

Ski Club of SA: PORTALIFTS 1 & 2

DOCUMENT Pt 3 of 5

USERS' MANUAL: PORTABLE SKI LIFT No 1 (with GS45 engine 5 HP) & No 2 (GX240 engine 8 HP) v 2011-05-02 Chris Inskip

Read this in conjunction with illustrations in Part V:

- | Lift No 1: Figs 1, "Portable lift No 1 Fig 2", 3, 3b, 4
- || Lift No 2: Figs 1, 1a/b, "Portable lift No 2 Fig 2", 3, 3b, 4

Copies should remain at main hut and within Packages 5 as listed below.

RECOMMENDATIONS: Study this manual in the comfort of the hut, before venturing into the elements. But the manual can fully make sense only when you have the hardware in front of you.

Before setting off to use the lift: Take along fresh petrol; 5l suffices perhaps for 2 or 3 hours (please report experience). The engine is 4-stroke; oil is needed only rarely to top up the level in the crankcase.

Sometimes it has proven impossible to start the engine. I advise to try to start it (steps 3.1/2 below), and check inventory, before moving the whole outfit from storage and/or setting up. The latter step(s) necessitate also those of 5 below, namely DISMANTLING, REPACKING AND STORAGE. You'll avoid incurring all this work for nothing if you find out before moving and

setting up that you cannot start the engine, or that vital parts are missing.

CAUTIONS: To prevent leakage/loss of crankcase oil, engine must always be more or less upright.

See notes on safety etc under "4 USE OF THE LIFT"

Ski in work- or garden gloves; normal ski gloves get shredded by gripping the liftrope.

Beware when unpacking the lift after storage; I once found a berg adder sheltering inside the weathercover.

CONTENTS

1 INVENTORY & PACKAGING

2 SETTING UP

3 START UP

4 USE OF THE LIFT

5 DISMANTLING, REPACKING AND STORAGE

6 CHECKING AND REPORTING DURING AND AFTER USE

7 MAINTENANCE & FAIL-SAFETY

1 INVENTORY & PACKAGING

Key: left margin border |, or single underline, denotes Lift No. 1, || or double underline denotes Lift No. 2

Package (as for portage) Item No.

Package 1 (on rucksack frame) 1a (This and item 1b and V-belt(s) make up the drive unit.)

| Lift No 1: Engine with catch loop (do not detach from engine) and rucksack frame for portage (ca. 28kg); see "Portable lift No 1 Fig 2" & Fig 3

|| Lift No 2: Engine / outrigger assembly with rucksack frame for portage (ca. 31,5kg); see Fig 1a and Fig 3

Note carefully how the engine is fitted on the rucksack frame and, when replacing there, put it back the same way.

CAUTION: Don't allow the rucksack frame to bear weight of the engine during transport by car/bakkie etc; it may fail under the shocks and jolting.

Package 2 1b

| Lift No 1: Drive pulley/chain drive assembly. (ca 9kg); see "Portable lift No 1 Fig 2"

|| Lift No 2: Fig 1b Drive pulley/tension bar assembly (8.2 kg), incl.large twin-groove V-belt pulley, and catch loop

There is also a weathercover for storage. The drive unit entire will fit under this cover. Thus when stowing you may sometimes avoid need for complete

dismantling per 5 below.

Package 3 2a Liftrope (giving ~100m run) on reel. (ca 11kg) and/or:

Package 4 2b Liftrope (giving ~200m run) in a bundle (?or on reel?). (ca 22kg)

Package 5 (in rucksack) V-belt(s) (A section, 13mm) (For Lift No 1: qty 1, circumference 950mm) (For Lift No 2: qty 2, circumference 1310mm) + spare, anchor rope, larger anchor peg for drive unit - see 2.3 below, 3 pulleys (nominally 1 return, 2 idler), tensioning assembly (triple purchase), spring with optional cord, 3 smaller anchor pegs (nominally 1 for spring, 2 for idler pulleys), supply of thin `parachute' cord for (re)joining item 2a, 2b or both endless - see 2.4 below -, ~~spare parts/tools in cloth bag including plug wrench~~, this MANUAL. For #1, spare starter cord.

Package 6 One or two ski sticks without baskets.

2 SETTING UP

2.1 **Find anchorage for drive unit** at top of slope;- Fig.1, "rock", to serve per 2.3 below. Anchorage strength required is approximately for Lift No 1, 130kg, for Lift No 2, 230kg. It is desirable that the anchorage should pull somewhat downward on the drive unit as suggested in Figs 1 & 2 so as to hold the drive unit with some firmness down on the ground, or snow, against any tendency of the lift rope to lift the unit off.

After step 2.1: Organisation: With setup team of 2 or 3 persons (A & B, or A, B & C), try the following division of labour:

A performs steps 2.2/3 (using items 1a/b and, from Package 5, V-belt(s), anchor rope, and perhaps larger anchor peg, then steps 3.1/2. At the same time B (or B & C) progress with steps 2.4 - 2.9.

Lift can operate with approx. 100m, 200m or 300m run, through use of item 2a, 2b, or both combined - see 2.4 below. If the available snow does not suffice for one of these lengths, the excess length of lift rope may be laid over grass or other non-abrasive surface (preferably at the lower end of the lift rather than the upper), alternatively may be taken up using idler pulleys as described below under 2.7. Lift rope should generally not rub on abrasive material, such as rocks along the line of the lift.

2.2 **For Lift No 1: Assemble drive unit** - see pic "Portable lift No 1 Fig 2" - comprising items 1a & 1b per that Fig 2, also V-belt from Package 5

- remove item 1a Engine from rucksack frame (note run of the strap/rope etc securing it to the frame, to guide you in replacing it).

- Insert pipe portion of item 1b into orifice of item 1a at A. Juggle item 1b so that the other end of said portion can be inserted into like orifice at B. At the same time engage the V-belt tensioner (mounted on item 1a at C) with the lower end of item 1b at D. Fit R-clip at A to retain item 1b in position against alu angle of item 1a at B. Slip V-belt onto V-pulleys on 1a & 1b; leave tensioning of V-belt until after step 3.2.

2.2 **For Lift No. 2: Assemble drive unit** - see pic "Portable lift No 2 Fig 2" - comprising items 1a & 1b per Fig 1a/b, also two V-belts from Package 5. Refer to Fig's 1a/b & 2 during these steps:

Prepare item 1a:

- remove item 1a Engine/outrigger assembly from rucksack frame (note run of the strap/rope etc securing it to the frame, to guide you when replacing it).

- prepare item 1a for steps i and iii below as shown in Fig 1a, i.e. with elements D/E laid over to the right and wingnut C slackened well off.

Fit item 1b to 1a; place 1b in cradle and fit V-belts:

i pick up item 1b (Fig 1b), lay its hub N in the cradle B. As shown in Fig 2 view (b), tension bar P must lie hard up against outrigger A and cradle B, to ensure a small clearance between A and Q so latter rotates without rubbing on A. This step takes some wiggling of item 1b, to get it into place.

ii [See step iv below. You may be able to perform step iv, i.e. fit V-belts, at this point instead of after iii. Maybe if you lift the hub N 2 or 3 inches out of the cradle, the centres of pulleys G and Q can come slightly closer together, facilitating the fitting of the belts.]

- iii swing parts D/E up and over hub N and hook the loop E, or a link of chain, over peg F. Tighten the parts D/E somewhat by means of wingnut C.
- iv (can be delayed till after vi) fit V-belts between large- and small twin V-belt pulleys Q and G. Place first belt behind Q, lay it into groove on G nearest to engine. Make sure ignition switch on engine is at "Off". Rotate engine by means of starter cord, to bring the belt into the matching groove on Q. Fit second belt similarly into the other matching pair of grooves.

Check tension of V-belts, if necessary rectify See below under 7

Fit item 1b to 1a (cont'd); place P on prop R to support P at correct angle:

- v rotate Item 1b within cradle B so that Rail S moves down into the V-notch in Prop R (Fig 2).

PS 2013 Sept: Rail S can be lifted out of the V-notch if the Anchor rope isn't "pull(ing) somewhat down" per 2.1 (e.g. because of available anchorage). This will allow tension bar P at that end to move about, hence may cause clamping of the bar at hub N to work loose.

Therefore please use cord or such, from bar P at S down to framing below the engine, to hold S down into the V-notch.

- vi finally tighten wingnut C, to clamp hub N in place in cradle B, with P still hard up against A and B per i above.

For both lifts:

2.3 Anchor drive unit. Loop anchor rope around a rock or use larger anchor peg, eg stuck in behind a rock. Clip the anchor rope into karabiner (marked X in Fig 1b).

2.4 Lay out liftrope on the slope. Regarding alternative of taking up excess length of lift rope using idler pulleys, as mentioned above under 2, refer to 2.6 below.

If it has not been done already, make up item 2a and/or 2b into an endless loop for use as liftrope, - Fig 4. For each joint use approx 200mm of the thin 'parachute' cord provided - see 'Package 5' above. Before joining any ends the length(s) must be laid out in a very straight line, for example down the intended line for the lift, so that any prior twist in the length(s) can wind itself out, with human help as appropriate - see Fig 4.

CAUTION: During operation of the lift the short piece(s) of this cord used for

joining the lift rope endless apparently wear(s), and after some hours break(s), due to chafing either on the lift rope at the eyes or on the drive pulley or both. Therefore always take a fresh piece of cord when joining liftrope endless or rejoining after breakage of the cord.

Place the liftrope in the V-groove of drive pulley

Detail for Lift No 2:..see Fig 1b & "Portable lift No 2 Fig 2": drive pulley is marked V; as shown by dotted line in Fig 2, place liftrope also around jockey W. For this purpose, temporarily lift up jockey W.

Place catch loop over the downgoing "slack" side of the liftrope.

Fit return pulley on the liftrope (the pulley comes apart; don't lose bolt, clip, or other parts - ensure pulley lies with clip up, not down, if lying on the snow or ground).

2.5 Attach and lay out tensioning assembly (pulled out to full length), **spring and anchor peg.** Place anchor peg to withstand 25kg force. In the snow may suffice; if such placing is not available at lower end of the spring it may be located some way below, using 'optional cord' as shown in Fig 1.

2.6 Tension: using tensioning assembly, pretension the liftrope, i.e. stretch the spring so it exerts 25kg.

In order to facilitate this, a length of blue/white rope is placed inside the spring as a gauge. Near one end there is a red tag placed in this rope. When this rope is taut between the red tag and the other end, and the spring is stretched until the end of the spring's coils is held flush with this red tag, the tension is correct, 25kg.

This setting should be checked at intervals during use to ensure that the tension remains at or close to 25kg, with no-one riding (because there may be some stretch in the liftrope during use).

NB Don't stretch the spring beyond abovementioned; that may deform it permanently.

2.7 As shown in Fig 3a, it may be necessary to put out ski stick(s) or one of the idler pulleys, a little way up from return pulley, so as to **pull downcoming side rope a little off to one side** and prevent the two sides of the lift rope, ie the downcoming ("slack") side and the upgoing ("tight") side, from twisting around

one another at return pulley. This or equivalent provision may be necessary also if users choose the alternative of taking up excess length of lift rope using idler pulleys, as mentioned above under 2. This is shown in Fig 3b. (Pulleys come apart for this; see 2.4 above.)

2.8 (optional) **Set up bipod just below the return pulley** to hold lift rope at some height above the snow so that skiers (especially beginners) can easily hitch on to the lift. PS Feb 2010: This step has never been found necessary!

2.9 (optional) **Set up manual safety cut-out** This consists of a jack plug inserted in socket mounted on the engine.

PS Feb 2010: This step has likewise never been implemented.

3 START UP

Steps 3.1 to 3.2.2 can be completed after step 2.3, i.e. needn't wait till remaining parts of SETTING UP are completed.

During operation the petrol tank must be in attitude such that a certain depth of petrol is maintained at the petrol outlet, otherwise unsteady running may result. Therefore engine should not be tilted too much in any direction.

3.1 Put fresh petrol in tank, open petrol tap, i.e.:

- | on Lift No 1: from OFF, turn clockwise
- || on Lift No 2: fully to the right.

3.2 Initial starting and warm-up of engine:

3.2.1 Take liftrope off V-groove pulley, if already placed there per step 2.4.

3.2.2 Per our experience and/or Honda instructions:

- | on Lift No 1: turn speed control knob to setting at or around START (to put throttle at 2/3 or maybe fully open)
- || on Lift No 2: set speed control lever/ throttle to idle, ie fully to the right (**????** to put it at 2/3 open or maybe fully open)
- set ignition switch to OFF
(Lift No 1: see Fig 2)
- set choke to fully shut i.e.:
Lift No 1: fully anti-clockwise Lift No 2: fully to the left

- turn engine over, say, twice (to prime with petrol)
- set choke to mid position i.e.:
Lift No 1: part way to fully clockwise Lift No 2: mid-position
- set ignition switch to ON
- (if using the safety cut-out per 2.9, ensure that it is in the RUN state)
- attempt starting of engine with pull-cord
- when engine starts, set choke to fully open, i.e.:
Lift No 1: fully clockwise Lift No 2: fully to the right
- move speed control knob **?????** or lever to **????** to raise speed as desired. Warm up.

3.2.3 Stop engine using ignition switch, replace liftrope in V-groove pulley.

3.3. After 3.2, or as restart following subsequent stalling of engine or emergency or deliberate shut-down: Engine can often be restarted without using choke, priming and slipping lift rope off V-groove pulley, provided no one is hitched onto the liftrope. If necessary repeat steps 3.2.1/2.

4 USE OF THE LIFT

SAFETY: Don't ride the lift wearing loose clothes, scarf or long hair which may catch on the moving rope and pull you onto the drive pulley or other moving parts.

When riding up, don't pull lift rope to the side, especially as you get close to the engine. It may increase wear of the rope in the v-groove and could cause the rope to jump out of the groove. The lift rope is rough on ski gloves; it's better to use work- or gardening gloves.

If the lift rope slows down or stops while the engine maintains speed, the rope may be slipping in the V-groove. This may cause damage to or breaking of the rope, therefore **STOP THE ENGINE** immediately and check pre-tension of the rope and restore requisite pre-tension if necessary; this check is in any case advisable at intervals during use - see 2.6.

5 DISMANTLING, REPACKING AND STORAGE

5.1 Generally, repack per 1 above. Certain detail is:

- ?Before detaching and stowing the engine?: **Detach the liftrope from other items and repack** it per 1 above. The rewinding of the rope(s) onto the reel(s) can be done with the aid of the engine: Start the engine. Place one of the ski sticks through the centre of the reel and place the rubber-edged rim of one of the ends of the reel in the V-groove of the drive unit. Adjust engine speed to taste.

- **If you used the safety cut-out cord, rewind it** onto reel/board, in figure-of-8 fashion to avoid kinks.

- Before stowing engine: **Empty petrol tank** into a fuel storage can. Remove residual petrol, including **empty the carb(urettor)**, by running engine till it stops (alternatively drain at carb float chamber). These steps avoid clogging by gum in the tank and especially the carb. This gum forms in time from residue left by petrol when it evaporates during prolonged storage of the engine. Also **empty the dust / water trap** (if fitted) below the fuel tap.

- **Check items against inventory per 1** and Figs 1a/b, 2; report deficiencies/shortages per 6.

5.1.1 Dismantling drive unit / further preparation for portage and/or storage

Lift No 1: **Slacken the v-belt**. Only this is essential before storage and/or transport, i.e. the drive unit entire can be stored, and/or be fitted to and carried on the rucksack frame. But it will be heavy to carry, and maybe if transporting it's best not to load the frame to that extent, i.e. rather to dismantle:

Lift No 2: Dismantle:

- **Dismantle drive unit**, in reversal of 2.2 above

- Using starting rope, **turn the engine slowly until both inlet and exhaust valves are closed**, as indicated by an increase in the resistance of the engine to being turned. The object is to minimise corrosion by closing the cylinder off from the atmosphere, including humidity, during storage.

- If the lift is to be carried elsewhere, e.g. to longer term storage site, **remake Package 1** per 1 above, i.e.,:

Replace item 1a on the rucksack frame:

For Lift No 2, see Fig 1a: Holes marked **orange** on rail H fit on **orange**

projecting bolts on the frame. Secure with R-clips L. Tie cord around the tank to secure top of engine to the frame; observe **orange** markings indicating run of the cord.

5. 2 Protection in storage: Using weather cover, **cover packages** against snow/ rain, varmints and sunshine. Items 2 - polypropylene liftrope(s) - will be damaged if exposed at length to sunshine (as will the weathercover). Lash over the weathercover, or suchlike, to prevent it from flapping in the gales.

NB Aug 1992: It is perhaps desirable eventually to provide bags to protect liftropes from sunshine during storage; pending this liftropes are stored within the weathercover or indoors / otherwise covered / in shade of an overhanging rock such as at the lower end of the chicken jump run.

6 CHECKING AND REPORTING DURING AND AFTER USE

Please report problems or deficiencies/ shortages, preferably to the Portalift officer, otherwise to the duty officer or a committee member. A variety of obscurely technological considerations has entered into the design; please therefore reflect before changing it and also report any such action.

7 MAINTENANCE & FAIL-SAFETY

Engine: see Honda's manual.

Lift No 2: V-belt drive: to check/ adjust belt tension: See note in Fig 1a. Fail-safety: If a hand, clothing etc is caught round the liftrope as latter approaches drive pulley V, the liftrope will easily fall off the pulley to the right (looking uphill). Even if the caught item goes right round the drive pulley, that item can get past jockey W because the jockey will lift up to allow it to pass.