

NILSSON WINCHES LTD.

69 HILLSIDE ROAD, TAKAPUNA, AUCKLAND 10, NEW ZEALAND
Telephone 449-328/449-329 Telex NZ21382 Cables & Grams "Winches Auckland"

HYDRAULIC INSTALLATION

To achieve rated winch speeds, it is necessary to fit a pump which will deliver the correct oil flow at a desirable engine speed taking into account the varying engine operating conditions..

Essential components of a hydraulic installation are reservoir, pump, pressure relief valve, control valve, checkvalve and filter.

The reservoir acts as holding tank, air eliminator, oil cooler and sediment trap.

The pump which may be permanently coupled to the engine or powerpack or driven via a clutch.

Pressure relief valve protects the pump and system against stalled loads or similar conditions.

Control valve allows oil to "free wheel" when the winch is not in use. Standard winches are single direction only.

Check valve provides a degree of hydraulic "hold" on the winch. Creep under load is possible due to slip within the motor.

Filter(s) are essential and must be of the replaceable micronic cartridge type.

ABSOLUTE CLEANLINESS is essential in a hydraulic system to achieve the long trouble free life typical of a good installation. It is recommended that the services of a competent hydraulic expert are used.

PUMP SELECTION Due to the many variations available the hydraulic motor on your winch may be one of several different models. Check the motor model for your winch against the table below before deciding on pump performance. It is important to realize that the oil pressures quoted are measured across the winch motor ports and allowance must be made for line losses.

Speed will vary in direct proportion to oil flow and it is possible to increase winch speeds up to 20% above those shown in the table. Any further speed increases should be checked with Nilsson Winches Ltd before proceeding.

WINCH	MOTORS	FLOW US GPM	PRESSURE PSI	WARP FPM	CHAIN FPM	WINCH RPM
H700 H	20010	3	1500	34	50	50
	20016	5	800	34	50	50
M800 H	20010	3	2000	54	-	80
	20016	4.5	1250	54	-	80
	20016	9	1400	108	-	160
Powerpack	20010	3	1500	34	50	33
	20016	4	1000	34	50	33
VW3000H	20016	8	2000	50	-	50
	20020	9	1500	50	-	50
	20025	11	1250	50	-	50
	20030	13	1000	50	-	50
V3000 H	20020	6	2000	34	50	33
and	20025	7	1700	34	50	33
H3000 H	20030	8	1400	34	50	33

RESERVOIR & PIPING A typical well designed reservoir is shown in the attached drawings. Suction line should be clear of the bottom and return line should be to the bottom of the tank. The baffle is to achieve proper settling and circulation. Position the tank in a cool spot (away from engine manifolds for example). A flooded suction for the pump is preferable. A 1" (25mm) suction line to pump, ½" (12mm) pressure line to winch and ¾" (18mm) return line is recommended as minimum sizes in a compact installation. Access to tank for filling and cleaning is essential. Rigid piping is recommended for additional heat dissipation with short flexibles at appropriate points for convenience and noise reduction. It is again stressed that absolute cleanliness is essential in a hydraulic installation.

PRESSURE RELIEF VALVE. Must be capable of handling the full pump flow at maximum possible engine speed. Pressure setting should generally be no more than 5% above recommended system operating pressure. Pressure relief return line must be separately piped to reservoir without filters or any other restriction if not part of the pump construction.

CONTROL VALVE A ball valve is the most commonly used control for systems. Some of our winches are supplied with a built in control valve. A secondary valve may be positioned anywhere on the boat and in this case whichever valve is not in use should be left shut.

CHECK VALVE Some winches are provided with a built in check valve, usually where there is a built in control valve.

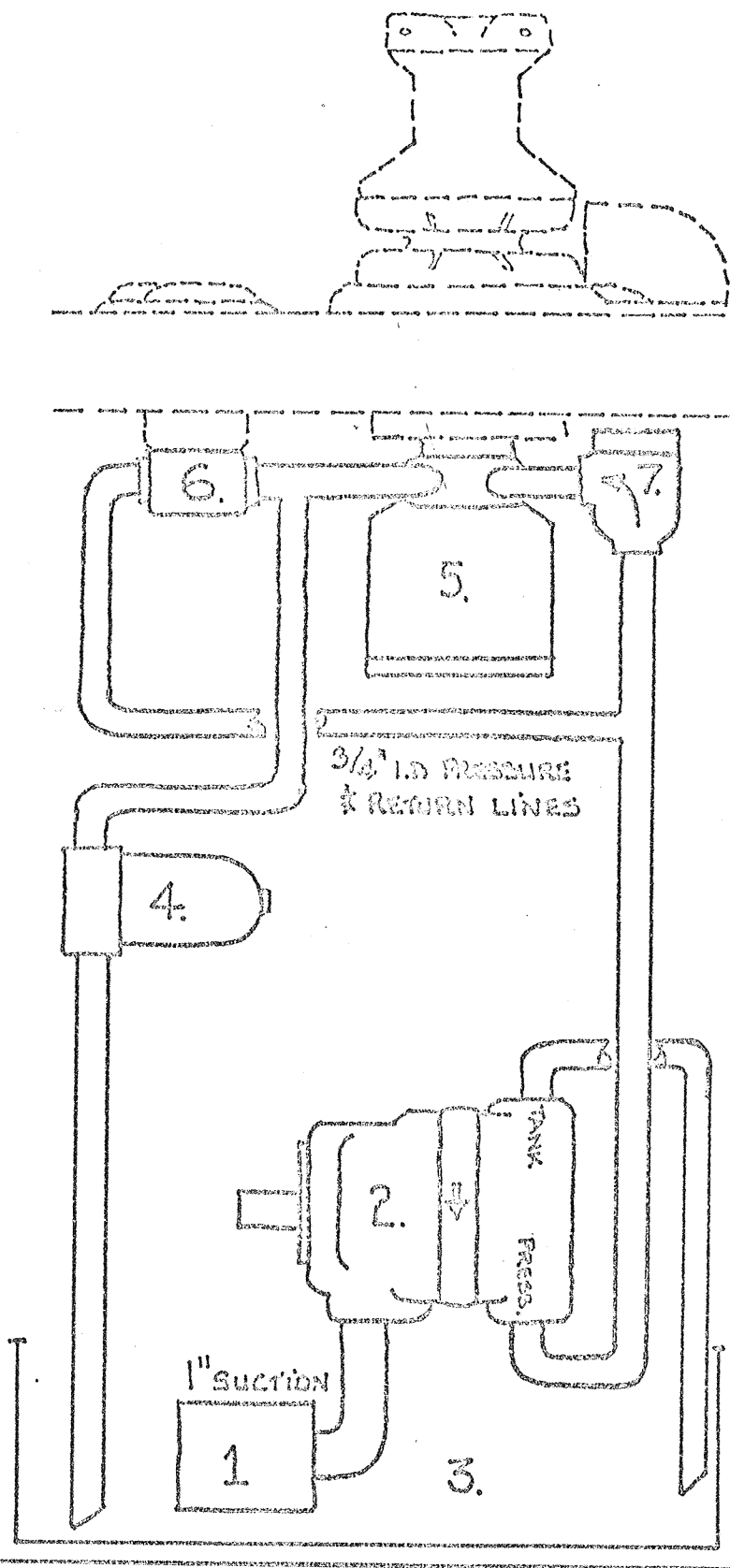
FILTERS We recommend a filler strainer, suction outlet strainer and return line micronic filter positioned at or adjacent to reservoir. Micronic filter element must be changed regularly.

- START UP
- 1) Is the system perfectly clean and winch fully greased?
 - 2) Ensure all control valves are open (winch stopped)
 - 3) Is reservoir full and spare oil to top up available?
 - 4) Open any other valves fitted (typically suction line and filter isolation valves)
 - 5) Start pump at winch operating speed (usually engine at fast idle)
 - 6) Check oil flow is taking place.
 - 7) Run for 15-20 minutes to purge air from lines or until oil is clear and free of bubbles.
 - 8) Check total system for oil leaks.
 - 9) Close winch control valve slowly. Operation may be noisy at first due to air. If more than one control valve fitted, close each one separately allowing 2-3 minutes each for purging.
 - 10) Check system for leaks.
 - 11) Simulate a load by a rope on warping drum tied off to a point capable of with standing well in excess of the full rated pull of the winch. Gradually tighten the rope and apply a good load and ensure there are no leaks in the system.
 - 12) Top up reservoir if necessary.

MAINTENANCE OF HYDRAULIC SYSTEM

- 1) Check oil reservoir level regularly.
- 2) Change filter cartridge regularly.
- 3) Before layup or long idle periods, thoroughly grease and oil winch (separate instructions) and give the system a run. Ensure moisture does not get into reservoir.

1. SUCTION FILTER
2. PUMP c/w RELIEF VALVE
3. OIL RESERVOIR
5 Imp Gallons
(use Shell Tellus 27
or equivalent)
4. MICRONIC RETURN LINE
FILTER
5. WINCH MOTOR
6. CONTROL VALVE -
Ball type 90° action
7. CHECK VALVE



HYDRAULIC CIRCUIT -

M800 H- L1000H - V1000H - H700H
V2000H - V3000H Single direction

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69 HILLSIDE RD TAKAPUNA.

AUCKLAND - NEW ZEALAND

Phone Auckland 449.329

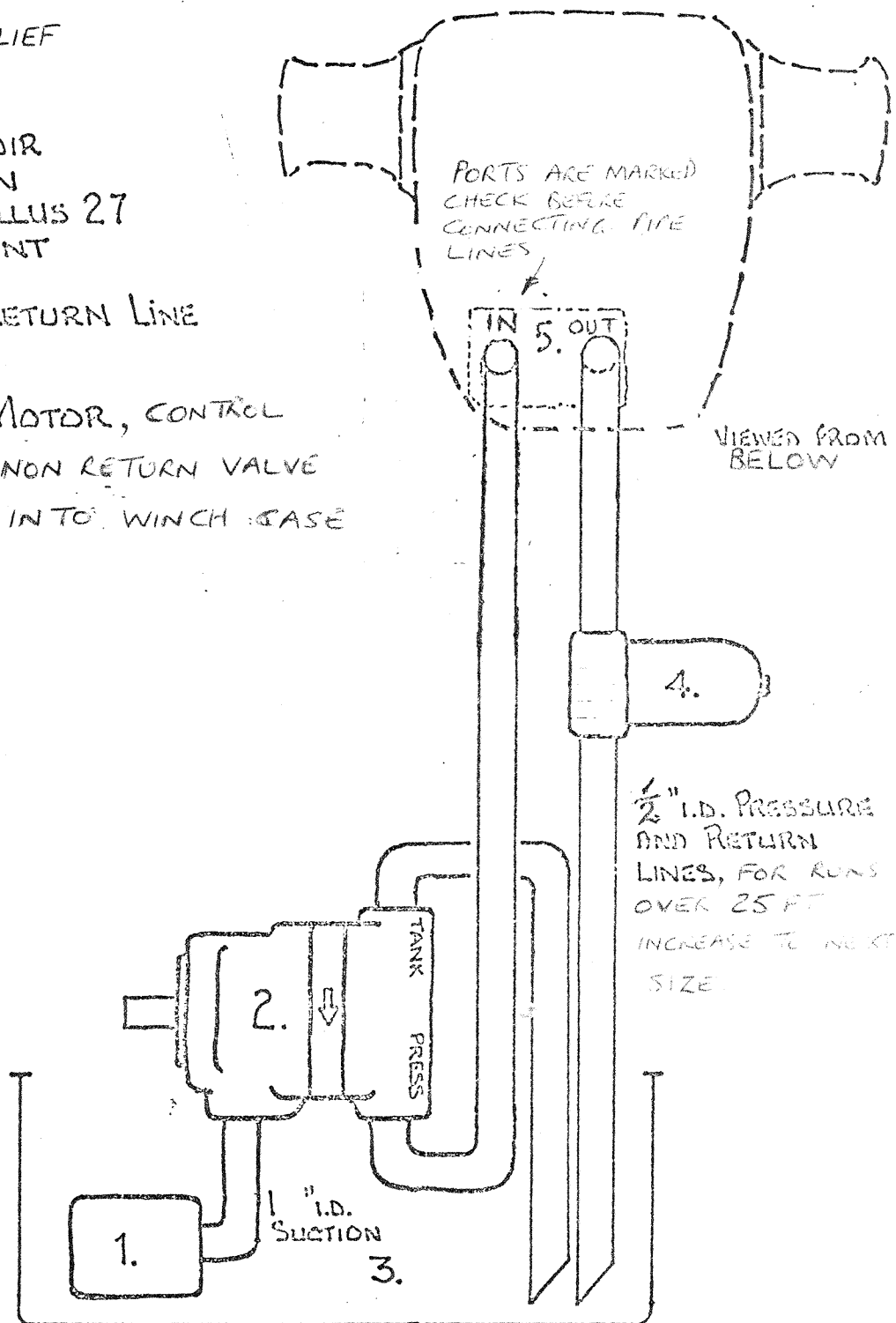
1. SUCTION FILTER.

2. Pump $\frac{1}{2}$ W RELIEF
VALVE

3. OIL RESERVOIR
3 IMP GALLON
USE SHELL TELLUS 27
OR EQUIVALENT

4. MICRONIC RETURN LINE
FILTER.

5. HYDRAULIC MOTOR, CONTROL
VALVE AND NON RETURN VALVE
ARE BUILT INTO WINCH CASE



HYDRAULIC CIRCUIT ~
H3000 SERIES
SINGLE DIRECTION WINDLASSES

REVISED APRIL 1980



NILSSON WINCHES LTD.

69 HILLSIDE ROAD, TAKAPUNA, AUCKLAND 10,
NEW ZEALAND.

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MANUFACTURERS OF MARINE & INDUSTRIAL WINCHES

VICKERS OIL TANK

FOR USE ON EARTHMOVING & OTHER MOBILE EQUIPMENT

1" SUCTION SIZE-MINIMUM DIMENSIONS

OIL CAPACITY: MINIMUM- 4 IMP. GALLONS

HILLSIDE - 5 IMP. GALLONS

For flow rates up to 16 U.S.g.p.m. Suitable generally for V200 pumps. Make larger for higher flow rates or heavier duties.

This has been designed to handle the flow rate specified without turbulence.

Return oil can expand & slow down without "boiling", dropping dirt particles before passing slowly over baffle (rejecting air bubbles) to enter the strainer without vortexing. Three tank walls are swept by the oil giving best heat dissipation & longest path for oil flow so that dirt, air & heat do not get into the suction line.

HILLSIDE - Tanks used for Hillside work (angle dozers etc) which undergo severe tilting should be made higher 15" instead of 12" and filled to 12" oil depth (for 30° tilt). Do not overfill a tilting tank or oil will be forced out breather.

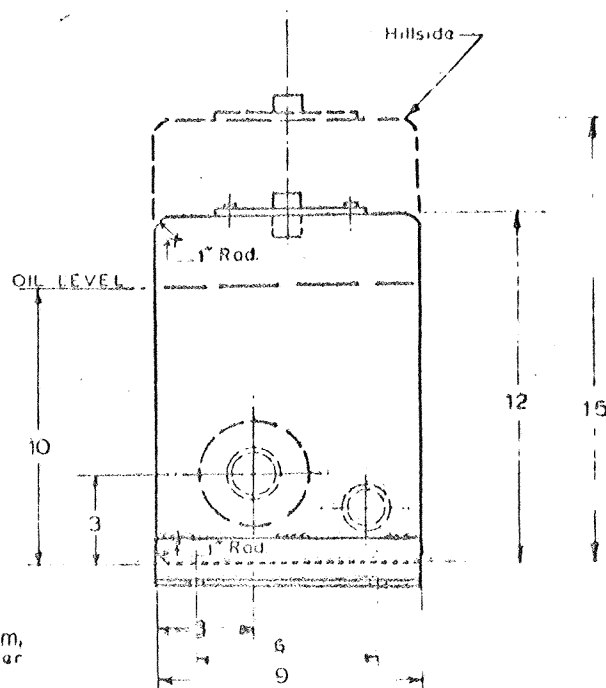
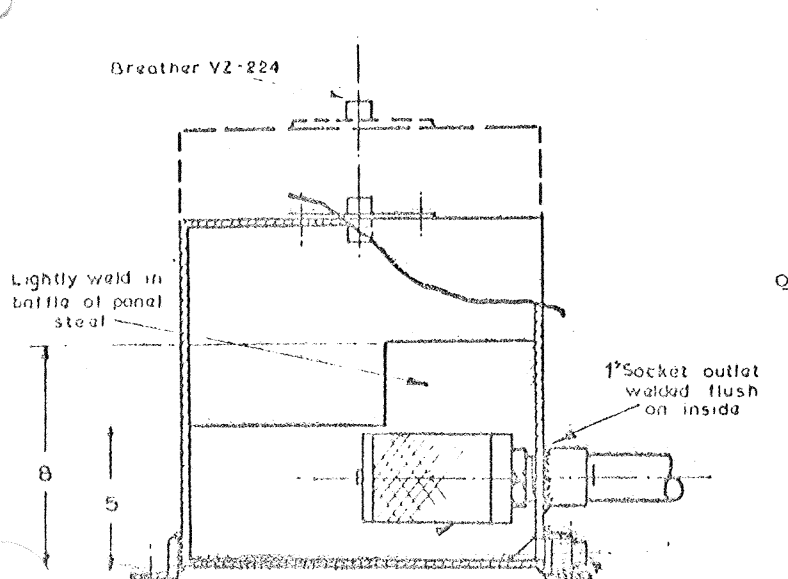
Double acting rams - up to $\frac{3}{4}$ gallon draw-off (piston rod displacement) Use breather as shown.

Single acting rams - if more than $\frac{3}{4}$ gallon draw-off, make tank higher.

Fluid motor applications - no draw-off, put breather on top of 2" dia by 3" long Riser & keep tank chock full of oil.

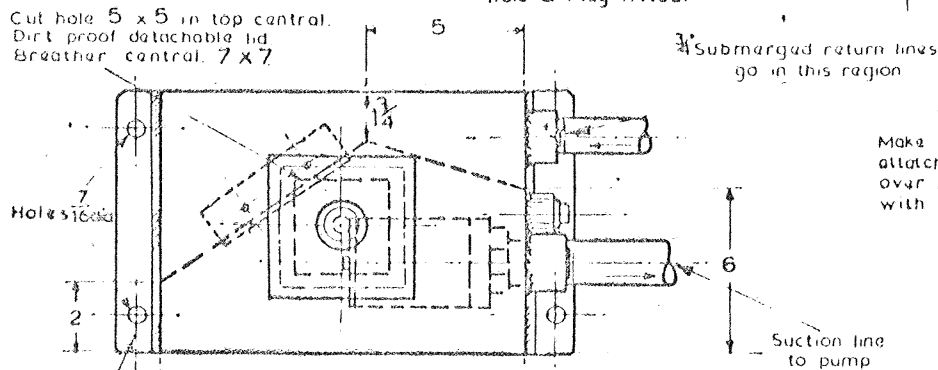
DO NOT USE SMALLER TANK

MANUFACTURE: Fabricate from clean panel steel, fold up sides, top & bottom, weld in ends.
Remove all mill scale, welding slag, turnings & grinding dust.
Suggest 14g. M.S. Plate



strainer screwed in hand tight.
Tank drilled $\frac{3}{4}$ dia at bottom, Half 1/2 Socket Welded over hole & Plug fitted.

Cut hole 5 x 5 in top central.
Dirt proof detachable lid.
Breather central 7 x 7



Mtg Feet
1/2 x 3/16 Angle.

PLAN

END VIEW

1/4 Drill, 2 Holes.

Cut & Set

Make from baffle offset
attach 2 magnets and clip
over lowered portion of baffle
with shelf toward returning oil

MAGNET MTG.

All dimensions in inches (Not to scale)

VICKERS DIVISION- SPERRY RAND (NZ) LTD

Phone 598900 183 Mt. ua Rd. Auckland.

OIL TANK

1" SUCTION - MINIMUM SIZE

Date - Sep 64

DRG NO.

Drawn by - IWC.

VZ - 170A

Mod A Mag. Mtg added 23 Apr 65