

SYDNEY TRAMWAY MUSEUM

HYWEMA VEHICLE LIFT-TYPE RG INSTRUCTIONS

April 2007

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HYWEMA VEHICLE LIFT TYPE RG

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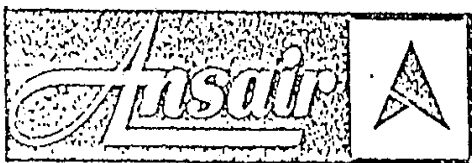
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Rail Safety Manager		Y	1	

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HYWEMA VEHICLE LIFT TYPE RG

Striking advantages of the mobile HYWEMA VEHICLE-LIFT

- ❖ *complete one man mobility;*
- ❖ *expensive foundation for pits, as well as pit coverings are obviated;*
- ❖ *No inconvenient, time consuming manoeuvring of the vehicle from the blocked pit if spare parts are lacking and the pit is needed for other vehicles;*
- ❖ *By means of 2 cross bars, special vehicles can also be maintained and repaired, without the necessity of modifying the lift;*
- ❖ *by lifting the vehicles, the conditions of work for employees are considerably improved. The tool carriage may be taken along under the vehicle so that all tools are immediately at hand;*
- ❖ *the staff supervision is improved and the risk of accidents is reduced, more safety and better light for employees;*
- ❖ *accessibility to all parts and units under the vehicle;*
- ❖ *infinitely variable adjustment to the most favourable height for repairing vehicles;*
- ❖ *easier mounting and demounting of heavy components;*
- ❖ *damage assessment is quicker and more thorough;*
- ❖ *the defective vehicles are put on low-priced support assemblies, this method prevents a bottleneck to repair activities, if spare parts are needed for vehicles;*
- ❖ *only one HYWEMA vehicle lift together with support assemblies provides maintenance and repair possibilities for 5 (five) and more vehicles;*
- ❖ *absolute advantage in price compared with other systems of equal specification;*
- ❖ *most optimal solution of workshop problems; and*
- ❖ *additional system of bars extends the installation to a complete, variable four column elevating platform for special workshop requirements.*



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HYWEMA VEHICLE LIFT TYPE RG

TECHNICAL SPECIFICATION

Decisive technical advantages.

- Base:** *The HYWEMA—vehicle lift, Type RG is technically so laid out, that the U-formed frame can pick up all uncontrolled forces. Therefore an additional alignment with spindles is not necessary.*
- Owing to the large base the unit floor loading is small and floor damage is unlikely, i.e. no damage of the ground takes place.*
- The carrying nuts cardanic suspension compensates for bad ground conditions.*
- DRIVE:** *The elevating process take place over an absolute self-locking, correctly dimensioned threaded spindle. Drive is via a standard geared motor, which directly coupled onto the spindle head.*
- Together with the threaded spindle, the carrying nuts move a HYWEMA-Safety grab nut unencumbered from the bottom to the top.*
- The carrying nuts are automatically controlled throughout the whole working capacity.*
- Should any damage occur to the carrying nuts, the HYWEMA-Safety grab nuts take over the carrying functions and the machine is automatically switched off by an impulse transmission to the control desk. The vehicle being supported can now only be moved downwards to the end position using the pushbutton marked “OFF”.*
- If one phase of the motor should fail, (automatic phase control) a fail safe circuit will switch the hoist OFF.*

STROKE SLIDE: *The stroke slide is precisely guided by 8 rollers running in ball bearings. All rollers are maintenance-free.*

CHASSIS: *Easily movable chassis with oversized wheels having double ball bearings.*

Due to a ridge less adjusting system, the hand hydraulic on the steering tiller makes it possible to manoeuvre the height of the chassis easily (adapts appropriately even with extremely bad floor conditions).

CONTROL AND

OPERATION: *The separate HYWEMA-control console (available for 4 lifts) equipped with mimic indicators for control, is designed for individual and over all regulation.*

Should any electrical defect occur in the motor or cables, etc., the machine switches itself off. This also occurs when all control cables are not exactly connected.



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HYWEMA VEHICLE LIFT TYPE RG

MOBILE LIFT SET SPECIFICATIONS

SYSTEM COMPONENTS

- 4 Mobile wheel lift units
- 1 Mobile control console with connecting cables

SYSTEM SPECIFICATIONS

MODEL RG5

Lifting capacity per lift unit

5.000 kp - 11,000 lbs

Lifting capacity per set

20 000 kp - 44,000 lbs

Lifting lowering speed

0.7 m/mm - 27 inches/min

Lifting height:

1 600 mm - 63 inches

Drive:

Electro—mechanical with trapezoidal drive nut on lifting spindle.

Lifting/Lowering:

By control console, Lift unit can be operated individually, in pairs, or as a complete set.

Tyre Sizes:

standard 8.25/20 to 12.00/22.5

Motor:

3 phase 240/415 volt, 50 Hertz, 3 HP, (2.2kW)

Control Voltages:

240 Volt, 50 Hertz

Manoeuvring:

Hand operated hydraulic jack lifts unit from the floor, easily operated by one mm

SAFETY FEATURES:

UPPER AND LOWER HOIST MOVEMENT CONTROLLED BY LIMIT SWITCHES.

SELF LOCKING TRAPEZOIDAL THREAD ON SPINDLE

BACKUP SAFETY NUT (ELECTRICAL INTERLOCK}

AUTOMATIC SHUT_DOWN IN CASE OF MOTOR OR CABLE FAILURE

Dimensions:

net weight: 720 kp – 1,600lbs/lift

overall height: 2 550 mm - 100 inches

width: 1 230 mm - 48-2/5 inches

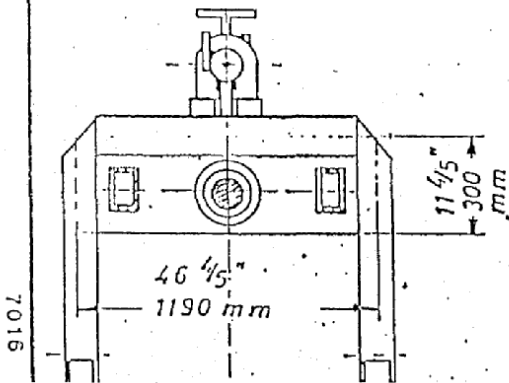
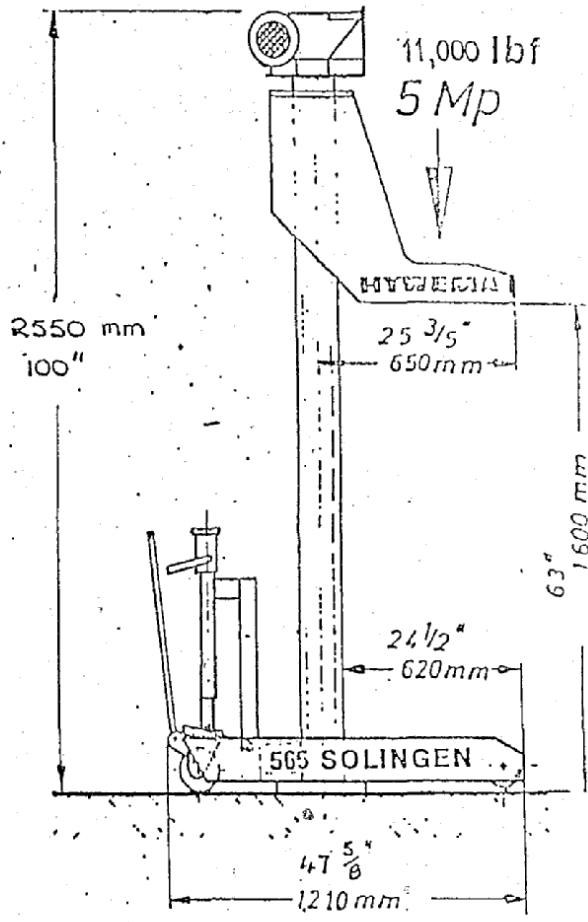
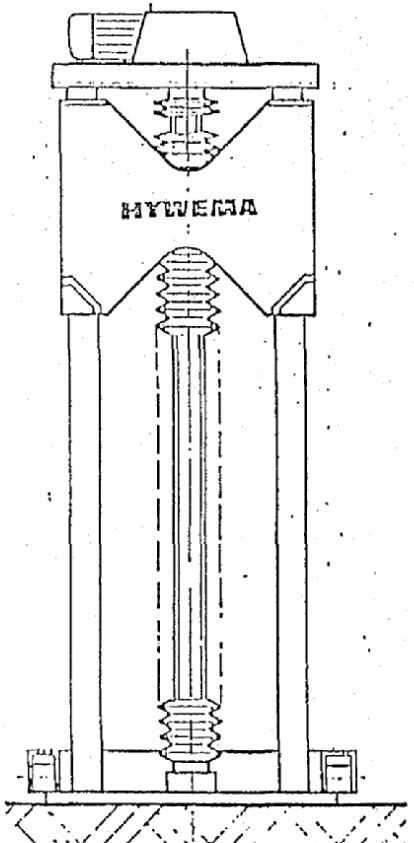
length: 1 275mm - 50-1/5 inches



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HYWEMA VEHICLE LIFT TYPE RG

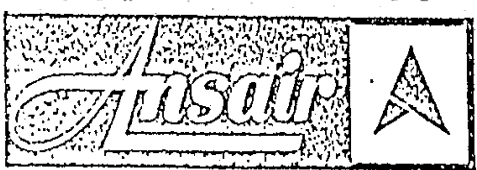
HYWEMA JOSEF SCHWALEN Hydraulische Hebezeuge	HYWEMA	5 RG 5-76-T11
mobile vehicle-lift		



Capacity per Set

- 4 Lifts = 44,000 lbs = 20.000 Kp
- 6 Lifts = 66,000 lbs = 30.000 Kp

HYWEMA
JOSEF SCHWALEN



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HYWEMA VEHICLE LIFT TYPE RG

OPERATING INSTRUCTIONS.

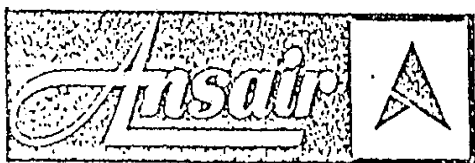
FLOOR CONDITIONS:

As the floor immediately under each lift is required to carry the weight of the lift as well as the lift load, it is essential that floor be firm, level and of adequate strength.

LIFTING & LOWERING:

- 1. Place the lifts centrally and as far in as possible under each vehicle tyre ensuring that the forked lifting platform does not foul any other vehicle projections e.g. fenders, side mirrors, side trim, etc.*
- 2. Open the check valve on the hydraulic jacking unit (PN13) so that the base of the lift rests firmly on the floor. The lifts should never be operated with lift base in the “up” position.*
- 3. Insert the trailing cable plugs of each lift into the correspondingly numbered socket situated on the side of the control console. Note that a safety interlocking circuit is provided through each cable to ensure that the lift system will not operate unless each plug and socket is firmly mated.*
- 4. Connect the main power cable from the control console to the appropriate 3-phase power supply.*
- 5. Close the main switch located on the side of the control console*
- 6. Turn the selector switch to “4” and depress the “UP” button, Keep the button firmly depressed until the required height is obtained. Upper limit interlocks are provided to prevent over travel, protection of the lift motors and associated mechanical components.*
- 7. If the vehicle is to be kept in the raised position for any length of time it is recommended that it be firmly supported on appropriate stands.*
- 8. When the vehicle is supported on stands the wheels can be removed and then lowered by the vehicle lifts singly, two-together (i.e. front wheels or rear wheels) or all — together by selecting the appropriate mode of action on the control console. Similarly, provided the vehicle body and/or chassis is adequately supported, the axles may be lowered by selecting the “two-together” mode.*
- 9. When lowering the vehicle the “4” position is selected and the “DOWN” button held firmly depressed until each lift comes to stop, automatically, in its lowest position.*
- 10. The lifts may now be moved out of position by closing the hydraulic check valve and hand-pumping the lift base up to its “portable” position.*
- 11. If the lift system is to be taken out of service reverse the cable connection procedure- steps 3, 4 and 5. Coil and stow the cables so that they cannot be accidentally damaged.*

Note that the usual emergency stop devices are provided on the console in addition to special safety interlock circuits to prevent mechanical lift failure, single phasing of the lift motors and thermal overload of the lift motors.



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HYWEMA VEHICLE LIFT TYPE RG

GENERAL DESCRIPTION.

The ANSAIR/HYWEMA vehicle lift is an electro-mechanical system providing safe, convenient and economical method of lifting vehicles up to 20 tonne G.V.W. The system is provided with facilities to use the wheel hoists singly, in pairs and “all-together”. A Comprehensive electrical supervisory system combined with fail-safe mechanical mechanisms render the equipment safe under most operating conditions.

The electrical system provides for the following:-

An electric motor for each hoist rated at 2.2. kw (2.95 H.P.). As each hoist, under full load and assuming an overall efficiency of 0.8, requires 0.94 HP the light loading under full load will ensure optimum mean time between overhaul.

Micro switches provide safeguards to limit travel in either direction and in the unlikely event of load nut failure. Mimic indicators lessen the possibility of the wrong direction being depressed and visual indication of operation is provided.

Each hoist has provision for safe shut down in the event of single phasing of the drive motors (losing 1 or 2 phases) or electrical overload.

The motors are 3 phase 4 pole running at approximately 1450 rpm at full load. The mechanical gearbox provides a 14:1 reduction so that the load spindle travels at approximately 100 rpm. The speed of vertical travel under load conditions is 0.7m/minute.

The mechanical system is generously proportioned and provides adequate load bearing safeguards under all operating conditions.

The load bearing base plate is proportioned to provide a floor loading not exceeding 25p.s.i.

The load spindle is provided with two threaded nuts one load bearing and carrying the wheel support, the other passive but capable of carrying the full load in the unlikely event of the load nut failure.

In the event of such failure occurring the wheel support under full load will fail safe i.e. remain within 6mm of its original position because of the safety nut and the mechanical advantage of the gear box.



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HYWEMA VEHICLE LIFT TYPE RG ANSAIR/HYWEMA MOBIIE LIFT MAINTENANCE

REPLACEMENT OF PLASTIC BOOTS OR BEARINGS

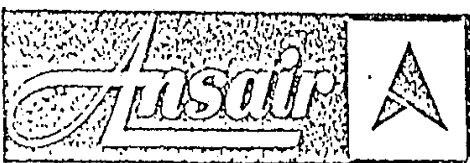
ANSAIR Reference Drawing No, 0000-MH-012.

1.0. Replacement of Bottom Boot.

- 1.1. Raise the wheel support to a height of 500 mm (20") above ground.
- 1.2. Free the top R.S.J. by removing the nuts from the torque rods and the 8 bolts fastening the R.S.J. to the box columns. Insert two elongated 200 mm (8") bolts in the positions indicated in the sketch.
- 1.3. Remove the jack by removing the two M6 screws in its base plate and the securing pin. Attach the chain and hook using the same pin.
- 1.4. Rest the base plate of the lifting jack on the lower base of hoist and by means of the lifting jack raise the wheel support by 150 mm (6").
- 1.5. Undo the jubilee clips on the safety nut and lower flange and remove the bottom boot.
- 1.6. Insert the new boot and reverse steps 1.1 to 1.5 to re-assemble.
- 1.7. Whenever replacing the lower thrust bearing repack the housing with new grease and ensure the filtered breather orifice is unobstructed.

2.0. Replacement of Top Boot

- 2.1. Undo the 'four bolts (item 17) coupling the motor and gear box to the coupling flange on the top R.S.J. after ensuring that wheel support is at its lowest position.
- 2.2. Undo the lower half coupling grub screw (item 20). Lift the motor and gear box clear.
- 2.3. Using a pulley extractor remove the lower half coupling.
- 2.4. Remove the four bolts M6 (item 21), securing the upper bearing cover,
- 2.5. By means of a chain block hoist the top R.S.J. by 150 mm.
- 2.6. Undo the upper and lower jubilee clips and replace boot.
- 2.7. Reverse steps 1 to 6 to reassemble.



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ANSAIR/HYWEMA MOBILE LIFT MAINTENANCE

REPLACEMENT OF PLASTIC BOOTS OR BEARINGS

ANSAIR Reference Drawing No, 0000-MH-012.

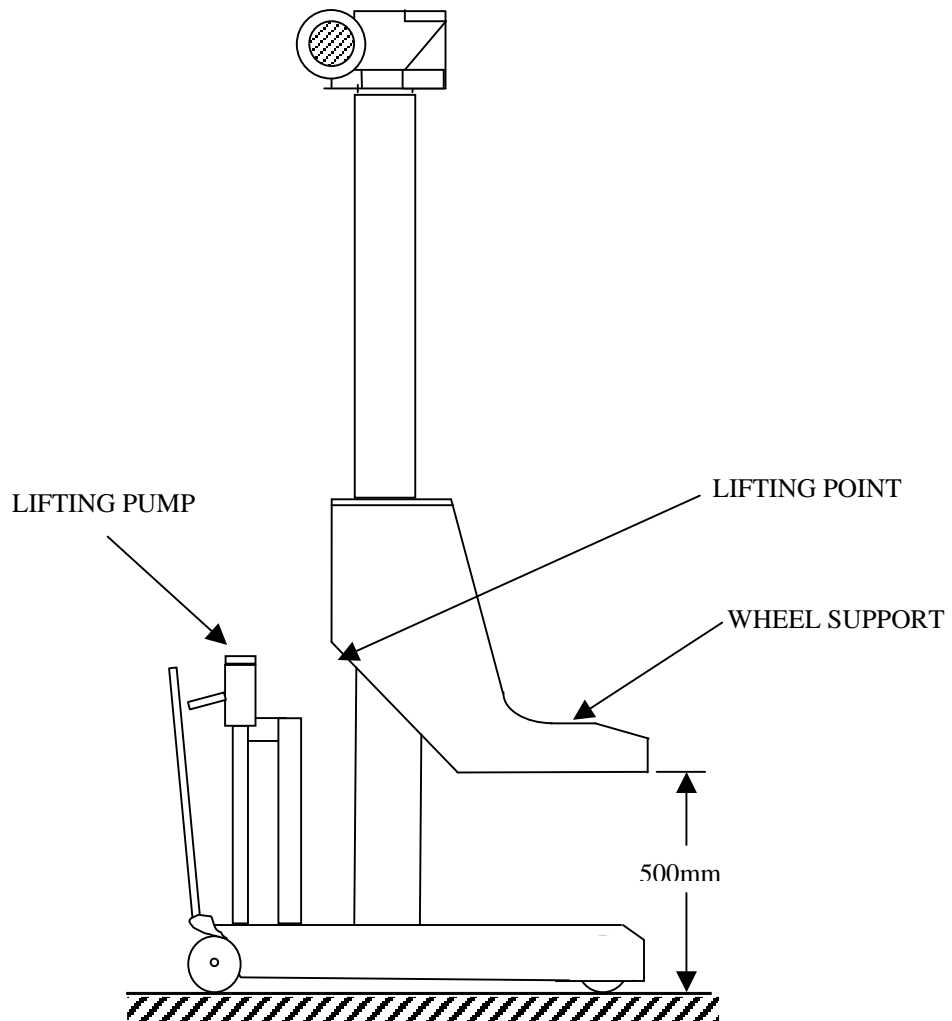
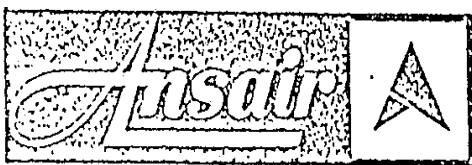


Figure 1



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ANSAIR/HYWEMA MOBIIE LIFT MAINTENANCE

GENERAL OPERATING RULES

MAINTENANCE

1.0. General Operating Rules.

1.1 **DIRECTION PHASE ROTATION:** *Since the electrical reticulation throughout Australia is phase co-ordinated it is generally not necessary to concern oneself about the direction of rotation of three phase motors wired according to standard codes. However it is possible that wiring in between the reticulation system and individual power outlets could have a phase transposed in which case, three phase motors will run in the opposite direction to that intended.*

In order to confirm correct directional running it is essential that each mains socket outlet to which the control console will be connected be checked for phase rotation by operating the system in a “4-together” mode. The 4 hoists should operate in a “raise” and “lower” motion when the appropriate button is pushed. If not, it is recommended that a qualified electrician restore the correct phase connection at the mains socket.

If this is not practical it is possible to install an automatic phase detection device in the control console which will eliminate physical phase reversal. However this relay is only available if originally specified at extra cost.

- 1.2. *Before lifting loads ensure that the lifting pump is in the down position, i.e. its shut-off valve should be fully open.*
- 1.3. *Ensure that the forks of the wheel support are pushed in as far as possible under the vehicles wheels without causing body damage during the lifting process.*
- 1.4. *The vehicle and lifts should be under the observation of the control console operator at all times when in motion. The push buttons should never be jammed in an operating mode with reliance placed on limit switches to limit travel.*

2. 0. ROUTINE MAINTENANCE

The degree of maintenance is best determined by the operator based on the frequency of equipment usage. However the following preventative maintenance checks are recommended.

2.1. Daily function checks.

(a) Plug in the hoists and switch to “All—together” position. Raise and lower the hoists to the extreme limits to functionally check the travel limit switches.

(b) Raise the wheel supports together to a height of appropriate of 1 metre. Insert a 3 mm wedge in between the safety nut limit switch and carrying nut striker plate of each one of the hoists in turn. Items 16 to 21 on figure 2. In each case the hoist must not be able to travel in an upward direction; only in a downward direction. Remove the wedge after the test.

(c) With the raise button depressed unplug each of the connectors to the hoists in turn. In each case the system should stop operating.

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ANSAIR/HYWEMA MOBIIE LIFT MAINTENANCE

GENERAL OPERATING RULES

MAINTENANCE

2.2 Monthly Maintenance.

- (a) Lubricate via the grease nipple provided, the lower thrust bearing and the guide rollers.
- (b) Remove the jubilee clips at one end of each plastic boat. Apply, if necessary, grease to the threaded spindle with a brush. Do not over grease.
Multi purpose grease B.P. 12 should be used.
- (c) Check that safety nut has no load.
Check that safety nut striker plates and limit switches are undamaged and in position. Under no circumstance should limit switch be removed

2.3 Annual Maintenance

Electrical —

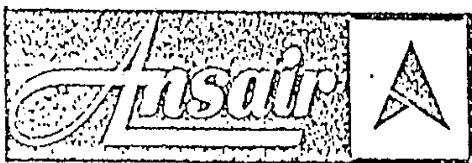
- (a) Visually inspect the limit switches, connecting cables, plugs and sockets, push buttons and indicator lamps. Repair or replace any faulty components.
- (b) Remove console cover and raise the control panel flap. Visually inspect all terminals for looseness.
- (c) With filtered compressed air or bellows, remove any dust.
- (d) Replace covers.
- (e) Plug the hoists to the control console but do not connect the console to the mains. With the console main switch on, megger test the system at the power input plug. Rectify any faults.

Mechanical —

- (f) Visually inspect the plastic boots, the safety nut striker plates and the manual lift pump.

FITTING NEW LOAD AND SAFETY NUT

When fitting new load and safety nuts, the gap between Striker plates should be approximately 6mm, Refer to Fig 2. item 16. The safety nut limit switch should be adjusted so that it operated after 2.5mm of plunger travel, the gap between the load nut striker plate and the limit switch should be 1mm. The four (4) inside running rollers on the box supports should have a clearance of 1mm from supports (unloaded).



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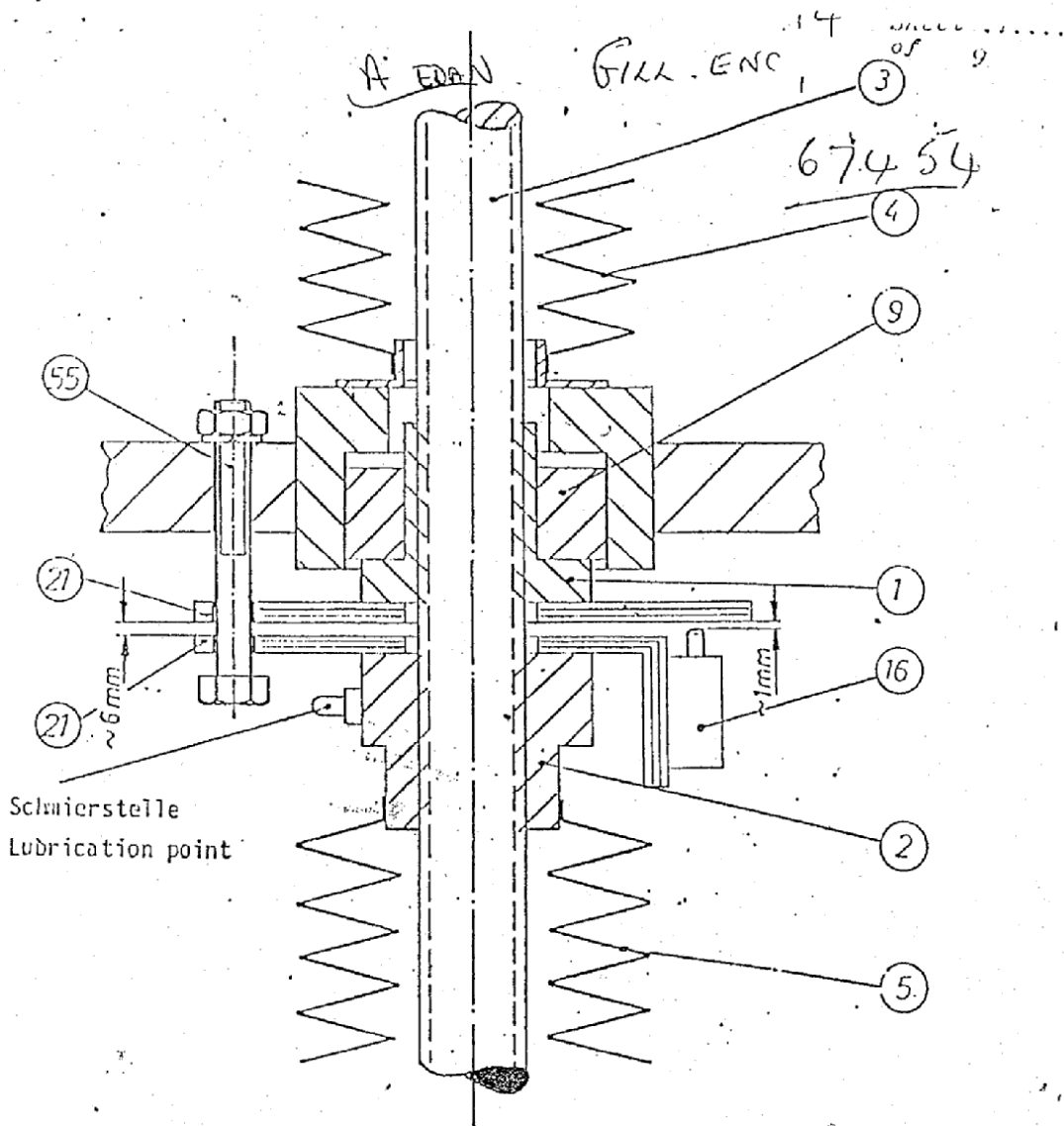
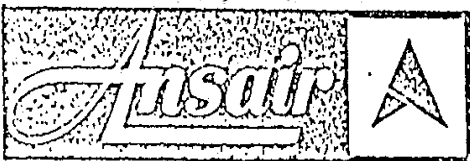


Fig. 2.

model RG 5

- 1 main nut
- 2 safety nut
- 3 spindle
- 4 + 5 plastic bellows
- 9 support bearing
- 16 safety nut limit switch
- 21 distance plate
- 55 bolt for the distance plates and the support



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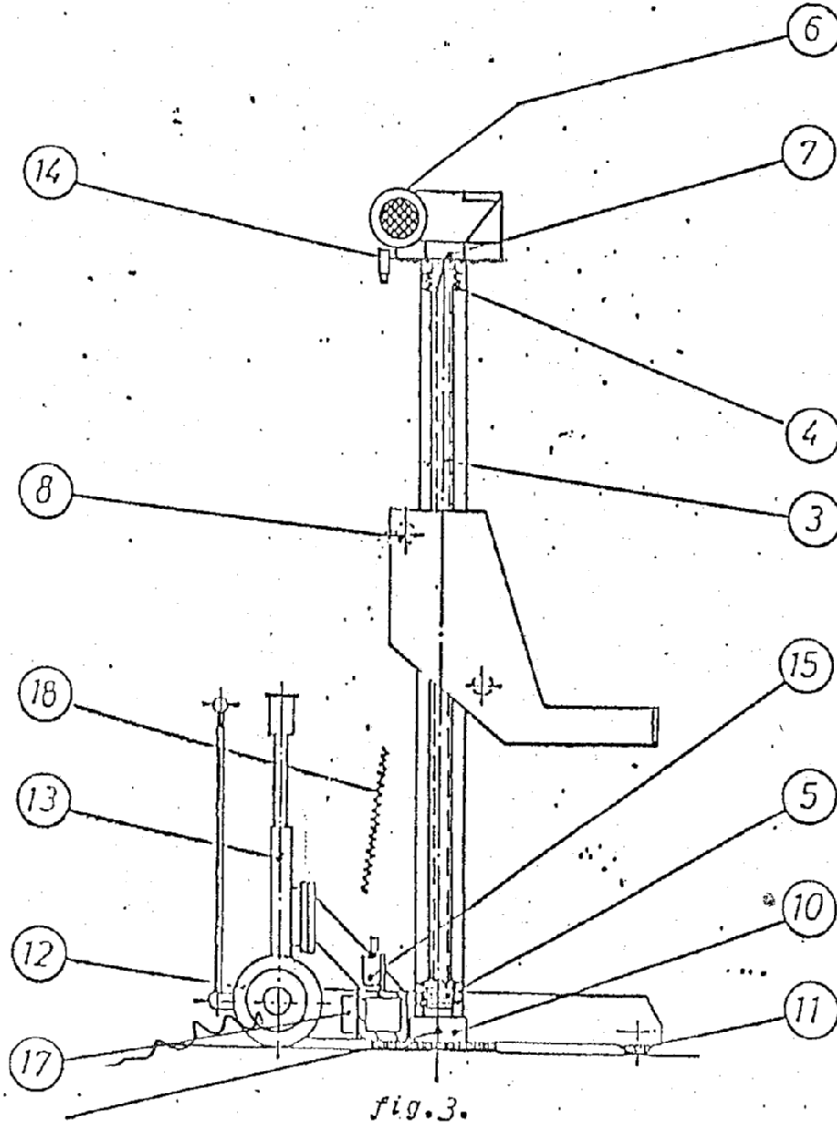


fig. 3.

Schmierstelle
Lubrication point



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HYWEMA Vehicle Lift Instructions

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ANSAIR HYWEMA ELECTRIC VEHICLE LIFTS

ELECTRICAL PARTS & CONSOLE LIST

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART No.
Oa1	1	Main Switch	Klockner-Moeller	T20-1/EA/SV?
1a1-4a1	4	Circuit Breaker	Klockner-Moeller	PkZMO-6/C+NH
Ob1	1	Emergency stop button	Klockner-Moeller	P-V/K + 3AK
Ob4/Ob5 1b1-6b2	10	Push Buttons	Klockner-Moeller	D-xGRA/K95/9?
Ob2/Ob3	2	Selector switch	Klockner-Moeller	W/K-97/98k
PSR/	1	Phase sensing	Klockner-Moeller	
OC1/OC2	1	Relay	Nilsen & TELEMECANIQUE	1C 1D 253U
1C1-4C2	8	Contactor	TELE	LCID093U
1d1-4d1	4	Contactor	TELE	CA2DN140U
Od1/2/3	3	Contactor	TELE	CA2DN122U
1h1-4h1	4	Indicators	K-M	L2/WS/FA
TR1	1	Transformer	Siros	415/240v/600
1u1-4u1	4	Socket	Baureihe	HVEE-16 pin
1U1-4u1	4	Plug	Baureihe	TS hood & AG cable gland
Oc2	1	Circuit-breaker	Heinemann	5A-CF1
Oc1	1	Circuit-breaker	Heinemann	1A-CF2
	2	Hand Grips	Ansair	-
	4M	Conduit	Dahl	LK4/40/40
	1M	Conduit	Dahl	LK4/25/40
	10M	Cable	-	4 core 56/0
	1	Console	Ansair	-



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ANSAIR HYWEMA MOBILE HOIST

Cross out that which is not applicable

HOIST N°. MC345/2

PROBLEM, MONTHLY AND ANNUAL MAINTENANCE LOG

Note: Monthly and Annual Maintenance details are obtained from the Manufacturer, Hywema, Manual

Date	Problem/Remarks/Actioned	Initiated By	Actioned By

Form N°. F10-12 Issue 1 Revision A Date 30/7/97