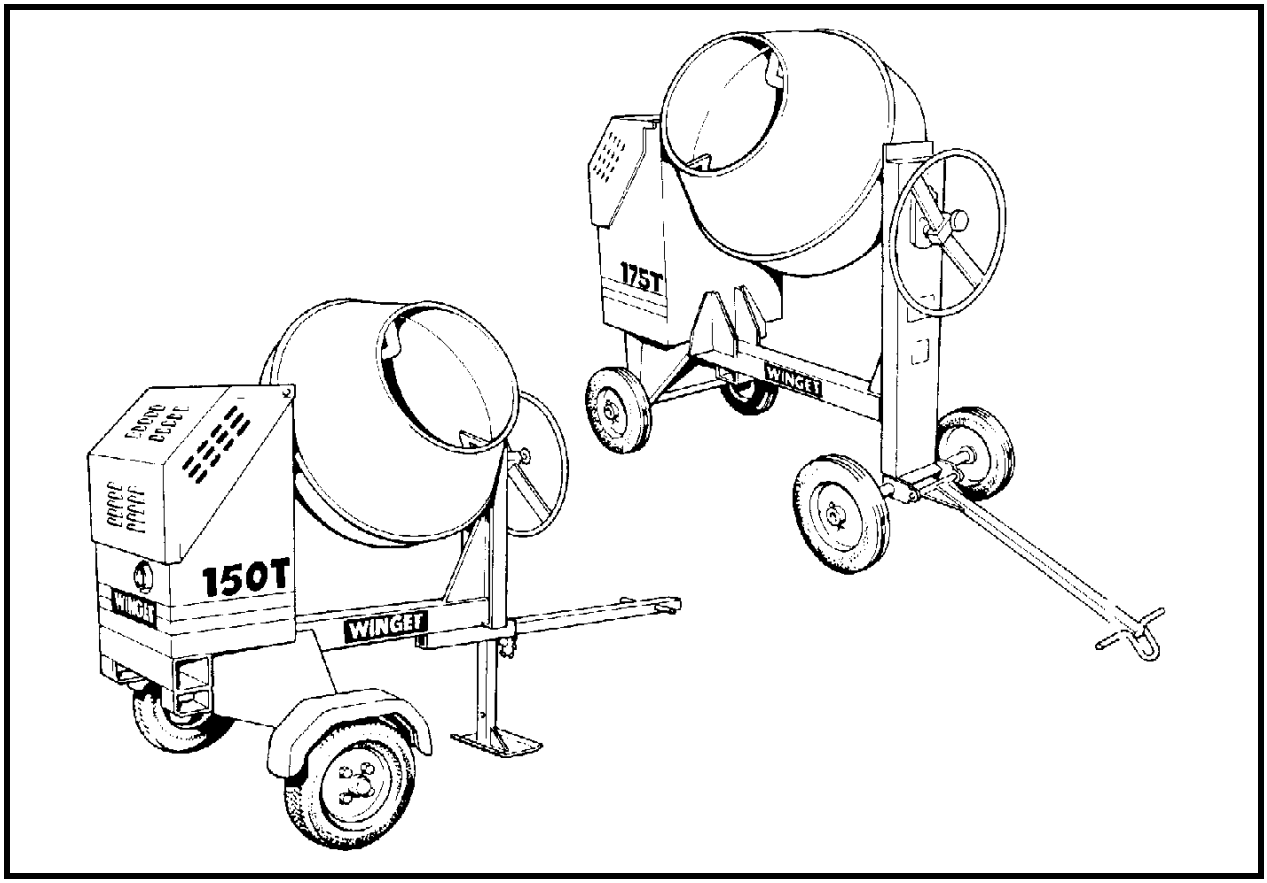
WINGET

WORKSHOP MANUAL
100T, 150T & 175T
HANDFED MIXERS



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ISSUE 13 2021

UP TO 2015

WORKSHOP MANUAL
100T / 150T / 175T
Winget Concrete Mixers
From 1988 Onwards
Issue 13 2021

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SECTION 1
INTRODUCTION

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Introduction

It is assumed that personnel involved in either the assembly or repair of Winget Mixers will be familiar with the product, either through the operation of, or previous repair and maintenance work. It is not intended to be used by personnel who are neither familiar with the product nor mechanically inexperienced.

It is also assumed that personnel are aware of Health and Safety Regulations, which should be applied to all working practices but the following should act as a reminder.

Ensure all work tools are in good condition.

Always wear Safety Spectacles when using soft or hard faced hammers, chisels or when using air tools. Wear Safety Spectacles when cleaning hardened concrete or mortar deposits off components. Do not misuse airlines and be aware of the damage compressed air can cause if misused.

Always make sure lifting equipment is in good condition and the marked Safe Working Loads exceed the weights of the components to be lifted.

Oils, fuels, silicone sealers and open gear lubricants can cause skin diseases if allowed to contaminate the skin. Always apply barrier creams, wear suitable protective clothing, or when contamination is unavoidable clean the area with soap and water as soon as possible. Do not use thinners or other solvents to clean skin.

Health and Safety is a matter of common sense. If common sense is applied correctly Health and Safety can be improved and the risk of accidents reduced.

L/H and R/H views are taken when standing directly behind and facing the engine housing.

Refer to the Parts Books for a guide to the correct sequence for assembling components and sub-assemblies.

Whilst every effort is made to ensure the contents of this manual are accurate, Winget Limited reserve the right to altar specification without prior notification and certain sections may then no longer apply.

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SECTION 2

REPAIR & SERVICE PROCEDURES

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Repair & Maintenance Procedures

The following procedures are based in part on the procedures issued to Distributors and the instructions should be used in conjunction with the appropriate Parts and Operators Manual or CD ROM. Reference should also be made to the Parts Listings in Section 9 for a guide to the correct sequence for assembling components and sub assemblies.

1) Clean any paint or debris from bores and shaft surfaces. Threaded holes should preferably be cleaned out using the correct tap

2) All sealed for life bearings should be packed with a good quality grease prior to installation. Carefully remove a seal, pack the bearing with grease and refit the seal ensuring it is correctly seated.

3) Apart from installing the electric motor, mounting brackets and conduit as described in this manual under the heading '110 volt & 240 volt single phase Electric Motor.' All wiring and other work concerned with the installation of 110 volt and 240 volt components and supply should be left to a suitably qualified electrician, who is conversant with single phase electric circuits.

4) The PTO of the Honda GX160K1 LX4 Petrol engine rotates anti-clockwise whilst the Lister-Petter LT1/LV1, AC1-05, YANMAR L40/L48 ARE SE and the 240/110V electric motors all rotate clockwise. Therefore the drum blades and countershaft and sprocket fitted to Honda powered mixers are 'OPPOSITE HAND'. When ordering spares it is important that the correct part number and engine type are quoted. Blades, countershaft and sprockets intended for use with the Lister-Petter and Yanmar should not be used with Honda powered mixers and vice-versa.

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Lifting Points

A lifting point capable of supporting the weight of the mixer is incorporated into the trunnion.

This lifting point is highlighted with an ISO 'Hook' symbol adjacent to the point.

On Military/NATO mixers the lifting point will also be painted white.

Draw Bar Replacement-Four Wheel Tow

The drawbar is secured to the front axle using split pins and flat washers. Remove the split pins and flat washers slide the old drawbar out of the lugs on the front axle. Replacement is a reversal of the above procedures ensuring that the eye on the drawbar points downwards.

Wheel Replacement-Four Wheel Tow

Solid rubber cushion and steel wheels are secured using split pins and flat washers and the removal procedure is identical. Lift and support the axles. Remove the split pins and washers. Clean the axle shafts and coat with copperslip. Fit the new wheel replace the flat washer and secure using a new split pin.

Wheel Replacement-Two Wheel Tow

On two wheel tow mixers the pneumatic tyre/wheel assembly is secured to the hub/suspension unit by four nuts. To change a wheel, chock the wheel on the opposite side, slacken but do not remove the wheel nuts securing the wheel to be changed. Place a suitable jack below the suspension unit and jack up the mixer until the tyre is just clear off the ground, remove the nuts and wheel assembly. Reverse the procedure to refit and fully tighten the wheel nuts when the jack is removed.

It is recommended that the wheel nuts be rechecked following a short "road test"

Hub/Suspension Unit Replacement-Two Wheel Tow Mixers

The suspension units require no maintenance being a sealed unit having an internal construction of rubber and ends sealed with nylon bushes. Suspension units should not be subjected to heat such as welding or oxy-acetylene cutting as this will damage the rubber and nylon components.

The suspension units are secured to the mainframe using six/eight bolts and nuts to remove, slacken the wheel nuts, jack up and support the mainframe on suitable supports. Do not attempt to work under the mainframe if it is supported only on a jack. Remove the wheel nuts and wheel assembly. Unbolt and remove the mudguard and supporting bracket. Remove the remaining bolts securing the suspension unit and detach the unit from the mainframe.

Note: it is recommended that suspension units be replaced in pairs.

Reverse the procedure to refit.

Wheel Hubs & Bearings-Two Wheel Tow

A single castle nut and flat washer retains the hubs to the stub axles of the suspension units. The castle nut is also secured with a split pin; this is accessible after removing the steel/plastic dust cap.

There are two types of hub bearings in use dependent on the age of the machine: -

The early type with ball race bearings and spacer, with this type the retaining nut must be fully tightened.

The later automotive type taper roller bearings requiring a small amount of end float.

To remove the hubs remove the wheels as described above, prise off the dust caps. Remove the split pin, nut and washer and pull off the hub. Do not allow the taper roller or ball bearings to drop to the floor where they will become contaminated with dust etc. The later type inner taper roller bearing and seal unit will normally be left on the stub axle when the hub is withdrawn, this can be carefully tapped off using a suitable drift taking care not to damage the bearing cage.

Clean all traces of old grease out of the hubs and off the stub axles, using a suitable drift knock out the old bearings, pack the new bearings with grease and tap home into the hub.

Assemble the hub and bearings onto the stub axle, in the case of the ball race bearings and spacer fully tighten the nut and insert the locking split pin. Check the hub rotates freely and fit the dust cap. Charge the hub with grease until the grease is visible in the breather hole in the cap.

With taper roller bearings, tighten the nut then back off 1/4-1/2 a turn, check that the hub spins freely without to much end float, .004" is sufficient. Align the castle nut with the split pinhole in the stub axle and fit the retaining split pin. Recheck the hub rotates freely and refit the dust cap. Charge the hub with grease until the grease is visible in the breather hole in the cap.

It is recommended that the wheel bearing adjustment be rechecked after giving the mixer a short "road test".

Front Axle Replacement- Four Wheel Tow

Depending on the age of the mixer two different front axle assemblies are fitted.

Early Mixers

Early mixers have a swivel fitted to the front axle, which allows the axle to oscillate as well as rotate.

Jack up and support the mainframe so the front wheels are clear of the ground. Remove the circlips securing the pivot pin through the front axle and swivel bracket. Knock out the pivot pin and remove the axle. The swivel bracket is secured to the mainframe by a spiral pin, using a suitable drift knock out the pin and remove the swivel.

Replacement is a reversal of the above procedure however pins and shafts should be coated with copperslip on assembly. When fitting the spiral pin through the swivel bracket rotate the bracket through a full 360 degrees making sure the pin does not foul the mainframe. Fit new circlips and split pin.

Early 175T mixers have a separate bracket bolted to the mainframe into which the swivel is located. This is secured using four nuts, bolts and washers and can be removed once the axle and swivel have been removed as described above. Replacement is a reversal of this procedure.

Later Mixers

On later Mixers the front axle only rotates through 360°, it will not oscillate and the front axle now locates directly into the front leg of the mainframe where it is secured via a spiral pin.

Jack up and support the mainframe and knock out the spiral pin. Remove the axle. Replacement is a reversal of the procedure however the pivot pin and axle shafts should be coated with copperslip. The axle should be rotated through 360° degrees making sure the spiral pin does not foul the mainframe.

Rear Axle-Four Wheel Tow

Early 175T mixers have a separate rear axle bolted to the mainframe. Jack up and support the mainframe with the rear wheels clear of the ground. Remove the nuts, bolts and washers securing the axle to the mainframe and remove the axle assembly.

Replacement is a reversal of the above procedure.

Drum Removal

Attach suitable lifting equipment through the drum blades. Knock back the tabs on the lock-washer securing the drum shaft setscrews. Remove the setscrews and the washers securing the shaft and flange. With the drum mouth upright lift the drum assembly clear of the trunnion. It may be necessary to rock the trunnion via the tiltwheel to free the shaft, especially if the mixer has been in service for some time.

In exceptional circumstances it may be necessary to use a commercially available two-leg puller/pusher tool to assist in pushing the drum shaft through the trunnion. When using such tools please ensure the manufacturers or supplier's instructions are adhered to.

Drum Re-Fitting

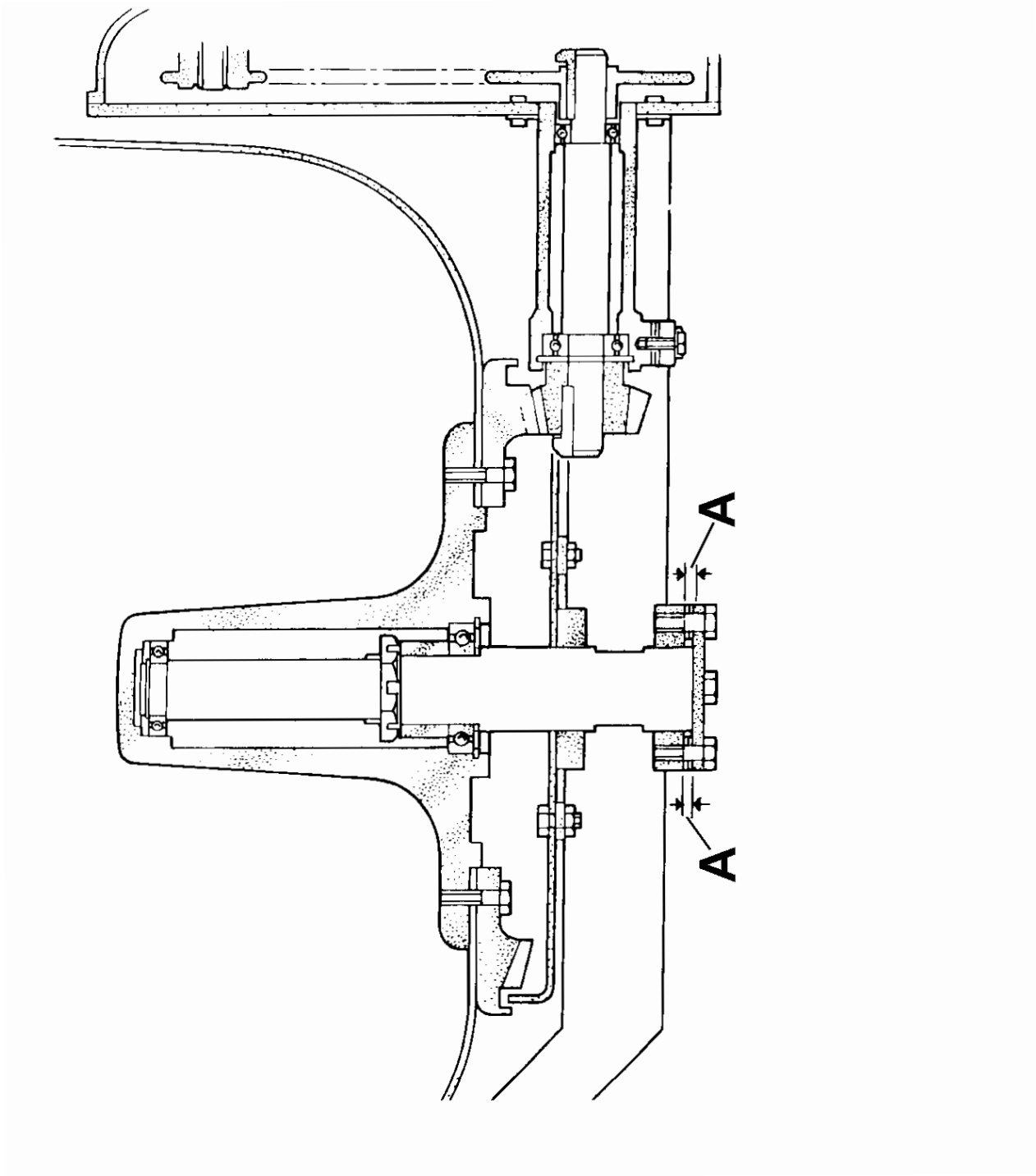
Clean and lubricate both the drum shaft and trunnion base plates with copperslip. Coat the bevel pinion and bevel gear with open gear lubricant. Attach suitable lifting equipment through the drum blades; lift the drum assembly and position over the trunnion.

Turn the drum shaft so the threaded holes in the shaft are at 90° to the holes in the lower base plate. Lower the drum and shaft assembly into place making sure that the bevel gear and pinion are fully in mesh and the drum shaft is fully through the base plates.

Slip the lockwasher over the two drum shaft setscrews and coat the threads with copperslip, using the setscrews secure the flange to the shaft. The flange can be used to turn the shaft until the remaining holes in the flange align with the remaining holes in the lower base plate.

Check the number of flat washers required to pack the gap between the flange and lower base plate. (See "A" on the following illustration). Deduct one washer from each side. Coat the threads on the setscrews with copperslip and fit the setscrews with spring washers attached through the flange and flat washers and

100T 150T 175T DRUM DRIVE LAYOUT



tighten into the base Plate. This will lift the drum shaft slightly back through the trunnion increasing the distance between the teeth of the bevel pinion and bevel gear. Gently rock the drum assembly back and forth and check the backlash between the gears. (Approx 5mm measured at drum clip). Ensure the setscrews are tight and knock over the tabs on the lockwasher.

Drum Cone Replacement

NOTE: the drum on Honda powered mixers rotates anti-clockwise on all others the rotation is clockwise.

Wearing suitable eye protection clean hardened concrete or mortar deposits from around the drum clip and the bolts securing the drum blades. Remove the bolts securing the blades to the drum cone and slacken the bolts through the base. Cut through the drum clip and remove. Lift off the drum cone.

If necessary clean out the drum base. Clean old silicone sealer and hardened concrete from the drum flange otherwise it will be difficult to effect a good seal when the new cone is fitted.

Run a generous bead of silicone sealer around the flange and inside the new drum clip. Leave the last 150mm of each end of the clip free from sealer.

Using suitable lifting equipment lift the new drum cone in place lining up the holes in the cone with those in the blades. Loosely refit in the bolts, nuts and washers. Fit the new drum clip around the circumference of the two halves of the drum tapping in place over the flanges using a soft faced hammer.

Attach the special drum clip tool; available under part number 513204000 from your local Winget distributor, placing the pins of the tool into the holes in each end of the clip. (Refer to the illustration)

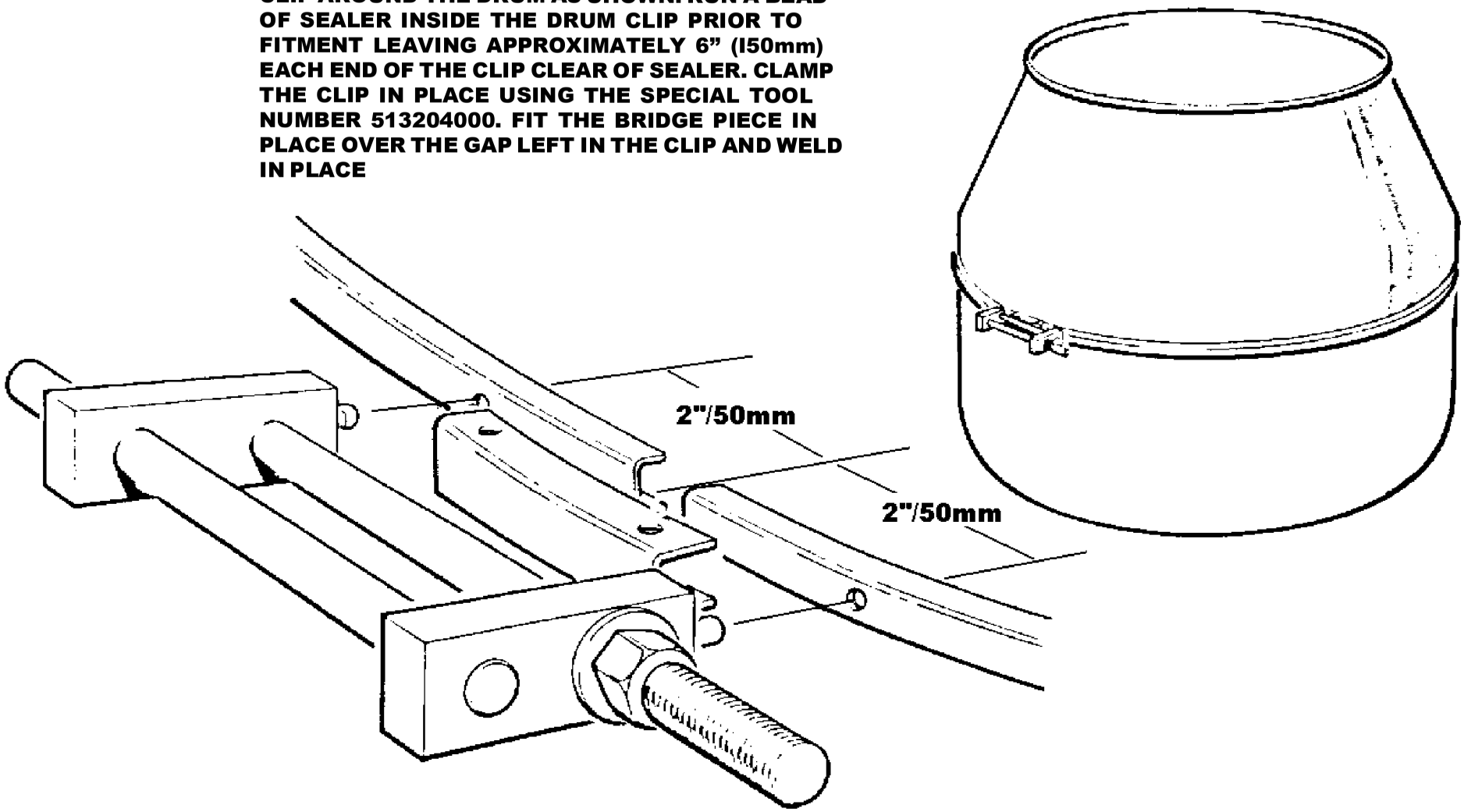
Using a suitable spanner tighten the drum clip to the drum until it is secure. Do not overtighten the clip or the pins in each end of the tool will shear off. Slip the bridge piece over the remaining gap in the drum clip and weld in place. Remove the tool and fully tighten the drum blades.

Run the mixer, tilting the drum via the tiltwheel making sure that the drum, clip or bridge piece, do not foul the mainframe or guards. Check the watertight integrity of the drum by emptying a bucket of water into the drum whilst the drum is tilted and the engine is running and observe if water leaks around the clip are evident. If leaks are evident run a bead of silicone around the interior joint between the two halves of the drum.

Stop the engine; clean any excess silicone off the drum or clip.

100T 150T 175T DRUM CLIP FIXING

AFTER COATING THE MATING FACES OF THE DRUM BASE AND CONE WITH SILICONE SEALER FIT THE CLIP AROUND THE DRUM AS SHOWN. RUN A BEAD OF SEALER INSIDE THE DRUM CLIP PRIOR TO FITMENT LEAVING APPROXIMATELY 6" (I50mm) EACH END OF THE CLIP CLEAR OF SEALER. CLAMP THE CLIP IN PLACE USING THE SPECIAL TOOL NUMBER 513204000. FIT THE BRIDGE PIECE IN PLACE OVER THE GAP LEFT IN THE CLIP AND WELD IN PLACE



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Drum Blade Replacement

NOTE: the drum on Honda powered mixers rotates anti-clockwise. on all others the rotation is clockwise, therefore Honda powered mixers use different blades.

It is unlikely that drum blades will require replacement separately to the drum cone. However in the event that it should prove necessary, wearing suitable eye protection clean any hardened concrete or mortar deposits from around the bolts securing the blades. Remove the bolts and blades. Due to the corrosive action of concrete and mortar it may be necessary to cut through the old bolts using oxyacetylene equipment. Be aware that hot concrete can “explode” violently spitting concrete - wear suitable eye protection and protective clothing.

Attach the new blades into the drum assembly finger tighten the bolts until all the bolts are in place. Tighten the bolts.

The bolts should go into the drum from the outside and only round headed bolts, either slotted or hexagon key should be used.

Bevel Gear Guard Replacement

Remove the drum assembly as previously described. Remove the four setscrews, nuts, etc. holding the guard in place. Fit the new guard tighten the setscrews. Replace the drum assembly as previously described.

Bevel Gear Replacement

Remove the drum assembly as previously described. Turn the drum so that it stands on the drum mouth, support the centre housing on the inside of the drum or attach lifting equipment to the drum shaft so that the centre housing cannot fall inside the drum when the bevel gear is removed.

Release the lockwashers and remove the setscrews securing the bevel gear, prise off the bevel gear and clean down the surface of the drum ready to accept a replacement. Fit the new bevel gear, slip new lockwashers on to the setscrews, coat the threads with copperslip and enter through the bevel gear into the centre housing.

Turn the tang on the lockwashers so that the tang can be turned down the inside of the bevel gear. Tighten the setscrews and bend the rounded edge of the lockwashers over the flats on the head of the setscrews. Coat the bevel gear with open gear lubricant. Refit the drum assembly as previously described.

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Drum Shaft, Bearings and Drum Centre

Remove the drum assembly as described previously. Lay the drum assembly on its side and release the lockwashers. Support the centre housing and remove the setscrews, which pass through the bevel gear and prise off the bevel gear. Carefully lower the centre housing into the drum. Lift the Housing out of the drum and clean down the mating surfaces in the drum removing all traces of the old gasket and sealer.

Clean the centre housing prior to any further dismantling. Remove the large circlip from the groove within the centre housing and using a suitable tool pull the drum shaft assembly out of the housing. If a suitable tool is not available secure the drum shaft in a soft jawed vice and using a soft faced hammer knock the housing off the shaft taking care not to damage the housing. Clean any debris out of the housing and inspect for damage.

Secure the drum shaft upright in a soft jawed vice remove the upper circlip and bearing. Release the lockwasher and remove the nut, lockwasher and distance piece. Remove the lower bearing.

Before fitting new bearings carefully remove the seals from the bearings and pack the bearings with good quality grease, refit the seals, do not completely fill the bearings with grease leave some room for expansion as the grease warms up in service.

Re-assemble the shaft in reverse order making sure the lockwasher is correctly fitted and locked onto the nut.

Smear the circumference of the bearings with copperslip and using a soft faced hammer knock the shaft assembly fully home into the housing. Refit the circlip into the groove within the housing.

Place a new gasket over the housing, locate the housing assembly into the drum and temporarily support in place.

Refit the bevel gear as previously described. Remove the supports from below the centre housing inside the drum. Refit the drum assembly as previously described.

Tilting Wheel and Locking Plunger

The tilting wheel is secured to the tilting pinion via a spiral pin, later versions also have an additional M10 grubscrew. With the drum in the vertical position knock out the spiral pin, slacken the grubscrew, if fitted, and lift off the tilting wheel.

The locking plunger is held in place in the tilting wheel by a second smaller spiral pin. Knock out this pin and remove the locking plunger and spring.

Re-assemble in the reverse order coating the locking plunger and pinion shaft with copperslip. Lubricate the felt seal behind the tilting wheel with oil.

Note: Later larger diameter tilting wheels also have an M10 grub screw fitted in addition to the spiral pin.

Tilting Bracket

With the drum in the vertical position, place temporary supports between the mainframe and trunnion to support the trunnion when the tilting bracket is removed.

Remove the upper tiling gear guard. Remove the four socket headed capscrews securing the tilting bracket taking care not to drop the retaining brackets on the inside of the mainframe front leg. Pull off the tilting bracket assembly. Check the felt seal in the tilting gear replace and/or lubricate as required.

Knock out the spiral pin securing the tilting wheel to the tilting pinion. Pull off the tilting wheel and pull the pinion out of the bracket. Check the condition of the bushes and felt seals. Replace and/or lubricate as required. The stub shaft is also secured into the tilting bracket via a spiral pin and can be removed simply by knocking out the pin.

Reassemble the tilting bracket in reverse order lubricating bushes and felt seals with engine oil. Coat shafts, pinions and plungers with copperslip.

When refitting the tilting bracket assembly to the mixer, engage and lock the plunger into the middle of the three bushed blind holes. Locate the stub shaft into the tilting gear and ensuring that the tilting pinion correctly meshes with the tilting gear push the assembly fully home. Coat the threads on the four capscrews with thread lock, insert through the tilting bracket, mainframe and into the retaining bars which should be held in position until the capscrews are engaged. Tighten the capscrews. Check that the drum clip is horizontal, if not it is likely that the tilting gear and tilting pinion are a tooth out. Refit the tilting gear guard. Remove the temporary supports.

Tilting Gear and Lower Guard

Remove the tilting bracket as described previously. Undo and remove the four setscrews securing the guard to the mainframe. Undo and remove the four nyloc

nuts and flat washers holding the gear. Push the bolts back through the gear, slide the gear forward and lift clear of the mainframe. Lift off the lower guard.

Reassemble in reverse order not forgetting to put the guard behind the gear. Lubricate the felt seal.

Refit the tilting bracket as previously described.

Countershaft/Bevel Pinion Drive Chain.

Remove the chain guard from the rear of the trunnion. Crank the engine over until the chain split link is visible. Disconnect the link. Hook the new chain loosely onto the split link and slowly crank the engine pulling the new chain in place round the countershaft chain wheel. Remove the old chain and link. Loop the new chain round the chain wheel on the bevel pinion shaft and fit the new split link. The open end of the split end should point away from the normal direction of rotation, which is anti-clockwise when looking directly at the chain, clockwise on Honda powered mixers. Check and adjust the chain tension. (See bevel pinion shaft and housing). Refit the chain guard.

Bevel Pinion Shaft and Housing

Follow the procedures described earlier and remove the drum, bevel gear guard and disconnect the countershaft bevel pinion drive chain.

Rotate the trunnion until it reaches its highest point and lock in place. Remove the gib head key securing the chain wheel to the bevel pinion shaft. Remove the bevel pinion guard, release the lockwashers and remove the setscrews, packers and shims securing the bevel pinion housing. At this point the housing should either be supported by a second pair of hands, strapped or supported in some other manner to prevent it dropping down sharply and causing damage to the casting, it will otherwise only be secured by the loose fitting retaining plate and chain wheel.

Remove the nuts and washer from the two bolts retaining the bevel pinion housing adjusting plate. Using a soft faced hammer knock the bevel pinion shaft through the chain wheel until it is possible to remove the chain wheel. Remove the bolts through the retaining plate and lift the housing out of the trunnion.

Clamp the housing in a soft jawed vice and remove the gib head key retaining the bevel pinion and pull off the pinion.

Remove the circlip from the groove within the housing and using a soft faced hammer knock the shaft and bearings out of the housing. The bearings can now be removed from the shaft.

Before fitting new bearings carefully remove the seals from the bearings and pack the bearings with good quality grease, refit the seals, do not completely fill the bearings with grease leave some room for expansion as the grease warms up in service.

To reassemble secure the bevel pinion shaft into a soft jawed vice. Using the correct size of bearing tube and a soft faced hammer fit the bearings to the shaft. Note the larger of the two bearings is fitted to the longer shank of the shaft. Remove the shaft from the vice and using the vice support the bevel pinion housing. Using the correct size of bearing tube and the soft faced hammer knock the shaft fully into the housing. Fit the retaining circlip into the groove within the housing and check the shaft turns freely.

Assemble the bevel pinion to the shaft, fitting the gib head key. The pinion is fitted to the longer shank of the shaft. If correctly assembled the threaded holes in the casting will be at the same end. Do not at this stage fit the chain wheel to the opposite end of the bevel pinion assembly, as this will prevent reassembly of the housing into the trunnion.

Loosely fit the triangular adjusting plate back into the trunnion, locating the plate on the peg. Fit the two bolts through the adjusting plate from the rear of the trunnion so that when assembled the head of the bolts will be sandwiched between the trunnion rear plate and the chain wheel.

Work the bevel pinion housing back into the trunnion and through the adjusting plate. As the shaft protrudes through the rear of the trunnion slide on the chain wheel until it is fully home.

Refit the setscrews, lockwashers, packer and shim set retaining the bevel pinion housing and finger tighten only.

Fit the gib head key retaining the chainwheel and refit the drive chain, when connecting the split link the open end of the link should be fitted so that it points away from the normal direction of rotation which is anti-clockwise when looking directly at the chain, clockwise on Honda powered mixers.

Release the trunnion and turn back to its lowest position. The adjusting plate holding the rear of the bevel pinion housing is slotted to allow the housing to move up and down enabling correct adjustment of the chain tension. Check and adjust the chain and tighten the two bolts securing the adjusting plate. By adding

or subtracting shims between the thick packer and housing ensure the housing is horizontal in the trunnion and square to the rear plate. Re-check the chain tension and fully tighten the bolts and setscrews securing the housing, knock over the lockwashers.
Crank the engine ensuring both the countershaft and bevel pinion turn freely. Coat the bevel pinion with grease or open gear lubricant and fit the pinion guard. Fit the rear chain guard folding the tab over the trunnion.

Following the procedures described earlier refit the bevel gear guard and drum assembly.

Countershaft, Trunnion Journal, Bearing Housing & Driven Chain wheel/ "V" Belt Pulley

Although it is recommended that the trunnion be removed completely from the mixer should the countershaft, trunnion journal or bearing housing require attention it is possible to leave the trunnion assembly in place provided it is properly supported.

Remove the drum as described previously. Remove the engine housing lid (top plate on 175T), engine housing chain guard and trunnion chain guard. Disconnect both drive chains.

On 110/240v electric drive, Lister-Petter AC1-05, Yanmar L40/L48 electric start diesel and Honda Petrol mixers the drive is transmitted to the countershaft by means of a 'V' belt in place of the chain.

Remove the six setscrews securing the trunnion bracket to the engine housing, remove the four countersunk socket headed screws and lift off the trunnion journal assembly.

Support the assembly in a soft jawed vice, remove the gib head key retaining the countershaft chain wheel and remove the chain wheel. Lift off the trunnion bracket; carefully remove the trunnion bearing and strip out the "O" rings and nylatron strip.

Using a soft faced hammer knock the countershaft out of the trunnion journal. Remove the bearing and circlip from within the journal housing.

Secure the countershaft in a soft faced vice, remove the grubscrew and unscrew the chain wheel, remove the bearing. Note: On mixers fitted with Lister-Petter LT1/LV1, Yanmar L40/L48 and 240/110V the countershaft and chain wheel have a LH thread, on Honda powered mixers the thread is RH.

Reassembly

Fit the circlip into the groove within the trunnion journal and lubricate the outer circumference/bearing face with copperslip.

Insert the nylatron bearing strip into the trunnion bearing, fit the “O” rings into their respective grooves within the bearing housing and pack the “O” ring grooves and nylatron bearing with grease. (Refer to the illustration to identify the “O” rings and their location)

Carefully fit the trunnion bearing over the trunnion journal taking care not to dislodge the “O” rings or damage the trunnion bearing.
Before fitting new bearings carefully remove the seals from the bearings and pack the bearings with good quality grease, refit the seals, do not completely fill the bearings with grease leave some room for expansion as the grease warms up in service.

Secure the countershaft in a soft jawed vice and using the correct size of bearing tube and a soft faced hammer fit the larger of the two bearings to the threaded end of the countershaft. Apply threadlock to the threads and screw on and tighten the countershaft chain wheel. Peen the end of the shaft in four points as an additional precaution to prevent the chain wheel unscrewing. Fit the grubscrew coating the threads with threadlock.

Insert the smaller bearing into the journal making sure it seats against the circlip.

Support the trunnion journal/trunnion bearing assembly in a soft jawed vice and using a soft faced hammer knock the countershaft assembly into the journal taking care not to dislodge the lower bearing. Remove the completed assembly and check the countershaft turns freely. Feed the short drive chain onto the countershaft chain wheel.

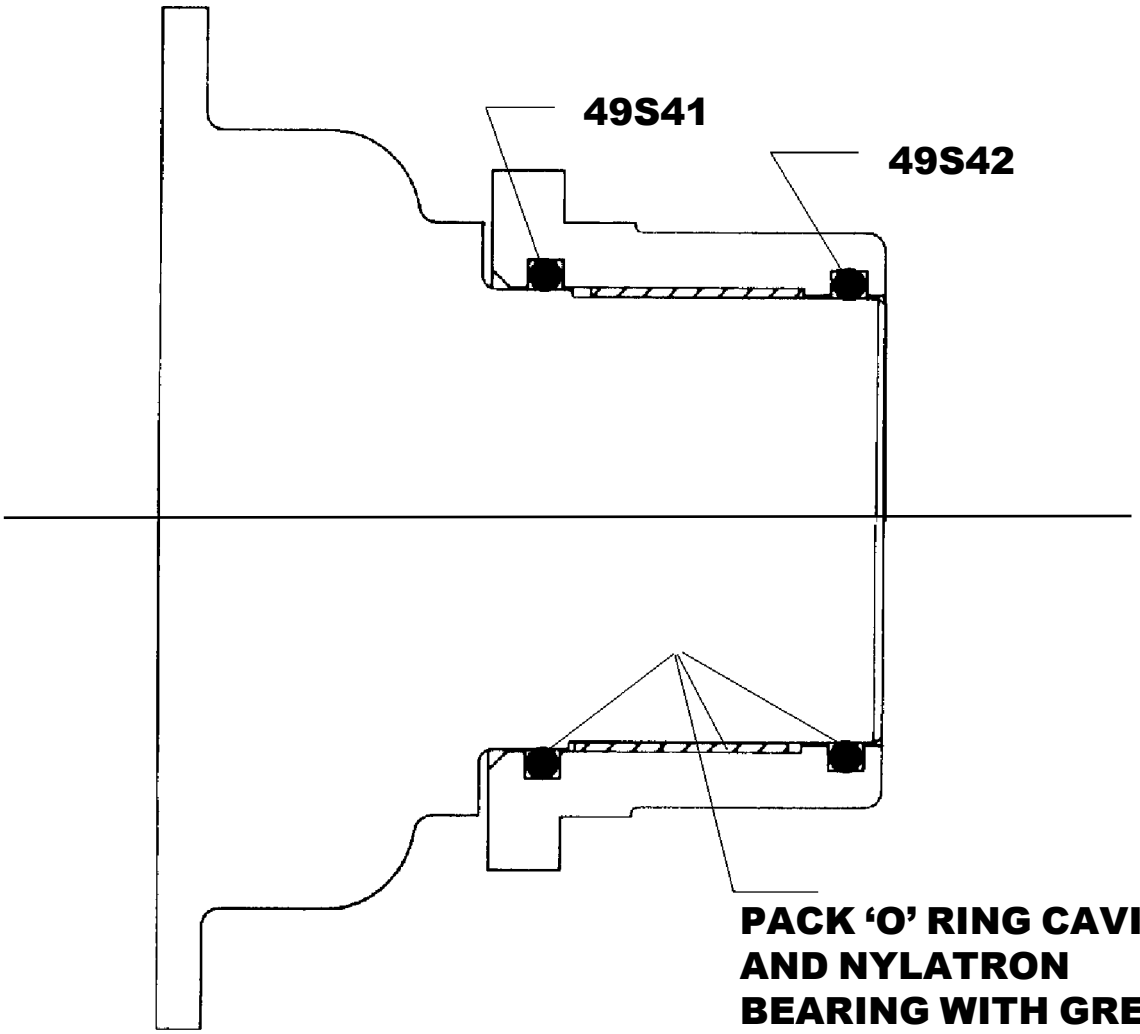
Coat the threads on the countersunk socket headed screws with threadlock and secure the assembly onto the face of the trunnion.

Turn the trunnion bearing so that the machined slot is at 12 o'clock and locate the trunnion bracket, fit the six setscrews and tighten.

Refit the drum assembly, countershaft chain and guard as previously described.

Coat the countershaft inside the engine housing with copperslip, fit the chain wheel and gib head key. Reconnect the engine drive chain or alternatively the ‘V’ belt.

100T 150T 175T 'O' RING LOCATION



Refit the chain guard not forgetting the polythene plug, engine housing lid and top plate on the 175T.

Start the engine and run test checking for unusual noises.

Engine, Lister-Petter LT1/LV1-32 (100T & 150T) Lister-Petter LT1/LV1-10 (175T) PTO Shaft Clockwise Rotation.

"CE" marked machines are fitted with 'anti-kick back starting handles' in order to comply with European legislation. For information on the starting handles refer to the engine operators handbook or engine workshop manual.

For details on engine services or overhauls, changing engine oils, filters and bleeding the fuel system refer to the engine operator's handbook or engine workshop manual.

Note, the Lister-Petter LT1/LV1 engine is set to run at 900/1000 rpm and rotates clockwise at the flywheel end.

Engine Sprockets LT1/LV1

The engine sprockets on LT1/LV1-32 engines are secured to the flywheel via the flywheel retaining screw. On the LT1/LV1-10 the sprocket is keyed onto the engine extension shaft and also held by an M8 grubscrew. Replacement of either sprocket requires removal of the engine.

Remove the engine housing closing plate, engine housing lid, top plate (175T) and chain guards. Disconnect the drive chain. Remove the exhaust pipe, remove the bolts securing the engine mounting channels or blocks to the engine bed. Using suitable lifting equipment remove the engine taking care not to lose or mix up the shims.

On LT1/LV1-32 refer to the Engine Workshop manual and remove the flywheel retaining screw, change the Sprocket and refit the Screw. On LT1/LV1-10 remove the gib head key and pull off the Sprocket. Slide on the new sprocket with the boss towards the engine and retain approximately 17mm from the end of the shaft using the gib head key. Do not at this stage fully fit the key incase the Sprocket needs to be aligned with the countershaft chain wheel when the engine is refitted.
Lift the engine back into the mainframe. Insert the bolts but do not fully tighten and refit the shim pack. Connect the chain. Check the alignment of the sprockets and chain wheel by either: -

On LT1/LV1-32 slide the engine assembly on the slots in the engine bed.

On LT1/LV1-10 moving the sprocket on the shaft before fully inserting the gib head key and tightening the grubscrew.

Check and adjust the chain tension by adding or subtracting engine shims. The tension is correct when the chain deflects approximately 5mm, or ½ a chain pitch about the centre line of the chain. The chain tension should be checked midway between the two sprockets and chain wheel. When the tension is correct fully tighten all the bolts and recheck the chain tension.

Refit the exhaust pipe, retaining clamps and brackets, refit the engine housing lid, chain guards not forgetting the polythene plug, top plate (175T) and closing plate.

Engine, Yanmar L40/L48-ARE SE/L48N Electric Start. PTO Shaft Clockwise Rotation.

There is no difference in build specification between “CE” marked machines intended for use in the European Union or those intended for export elsewhere. No starting handles are fitted to the Yanmar engines, instead a recoil rope starter is fitted as an ‘emergency’ back up starting device in the event that the electrical starting system should fail. Note, starting the engine with the recoil in the absence of the battery or start key may damage the charging system.

For details on engine services or overhauls, changing engine oils, filters and bleeding the fuel system refer to the engine operator’s handbook or engine workshop manual.

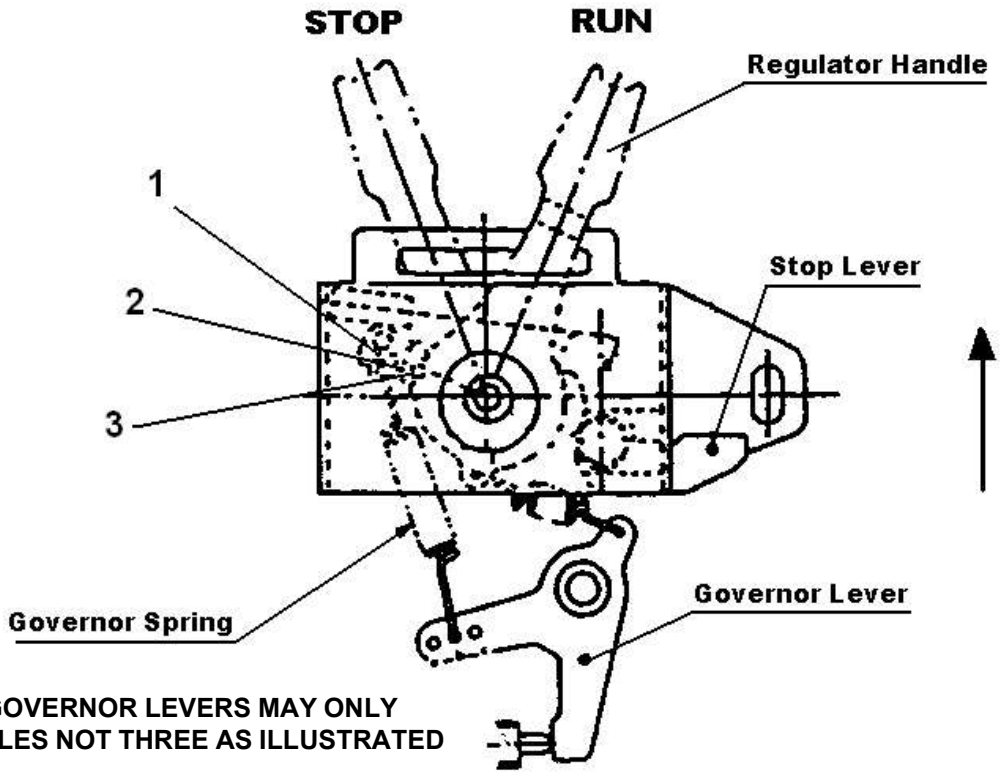
Note: this ‘high speed’ engine is set to run at approximately 2700 rpm and rotates clockwise at the half speed (1350 rpm) PTO shaft extension. The “speed control” on factory fitted engines is modified to reduce the engine speed from the standard Yanmar setting. Replacement engines will require the speed control similarly modifying before installation. Refer to the illustrated Yanmar Type D Throttle Control instruction page in this manual.

To prevent the characteristics of chain drives damaging the Yanmar engine which lacks the heavy flywheel of the slow speed Lister Petter LT1/LV1, the countershaft chain wheel and engine drive chain are replaced by a “V” belt and “V” drive pulleys.

The engine is also mounted differently in that it is bolted to a height adjustable bedplate, similar to the electric 240/110V motor, Petter AC1-05 and Honda engine to allow for belt tensioning.

HANDFED MIXERS YANMAR L48 TYPE D THROTTLE

ENGINE THROTTLE CONTROL USED ON LATER L48 ENGINES FITTED TO 100T, 150T, 175T & 200T HANDFED MIXERS

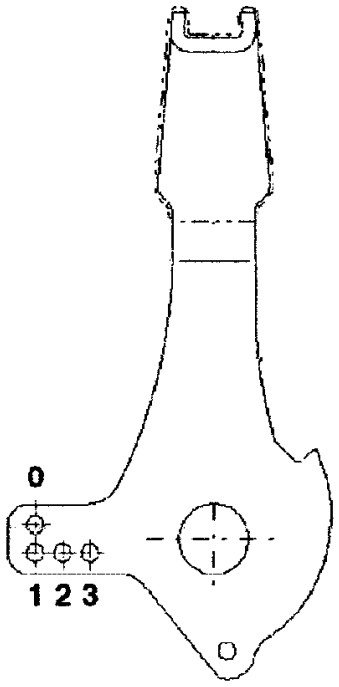


NOTE: SOME GOVERNOR LEVERS MAY ONLY HAVE TWO HOLES NOT THREE AS ILLUSTRATED

TYPE "D" THROTTLE CONTROL

WITH THE REGULATOR HANDLE IN THE "STOP " POSITION REMOVE THE CENTRE SECURING BOLT AND THE LOCKING SETSCREW FROM THE SLOT ADJACENT TO THE STOP LEVER.

CAREFULLY LIFT THE THROTTLE CONTROL ASSEMBLY AWAY FROM THE ENGINE SUFFICIENTLY TO GAIN ACCESS TO THE GOVERNOR SPRING. UNHOOK THE SPRING FROM THE GOVERNOR LEVER AND REMOVE THE ASSEMBLY. SECURE THE ASSEMBLY CAREFULLY IN A VICE AND CUT AWAY THE BOTTOM OF THE SLOT. TAKE CARE NOT TO DAMAGE OR LOSE THE SPRING.



REFIT THE THROTTLE CONTROL ASSEMBLY MOVING THE UPPER HOOK ON THE GOVERNOR SPRING INTO THE No 3 HOLE POSITION IN THE REGULATOR HANDLE. (SEE DRAWING OPPOSITE) LEAVE THE LOWER HOOK IN THE SECOND INNER HOLE IN THE GOVERNOR LEVER.

START THE ENGINE AND USING A SUITABLE REV COUNTER OR THE SECOND HAND OF A WATCH ROTATE THE CONTROL ASSEMBLY ANTICLOCKWISE TO GIVE A DRUM SPEED OF APPROX. 22RPM, (DO NOT EXCEED 23RPM) THE ENGINE SPEED SHOULD NOW BE SET TO APPROX 2650-2700RPM.

TIGHTEN THE TWO RETAINING SETSCREWS

Power to charge the battery is provided by integral flywheel mounted charge windings and engine mounted regulator with key switch control. Circuit protection is provided by a glass fuse mounted in within a plastic receptacle mounted on the RH side of the engine behind the regulator.

Note:- do not continuously crank the Yanmar engine over on the starter motor if it is difficult to start. This can overheat the starter and lead to premature failure in service. Investigate what might be the cause of the difficult starting. The engine should be cranked over intermittently for no more than 15-20 seconds at a time.

Battery Removal/Replacement

The 12-volt battery is secured on the R/H side of the Yanmar engine within the engine housing for security. To remove, unscrew the 'T' handle from the stop control rod and remove the closing plate. (The Stop control rod is omitted on later mixers) The battery is retained by a non-conductive clamping block, cover and threaded studs, the studs pass through the clamp block screw down into and through the engine mounting plate being retained below the plate with two M6 nuts. Remove the nuts, unscrew the studs and remove, lift off the cover and clamp block, disconnect the battery leads and slide out the battery. Reverse the procedure to refit the battery.

Drive Pulley/ "V" Belt Removal/Replacement

The "V" belt drive pulley is keyed onto the engine extension shaft and also held by a small grubscrew through the pulley shank. An M8 setscrew and flat washer is also screwed into the end of the engine extension shaft to retain the pulley. Replacement requires the removal of the engine.

Unscrew the 'T' handle from the stop control rod where it passes through the closing plate. (The Stop control rod is omitted on later mixers). Undo the knot in the recoil rope retaining the handle where it passes through the side of the engine housing, do not release the rope but remove the handle and pass the rope back through into the housing. Tie a loose knot in the rope to prevent it being pulled inside the recoil housing under spring tension. Alternatively the recoil can be removed from the engine and allowed to hang inside the engine housing. To remove the recoil mark its position on the flywheel housing and remove the three small screws which retain the assembly in place.

Remove the engine housing closing plate, engine housing lid, top plate (175T) and chain /belt guards. Disconnect the battery. Remove the 'V' belt and unbolt the electrical panel from the side of the mainframe. Remove the bolts securing the engine to the mounting plate and carefully lift the engine out of the housing.

Turn the engine through 180º' to access the drive pulley and rest the engine back on the mounting plate taking care it does not topple off.

Slacken the grubscrew and remove the setscrew and washer, pull off the pulley, it may be necessary to use a small two legged puller if the pulley has been attached for some time.

Coat the bore of the pulley and the extension shaft with anti-seize compound and slide the pulley onto the shaft fully home up to the shoulder, fit the key, grubscrew, setscrew and washer.
Lift the engine back into the mainframe and secure to the bed. Insert the bolts but do not fully tighten, refit the 'V' belt. Check the belt alignment using a suitable straight edge laid across the rear of both pulleys, if the alignment is incorrect rectify by sliding the engine mounting plate and bracket back and forth on the engine bed, tighten the engine retaining bolts.

Check and adjust the belt tension by means of the long threaded adjusting screws, the V belt needs to be fairly tight to prevent slippage. The correct tension can be achieved by placing a 18kg weight on the engine mounting plate in place of the battery. When correctly adjusted firm pressure is required to deflect the belt, the tension should be checked midway between the two pulleys. When the tension is correct fully tighten all the bolts and recheck the tension.

A belt running too tight will cause starting problems and the increased loadings will increase the rate of wear on the belt causing it to stretch prematurely and may also damage the crankshaft bearings. A belt running too slack will slip under load with the result that the drum will cease to revolve.

Reconnect the battery and electric start panel, ensuring the wiring is secured and will not chafe through.

Refit the recoil assembly or rope handle, engine housing lid, chain/belt guards not forgetting the polythene plug, top plate, closing plate and where fitted the stop control 'T' handle.

Emergency Stop Cable Removal/Replacement L48N & L48V5V

The later L48N and L48V5V engines have an external stop cable fitted, which terminates at the speed control assembly on the L/H side of the crankcase.

The cable passes through the R/H side of the engine housing, secured by a 9/16" thin nut routing across the top of the engine, secured to the belt guard by a panel type cable tie down to the control assembly.

It is necessary to remove the battery to gain access to the cable anchor point on the speed control. Slacken the two M6 locknuts retaining the outer cable to the anchor and release/unclip the inner cable from the control lever. Remove the M6 nuts and flat washers. Remove the 9/16" nut at the opposite end of the cable, cut the cable tie and withdrawn the cable through the engine housing.

Reverse the procedure to replace the cable, ensuring the inner cable is free to move within the outer when correctly installed. Clip the cable back to the belt guard using a suitable cable tie. Refit the battery.

Note: over tightening the 9/16" nut will result in the cable end snapping off.

110/240 Volt 1PH Electric Motor

The motor runs at approximately 1420/1470 rpm and rotates Clockwise.

To accommodate the reduction in rpm at the motor and to prevent the characteristics of chain drives damaging the motor, the countershaft chainwheel and engine drive chain are replaced by a "V" belt and "V" drive pulley.

The motor is also mounted differently to the Lister Petter LT1/LV1 in that it is bolted to a height adjustable bedplate, similar to the AC1-05, Yanmar and Honda engines to allow for belt tensioning.

The contactor enclosure is attached to the chain/belt guard and a key lockable 'emergency' stop button is fitted to the exterior of the engine housing on the left-hand side.

Note, locking off the stop button prevents any un-authorised person from starting the equipment **BUT** does not isolate the electricity supply. Before carrying out any work on the motor, contactor or enclosure isolate the supply at the main distribution board and attach a suitable 'locked out' tag to prevent the supply being inadvertently re-connected.
Refer to the wiring diagram for details of the connections between the motor, contactor and emergency stop button.

Belt Drive Pulley/"V" Belt Removal/Replacement

The drive pulley is mounted onto the motor extension shaft, and is secured with a feather key and grubscrew.

Unlike the diesel and petrol driven versions it is possible to remove the pulley without removing the motor. To remove the pulley, first disconnect the electrical supply and isolate the mixer. Remove the engine housing lid, closing and top

plates, upper and lower belt guard and “V” belt. When removing the upper belt guard take care as the contactor is attached. Mark the position of the pulley on the shaft. Turn the motor shaft until the grubscrew is visible, slacken the screw and remove the pulley. Reverse the procedure to refit coating the bore of the pulley with anti-seize compound prior to assembly.
Fit the “V” belt and confirm the alignment of the pulleys. Adjust the height of the motor to tension the “V” belt. The tension is correct when the belt deflects 8-12mm check midway between the pulleys.

A belt running too tight may cause starting problems and the increased loadings will increase the rate of wear on the belt causing it to stretch prematurely and may also result in damage to the motor shaft bearings. A belt running too slack will slip under load with the result that the drum will cease to revolve.

Refit the engine housing lid, closing and top plates and upper and lower belt guards, not forgetting the plastic plug, take care not to damage the contactor when refitting the upper belt guard. Reconnect the electrical supply.

Engine, Lister-Petter AC1-05 Electric Start, PTO Shaft Clockwise Rotation

A small number of 150T mixers, mainly two wheel fast tow are fitted with the electric starting Lister-Petter AC1-05 engine. As with the Yanmar L40/L48 and Honda engine there is no difference in build specification between “CE” marked machines intended for use in the European Union or those intended for export elsewhere. Unlike the Yanmar L40/L48 no back up starting system is provided in the event that the electrical starting system fails, the AC1-05 powered mixers where intended to be purely electric start.

For details on engine services or overhauls, changing engine oils, filters and bleeding the fuel system refer to the engine operator’s handbook or engine workshop manual.

Note: this ‘high speed’ engine is set to run at 1500 rpm and rotates clockwise at the engine flywheel PTO.

To provide the reduction in speed necessary to drive the drum at a nominal 22 rpm the countershaft chain wheel and engine drive chain are replaced by a “V” belt and “V” drive pulleys.

The engine is also mounted on a height adjustable bedplate, similar to the electric 110/240V motor, Yanmar L40/L48 and Honda GX160K1 to allow for belt tensioning.

Power to charge the battery is provided by integral flywheel mounted charge windings and engine mounted regulator with key switch control.

Battery Removal/Replacement

The 12-volt battery is secured below the engine bed between the rear wheels enclosed by a removable cover to provide some security.
A simple clamp bar, two retaining rods and wing nuts retain the battery.
Remove the setscrews and nuts holding the cover, release the wing nuts and remove the rods and clamp. Disconnect the battery leads and lift out the battery.
Reverse the procedure to refit the battery.

Drive Pulley/ " V" Belt Removal/Replacement

The "V" belt drive pulley is combined with a short extension shaft and bolted directly to the face of the engine flywheel, when selecting retaining bolts ensure only the correct length of bolt is used to prevent the bolts passing straight through the flywheel and damaging the charge windings. Replacement of the "V" belt pulley/shaft requires the removal of the engine.

Remove the stop control rod where it passes through the closing plate.

Remove the engine housing closing plate, engine housing lid, chain /belt guards and exhaust pipe. Remove the 'V' belt and unbolt the electrical panel from the side of the mainframe, disconnect the battery. Remove the bolts securing the engine to the mounting plate and carefully lift the engine out of the housing. Turn the engine through 180º to access the drive pulley and rest the engine back on the mounting plate taking care it does not topple off.

Remove the bolts and washers securing the pulley to the flywheel, as the pulley sits in a small recess within the flywheel it may be necessary to tap the pulley with a soft faced hammer in order to remove it, take care not to damage the pulley in doing so.

Reverse the procedure to refit taking care when selecting any replacement bolts to avoid damaging the charge windings behind the flywheel.

Lift the engine back into the mainframe and secure to the bed. Insert the bolts but do not fully tighten, refit the "V" belt check the belt alignment, if the alignment is incorrect rectify by sliding the engine mounting plate and bracket back and forth on the engine bed, tighten the engine retaining bolts.

Check and adjust the belt tension by means of the long threaded adjusting screws the tension is correct when the belt deflects approximately 8-12mm about

the centre line of the belt. The tension should be checked midway between the two pulleys. When the tension is correct fully tighten all the bolts and recheck the tension.

A belt running too tight will cause starting problems and the increased loadings will increase the rate of wear on the belt causing it to stretch prematurely and may also damage the crankshaft bearings. A belt running too slack will slip under load with the result that the drum will cease to revolve.

Reconnect the battery and electric start panel, ensuring the wiring is secured and will not chafe through.

Refit the engine housing lid, chain/belt guards not forgetting the polythene plug, closing plate and stop control rod.

Engine, Honda Petrol GX160K1 LX4 Recoil Start. PTO Shaft Anti-clockwise Rotation.

There is no difference in build specification between “CE” marked machines intended for use in the European Union or those intended for export elsewhere. No starting handles are fitted to the Honda engines, instead a recoil rope starter is fitted. The engine housing of Honda powered mixers differs in that the housing incorporates large air inlet/outlets to provide the necessary cooling air and it is important that in service these are not allowed to become blocked.

For details on engine services or overhauls, changing engine oils and filters etc refer to the engine operator’s handbook or engine workshop manual.

Note: this ‘high speed’ engine is set to run at 2800 rpm and rotates anti-clockwise at the half speed (1400rpm) 2:1 Reduction PTO shaft extension.

To prevent the characteristics of chain drives damaging the Honda engine which lacks the heavy flywheel of the slow speed Lister-Petter LT1/LV1, the countershaft chain wheel and engine drive chain are replaced by a “V” belt and “V” drive pulleys.

The engine is also mounted differently in that it is bolted to a height adjustable bedplate, similar to the electric 240/110V motor, Petter AC1-05 and Yanmar engines to allow for belt tensioning.

Drive Pulley/ “V” Belt Removal/Replacement

The “V” belt drive pulley is keyed onto the engine extension shaft and also held by a small grubscrew through the pulley shank. An M8 setscrew, flat washer and

spacer are also fitted to the end of the engine extension shaft to retain the pulley. Replacement of the pulley requires the removal of the engine.

Undo the knot in the recoil rope retaining the handle where it passes through the side of the engine housing, do not release the rope but remove the handle and pass the rope back through into the housing. Tie a loose knot in the rope to prevent it being pulled inside the recoil housing under spring tension. Alternatively the recoil can be removed from the engine and allowed to hang inside the engine housing. To remove the recoil mark its position on the flywheel housing and remove the small screws which retain the assembly in place.

Remove the engine housing closing plate, engine housing lid, top plate (175T) and chain /belt guards and 'V' belt. Disconnect the exhaust pipe, remove the bolts securing the engine to the mounting plate and carefully lift the engine out of the housing. Turn the engine through 180º' to access the drive pulley and rest the engine back on the mounting plate taking care it does not topple off.

Slacken the grubscrew and remove the setscrew, washer and spacer, pull off the pulley, it may be necessary to use a small two legged puller if the pulley has been attached for some time.

Coat the bore of the pulley and the extension shaft with anti-seize compound and slide the pulley onto the shaft fully home up to the shoulder, fit the key, grubscrew, setscrew, washer and spacer.
Lift the engine back into the mainframe and secure to the bed. Insert the bolts but do not fully tighten, refit the 'V' belt check the belt alignment, if the alignment is incorrect rectify by sliding the engine mounting plate and bracket back and forth on the engine bed, tighten the engine retaining bolts.

Check and adjust the belt tension by means of the long threaded adjusting screws the tension is correct when the belt deflects approximately 8-12mm about the centre line of the belt. The tension should be checked midway between the two pulleys. When the tension is correct fully tighten all the bolts and recheck the tension.

A belt running too tight will cause starting problems and the increased loadings will increase the rate of wear on the belt causing it to stretch prematurely and may also damage the reduction gear bearings. A belt running too slack will slip under load with the result that the drum will cease to revolve.

Refit the recoil assembly or rope handle, engine housing lid, chain/belt guards not forgetting the polythene plug, top plate and closing plate.

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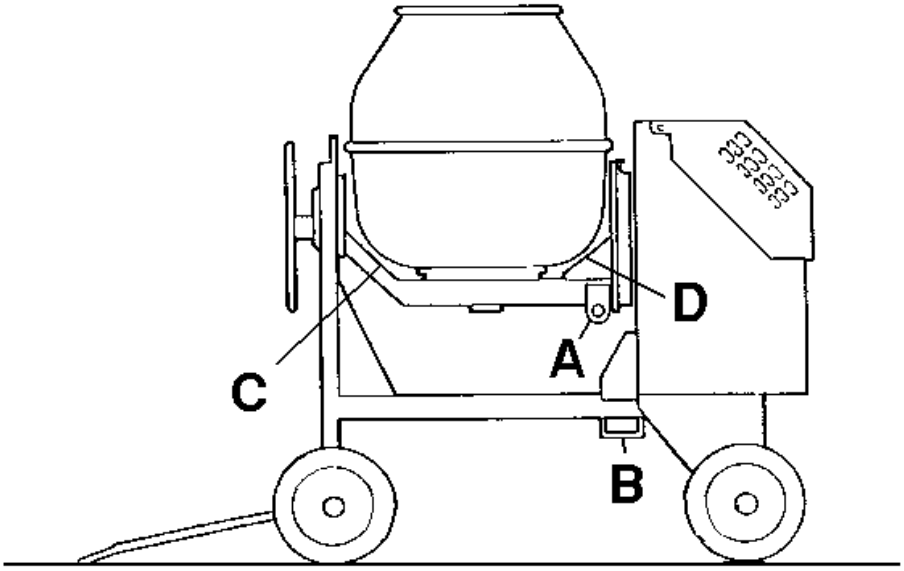
Lashing Down & Lifting Points



Lashing Down & Lifting Points

General

Care should be taken when lifting or transporting the Mixer to ensure that lifting or retaining Straps are in good condition and the following procedures must be followed when lifting or lashing down to avoid causing unnecessary damage.

Its is recommended that chains or webbing slings are used to lift the mixer via the lifting point on the trunnion and that ratchet type webbing straps are used to lash the mixer down.

Lifting the Mixer (Crane)

Turn the drum and trunnion through 180' and using the locking pin in the tilting handwheel lock the assembly in this position with the lifting eye **'A'** uppermost. Attach suitable lifting equipment to the lifting eye and slowly take the weight, do not 'snatch' the mixer otherwise damage may be caused to the lifting point, trunnion or lifting equipment. To prevent the drawbar swinging freely as the mixer clears the ground rest the drawbars 'T' handle on the mainframe below the upturned drum. If the mixer is on site and the wheels are immersed in dried concrete or mortar the wheels must be freed before attempts are made to lift the mixer. Be aware that the mixer will tend to swing as it clears the ground.

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Lifting the Mixer (Forklift/Telehandler)

Using the tilting handwheel locking plunger, lock the drum upright as illustrated overleaf. If the wheels are immersed in dried concrete or mortar, free them before attempting to lift the mixer.

Spread the fork tines and carefully position the forks below the mainframe so that one tine enters and passes through the bracket **'B'** below the mainframe, the other fork should be spread as wide as possible. Position the carriage as close as possible to the mixer and rest the mixers drawbar on one of the fork tines to prevent it swinging freely.

Slowly tilt the carriage back slightly to prevent the mixer rocking forward and raise the mixer just clear of the ground. Do not raise the mixer unnecessarily high, keep the height to the minimum required to clear any obstructions without unduly obstructing your forward vision. When travelling keep your speed to the minimum and when loading vehicles do not raise the mixer to the height of the bed until the mixer is close to the vehicle. Similarly when unloading vehicles lower the mixer just clear of the ground as soon as it clears the side of the vehicle.

Lashing Down

General

It is recommended that unless the mixer is pulled up against a headboard or some form of substantial wheel chocks that two ratchet type webbing straps are used to retain the mixer, one pulling to the rear and one pulling to the front. The drum should be locked in the upright position shown overleaf to keep the centre of gravity as low as possible.

Position the mixer on the vehicle bed and chock the rear wheels to prevent it rolling until lashed down. Turn the front axle so that the drawbar is below the mixer and not forming an obstruction on the vehicle bed. Lock the drum in the upright position. Pass one of the webbing straps between the drum and trunnion at point **'C'** and secure the strap down to retaining hooks on the vehicle bed in front of the mixer. Pass the second strap between the drum and trunnion at point **'D'** and secure the strap down to retaining hooks on the vehicle bed to the rear of the mixer. Tighten the straps by means of the ratchets until the mixer is securely held.

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SECTION 3

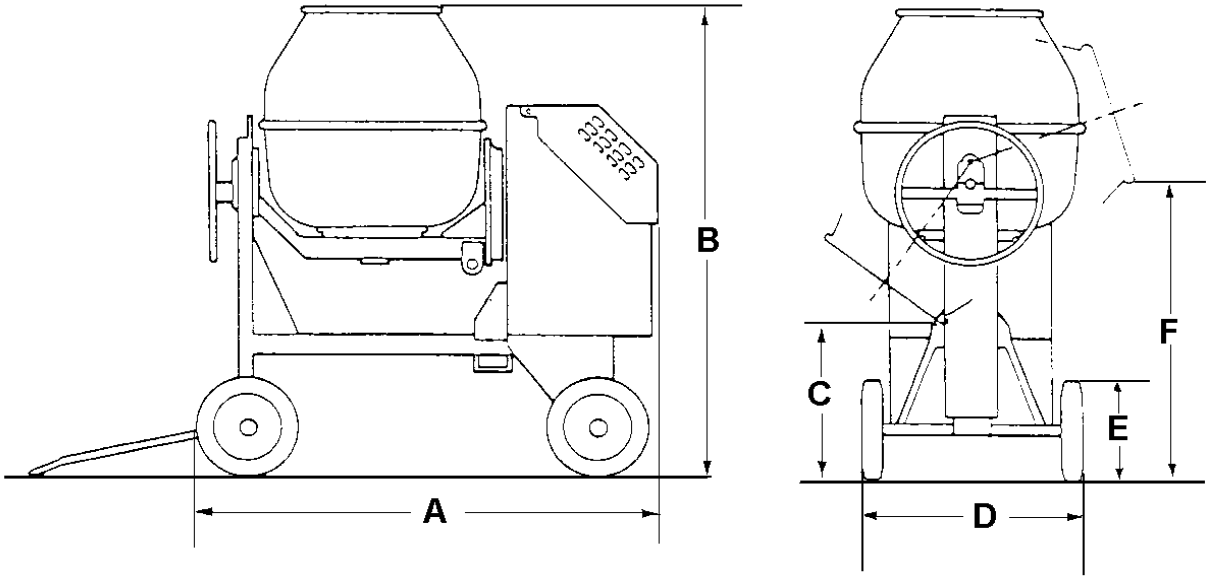
GENERAL ARRANGEMENT DIMENSIONS

DIMENSIONS & GENERAL ARRANGEMENT

FOUR WHEEL MODELS

(ALL DIMENSIONS NOMINAL)

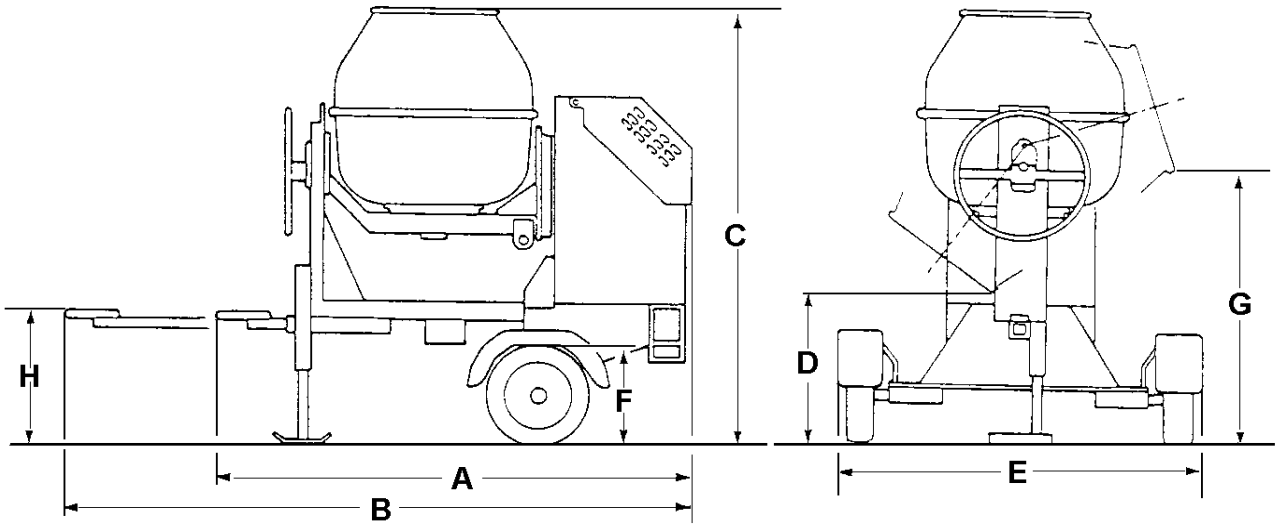
	100T	150T	175T
A	1515	1650	1680
B	1560	1730	1780
C	520	555	520
D	800	800	800
E	355	355	355
F	1000	1100	1110
Weight	375kg	425kg	460kg



TWO WHEEL MODELS

(ALL DIMENSIONS NOMINAL)

	100T	150T	175T
A	1720	1910	2060
B	2390	2490	2640
C	1630	1770	1840
D	600	610	590
E	1240	1320	1350
F	4.80/4.00-8	4.80/4.00-8	145R10
G	1060	1140	1180
H	430	480	450
Weight	395kg	482kg	500kg



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SECTION 4
SERVICE SCHEDULES

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Service Schedule

Also refer to the Parts & Operators Handbook

The engine will require additional services or adjustments in addition to those listed below. (See the appropriate Engine Operators Handbook or Workshop Manual)

Daily: (8) Hours

Before Work

Lubricate all grease points.

Check fuel and lubricating oil levels.

Check for oil and fuel leaks.

Check/clean/replace air filter element

Check the wheel nuts on Two Wheel Fast Tow mixers

After Work

Top up fuel tank.

Clean out drum and hopper.

Wash down the mixer.

Weekly: (40 Hours)

The above and the following:

Drive Chain/Belt	Check tension, adjust if necessary
Controls and Pivots	Lubricate all levers, rods, pivots and pins with oil
Wheel Hubs-Two Wheel Tow	Charge grease point on both hubs until grease is visible in breather hole in dust cap.

Battery (if fitted)	Check terminals, clean if necessary, top up
Drum Drive	Inspect and lubricate the chain and teeth of the drum bevel gear and pinion.

Monthly: (100 Hours)

The above and the following:

	Check tightness of nuts, bolts etc.

Every 3 Months: (300 Hours Minimum)

The above and the following:

Engine	Change air filter element
	Change lubrication oil and filter
	Change fuel filter
	Check valve clearances

(Also see relevant Engine Handbook/Workshop Manual as oil changes periods may differ and oils may need to be changed more frequently.)

Every 6 Months: (600 Hours)

The above and the following:

Engine	Check the fuel injection timing (Yanmar)
	Clean fuel injectors

Every 12 Months: (1200 Hours or earlier if conditions dictate)

The above and the following:

Engine	Decarbonise if necessary
	Check Fuel Injection pump and Injectors

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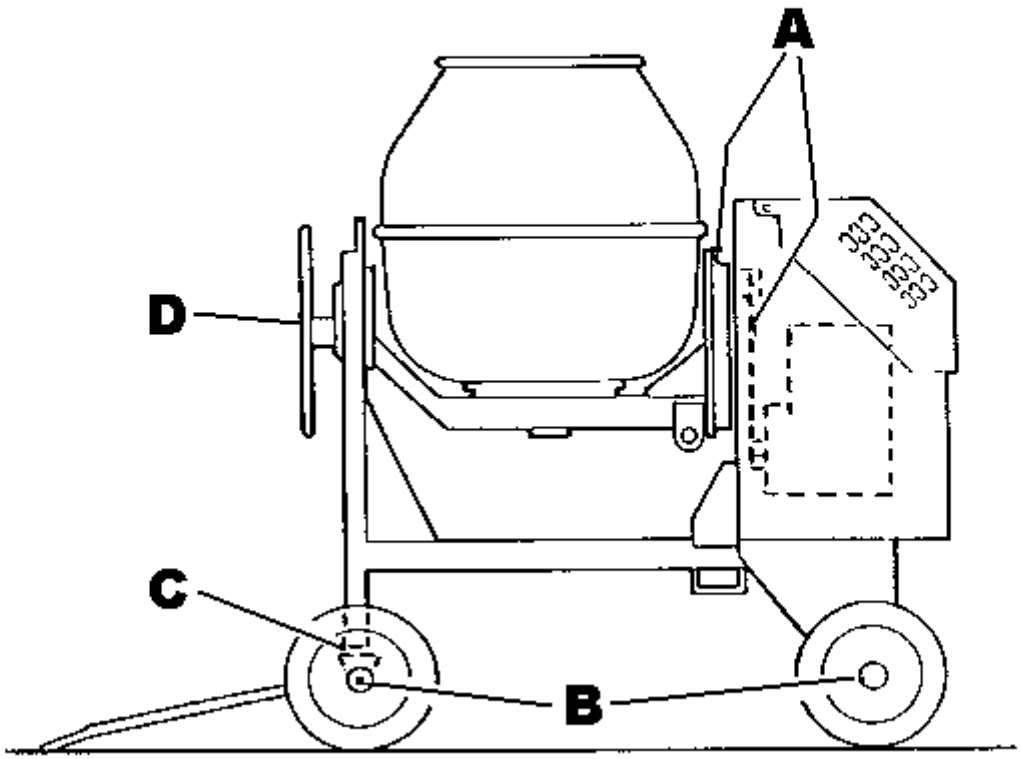
SECTION 5

LUBRICATION DIAGRAM

LUBRICATION POINTS



Lub Point	Type	Use	No of Points
A	Drive Chains	Oil	2
B	Wheels	Oil	4
B1	Wheel Hubs (Pneu)	Grease	2
C	Steering Joint	Oil	1
D	Tilt Wheel	Oil	2

LUBRICANTS

MIXERS ARE FACTORY FILLED WITH THE FOLLOWING OILS & GREASES OR EQUIVILENT GRADES

Engine	Rubia B10W/30 Oil
Electric Motor Bearings	Multis EP2 Grease
Drive Chain	Rubia B20W/30 Oil
Bevel Gears	Open Gear Lubricant
Drum Shaft	Anti-seize Compound
Grease Nipples	Multis EP2 Grease
Linkages & Hinges	Rubia B20W/30 Oil
Pivots	Rubia B20W/30 Oil
Bearings (on assembly)	Multis EP2 Grease

Refer to your local oil supplier for a list of the locally available equivalent grades

MIXER DRUM SEALANT

Silicone Sealant	Winget Part No : V2000772

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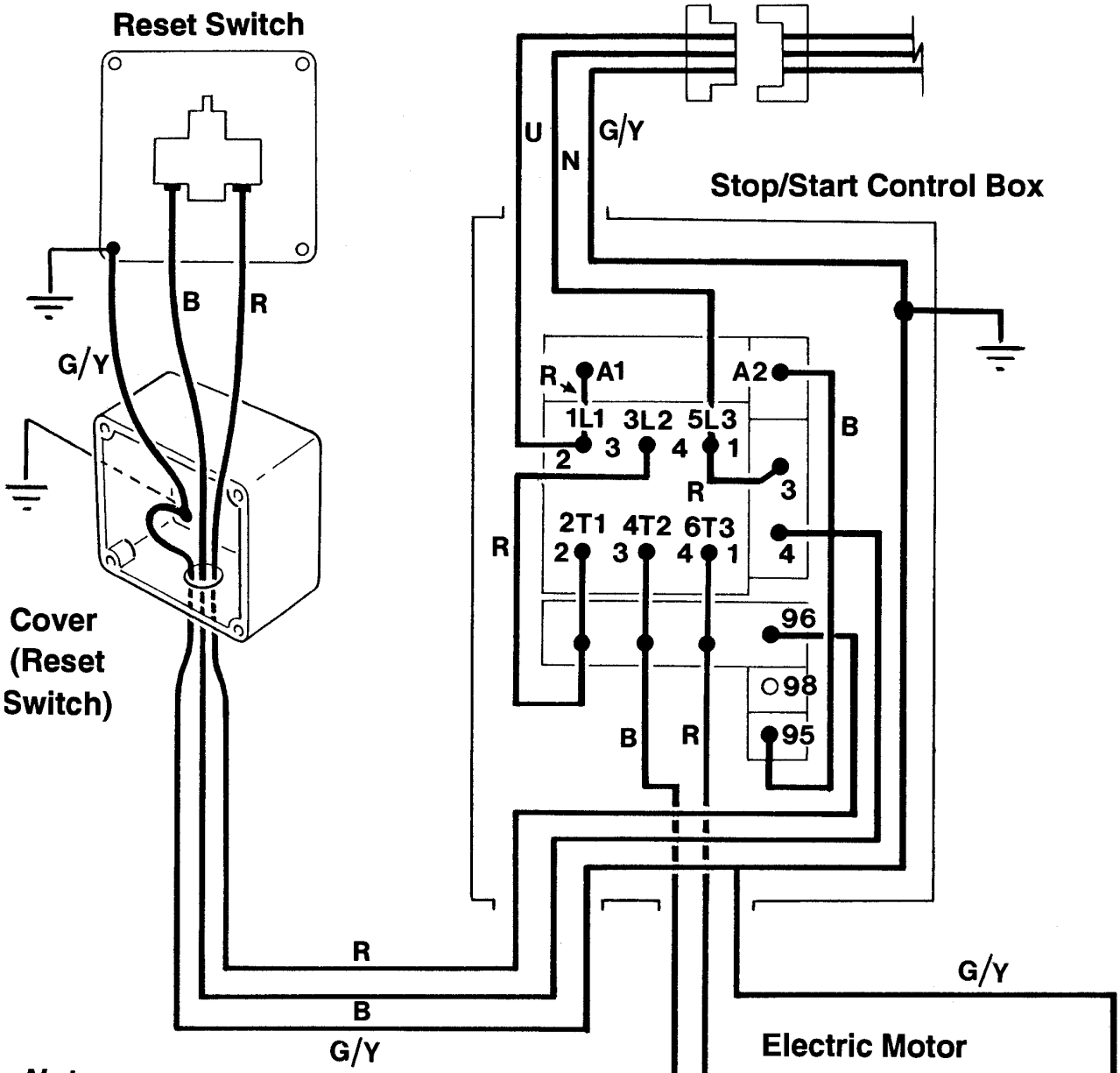
SECTION 6
WIRING DIAGRAMS

TECHNICAL INFORMATION

ELECTRICALLY DRIVEN MIXERS WIRING CIRCUIT

Electrical connections must only be made by a suitably qualified electrician.



Notes:

Connections within electric motor

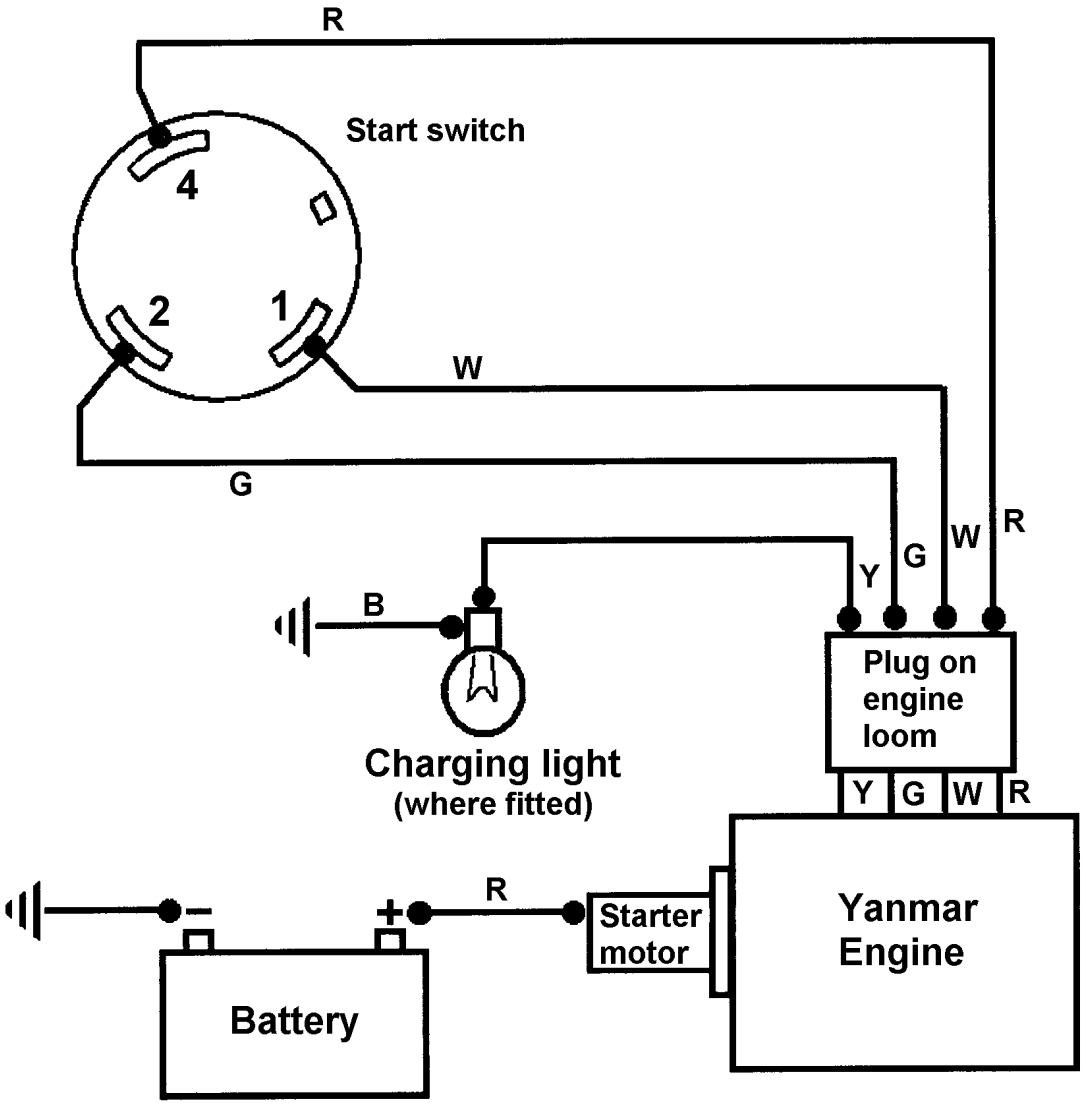
Link: U2 - Z2
Red wire: U2
Link: Z1 - O2
Brown wire: O2
Grey wire: Z1
Yellow/Black wire: O1
Yellow/White/Blue wire: U1

Stop/Start Control Box

Remove link from between 4 and 96

YANMAR L40/48 KEY START WIRING CIRCUIT

In adition to the circuit shown below, the engine is fitted with its own loom. (see Yanmar service literature)



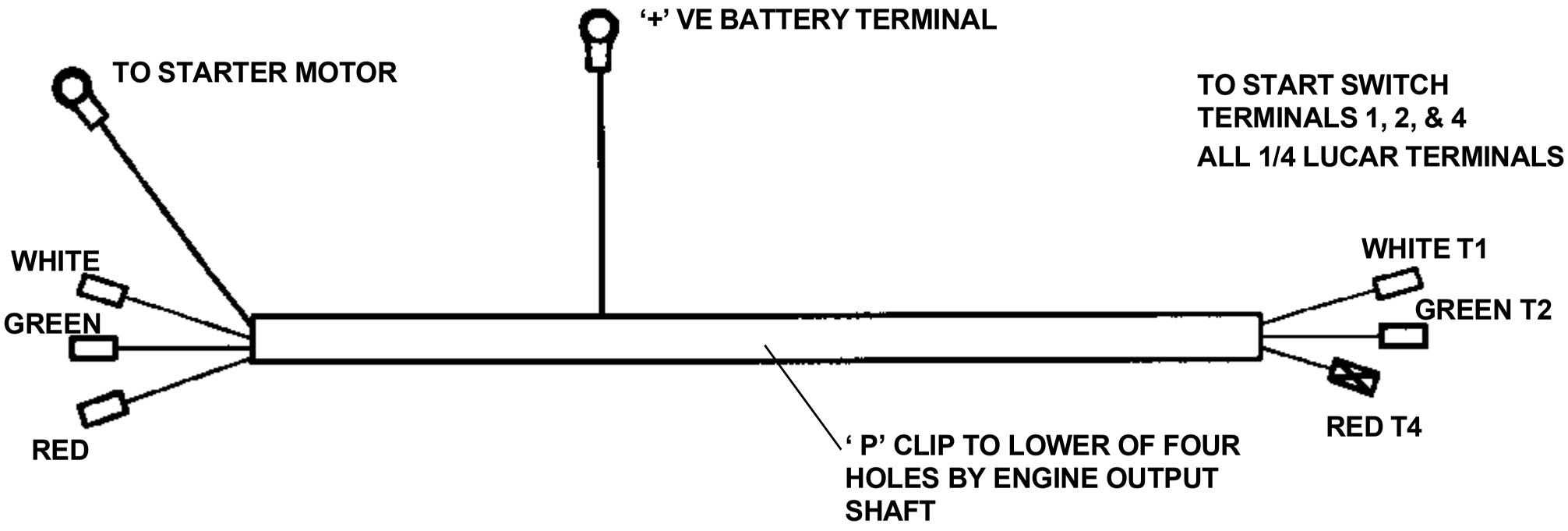
Wire colours

R Red
B Black
G Green
W White
Y Yellow

NOTE: Wire identification

The red wire to the battery is much thicker than the red wire to the start switch.

YANMAR L40 ARE-SE WIRING DIAGRAM



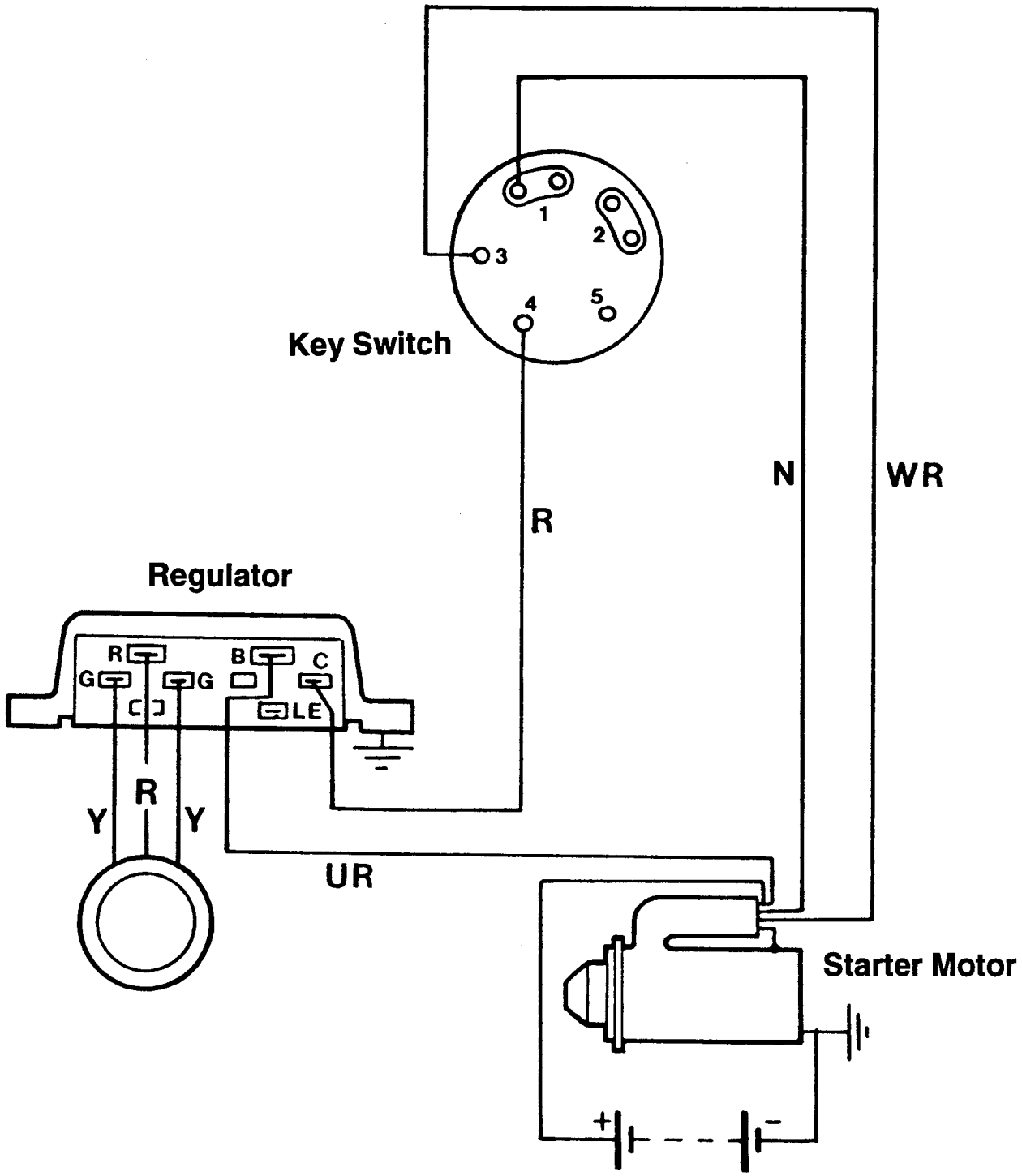
RED	GREEN
YELLOW	WHITE

FOUR WAY PLUG TO REAR OF ENGINE BELOW IN-LINE FUSE ADJACENT TO REGULATOR

PART NUMBER 513362200

TECHNICAL INFORMATION

LISTER-PETTER AC1-05 KEY START WIRING CIRCUIT



WORKSHOP MANUAL

100T, 150T & 175T

SECTION 7

NOISE LEVELS

SECTION 7

NOISE LEVELS

Noise Tests were carried out in accordance with EC Directive 79/113 on a 4 metre Hemisphere with the drum empty and rotating and in accordance with EC Directive 2000/14/EC again on a 4 metre hemisphere with the drum loaded and rotating.

Operators Ear Tests were carried out at a distance 1 metre from the Drum and Handwheel at a height of 1 metre.

Lister Petter LT1-32/LV1-32 Standard Build (79/113)

4 metre	98Lwa
Operators Ear	80Lpa

Lister Petter LT1-10/LV1-10 Standard Build (79/113)

4 metre	98Lwa
Operators Ear	80Lpa

Lister Petter LT1-32/LV1-32 Standard Build (2000/14EC)

4 metre	101Lwa
Operators Ear	80Lpa

Lister Petter LT1-10/LV1-10 Standard Build (2000/14/EC)

4 metre	101Lwa
Operators Ear	80Lpa

Yanmar L40 ARE-SE Standard Build (2000/14/EC)

4 metre	101Lwa
Operators Ear	80Lpa

Honda GX160K1 Standard Build (2000/14/EC)

4 metre	101Lwa
Operators Ear	85Lpa

110/240 Volt Electric Motor (79/113 & 2000/14/EC)

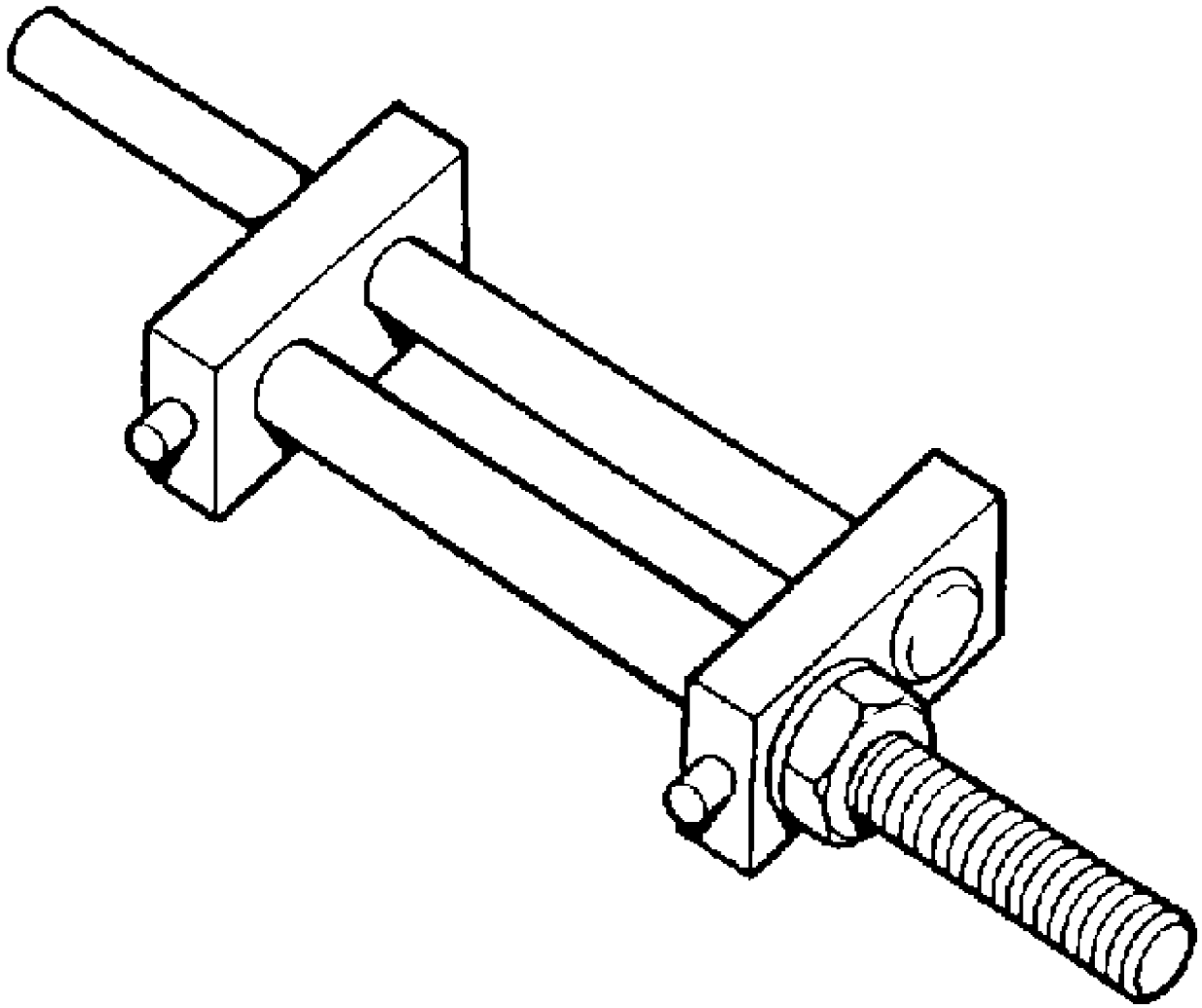
4 metre	98Lwa
Operators Ear	80Lpa

WORKSHOP MANUAL

100T, 150T & 175T

SECTION 8
SPECIAL TOOLS

100T 150T 175T DRUM CLIP TOOL



513204000 DRUM CLIP TOOL

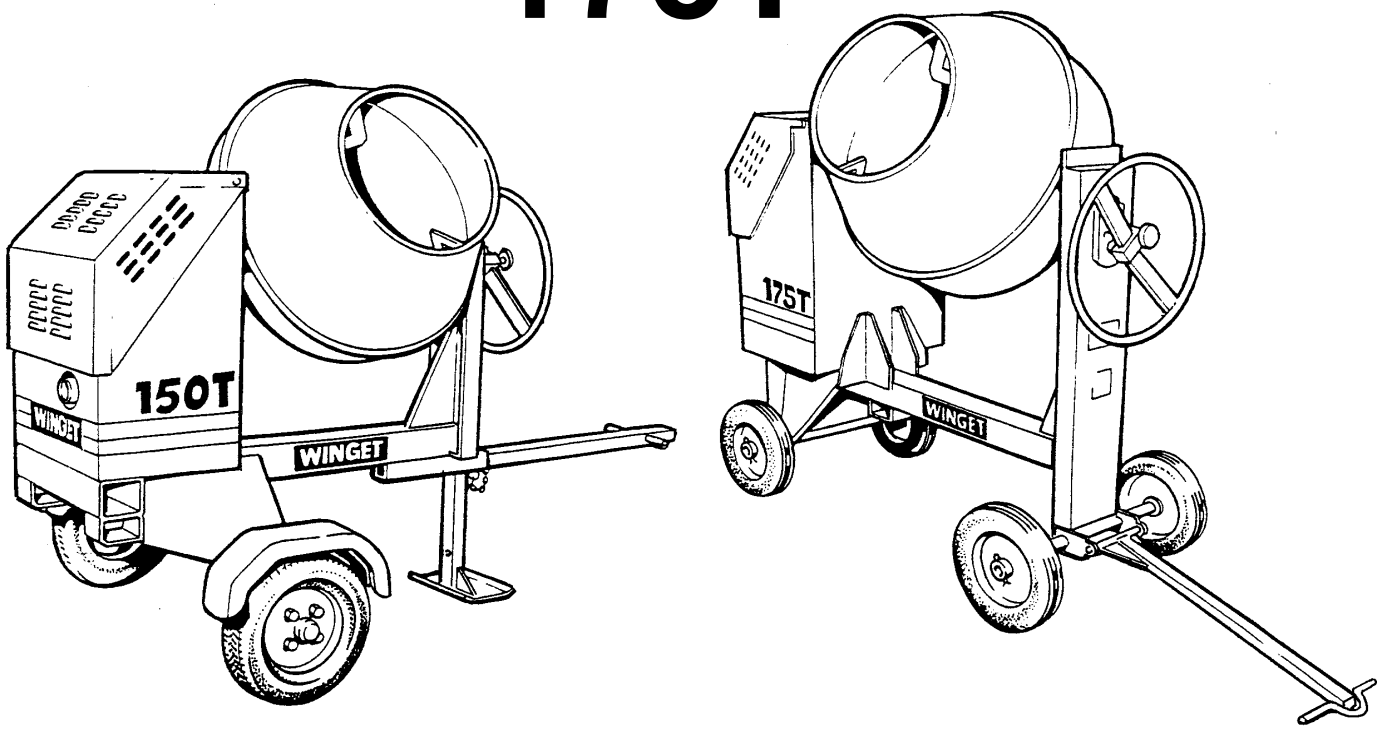
WORKSHOP MANUAL

100T, 150T & 175T

SECTION 9

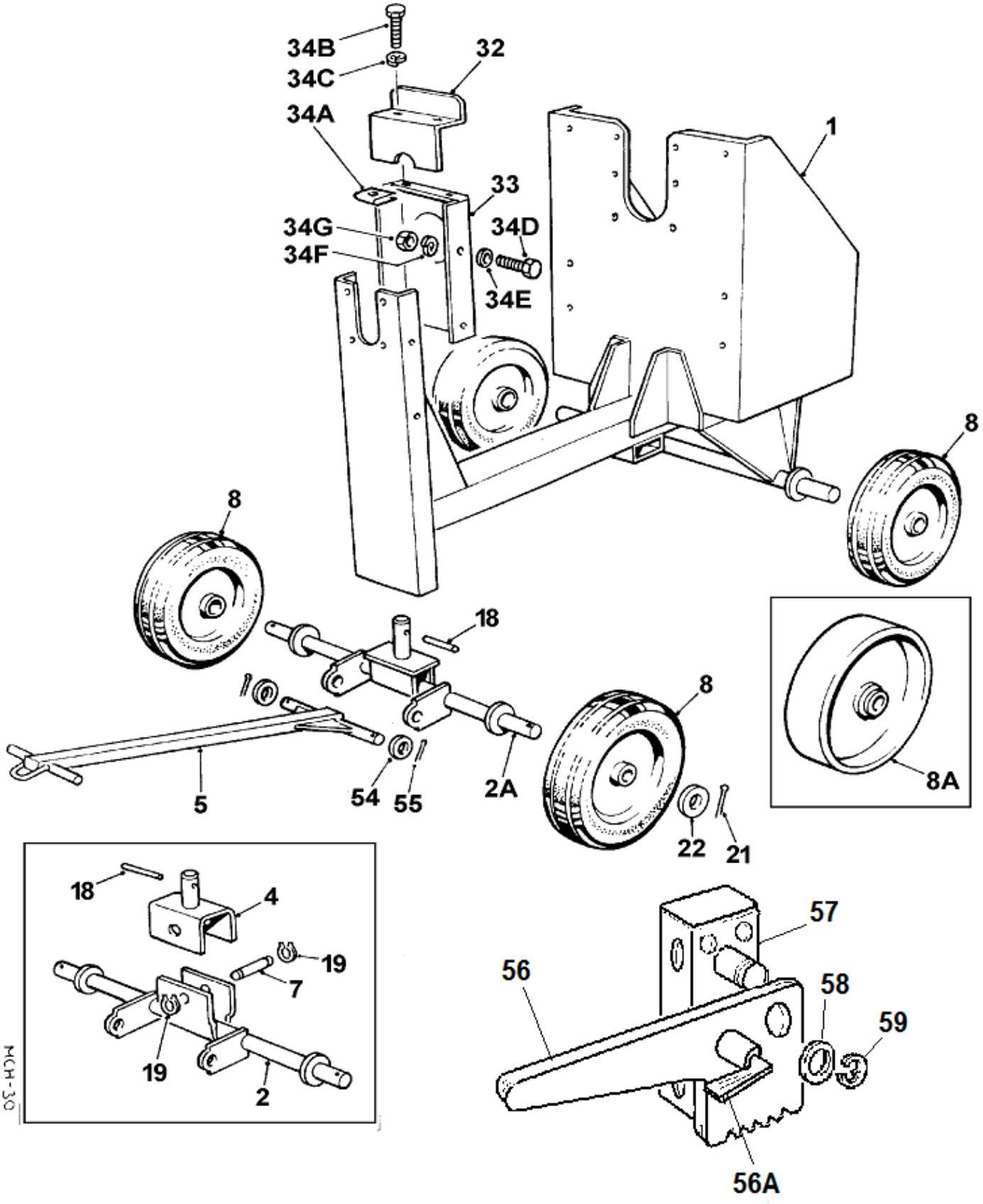
PARTS LISTING

Mixers
100T
150T
175T



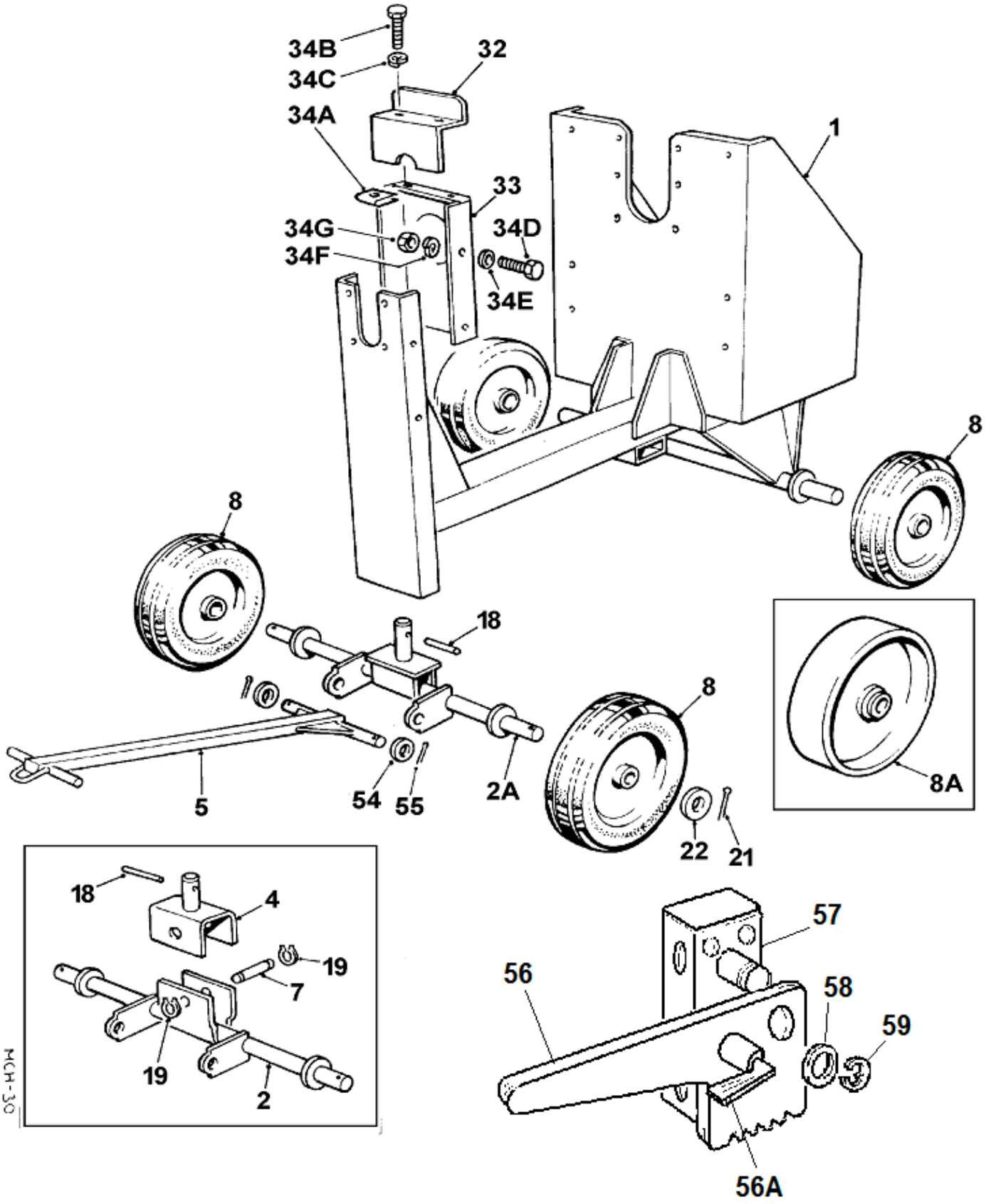
Mixers built FROM February 1988

100T & 150T Mixers *from February 1988*

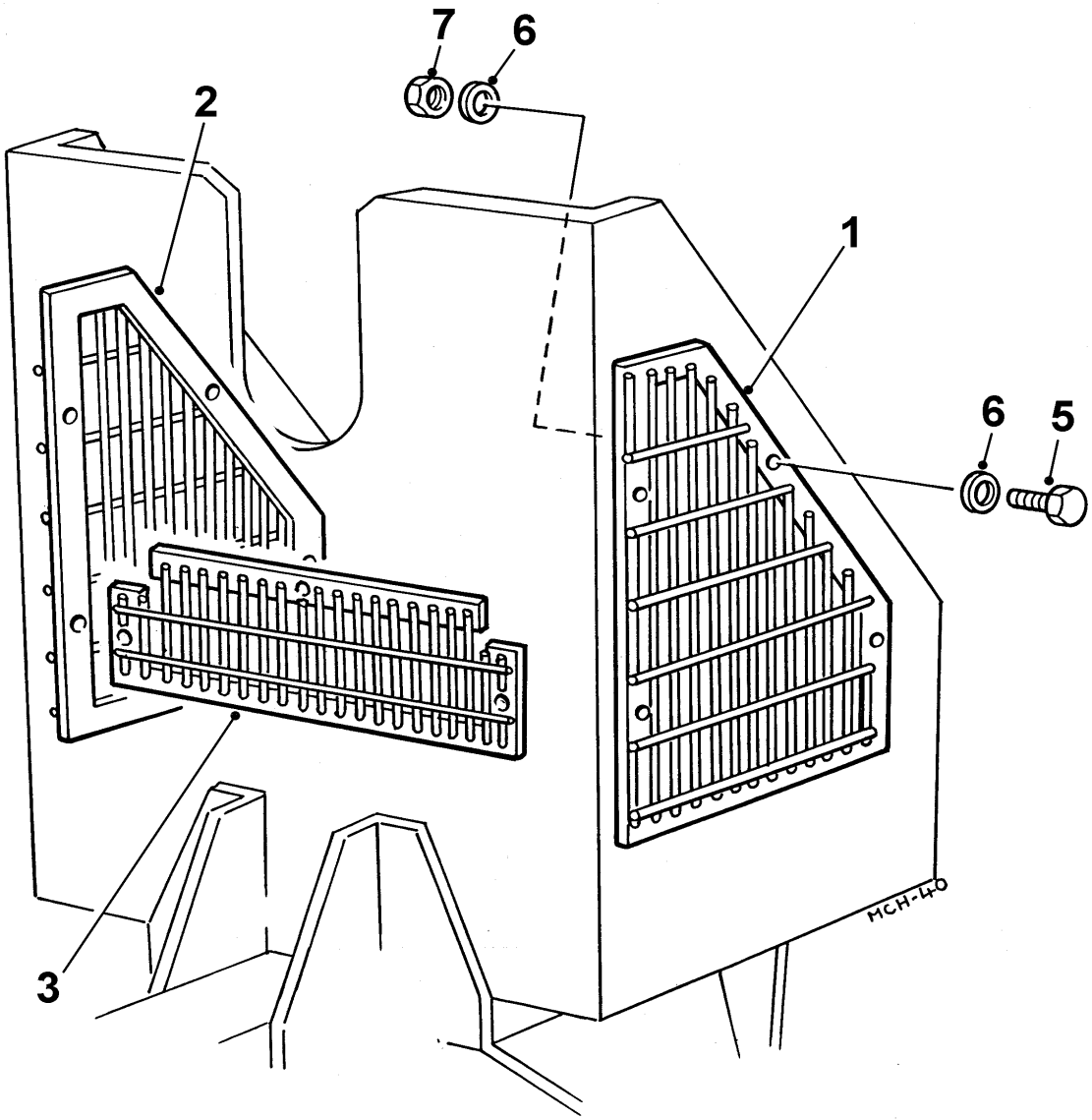


Item	Part no	Serial no	Description	Qty
1	513340900		MAINFRAME, **100T** *(Not Honda eng.)*	1
1	513363900		MAINFRAME, **100T** *(With Honda eng.)*	1
1	513341000		MAINFRAME, **150T**	1
2	513341100	/ 05641	AXLE, front,**100T**	1
2A	513358100	05642 /	AXLE, front,**100T**	1
2	513341100	/ 01725	AXLE, front**,150T**	1
2A	513358100	01726 /	AXLE, front,**150T**	1
4	513154500	/ 05641	SWIVEL, front axle, **100T**	1
4	513154500	/ 01725	SWIVEL, front axle, **150T**	1
5	513341200		TOWBAR	1
7	513155000	/ 05641	PIN, pivot, front axle, **100T**	1
7	513155000	/ 01725	PIN, pivot, front axle, **150T**	1
8	475106000	**100T** /06312	WHEEL, cushion tyre, 355mm (14") dia	4
8	475106000	**150T** /02311	WHEEL, cushion tyre, 355mm (14") dia	4
8	475115000	06313/ **100T**	WHEEL, cushion tyre, 405mm dia	4
8	475115000	02312/ **150T**	WHEEL, cushion tyre, 405mm dia	4
			Alternative wheel	
8A	513198500		WHEEL, steel, 400x100mm (16" x 4") (Obsolete, no longer available)	4
18	353830650		PIN, spirol	1
19	132412010	/ 05641	CIRCLIP, **100T**	2
19	132412010	/ 01725	CIRCLIP, **150T**	2
20	10S09		WASHER, flat	4
21	44S05G		PIN, split	4
-	513198400		GUARD, tilt wheel, assembly	1
32	513198402		GUARD, upper	1
33	513198401		GUARD, lower	1
34A	332719000		NUT, captive	2
34B	11S02B		SCREW, set	2
34C	17S03		WASHER, spring	2
34D	66S03CC		SCREW, set	4
34E	10S03		WASHER, flat	4
34F	41S05		WASHER, spring	4
34G	104S03		Nut	4
54	10S17		WASHER, flat	2
55	44S03D		PIN, split	2

100T & 150T Mixers *from February 1988*



Item	Part no	Serial no	Description	Qty
		11195/ 05637/	**100T** **150T**	
56	513370700		LEVER, handbrake, assembly	1
56A	513370800		CATCH, sprung	1
57	513370600		PIVOT, bracket	1
57A	11S04C		SCREW, set, not illustrated	2
57B	17S05		WASHER, spring, not illustrated	2
57C	267S06		WASHER, flat, not illustrated	2
58	10S18		WASHER, flat	1
59	132412010		CIRCLIP	1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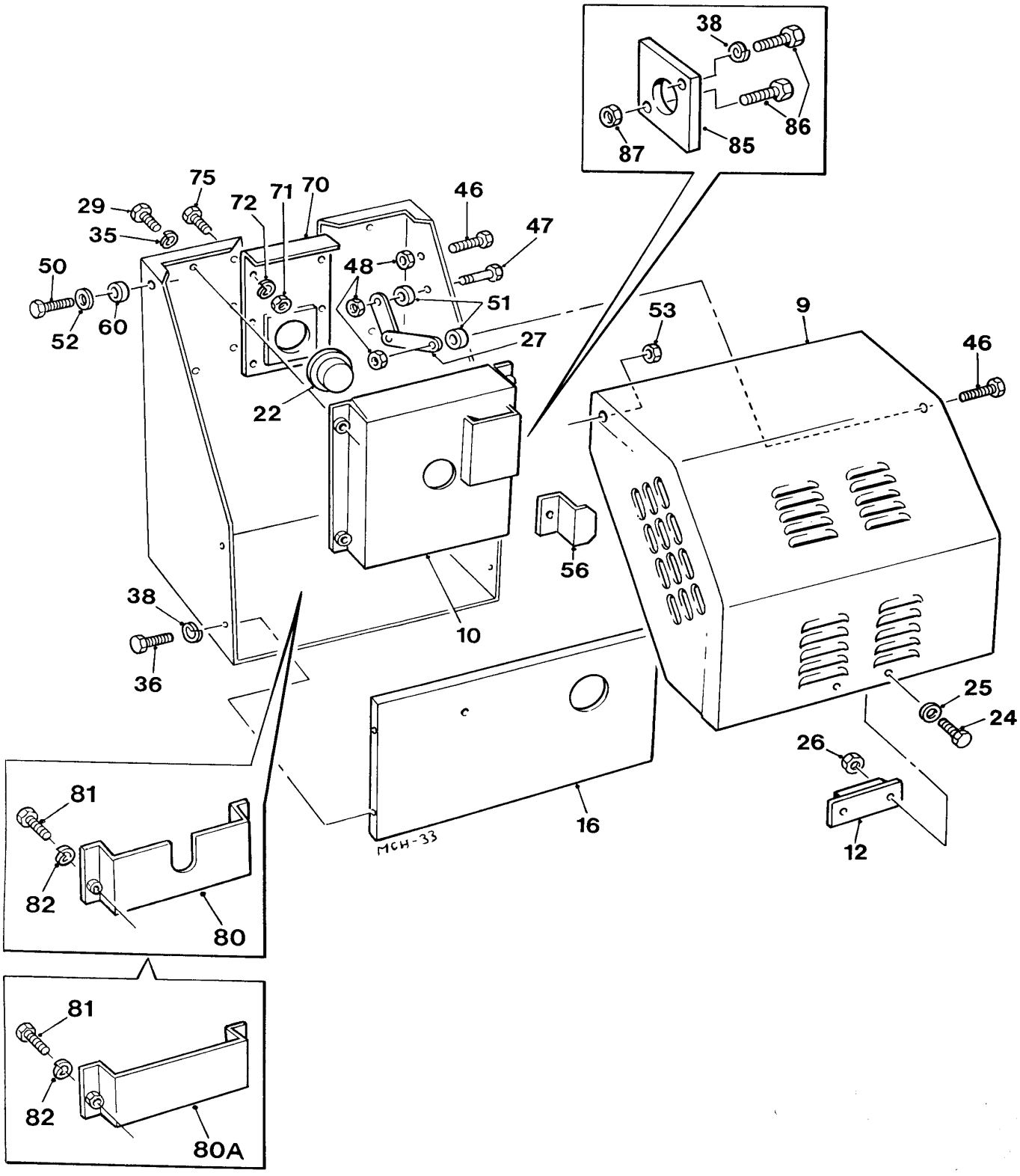
MCH-40

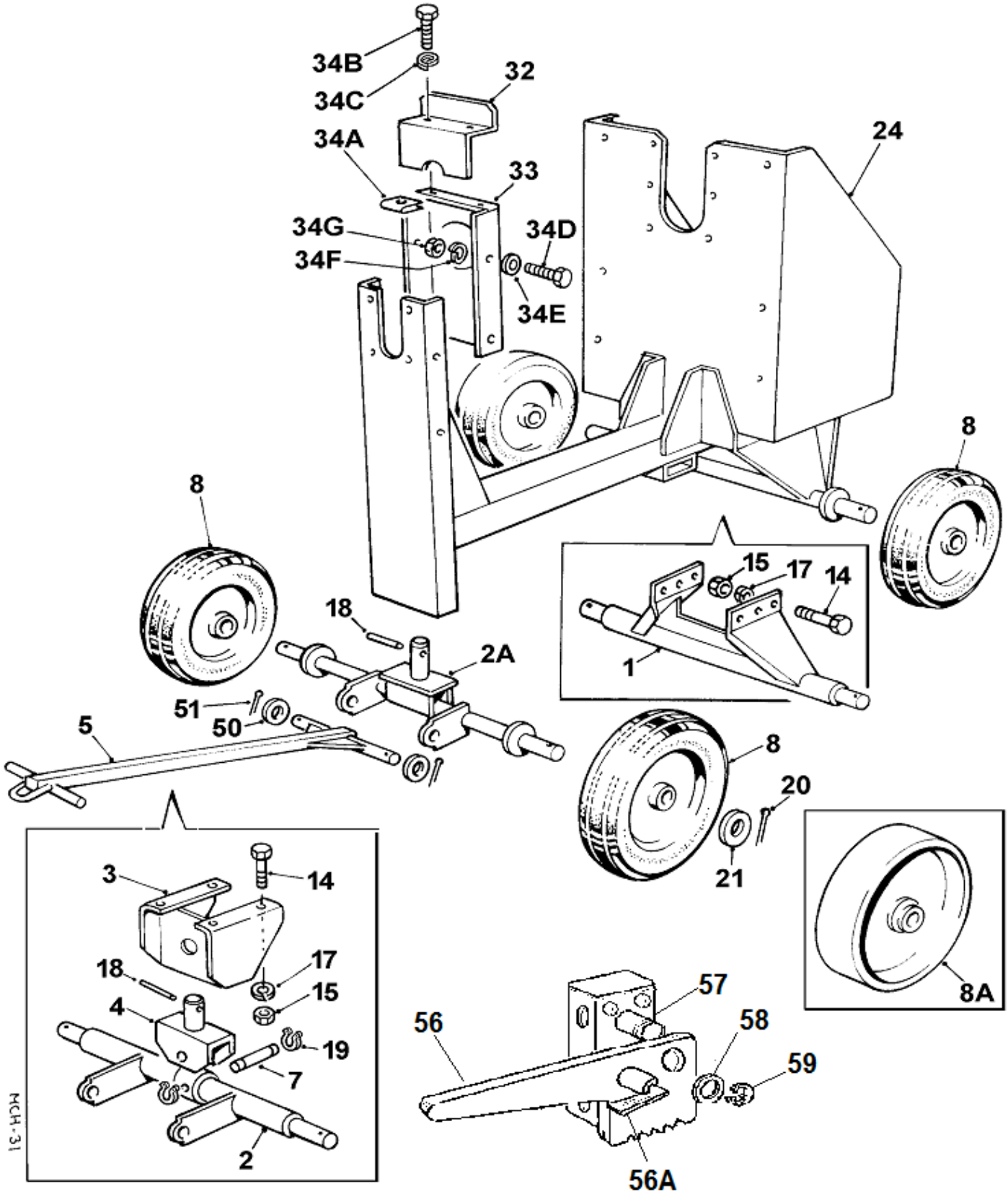
Item	Part no	Serial no	Description	Qty
1	513364300		GUARD, mesh, L.H.	1
2	513364400		GUARD, mesh, R.H.	1
3	513364500		GUARD, mesh, rear	1
5	11S02B		SCREW, set	11
6	267S04		WASHER, flat	22
7	61S02		NUT, self locking	11

100T & 150T Mixers *from February 1988*

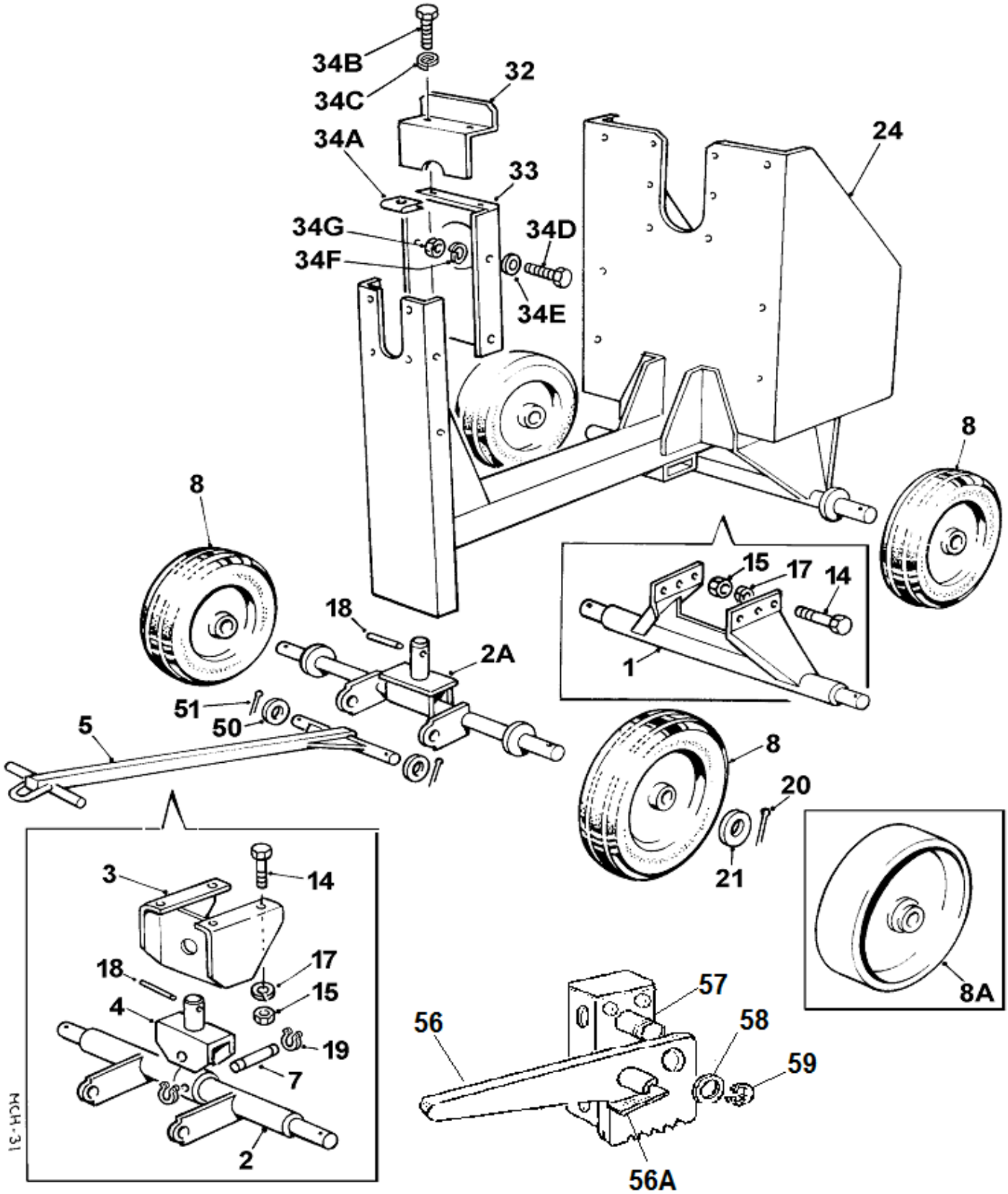


Item	Part no	Serial no		Description	Qty
9	513341300			LID, engine housing	1
10	513341400			GUARD, chain/belt	1
12	V2003109			STOP, rubber *(screw-in bobbin)*	2
12	513205300			STOP, rubber *(two screw block)*	1
16	513341500			PLATE, **100T,** *(Not Honda engine)*	1
16	513364100			PLATE, **100T,** *(With Honda engine)*	1
16	513341600			PLATE, **150T**	1
22	241859000			PLUG, polythene	1
24	11S02A			SCREW, set	2
25	267S04			WASHER, flat	2
26	61S02			NUT, Binx, self-locking	2
27	513287200			STAY, housing lid	1
29	11S02B			SCREW, set	4
35	17S03			WASHER, spring	4
36	11S02B			SCREW, set	4
38	17S03			WASHER, spring	4
46	28S02E			SCREW, set	2
47	6S02E			BOLT	1
48	87S02			NUT, binx, self-locking	3
50	11S04E			SCREW, set	2
51	513340800			SPACER	2
52	267S06			WASHER, flat	4
53	7S04			NUT	2
56	513285000	/ 05641		BRACKET, starting handle, **100T**	1
56	513285000	/ 01725		BRACKET, starting handle, **150T**	1
56	.....			*(Not used with Yanmar or Honda engines)*	
60	555170000			SPACER	2
70	513151800			BRACKET, trunnion	1
71	104S03			NUT	6
72	41S05			WASHER, spring	6
75	66S03CC			SCREW, set	6
80	513355800			GUARD, *(electric motors only)*	1
80A	513362400		#	GUARD, *(**150T** with Yanmar eng. only)*	1
81	11S02A			SCREW, set	2
82	17S03			WASHER, spring	2
		06737 /	#	**100T** *(with Yanmar & Honda engines only)*	
		02719 /	#	**150T** *(with Yanmar engines only)*	
85	513362600	/	#	PLATE	1
86	11S02D	/	#	SCREW, set	2
87	61S02	/	#	NUT, Binx	1/2

175T Mixers *from February 1988*



Item	Part no	Serial no	Description	Qty
1	513275200	/ 01725	AXLE, rear	1
2	513203400	/ 01725	AXLE, front	1
2A	513358100	01726 /	AXLE, front	1
3	513274900	/ 01725	BRACKET, front axle swivel	1
4	513154500	/ 01725	SWIVEL, front axle	1
5	513341200		TOWBAR	1
7	513155000	/ 01725	PIN, pivot, front axle	1
8	475106000	/ 02277	WHEEL, cushion tyre, 355mm (14") dia	4
8	475115000	02282 /	WHEEL, cushion tyre, 405mm (16") dia	4
			Alternative wheel	
8A	513198500		WHEEL, steel, 400x100mm (16" x4")	4
14	69S05E		BOLT	10
15	192S05		NUT	10
17	10S04		WASHER, flat	10
18	353830650		PIN, spirol	1
19	132412010	/ 01725	CIRCLIP	2
20	44S05G		PIN, split	4
21	10S09		WASHER, flat	4
24	513269400		MAINFRAME	1
-	513198400		GUARD, tilt wheel, assembly	1
32	513198402		GUARD, upper	1
33	513198401		GUARD, lower	1
34A	332719000	/ June-96	NUT, captive *(Replaced by nuts welded to guard)*	2
34B	11S02B		SCREW, set	2
34C	17S03		WASHER, spring	2
34D	66S03CC		SCREW, set	4
34E	10S03		WASHER, flat	4
34F	41S05		WASHER, spring	4
34G	104S03		NUT	4
50	10S17		WASHER, flat	2
51	44S03D		PIN, split	2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MCH-31
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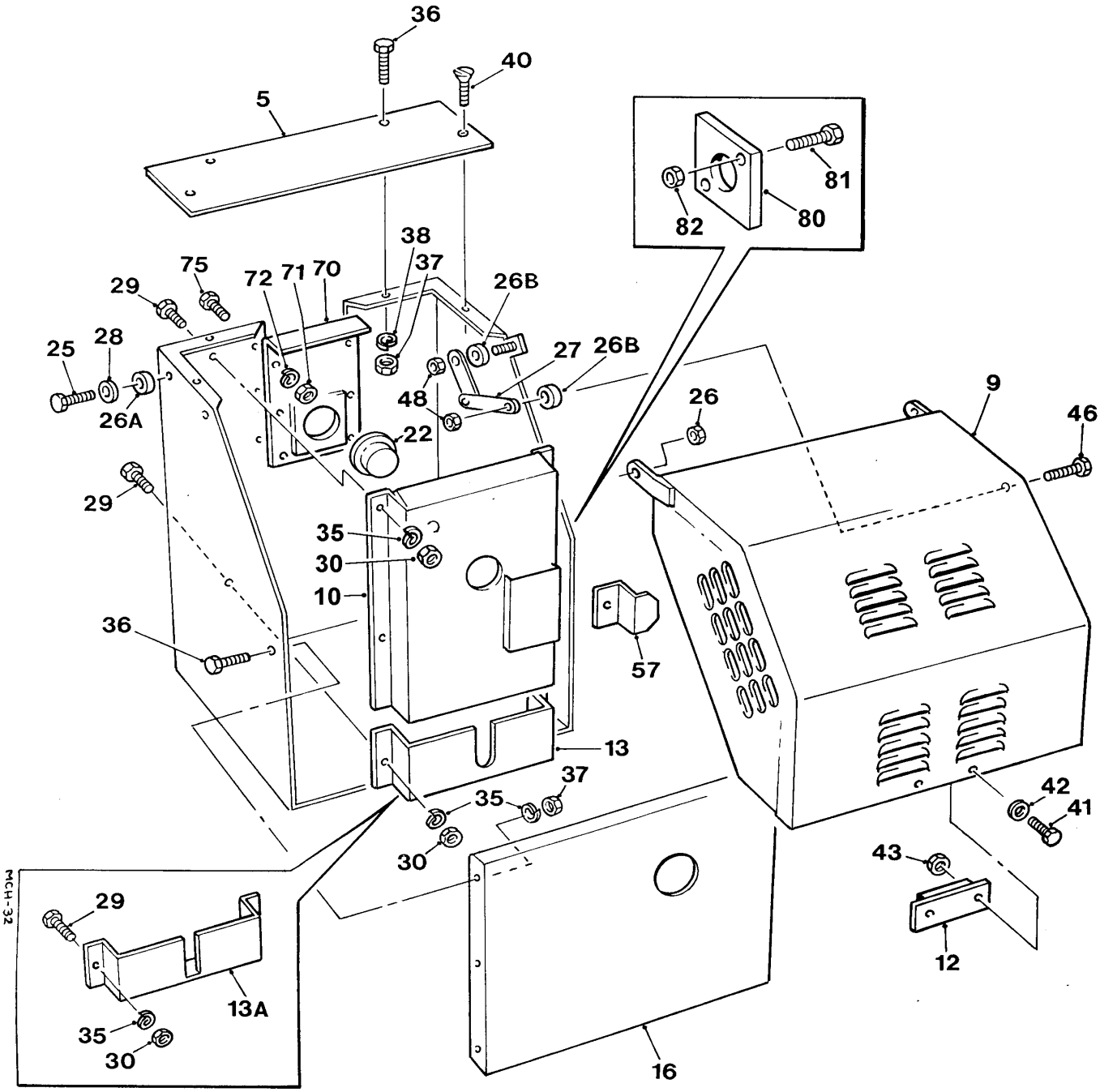
56A

Item	Part no	Serial no	Description	Qty
		05604/	**175T**	
56	513370700		LEVER, handbrake, assembly	1
56A	513370800		CATCH, sprung	1
57	513370600		PIVOT, bracket	1
57A	11S04C		SCREW, set, not illustrated	2
57B	17S05		WASHER, spring, not illustrated	2
57C	267S06		WASHER, flat, not illustrated	2
58	10S18		WASHER, flat	1
59	132412010		CIRCLIP	1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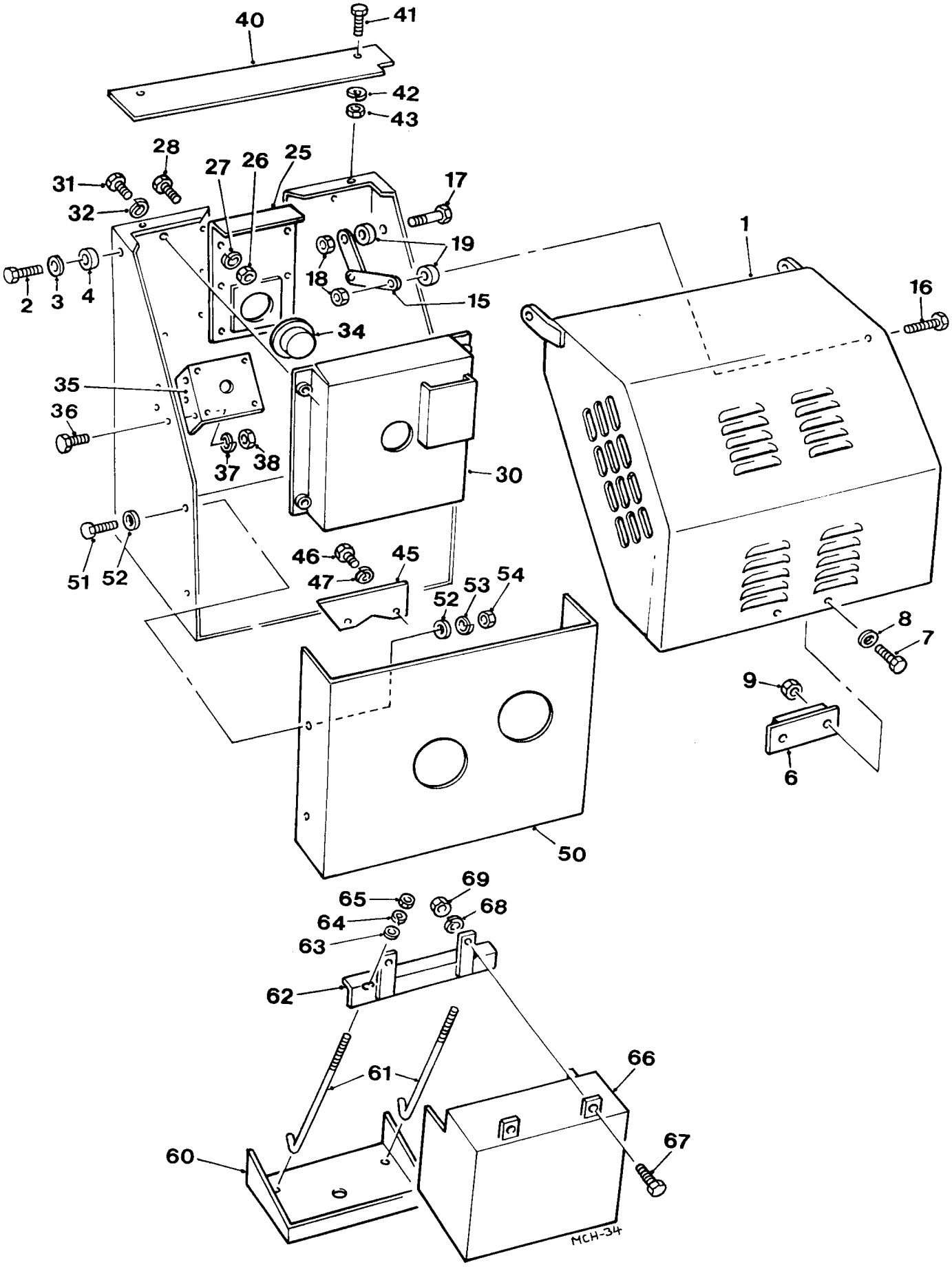
MCH-32

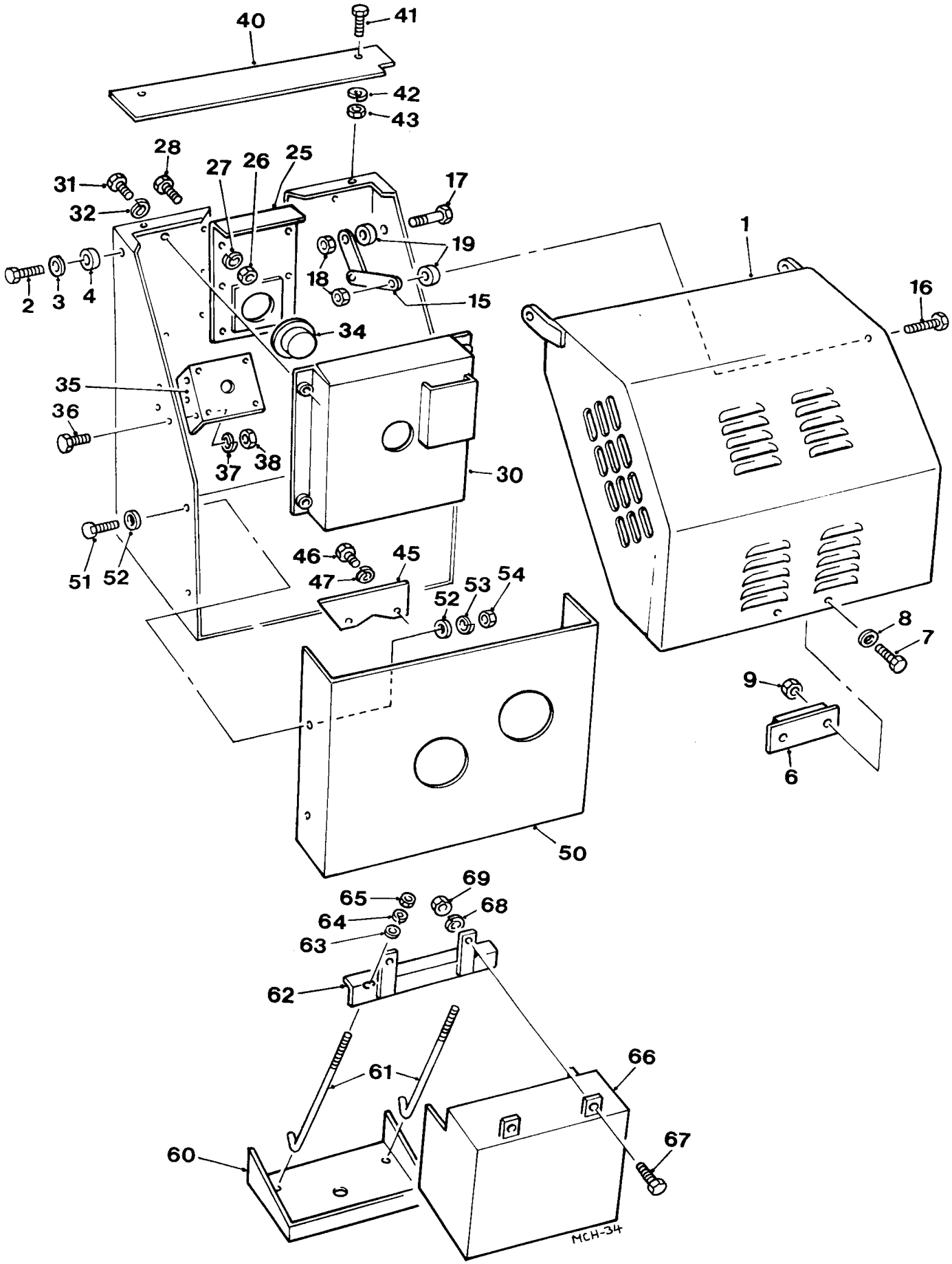
Item	Part no	Serial no	Description	Qty
5	513287000		TOP PLATE, engine housing	1
9	513286800		LID, engine housing	1
10	513248700		GUARD, chain	1
12	V2003109		STOP, rubber (round screw-in bobbin)	1
12	513205300		STOP, rubber (two screw block)	1
13	513266900		GUARD, sprocket, **diesel engine**	1
13A	513205600		GUARD, sprocket, **electric motor**	1
16	513270300		PLATE, closing	1
22	241859000		PLUG, polythene	1
25	11S04E		SCREW, set	2
26	7S04		NUT	2
26A	555170000		SPACER	2
26B	513340800		SPACER	2
27	513287200		STAY, housing lid	1
28	267S06		WASHER, flat	2
29	66S03CC		SCREW, set	6
30	104S03		NUT	6
35	41S05		WASHER, spring	12
36	11S02A		SCREW, set	2
36A	66S03CC		SCREW, set	6
37	7S02		NUT	4
37A	104S03		NUT	6
38	17S03		WASHER, spring	4
40	52S02C		SCREW, c'sunk socket head	2
41	11S02A		SCREW,set	2
42	267S04		WASHER, flat	2
43	61S02		NUT, Binx, self-locking	2
46	6S02E		BOLT	1
48	87S02		NUT, binx	2
57	513285000		BRACKET, starting handle	1
70	513151800		BRACKET, trunnion	1
71	104S03		NUT	6
72	41S05		WASHER, spring	6
75	66S03CC		SCREW, set	6
80	513362600	02719 /	PLATE, *(with Yanmar engines)*	1
81	11S02C	02719 /	SCREW, set, *(with Yanmar engines)*	2
82	61S02	02719 /	NUT, Binx, *(with Yanmar engines)*	2

100T, 150T & 175T Mixers *from February 1988*



Item	Part no	Serial no	Description	Qty
1	513286800		LID, engine housing	1
2	11S04C		SCREW, set	2
3	267S06		WASHER, flat	2
4	555170000		SPACER	2
6	513205300		STOP, rubber	1
7	11S02A		SCREW	2
8	267S04		WASHER, flat	2
9	61S02		NUT, Binx	2
15	513287200		STAY, housing lid	1
16	6S02E		BOLT	1
17	28S02E		SCREW, set	1
18	87S02		NUT, Binx	2
19	513340800		SPACER	2
25	513151800		BRACKET, trunnion	1
26	104S03		NUT	6
27	41S05		WASHER, spring	6
28	66S03CC		SCREW, set	6
30	513341400		GUARD, chain	1
31	11S02A		SCREW, set	4
32	17S03		WASHER, spring	4
34	241859000		PLUG, polythene	1
35	513359200		BRACKET, start switch	1
36	11S03A		SCREW, set	3
37	17S04		WASHER	3
38	7S03		NUT	3
40	513358900		PLATE, top infill	1
41	11S02A		SCREW, set	2
42	17S03		WASHER, spring	2
43	7S02		NUT	2
45	513359100		PLATE, belt guard	1
46	66S03C		SCREW, set	1
47	41S05		WASHER, spring	1
50	513358400		PLATE, closing	1
51	11S02A		SCREW, set	4
52	267S04		WASHER, flat	8
53	17S03		WASHER, spring	4
54	7S02		NUT	4

Continued>>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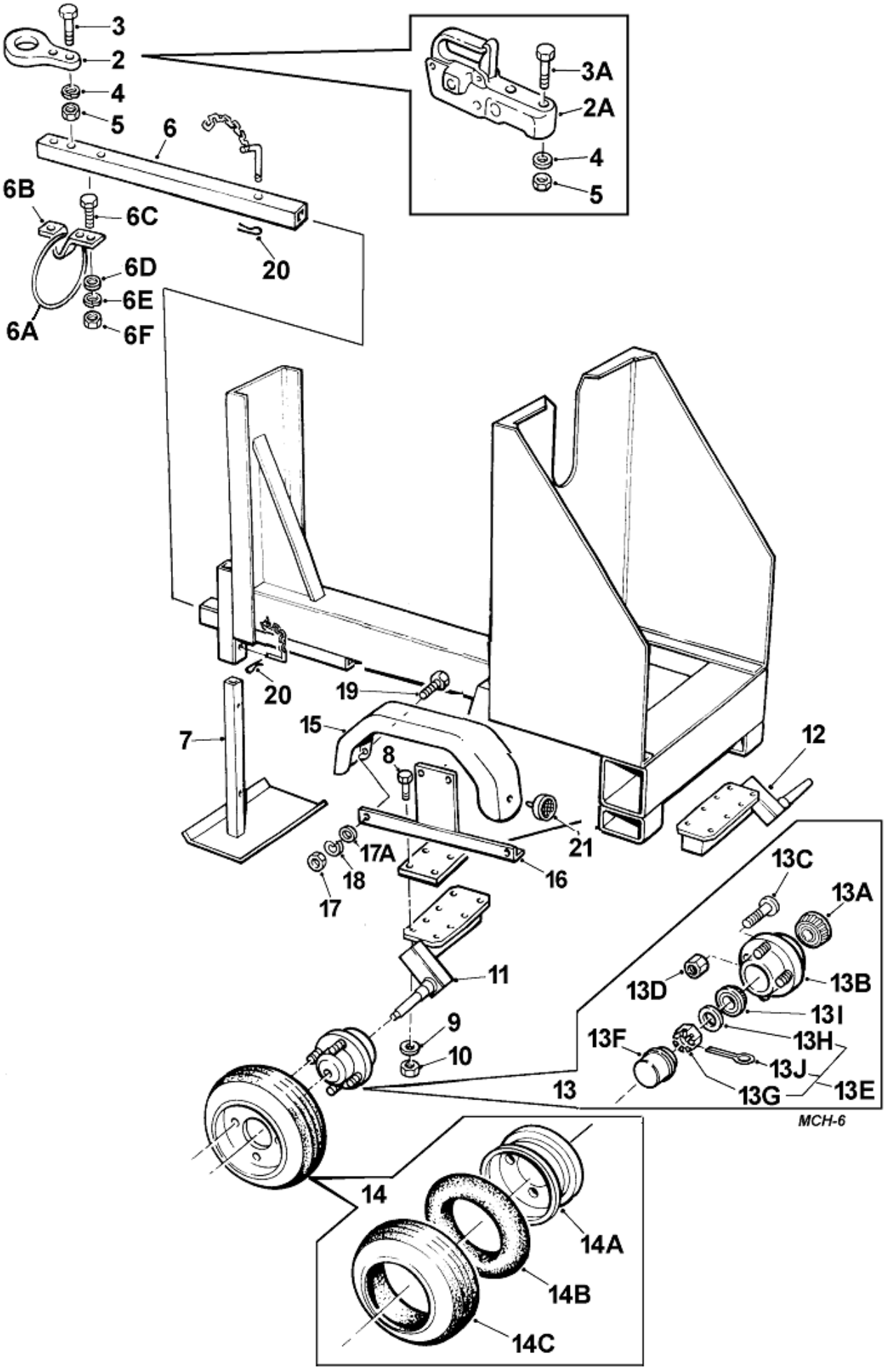
MCH-34

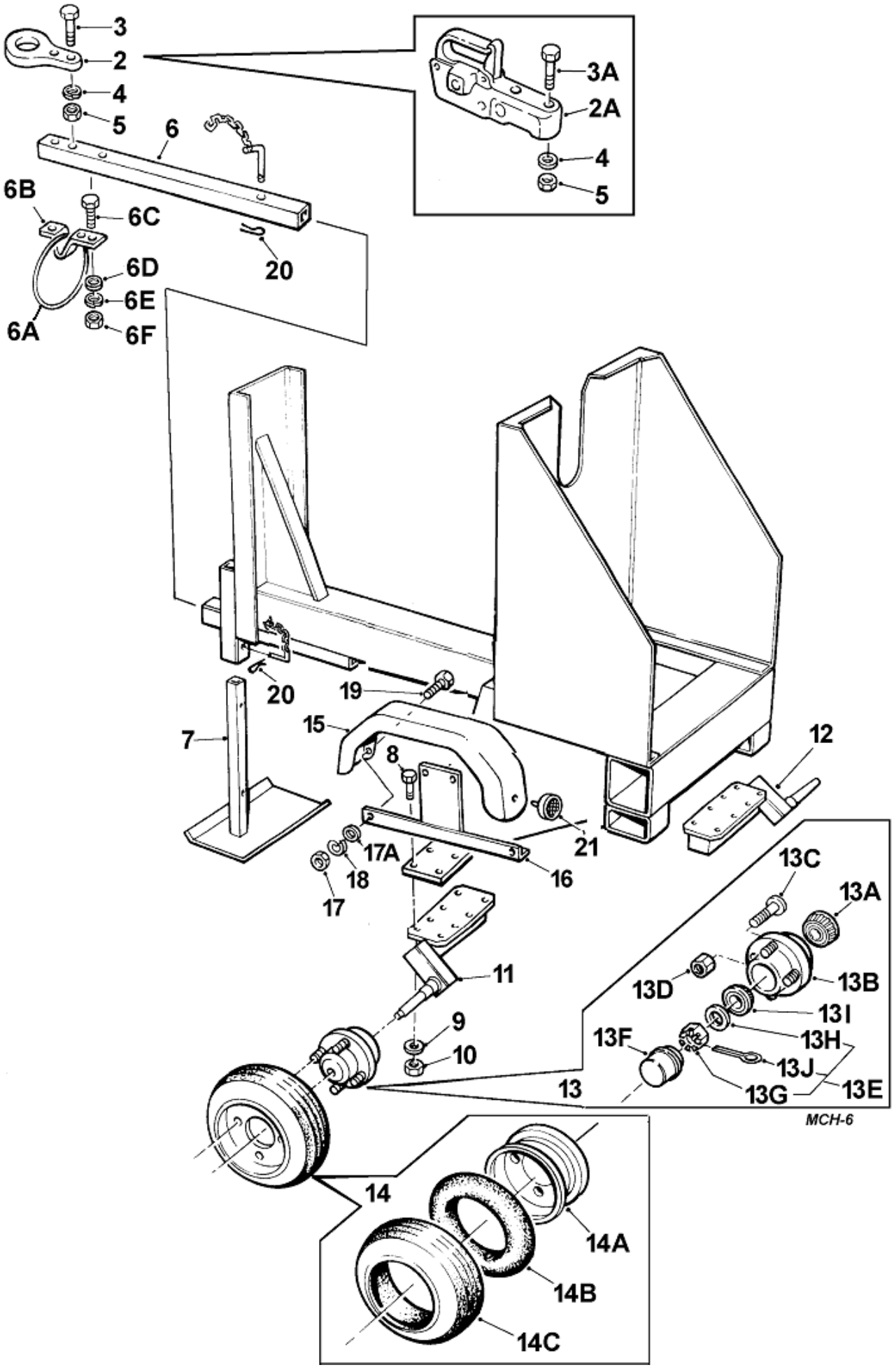
Item	Part no	Serial no	Description	Qty
			Continued>>>	
60	513358500		BRACKET, battery (welded to chassis)	1
61	V2004120		ROD	2
62	V2004055		CLAMP	1
63	267S04		WASHER, flat	2
64	17S03		WASHER, spring	2
65	7S04		NUT	2
66	513358600		COVER, battery	1
67	11S04B		SCREW, set	2
68	17S05		WASHER, spring	2
69	7S04		NUT	2

100T & 150T Mixers *from February 1988*



Item	Part no	Date	Description	Qty
-	513342200		MAINFRAME, assembly, **100T**	1
-	513342300		MAINFRAME, assembly, **150T**	1
1	513344200		MAINFRAME, **100T**	1
1	513344300		MAINFRAME, **150T**	1
2	513344000		EYE, towing	1
2A	513364700	Nov-03 /	COUPLING, towing	1
3	8S04E		BOLT	2
3A	8S04L	Nov-03 /	BOLT	2
4	267S06		WASHER, spring	2
5	59S03		NUT	2
6	513343800		ARM, towing, adjustable	1
6A	V2004765		CABLE, breakaway, towbar	1
6B	V2004765A		SUPPORT, towbar	1
6C	11S04C		SCREW, set	3
6D	267S06		WASHER, flat	3
6E	17S05		WASHER, spring	3
6F	7S04		NUT	3
7	513343900		LEG, adjustable	1
8	8S03B		BOLT	16
9	267S05		WASHER, flat	16
10	61S03		NUT, locking	16
11	475130300		# SUSPENSION UNIT, L.H.	2
12	475130400		# SUSPENSION UNIT, R.H.	2
13	475130200		# HUB, wheel, assembly	2
13A	V600149		KIT, bearing	2
13B	V600150		HUB	1
13C	V600151		$ KIT, stud, imperial 3/8" UNF	set of 4
13C	V603612		$ KIT, stud, metric M10 fine	set of 4
13D	V600152		$ KIT, nut, imperial 3/8" UNF	set of 4
13D	V603611		$ KIT, nut, metric M10 fine	set of 4
			$ *When ordering state whether "Metric" or "Imperial"*	
13E	V600153		KIT, fastening	1
13F	V600154		CAP	1
13G	216S08		NUT, "metric"	1
13G	92S07		NUT, "imperial"	1
13H	10S05		WASHER	1
13I	475117006		BEARING	1
13J	44S03C		PIN, split	1
14	475117021		# WHEEL, assembly	2
14A	V600155		RIM, wheel	1
14B	475117008		TUBE, inner	1
14C	475117007		TYRE	1

 # Items 11, 12, 13, & 14 are supplied as part of kit suspension. Part number 513343700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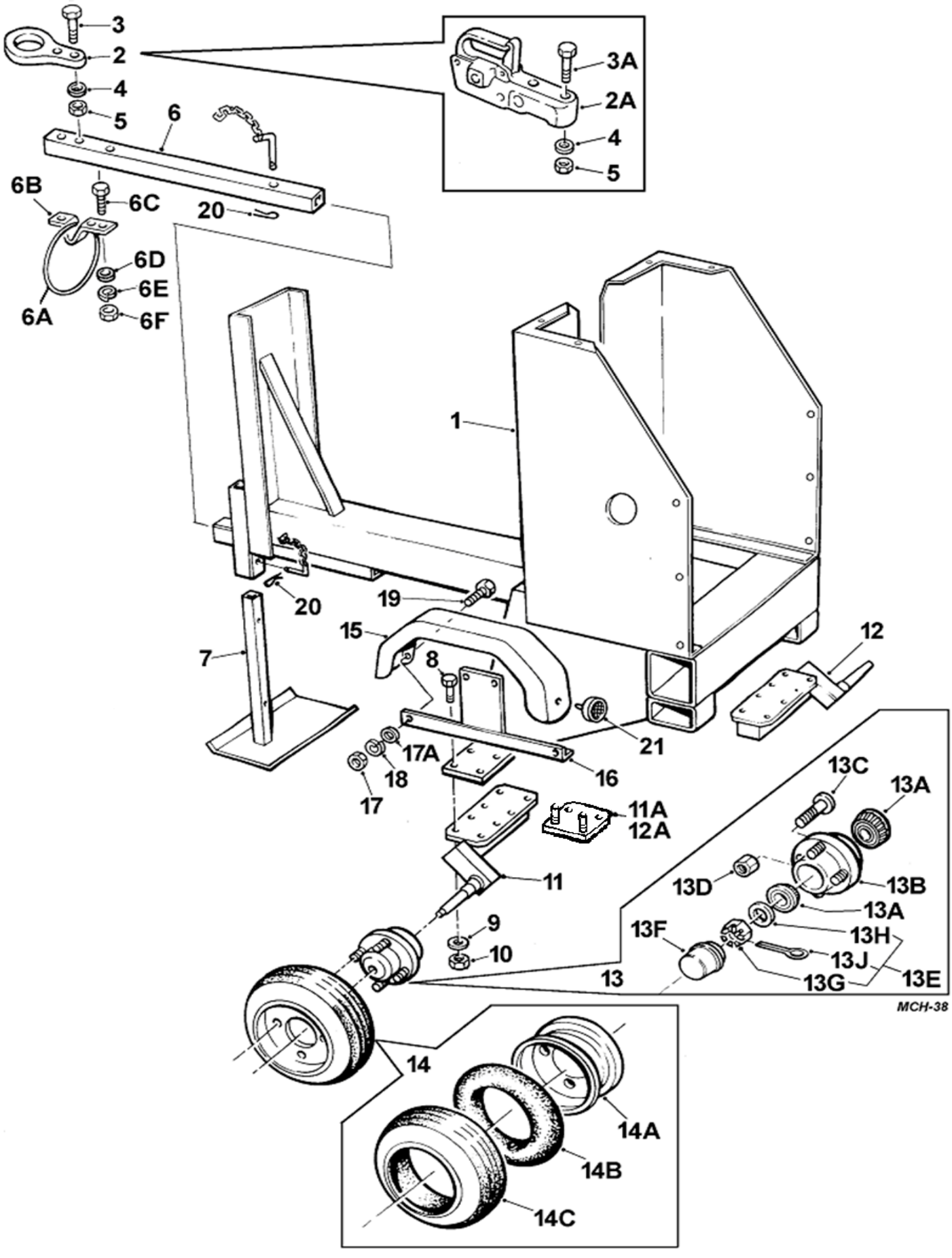
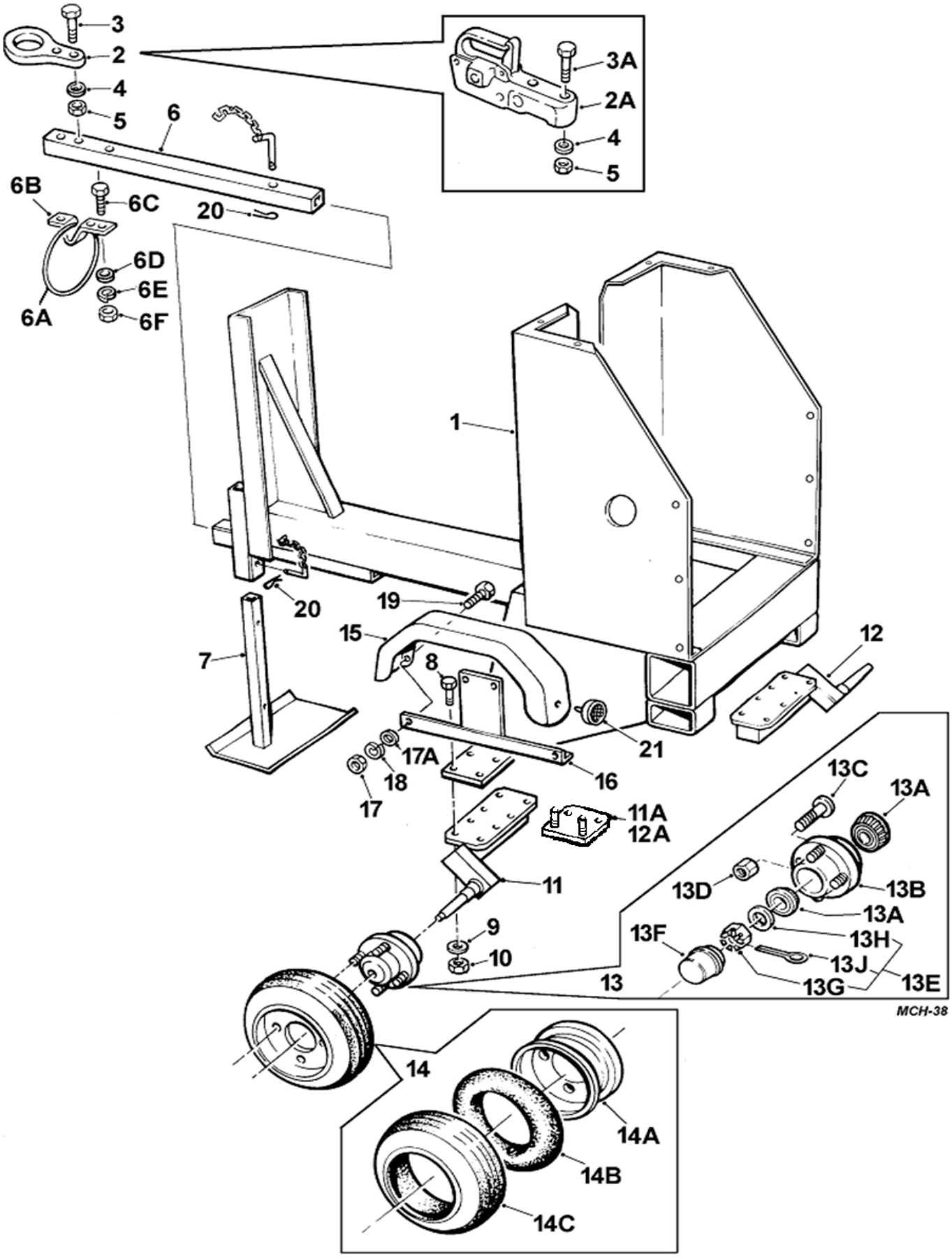
Item	Part no	Serial no	Description	Qty
15	513167900	804120 /	MUDGUARD	2
16	513345700	804120 Sept '16	BRACKET, mudguard	2
16	513345700	Sept '16 /	BRACKET, mudguard	2
17	104S03	804120 /	NUT	6/8
17A	V2004220	Sept '16 /	WASHER, flat	4
18	41S05	804120 /	WASHER, spring	6/8
19	200S03E	804120 /	SCREW, round head	6/8
20	902S02	804120 /	PIN, lynch	2
21	386102000	804120 /	REFLECTOR, red, non triangular, rear of mudguard, not EU from serial nos below	2
	Following parts are not illustrated			
	From serial nos 100T-09456, 150T-05103			
22	386103000		REFLECTOR, white, non triangular front of mudguard	2
22A	513369300S		BRACKET, reflector, white, straight	2
22B	11S01A		SCREW, set	4
22C	267S03		WASHER, flat	6
22D	59S13		NUT, nyloc	4
23	386104000		REFLECTOR, amber, non triangular top of mudguard	2
23A	513369300F		BRACKET, reflector, amber, folded	2
23B	11S01A		SCREW, set	4
23C	267S03		WASHER, flat	6
23D	59S13		NUT, nyloc	4
24	V2006349		BOARD, lighting	1
24A	513369700		BUSH, flanged, plastic	4
25	513369600		PLATE, lighting board mounting	1
25A	8S04F		BOLT, plate retaining	2
25B	V2004220		WASHER, special	4
25C	59S03		NUT, nyloc	2
26	V2006351		NUT, winged	2
27	267S06		WASHER, flat	2

175T Mixers *from February 1988*



Item	Part no	Serial no	Description	Qty
.....	513345100	02184 /	MAINFRAME, assembly	
1	513360200		MAINFRAME, **175T FT**	1
2	513344000		EYE, towing	1
2A	513364700	Nov-03 /	COUPLING, towing	1
3	8S04E		BOLT	2
3A	8S04L	Nov-03 /	BOLT	2
4	267S06		WASHER, spring	2
5	59S03		NUT	2
6	513343800		ARM, towing, adjustable	1
6A	V2004765		CABLE, breakaway, towbar	1
6B	V2004765A		SUPPORT, towbar	1
6C	11S04C		SCREW, set	3
6D	267S06		WASHER, flat	3
6E	17S05		WASHER, spring	3
6F	7S04		NUT	3
7	513343900		LEG, adjustable	1
8	11S05E		SCREW, set	16
8A	11S05F	05250/	SCREW, set, *use with 11A & 12A*	4
9	267S07		WASHER, flat	16
10	61S05		NUT, locking	16
11	475130500		SUSPENSION UNIT, L.H.	2
	Peak Dynamic Suspension units with a longer radius arm introduced from S/No 05250. If replacing earlier units with Peak they must be replaced in pairs			
11A	513370200	05250/	BRACKET, mudguard LH (PEAK SUS)	1
11B	59S04	05250/	NUT, nyloc	2
11C	267S07	05250/	WASHER, flat	2
12	475130600		SUSPENSION UNIT, R.H.	2
	Peak Dynamic Suspension units with a longer radius arm introduced from S/No 05250. If replacing earlier units with Peak they must be replaced in pairs			
12A	513370100	05250/	BRACKET, mudguard RH (PEAK SUS)	1
12B	59S04	05250/	NUT, nyloc	2
12C	267S07	05250/	WASHER, flat	2
13	475130800		HUB, wheel, assembly	2
13A	V602718		KIT, bearing	2
13B	V602719		HUB	1
13C	V602721		KIT, stud	4
13D	V602720		KIT, wheel nut	4
13E	V600153		KIT, fastening	1
13F	V602722		CAP	1
13G	216S08		NUT, "metric"	1
13G	92S07		NUT, "imperial"	1
13H	10S05		WASHER	1
13J	44S03C		PIN, split	1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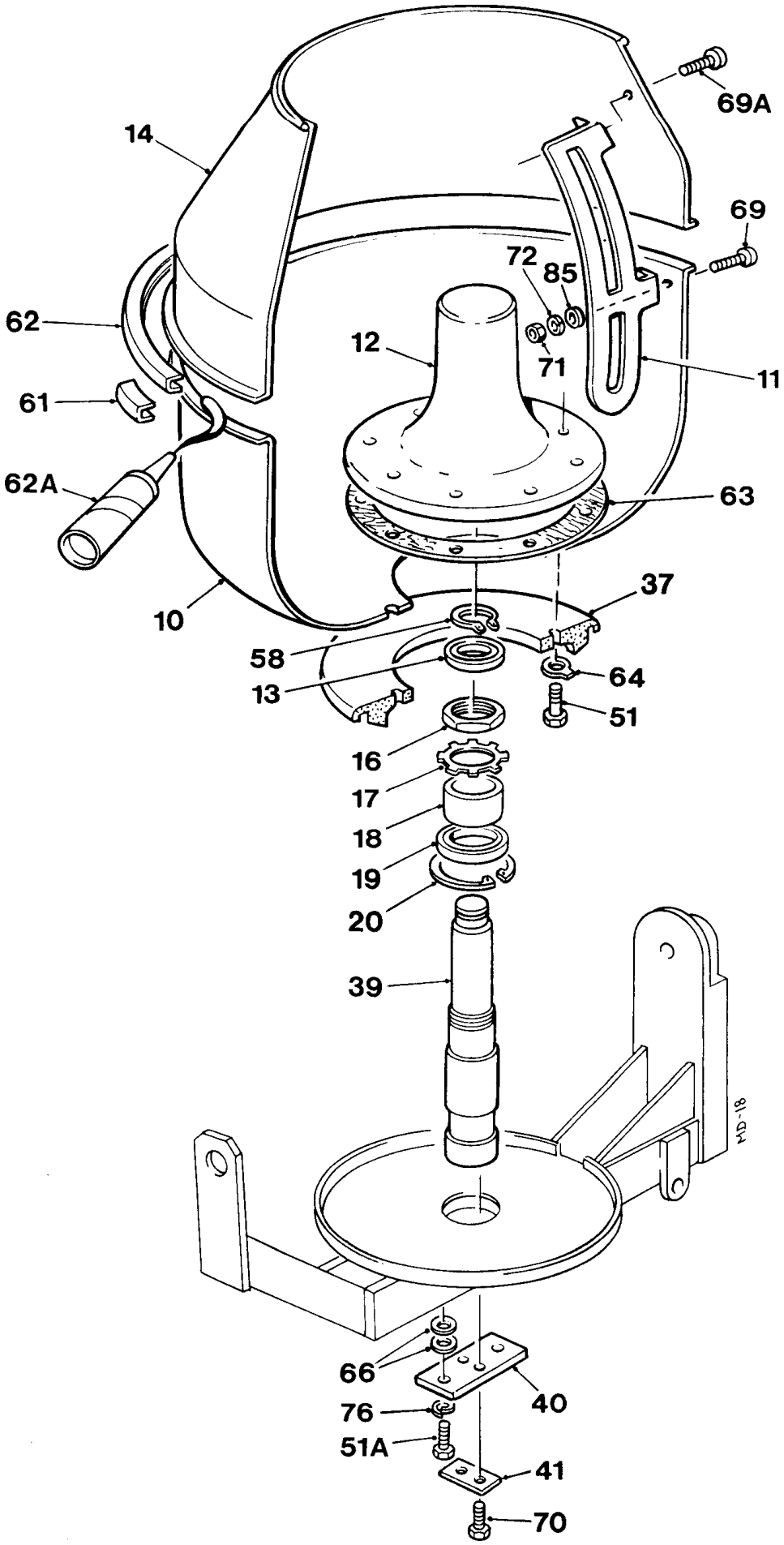
Item	Part no	Serial no	Description	Qty
13H	10S05		WASHER	1
13J	44S03C		PIN, split	1
14	475130700		WHEEL, assembly, 10"	2
14A	V602717		RIM, wheel, 10"	1
14B	475123001		TUBE, inner	1
14C	475123002		TYRE, 10"	1
15	513361000		MUDGUARD, plastic	2
16	513361100		BRACKET, mudguard	2
17	104S03		NUT	8
17A	V2004220		WASHER, "Special"	8
18	41S05		WASHER, spring	8
19	200S03E		SCREW, round head	8
20	902S02		PIN, lynch	2
21	386102000		REFLECTOR, red, non triangular rear of mudguard	2
	Following parts are not illustrated			
21A	386103000	05101/	REFLECTOR, white, non triangular front of mudguard	2
21B	11S01A	05101/	SCREW, set, reflector mounting	2
21C	267S03	05101/	WASHER, flat	2
21D	59S13	05101/	NUT, nyloc	2
22	V2006349	05101/	BOARD, lighting	1
22A	513369700	05101/	BUSH, flanged, plastic	4
23	513369600	05101/	PLATE, lighting board mounting	1
23A	8S04F	05101/	BOLT, plate retaining	2
23B	V2004220	05101/	WASHER, special	4
23C	59S03	05101/	NUT, nyloc	2
23D	V2006351	05101/	NUT, winged	2
23E	267S06	05101/	WASHER, flat	2

The mudguard, item no 15, part no 513361000, is normally supplied fitted with a rectangular amber side reflector, should the mudguard not be supplied with the integral reflectors the following parts may be fitted

24	386104000	05101/	REFLECTOR, amber, non triangular top of mudguard	2
24A	513369300F	05101/	BRACKET, folded, amber reflector	2
24B	11S01A	05101/	SCREW, set	6
24C	267S03	05101/	WASHER, flat	10
24D	59S13	05101/	NUT, nyloc	6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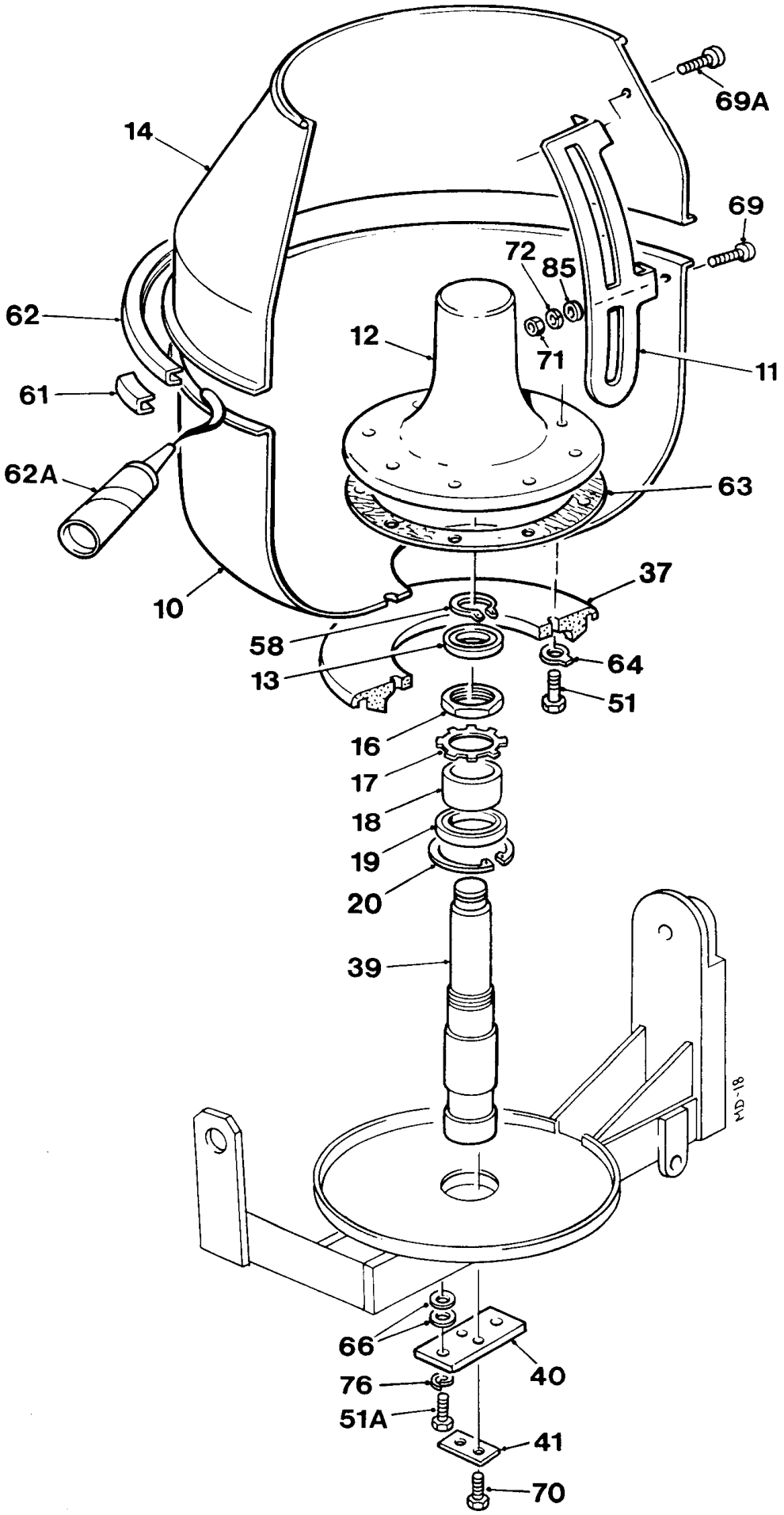
MD-18

Item	Part no	Serial no	Description	Qty
10	513152901		BASE, drum, **100T**	1
10	513161001		BASE, drum, **150T** & **175T**	1
11	513151100		BLADE, **100T** *(Not Honda engines)*	2
11	513363100		BLADE, **100T** *(With Honda engines)*	2
11	513157500		BLADE, **150T** & **175**	2
12	513149600		DRUM CENTRE	1
13	88S07D		BEARING	1
14	513152902		CONE, drum, **100T**	1
14	513161002		CONE, drum, **150T**	1
14	513203202		CONE, drum, **175T**	1
16	513208800		NUT, locking	1
17	22096210		WASHER, locking	1
18	513152300		DISTANCE PIECE, drum shaft	1
19	88S20D		BEARING	1
20	132390000		CIRCLIP	1
37	513150100		BEVEL GEAR, drum	1
39	513152200		SHAFT, drum	1
40	513152000		FLANGE, drum shaft	1
41	513152100		WASHER, tab	1
51	66S05D		SCREW	8
51A	28S05G		SCREW	2
58	142330000		CIRCLIP	1
61	513203900		BRIDGE PIECE, **100T**	1
61	513203800		BRIDGE PIECE, **150T** & **175T**	1
62	513203600		CLIP, drum, **100T**	1
62	513203100		CLIP, drum, **150T** & **175T**	1
62A	V2000772		SEALANT	tube 1
63	513202800		GASKET	1
64	513199800		WASHER, tab	6
66	10S04		WASHER, flat	AR
69A	200S03E		SCREW, blade upper, **100T,** obsolete, use	
69A	301S06F		SCREW, blade upper, **100T,** metric	4
69	200S03G		SCREW, blade lower, **100T,** obsolete, use	
69	301S06H		SCREW, blade lower, **100T,** metric	4
69A	200S03G		SCREW, blade upper, **150T/175T** obsolete, use	
69A	301S06H		SCREW, blade upper **150T/175T** metric	4
69	200S03H		SCREW, blade lower, **150T/175T** obsolete, use	
69	301S06J		SCREW, blade lower **150T/175T** metric	4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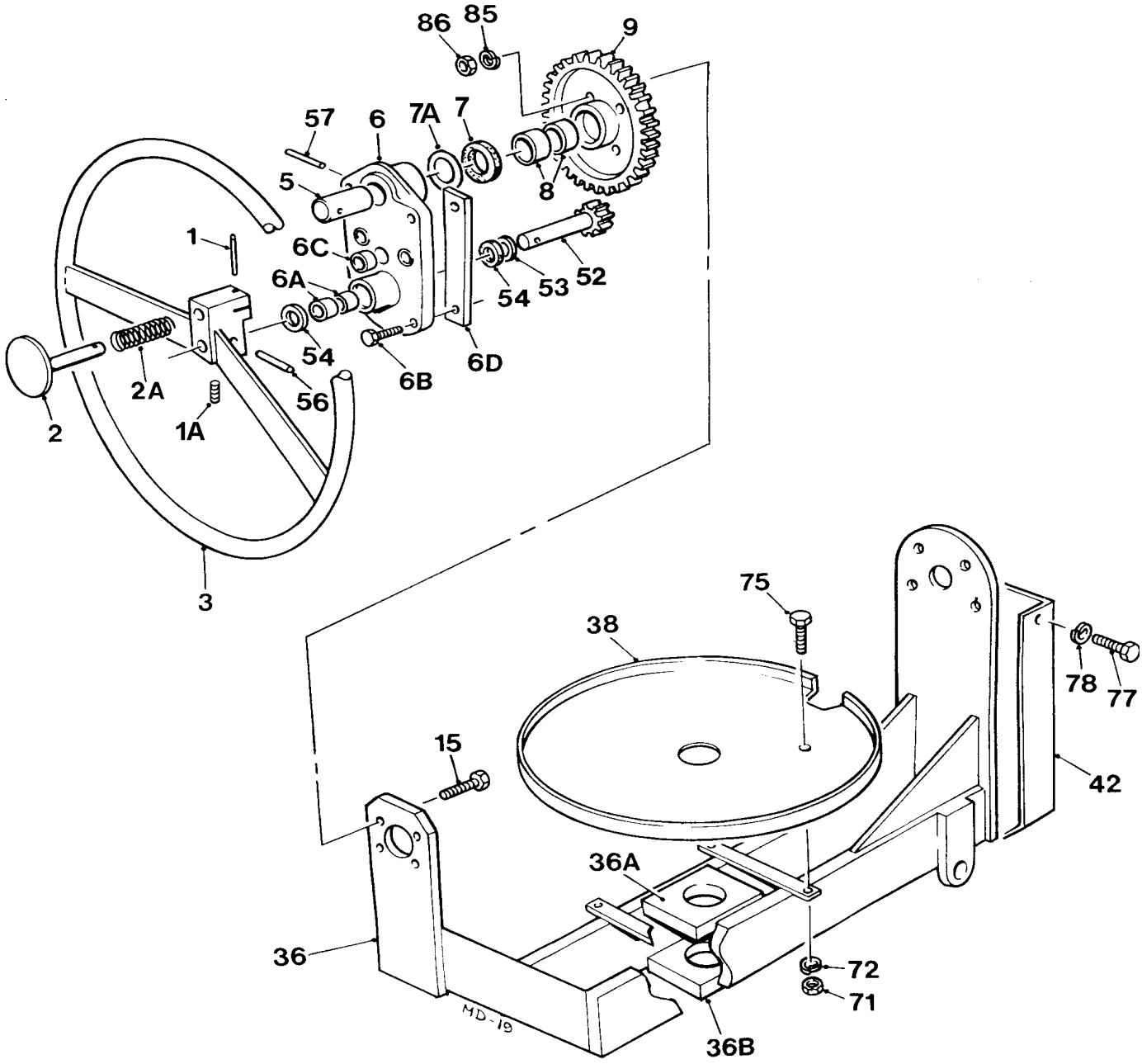
MD-18

Item	Part no	Serial no	Description	Qty
70	28S05G		SCREW	2
71	104S03		NUT, imperial, obsolete, use	
71	7S04		NUT, metric	8
72	41S05		WASHER, spring, imperial, obsolete, use	
72	17S05		WASHER, spring, metric	8
76	41S07		WASHER, spring	2
85	10S03		WASHER, flat, imperial, obsolete, use	
85	267S06		WASHER, flat, metric	8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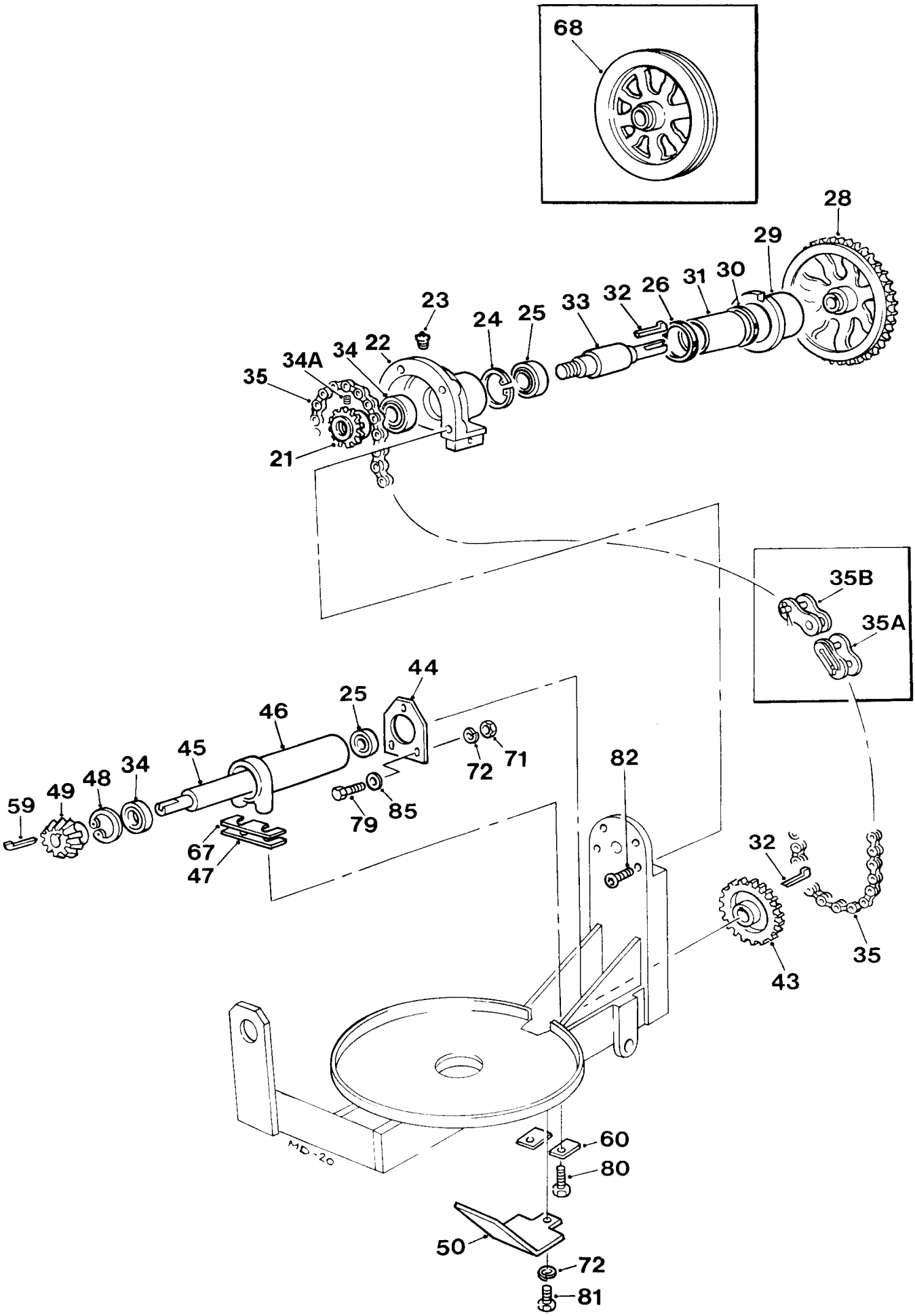
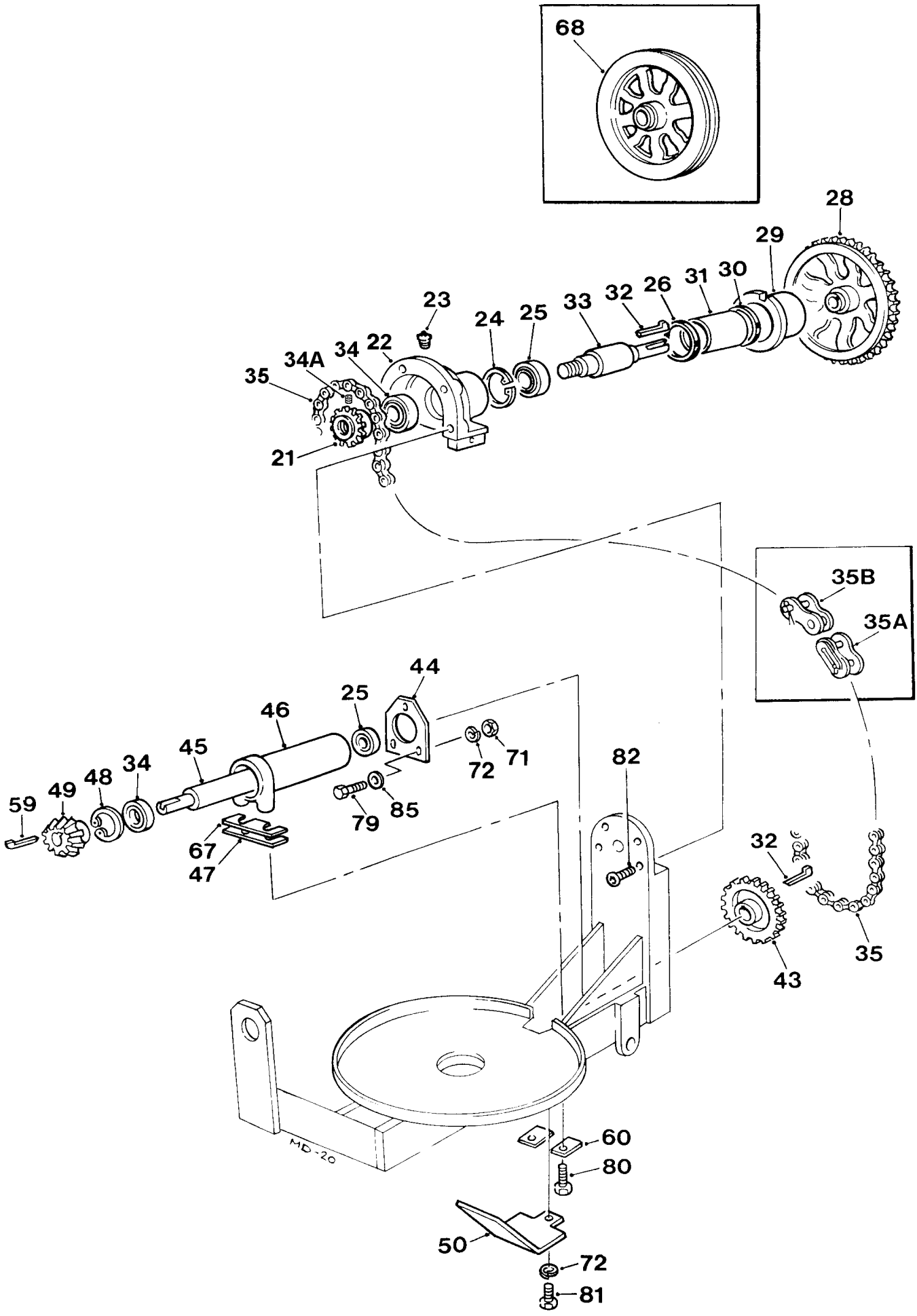
Item	Part no	Serial no	Description	Qty
1	54S01A		PIN, spirol	1
1A	57S06F1	05999 /	SCREW, grub, **100T**	1
1A	57S06F1	02026 /	SCREW, grub, **150T**	1
1A	57S06F1	02021 /	SCREW, grub, **175T**	1
2	513194400		PLUNGER, locking	1
2A	513345300	803866 /	SPRING, plunger, **100T**	1
2A	513345300	801072 /	SPRING, plunger, **150T**	1
2A	513345300	801081 /	SPRING, plunger, **175T**	1
3	513345400		HANDWHEEL	1
5	513151000		STUB, trunnion journal	1
-	513149400		BRACKET, tilting, assembly	1
6	-		BRACKET, tilting (order assembly)	1
6A	112821000		BUSH	2
6B	103S04C		SCREW, socket head cap	4
6C	114625320		BUSH	3
6D	513212300		RETAINING BAR, tilting bracket	2
7	225520280		FELT SEAL	1
7A	10S09		WASHER, flat	AR
8	112820000		BUSH	2
9	513149300		GEAR, tilting	1
15	6S03E		BOLT	4
36	513211400		TRUNNION, **100T**	1
36	513211500		TRUNNION, **150T** & **175T**	1
36A	513212000		PLATE, upper (welded)	1
36B	513212000		PLATE, lower (welded)	1
38	513153000		GUARD, bevel gear	1
42	513152700		GUARD, chain, **100T**	1
42	513203300		GUARD, chain, **150T** & **175T**	1
52	513345600		PINION, tilting	1
53	10S18		WASHER, flat	1
54	225514220		WASHER, felt	2
56	513374900		PIN, grooved	1
57	55S07Q		PIN, spirol	1
71	104S03		NUT	4
72	41S05		WASHER, spring	4
75	66S03CC		SCREW, set	4
77	66S02CC		SCREW, set	2
78	41S04		WASHER, spring	2
85	10S03		WASHER, flat	4
86	107S14		NUT, ‘Nyloc’ self-locking	4

100T, 150T & 175T Mixers from February 1988



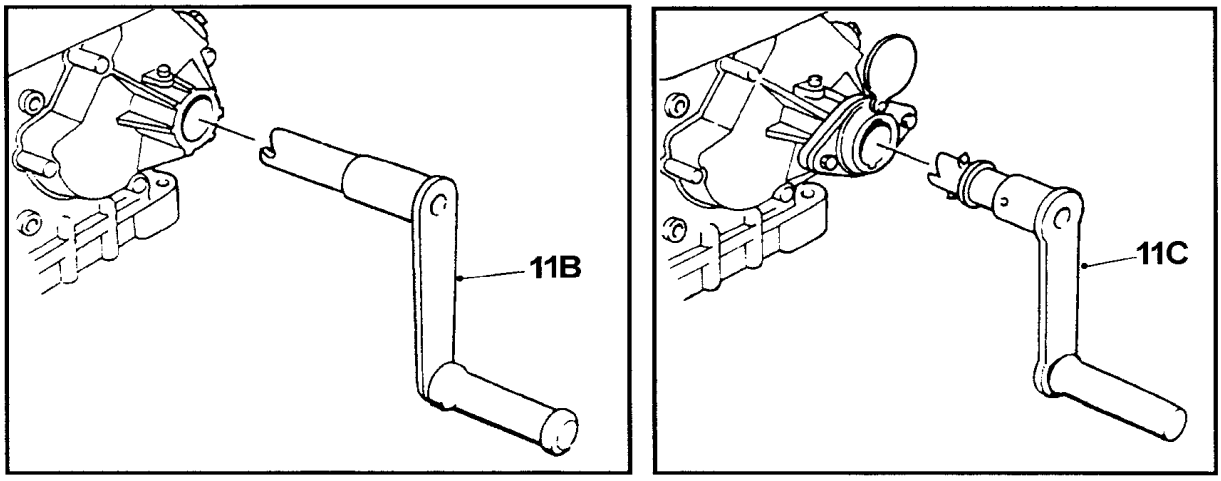
Item	Part no	Serial no	Description	Qty
21	513151600		SPROCKET, countershaft, L.H. thread *(Not Honda engines)*	1
21	513363200		SPROCKET, countershaft, R.H. thread *(With Honda engines)*	1
22	513149700		JOURNAL, trunnion	1
23	315803100		PLUG, lubricating	1
24	132352000		CIRCLIP	1
25	88S15D		BEARING	2
26	225104410	/ Jan-97	FELT STRIP, **'Obsolete'** use 'O' ring	2
26	49S41	Jan-97 /	O' RING, 79mm I/D	1
28	513150200		CHAINWHEEL, countershaft	1
29	513150400		BEARING, trunnion	1
30	225104410	/ Jan-97	FELT STRIP, **'Obsolete'** use 'O' ring	1
30	49S42	Jan-97 /	O' RING, 75.5mm I/D	1
31	513153100		BEARING	1
32	300204140		KEY, gib head	2
33	513151700		COUNTERSHAFT, L.H. thread *(Not Honda engines)*	1
33	513363300		COUNTERSHAFT, R.H. thread *(With Honda engines)*	1
34	88S05D		BEARING	2
34A	57S04D2	06707 /	SCREW, grub, **100T**	1
34A	57S04D2	02678 /	SCREW, grub, **150T** & **175T**	1
35	134105056		CHAIN, **100T**	1
35	134105060		CHAIN, **150T** & **175T**	1
35A	134105002		LINK, connecting	1
35B	134105001		LINK, half	AR
43	513150300		SPROCKET, bevel pinion shaft	1
44	513298900		PLATE, adjusting	1
45	513152500		SHAFT, bevel pinion, **100T**	1
45	513158700		SHAFT, bevel pinion, **150T** & **175T**	1
46	513149800		HOUSING, pinion shaft, **100T**	1
46	513160700		HOUSING, pinion shaft, **150T** & **175T**	1
47	513152400		PACKING PIECE *(set of 4)*	sets 2
48	132362000		CIRCLIP	1
49	513278400		BEVEL PINION	1
50	513211800		GUARD, bevel pinion	1

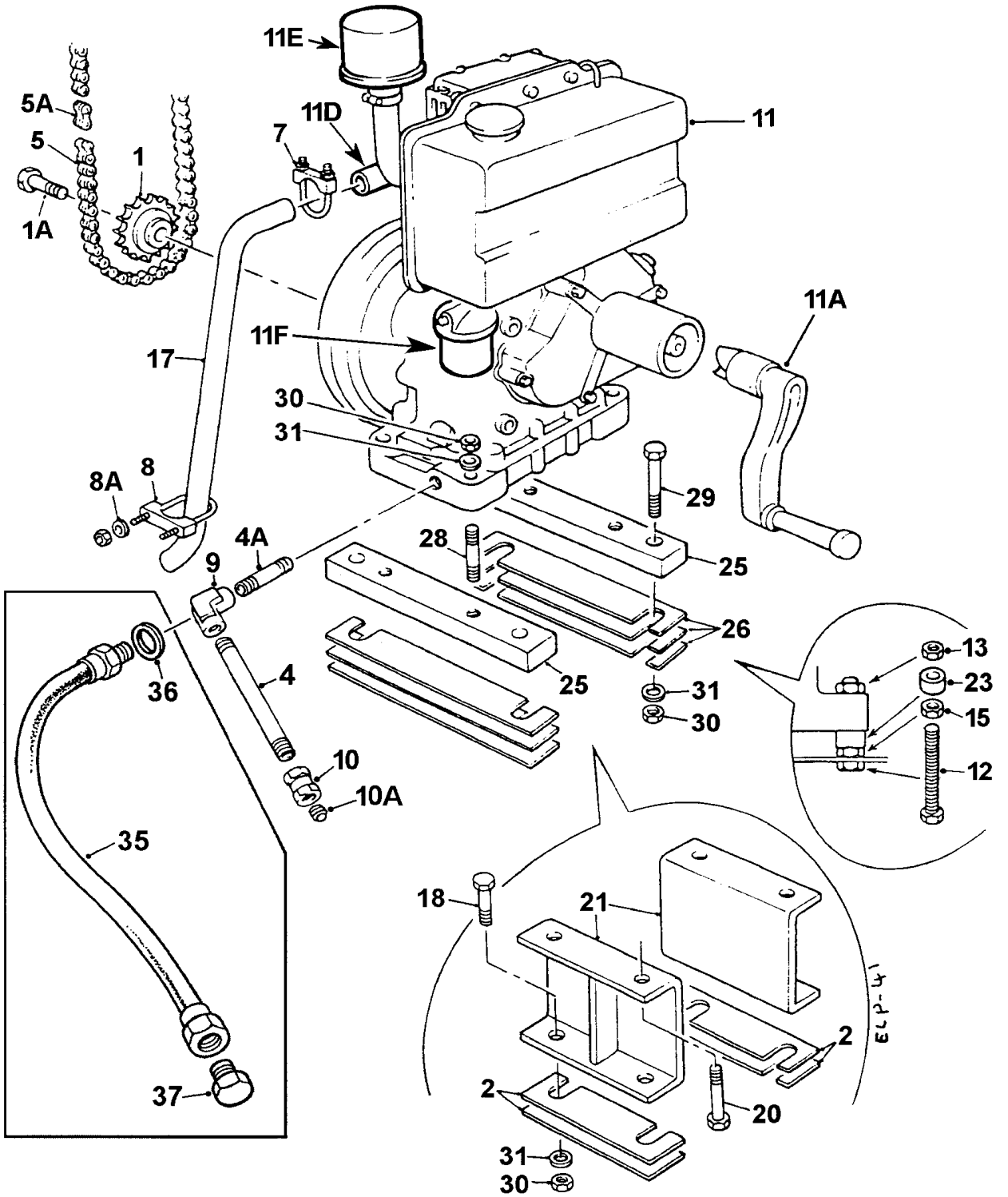
B - 1C 100T, 150T & 175T Mixers from February 1988



Item	Part no	Serial no	Description	Qty
59	300204140		KEY, gib head	1
60	513211900		WASHER, tab	2
67	513211700		PACKER	1
68	513290700		PULLEY, 'V', for electric motors, Yanmar and Honda engines	1
71	104S03		NUT	
72	41S05		WASHER, spring	4
79	66S03C		SCREW	3
80	66S03D		SCREW	2
81	66S03AA		SCREW	1
82	208S03F		SCREW, c/sunk socket	4
85	10S03		WASHER, flat	3

100T & 150T Mixer *from February 1988*





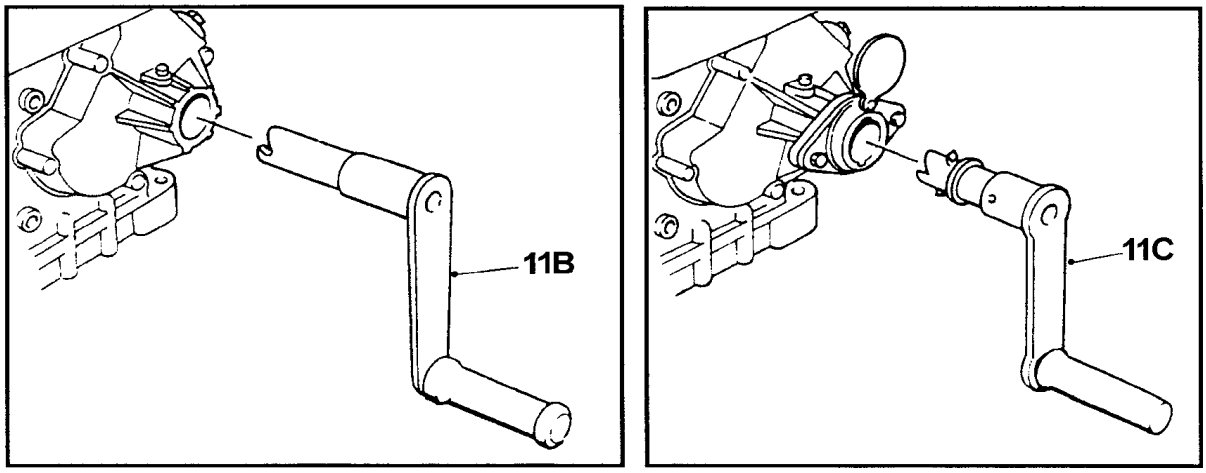
Item	Part no	Serial no	Description	Qty
1	513344100		SPROCKET, engine, assembly	1
1A	EL60222040		SCREW, retaining	1
2	513127500		KIT, shims, **150T**	pack 1
—	513127501		SHIM, 3mm, **150T**	6
—	513127502		SHIM, 1.5mm, **150T**	4
—	—	Jan-95 /	SHIM, 0.7mm, **150T**	2
4	513278200	(year) / 1995/96	PIPE, 125mm long, 1/4“ BSP	1
4	513359800	1995/96 / 2003	PIPE, 125mm long, 1/2“ BSP	1
4A	513256500	(year) / 1995/96	PIPE, 60mm long, 1/4" BSP	1
4A	513359700	1995/96 / 2003	PIPE, 60mm long, 1/2“ BSP	1
5	134105095		CHAIN, roller	1
5A	134105002		LINK, connecting	1
—	134105001		LINK, half *(not illustrated)*	1
7	153S01		CLAMP, pipe	1
8	153S01		CLAMP, pipe	1
8A	267S04		WASHER, flat	4
9	241102000	(year) / 1995/96	ELBOW, female, 1/4“ BSP	1
9	241104000	1995/96 / 2003	ELBOW, female, 1/2“ BSP	1
10	241902000	(year) / 1995/96	FITTING, straight female, 1/4“ BSP	1
10	241904000	1995/96 / 2003	FITTING, straight female, 1/2“ BSP	1
10A	241702000	(year) / 1995/96	PLUG, oil drain, 1/4“ BSP tapered	1
10A	241704000	1995/96 / 2003	PLUG, oil drain, 1/2“ BSP tapered	1
11	354052000		ENGINE, Lister-Petter LT1/LV1-32 “Export” (“UK/EEC” upto 1995)	1
11A	EL60150016	/ Jan-95	**#** STARTING HANDLE	1
11B	EL60252971	Jan-95 /	**#** STARTING HANDLE, without anti kickback	1
11	354054200	Jan-95 /	ENGINE, Lister-Petter LT1/LV1-32 “UK/EEC”	1
11C	EL375231	Jan-95 /	**#** STARTING HANDLE, with anti kickback	1
			# *When ordering starting handles, specify the type required*	

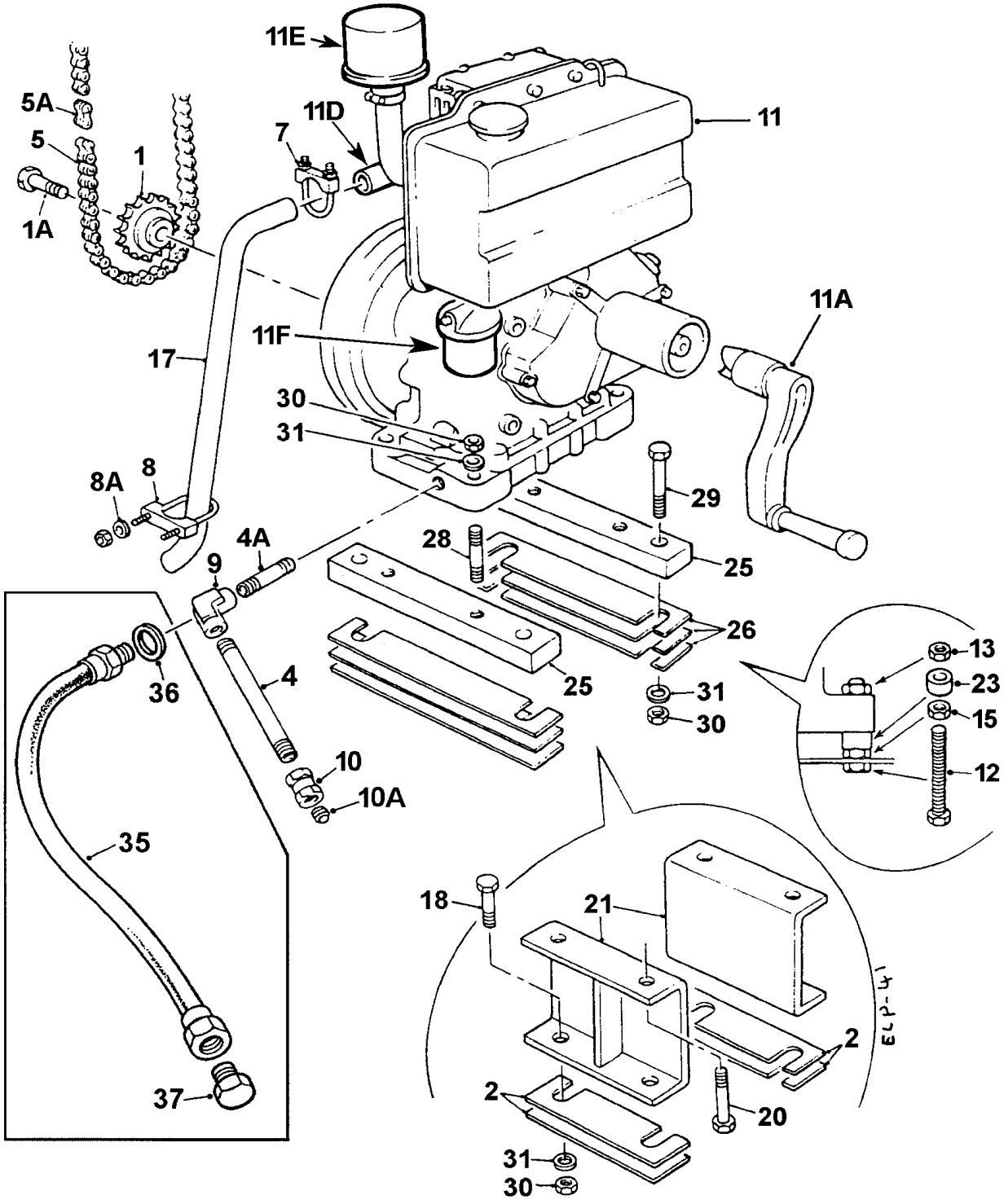
NOTE : ENGINE CHANGE Lister-Petter LT1-32 to LV1-32

From mixer serial numbers: 100T 07978 and 150T 03813.

Early in 2005 the Lister-Petter LT1-32 was superseded by the LV1-32. The engines as complete assemblies are interchangeable as are consumable items such as filters etc. Major items such as fuel injection pump, cylinder and piston, crankshaft, and conrod are different and when ordering spares it is important to quote the engine type.

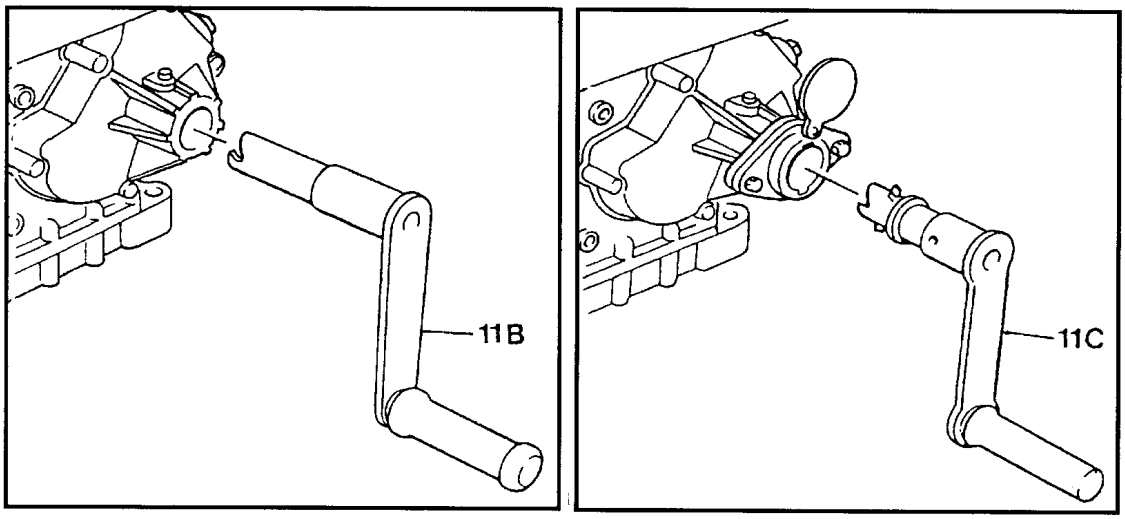
C - 1 100T & 150T Mixer *from February 1988*

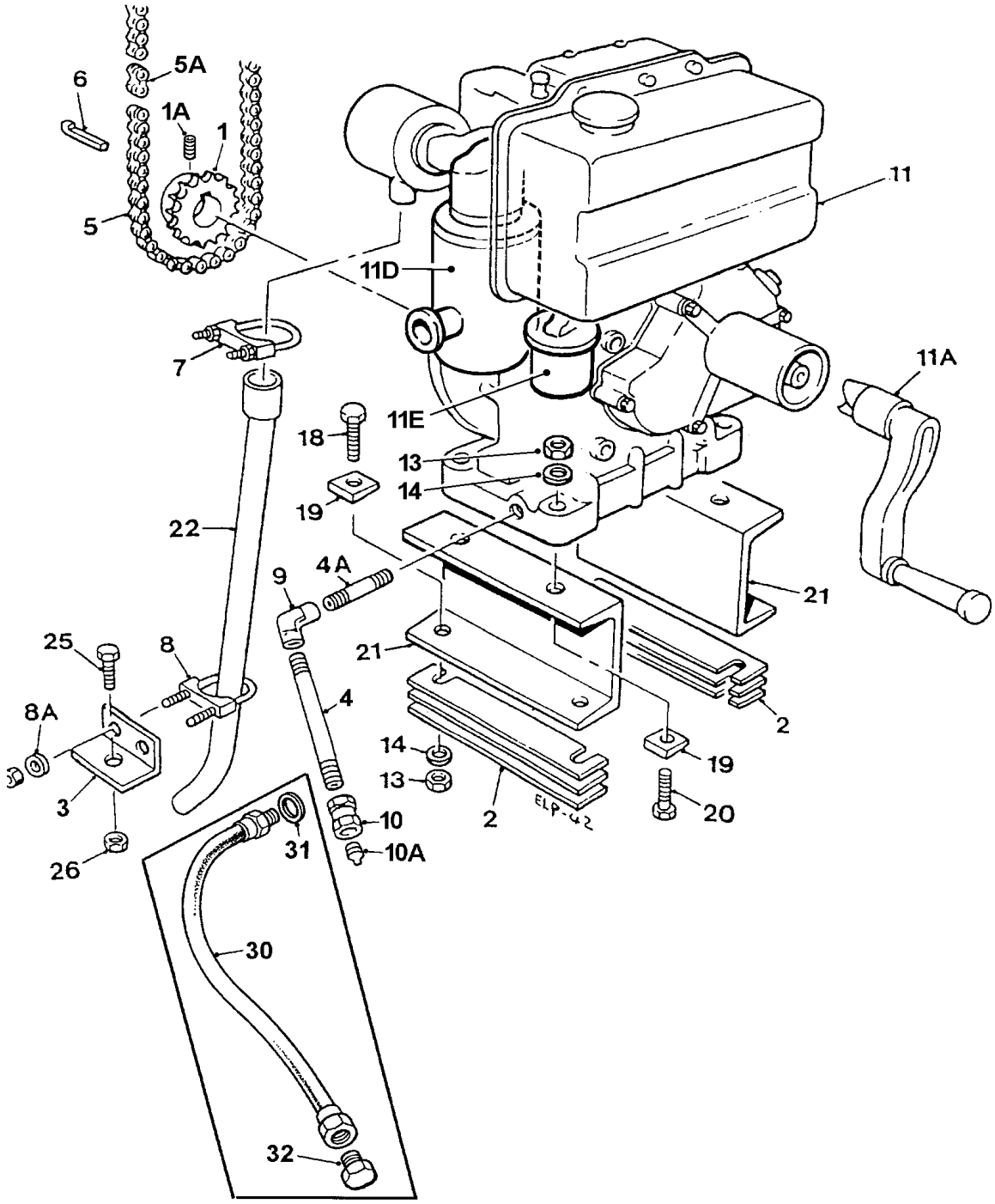




Item	Part no	Serial no	Description	Qty
Continued >>				
11D	EL60142480		MANIFOLD, engine exhaust *(part of engine)*	1
11E	EL60142520		FILTER, air	1
11F	EL20113118		FILTER, fuel	1
12	11S05T	/ 1995/96	SCREW, set, **100T**	4
13	61S05	/ 1995/96	NUT, binx “Binx”, self-locking, **100T**	4
15	7S05	/ 1995/96	NUT, **100T**	4
17	513341900		PIPE, exhaust, **100T**	1
17	513342500		PIPE, exhaust, **150T**	1
18	8S05F		BOLT, **150T**	4
20	8S05H		BOLT, **150T**	4
21	513343000		CHANNEL, engine base, **150T**	2
23	513340500	(year) / 1995/96	SPACER, **100T**	
25	513266700	1995/96 /	BASE BLOCK, engine, **100T**	4 2
26	513248400	1995/96 /	KIT,shims, **100T**	pack 1
—	513248401	1995/96 /	SHIM, 10G. **100T**	6
—	513248402	1995/96 /	SHIM, 16G. **100T**	4
—	513248403	1995/96 /	SHIM, 14G. **100T**	2
—	513248404	1995/96 /	SHIM, 18G. **100T**	2
—	—	Dec-96 /	SHIM, 22G. **100T**	2
28	V601339	1995/96 /	STUD, **100T**	4
29	8S05H	1995/96 /	BOLT, **100T**	4
30	61S05		NUT, “Binx”, self-locking	8
31	267S07		WASHER, flat	8
35	513362800	2003 / (year)	HOSE, sump oil drain	1
36	100S04	2003 /	SEAL, bonded	1
37	127S04	2003 /	PLUG, blanking	1

175T Mixer *from February 1988*





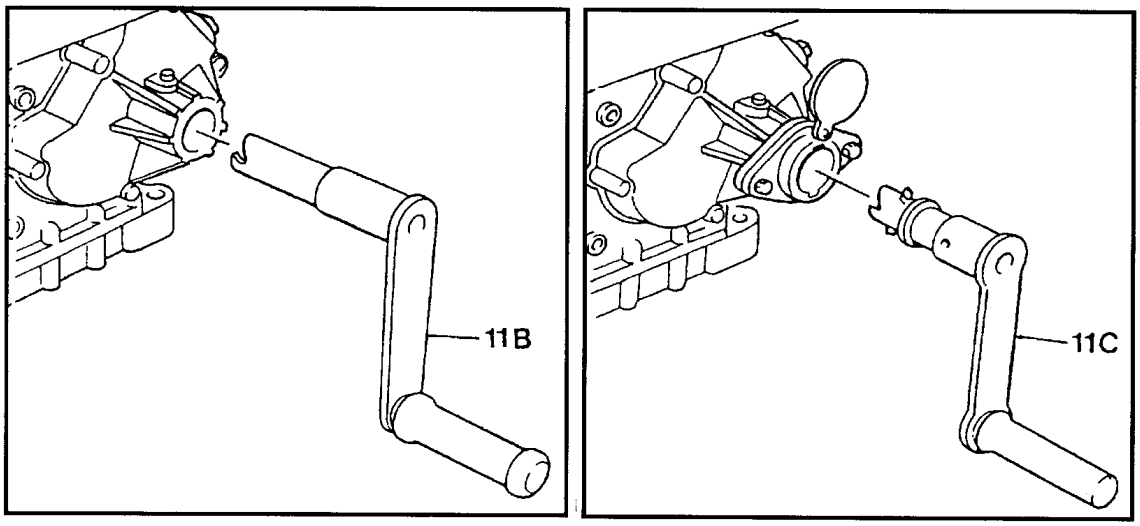
Item	Part no	Serial no	Description	Qty
1	513248300		SPROCKET, engine	1
1A	57S05D2	02679 /	SCREW, grub	1
2	513248400		SHIMS	pack 1
3	513266800		BRACKET, exhaust	1
4	513278200	(year) / 1995/96	PIPE, 125mm long, 1/4“ BSP	1
4	513359800	1995/96 / 2003	PIPE, 125mm long, 1/2“ BSP	1
4A	513256500	(year) / 1995/96	PIPE, 60mm long, 1/4" BSP	1
4A	513359700	1995/96 / 2003	PIPE, 60mm long, 1/2“ BSP	1
5	134105095		CHAIN, roller	1
5A	134105002		LINK	1
—	134105001		LINK, half *(not illustrated)*	1
6	300204160		KEY, gib head	1
7	354051005		CLAMP, exhaust	1
8	153S01		CLAMP, exhaust	1
8A	267S04		WASHER, flat	2
9	241102000	(year) / 1995/96	ELBOW, female, 1/4“ BSP	1
9	241104000	1995/96 / 2003	ELBOW, female, 1/2“ BSP	1
10	241902000	(year) / 1995/96	FITTING, straight female, 1/4“ BSP	1
10	241904000	1995/96 /	FITTING, straight female, 1/2“ BSP	1
10A	241702000	(year) / 1995/96	PLUG, oil drain, 1/4“ BSP tapered	1
10A	241704000	1995/96 / 2003	PLUG, oil drain, 1/2“ BSP tapered	1
11	354051000		ENGINE, Lister-Petter LT1/LV1-10 “Export” (“UK/EEC” up to 1995)	1
11A	EL60150016	/ Jan-95	# STARTING HANDLE	1
11B	EL60252971	Jan-95 /	# STARTING HANDLE, without anti kickback	1
11	354054100	Jan-95 /	ENGINE, Lister-Petter LT1/LV1-10 “UK/EEC	
11C	EL375231	Jan-95 /	# STARTING HANDLE, with anti kickback	1
			# When ordering starting handles specify the type required.	
11D	EL60131350		FILTER, air	1
11E	EL20113118		FILTER, fuel	1

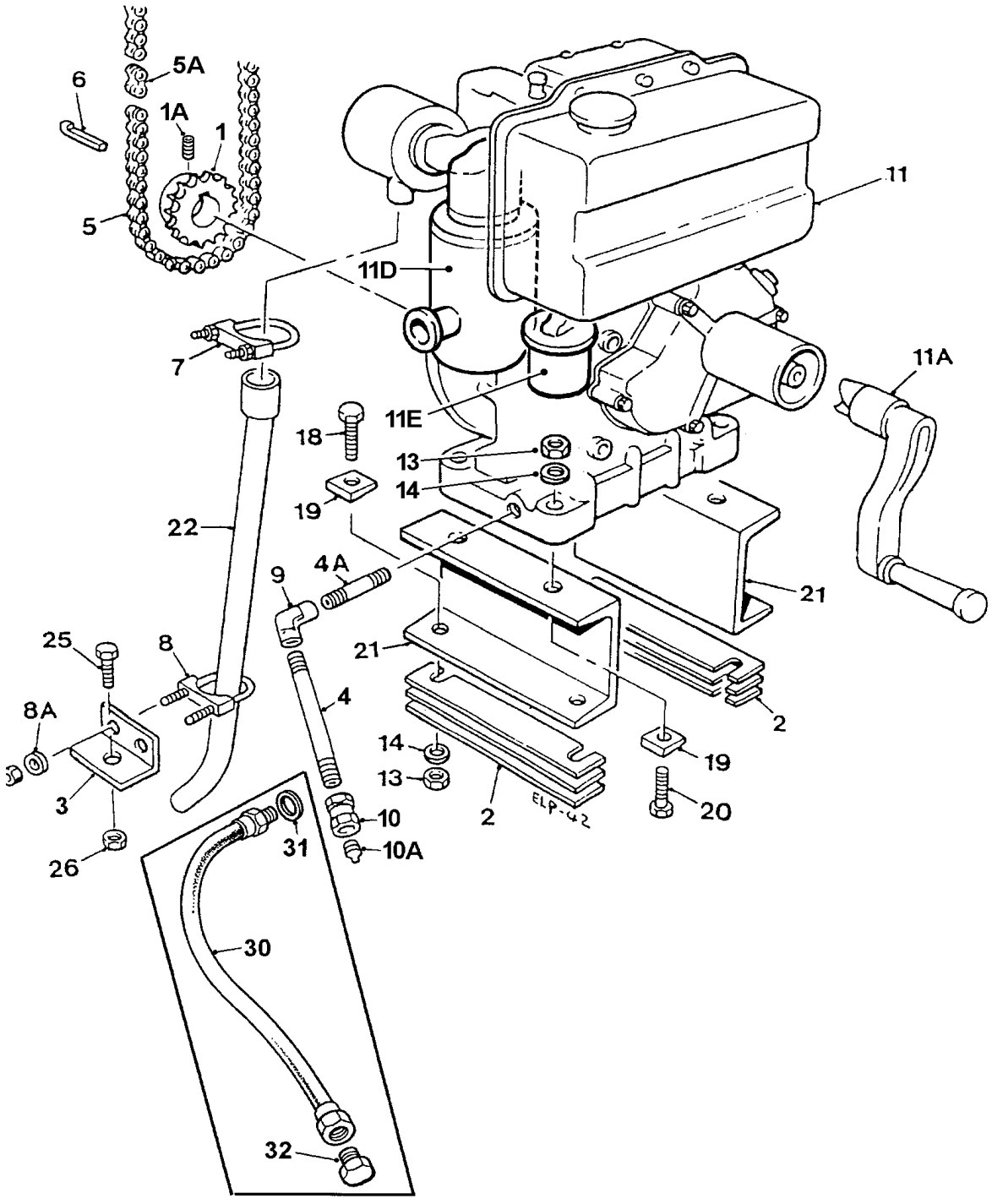
NOTE : ENGINE CHANGE Lister-Petter LT1-10 to LV1-10

Late in 2003 the Lister-Petter LT1-10 was superseded by the LV1-10. The engines as complete assemblies are interchangeable as are consumable items such as filters etc. Major items such as fuel injection pump, cylinder and piston, crankshaft, and conrod are different and when ordering spares it is important to quote the engine type.

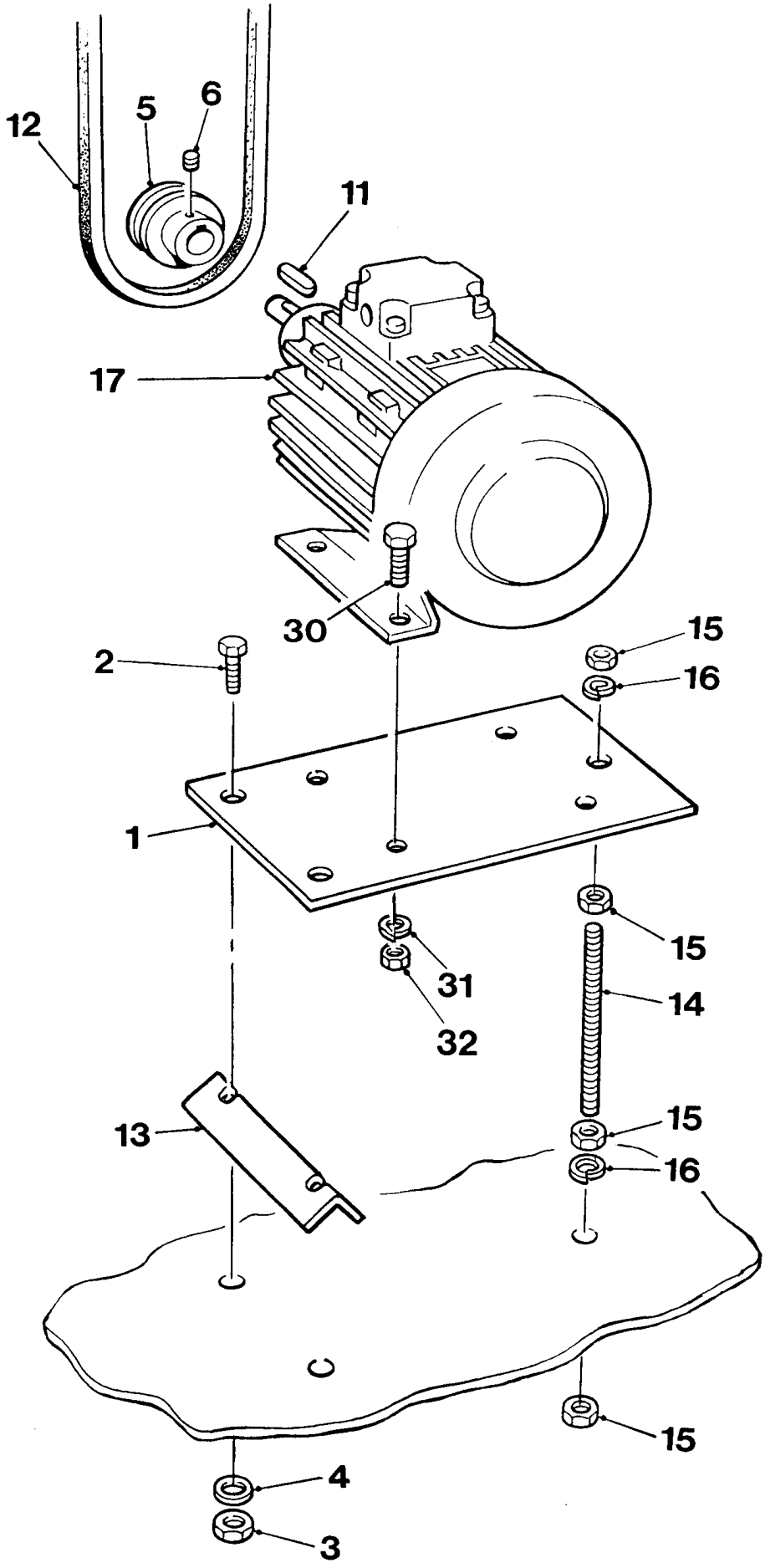
continued >

175T Mixer *from February 1988*





Item	Part no	Serial no	Description	Qty
13	61S05		NUT, “Binx”, self-locking	8
14	267S07		WASHER, flat	8
18	8S05E		BOLT	4
19	105S05		WASHER, taper	8
20	8S05J		BOLT	4
21	513267400		CHANNEL, engine base,	2
22	513267500		PIPE, exhaust	1
25	66S05A		SCREW, set	1
26	192S05		NUT, “Binx”, self-locking	1
30	513362800	2003 / (year)	HOSE, sump oil drain	1
31	100S04	2003 /	SEAL, bonded	1
32	127S04	2003 /	PLUG, blanking	1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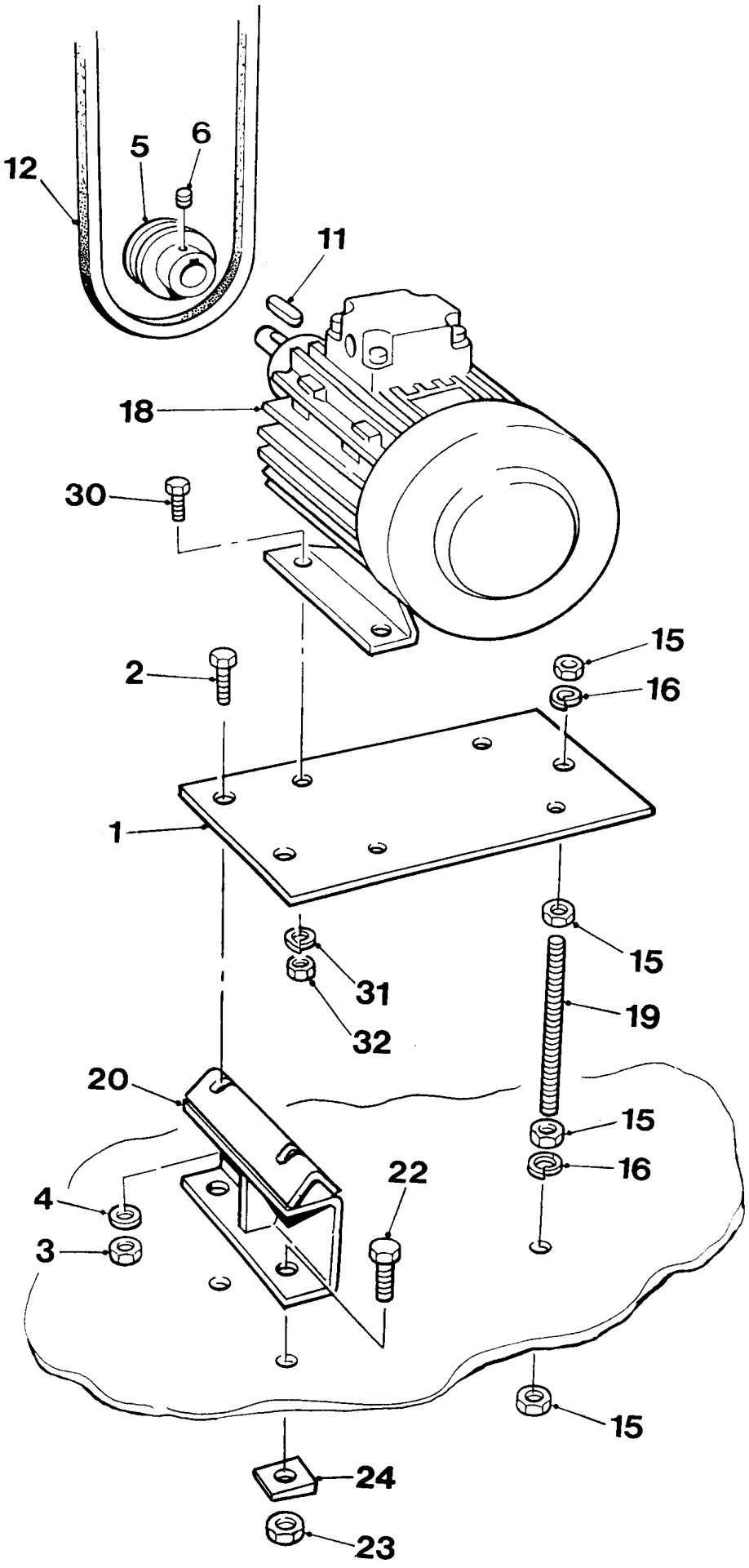
ELECTRIC (240/110 volt) drive assembly

C - 2A

Item	Part no	Serial no	Description	Qty
1	513342100		PLATE, motor mounting	1
2	8S05H		BOLT	2
3	61S05		NUT, “Binx”	2
4	267S07		WASHER, flat	2
5	513290600		PULLEY, ‘V’	1
6	57S04D2		SCREW, grub	1
11	304710840		KEY, parallel	1
12	397400300		BELT, ‘V’	1
13	513342000		ANGLE, motor adjusting	1
14	513333100		STUD	1
15	7S05		NUT	4
16	17S06		WASHER, spring	2
17	202493500		MOTOR, electric, 240v, .75kW (1hp)	1
17	202493600		MOTOR, electric, 110v, 1.1kW (1.5hp)	1
30	66S03A		SCREW, set	4
31	41S05		WASHER, spring	4
32	104S03		NUT	4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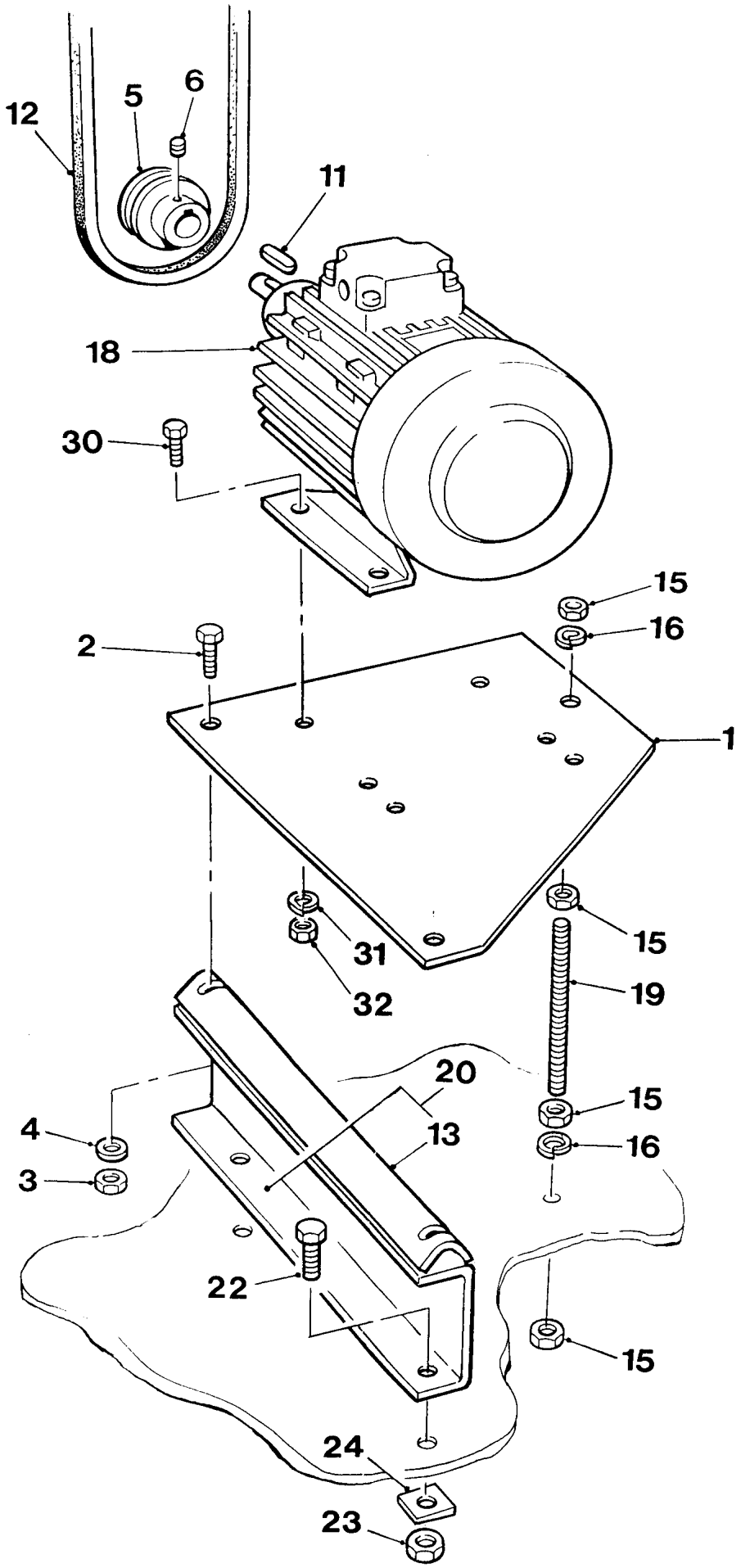
Item	Part no	Serial no	Description	Qty
1	513342100	/ Feb-90	PLATE, motor mounting	1
1	513350000	Feb-90 /	PLATE, motor mounting	1
2	8S05H		BOLT	2
3	61S05		NUT, self-locking “Binx”	2
4	267S07		WASHER, flat	2
5	513290600		PULLEY, ‘V’	1
6	57S04D2		SCREW, grub	1
11	304710840		KEY, parallel	1
12	397400300		BELT, ‘V’	1
13	——			
15	7S05		NUT	4
16	17S06		WASHER, spring	2
18	202493700		MOTOR, electric, 240v, 1.1kW (1.5hp)	1
18	202493800		MOTOR, electric, 110v, 1.1kW (1.5hp)	1
19	513333100		STUD	1
20	513343400		CHANNEL, motor mounting,	1
22	8S05D		BOLT	2
23	61S05		NUT, self-locking, “Binx”	2
24	105S05		WASHER, taper	2
30	66S03A		SCREW, set	4
31	41S05		WASHER, spring	4
32	104S03		NUT	4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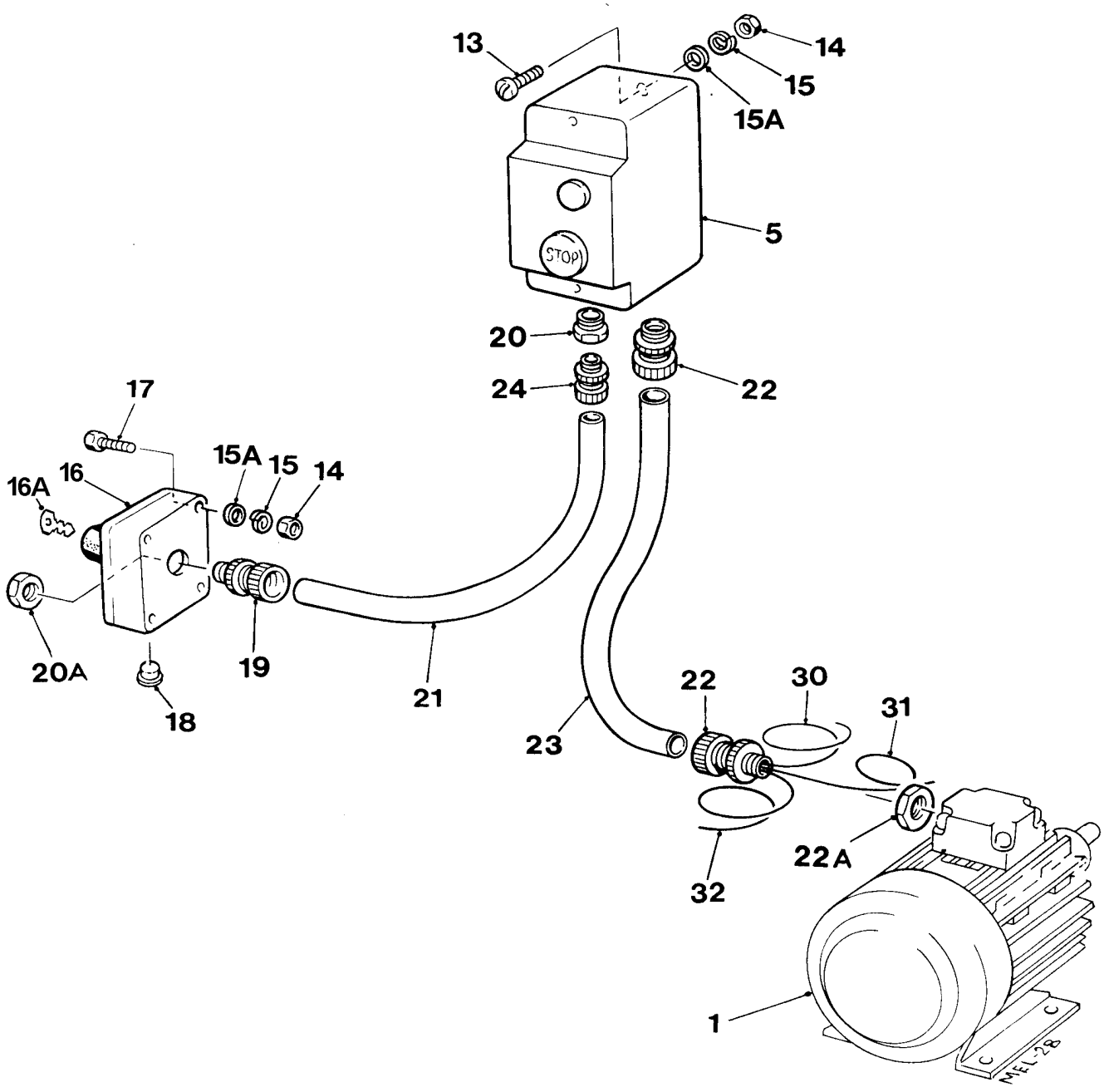
ELECTRIC (240/110 volt) drive assembly

C - 2C

Item	Part no	Serial no	Description	Qty
1	513290400		PLATE, motor mounting	1
2	8S05H		BOLT	2
3	61S05		NUT, self-locking “Binx”	2
4	267S07		WASHER, flat	2
5	513290600		PULLEY, ‘V’	1
6	57S04D2		SCREW, socket head	1
11	304710840		KEY, parallel	1
12	397400300		BELT, ‘V’	1
13	513290300		ANGLE, *(Welded part of item 20)*	1
15	7S05		NUT	4
16	17S06		WASHER, spring	2
18	202493700		MOTOR, electric, 240v, 1.1kw (1.5hp)	1
18	202493800		MOTOR, electric, 110v, 1.1kw (1.5hp)	1
19	513333100		STUD	1
20	513290500		CHANNEL, motor mount, *(Includes item 13)*	1
22	8S05D		BOLT	2
23	61S05		NUT, self-locking, “Binx”	4
24	105S05		WASHER, taper	2
30	66S03A		SCREW, set	4
31	41S05		WASHER, spring	4
32	104S03		NUT	4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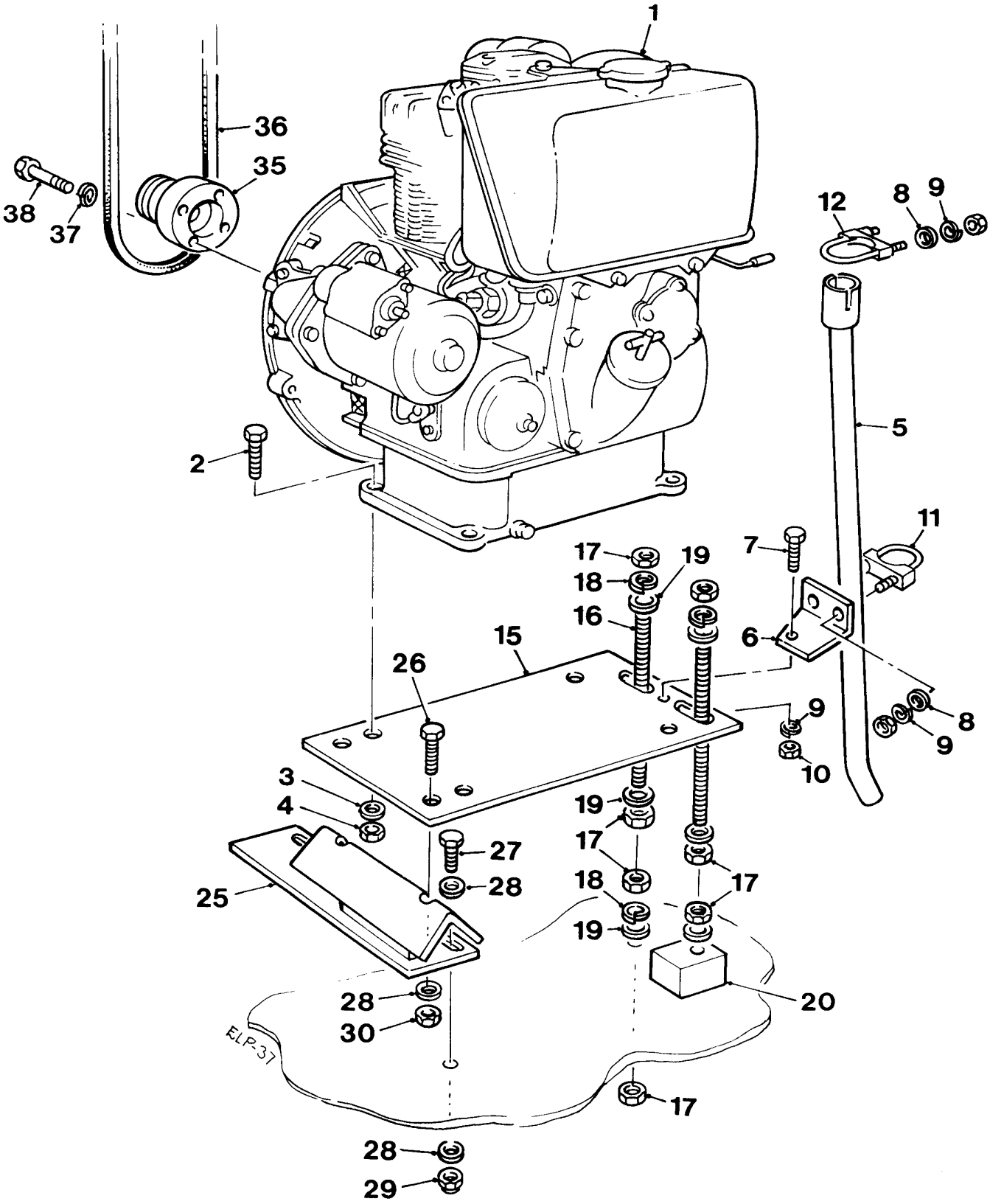
MEL-28

Item	Part no	Date	Description	Qty
1	.....		ELECTRIC MOTOR *(see Index page)*	1
5	208398600		STARTER, Danfoss 240v, **100T, 150T** & **175T**	1
.....	208398500		CASE, starter	1
.....	192928000		CONTACTOR	1
.....	207818001		RELAY, overload	1
5	208398800		STARTER, Danfoss 110v, **100T**	1
.....	208398500		CASE, starter	1
.....	192928000		CONTACTOR	1
.....	207818003		RELAY, overload	1
5	208398900		STARTER, Danfoss 110v, **150T** & **175T**	1
.....	208398500		CASE, starter	1
.....	192928000		CONTACTOR	1
.....	207818004		RELAY, overload	1
13	16S06C		SCREW, cheese head	2
14	7S01		NUT	4
15	17S02		WASHER, spring	4
15A	267S03		WASHER, flat	4
16	208870000	/ Oct-04	**#** SWITCH, stop, assembly	1
			# OBSOLETE: use 208880000	
16A	V602651	/ Oct-04	KEY, stop switch	1
16	208880000	Oct-04 /	SWITCH, stop, assembly	1
.....	208880000A	Oct-04 /	MUSHROOM key reset, c/w keys	1
.....	208880000B	Oct-04 /	CONTACTOR	1
.....	208880000C	Oct-04 /	ENCLOSURE	1
16A	V603623	Oct-04 /	KEY, stop switch	2
17	11S01C	/ Oct-04	SCREW, set	2
17	11S01D	Oct-04 /	SCREW, set	
18	133470000		PLUG, stop switch casing	1
19	131270000		COUPLING, 16mm	1
20	131570016		SOCKET, reducing	1
20A	133266050		NUT, backing	1
21	131766010		CONDUIT, 16mm	1
22	131271000		COUPLING, 20mm	2
22A	133272000		NUT, backing	1
23	131770010		CONDUIT, 20mm	1
24	131270000		COUPLING, 16mm	1
			110 volts	
30	30788101		WIRE, black	1 meter
31	30788102		WIRE, red	1 meter
32	30788103		WIRE, green/yellow	1 meter
			240 volts	
30	144750000		WIRE, black	1 meter
31	144700100		WIRE, red	1 meter
32	144700200		WIRE, green/yellow	1 meter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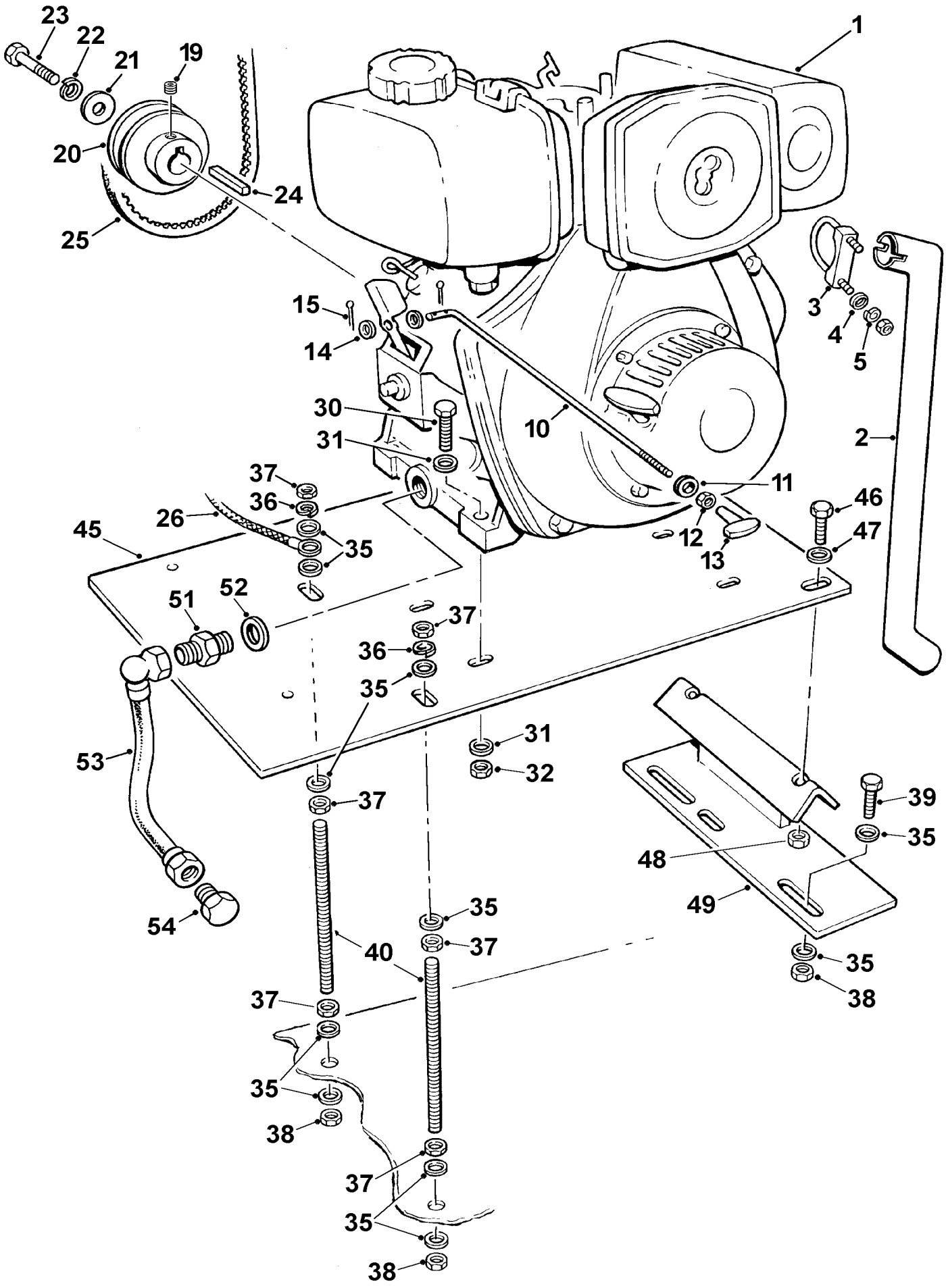
Item	Part no	Serial no	Description	Qty
1	V2004253		ENGINE, Lister/Petter AC1	1
2	11S04F		SCREW, set	4
3	267S06		WASHER, flat	4
4	61S04		NUT, self- locking “Binx”	4
5	513267500		PIPE, exhaust	1
6	513359300		BRACKET, exhaust	1
7	11S03C		SCREW, set	1
8	267S05		WASHER, flat	4
9	17S04		WASHER, spring	5
10	7S03		NUT	1
11	153S01		CLAMP	1
12	153S03		CLAMP	1
15	513358700		PLATE, engine mounting	1
16	513333100		STUD	2
17	7S05		NUT	7
18	17S06		WASHER, spring	3
19	267S07		WASHER, flat	6
20	513359000		PLATE (welded to chassis)	1
25	513358800		SUPPORT	1
26	11S04F		SCREW, set	2
27	11S04D		SCREW, set	2
28	267S06		WASHER, flat	6
29	59S03		NUT, self- locking “Nyloc”	2
30	61S04		NUT, self- locking “Binx”	2
35	513358300		PULLEY, special	1
36	397400100		BELT	1
37	41S04		WASHER, spring	4
38	6S02E		BOLT	4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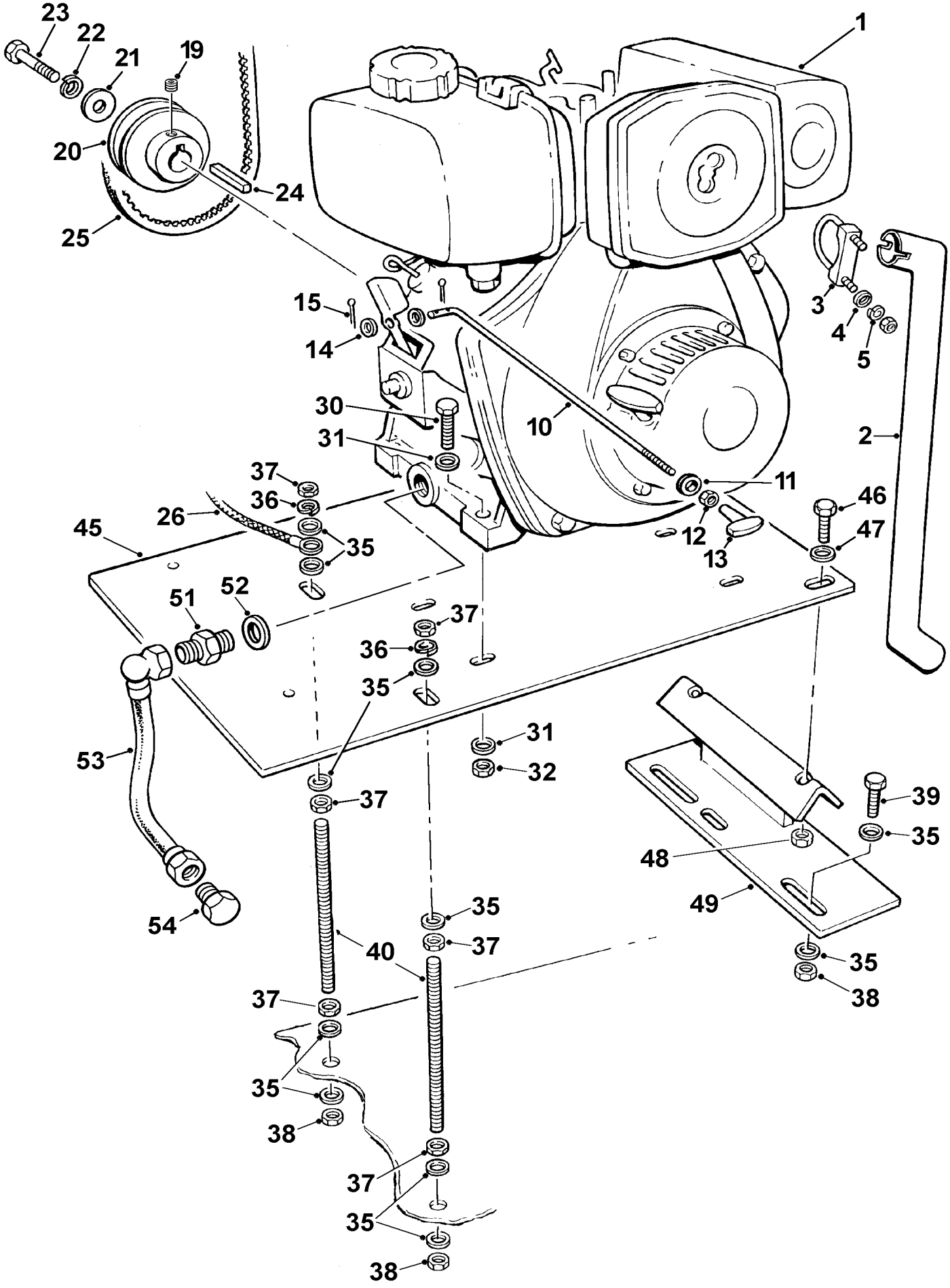
Engine & mounts

Item	Part no	Serial no	Description	Qty
			NOTE: ***For Battery, start switch & loom, see page C-6***	
		06737 /	**100T**	
		02719 /	**150T** & **175T**	
1	V2005210		ENGINE, Yanmar L40A/L48A/L48N	1
From Serial nos 09571-100T & 05135-150T/175T L48A replaced by L48N, Engines are interchangeable, check model before ordering filters etc				
2	513361600		PIPE, exhaust	1
3	153S02		CLAMP, exhaust	1
4	267S05		WASHER, flat	2
5	17S04		WASHER, spring	2
10	513362100	/ 07364	ROD, engine stop, **100T**	1
10	513362100	/ 03347	ROD, engine stop, **150T**	1
10	513362300	/ 03305	ROD, engine stop, **175T**	1
		#	*Deleted with the above RODS (Item 10)*	
11	254820000	/ #	GROMMET, open *(Fitted in eng. cover)*	1
12	7S02	/ #	NUT	1
13	V2005213	/ #	HANDLE, 'T', engine stop	1
14	267S04	/ #	WASHER, flat	2
15	44S02B	/ #	PIN, split	2
19	57S04D2		SCREW, grub	1
20	V2005220		PULLEY	1
21	V2004220		WASHER, 'Special'	1
22	17S04		WASHER, spring	1
23	8S03D		BOLT	1
24	305110550		KEY, parallel	1
25	397400200		BELT, 'V', **100T**	1
25	397400600		BELT, 'V', **150T** & **175T**	1
26	.....		CABLE, negative *(See page C-6)*	1
30	8S03D		BOLT	4
31	267S05		WASHER, flat	8
32	61S03		NUT, self- locking “Binx”	4
35	267S07		WASHER, flat	13
36	17S06		WASHER, spring	2
37	7S05		NUT	6
38	61S05		NUT, self- locking “Binx”	4
39	11S05D		SCREW, set	2
40	513333100		STUD	2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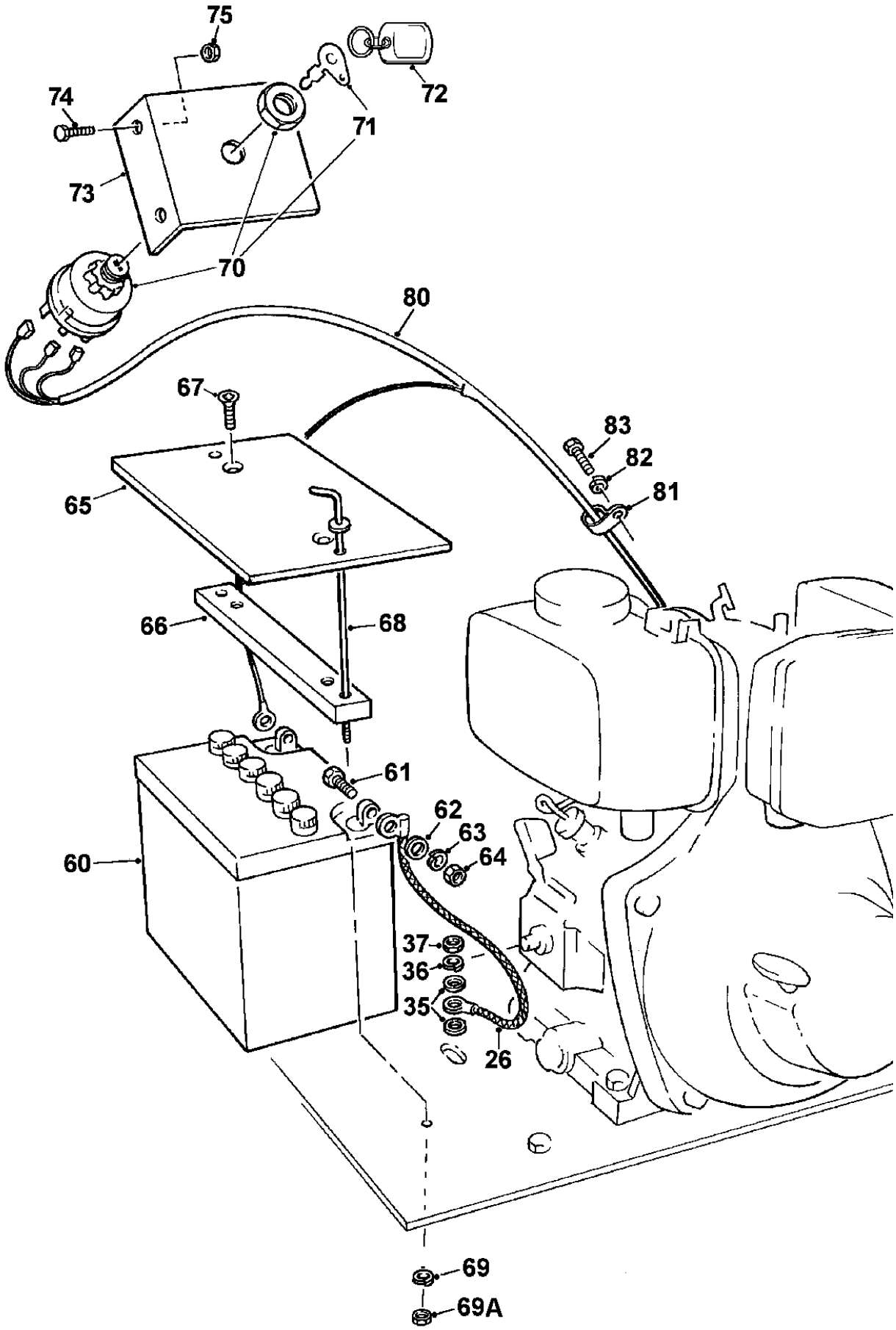
Engine & mounts

Item	Part no	Serial no	Description	Qty
45	513361800		PLATE, engine mounting	1
46	8S04D		BOLT	2
47	V2004220		WASHER, flat	2
48	61S04		NUT, self- locking “Binx”	2
49	513358800		SUPPORT, bracket	1
51	325S04	$ /	ADAPTOR, male/male	1
52	298S05	$ /	SEAL, bonded	1
53	31S02LL	$ /	HOSE, hydraulic	1
54	127S03	$ /	PLUG, blanking, engine oil drain	1

$ *From mixer serial numbers*

07373 / **100T**
03347 / **150T**
03387 / **175T**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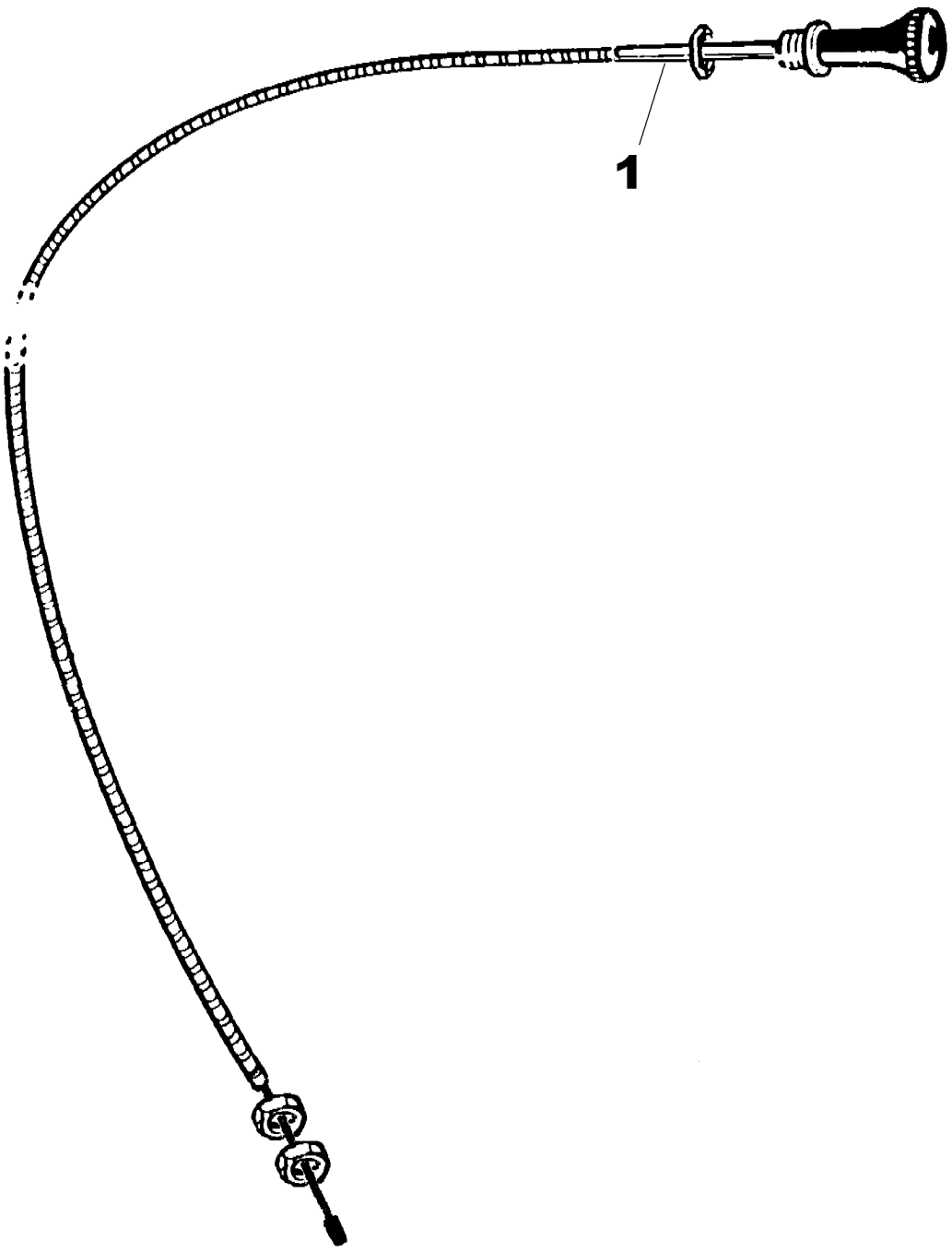
Battery, start switch & loom

Item	Part no	Serial no	Description	Qty
		06737 /	**100T**	
		02719 /	**150T** & **175T**	
26	V2005211		CABLE, negative	1
35	267S07		WASHER, flat	2
36	17S06		WASHER, spring	1
37	7S05		NUT	1
60	109S11		BATTERY, 12 volt	1
61	11S02B		SCREW, set	2
62	267S04		WASHER, flat	2
63	17S03		WASHER, spring	2
64	7S02		NUT	2
65	513362000		COVER, battery	1
66	513361900		CLAMP, battery	1
67	52S02E		SCREW, counter sunk	2
68	513361700		ROD, battery clamp	2
69	17S03		WASHER, spring	2
69A	7S02		NUT	2
70	V2003561		SWITCH, start, c/w key	1
71	V601179		KEY	2
72	V2003540		KEY RING	1
73	513359200		BRACKET, start switch	1
74	11S03A		SCREW, set	2
75	61S03		NUT, self-locking, 'Binx'	2
80	513362200		LOOM	1
81	V2005209		CLIP, 'P'	1
82	17S04		WASHER, spring	1
83	11S03A		SCREW, set	1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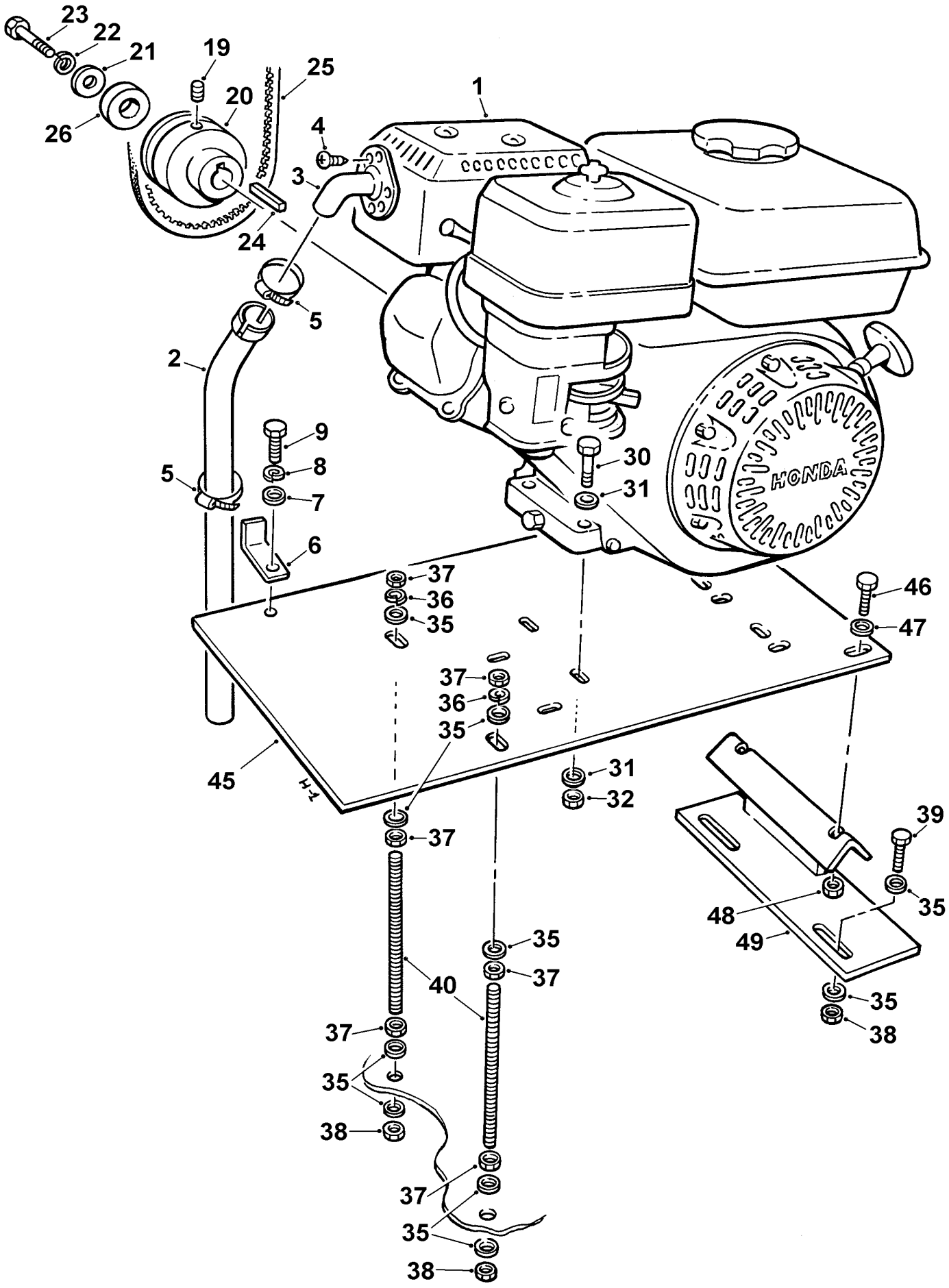
Emergency stop cable

Item	Part no	Serial no	Description	Qty
		11195 /	**100T**	
		05637 /	**150T**	
		05604 /	**175T**	
1	513370900		CABLE, emergency stop	1
2	267S04		WASHER, flat	2
3	V2006398		TIE, Cable, panel mount	1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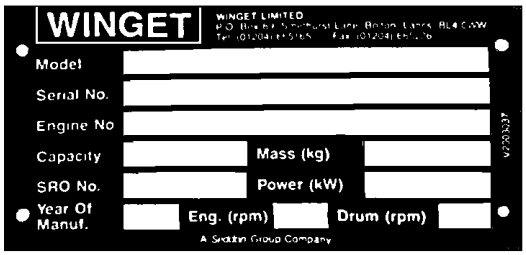
HONDA GX160K1 (hand start)
Engine & mounts

Item	Part no	Serial no	Description	Qty
1	354073260	07395 /	ENGINE, Honda GX160K1	1
2	513363600		PIPE, exhaust	1
3	513363700		ELBOW, exhaust	1
4	214S03		SCREW, self tapping	2
5	97S05		CLIP, pipe	2
6	513363800		BRACKET, exhaust	1
7	267S04		WASHER, flat	1
8	17S03		WASHER, spring	1
9	11S02A		SCREW, set	1
19	57S04D2		SCREW, grub	1
20	513363000		PULLEY	1
21	V2004220		WASHER, 'Special'	1
22	17S04		WASHER, spring	1
23	11S03D		SCREW, set	1
24	305110550		KEY, parallel	1
25	397400400		BELT, 'V', **(100T)**	1
26	513363400		SPACER	1
30	8S03D		BOLT	4
31	267S05		WASHER, flat	8
32	61S03		NUT, self- locking “Binx”	4
35	267S07		WASHER, flat	13
36	17S06		WASHER, spring	2
37	7S05		NUT	6
38	61S05		NUT, self- locking “Binx”	4
39	11S05D		SCREW, set	2
40	513333100		STUD	2
45	513361800		PLATE, engine mounting	1
46	8S04D		BOLT	2
47	267S06		WASHER, flat	2
48	61S04		NUT, self- locking “Binx”	2
49	513364600		SUPPORT, bracket	1

2



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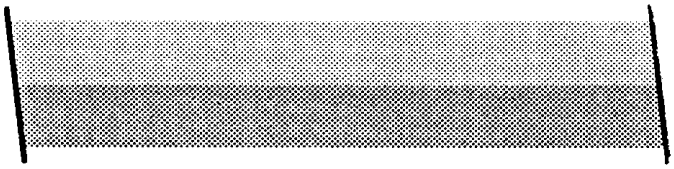

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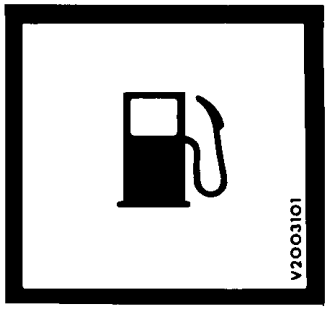

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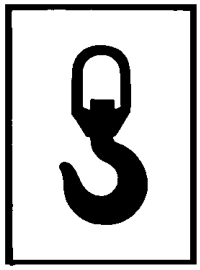

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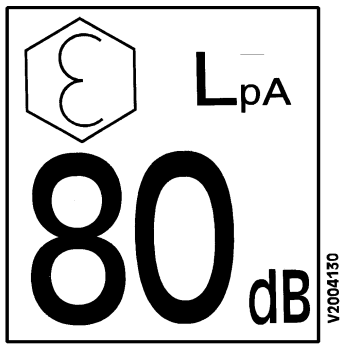

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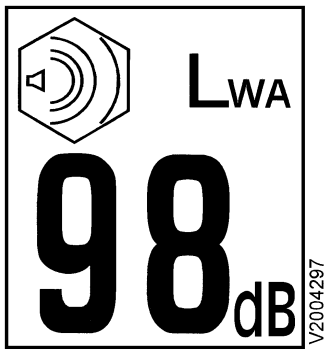

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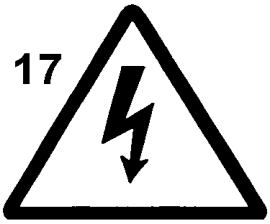

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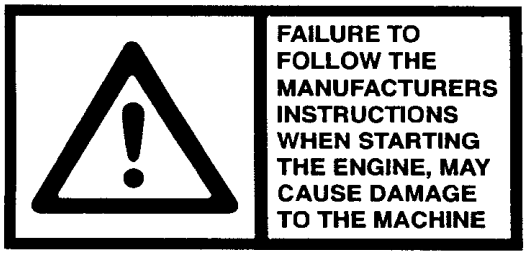


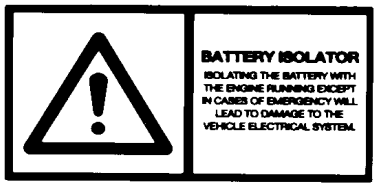
Item	Part no	Serial no	Description	Qty
				1
2	V2003037		PLATE, serial	1
—	101S05B		RIVET. pop	4
3	504600900		DECAL, “Engine housing lid closed”	1
4	504694600		DECAL, “Safety Warning”	1
8	V2003039		DECAL, “WINGET” logo,	3
9	V2003038		DECAL, stripe, 2 colour	AR
10	——		DECAL, diesel fuel *(OBSOLETE: use item 10A)*	
10A	V2003101		DECAL, “Diesel fuel”	1
13	V2003665		DECAL, “Sling point”	1
14	V2003598		DECAL, “Britsh made”	1
15	V2004130		DECAL, “LPA 80"	1
16	V2004297		DECAL, “LWA 98"	1
17	V2004307		DECAL, “Electrical hazard”	1
18	V2005208		DECAL, "Engine starting procedure"	

1 **100 T**

2 **150 T**

3 **175 T**

4



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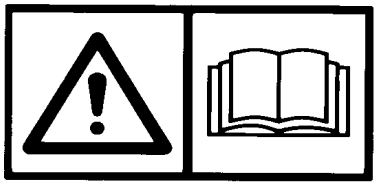

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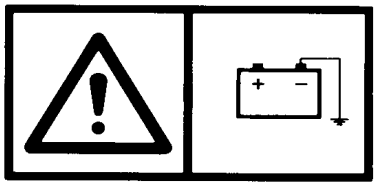

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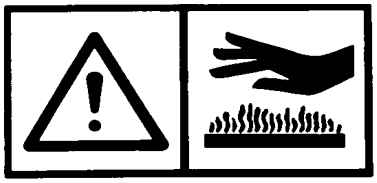

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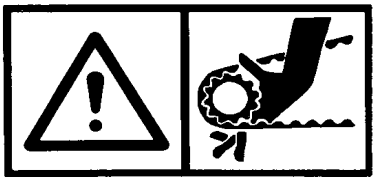

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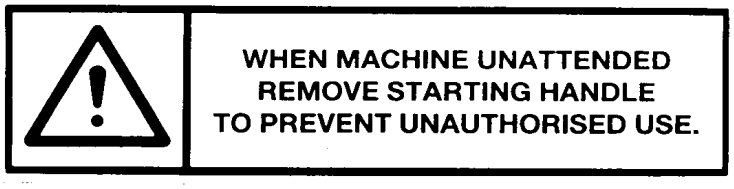

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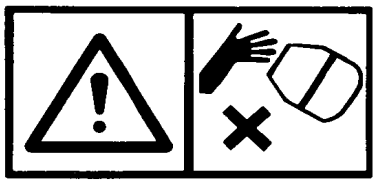

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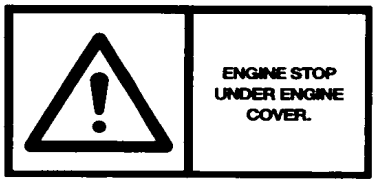

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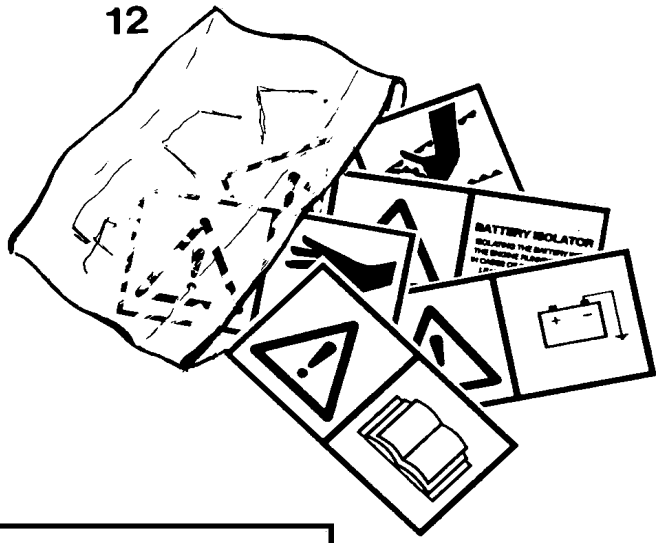

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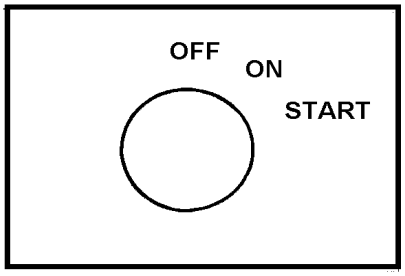

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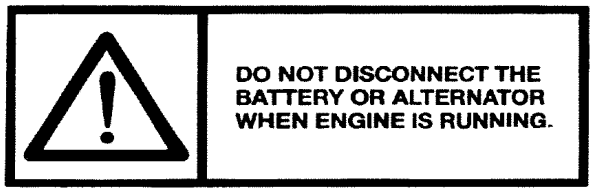

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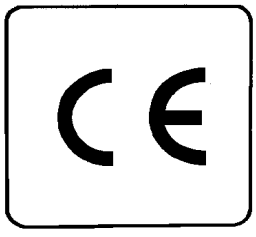
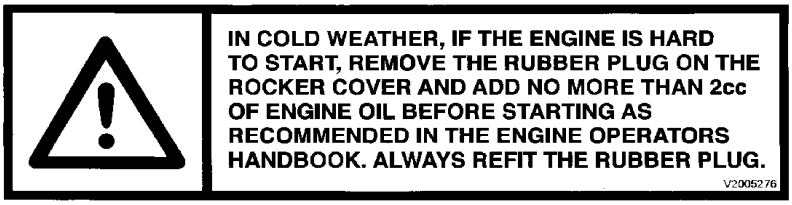
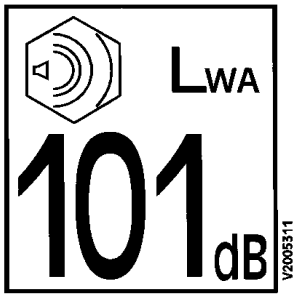


Item	Part no	Serial no	Description	Qty
1	V2003105		DECAL, “100T”, Black	2
1	V602436		DECAL, “100T” White *(Not illustrated)*	-
2	V2003106		DECAL, “150T” Black	2
2	V602437		DECAL, “150T” White *(Not illustrated)*	-
3	V2003107		DECAL, “175T” Black	2
3	V602438		DECAL, “175T” White *(Not illustrated)*	-
4	V2004227		DECAL, “Battery isolator”	1
5	V2004229		DECAL, “Operators handbook	1
6	V2004235		DECAL, “Negative earth”	1
7	V2004282		DECAL, “Hot surface”	1
8	V2004281		DECAL, “Chain drive	1
9	V2004288		DECAL, “Remove start handle”	1
10	V2004289		DECAL, “Keep hands clear of drum”	1
11	V2004302		DECAL, Engine stop"	1
12	V601906		KIT, decals, 100T, 150T, 175T Each kit contains all of the decals required for one machine.	1
13	V2005218		DECAL "Key switch"	1
14	V2004796		DECAL "Do not disconnect battery"	1
15	V2004223		DECAL "CE mark"	1

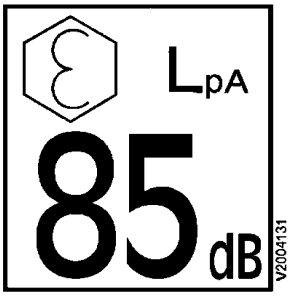
1


IN COLD WEATHER, IF THE ENGINE IS HARD TO START, REMOVE THE RUBBER PLUG ON THE ROCKER COVER AND ADD NO MORE THAN 2cc OF ENGINE OIL BEFORE STARTING AS RECOMMENDED IN THE ENGINE OPERATORS HANDBOOK. ALWAYS REFIT THE RUBBER PLUG.
V2005276

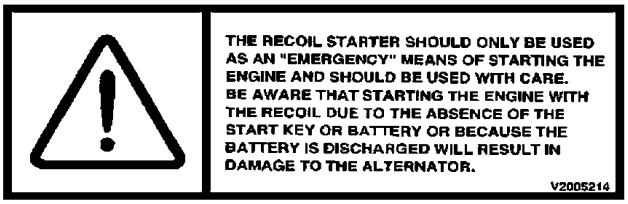
2


LWA
101 dB
V2005311

3


LpA
85 dB
V2004131

4


THE RECOIL STARTER SHOULD ONLY BE USED AS AN "EMERGENCY" MEANS OF STARTING THE ENGINE AND SHOULD BE USED WITH CARE. BE AWARE THAT STARTING THE ENGINE WITH THE RECOIL DUE TO THE ABSENCE OF THE START KEY OR BATTERY OR BECAUSE THE BATTERY IS DISCHARGED WILL RESULT IN DAMAGE TO THE ALTERNATOR.
V2005214

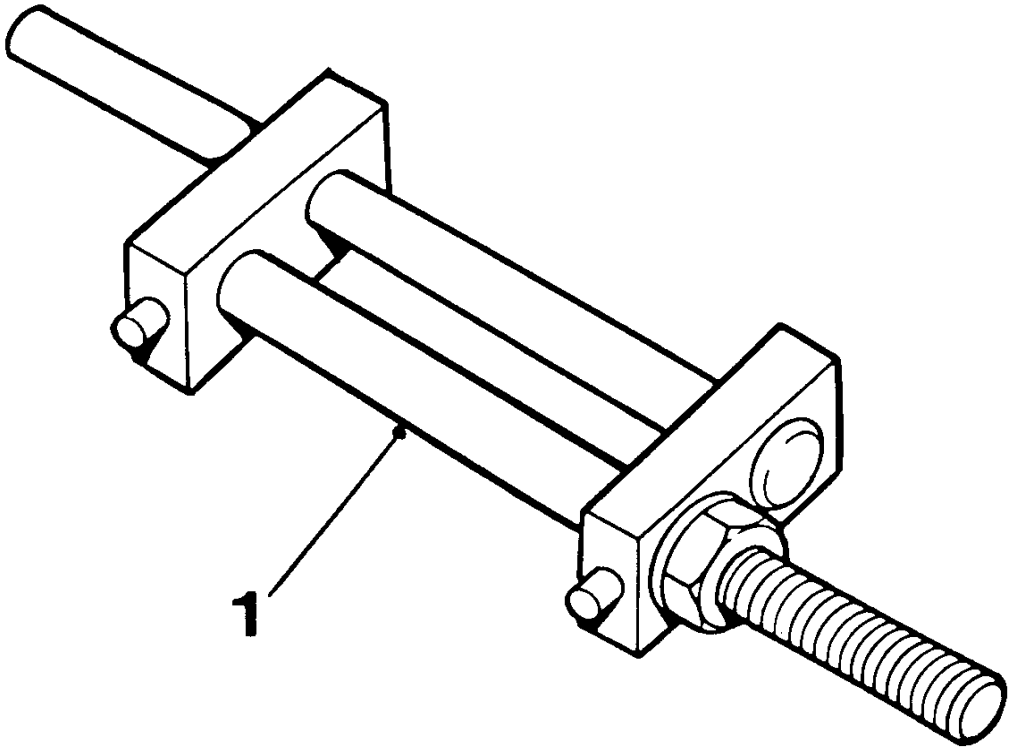
5


ENGINE
STOP

6


IMPORTANT!
TO AVOID INJURY OR MACHINE DAMAGE DO NOT ENGAGE LOCKING PLUNGER WHILST HANDWHEEL IN MOTION

Item	Part no	Serial no	Description	Qty
1	V2005276		DECAL, " Engine cold starting"	1
2	V2005311		DECAL, "LWA 101"	1
3	V2004131		DECAL, "LPA 85"	1
4	V2005214		DECAL, "The recoil starter"	1
5	FSE357		DECAL, "ENGINE STOP"	1
6	V2005630		DECAL, "Locking Plunger"	1


1

Item	Part no	Serial no	Description	Qty
1	513204000		CLAMP, drum clip	1

NUMERICAL INDEX *Built from February 1988*

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm