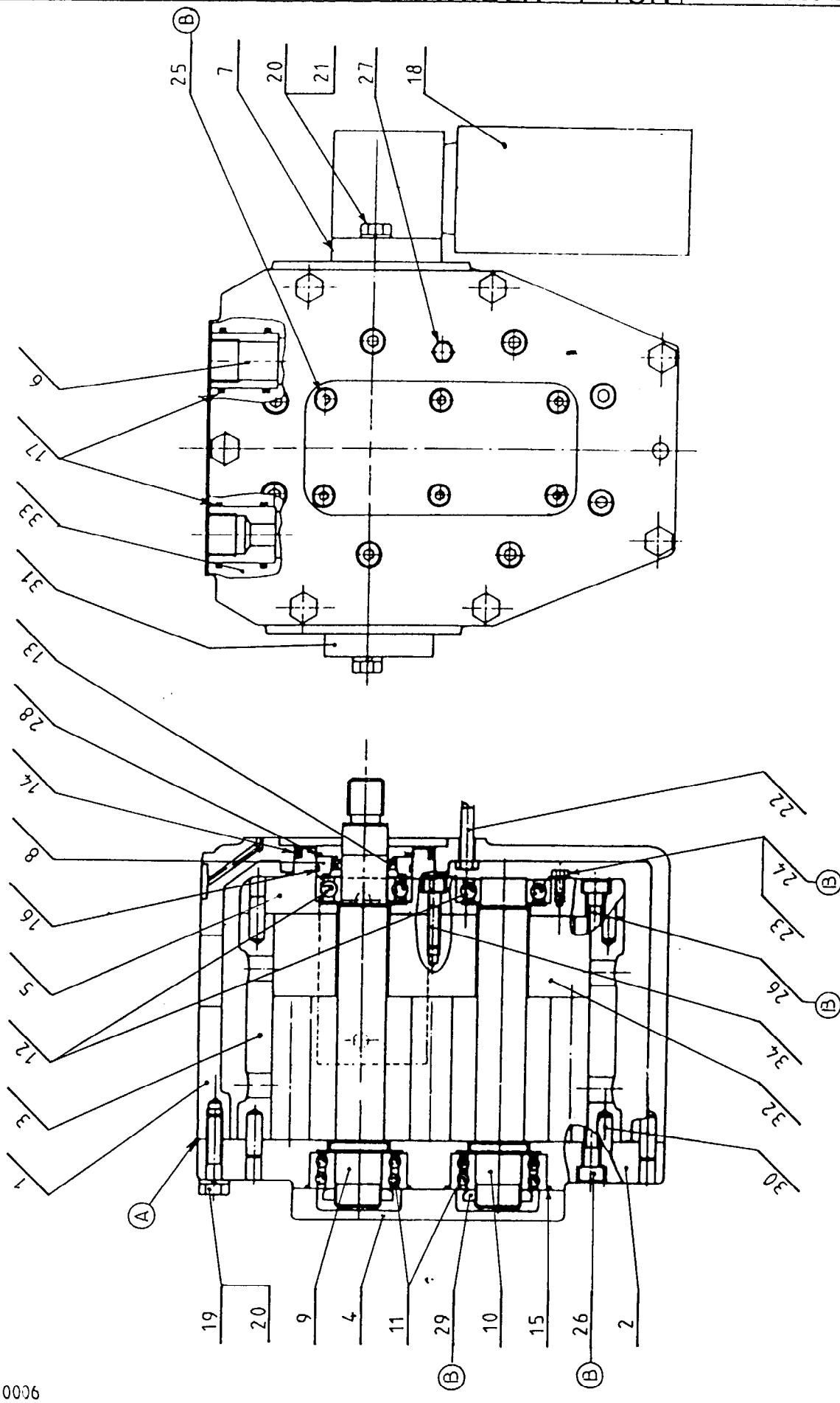
The assembling of the control valve has to be carried out in the opposite direction to the one used for dismantling.
- Screws rep 19 and 22 will be tightened with brake net LOCTITE ref 243
- Plug rep 5 will be fixed with tubetanche LOCTITE 577
- Plug valve cone rep 4 will be fixed with tubetanche LOCTITE 577

INGERSOLL-RAND
MATERIAL HANDLING

MOTEUR PNEUMATIQUE A ENGRENAGES
AIR GEAR MOTOR
DRUCKLUFT GETRIEBEMOTOR
THE MANRIDER 1 TON

NUMERO DE NOMENCLATURE
L 615
NUMERO DU DOCUMENT
9 2 0 4 1 6 | A | 1/4

LE CHEF DU BUREAU D'ETUDES



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INGERSOLL-RAND
MATERIAL HANDLING

MOTEUR PNEUMATIQUE A ENGRENAGES
AIR GEAR MOTOR
DURCKLUFT GETRIEBEMOTOR

NUMERO DE NOMENCLATURE

NUMERO DU DOCUMENT
9 2 0 4 1 6 A 2/4

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
1	Carter moteur	Motor casing	Motorgehäuse	1	9616-0001	38533097
2	Plaque arrière	Rear end cover	Rückwartsseit enteil	1	9616-0002	38533105
3	Corps moteur	Motor housing	Motor gehäuse	1	9616-0003	38533113
4	Couvercle	Cover	Eleckel	1	9616-0004	38533121
5	Plaque avant	Front end cover	Vorwarkseitenteil	1	9616-0015	38533139
6	Tube	Pipe	Rohr	1	9616-0006	38533147
7	Bride	Flange	Flansch	1	9616-0007	38533154
8	Support de joint	Joint support	Dichtungsträger	1	9616-0008	38533162
9	Rotor moteur	Motor rotor	Motor rotor	1	9616-0012	38534939
10	Rotor repulsion	Repulsion rotor	Repulsion rotor	1	9616-0013	38534957
12	Roulement à billes	Ball bearing	Kugellager	2	5018-0906	38533196
11	Roulement à billes	Ball bearing	Kugellager	2	5060-0006	38533204
13	Bague d'étanchéité	Sealing ring	Pichtring	1	5801-3430	38533212
14	Joint torique	O'ring	O'ring	1	5820-8529	38533220
15	Joint torique	O'ring	O'ring	2	5821-0429	38533238
16	Joint torique	O'ring	O'ring	1	5822-4329	38533246
17	Joint torique	O'ring	O'ring	4	5820-0929	38533253
18	Silencieux	Muffler	Schalldämpfer	2	6846-6832	38529202
19	Vis H.	Screw	Schraube	7	4100-8801	38533261
20	Rondelle W	Split wasker	Scheibe	11	4520-0010	38522223
21	Vis H	Screw	Schraube	4	4100-0401	38528667
22	Vis H	Screw	Schraube	12	4101-6701	38533279
23	Vis H	Screw	Schraube	1	4100-7601	38533287
24	Rondelle M	Washer	Scheibe	1	4500-0106	38523619
25	Vis CHc	Screw	Schraube	6	4130-1506	38528832
26	Vis CHc	Screw	Schraube	16	4130-2806	38527057

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND
MATERIAL HANDLING

MOTEUR PNEUMATIQUE A ENGRENAGES
AIR GEAR MOTOR
DURCKLUFT GETRIEBEMOTOR

NUMERO DE NOMENCLATURE

NUMERO DU DOCUMENT
9 2 0 4 1 6 A 3/4

LE CHEF DU BUREAU D'ETUDES

REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
27	Bouchon	Plug	Stopfen	2	6512-5832	38528402
28	Circlips	Circlips	Seegering	1	4770-3062	38527149
29	Ecrou	Nut	Mutter	2	5700-0006	38533295
30	Goupille	Pin	Stift	5	4600-0816	38533303
31	Plaque d'obturation	Closing plate	Auschlußplatte	1	9616-0011	38534954
32	Flasque cage	Flange cage	Flansch käfig	1	9616-0014	38534962
33	Tube	Pipe	Röhr	1	9616-0016	38534970
34	Vis CHc	Screw	Schraube	2	4130-4506	38525689

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND MATERIAL HANDLING	MOTEUR PNEUMATIQUE A ENGRENAGES *DRUCKLUFT GETRIEBEMOTOR* AIR GEAR MOTOR	NUMERO DE NOMENCLATURE NUMERO DU DOCUMENT 9 2 0 4 1 6 | | 4/4 LE CHEF DU BUREAU D'ETUDES

DISASSEMBLY INSTRUCTIONS (air motor)

Stripping down of motor doesn't required any oil change.

- pay out the cable
- put down the maintain hole of drum ø 40
- strip down the air limit switch device if the winch is fitted with any (see paragraph : air limit switch device)
- screw off frame skid rep 23 and throw off the winch on rear end cover rep 8

1 - Strip down the whole of air motor

1.1 - Disconnect the hoses rep 1 of flat sides rep 2 (if the winch is fitted with overload limit switch)
1.2 - Strip down the whole air control valve (see paragraph : Air control valve)
1.3 - Remove the feeding tubes rep 6 and 33 (extraction at ø M24)
Nota : See assembly instruction of air motor before stripping down
1.4 - Remove screws rep 19 (wrench 17 mm on flat sides)
1.5 - Remove the whole of motor block from exterior housing rep 1 (2 extraction holes M10) and the 0'ring rep 14
1.6 - Strip down the metal and support box without disconnecting the hoses if the winch is fitted with the overload limit valve switch
1.7 - Remove screws ITEM 24 from housing (ITEMS 1) except 2 diametrically opposite socket (13 mm on flat sides)
1.8 - Progressively unscrew the both last screws to release the springs ITEM 33
1.9 - Remove housing ITEM 1

2 - Dismantling motor block

2.1 - Remove screws CHc rep 26 from the front plate rep 5
  2.1.1 - Strip down the front plate rep 5 and use the 2 extraction hoses M10
  2.1.2 - Remove screws CHc rep 26 and strip down the cage flange rep 32
  2.1.3 - Remove interior circlips rep 28
  2.1.4 - Strip down the whole ball bearing rep 12 support ring of joint rep 8
  2.1.5 - Remove screw head H rep 23 and strip down the ball bearing rep 12
2.2 - Remove screws CHc rep 26 from rear plate rep 2
  2.2.1 - Strip down the casing of motor rep 3 and use the 2 extraction hoses M10
2.3 - Remove screws CHc rep 25 from rear plate
  2.3.1 - Strip down cover rep 4
  2.3.2 - Strip down the 0'rings rep 15
2.4 - Block by rotation the rotors of motor and unscrew the nuts rep 29
2.5 - Strip down the rotors of motor and repulsion rep 9 and 10

3 - Assembling motor block

The assembling of motor block has to be carried out in the opposite direction to the one used for dismantling.

Importants nota :

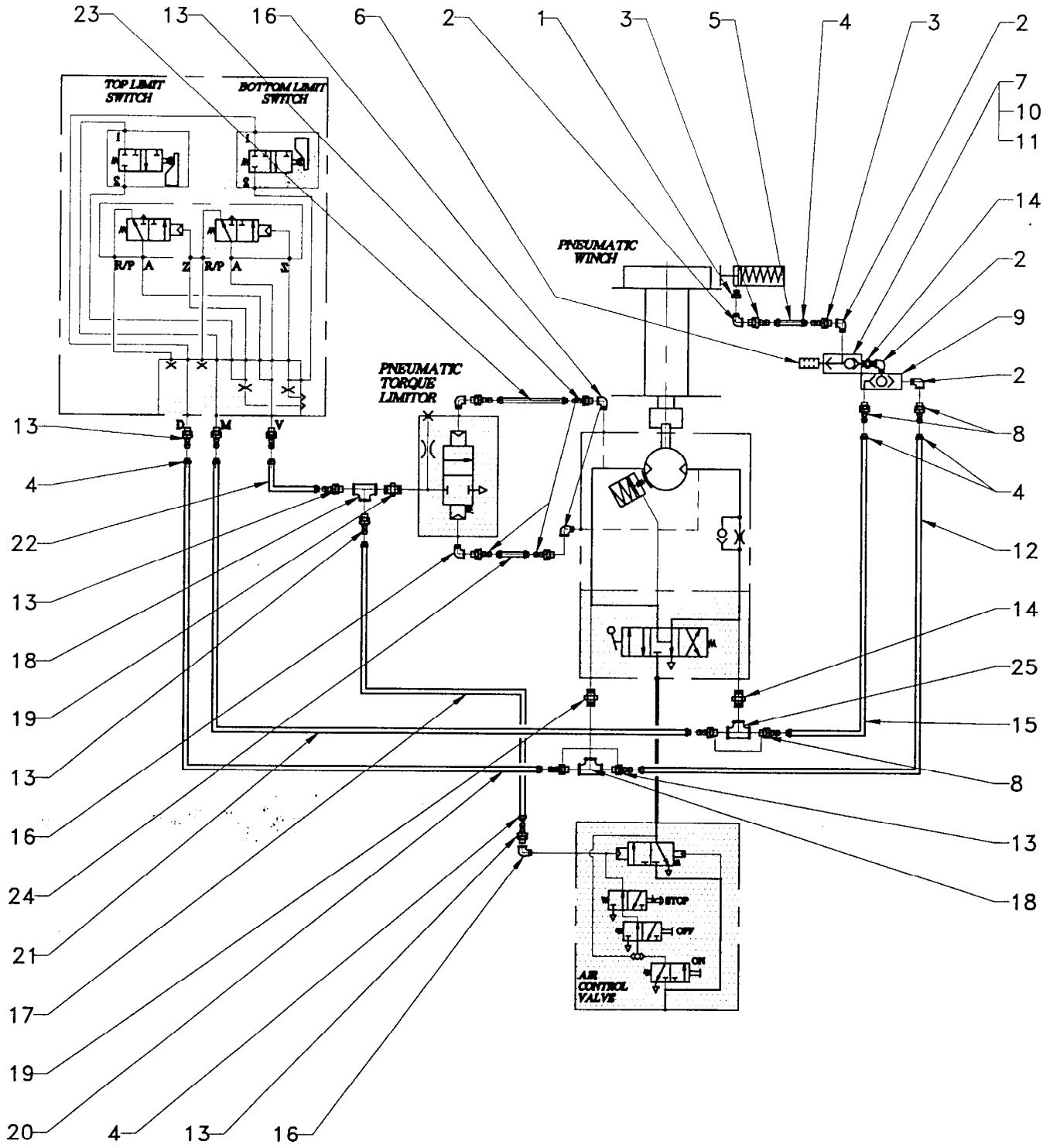
- Screws rep 24 and 26 will be fixed and tightened with brake net LOCTITE rep 243 and the screws cap rep 29.
- Lubricate the sealing ring rep 13 when fixing to the motor axle
- After final assembly of motor block, except for cover rep 4, position rotor bearings by tightening the rotor axles with a nylon mallet, then reposition cover rep 4
- Check that motor thus reassembled works with no friction ; in order to do that rotate the rotor motor by hand, clock wise and anti-clockwise
- In order to enable easy assembly of the motor block into the crankcase rep 1, please ensure that the pin between the rear plate and the motor block is positioned only after the pinion of motor has been engaged into the grooves of the motor sleeve.

INGERSOLL–RAND

MATERIEL HANDLING

THE MANRIDER 1T
AIR POWERED
ACCESSORIES DRAWING

NUMERO DE NOMENCLATURE
615
NUMERO DU DOCUMENT
96/01/10 1/2
Ph. Demeese
LE CHEF DU BUREAU D'ETUDES



INGERSOLL-RAND MATERIAL HANDLING	**THE MANRIDER 1T AIR POWERED ACCESSORIES PARTS LIST**	NUMERO DE NOMENCLATURE **L615** NUMERO DU DOCUMENT **96/01/10 2/2** *Ph. Demeese* Le chef du bureau d'études

ITEM NO.	DESCRIPTION OF PART	TOTAL QTY	PART NO.
1	Reducing adaptor	1	61308428
2	Elbow 1/4	4	68235832
3	Butt-end 1/4 dia.8	2	61635732
4	Clamp collar	6	61130132
5	Hose dia.8	m	68055332
6	Muffler	1	68490832
7	Quick exhaust valve	1	61935932
8	Butt-end ¼ dia.6	3	61629732
9	Circuit selector	1	67709232
10	Washer	2	45200005
11	Screw	2	41014801
12	Hose dia.6	m	68024232
13	Butt-end 1/8 dia.6	1	61352632
14	Nipple 1/4	1	61623132
15	Hose dia.6	m	68024232
	TORQUE LIMITOR OPTION		
4	Clamp collar	6	61130132
13	Butt-end 1/8 dia.6	6	61652632
16	Elbow 1/8	5	68280132
17	Hose dia.6	m	68024232
23	Hose dia.6	m	68024232
24	Hose dia.6	m	68024232
	LIMIT SWITCH OPTION		
4	Clamp collar	6	61130132
8	Butt-end 1/4 dia.6	1	61629732
13	Butt-end 1/8 dia.6	5	61629732
14	Nipple 1/4	1	61623132
18	Tee 1/8	2	61394532
19	Nipple 1/8	2	61385232
20	Hose dia.6	m	68024232
21	Hose dia.6	m	68024232
22	Hose dia.6	m	68024232
25	Tee 1/4	1	61311332

INGERSOLL-RAND

MATERIEL HANDLING

TORQUE LIMITOR

NUMERO DE NOMENCLATURE

3.636.0002

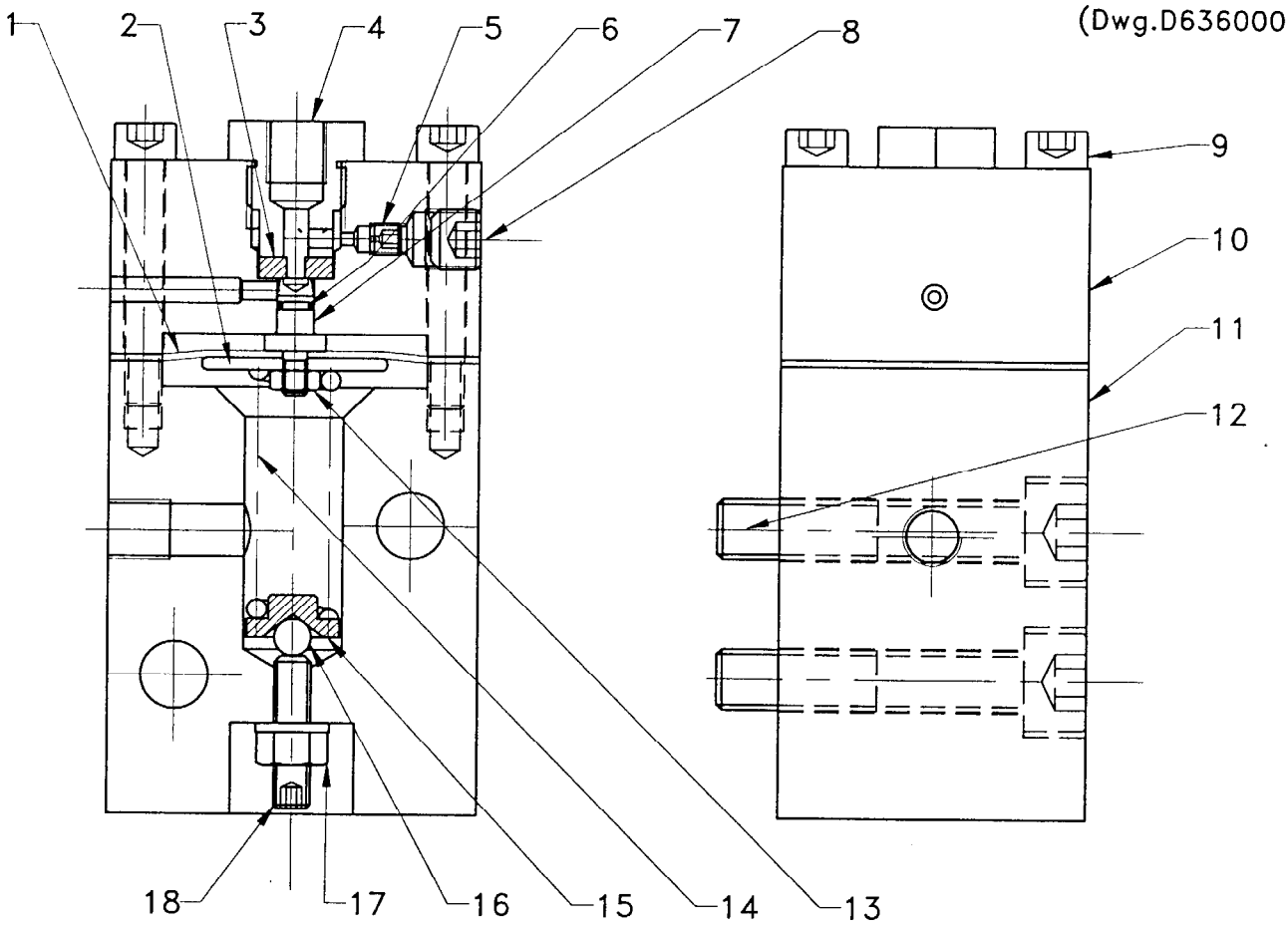
NUMERO DU DOCUMENT

96/01/11 1/1

Ph. Demeese

LE CHEF DU BUREAU D'ETUDES

(Dwg.D6360003)



REPERE ITEM	DESIGNATION	DESCRIPTION	QUANTITE QUANTITY	CODE
1	Membrane	Diaphragm	1	9636.0020
2	Rondelle	Washer	1	9636.0019
3	Joint	Gasket	1	9636.0021
4	Vis	Screw	1	9636.0018
5	Gicleur	Nozzle	1	9617.0071
6	Joint torique	'O' Ring	1	5822.2329
7	Clapet	Valve	1	9636.0017
8	Bouchon	Plug	1	6517.2032
9	Vis Chc	Screw	4	4131.4906
10	Corps	Body	1	9636.0025
11	Couvercle	Cover	1	9636.0024
12	Vis Chc	Screw	2	4130.7406
13	Ecrou	Nut	1	4300.1111
14	Ressort	Spring	1	6911.8541
15	Siège de ressort	Spring seat	1	9636.0023
16	Bille	Ball	1	6940.0125
17	Ecrou d'étanchéité	Nut	1	4300.7811
18	Vis Hc	Screw	1	4200.1607

INGERSOLL–RAND

MATERIEL HANDLING

EMERGENCY STOP VALVE 1" 1/2

NUMERO DE NOMENCLATURE

3.617.0020

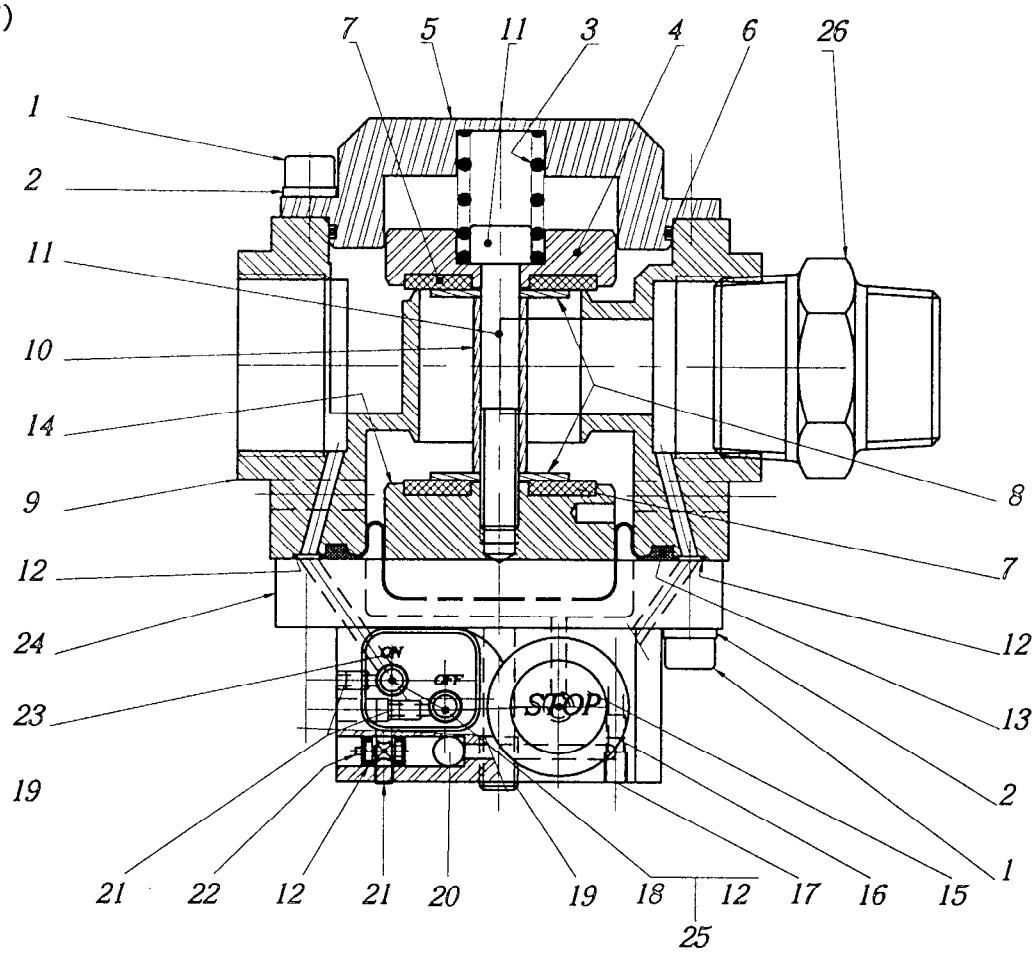
NUMERO DU DOCUMENT

96/01/09 1/1

Ph. Demeese

LE CHEF DU BUREAU D'ETUDES

(Dwg.D6170007)



REPERE ITEM	DESIGNATION	DESCRIPTION	QUANTITE QUANTITY	CODE
1	Vis CHc	Screw	12	4130.1406
2	Rondelle W	Washer	12	4520.0008
3	Ressort	Spring	1	6912.0141
4	Clapet	Valve	1	9617.0075
5	Couvercle	Cover	1	9617.0073
6	Joint torique	'O'Ring	1	5821.6129
7	Joint	Gasket	2	9617.0076
8	Rondelle LL10N	Flat 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	Joint torique	'O'Ring	10	5820.9229
13	Membrane	Diaphram	1	6772.0041
14	Clapet	Valve	1	9617.0078
15	Bouton d'arret d'urgence	Emergency stop button	1	6859.8632
16	Gicleur	Nozzle	1	9617.0071
17	Vis Hc	Screw	1	4200.7407
18	Tiroir	Spool	3	9579.0085
19	Bouchon	Plug	1	6517.2032
20	Bille	Ball	1	6940.1625
21	Vis Hc	Setscrew	3	4200.8207
22	Obturateur	Shuttle Valve Stop	1	9579.0098
23	Etiquette	Sticker	1	9579.0099
24	Couvercle	Cover	1	9617.0079
25	Ressort	Spring	3	6911.3941
26	Mamelon réduit	Reducing Nipple	1	6132.0628

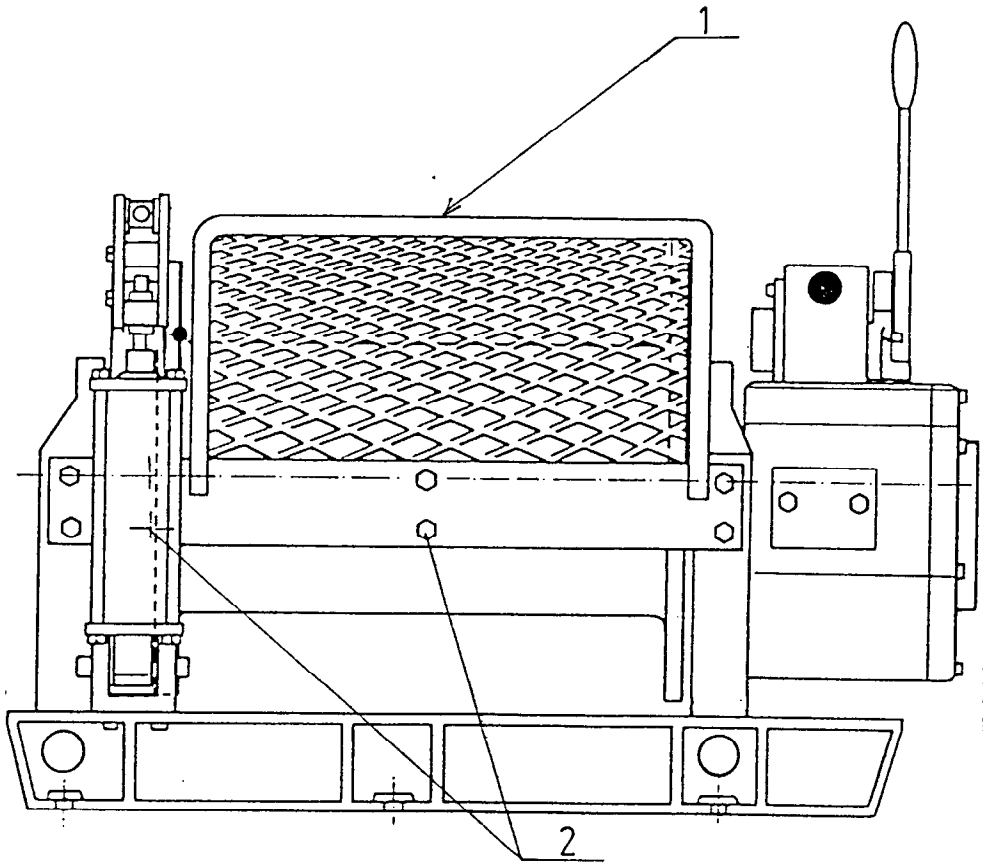
* Pièce de rechange recommandée – Recommended Spare

INGERSOLL-RAND
MATERIAL HANDLING

DRUM GUARD KIT

NUMERO DE NOMENCLATURE
3615-0040
NUMERO DU DOCUMENT
9 3 0 3 0 2 | A | 1/1

LE CHEF DU BUREAU D'ETUDES



REPERE ITEM HINWEIS	DESIGNATION	DESCRIPTION	BEZEICHNUNG	Quantité Quantity Anzhal	CODE	CPN
1	Capot protecteur	Drum guard	Trommelschutzhaube	1	9615-0108	38535753
2	Vis H	Screw	Schraube	4	4100-6201	38535761

Pour toute commande de pièces de rechange, il est recommandé de rappeler le numéro porté sur la plaque d'identification de l'appareil
For each demand of spare parts, it is recommended to specify the number written on the identification plate of the device
Bei Bestellung von Ersatzleilen bitte Sereinnummer auf dem Identifizierungsschild des Geräte angeben

INGERSOLL-RAND

MATERIEL HANDLING

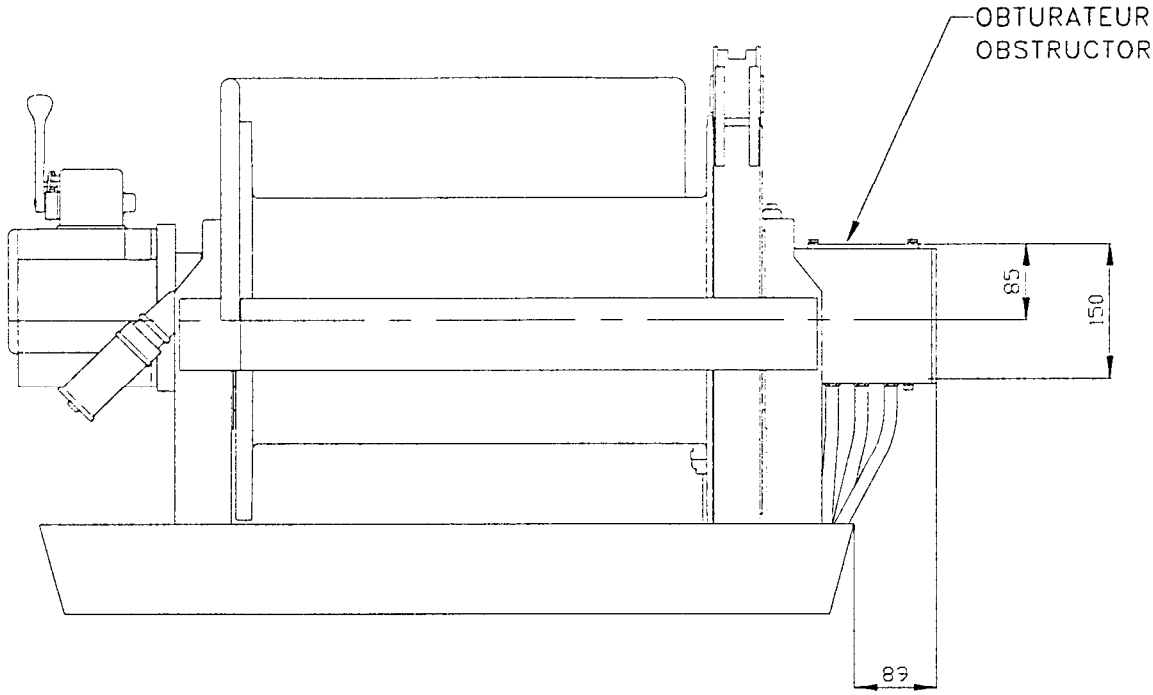
FIN DE COURSE PNEUMATIQUE

PNEUMATIC LIMIT SWITCH

NUMERO DE NOMENCLATURE
L615
NUMERO DU DOCUMENT
95/10/20 **1/2**

Ph. Demeere

Le chef du bureau d'études



(DWG.D6150029)

FONCTION
Ce dispositif permet de limiter la course de travail du treuil en deux points dont la position peut être réglée à volonté. Il permet également de garantir les 3 tours morts de sécurité sur le tambour et d'immobiliser le treuil lorsque la position la plus haute des crochets est atteinte.

FUNCTION
This device allonws to limit the winch running within two points,the position of which can be adjusted at will. It also allows to guarantee the 3 « dead » safety windings on the drun and to stop the winch when the highest position of hooks is reached.

DESCRIPTION
Deux distributeurs à commande mecanique pilotent deux distributeurs qui commandent la fermeture de la valve d'arrêt d'urgence. Les contacts sont actionnés par un mécanisme réducteur. Le tout protègé par un coffret métallique monté sur le palier arriére, il est lié à la rotation du tambour.

DESCRIPTION
Two mechanical remote control valves pilot 2 main control valves which close the emergency stop valve. The contacts are acted by a gear mechanism. The whole is protected by a metallic box, mounted on the rear bearing. The gear is bound to the drum rotation.

REGLAGE
Afin de régler le dispositif de fin de course, enlever l'opturateur (rep. 2) situé sur la partie supérieure du coffret métallique.
Desserrer la vis centrale.
Pour limiter la course en sens montée (réglage du point haut), visser la vis de réglage repérée 2, de même pour limiter la course en sens descente, (réglage du point bas), dévisser la vis repérée 1, rebloquer la vis centrale après le réglage.

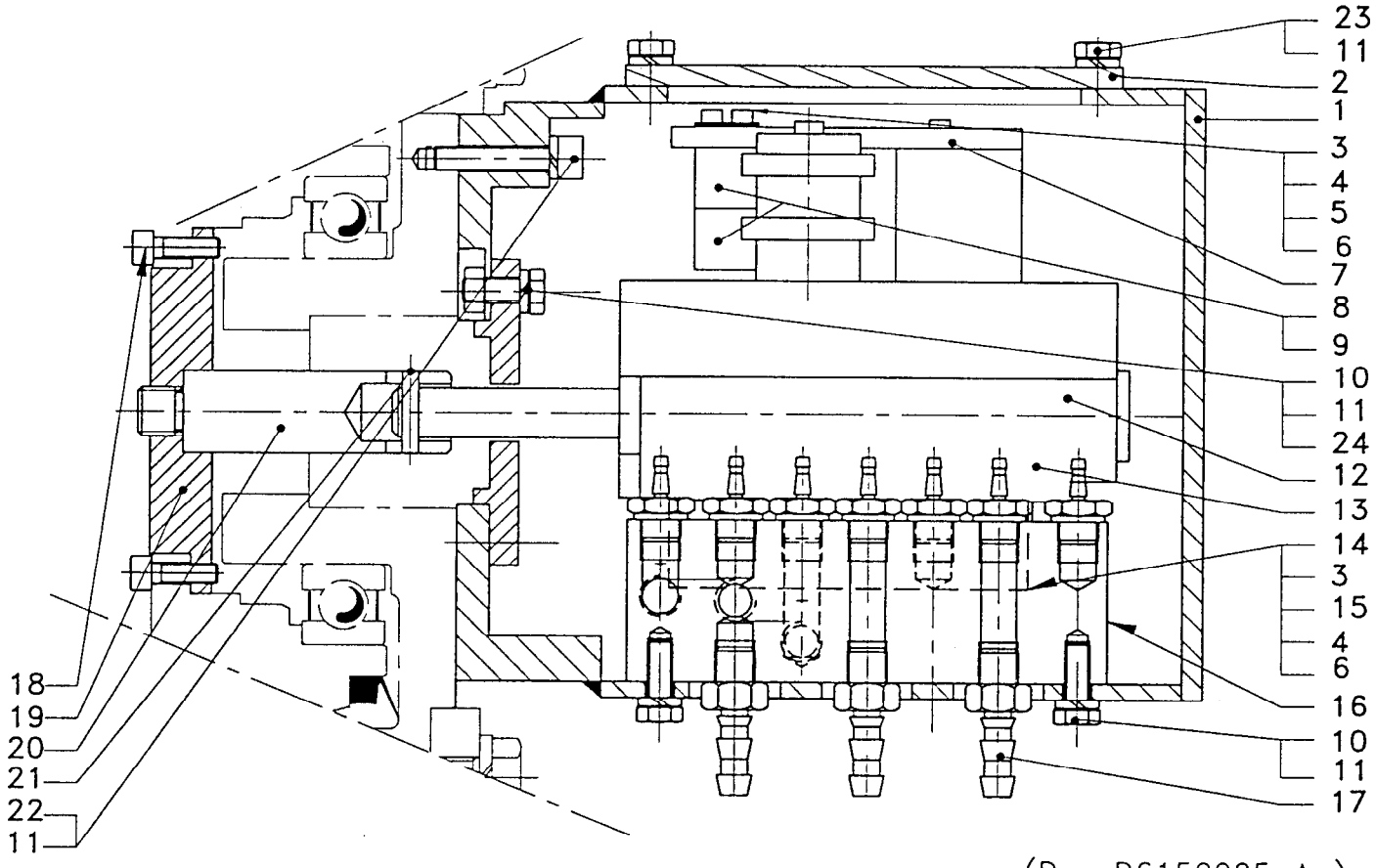
ADJUSTMENT
To adjust the limit switch device :
- remove the closing plate (rep. 2) from the top, loosen the central screw.
- to limit the stroke on the upward direction (adjustment of the top limit) screw on the adjusting screw 2
- Also to limit the strake on the downward direction (adjustment of the bottom limit) , unscrew the adjusting screw 1
- then tighten the central screw to secure the above adjustments.

INGERSOLL-RAND

MATERIEL HANDLING

PNEUMATIC LIMIT–SWITCH

NUMERO DE NOMENCLATURE
615
NUMERO DU DOCUMENT
95/10/20 - 2 / 2
Ph. Demeese
LE CHEF DU BUREAU D'ETUDES



(Dwg.D6150025 A)

REPERE ITEM	DESIGNATION	DESCRIPTION	QUANTITE QUANTITY	CODE PART NO.
1	Coffret	Box	1	96150254
2	Obturateur	Blind washer	1	96150261
3	Vis	Screw	2	41307606
4	Rondelle	Washer	4	45200004
5	Rondelle	Washer	4	45000104
6	Ecrou	Nut	4	43001111
7	Support de distributeur	Support	1	96150255
8	Distributeur	Valve	2	68523641
9	Flexible	Hose	1m	68094832
10	Vis	Screw	5	41000201
11	Rondelle	Washer	7	45200006
12	Fin de course	Limit switch	1	95060150
13	Raccord cannelé	Butt–end	10	61694932
14	Distributeur	Valve	1	68523441
15	Rondelle	Washer	2	45000105
16	Bloc de connection	Connection block	1	96150256
17	About	Butt–end	3	61652632
18	Vis	Screw	4	41308706
19	Rondelle	Washer	1	96150147
20	Axe de liaison	Axle linking	1	96150258
21	Goupille	pin	1	46503420
22	Vis	Screw	2	41300406
23	Vis	Screw	4	41007601
24	Ecrou	Nut	3	43000711

L - PARTS ORDERING INFORMATION

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

1 - Complete model number with code as it appears on the name plate
2 - Part code and part description as shown in this manual.
3 - Quantity required.

Return Goods Policy

Ingersoll-Rand will not accept returned goods for warranty or service unless prior arrangements have been made 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.

M - GUARANTEE

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

INGERSOLL-RAND guarantees the equipment sold and supplied by itself against any defect or flaw in manufacture or operation under the conditions and within the limits hereafter.
- the guarantee is only valid if the customer has satisfied the general obligations of the present contract and, in particular, of settlement.
- the guarantee is strictly limited to INGERSOLL-RAND equipment. It does extend to supplies and accessories which are not of its manufacture.
- the guarantee does not extend to assemblies or machines in winch INGERSOLL-RAND equipment is incorporated and in particular to the performances of these assemblies or machines.
- When INGERSOLL-RAND equipment is incorporated into one or other assembly or machine by the customer, he alone is responsible for the adaptation, the choice and the suitability of the INGERSOLL-RAND equipment, INGERSOLL-RAND 's diagrams, surveys and layouts being given only for guidance, unless there is a special stipulation in the acceptance of order, defined in the acknowledgment of receipt.
- INGERSOLL-RAND does not guarantee components and accessories it does not sell.
Defects in fitting, adaptation, design, connection and running of the assembly or part of the assembly put together by the customer are not covered by the guarantee.
INGERSOLL-RAND equipment and material as well as the assemblies or machines set up by the customer or by a third party are assumed to be operated and used under the sole control of the customer or third party.
- The duration of the guarantee is for 6 months from the start up of the equipment by the customer. The start up must be made at the latest three months after dispatch of the equipment or its being made available.
- INGERSOLL-RAND has the right to demand from its customer proof of the date of start up.
- The guarantee period is reduced to half if the equipment is used day and night.
- The 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 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, faultly 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 majeure, or for wear, replacements or repairs caused by normal use of the equipment.
- The guarantee is restricted to reconditioning in INGERSOLL-RAND's premises at its expense and as soon as possible the equipment and parts recognized as faulty by its technical or after sales services, which are sent carriage paid and packing free, without there being any claim for damage arising, such as injury to 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 INGERSOLL-RAND's premises, the cost of moving faulty, replaced or repaired equipment and the travelling and living expenses of INGERSOLL-RAND's engineers are covered exclusively by the customer.
- In order to obtain the advantages of the guarantee, the customer must advice 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, 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 INGERSOLL-RAND will not be responsible for damage in the event that the customer has not fulfilled one or other of the obligations set out above.
- Parts replaced free of charge remain the property of INGERSOLL-RAND.
- The guarantee does not apply to wearing parts.

IMPORTANT NOTICE

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

Visible loss or damage

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

Concealed loss or damage

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

INGERSOLL-RAND
MATERIAL HANDLING

EXTERNAL BAND BRAKE

ASSEMBLY DRAWING

L615
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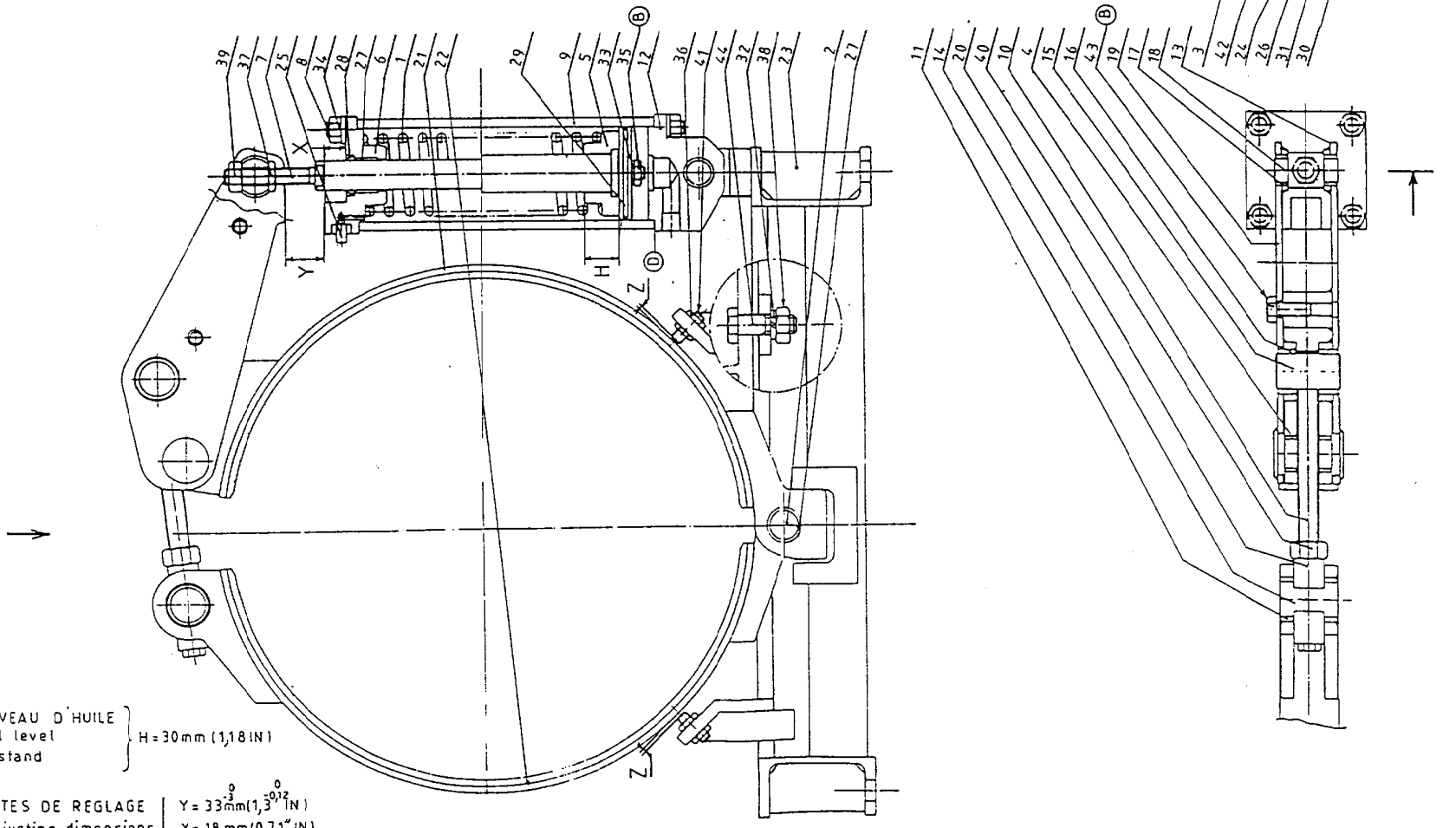
92-04-08 A 1 / 6
Ph. Demeese
LE CHEF DU BUREAU D'ETUDES

Ⓐ LOCTITE INSTAJOINT 574
Ⓑ LOCTITE FREIN FILET 243
Ⓒ LOCTITE TUBETANCHE 577
Ⓓ SILICOMET



NIVEAU D'HUILE
Oil level
Ölstand
} H = 30 mm (1,18 IN)

CÔTES DE REGLAGE	$Y = 33^{0}_{-3}$ mm ($1,3^{0}_{-0,12}$ IN)
Adjusting dimensions	X = 18 mm (0,71" IN)
Passungsmaß	Z = 1,5 mm (0,059 IN)

INGERSOLL-RAND
MATERIAL HANDLING

PLAN D'ENSEMBLE du TREUIL
WINCH ASSEMBLY DRAWING
WINDEZEICHNUNG
THE MANRIDER 1 T

NUMERO DE NOMENCLATURE
L 615
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9 2 0 4 0 9 | A | 1/8

LE CHEF DU BUREAU D'ETUDES

Par suite de l'évolution constante de la technique, nous pouvons être amenés à modifier sans préavis la conception et les caractéristiques de nos appareils ou accessoires
Wir behalten uns vor, in Zuge der technischen Entwicklung Bauart und technische Daten unserer Maschinen und des Zubehörs zu ändern
In our continuous policy of improvement, the right is reserved to make any change we think of benefit for our customers

Ⓐ LOCTITE INSTAJOINT 574
Ⓑ LOCTITE FREIN FILET 243
Ⓒ LOCTITE TUBETANCHE 577