

460S, 520S, 540S, 580S & 600S
Operation & Parts Manual

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**THIS MANUAL IS TO BE HANDED TO THE CUSTOMER BEFORE
THE MACHINE IS TO BE USED FOR THE FIRST TIME.**

**THIS MANUAL (OR A COPY OF) MUST BE USED AND READ BY
ALL OPERATORS OF THIS MACHINE.**

TWOSE OF TIVERTON LIMITED

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LOWER MOOR WAY
TIVERTON BUSINESS PARK
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All dimensions and capacities mentioned in this book are approximate. In pursuance of the company's policy of constant development, the right is reserved to depart, without notice, from any detail illustrated or specified in this book, without incurring the obligation to provide such modifications on the machine previously delivered.

No responsibility will be accepted by Twose of Tiverton Limited for any injury, damage or loss arising from the improper use of or lack of maintenance of any machinery supplied by them or from any failure of the user to comply with all instructions published by Tractor or Loader Manufacturers, particularly with the regard to maximum load capacities, tyre pressures and stability, or with instructions and regulations pertaining to Tractor Cabs.

EC DECLARATION OF CONFORMITY

Conforming to EEC Directive 89/392/EEC

We,

TWOSE OF TIVERTON LIMITED,
6 Chinon Court, Lower Moor Way,
Tiverton Business Park, Tiverton, Devon, EX16 6SS.

Declare under our sole responsibility that:

The product (type) ... Tractor Mounted Flail Hedge/Grass Cutter

.....
Product Code ... 460S, 520S, 540S, 580S, 600S

Serial No. & Date Type

Manufactured by the above company/*

.....
(insert business name and full address if not stated above)*

Complies with the required provisions of the Directive 89/392/CEE, and AMD 91/368/CEE,
AMD 93/44/CEE, AMD 93/63/CEE and conforms with European Norm. BS EN 292.

Part 1: 1991 – Safety of Machinery – Terminology, methodology.

Part 2: 1991 – Safety of Machinery – Technical Specifications.

and other national standards associated with its design and construction as listed in the Technical File.

Signed John Fawk

on behalf of TWOSE of TIVERTON LIMITED

Responsible Person

Chief Design Engineer

Status

June 2003

Date

EC DECLARATION OF CONFORMITY

Conforming to EEC Directive 89/392/EEC

We,

TWOSE OF TIVERTON LIMITED,
6 Chinon Court, Lower Moor Way,
Tiverton Business Park, Tiverton, Devon, EX16 6SS.

Declare under our sole responsibility that:

The product (type) .. Flail Head

.....

Product Code .. TWHD

Serial No. & Date Type

Manufactured by the above company/*

.....

(* insert business name and full address if not stated above)

Complies with the required provisions of the Directive 89/392/CEE, and AMD 91/368/CEE,
AMD 93/44/CEE, AMD 93/63/CEE and conforms with European Norm. BS EN 292.

Part 1: 1991 – Safety of Machinery – Terminology, methodology.

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and other national standards associated with its design and construction as listed in the Technical File.

Signed 

on behalf of TWOSE of TIVERTON LIMITED

Responsible Person

Chief Design Engineer June 2003

Status

Date

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SPECIFICATIONS

ALL MODELS

Width folded:

For transport the whole machine is within tractor width.

Height and length:

When folded for transport these dimensions will vary according to tractor and cab.

ALL MODELS

Width folded:

For transport the whole machine is within tractor width.

Height and length:

When folded for transport these dimensions will vary according to tractor and cab.

NOISE

The equivalent daily personal noise exposure from this machine, measured at the operators' ear, is within the range 78 – 85 dB.

These figures apply to a normal distribution of use where the noise fluctuates between zero and maximum. The figures assume that the machine is fitted to a tractor with a quiet cab with the windows closed in a generally open environment. We recommend that the windows are kept closed.

With the cab rear window open the equivalent daily personal noise exposure will increase to a figure within the range 82 – 88 dB.

At equivalent daily noise exposure levels of between 85 and 90 dB, ear protection is recommended, it should be used if any window is left open.

GENERAL INFORMATION

Read this manual before fitting or operating the machine. Whenever any doubt exists contact your dealer or Twose Service Department for advice and assistance.

Use only Twose ‘Genuine Service Parts’ on Twose equipment and machines.

DEFINITIONS: The following definitions apply throughout this manual:

WARNING:

An operating procedure, technique etc., which can result in personal injury or loss of life if not observed carefully.

CAUTION:

An operating procedure, technique etc., which can result in the damage of either machine or equipment if not observed carefully.

NOTE:

An operating procedure, technique etc., which is considered essential to emphasize.

LEFT AND RIGHT HAND:

This term is applicable to the machine when fitted to the tractor and viewed from the rear, this also applies to tractor references.

To be assured of the latest design improvements purchase your ‘**Genuine Replacements**’ from the **Original Equipment Manufacturer: TWOSE of TIVERTON LIMITED** through your local Dealer or Stockist.

Always quote:

- *Machine Type*
- *Serial Number*
- *Part Number*

Record the Serial No. of your machine on this page and always quote this number when ordering spares along with the type and model of tractor your machine is fitted to.		
Machine Serial No.	Model Details:	Installation Date:
Dealer Name:		Dealer Telephone:
Dealer Address:		

FEATURES

460 SI, 520 SI, 540 SI, 580 SI & 600 SI

Cable Controls.
Linkage Mounted (Axle Mounted Optional).
Right or Left Hand Cutting.
1.2m Double Skin Belt Drive Head.
190 Litre Hydraulic Reservoir.
Independent Hydraulics.
Option of Standard or Hi Power.
245° of Head Angle – Constant Motion.
Built in Head Floatation.
Optional Lift Float.
95° Power Slew with Hydraulic Breakback.

460 SIE, 520 SIE, 540 SIE, 580 SIE & 600 SIE

Choice of Mono Lever or Multi Lever Electric Controls.
Linkage Mounted (Axle Mounted Optional).
Right or Left Hand Cutting.
1.2m Belt Drive Head.
190 Litre Hydraulic Reservoir.
Independent Hydraulics.
Option of Standard or Hi Power.
245° of Head Angle – Constant Motion.
Built in Head Floatation.
Optional Lift Float.
95° Power Slew with Hydraulic Breakback.

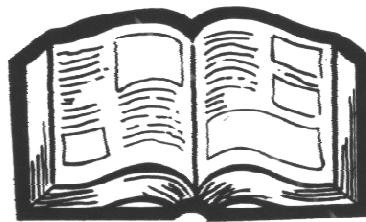
460 SIEP, 520 SIEP, 540 SIEP, 580 SIEP & 600 SIEP

Proportional Armrest Controls.
4 Proportional Services.
Linkage Mounted (Axle Mounted Optional).
Right or Left Hand Cutting.
1.2m Belt Drive Head.
190 Litre Hydraulic Reservoir.
Independent Hydraulics.
Option of Standard or Hi Power.
245° of Head Angle – Constant Motion.
Built in Head Floatation.
Adjustable Hydraulic Boom Flotation.
95° Power Slew with Hydraulic Breakback.

Models 540 & 600 – Feature Cranked Arms



SAFETY INFORMATION



SAFETY INFORMATION

This machine has the potential to be extremely dangerous, in the wrong hands it can kill or maim. It is therefore imperative that the owner, and the operator of this machine, read the following section to ensure that they are both fully aware of the dangers that do, or may exist, and their responsibilities surrounding its use.

The operator of this machine is responsible not only for their own safety but equally for the safety of others who may come into the close proximity of the machine, as the owner you are responsible for both.

POTENTIAL SIGNIFICANT DANGERS ASSOCIATED WITH THE USE OF THIS MACHINE:

- ▲ *Being hit by debris thrown by rotating components.*
- ▲ *Being hit by machine parts ejected through damage during use.*
- ▲ *Being caught on a rotating power take-off (PTO) shaft.*
- ▲ *Being caught in other moving parts i.e.: belts, pulleys and cutting heads.*
- ▲ *Electrocution from Overhead Power Lines (by contact with or 'flashover' from).*
- ▲ *Being hit by cutting heads or machine arms as they move.*
- ▲ *Becoming trapped between tractor and machine when hitching or unhitching.*
- ▲ *Tractor overbalancing when machine arm is extended.*
- ▲ *Injection of high pressure oil from hydraulic hoses or couplings.*
- ▲ *Machine overbalancing when freestanding (out of use).*
- ▲ *Road traffic accidents due to collision or debris on the road.*

BEFORE USING THIS MACHINE YOU MUST:

- ▲ *Ensure you read all sections of the operator handbook.*
- ▲ *Ensure the operator is, or has been, properly trained to use the machine.*
- ▲ *Ensure the operator has been issued with and reads the operator handbook.*
- ▲ *Ensure the operator understands and follows the instructions in operator handbook.*

- ▲ *Ensure the tractor front, rear and side(s) are fitted with metal mesh or polycarbonate guards of suitable size and strength to protect the operator against thrown debris or parts.*
- ▲ *Ensure tractor guards are fitted correctly, are undamaged and kept properly maintained.*
- ▲ *Ensure that all machine guards are in position, are undamaged, and are kept maintained in accordance with the manufacturer's recommendations.*
- ▲ *Ensure flails and their fixings are of a type recommended by the manufacturer, are securely attached and that none are missing or damaged.*
- ▲ *Ensure hydraulic pipes are carefully and correctly routed to avoid damage by chaffing, stretching or pinching and that they are held in place with the correct fittings.*
- ▲ *Always follow the manufacturer's instructions for attachment and removal of the machine from the tractor.*
- ▲ *Check that the machine fittings and couplings are in good condition.*
- ▲ *Ensure the tractor meets the minimum weight recommendations of the machine manufacturer and that ballast is used as necessary.*
- ▲ *Always inspect the work area thoroughly before starting to note obstacles and remove wire, bottles, cans and other debris.*
- ▲ *Use clear suitably sized warning signs to alert others to the nature of the machine working within that area. Signs should be placed at both ends of the work site. (It is recommended that signs used are of a size and type specified by the Department of Transport and positioned in accordance with their and the Local Highways Authority guidelines).*
- ▲ *Ensure the operator is protected from noise. Ear defenders should be worn and tractor cab doors and windows must be kept closed. Machine controls should be routed through proprietary openings in the cab to enable all windows to be shut fully.*
- ▲ *Always work at a safe speed taking account of the conditions i.e.: terrain, highway proximity and obstacles around and above the machine.*
- ▲ *Extra special attention should be applied to Overhead Power Lines. Some of our machines are capable of reach in excess of 8 metres (26 feet) this means they have the*

potential to well exceed, by possibly 3 metres (9' 9"), the lowest legal minimum height of 5.2 metres from the ground for 11,000 and 33,000 volt power lines. It cannot be stressed enough the dangers that surround this capability, it is therefore vital that the operator is fully aware of the maximum height and reach of the machine, and that they are fully conversant with all aspects regarding the safe minimum distances that apply when working with machines in close proximity to Power Lines. (Further information on this subject can be obtained from the Health & Safety Executive or your Local Power Company).

- ▲ *Always disengage the machine, kill the tractor engine, remove and pocket the key before dismounting for any reason.*
- ▲ *Always clear up all debris left at the work area, it may cause hazard to others.*
- ▲ *Always ensure when you remove your machine from the tractor that it is left in a safe and stable position using the stands and props provided and secured if necessary.*

WHEN NOT TO USE THIS MACHINE:

- ▲ *Never attempt to use this machine if you have not been trained to do so.*
- ▲ *Never uses a machine until you have read and understood the operator handbook, are familiar with, and practiced the controls.*
- ▲ *Never use a machine that is poorly maintained.*
- ▲ *Never use a machine if guards are missing or damaged.*
- ▲ *Never use a machine on which the hydraulic system shows signs of wear or damage.*
- ▲ *Never fit, or use, a machine on a tractor that does not meet the manufacturer's minimum specification level.*
- ▲ *Never use a machine fitted to a tractor that does not have suitable front, rear and side(s) cab guarding made of metal mesh or polycarbonate.*
- ▲ *Never use the machine if the tractor cab guarding is damaged, deteriorating or badly fitted.*
- ▲ *Never turn a machine cutting head to an angle that causes debris to be ejected towards the cab.*

- ▲ *Never start or continue to work a machine if people are nearby or approaching - Stop and wait until they are at a safe distance before continuing.*
- ▲ *Never attempt to use a machine on materials in excess of its capability.*
- ▲ *Never use a machine to perform a task it has not been designed to do.*
- ▲ *Never operate the tractor or machine controls from any position other than from the driving seat, especially whilst hitching or unhitching the machine.*
- ▲ *Never carry out maintenance of a machine or a tractor whilst the engine is running – the engine should be switched off, the key removed and pocketed.*
- ▲ *Never leave a machine unattended in a raised position – it should be lowered to the ground in a safe position on a level firm site.*
- ▲ *Never leave a tractor with the key in or the engine running.*
- ▲ *Never carry out maintenance on any part or component of a machine that is raised unless that part or component has been properly substantially braced or supported.*
- ▲ *Never attempt to detect a hydraulic leak with your hand – use a piece of cardboard.*
- ▲ *Never allow children near to, or play on, a tractor or machine under any circumstances.*

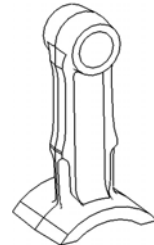
INTRODUCTION

The Twose range of Boom Flail Trimmers has been designed with both the farmer and the contractor in mind - which has resulted in a boom flail with a very high specification - with many features not found on other machines.

The construction is of welded steel fabricated assemblies - with many and varied options available covering such things as controls, hydraulics, heads, booms etc. The cutting head is of a 'double skin' construction.

The cutting flail blades offered for your Twose machine are: -

- a) Heavy, double edged design (one piece).
 - For 'Upward' or 'Downward' cutting.
 - Suitable for all types of conditions and growth.



- b) Back to Back 'rigid' one piece blade (in pairs).
 - For 'Upward' or 'Downward' cutting.
 - Suitable for grass/mowing and trimming.

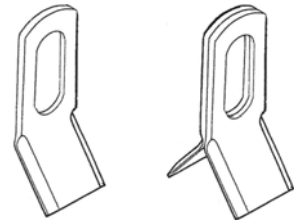
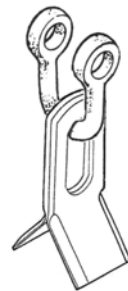


Illustration shows both a single blade and pair of blades back to back.

- c) Back to Back - on shackle (in pairs).
 - for 'Upward' or 'Downward' cutting.
 - Suitable for grass/mowing.



- d) Heavy single edge blade flail (twisted pattern).
 - Cuts one direction only.
 - For grass cutting and hedge trimming.



- e) Boot flail - on shackle.
 - Cuts one direction only.
 - For grass cutting and hedge trimming.



The cutter head design is of a 'double skin' construction for greater strength and longer life. The drive is by means of 'vee' belts from the hydraulic motor to the rotor, with the drive completely contained within the width of head for a cleaner cut.

Twin 'vee' belts take the drive from the motor to the rotor - giving a reliable drive with the added benefit of anti-shock protection that a belt drive system provides.

A hydraulically powered 'breakback' system is built into all models. This is primarily to protect components when encountering obstructions, but also acts as an aid when cutting in difficult and awkward corners.

Two parking stand legs are fitted to the machine, which once the machine has been attached to the tractor should be folded away in the 'stow' position.

A hydraulically powered breakback system (100° max slew) is built into all models - this is primarily to protect machine components should obstructions be encountered whilst working, but also acts as an aid when cutting in difficult and awkward corners.

Every machine has 'angle head flotation' as standard – on cable machines this is engaged by moving the head rotation lever beyond the normal actuation range into a detented 'float' position, on electric machines a switch engages the head float.

'Lift float' is available as an option on the machine.

All machines have a relief valve in the primary ram system, this limits the pressure which can be generated in the drop side of the cylinder – the cutting head cannot therefore be 'driven' into the ground in any circumstances.

TRACTOR SELECTION

Tractor Specifications

460S - Tractor size must be a minimum of 60 HP

520S/580S - Tractor size must be a minimum of 65 HP

540S - Tractor size must be a minimum of 75 HP

600S - Tractor size must be a minimum of 80 HP

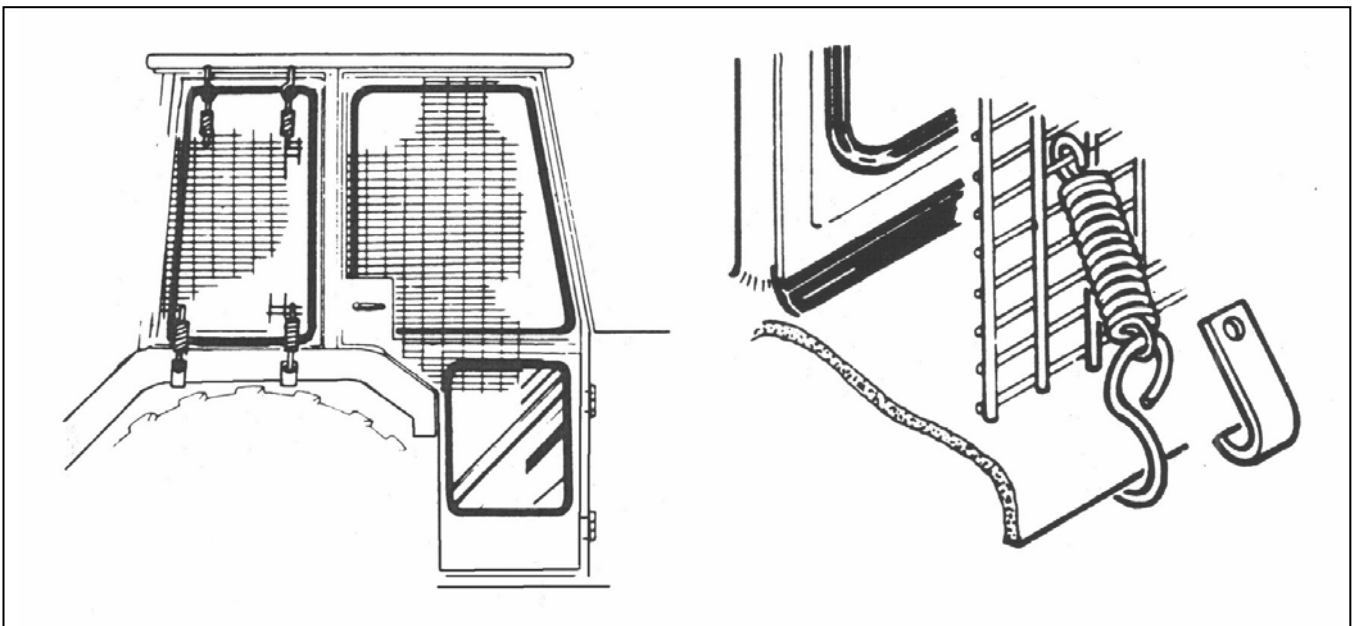
Tractors must be equipped with a power take off (PTO) shaft that must run at 450 rpm during operation. The PTO shaft should run clockwise when viewed from the rear of the tractor and ideally be of a 3/8" S.A.E. – 6 spline shaft type to enable a standard PTO shaft to be connected.

The tractor should have counterbalance weights (*on approved mountings*) fitted if necessary and/or ballasted wheels to ensure stability of the unit at all times.

Stability may be further increased with a wider track setting on the tractors rear wheels – *contact your local dealer or tractor agent for specific advice on this subject.*

Four wheel drive tractors have extra weight inbuilt plus larger front wheels, this is an advantage in keeping the unit stable.

TRACTOR/OPERATOR GUARDING



Use a tractor with ‘safety glass’ windows if possible and fit **Operator guard** (*Part No.7313324*) using the hooks provided.

Shape ‘safety protection material’ to cover all vulnerable areas. Remember the driver must be looking through ‘safety protection’ at the flail head in any working position.

If the windows are not laminated safety glass polycarbonate glazing must also be fitted.

If the tractor has a roll bar only, a frame must be made to carry both mesh and polycarbonate glazing.

Ensure the operator is guarded by ‘safety protection’ whatever position the machine is in and that the protection is such that it does not interfere with tractor and machine functions or obstruct the operator’s vision.

HYDRAULIC OIL

IMPORTANT

The hydraulic system will have been 'run-up' and checked at the factory prior to the machines despatch, where 'Texaco Rando 46' hydraulic oil is used - and is recommended for the machine.

The hydraulic tank will have oil in it when delivered.

Oil tank capacity is 190 Litres

The user must ensure the hydraulic tank is full of 'RANDO 46' hydraulic oil (or an equivalent recommended oil – refer to oil chart below) before attempting to start the machine from new.

Recommended Oils

Manufacturer	Cold or Temperate Climate	Hot Climate
BP	<i>Bartran 46</i> <i>Energol HLP-HM 46</i>	<i>Bartran 68</i> <i>Energol HLP-HM 68</i>
CASTROL	<i>Hyspin AWH-M 46</i>	<i>Hyspin AWH-M 68</i>
COMMA	<i>Hydraulic Oil LIC 15</i>	<i>Hydraulic Oil LIC 20</i>
ELF	<i>Hydrelf HV 46</i> <i>Hydrelf XV 46</i>	<i>Hydrelf HV 68</i>
ESSO	<i>Univis N 46</i>	<i>Univis N 68</i>
FUCHS (UK/Non UK markets*)	<i>Renolin 46</i> <i>Renolin HVZ 46</i> <i>Renolin CL46/B15*</i> <i>Renolin AF46/ZAF46B*</i>	<i>Renolin 68</i> <i>Renolin HVZ 68</i> <i>Renolin CL68/B20*</i> <i>Renolin AF68/ZAF68B*</i>
GREENWAY	<i>Excelpower HY 68</i>	<i>Excelpower HY 68</i>
MILLERS	<i>Millmax 46</i> <i>Millmax HV 46</i>	<i>Millmax 68</i> <i>Millmax HV 68</i>
MORRIS	<i>Liquimatic 5</i> <i>Liquimatic HV 46</i> <i>Triad 46</i>	<i>Liquimatic 6</i> <i>Liquimatic HV 68</i> <i>Triad 68</i>
SHELL	<i>Tellus 46</i> <i>Tellus T46</i>	<i>Tellus 68</i> <i>Tellus T68</i>
TEXACO	<i>RandoHD 46</i> <i>Rando HDZ 46</i>	<i>Rando HD 68</i> <i>Rando HDZ 68</i>
TOTAL	<i>Equivis ZS 46</i>	<i>Equivis ZS 68</i>

The tank top filter/breather is equipped with a strainer to ensure all oil is strained when being put into tank. The strainer basket - should never be removed, all hydraulic oil filling is to be done through the strainer.

WARNING

Never mix hydraulic oils - if another supplier's oil is to be used ensure it is suitably compatible oil - *Check with your oil supplier or machine manufacturer first.*

ATTACHING THE MACHINE TO THE TRACTOR

IMPORTANT: -

Ensure the machine is parked on a firm and level site away from bystanders or onlookers. Read and understand all instructions in this manual regarding Health, Safety and the use of this machine.

FOR PIN TYPE LOWER LINKAGE EYES ONLY

- Remove spring pins, lift pins and spacers as supplied with Hedgetrimmer from lower link positions of linkage frame.
- Slowly and very carefully reverse the tractor towards the machine linkage frame.
- With care - ensure that tractor lower link ball eyes fit between lower jaws of linkage frame and that pin holes are aligned.

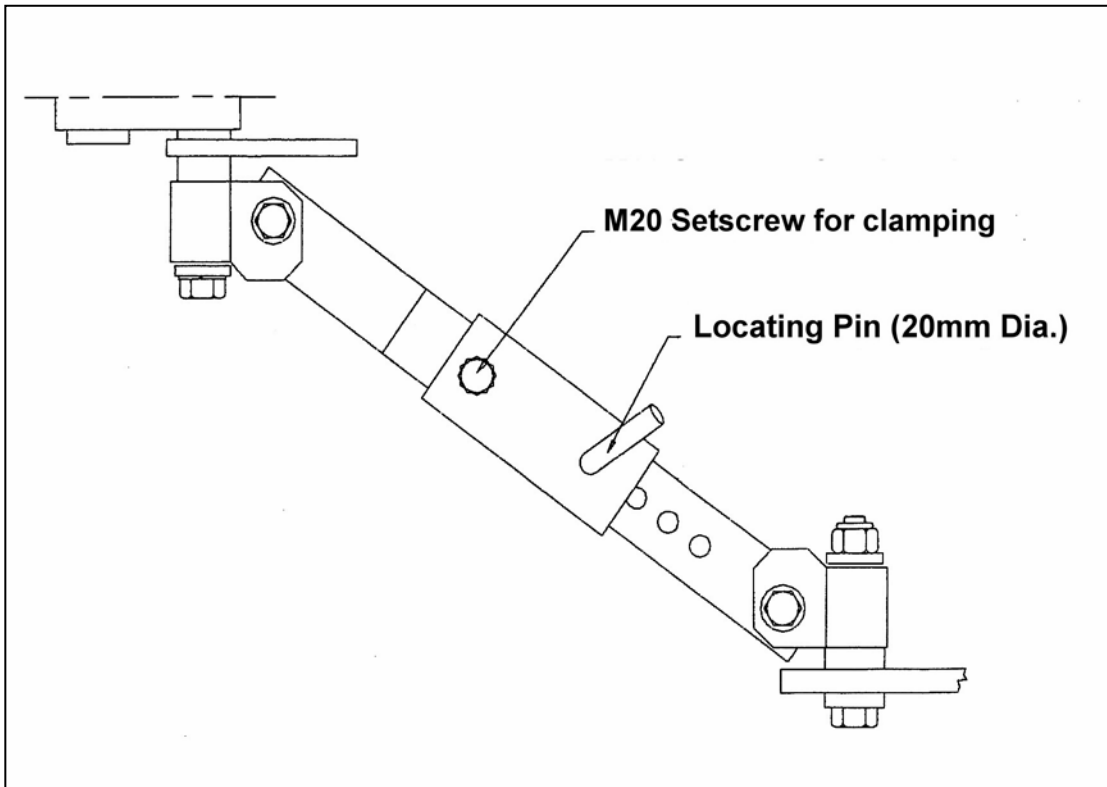
SWITCH OFF TRACTOR ENGINE AND ENSURE HANDBRAKE IS ON

- With holes of tractor lower link eyes in line with lower jaw holes of frame - the lower linkage pins should now be refitted - with spacers 'in position - on pin, between jaws and outboard'
- Spacer is provided to prevent side movement of link arms.
- Secure lift pin into position using the 7/16" dia. pin and ring assembly.

FOR AUTOMATIC QUICK CROOK-ON LOWER LINK ONLY

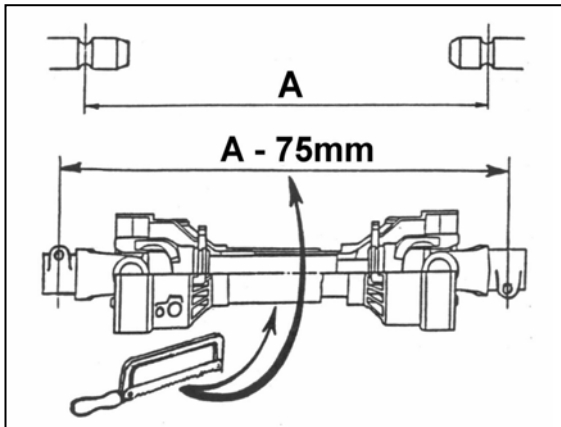
- Remove spring pins, lift pins and spacers as supplied with Hedgetrimmer from lower link positions of linkage frame. Then reassemble lift pin, spacer together with tractor lower link ball end eye - all onto lift pin (between ears of frame) - with spacers to the outside. Then secure into position using 7/16" diameter pin and ring.
- Slowly and very carefully reverse the tractor towards the machine linkage frame.
- With care - ensure that tractor lower links fit between lower jaws of linkage frame and are aligned with relevant ball eyes now already on lower lift pins.
- Raise tractor lower link arms to a position that allows the ball to engage correctly into its own housing in arm.
- The adjustable 'A' frame - stabiliser arms should now be set to required length to suit tractor.
- The main 20mm diameter locating pin - through both assemblies should be removed after first disconnecting its 7/16" diameter lock-pin and ring.
- Slacken off the M20 setscrew (clamping both halves together)

- The pair of stabiliser arms can now be telescoped upwards/forwards to allow the top link coupler to be fitted to the tractor top link position. Secure upper end of stabiliser to tractor top link point using tractor top link pin and spring pin.
- The top link stay - between Hedgetrimmer and stabiliser frame may have to be lengthened/adjusted to suit.



START-UP TRACTOR

- Raise whole machine on linkage until a height is reached which gives a reasonably horizontal path for the P.T.O shaft and approximately 300mm.
- With machine at this height setting the 20mm diameter locating pin for stabiliser arms should be fitted through pair of nearest matching holes, and secured with 7/16" pin and ring (both arms) - *Ensure chosen setting is same on both arms.*
- Tighten M20 setscrew to each stabiliser arm - to lock together.
- Lower three-point linkage to allow weight of machine to be taken on stabilisers.
- Tractor lower linkage check chains assemblies should now be tightened to make sure tractor arms are locked and machine is positioned centrally at rear of tractor.
- Top link should be adjusted to ensure hedgetrimmer is upright.
- Check the P.T.O shaft length.
When connected from tractor to machine it should engage by 1/3rd of the total shaft length, i.e. male part should be halfway from the end to fully 'bottom' out. Do not use the machine until this has been cut to the correct length.



Measure the PTO shaft and cut to the dimension shown – the finished length of the PTO shaft should be 75mm (3”) less than the measured distance ‘A’ -between tractor shaft and gearbox stub shaft – to enable fitting.

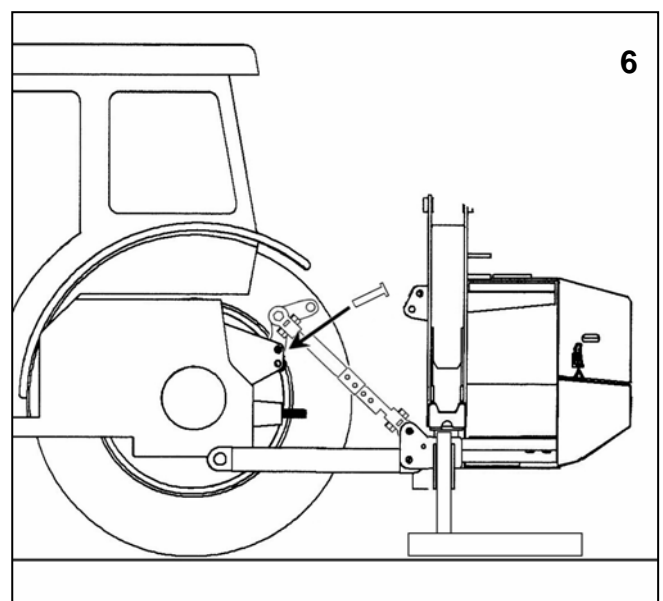
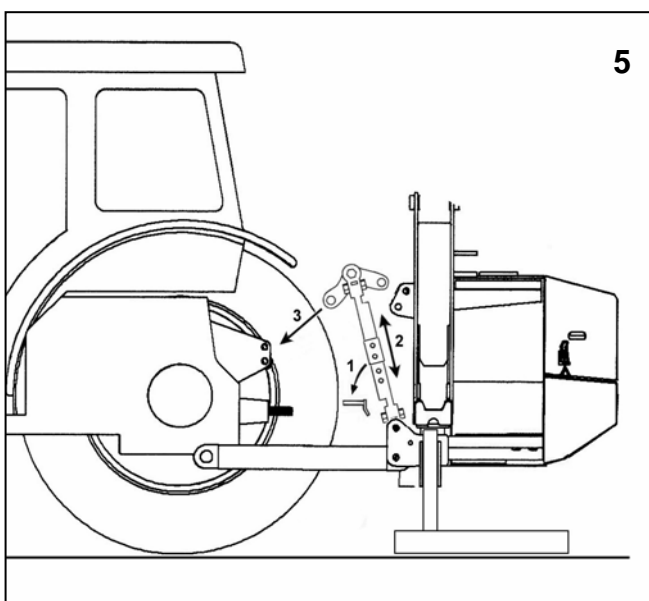
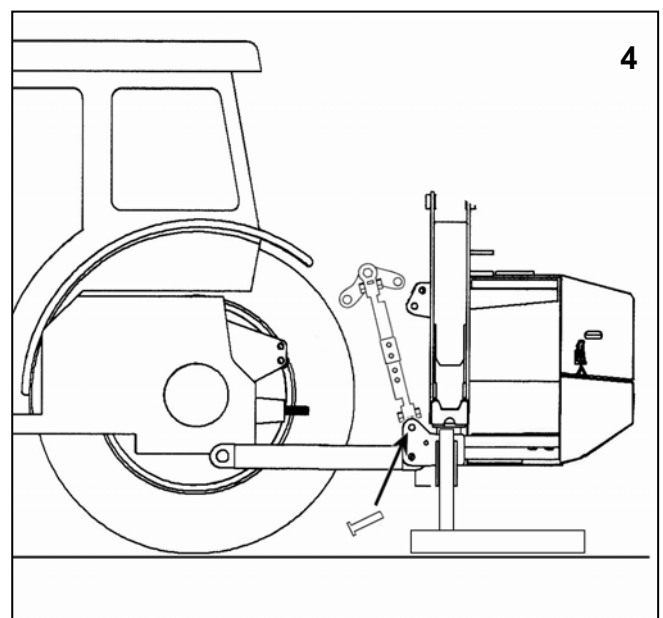
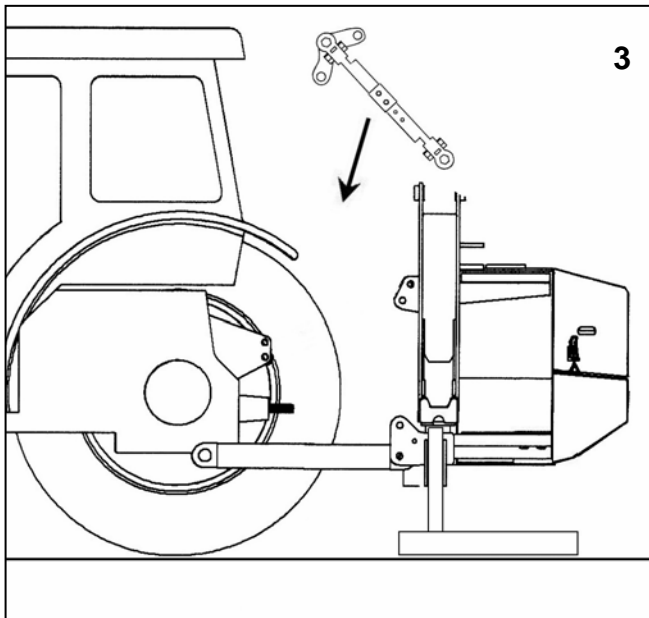
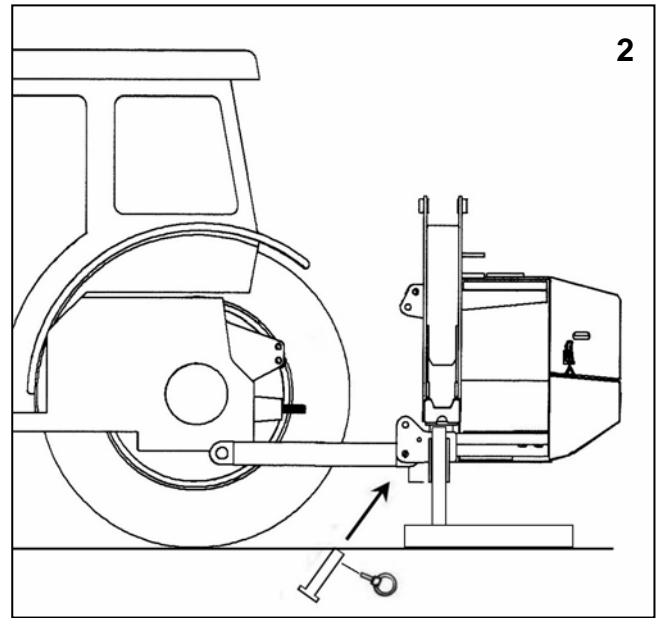
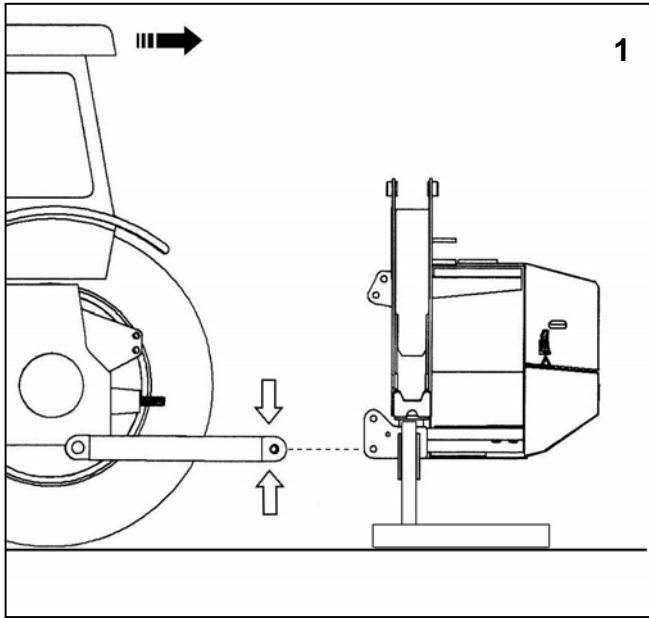
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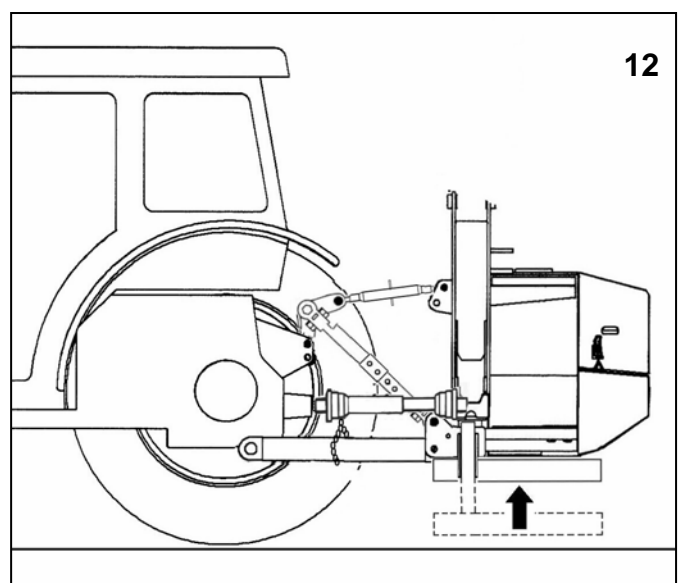
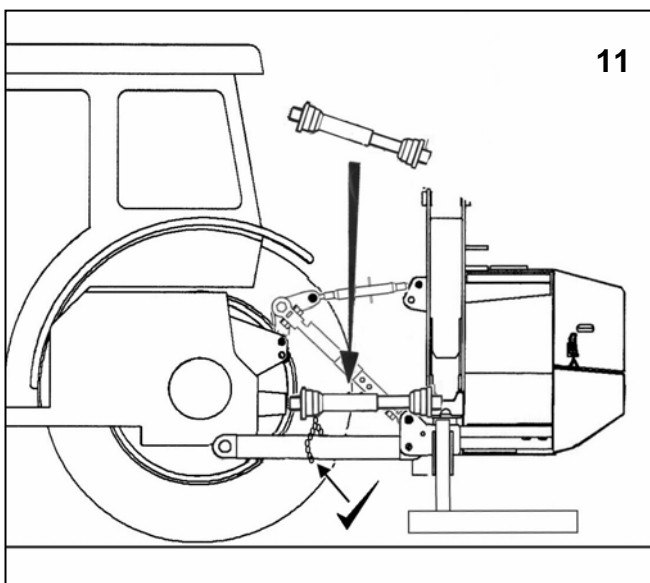
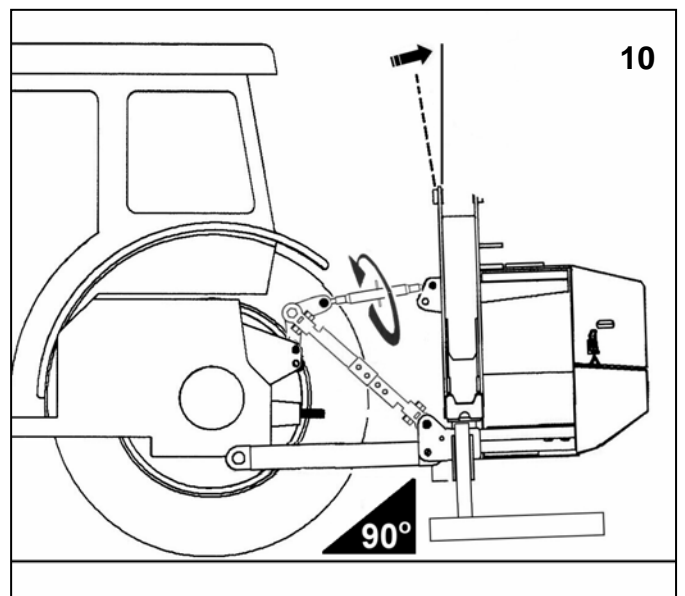
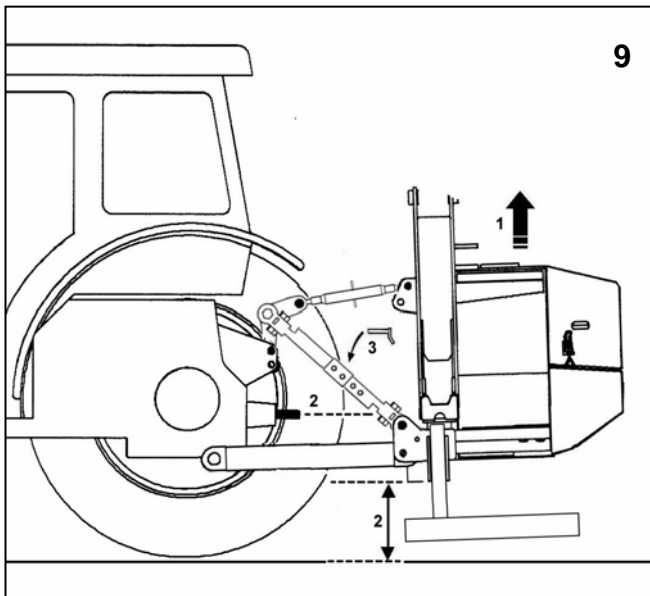
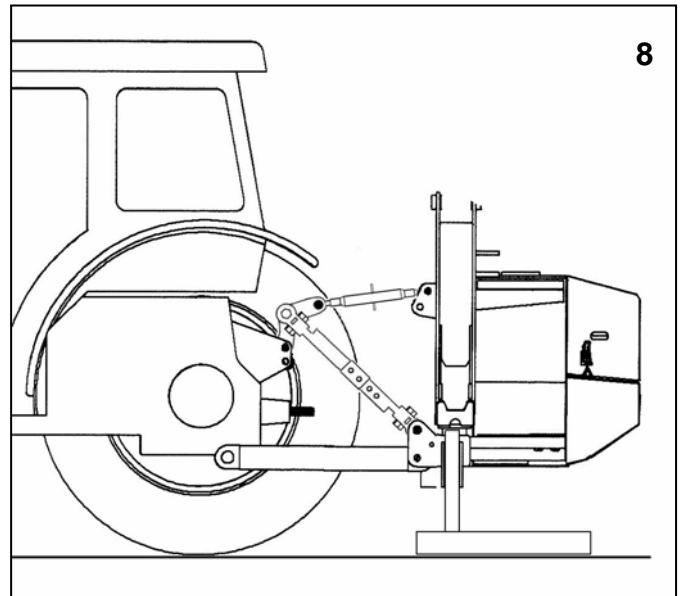
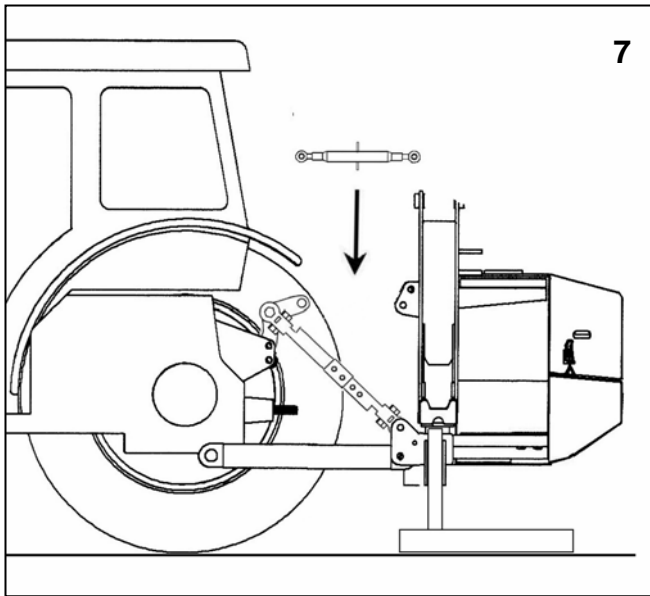
For subsequent use with different tractors measure again, there must be a minimum shaft overlap of 150mm (6”).

- Fit the P.T.O shaft.
- Ensure the shaft is correctly fitted to the correct splines - at both ends.
- Fit the anti-spin chains of P.T.O guard to a rigid non-turning assembly.
- Remove both stand legs - one on sub-frame and one on tank.
The sub-frame mounted stand leg is to be stored where and as indicated below.
- The plate stand at outer face of tank, once removed - should be inverted and located back onto the same mounting pins and secured by same 7/16” lynch pins.
- Tank stand leg can be used as a warning triangle to warn traffic etc. near the worksite (use in the position shown in left hand drawing)
- The mesh safety screens should now be cut and fitted. They are designed to be fitted to the cutting head side of tractor cab (i.e. for left-hand cut machines to left-hand side of cab). Bolts, nuts and washers are supplied for fixing purposes.

All glass screens on the relevant side of cab must be protected.

- Fix valve control handles into position:-
- Control levers are supplied bolted together as a unit complete with a support leg to slot into a bracket supplied for fitting to the tractor.
- Depending on model there may be 4, 5 or even only one controller in the set. The locating bracket should be positioned on the inner wing face of the tractor cab in a suitable position for easy operation. Bolts, nuts and washers are supplied for fixing.
- It is suggested that for four and five bank controller sets the bracket is fitted to the left-hand wing for left-hand cut machines and right-hand wing for right- hand cut machines.
- In the case of single-bank controllers, it is suggested that the bracket is fitted to the opposite side for the control of the cutting direction and that the joystick mounting bracket is fitted to the cutting side (both brackets are however the same). Once the bracket is fitted to the cab side the controller unit can be lowered into the brackets slot and secured by tightening screw 'X' (clockwise).
- Drawing shows a bank of five controllers to be fitted to a support leg and to be fitted to a locating bracket to be fitted to the inner wing for left-hand cut machines.





FLAIL TRIMMER- OPERATION INFORMATION

The vehicle driver should be conversant with all tractor controls and capabilities.

It is always advisable for the tractor driver to practice the controls and operations of the Flail Trimmer, in a safe open location away from potential hazards, prior to setting off into work.

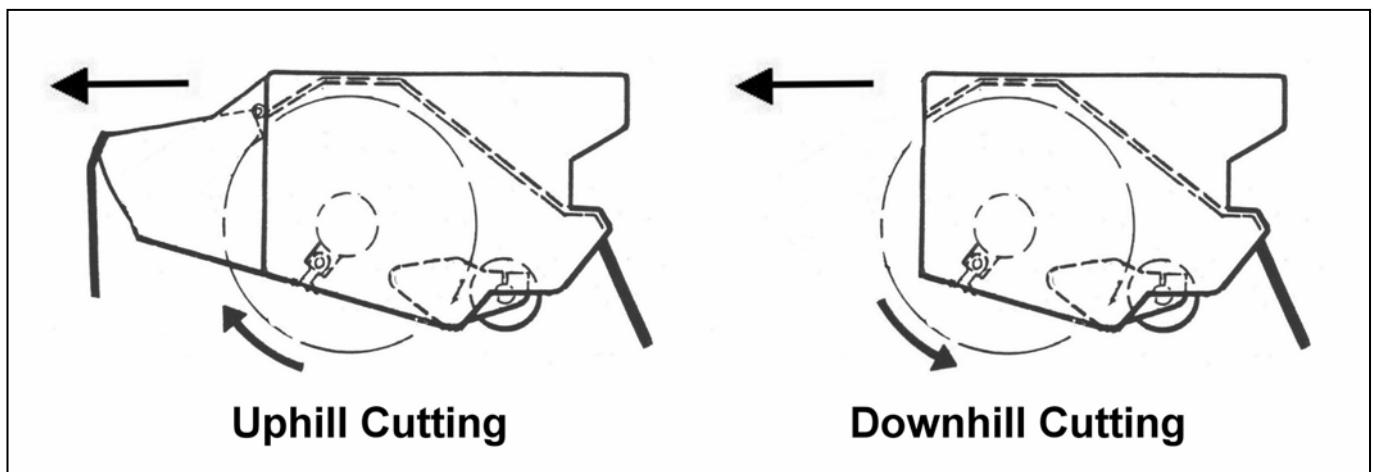
The speed of operation of Trimming will depend on the size, quantity, and type of growth to be cut. A slow speed to suit conditions should be selected, ensuring that engine speed gives a P.T.O speed of 450 R.P.M for general use - *this 450 R.P.M (PTO) is recommended for best trimming results and performance, variation from this recommended R.P.M should be kept to a minimum and never at any time should PTO R.P.M exceed 540 R.P.M.*

ROTOR ROTATION DIRECTION

Depending on the type of hedge to be cut, an option of rotation direction is offered.

The 'upward' cut is recommended for trimming grass, light growth such as one/two year's growth.

DOWNWARD CUTTING IS NOT RECOMMENDED - and should only be considered for really heavy, large diameter, growth cutting - even then, it is important that down cutting is kept to the minimum, very short periods, only.



DANGER - IMPORTANT

In heavy conditions when cutting large diameter growth with front cowling removed, the rotor **MUST ALWAYS CUT DOWNWARDS AT FRONT**. **At no time should the rotor be cutting upwards with the front cowling removed.**

DANGER VERY IMPORTANT

It is very important that motor spool and motor spool control lever works in one direction only - From centre (OFF) position to selected (ON) 'rotor cut' direction position – permitting the rotor one direction of cut and the 'OFF' setting only. This eliminates the chance of going from 'cut-up' to 'cut-down' in one movement of controls and blowing the system. Only by altering LOCK-LEVER setting can direction of control lever be changed.

WARNING

DANGER - NEVER CHANGE DIRECTION OF ROTOR CUT WHILST ROTOR IS STILL TURNING.

DANGER - ALWAYS ALLOW ROTOR TO STOP SPINNING COMPLETELY BEFORE CHANGING CUT ROTATION DIRECTION.

On despatch from the manufacturer the machine will be supplied set as standard for 'upward' rotor cutting unless specifically requested otherwise.

ROTOR CUT DIRECTION MUST NEVER BE CHANGED IN ONE MOVEMENT

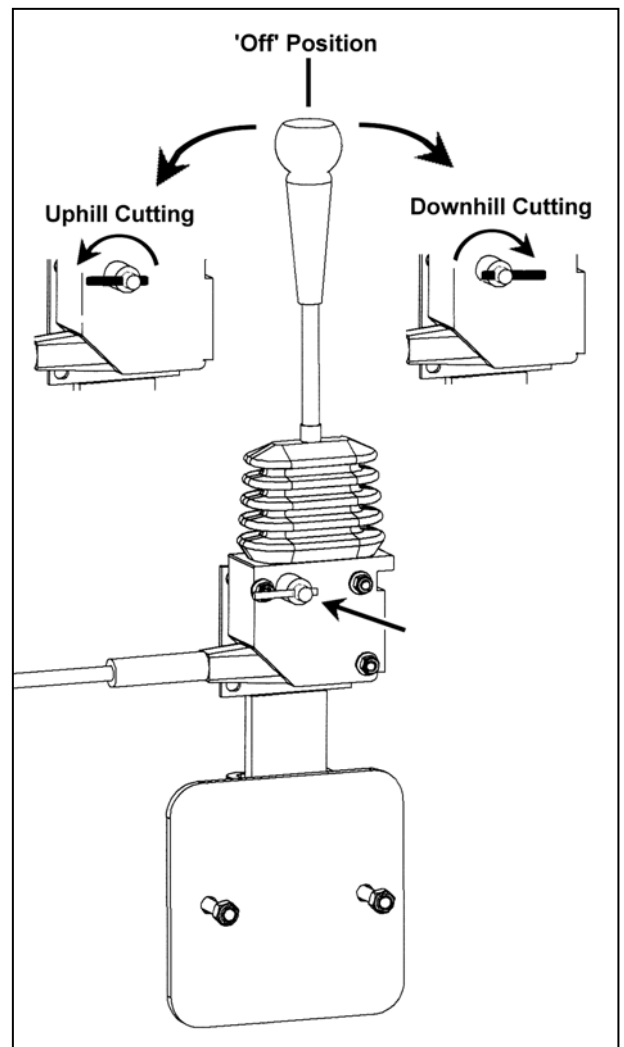
The controller lever head for motor spool control is designed with a "LOCK-ARM LEVER" which is operated by rotating and positioning as follows: -

Uphill Cutting

Lever positioned with long end of pin rearwards
- 9.00 o'clock when viewed from the side -
Control lever will now only be permitted to travel in the neutral to the uphill cutting mode (Off and Towards).
Refer to diagram opposite.

Downhill Cutting

Lever positioned with long end of pin forwards
- 3.00 o'clock when viewed from the side -
Control lever will now only be permitted to travel in the neutral to the downhill cutting mode (Off and Away).
Refer to diagram opposite.

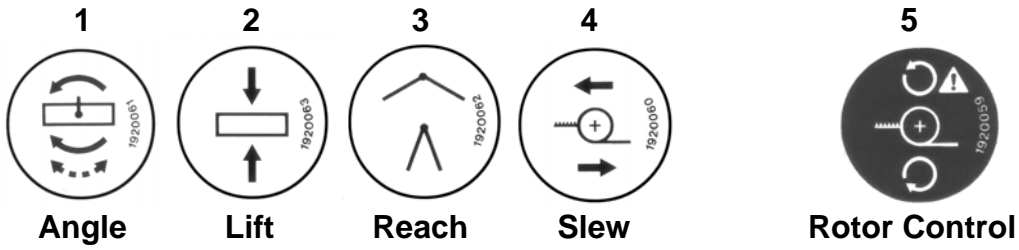


WARNING:

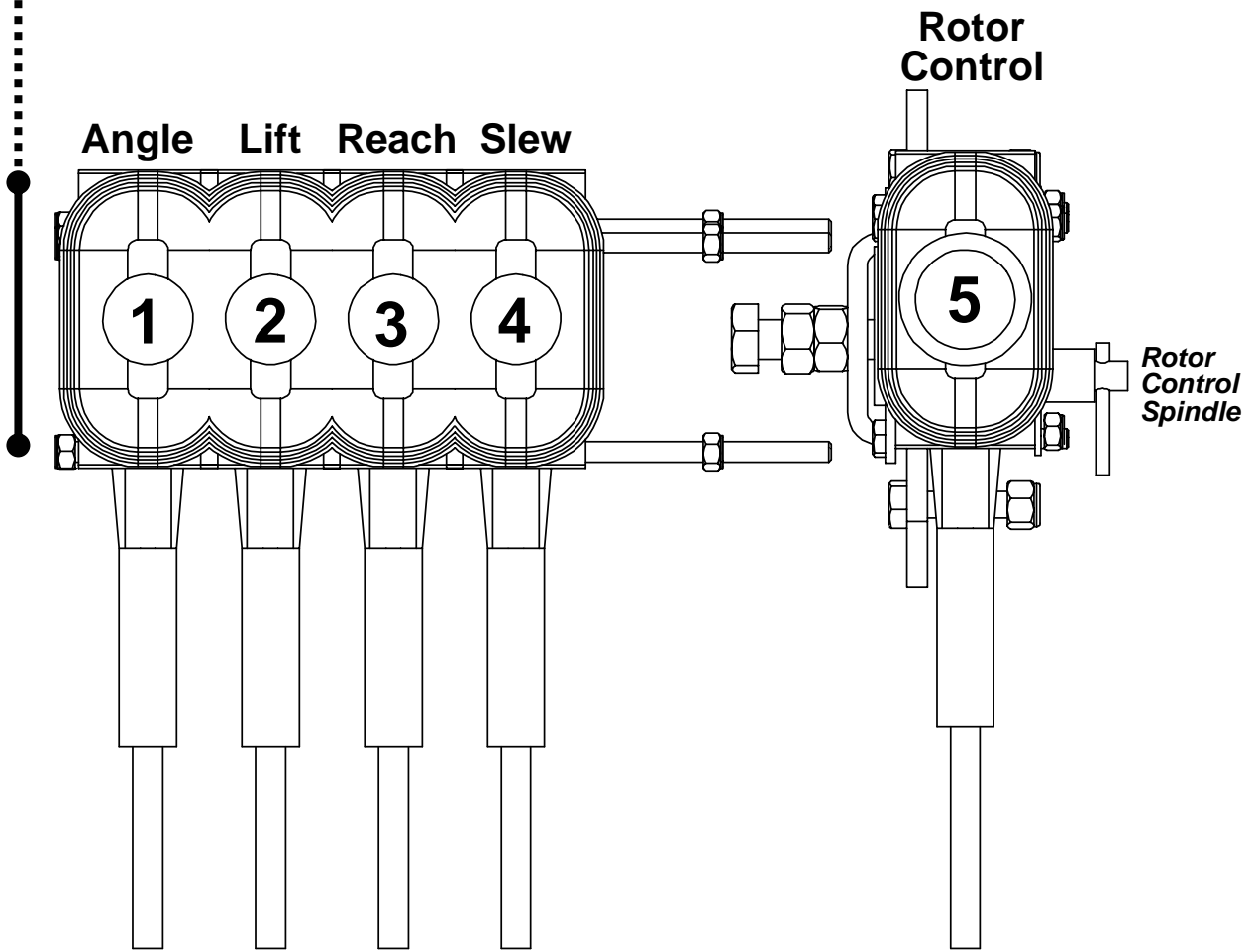
Ensure rotor is stationary before switching from one cutting mode to another.

CABLE CONTROLS – Lever Functions

Lever Symbols



● Angle Float

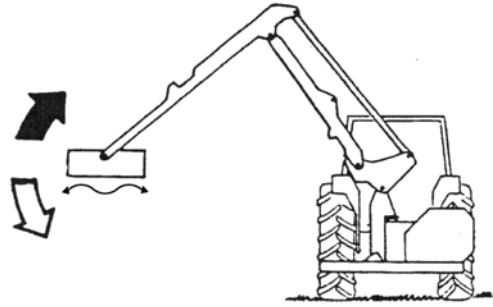


CABLE CONTROLS – Lever Functions

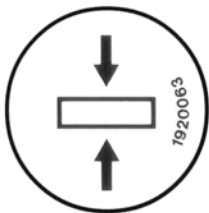
1



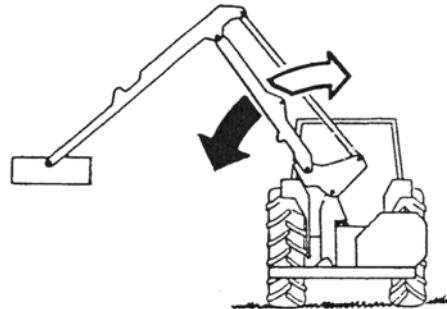
Angle



2



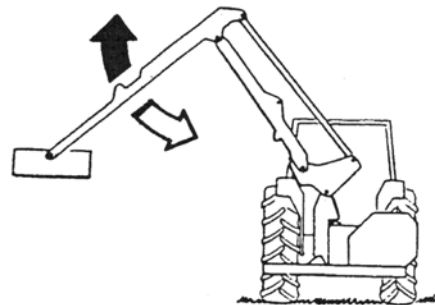
Lift



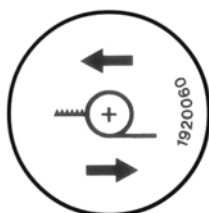
3



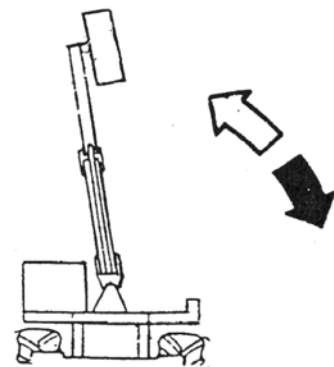
Reach



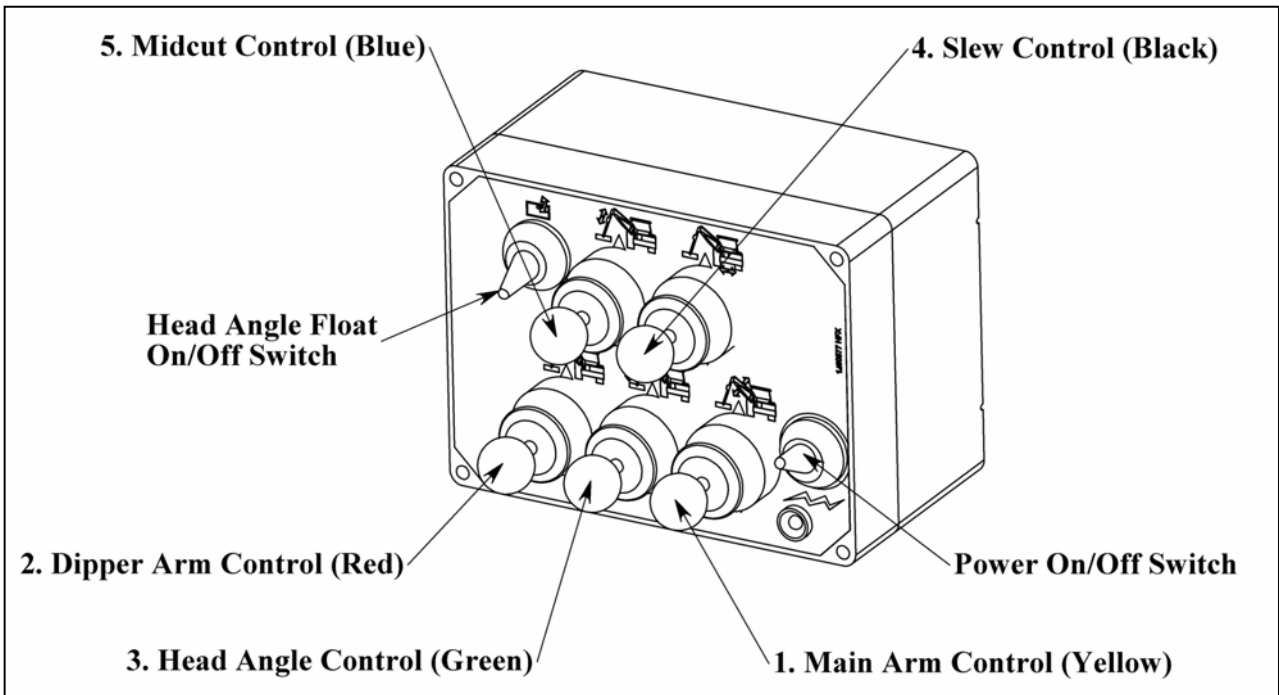
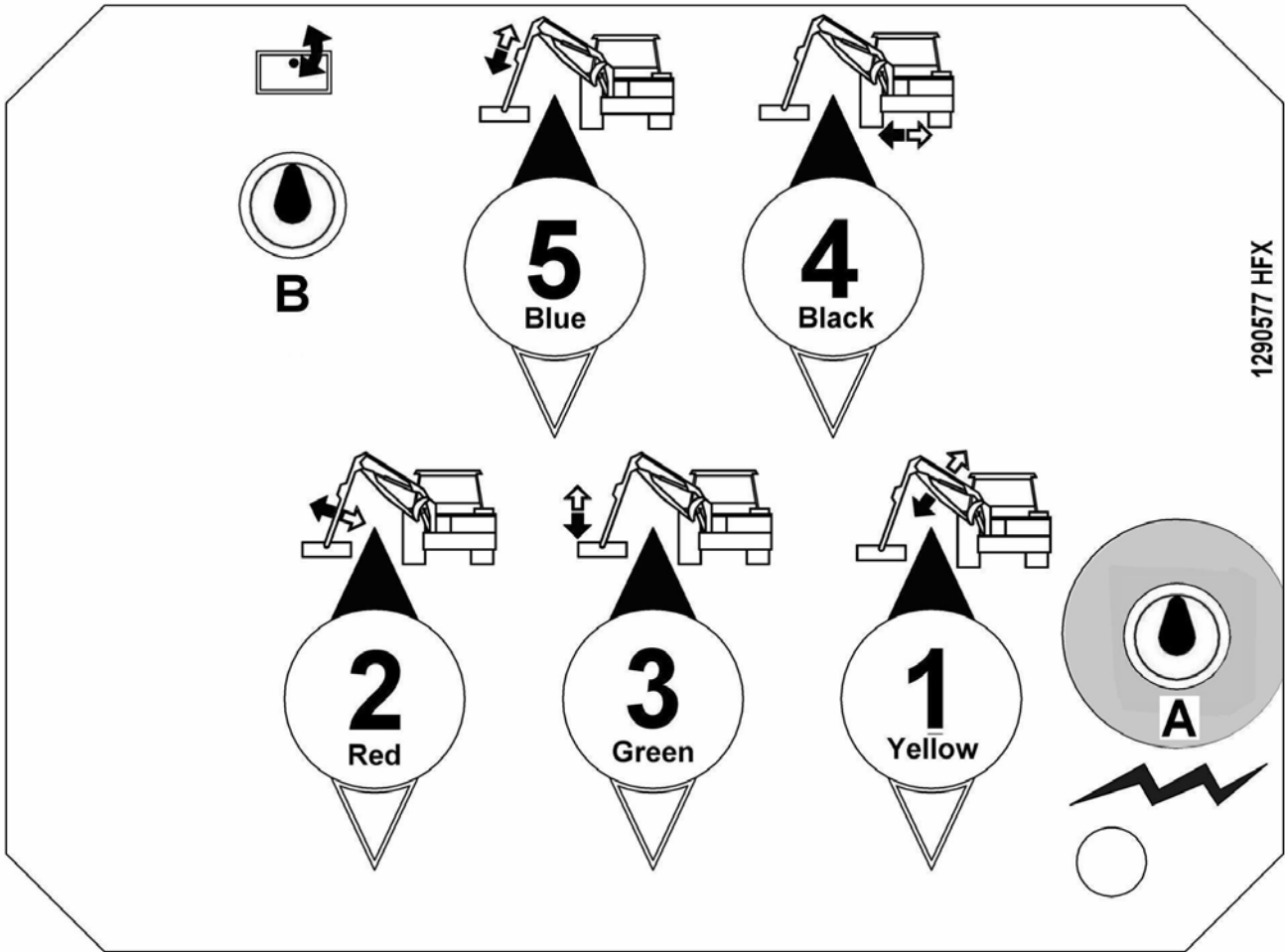
4



Slew



SWITCHBOX CONTROLS – Operation and Functions



SWITCHBOX CONTROLS – Operation and Functions (*Refer to diagrams*)

SWITCH ‘A’

Power On/Off – Power to the control unit is controlled via the On/Off Switch (A), a red l.e.d light will be illuminated in the ‘Power On’ mode.

Switch Up – Power On (red light lit).

Switch Down – Power Off (red light off).

SWITCH ‘B’

Head Angle Float – ‘On/Off’ Switch for selecting or deselecting Head Angle Float.

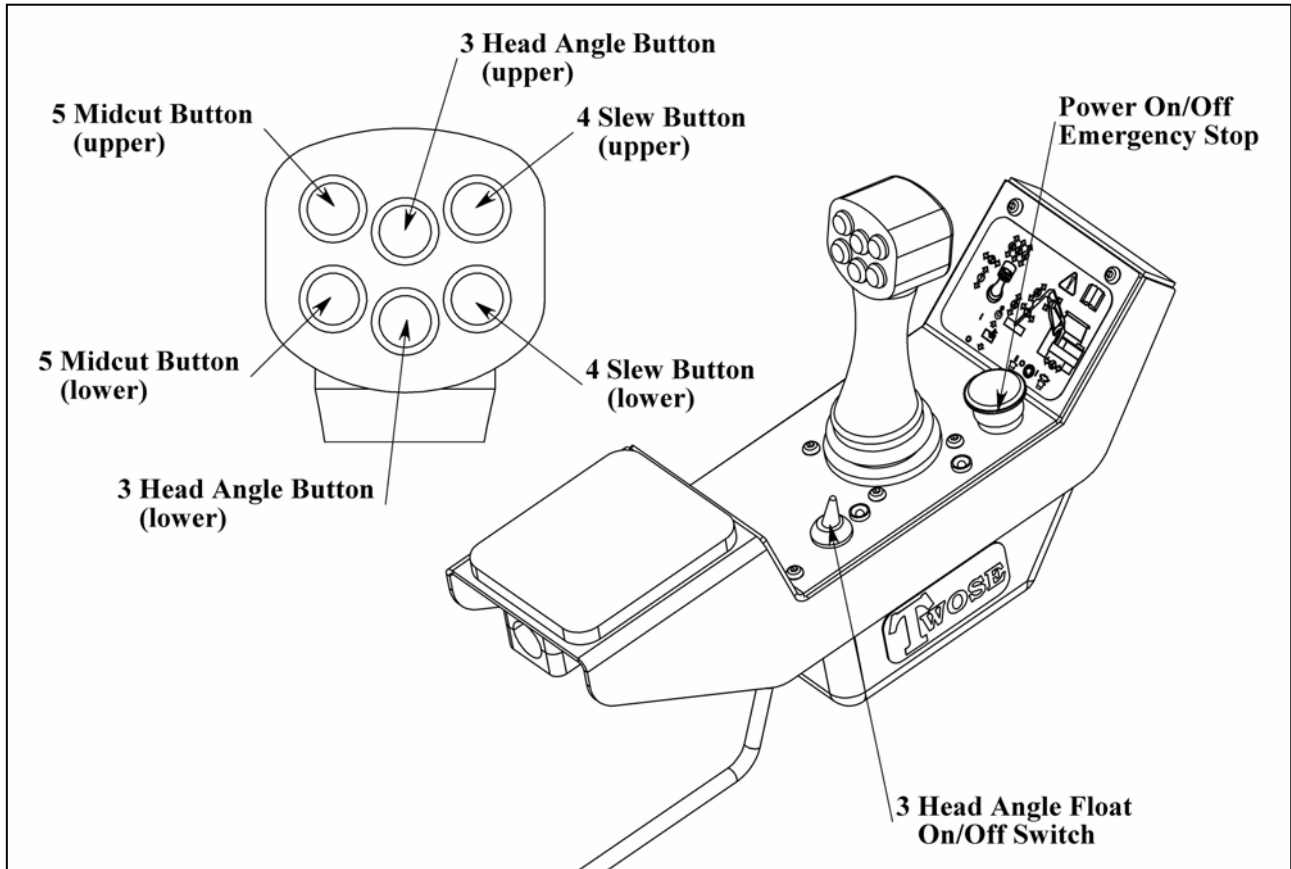
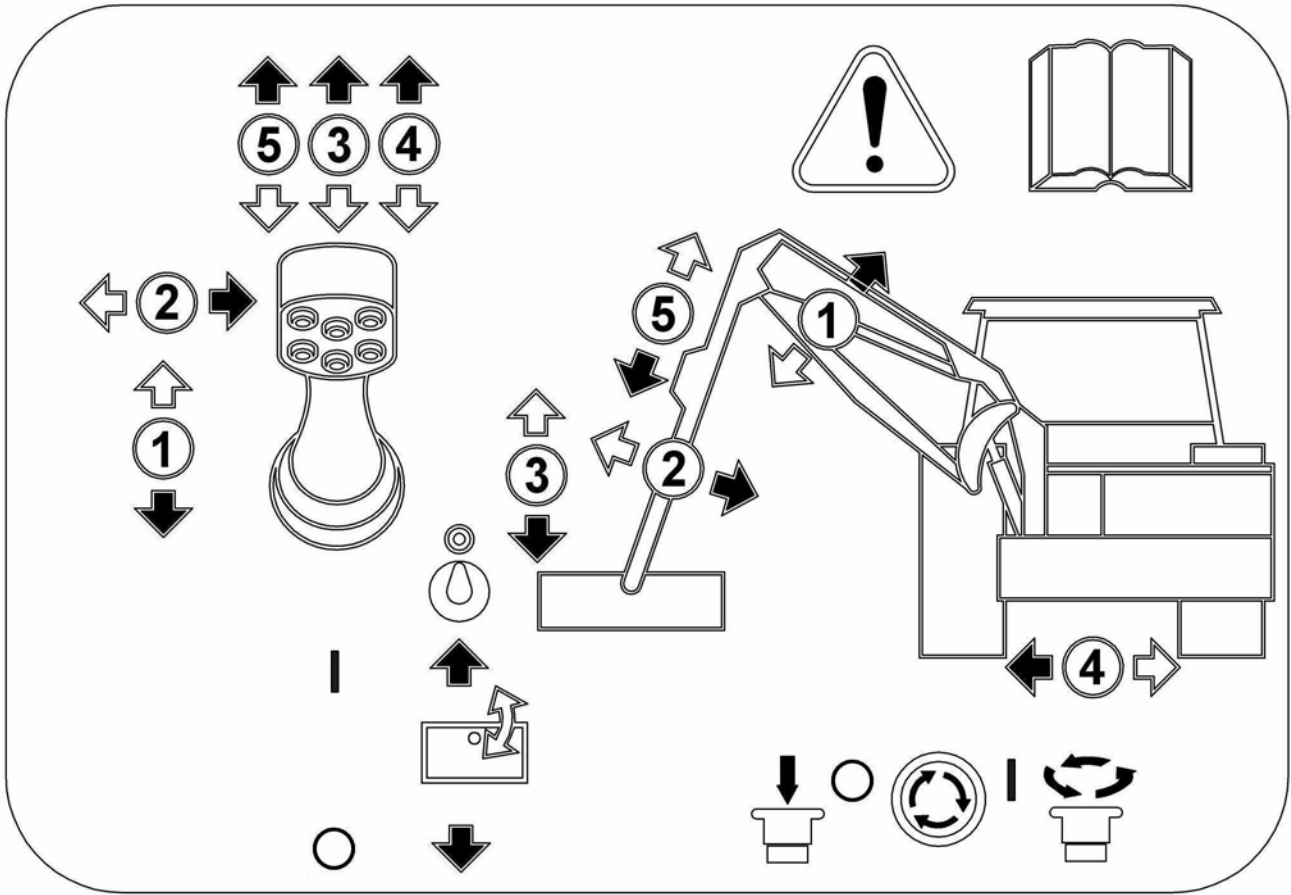
Switch Up – Head Angle Float selected.

Switch Down – Head Angle Float deselected.

SWITCH LEVER FUNCTIONS

- 1. Yellow Switch Lever** - Movement of this lever in a ‘Forward’ and ‘Backward’ direction operates the Main Arm:
Forwards – Lowers the Main Arm.
Backwards – Raises the Main Arm.
- 2. Red Switch Lever** - Movement of this lever in a ‘Forward’ and ‘Backward’ direction operates the Dipper Arm:
Forward – Moves Dipper Arm away from the operator.
Backward – Moves Dipper Arm towards the operator.
- 3. Green Switch Lever** – Movement of this lever in a ‘Forwards’ and ‘Backwards’ direction operates the ‘Head Angle’ function:
Forward – Lowers the ‘Outer’ end of the flail head and raises the ‘Inner’ end.
Backward – Raises the ‘Outer’ end of the flail head and lowers the ‘Inner’ end.
- 4. Black Switch Lever** – Movement of this lever in a ‘Forward’ and ‘Backward’ direction operates the ‘Slew’ function:
Forward – Slews the machine into the ‘working’ position.
Backward – Slews the machine into the ‘transport’ position.
Note: this function can be utilized for repositioning the machine to work in difficult positions such as corners and for negotiating around, or avoiding, obstacles.
- 5. Blue Switch Lever** – Movement of this lever in a ‘Forward’ and ‘Backward’ direction operates the ‘Midcut’ function (Cranked Arm models only):
Forward – Straightens the Cranked Arm away or out of the ‘Midcut’ position.
Backward – ‘Cranks’ the Arm towards or to the ‘Midcut’ position.
Note: On Standard Arm models this lever performs no function.

MONOLEVER CONTROLS – Operation and Functions

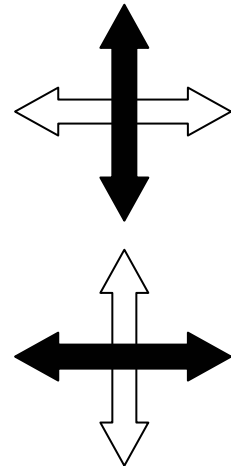


MONOLEVER CONTROLS – Operation and Functions (*Refer to diagrams*)

POWER ON/OFF – Power to the control unit is controlled via the master On/Off button.
Power ON – Rotate button to **Power on the Control Unit** (button will ‘spring’ out).
Power OFF – Press button in to **Power off or for Emergency Stop**.

LEVER FUNCTIONS

- Lever** - Movement of the lever in a ‘Forward’ and ‘Backward’ direction operates the Main Arm:
Forwards – **Lowers the Main Arm.**
Backwards – **Raises the Main Arm.**
- Lever** - Movement of the lever in a ‘Sideways’ direction operates the Dipper Arm:
Left – **Moves Dipper Arm away from the operator.**
Right – **Moves Dipper Arm towards the operator.**



SWITCH FUNCTION

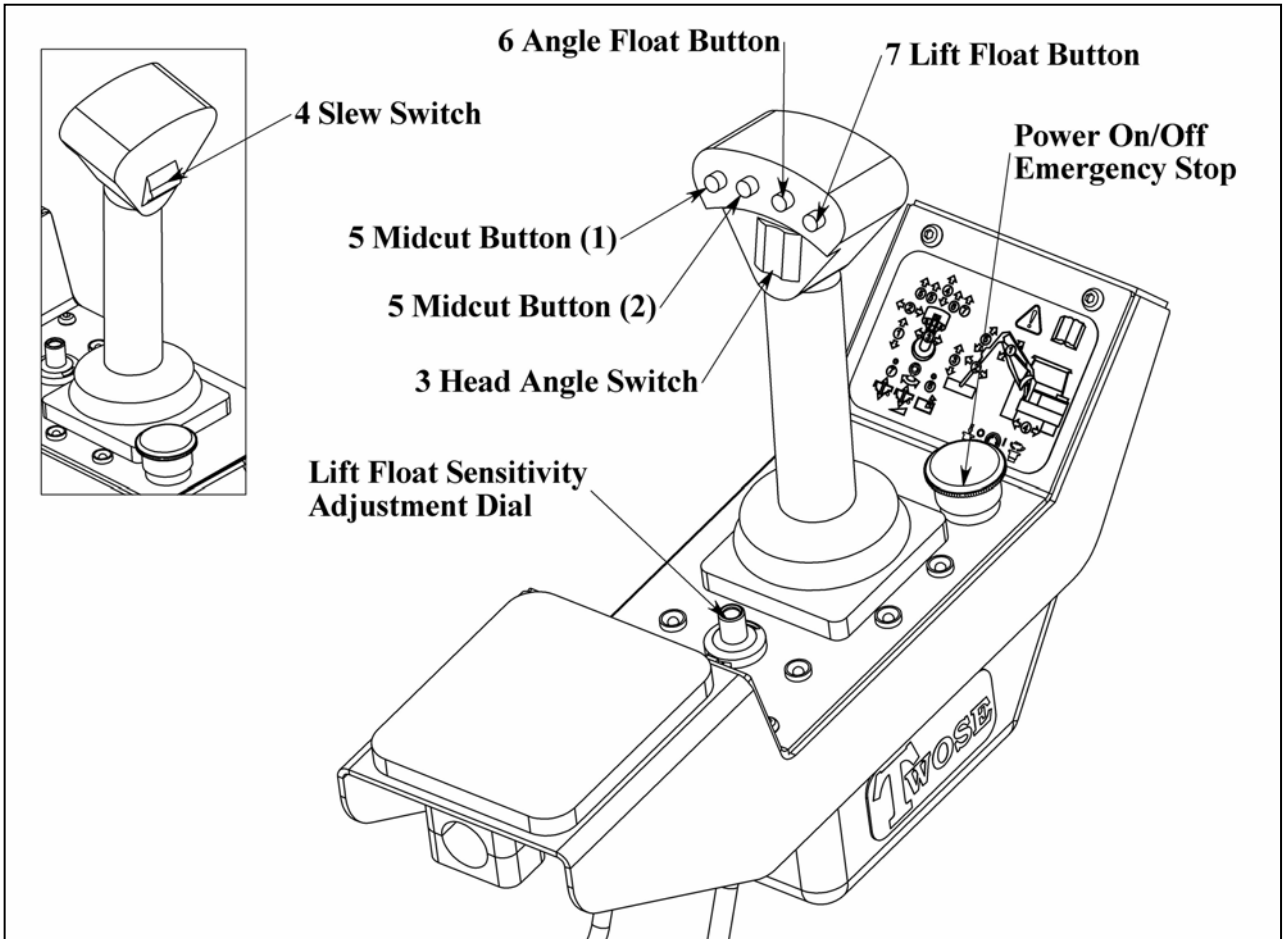
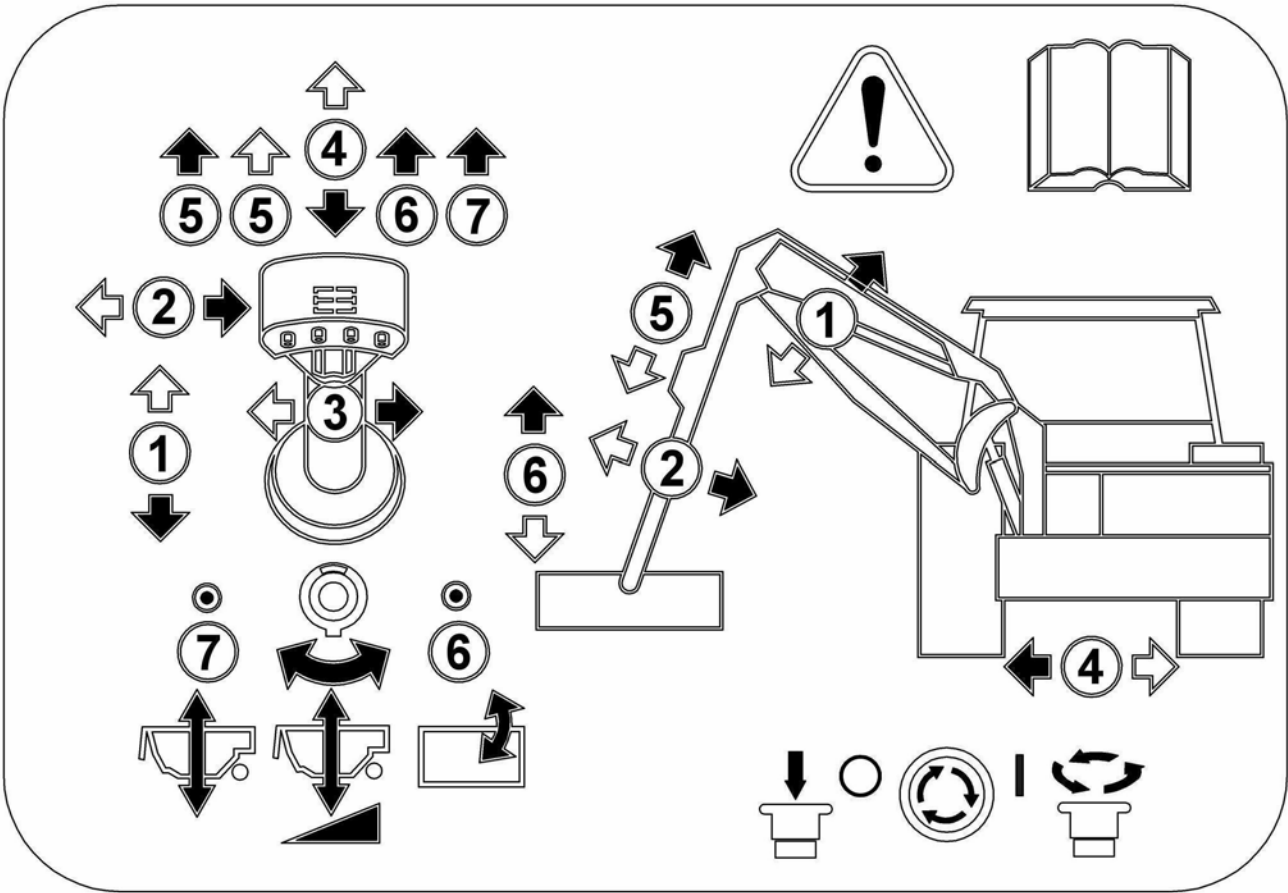
- Head Angle Float Switch** – standard ‘On/Off’ switch for selecting or deselecting of Head Angle Float mode with red l.e.d. light indication:
Switch Up – to select **Head Angle Float mode (red light on).**
Switch Down – to deselect **Head Angle Float mode (red light off).**

BUTTON FUNCTIONS

Note: with all the following buttons movement is dictated by the length of time the button is held – releasing the button will halt the movement in that function.

- Head Angle Buttons** – 2 ‘press and hold’ buttons (top & bottom) for adjustment of the head angle:
Top Button – **Lowers ‘Outer’ end of the flail head and raises ‘Inner’ end.**
Bottom Button – **Raises ‘Outer’ end of the flail head and lowers ‘Inner’ end.**
- Slew Buttons** – 2 ‘press and hold’ buttons (top & bottom) for ‘slew’ operation:
Top Button – **Slews the machine into the ‘working’ position.**
Bottom Button – **Slews the machine into the ‘transport’ position.**
Note: this function can be utilized for repositioning the machine to work in difficult positions such as corners and for negotiating around, or avoiding, obstacles.
- Midcut Buttons** (Cranked Arm models only) – ‘press and hold’ buttons for positioning of the Midcut/Cranked Arm:
Top Button – **Straightens the Cranked Arm away or out of the ‘Midcut’ position.**
Bottom Button – **‘Cranks’ the Arm towards or to the ‘Midcut’ position.**
Note: On Standard Arm models these Midcut buttons serve no function.

PROPORTIONAL CONTROLS – Operation and Functions



PROPORTIONAL CONTROLS – Operation and Functions (*Refer to diagrams*)

POWER ON/OFF – Power to the control unit is controlled via the master On/Off button.

Power ON – Rotate button to **Power on the Control Unit** (button will ‘spring’ out).

Power OFF – Press button in to **Power off or for Emergency Stop**.

LEVER FUNCTIONS

1. **Lever** - Movement of the lever in a ‘Forward’ and ‘Backward’ direction operates the Main Arm:

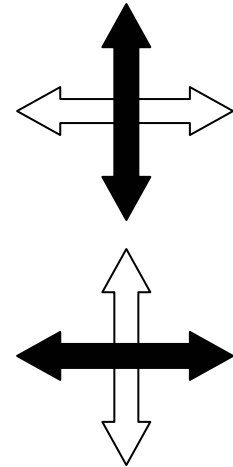
Forwards – **Lowers the Main Arm.**

Backwards – **Raises the Main Arm.**

2. **Lever** - Movement of the lever in a ‘Sideways’ direction operates the Dipper Arm:

Left – **Moves Dipper Arm away from the operator.**

Right – **Moves Dipper Arm towards the operator.**



SWITCH FUNCTIONS

3. **Head Angle Switch** – a ‘Thumb’ operated rocker switch for adjustment of the head angle:

Left – **Lowers the ‘Outer’ end of the flail head and raises the ‘Inner’ end.**

Right – **Raises the ‘Outer’ end of the flail head and lowers the ‘Inner’ end.**

4. **Slew Switch** – a ‘Trigger finger’ operated rocker switch for slew operation:

Down – **Slews the machine into the ‘working’ position.**

Up – **Slews the machine into the ‘transport’ position.**

Note: this function can be utilized for repositioning the machine to work in difficult positions such as corners and for negotiating around, or avoiding, obstacles.

BUTTON FUNCTIONS

5. **Midcut Buttons** (Cranked Arm models only) – ‘press and hold’ buttons for positioning of the Midcut/Cranked Arm – movement is dictated by the length of time the buttons are held.

Left Button – **Straightens the Cranked Arm away or out of the ‘Midcut’ position.**

Right Button – **‘Cranks’ the Arm towards or to the ‘Midcut’ position.**

Note: On Standard Arm models these Midcut buttons serve no function.

6. **Head Angle Float Button** – ‘press select and deselect’ toggle button for Head Angle Float function – mode selection indicated by red l.e.d. light.

Press Button – **Selects Head Angle Float mode (red light on).**

Press Button – **Deselects Head Angle Float mode (red light off).**

7. **Lift Float Button** - ‘press select and deselect’ toggle button for Lift Float function – mode selection indicated by red l.e.d. light.

Press Button – **Selects Lift Float mode (red light on).**

Press Button – **Deselects Lift Float mode (red light off).**

Lift Float sensitivity is adjusted by means of the 10 turn analogue dial mounted on the control console– sensitivity is increased or decreased depending on direction rotated.

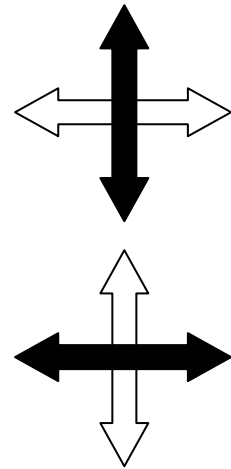
LOW PRESSURE CONTROLS – Operation and Functions *(Refer to diagrams)*

Power ON – Connect Power Plug to battery.

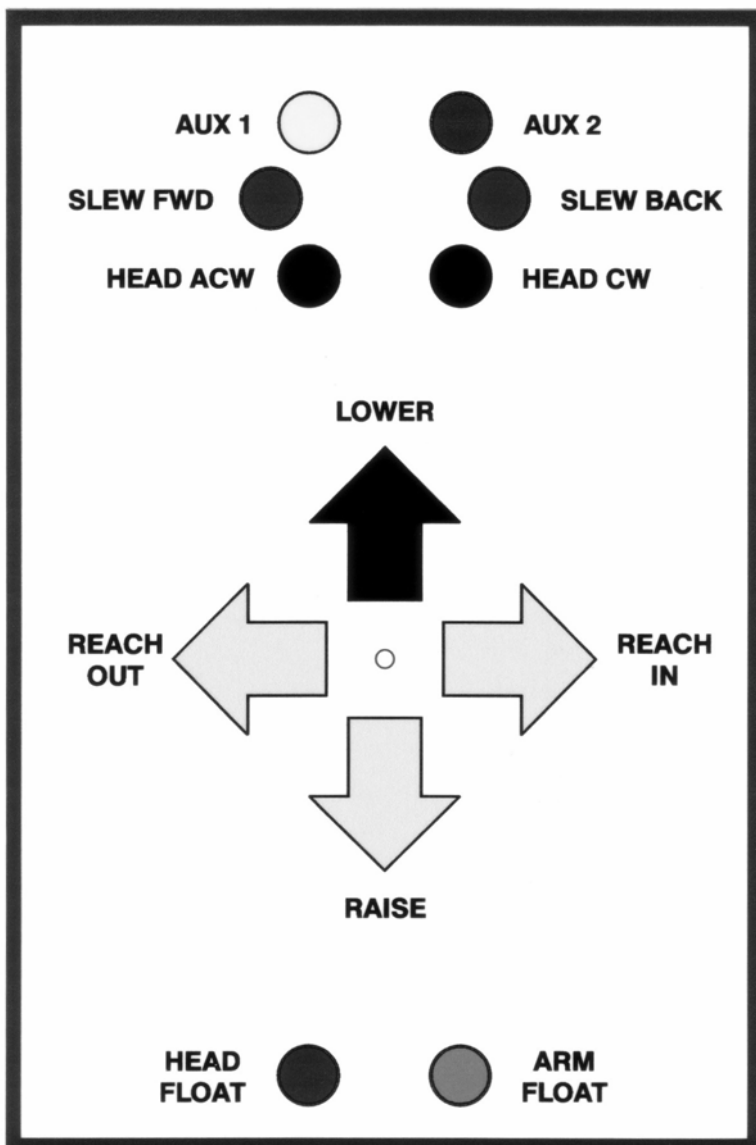
Power OFF – Disconnect power from hedgecutter to tractor.

LEVER FUNCTIONS

- Lever** - Movement of the lever in a 'Forward' and 'Backward' direction operates the Main Arm:
Forwards – Lowers the Main Arm.
Backwards – Raises the Main Arm.
- Lever** - Movement of the lever in a 'Sideways' direction operates the Dipper Arm:
Left – Moves Dipper Arm away from the operator.
Right – Moves Dipper Arm towards the operator.



SWITCH FUNCTIONS



Functions illustrated as viewed from the driving position.

Float functions are located on the underside face of the joystick. Press once to engage – press again to disengage.

HYDRAULIC CONTROLS - CUTTING POSITION

The cutting head must at all times be lowered gently into the cutting position. Never 'drop' a flailhead into a hedge at speed.

When cutting at ground level (grass etc.) the head must be lowered gently to give a slight contact pressure of roller to ground.

WARNING:

Ensure flailhead does not come into contact with obstacles such as rocks, stones, stumps etc. Keep rotor away and free from wire, as to entangle wire in a rotor is both dangerous and costly.

Should large obstacles be encountered or wire become entangled in the rotor **stop immediately** and reset or clear before continuing.

DANGER WARNING

Always stop machine, switch off engine and pocket the key before attempting to remove any items that foul the flailhead.

Normal obstacles and level variations should be overcome by the operator slowing 'forward motion' and raising/lowering the booms of trimmers to suit.

CUTTING HEAD

The cutting head rotor has been balanced prior to fitting; this will ensure a vibration free cutting unit.

Should the rotor become blocked for any reason, hit an obstacle, loose a blade or blades, the rotor may be put into a state of unbalance. This will result in vibration from the rotor being transmitted through the head. Should this happen **stop immediately**, as to continue may have serious consequences.

Once stopped clean rotor and check for loss of blades and bolts, replace as required.

As a result of hitting solid objects with serious force the rotor can be bent, this will obviously cause vibrations. In such cases the only answer will be to get the rotor repaired/rebalanced or replaced.

Keep the cutting blades VERY SHARP: the flailhead should be inspected daily. Bolts and nuts holding flails to rotor should be checked frequently and kept **tight**. Missing or broken flails should be replaced immediately, as the imbalance will rapidly harm bearings and structure. When a flail is renewed its opposing flail (or pair if using Back to Back flails) should be renewed also in order to maintain balance.

Check 'vee' belt tension on cutter head daily: a load of 5 Kgs (*10 lbs.*) should give a deflection of 9mm at these pulley centres. Access to the belts is by removing the guard panel on the side of the drive end. Tension is adjusted by first slackening the bolts mounting the motor (*nuts are held from turning on the inside*). The nuts on the threaded adjuster can now be turned to give the required tension and then re-tightened and the motor mounting bolts then tightened also.

TRANSPORTING

- Turn cutting head to vertical position with flails away from tractor.
- Swing machine rearwards by powering breakback ram to 'open' position.
- Fold 'in' second/outer boom with cutting head, until boom main tube contacts rubber buffer fixed to first boom.

The cutting head should now be positioned behind and slightly inside tractor rear tyre.
The unit is now ready for transport.

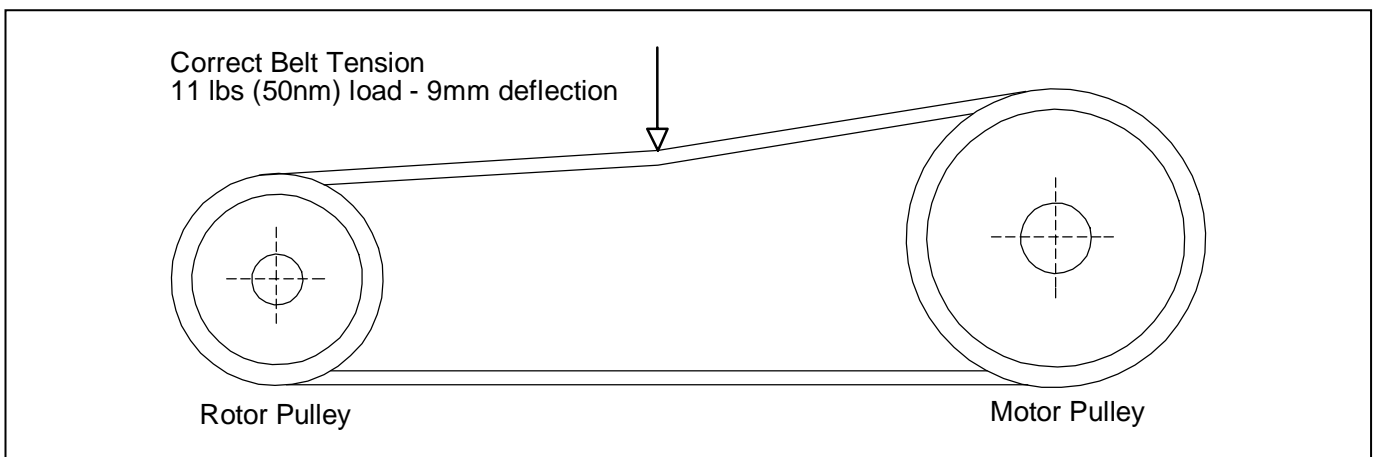
WARNING

**Never transport a machine with the Booms open -
Ensure Booms are in contact with each other at all times.**

CUTTING HEAD 'VEE' BELT ADJUSTMENT

To adjust the cutting head 'vee' belts the following procedure should be followed: -

- Position the cutting head on the ground in a safe level location with the drive end uppermost.
- Switch off the tractor engine, remove and pocket the key.
- Remove bolt securing the 'flap-door' of the drive end, this will release the guard flap panel.
- Open upper guard/inspection panel.
- Slacken the 2 bolts holding hydraulic motor to its mounting plate.
- Adjust belt tension by turning the nuts on the tensioning screw
 - *clockwise will tighten the belt, anti-clockwise will slacken the belt.*
- When the correct belt tension is achieved (*refer to diagram below*) the 2 adjustable nuts on the tensioner screw must be locked tight and the 2 bolts securing the motor to the head re-tightened to lock the whole unit into position.

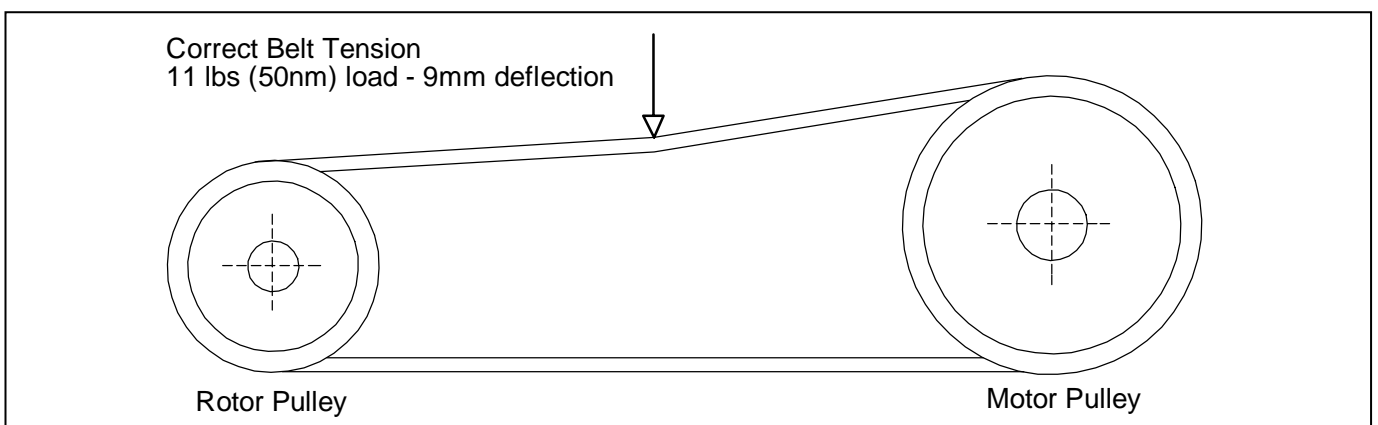


- Re-check tensions when all bolts have been tightened.
- Close flap door and secure with bolt.

CUTTING HEAD 'VEE' BELT REPLACEMENT

To replace the cutting head 'vee' belts the following procedure should be followed: -

- Hydraulically position cutting head to stand vertically on the ground with the drive end uppermost - *this should be done on a firm and level location to ensure the cutting head is steady and safe in this position.*
- Stop tractor engine, remove and pocket the key.
- Slacken off the motor mounting bolts and nuts on the threaded adjuster arm to release the belt tension.
- Undo completely, and remove, the 6 bolts that attach the main cover plate to the head.
- Undo, and remove, the 6 M12 x 20 setscrews that hold the bearing housing to the cover plate.
- Remove the cover plate from its bolted position.
- The drive belts can now be removed from around the pair of 'vee' pulleys.
- New belts can now be fitted – position each belt in the respective 'vee's' on both the driven and the driver pulleys.
- Replace the main cover plate assembly over the drive belt aperture.
- Replace the 6 M12 x 20 setscrews through the plate and into the bearing housing. *Ensure all 6 screws are aligned correctly and tightened sufficient only to hold the bearing housing in place. DO NOT TIGHTEN FULLY.*
- Replace all of the M12 x 80 bolts through the cover panel from the panel side – *ensuring first that the holes align* – and place the 'nyloc' stiffnuts onto each bolt.
- With all mounting bolts of both bearing to panel, and panel to head now in position all 12 bolts should be tightened until fully dead tight.
- Belts should now be adjusted to the correct tension as per the diagram below – *refer to belt adjustment section for details.*



- When belts have been tensioned correctly and all covers replaced, the machine is ready for start up.

ROTOR REMOVAL & REPLACEMENT

Removal procedure:

- With the machine attached to the tractor, hydraulically position the cutting head vertically with the drive end downwards resting on the ground – *select a firm level location and ensure the weight of the head is fully rested on the ground.*
- Switch off tractor engine, remove and pocket the key.
- Slacken off and remove the 2 nuts and bolts securing the bearing housing to the flail head main frame at the non-drive end.
- Remove the 4 M12 x 35 setscrews from the drive end (inside shell) - rotor to pulley.
- The whole rotor assembly should now be raised vertically a sufficient amount to allow the drive end location flange to free itself from the locating dowel on the rotor drive pulley.
- With the rotor raised and free of the drive pulley, the drive end of the rotor can be swung gently out of its drive line position in a downward direction relative to the head. With drive end of rotor swung towards base of head the rotor can now be gently lowered to allow non-drive end of rotor, complete with bearing/housing attached, to drop out of main frame and removed.

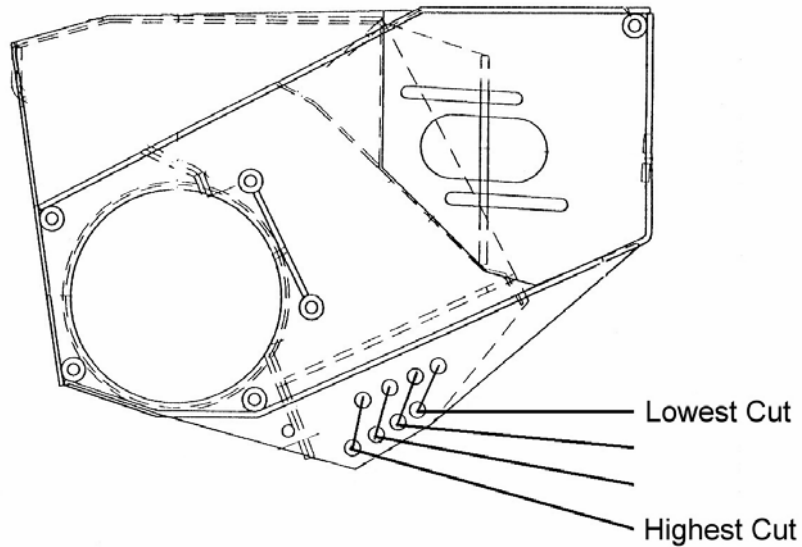
Replacement procedure:

- Position flail head as described for removal procedure – *see above.*
- Position rotor vertically with the drive flange end downwards and gently swing in the upper (non-drive end) towards its location position – *this operation is to be carried out from the base face of the head.*
- Locate non-drive end of the rotor up through the head end panel – at the same time as raising and locating the non-drive end of the rotor the lower drive end should be swung into its drive-line position.
- Ensure lower end of rotor (drive flange) is positioned to register with the locating dowel of the drive pulley. Lower rotor onto dowel to locate with the flange making sure both faces seat together correctly.
- Replace the 4 M12 x 35 setscrews to fix the rotor drive flange to the drive pulley and tighten fully. The drive end of the rotor is now connected.
- The upper end of the rotor (bearing housing) is now free/slack. The nuts and bolts for the bearing location should now be fully tightened to complete the rotor fixing.
- Spin the rotor by hand to ensure free, uninterrupted motion.

NOTE: Rotor mounting bolts should be checked daily to ensure they remain tight.

ROLLER HEIGHT ADJUSTMENT

The cutting height of the flail head may be adjusted to cut at 4 different heights; this is achieved by altering the mounting position of the roller on the flail head - *refer to diagram below.*



To alter the roller position, each end bracket of the roller and the relative securing bolts will need to be positioned at either of the four position height options offered. Ensure that same opposing location holes on the flail head are chosen.

NOTE:

The flail head roller is generally required only when bank or verge mowing and not when hedgetrimming.

REMOVING THE MACHINE FROM THE TRACTOR

Select a good clear, level and firm site on which to detach and store the machine.

IMPORTANT

Use the hydraulics to lower the head onto the ground *horizontally (as if you were cutting grass)*.

- Disengage the PTO drive.
- **STOP THE TRACTOR ENGINE.**
- *Take the 'T' stand leg from its 'stored' position and put it into its 'down' position, securing it with the lynch pins provided.*

NOTE: -

Long-foot of 'T' stand MUST be furthest from tractor to ensure maximum stability.

- Slacken both M20 setscrews on stabiliser arms, remove the 7/16" diameter lynch pins from the stabiliser locating pins, and remove pins. It may be necessary to slightly raise three-point linkage to 'free' pins, for removal.
- Lower hedgetrimmer so stands are on the floor, by means of lowering tractor three-point linkage. *(Top link may have to be adjusted to ensure trimmer is upright and safe).*
- When you are sure that trimmer is properly settled and safe on its stands, operate boom '1' lever to release hydraulic pressure from ram.

NOTE: -

If the machine is semi-independent (*one pump*) you may have to stop tractor engine to facilitate this.

- Disconnect top link assembly from stabiliser end.
- Uncouple stabiliser 'A' frame from tractor top link position - by removing 7/16" lynch pin and tractor top link pin.
- Remove control handles from tractor and 'stow' off the ground in a location where it is protected from damage.

NOTE: -

For semi-independent machines – the 2 hoses (*supply and return*) must be uncoupled from tractor aux. ports and stowed on machine.

- Disconnect Power Take off shaft and anti-spin chains (*tractor end*).

For Pin Type Lower Link Arms

- Remove 7/16" lynch pins from lower lift pins and remove pins from linkage.

For Quick Hitch Crook on Arms

- Release crook lock levers on lower link arms and lower/drop arms away.

Tractor linkage arms are now free of the machine.

- Draw tractor slowly away - Many operators stop about 300mm (12") away to double-check that tractor and machine have completely separated and that no connections or couplings remain connected.

Safety screens can now be removed if so desired.

- Replace location pins back through arms of stabiliser assembly and secure in position with 7/16 lynch pins.
- Re-connect top link bar assembly back onto stabiliser with pin and lynch pin provided.
- Replace lower linkage pins back into relevant positions on mounting frame and secure with 7/16 diameter lynch pins.
- Ensure tractor top link pin is replaced and secured with 7/16" lynch pin.

MAINTENANCE

OIL FILTER CHANGE

Oil filter should be replaced initially after the first 50 hours and every 250 hours thereafter.

HYDRAULIC PUMP - GEARBOX

Gearbox oil level should be checked every 500 hours and topped up if required.

Oil capacity for both Standard and Hi-Power Gearboxes is **0.5 Litres**.

Standard Hydraulic Gearbox use **S.A.E EP 90** oil - always ensure the same grade of oil is used for 'topping up' when required.

Hi-power Hydraulic Gearbox (Hi-ton) use **universal oil** - always ensure the same grade of oil is used for 'topping up' when required.

ROUTINE MAINTENANCE AND LAYING UP

Daily Maintenance

- Check oil level in main system oil tank.
- Grease pivot points regularly.
- Check cutting blade sharpness – always keep the cutting blades very sharp.
- Check all machine and safety guarding is in place and in good condition – replace or repair if required. **Never operate a machine with missing or damaged guarding.**
- Check hoses and connections for wear damage or leaks and replace immediately if required. **Never check for hydraulic leaks with your hand – use a piece of card.**

Weekly Maintenance

- Check all hydraulic fittings and hoses.
- Check 'vee' belts tension on cutter head drive.

Laying up Maintenance

- Clean the machine and note any damage or repairs needed - arrange for spares and/or repairs as required in preparation for next season.
- Fully lubricate the machine totally.
- Store machine in a safe dry location - ideally in an 'undercover' location.
- Check 'vee' belts tension on cutter head drive.

A full inspection to all components of your machine should be made prior to starting a new season's work after a period of 'laying up'.

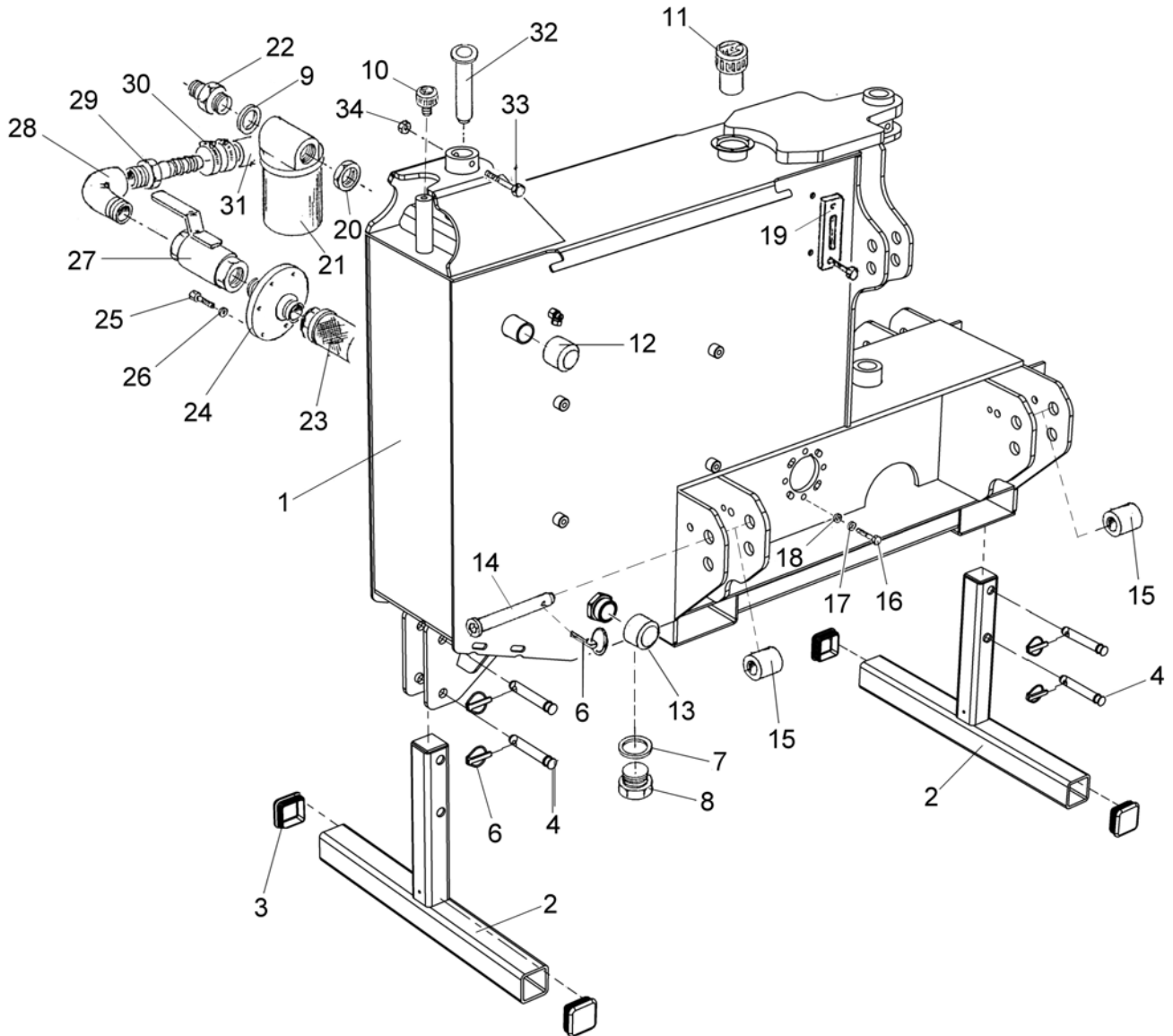
460S, 520S, 540S, 580S & 600S
Parts Manual

Revised 16.10.09

TANK-FRAME ASSEMBLY

Modules:
194.700 – L/H & R/H builds

Illustrated in Left-Hand build



TANK-FRAME ASSEMBLY

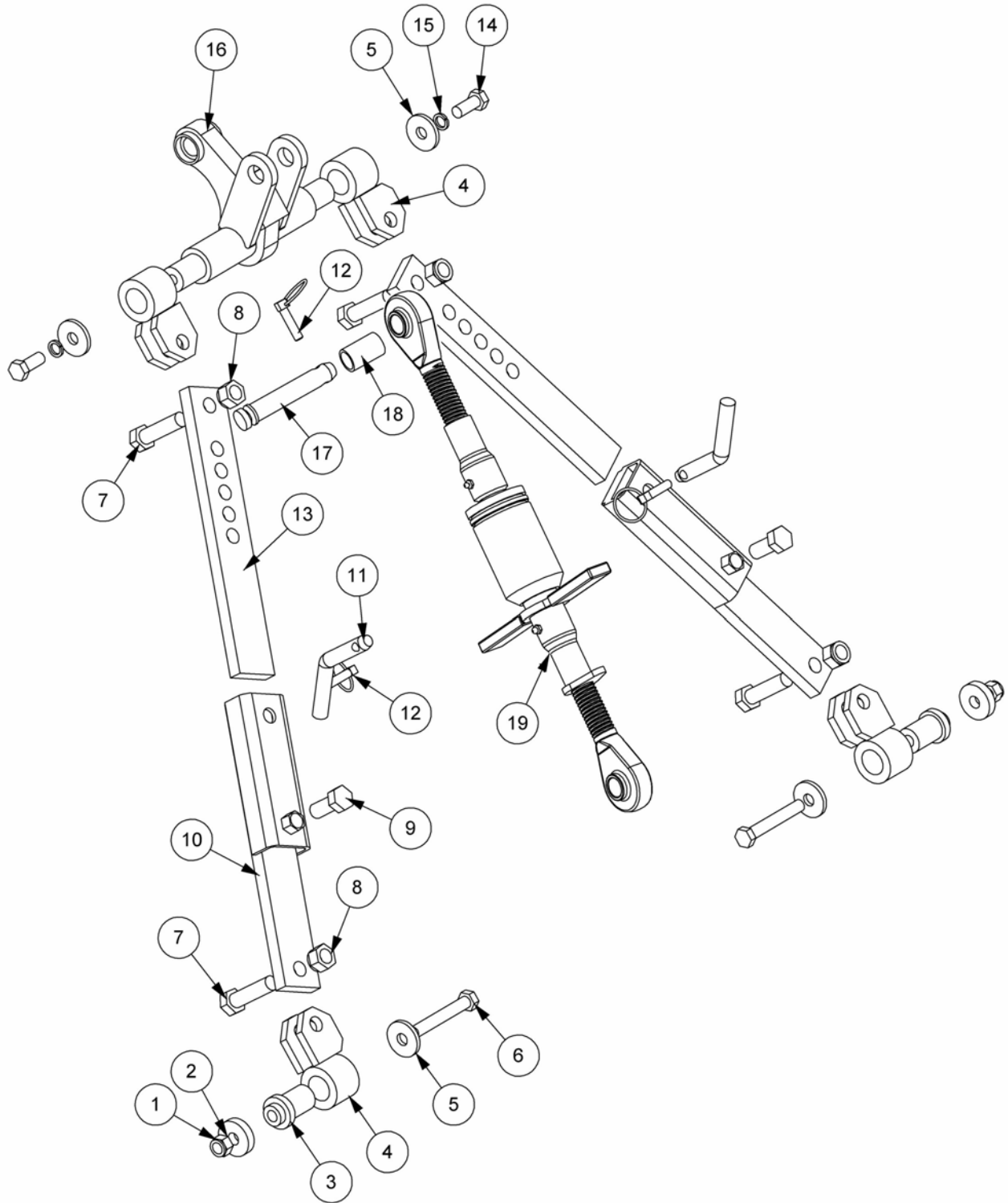
REF.	QTY.	PART No.	DESCRIPTION
		194.700	TANK-FRAME ASSEMBLY
1	1	194.133	TANK-FRAME
2	2	194.132	LEG
3	4	45210.01	PLASTIC PLUG
4	4	T1657	PIN - LEG
5	1	194.207	PTO GUARD (OVAL)
6	8	0431217	LINCH PIN
7	1	8650224	BONDED SEAL
8	1	T7894	PLUG
9	1	T3155	SEAL
10	1	T8155	BREATHER
11	1	8401074	FILLER/BREATHER
12	1	T8157	CAP
13	1	T8158	CAP
14	2	194.052	PIN - LOWER LINK
15	2	184.308	SPACER - LOWER LINK
16	4	9313066	SETSCREW
17	8	9100206	SPRING WASHER
18	4	9100106	WASHER
19	1	T5371	OIL LEVEL GUAGE
20	1	T8043	BACKNUT
21	1	T3126	FILTER - 25 MICRON INLINE
22	1	T5241	ADAPTER
23	1	8401047	STRAINER ELEMENT
24	1	188.065	FILTER MOUNTING PLATE
25	6	9313055	SETSCREW
26	6	9100205	SPRING WASHER
27	1	T7619	BALL VALVE
28	1	T8002	ADAPTER
29	1	T7999	HOSE TAIL
30	4	T7455	JUBILEE CLIP
31	1	8501218	HOSE - 600mm LONG
32	1	194.020	PIN - BREAKBACK RAM
33	1	9213155	BOLT
34	1	9163005	NYLOC NUT
35	4	9313046	SETSCREW
36	1	45429.01	SERIAL No. PLATE
37	4	7103230	POP RIVET

STABILISER ASEMBLY

Modules:

MK520S0200 – Standard

MK520SF0200 – French Market



STABILISER ASSEMBLY

REF.	QTY.	PART No.	DESCRIPTION
		MK520S0200	STABILISER - Standard Build
		MK520SF0200	STABILISER - French Build
1	2	3747	STIFFNUT - NYLOC
2	2	184.436	WASHER - SPECIAL
3	2	187.053A	LIFT PIN STABILISER
4	4	184.430	ANCHOR BRACKET
5	4	185.096	WASHER - SPECIAL
6	2	2914	BOLT
7	4	3732	STIFFNUT - NYLOC
8	4	2705	BOLT
9	2	3904	SETSCREW
10	2	184.672	SLIDE BOX
11	2	184.437	PIN
12	3	0832	LINCH PIN
13	2	184.671	SLIDE ARM INNER
14	2	3904	SETSCREW
15	2	2730	SPRING WASHER
16	1	184.435A	TOP LINK COUPLER (WIDE)
	1	184.435B	TOP LINK COUPLER (NARROW)
17	1	2584	LINKAGE PIN
18	1	7956	SLEEVE - TOP LINK CAT. 2-3
*	1	6956	GREASE NIPPLE
19	1	199.213	TOP LINK ASSEMBLY

* *Not illustrated*

PILLAR (SPLINE) ASSEMBLY

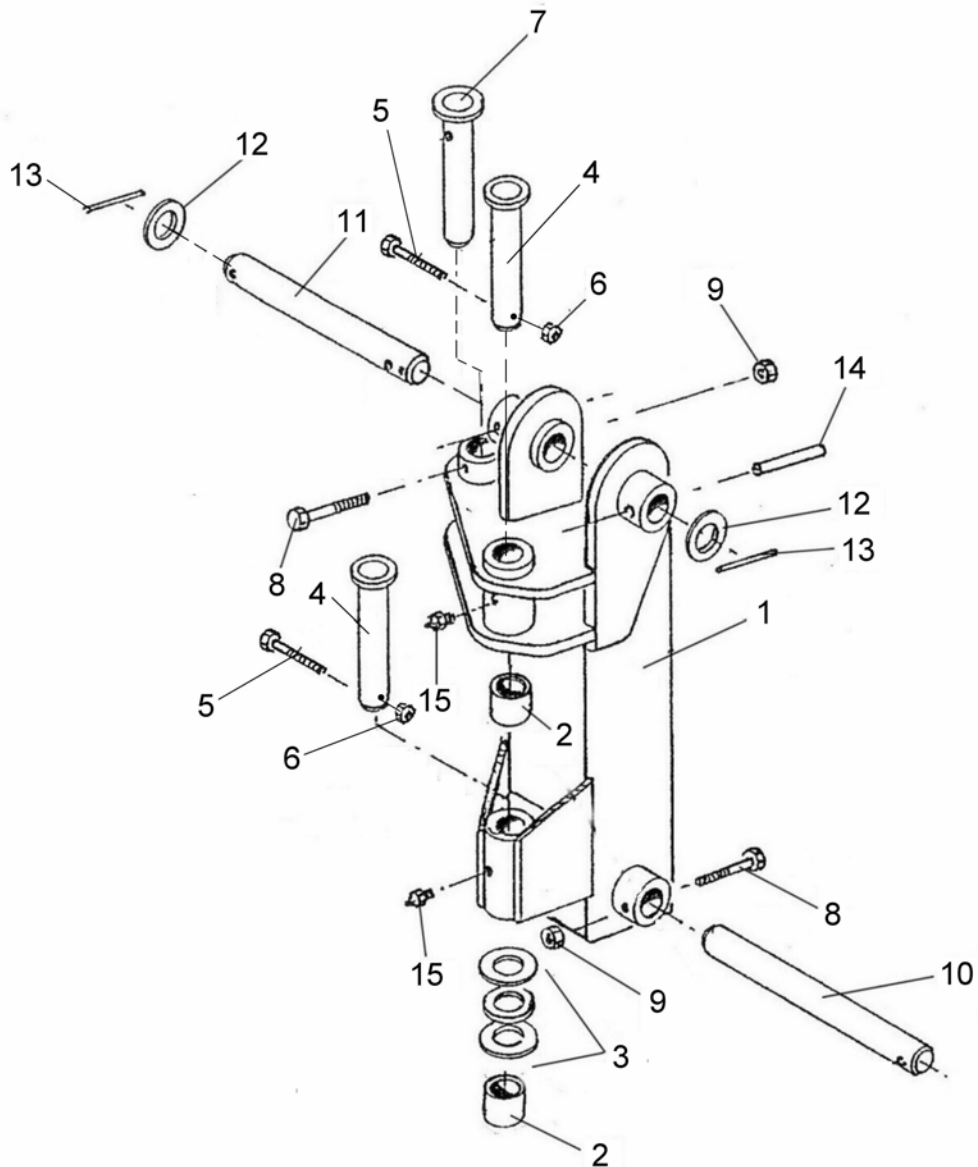
Modules:

194.702 – L/H build (Standard & Cranked Arm)

194.703 – R/H build (Standard & Cranked Arm)

194.704 – L/H Front Mount build

194.705 – R/H Front Mount build

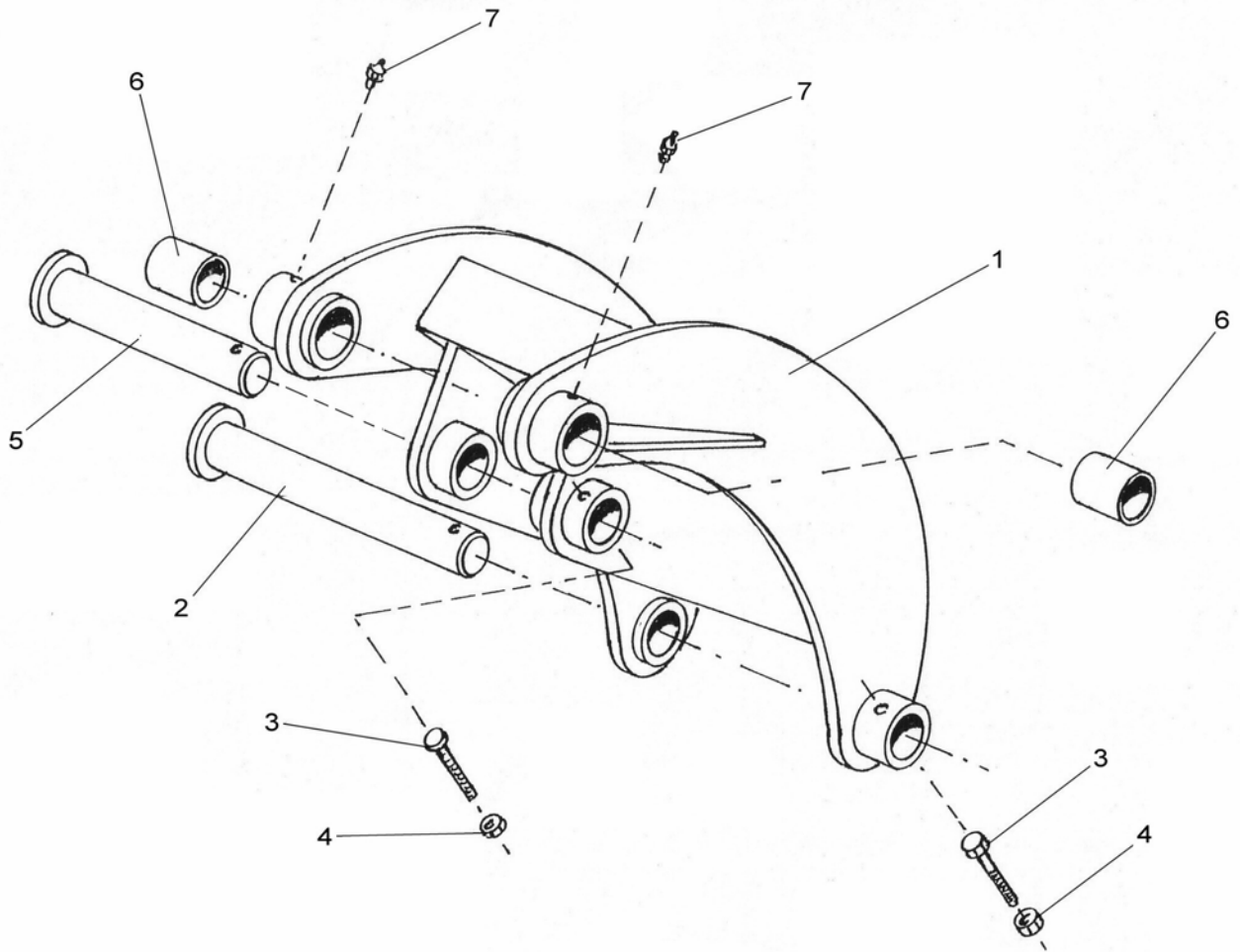
Illustrated in Standard Left-Hand build

PILLAR (SPLINE) ASSEMBLY

REF.	QTY.	PART No.	DESCRIPTION
		194.702	PILLAR (SPLINE) ASSEMBLY - L/H Std. & C/Arm
		194.703	PILLAR (SPLINE) ASSEMBLY - R/H Std. & C/Arm
		194.704	PILLAR (SPLINE) ASSEMBLY - L/H Front Mount
		194.705	PILLAR (SPLINE) ASSEMBLY - R/H Front Mount
1	1	194.028	PILLAR (SPLINE) - L/H Standard & Cranked Arm
	1	194.002	PILLAR (SPLINE) - R/H Standard & Cranked Arm
	1	194.164L	PILLAR (SPLINE) - L/H Front Mount
	1	194.164R	PILLAR (SPLINE) - R/H Front Mount
2	2	6257G	BUSH
3	1	194.054	THRUST WASHER ASSEMBLY
4	2	194.012	PIN - SPLINE PIVOT
5	2	9213166	BOLT
6	2	9163006	NYLOC NUT
7	1	194.021	PIN - BREAKBACK/SPLINE
8	2	9213155	BOLT
9	2	9163005	NYLOC NUT
10	1	194.015	PIN - LIFT BASE
11	1	194.013	PIN - ROCKER
12	2	T6541	WASHER
13	2	T7920	SPRING DOWEL
14	1	T8013	SPRING DOWEL
15	2	T2923	GREASE NIPPLE

ROCKER ASSEMBLY

Module:
194.706



ROCKER ASSEMBLY

REF.	QTY.	PART No.	DESCRIPTION
		194.098	ROCKER ASSEMBLY
1	1	194.098	ROCKER
2	1	194.016	PIN - 1ST BOOM
3	2	9213155	BOLT
4	2	9163005	NYLOC NUT
5	1	194.014	PIN - LIFT RAM (ROD END)
6	2	T7488	BUSH - NYLON
7	2	T2923	GREASE NIPPLE

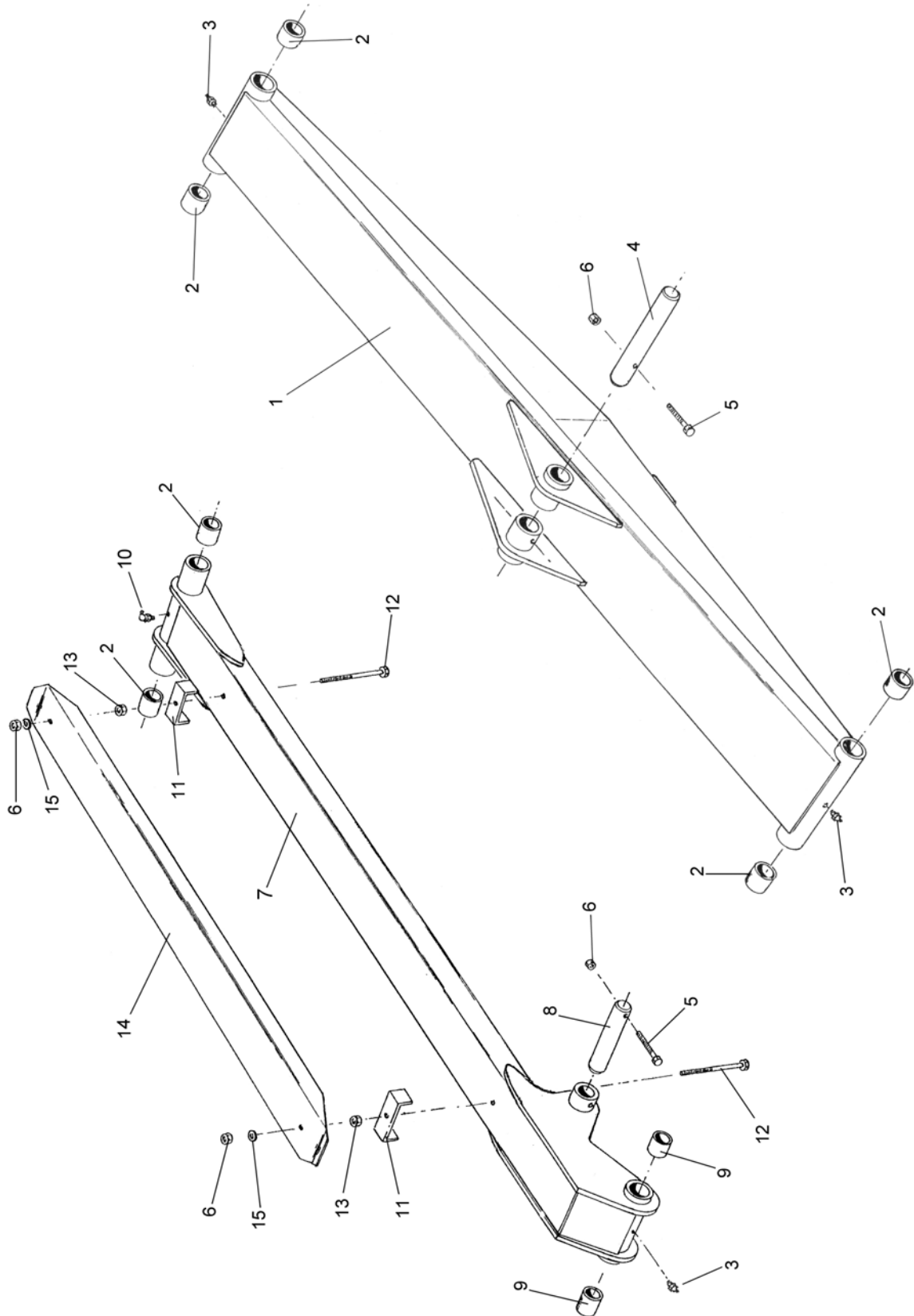
MAIN ARM & TENSION LINK

Modules:

194.707 – 460S Models

194.708 – 520S & 540S Models

194.709 – 580S & 600S Models



MAIN ARM & TENSION LINK

REF.	QTY.	PART No.	DESCRIPTION
		194.707	MAIN ARM & TENSION LINK - 460S Models
		194.708	MAIN ARM & TENSION LINK - 520S & 540S Models
		194.709	MAIN ARM & TENSION LINK - 580S & 600S Models
1	1	194.095	MAIN ARM - 460S Models
	1	194.096	MAIN ARM - 520S & 540S Models
	1	194.097	MAIN ARM - 580S & 600S Models
2	6	6257G	BUSH
3	3	T2923	GREASE NIPPLE
4	1	194.018	PIN
5	2	9213155	BOLT
6	4	9163005	NYLOC NUT
7	1	194.102	TENSION LINK - 460S Models
	1	194.103	TENSION LINK - 520S & 540S Models
	1	194.104	TENSION LINK - 580S & 600S Models
8	1	194.017	PIN - REACH BASE END
9	2	T7488	BUSH
10	1	T2944	GREASE NIPPLE
11	2	194.053	HOSE CLAMP
12	2	05.292.15	BOLT
13	2	9113005	NUT
14	1	194.110	TENSION LINK COVER - 460S Models
	1	194.111	TENSION LINK COVER - 520S & 540S Models
	1	194.112	TENSION LINK COVER - 580S & 600S Models
15	2	9100105	FLAT WASHER

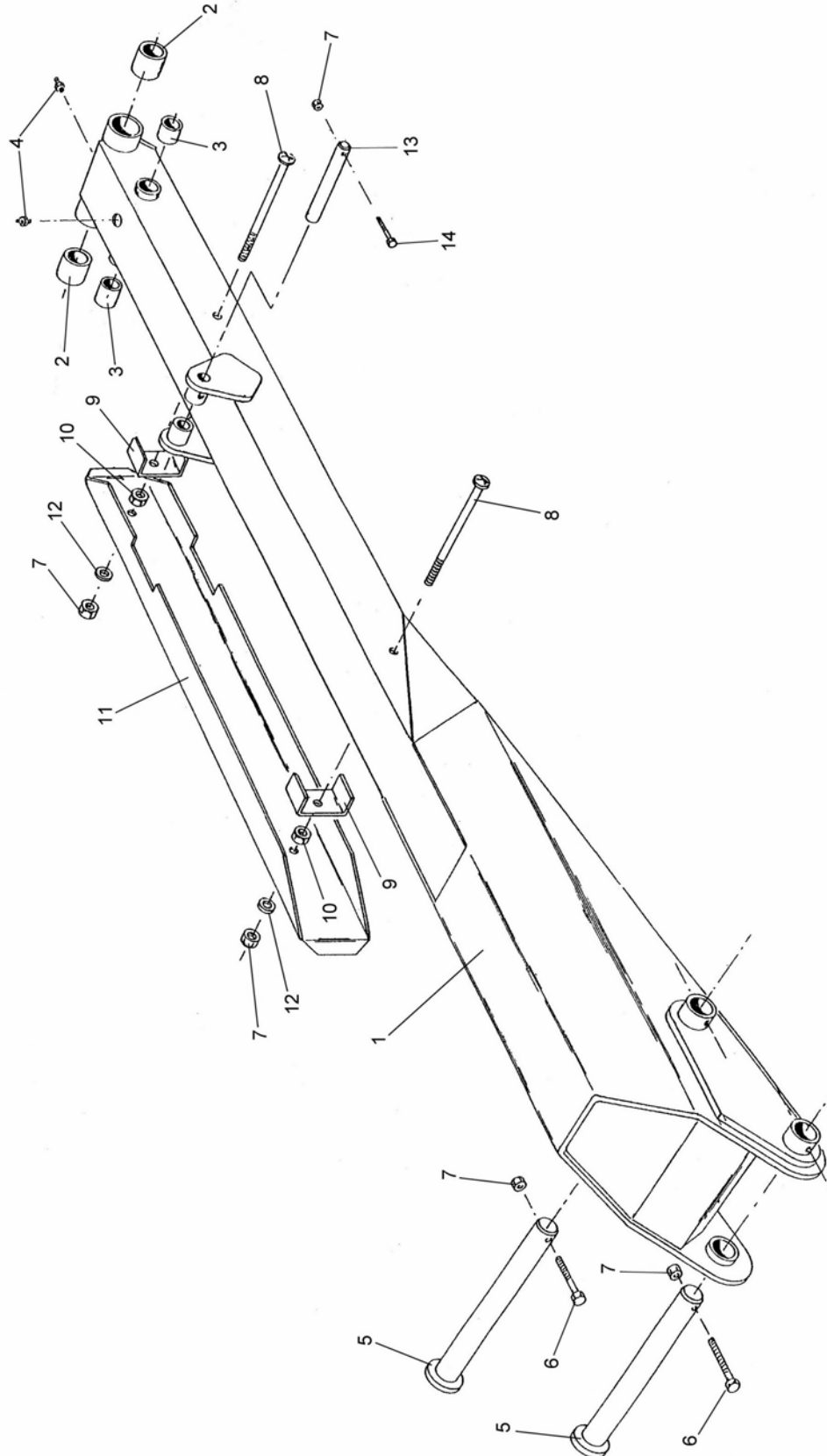
DIPPER ARM ASSEMBLY – Standard Models

Modules:

194.710 – 460S Model

194.711 – 520S Model

194.712 – 580S Model



DIPPER ARM ASSEMBLY – Standard Models

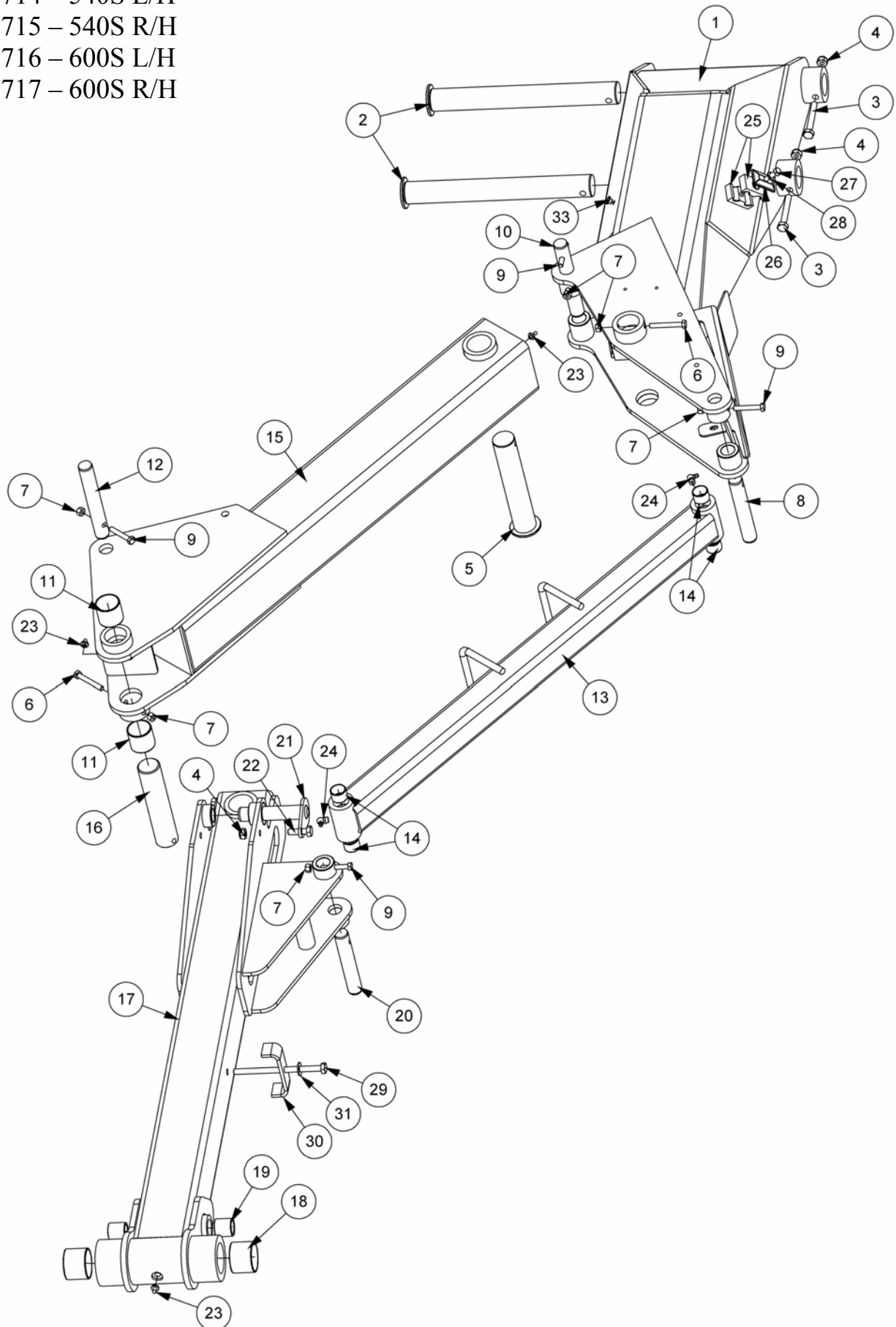
REF.	QTY.	PART No.	DESCRIPTION
		194.710	DIPPER ARM ASSEMBY - 460S Models
		194.711	DIPPER ARM ASSEMBY - 520S Models
		194.712	DIPPER ARM ASSEMBY - 580S Models
1	1	194.137	DIPPER ARM - 460S Models
	1	194.138	DIPPER ARM - 520S Models
	1	194.130	DIPPER ARM - 580S Models
2	2	T7900	BUSH
3	2	30.207.70	BUSH
4	2	T2923	GREASE NIPPLE
5	2	194.016	PIN - MAIN ARM/TENSION LINK
6	2	9213155	BOLT
7	5	9163005	NYLOC NUT
8	2	T8069	BOLT
9	2	194.053	HOSE CLAMP
10	2	9113005	PLAIN NUT
11	1	194.139	HOSE COVER - 460S Models
	1	194.140	HOSE COVER - 520S Models
	1	194.131	HOSE COVER - 580S Models
12	2	9100105	FLAT WASHER
13	1	199.017	PIN - ANGLE RAM BASE END
14	1	9213075	BOLT

DIPPER ARM ASSEMBLY – Cranked Arm Models

Modules:

- 194.714 – 540S L/H
- 194.715 – 540S R/H
- 194.716 – 600S L/H
- 194.717 – 600S R/H

Illustrated in Left-Hand build

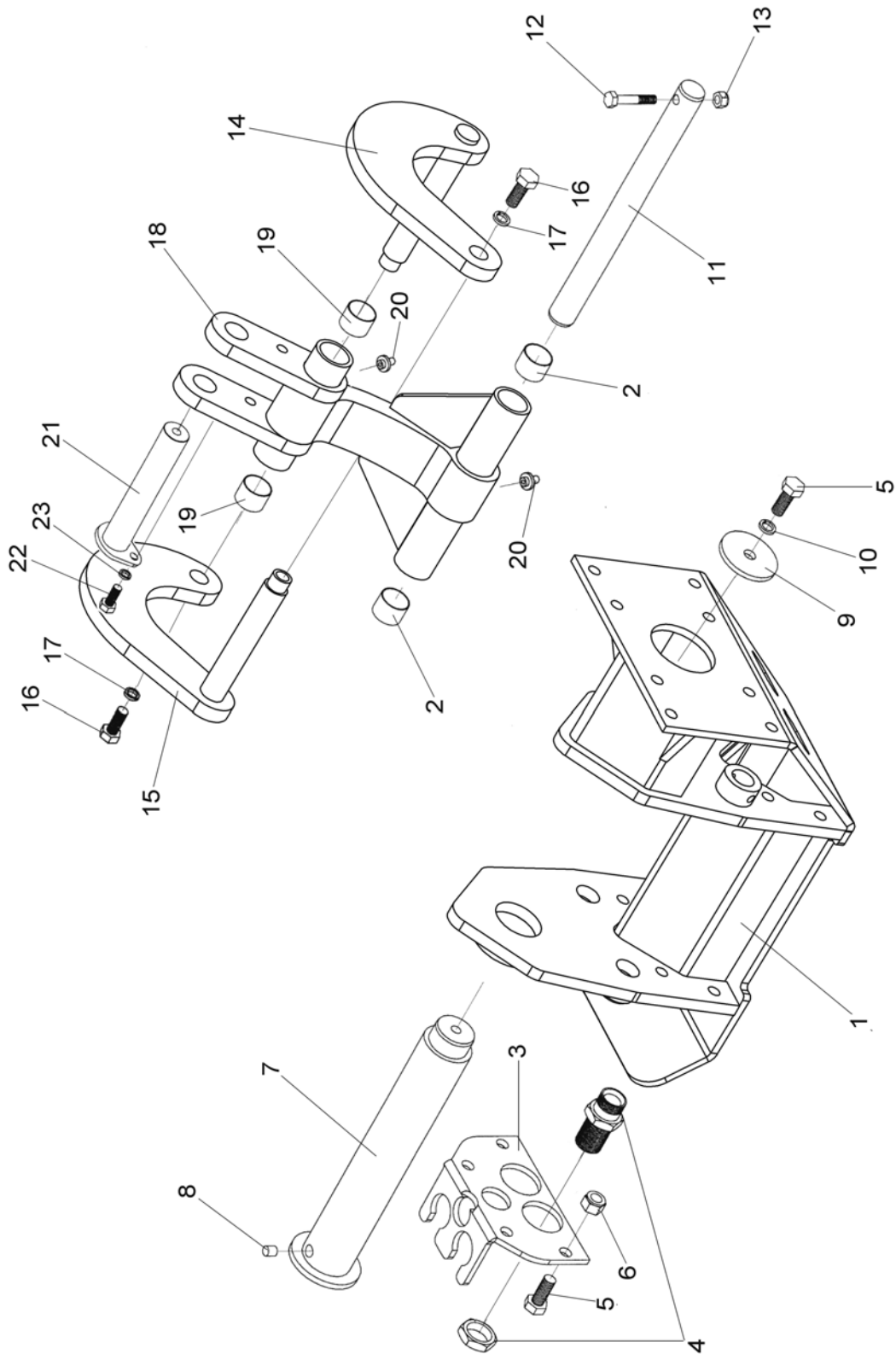


DIPPER ARM ASSEMBLY – Cranked Arm Models

REF.	QTY.	PART No.	DESCRIPTION
		194.714	CRANKED DIPPER ARM ASSEMBLY - 540S L/H
		194.715	CRANKED DIPPER ARM ASSEMBLY - 540S R/H
		194.716	CRANKED DIPPER ARM ASSEMBLY - 600S L/H
		194.717	CRANKED DIPPER ARM ASSEMBLY - 600S R/H
1	1	194.145	DIPPER ARM UPPER - 540S L/H Build
	1	194.146	DIPPER ARM UPPER - 540S R/H Build
	1	194.143	DIPPER ARM UPPER - 600S L/H Build
	1	194.144	DIPPER ARM UPPER - 600S R/H Build
2	2	194.016	PIN - MAIN ARM/TENSION LINK
3	2	9213155	BOLT
4	4	9163005	NYLOC NUT
5	1	194.075	PIN - UPPER DIPPER/CENTRE DIPPER
6	2	9213124	BOLT
7	6	9143004	NYLOC NUT
8	1	194.080	PIN - UPPER DIPPER/PARALLEL ARM
9	4	9213104	BOLT
10	1	194.077	PIN - UPPER DIPPER/C.RAM BASE END
11	2	6257G	BUSH
12	1	194.076	PIN
13	1	194.073	PARALLEL ARM
14	4	T8039	BUSH
15	1	194.208	DIPPER ARM CENTRE - L/H Build
		194.071	DIPPER ARM CENTRE - R/H Build
16	1	194.079	PIN
17	1	194.142	DIPPER ARM LOWER - 540S & 600S L/H Build
	1	194.141	DIPPER ARM LOWER - 540S & 600S R/H Build
18	2	T7900	BUSH
19	2	30.207.70	NYLON BUSH
20	1	194.078	PIN
21	1	194.152	ANGLE RAM PIN
22	1	9213075	BOLT
23	4	T2923	GREASE NIPPLE
24	2	T2944	GREASE NIPPLE
25	1	7193065	HOSE CLAMP
26	1	7193066	CLAMP PLATE
27	1	9213084	BOLT
28	1	9100204	SPRING WASHER
29	1	9213325	BOLT
30	1	194.053	PIPE CLAMP
31	1	9100105	FLAT WASHER
32	1	194.168	CRANKED ARM HOSE COVER
33	1	42964.02	PLASTIC PLUG

HEAD ANGLING MECHANISM ASSEMBLY

Module:
194.718



HEAD ANGLING MECHANISM ASSEMBLY

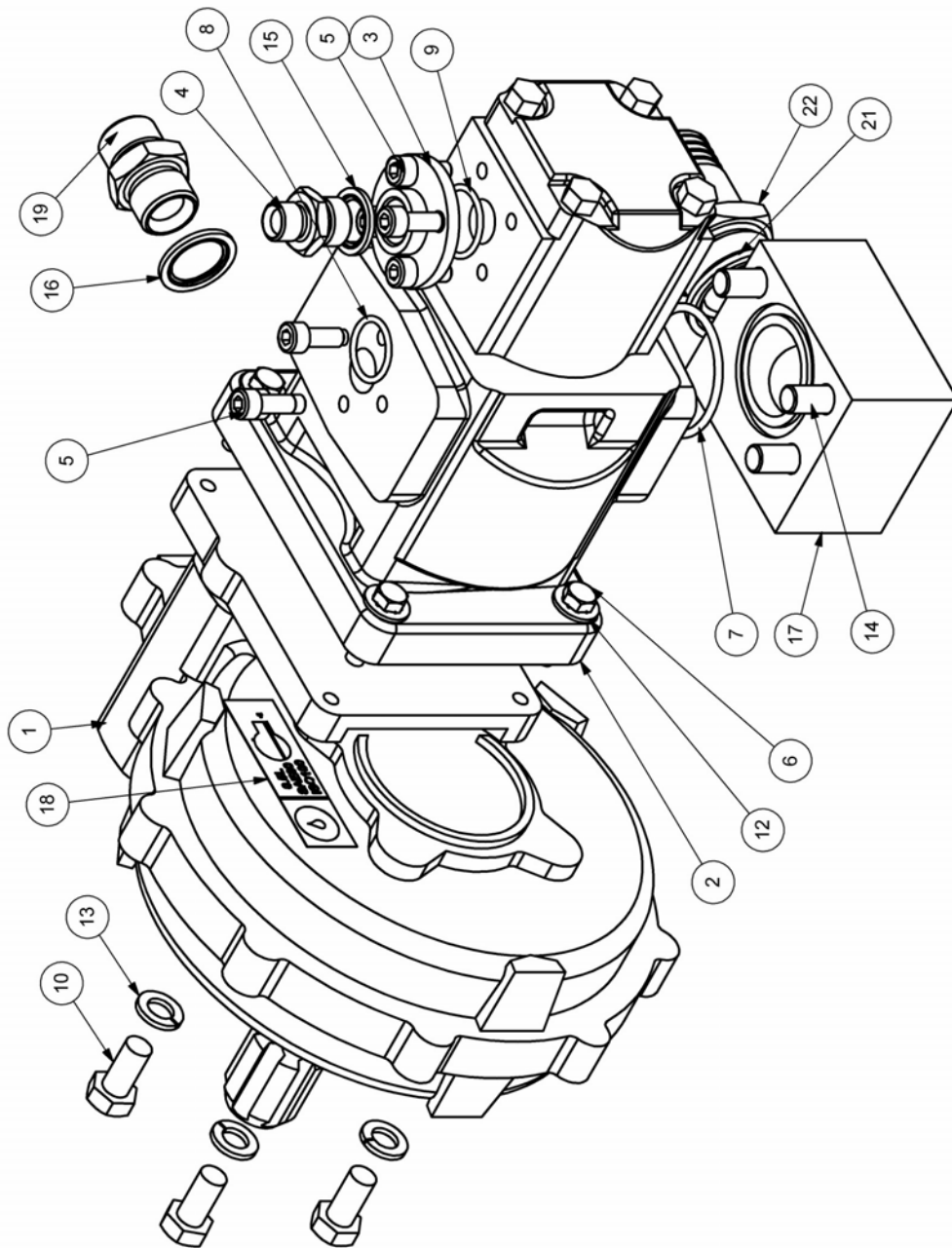
REF.	QTY.	PART No.	DESCRIPTION
		194.718	HEAD ANGLING MECHANISM ASSEMBLY
1	1	194.105	SHOE
2	2	08.297.09	BUSH - PLASTIC
3	1	45921.01	PIPE BRACKET
4	2	T8085	BULKHEAD FITTING
5	5	9313066	SETSCREW
6	4	9163006	NYLOC NUT
7	1	194.107	PIN - SHOE PIVOT
8	1	T7760	GRUB SCREW
9	1	184-461	SPECIAL WASHER
10	1	9100206	SPRING WASHER
11	1	194.108	PIN - BANANA/SHOE PIVOT
12	1	9213104	BOLT
13	1	9163004	NYLOC NUT
14	1	194.127	BANANA LINK
15	1	194.128	BANANA LINK
16	2	9313067	SETSCREW
17	2	0100106	FLAT WASHER
18	1	194.129	SLAVE LINK
19	2	30.207.70	BUSH
20	2	T2923	GREASE NIPPLE
21	1	199.016	PIN - ANGLE ROD END/SLAVE LINK
22	1	9213075	BOLT
23	1	9163005	NYLOC NUT

PUMP & GEARBOX ASSEMBLY – Standard Power

Modules:

Illustrated in Left-Hand build

194.730 – L/H Standard Power Rear Mount Models



PUMP & GEARBOX ASSEMBLY – Standard Power

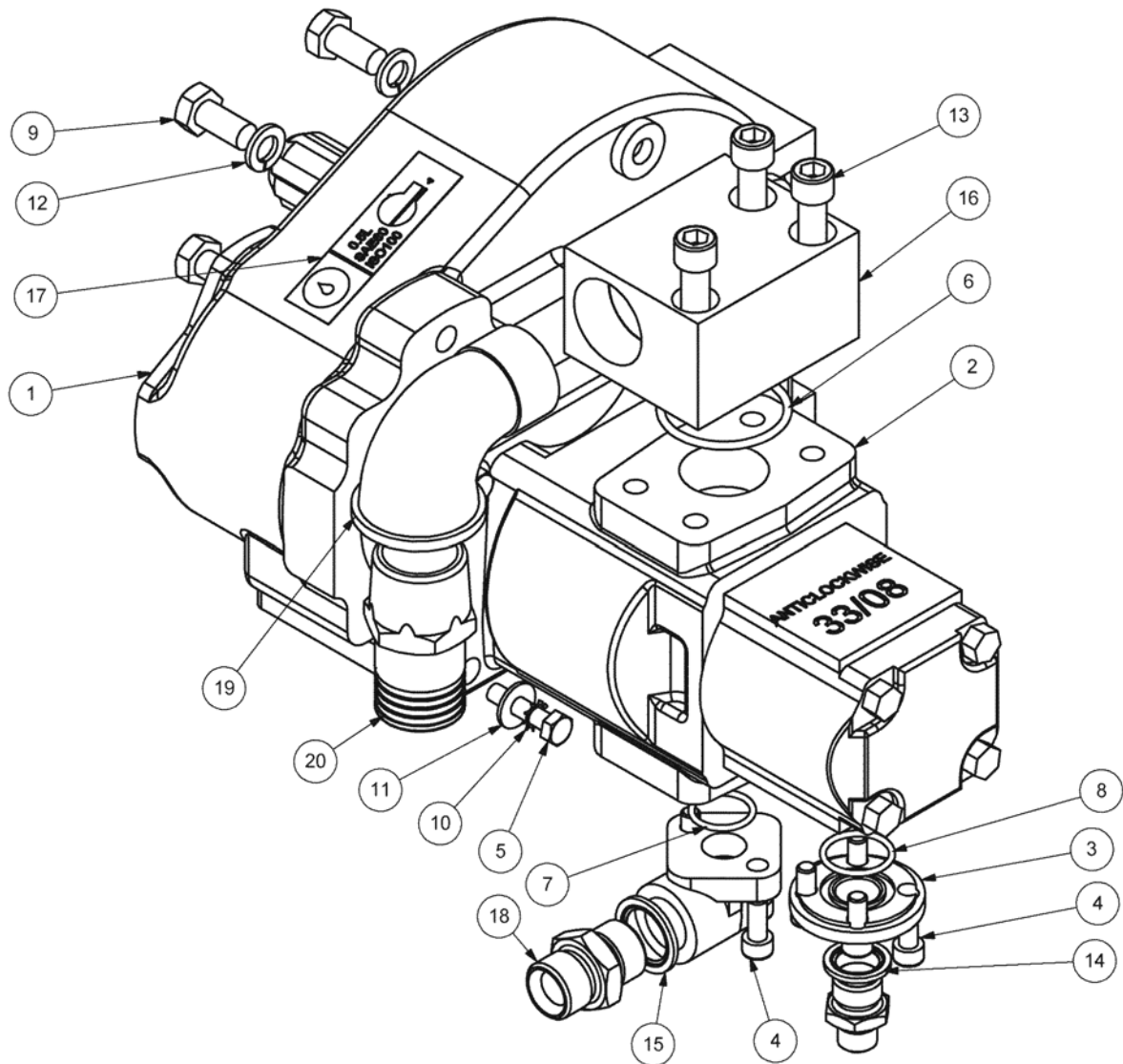
REF.	QTY.	PART No.	DESCRIPTION
		194.730	PUMP & GEARBOX ASSEMBLY - L/H Std. Power
1	1	T8119	GEARBOX - Standard Power
2	1	8201714	PUMP IRON - TI
3	1	42029.01	PORT PLATE
4	1	6000112	ADAPTOR
5	7	9300147	CAPSCREW
6	4	9313074	SETSCREW
7	1	8600304	O RING
8	1	8600403	O RING
9	1	8600405	O RING
10	4	9313056	SETSCREW
11	4	9100404	SHAKEPROOF WASHER
12	4	9100104	FLAT WASHER
13	4	9100206	SPRING WASHER
14	3	9243126	CAPSCREW
15	1	8650104	BONDED SEAL
16	1	8650106	BONDED SEAL
17	1	42142.01	BLOCK SUCTION
18	1	1290054	GEARBOX LABEL
19	1	8581136	ADAPTOR
20	1	8013097	COUPLING 13T-18T
21	1	8650109	BONDED SEAL
22	1	8581260	ADAPTOR - LP

PUMP & GEARBOX ASSEMBLY – Std. Power F/Mount

Modules:

Illustrated in Left-Hand build

194.734 – L/H Standard Power Front Mount Models



PUMP & GEARBOX ASSEMBLY – Std. Power F/Mount

REF.	QTY.	PART No.	DESCRIPTION
		194.734	PUMP & GEARBOX ASSEMBLY - L/H Std. Power F/M
1	1	42693.05	GEARBOX - Standard Power Front Mount
2	1	8201715	PUMP - Anti-Clockwise
3	1	42029.01	PORT PLATE
4	7	9300147	CAPSCREW
5	4	9313074	SETSCREW
6	1	8600304	O RING
7	1	8600403	O RING
8	1	8600405	O RING
9	4	9313056	SETSCREW
10	4	9100404	SHAKEPROOF WASHER
11	4	9100104	FLAT WASHER
12	4	9100206	SPRING WASHER
13	3	9243126	CAPSCREW
14	1	8650104	BONDED SEAL
15	1	8650106	BONDED SEAL
16	1	42142.02	BLOCK - SUCTION TAPER
17	1	1290054	GEARBOX LABEL
18	1	8581136	ADAPTOR
19	1	8581261	ADAPTOR
20	1	8581367	ADAPTOR - LP
21	1	1290086	DECAL - 800 RPM

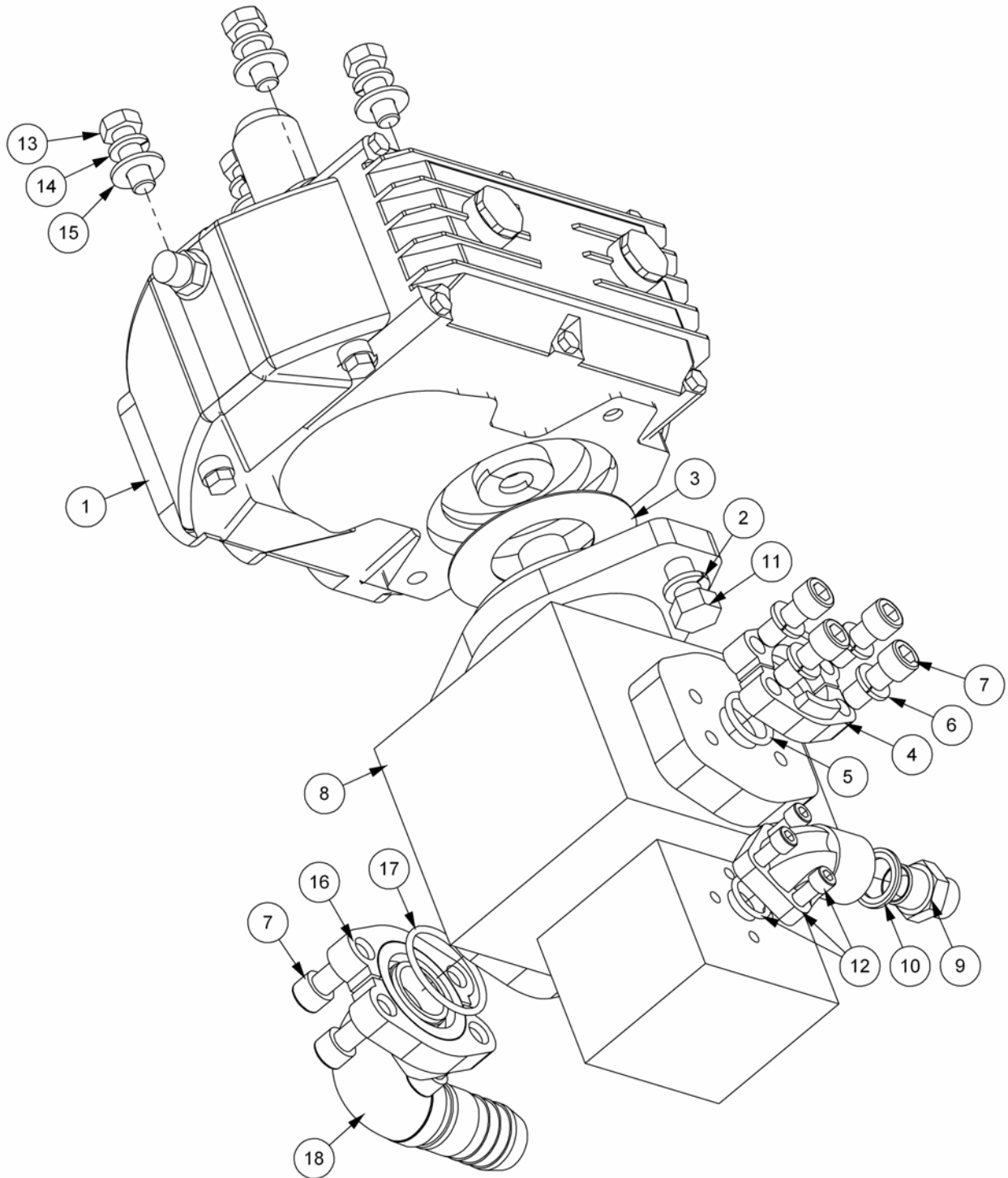
PUMP & GEARBOX ASSEMBLY (High Power)

Modules:

194.912 – L/H build

194.913 – R/H build

Illustrated in Standard Left-Hand build



PUMP & GEARBOX ASSEMBLY (High Power)

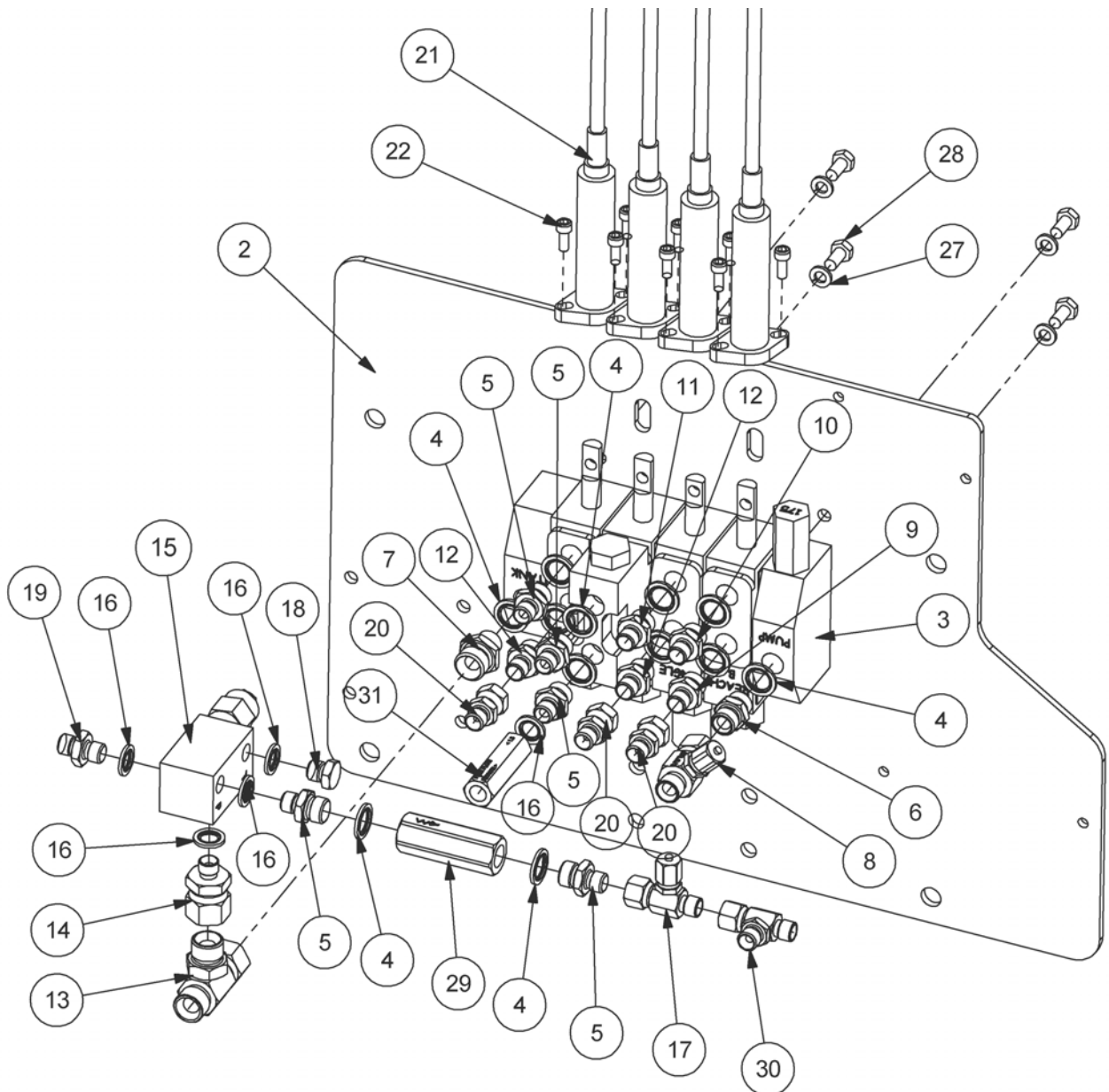
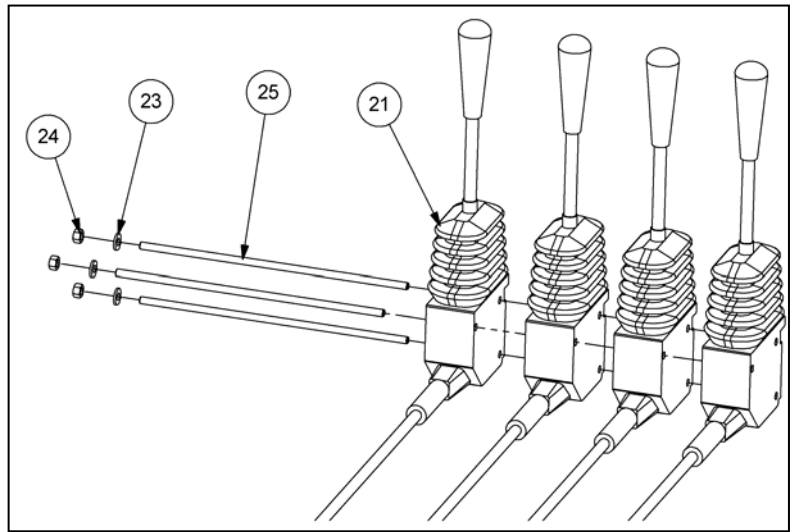
REF.	QTY.	PART No.	DESCRIPTION
		194.912	PUMP & GEARBOX ASSEMBLY - L/H HP
		194.913	PUMP & GEARBOX ASSEMBLY - R/H HP
1	1	8013514	GEARBOX - RATIO 3.57:1
2	2	05.282.08	SPRING WASHER
3	1	7550316	GASKET
4	2	7988.1	SPLIT FLANGE
5	1	8600119	O RING
6	4	9100206	SPRING WASHER
7	8	9343066	CAPSCREW
8	1	199.355	TANDEM PUMP ASSEMBLY
9	1	05.122.01	ADAPTOR
10	1	05.290.05	BONDED SEAL
11	2	05.839.01	BOLT
12	1	199.358	FLANGE ADAPTOR KIT (Incl. Bolts & O Ring)
13	4	05.264.24	SETSCREW
14	4	05.282.03	SPRING WASHER
15	4	05.281.03	FLAT WASHER
16	1	41.294.01	SPLIT FLANGE
17	1	8600303	O RING
18	1	199.363	HOSE TAIL

CONTROL VALVE ASSEMBLY – Cable models

Modules:

- 194.739 – L/H Std.Power
- 194.780 – R/H Std.Power
- 194.748 – L/H Std.Power C /Arm
- 194.790 – R/H Std.Power C/Arm
- 194.738 – L/H High Power
- 194.781 – R/H High Power
- 194.749 – L/H High Power C/Arm
- 194.791 – R/H High Power C/Arm

Illustrated in Left-Hand High Power build.



CONTROL VALVE ASSEMBLY – Cable models

REF.	QTY.	PART No.	DESCRIPTION
		194.739	CABLE CONTROL VALVE - L/H Std. Power
		194.780	CABLE CONTROL VALVE - R/H Std. Power
		194.748	CABLE CONTROL VALVE - L/H Std. Power C/Arm
		194.790	CABLE CONTROL VALVE - R/H Std. Power C/Arm
		194.738	CABLE CONTROL VALVE - L/H High Power
		194.781	CABLE CONTROL VALVE - R/H High Power
		194.749	CABLE CONTROL VALVE - L/H High Power C/Arm
		194.791	CABLE CONTROL VALVE - R/H High Power C/Arm
1*	1	194.157	ROTOR CONTROL VALVE ASSEMBLY - L/H Std.Power
	1	194.158	ROTOR CONTROL VALVE ASSEMBLY - R/H Std.Power
	1	194.159	ROTOR CONTROL VALVE ASSEMBLY - L/H High Power
	1	194.155	ROTOR CONTROL VALVE ASSEMBLY - R/H High Power
2	1	194.156	VALVE PLATE
3	1	T7698	VALVE BLOCK
4	12	8650103	BONDED SEAL
5	5	8581115	ADAPTOR
6	1	6000113	ADAPTOR
7	1	6000112	ADAPTOR
8	1	T7815	TEST POINT
9	1	8130046	RESTRICTOR
10	1	8130047	RESTRICTOR
11	1	8130048	RESTRICTOR
12	2	8130066	RESTRICTOR
13	1	8581296	TEE
14	1	T7832	ADAPTOR
15	1	7484R2000	RELIEF VALVE BLOCK
16	5	8650102	BONDED SEAL
17	1	T7814	TEST POINT
18	1	520378	ADAPTOR PLUG
19	1	8581169	ADAPTOR
20	3	8581309	ADAPTOR - SWIVEL
21	4	T7822	CABLE CONTROL ASSEMBLY - 3.0M
22	8	9343033	CAPSCREW
23	3	9100103	FLAT WASHER
24	3	9143003	SELF-LOCKING NUT
25	3	04.282.71	STUD
26	4	T7835	BLACK KNOB & LENS
27	4	9100204	SPRING WASHER
28	4	9313034	SETSCREW
29	1	T6986	CHECK VALVE
30	1	8581254	ADAPTOR TEE
31	1	T7813	RESTRICTOR
32	1	8581154	ADAPTOR
33	1	T1920060	BREAKBACK SYMBOL
34	1	T1920061	HEAD ANGLE SYMBOL
35	1	T1920062	REACH SYMBOL
36	1	T1920063	LIFT SYMBOL

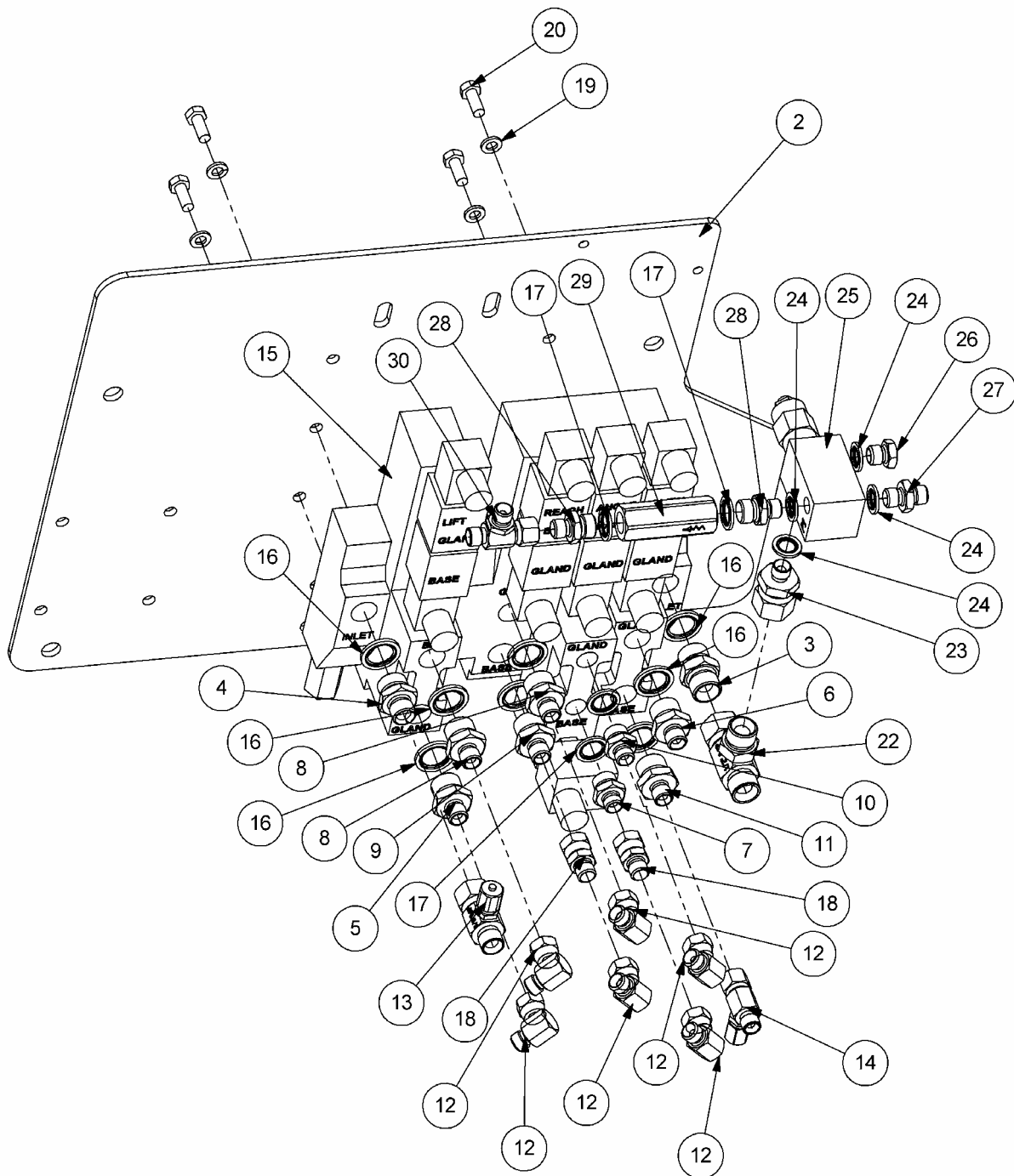
* Not illustrated - refer to separate Rotor Control Valve page

CONTROL VALVE ASSEMBLY – Electric models

Modules:

Illustrated in Left-Hand build

- 194.840 – L/H Std. Power
- 194.882 – R/H Std. Power
- 194.850 – L/H Std. Power C /Arm
- 194.892 – R/H Std. Power C/Arm
- 194.841 – L/H High Power
- 194.883 – R/H High Power
- 194.851 – L/H High Power C/Arm
- 194.893 – R/H High Power C/Arm



CONTROL VALVE ASSEMBLY – Electric models

REF.	QTY.	PART No.	DESCRIPTION
		194.840	ELECTRIC CONTROL VALVE - L/H Std. Power
		194.882	ELECTRIC CONTROL VALVE - R/H Std. Power
		194.850	ELECTRIC CONTROL VALVE - L/H Std. Power C/Arm
		194.892	ELECTRIC CONTROL VALVE - R/H Std. Power C/Arm
		194.841	ELECTRIC CONTROL VALVE - L/H High Power
		194.883	ELECTRIC CONTROL VALVE - R/H High Power
		194.851	ELECTRIC CONTROL VALVE - L/H High Power C/Arm
		194.893	ELECTRIC CONTROL VALVE - R/H High Power C/Arm
1*	1	194.157	ROTOR CONTROL VALVE ASSEMBLY - L/H Std.Power
	1	194.158	ROTOR CONTROL VALVE ASSEMBLY - R/H Std.Power
	1	194.159	ROTOR CONTROL VALVE ASSEMBLY - L/H High Power
	1	194.155	ROTOR CONTROL VALVE ASSEMBLY - R/H High Power
2	1	194.156	VALVE PLATE
3	1	8581110	ADAPTOR
4	1	6000112	ADAPTOR
5	1	8124096	ADAPTOR RESTRICTOR - 1.3 'D'
6	1	8124097	ADAPTOR RESTRICTOR - 1.15 'S'
7	1	8130048	ADAPTOR RESTRICTOR - 1.3 'C'
8	2	8124093	ADAPTOR RESTRICTOR - 1.6 'A'
9	1	8124094	ADAPTOR RESTRICTOR - 1.8 'B'
10	1	8130066	ADAPTOR RESTRICTOR - 1.15 'M'
11	1	8581172	ADAPTOR
12	6	8581190	ADAPTOR ELBOW - 90°
13	1	T7815	TEST POINT
14	1	T7814	TEST POINT
15	1	8134253	VALVE - HYPRO 4 SPOOL 210 BAR
16	8	8650104	BONDED SEAL
17	4	8650103	BONDED SEAL
18	2	8581309	ADAPTOR - SWIVEL/STRAIGHT
19	4	9100204	SPRING WASHER
20	4	9313044	SETSCREW
21	1	41844.03	LOOM - 19 CORE 4 SERVICE B/B
22	1	8581296	TEE
23	1	T7832	ADAPTOR
24	4	8650102	BONDED SEAL
25	1	7484R2000	RELIEF VALVE BLOCK - 2000 PSI
26	1	520378	ADAPTOR PLUG
27	1	8581169	ADAPTOR
28	2	8581115	ADAPTOR
29	1	T6986	CHECK VALVE
30	1	8581254	ADAPTOR TEE

* *Not illustrated - refer to separate Rotor Control Valve page*

CONTROL VALVE ASSEMBLY - Early Prop. Models

Modules:

L/H Standard Power Cranked Arm version illustrated.

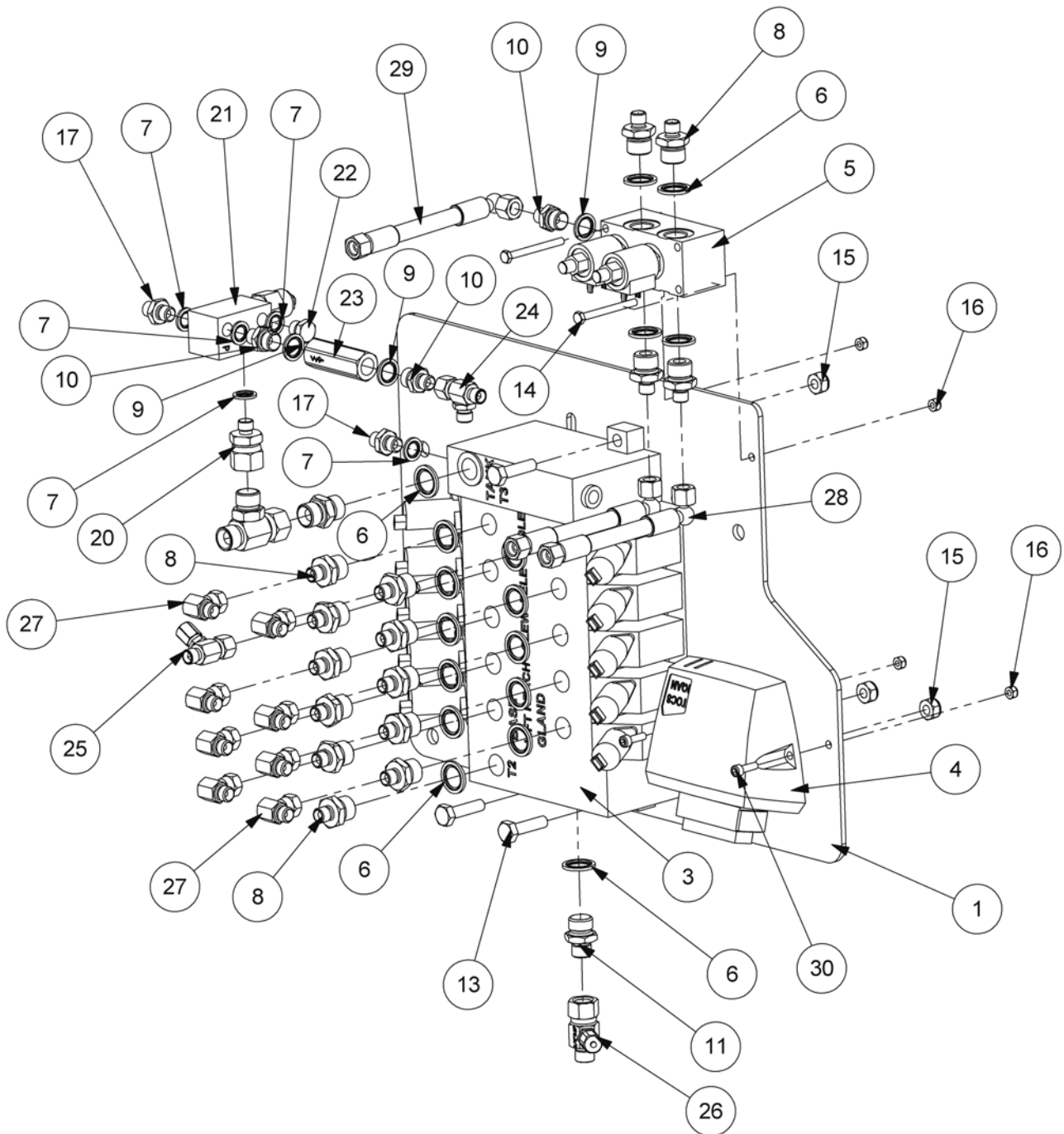
194.742 – L/H Standard Power (194.746 – Front Mount / 194.752 – Cranked Arm)

194.784 – R/H Standard Power (194.788 – Front Mount / 194.792 – Cranked Arm)

194.743 – L/H High Power (194.747 – Front Mount / 194.753 – Cranked Arm)

194.785 – R/H High Power (194.789 – Front Mount / 194.795 – Cranked Arm)

Fitted to machines manufactured before 12/03



CONTROL VALVE ASSEMBLY - Early Prop. Models

REF.	QTY.	PART No.	DESCRIPTION
		194.742	PROP. CONTROL VALVE - L/H Std.Power
		194.784	PROP. CONTROL VALVE - R/H Std.Power
		194.746	PROP. CONTROL VALVE - L/H Std. Power F/Mount
		194.788	PROP. CONTROL VALVE - R/H Std. Power F/Mount
		194.752	PROP. CONTROL VALVE - L/H Std. Power C/Arm
		194.792	PROP. CONTROL VALVE - R/H Std. Power C/Arm
		194.743	PROP. CONTROL VALVE - L/H High Power
		194.785	PROP. CONTROL VALVE - R/H High Power
		194.747	PROP. CONTROL VALVE - L/H High Power F/Mount
		194.789	PROP. CONTROL VALVE - R/H High Power F/Mount
		194.753	PROP. CONTROL VALVE - L/H High Power C/Arm
		194.795	PROP. CONTROL VALVE - R/H High Power C/Arm
1	1	194.156	VALVE PLATE
2*	1	194.157	ROTOR CONTROL VALVE ASSEMBLY - L/H Std. Power
		194.158	ROTOR CONTROL VALVE ASSEMBLY - R/H Std. Power
		194.159	ROTOR CONTROL VALVE ASSEMBLY - L/H High Power
		194.155	ROTOR CONTROL VALVE ASSEMBLY - R/H High Power
3	1	8135250	VALVE 5 SPOOL
4	1	8135260	VALVE DRIVER
5	1	8135252	VALVE BLOCK ANGLE FLOAT
6	17	8650104	BONDED SEAL
7	5	8650102	BONDED SEAL
8	15	8581172	ADAPTOR
9	3	8650103	BONDED SEAL
10	3	8581115	ADAPTOR
11	1	6000112	ADAPTOR
12	1	8581110	ADAPTOR
13	3	9213085	BOLT
14	2	9213133	BOLT
15	3	9163005	NYLOC NUT
16	4	9163003	NYLOC NUT
17	2	8581169	ADAPTOR
18	1	21121.03	LOOM
19	1	8581296	TEE
20	1	T7832	ADAPTOR
21	1	7484R2000	RELIEF VALVE BLOCK 2000 PSI
22	1	520378	ADAPTOR PLUG
23	1	T6986	CHECK VALVE
24	1	8581254	ADAPTOR TEE
25	1	T7814	TEST POINT
26	1	T7815	TEST POINT
27	8	8581190	ADAP ELBOW
28	2	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm LONG
29	1	10.002.09	HOSE - 1/4" BSP FS/F90 x 450mm LONG
30	2	9343043	CAPSCREW

* Not illustrated - refer to separate Rotor Control Valve page

CONTROL VALVE ASSEMBLY – Later Prop. Models

Modules: *L/H Standard Power Cranked Arm version illustrated.*

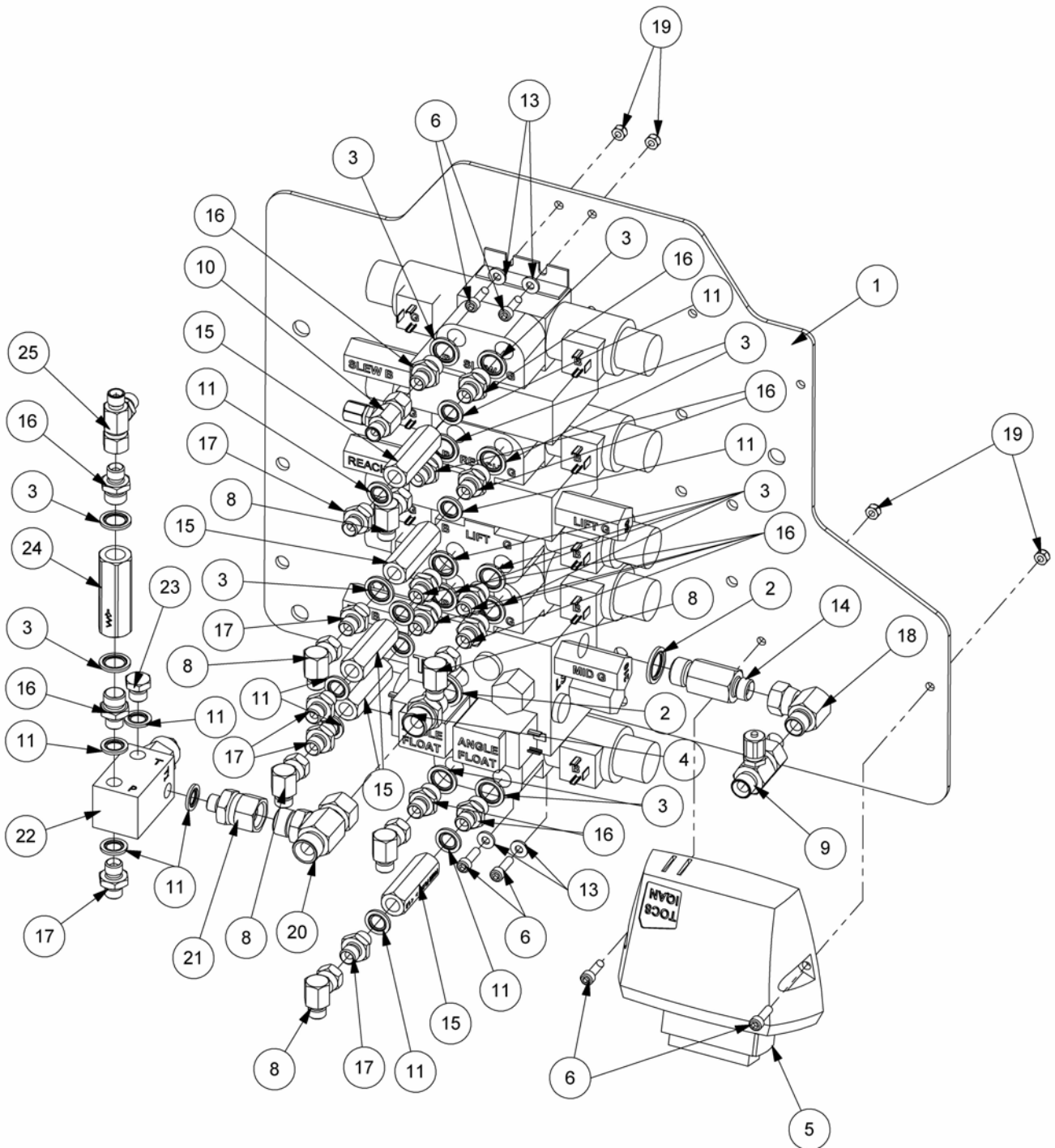
194.842 – L/H Standard Power (194.846 – Front Mount / 194.852 – Cranked Arm)

194.884 – R/H Standard Power (194.888 – Front Mount / 194.892 – Cranked Arm)

194.843 – L/H High Power (194.847 – Front Mount / 194.853 – Cranked Arm)

194.885 – R/H High Power (194.889 – Front Mount / 194.895 – Cranked Arm)

Fitted to machines manufactured after 12/03



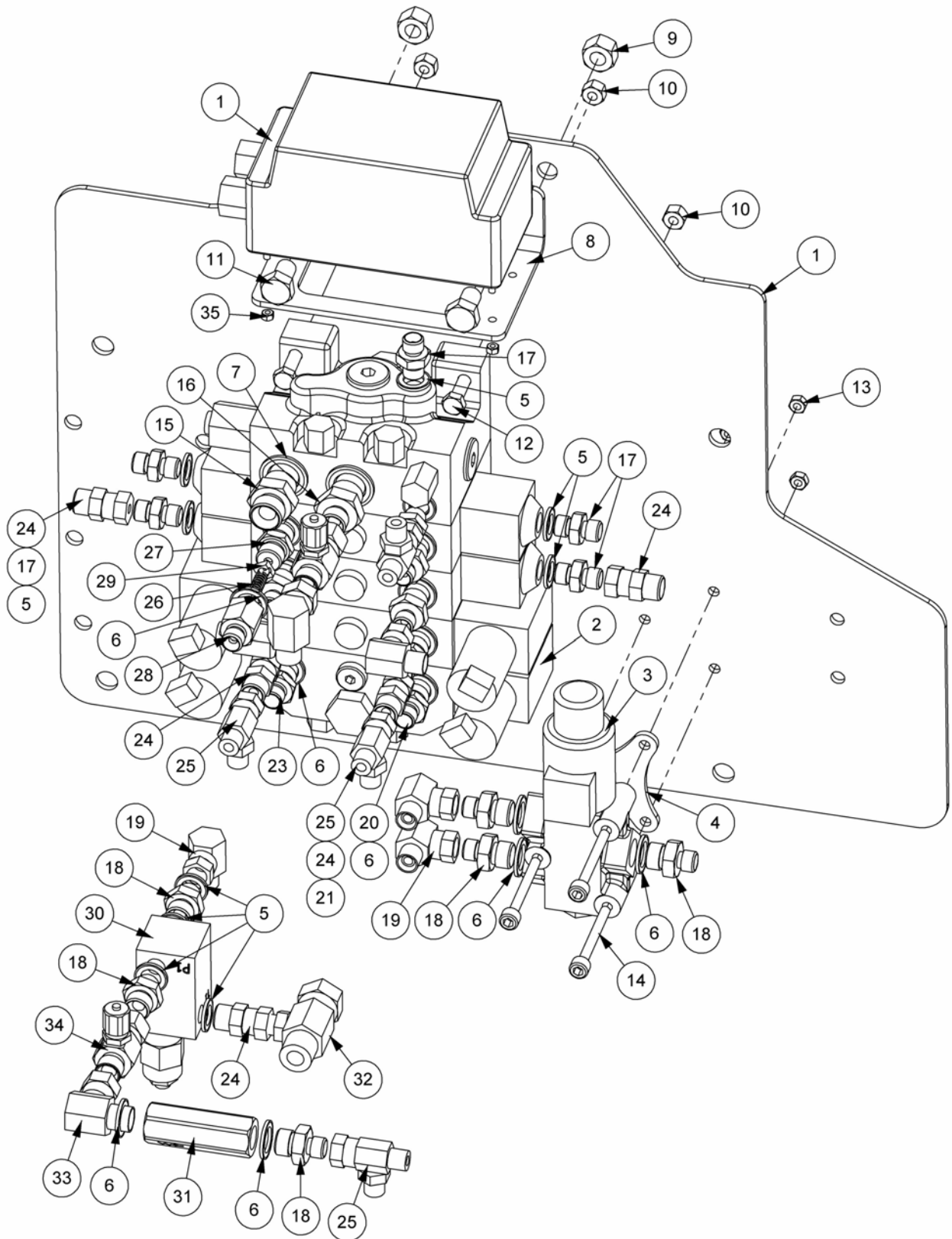
CONTROL VALVE ASSEMBLY – Later Prop. Models

REF.	QTY.	PART No.	DESCRIPTION
		194.842	PROP. CONTROL VALVE - L/H Std.Power
		194.884	PROP. CONTROL VALVE - R/H Std.Power
		194.846	PROP. CONTROL VALVE - L/H Std. Power F/Mount
		194.888	PROP. CONTROL VALVE - R/H Std. Power F/Mount
		194.852	PROP. CONTROL VALVE - L/H Std. Power C/Arm
		194.892	PROP. CONTROL VALVE - R/H Std. Power C/Arm
		194.843	PROP. CONTROL VALVE - L/H High Power
		194.885	PROP. CONTROL VALVE - R/H High Power
		194.847	PROP. CONTROL VALVE - L/H High Power F/Mount
		194.889	PROP. CONTROL VALVE - R/H High Power F/Mount
		194.853	PROP. CONTROL VALVE - L/H High Power C/Arm
		194.895	PROP. CONTROL VALVE - R/H High Power C/Arm
1	1	194.156	VALVE PLATE
2	2	8650104	BONDED SEAL
3	14	8650103	BONDED SEAL
4	1	8581110	ADAPTOR
5	1	8135260	VALVE DRIVER
6	6	9343043	CAPSCREW
7	1	21121.06	LOOM - <i>not illustrated</i>
8	6	8581190	ADAPTOR ELBOW - 90°
9	1	T7815	TEST POINT
10	1	T7814	TEST POINT
11	13	8650102	BONDED SEAL
12	1	8135254	VALVE - PROP 5 SERVICE
13	4	9100103	FLAT WASHER
14	1	8124053	ADAPTOR
15	5	T7813	RESTRICTOR - ONE WAY
16	12	8581115	ADAPTOR
17	6	8581169	ADAPTOR
18	1	8581117	ADAPTOR ELBOW
19	6	9163003	NYLOC NUT
20	1	8581296	TEE
21	1	T7832	ADAPTOR
22	1	7484R2000	RELIEF VALVE BLOCK 2000 PSI
23	1	520378	ADAPTOR PLUG
24	1	T6986	CHECK VALVE
25	1	8581254	ADAPTOR TEE
26*	1	194.157	ROTOR CONTROL VALVE ASSEMBLY - L/H Std. Power
		194.158	ROTOR CONTROL VALVE ASSEMBLY - R/H Std. Power
		194.159	ROTOR CONTROL VALVE ASSEMBLY - L/H High Power
		194.155	ROTOR CONTROL VALVE ASSEMBLY - R/H High Power

* *Not illustrated - refer to separate Rotor Control Valve page*

LOW PRESSURE CONTROL VALVE ASSEMBLY (HP)

Module:
194.903



LOW PRESSURE CONTROL VALVE ASSEMBLY (HP)

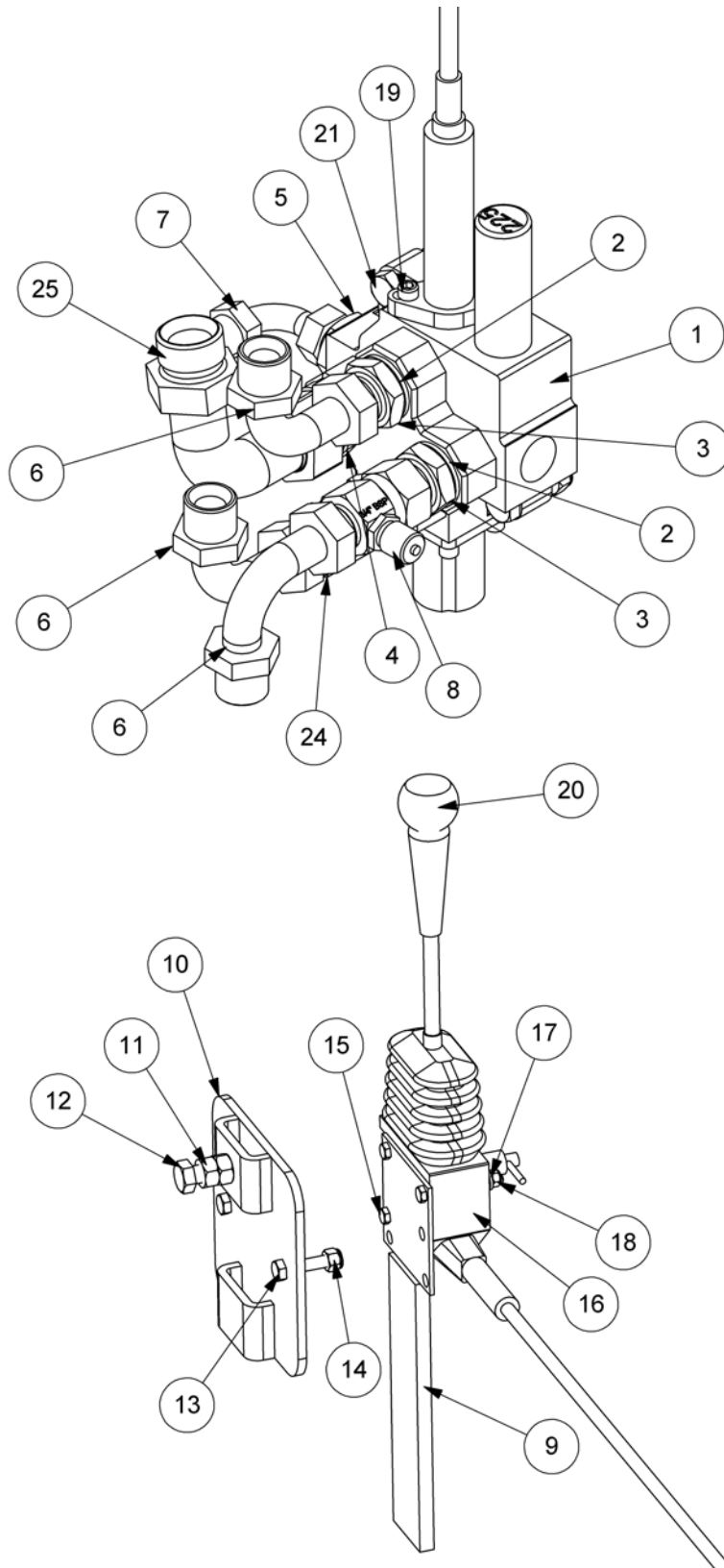
REF.	QTY.	PART No.	DESCRIPTION
		194.903	LP VALVE ASSEMBLY (High Power)
1	1	194.200	PLATE
2	1	199.336	LOW PRESSURE VALVE (4 PORT)
3	1	199.334	3 WAY SOLENOID DIVERTER
4	1	199.340	PLATE
5	11	05.290.02	BONDED SEAL
6	14	05.290.04	BONDED SEAL
7	2	05.290.05	BONDED SEAL
8	1	199.341	JUNCTION BOX BRACKET
9	2	9143006	SELF-LOCKING NUT
10	4	9143004	SELF-LOCKING NUT
11	2	05.264.21	SETSCREW
12	4	05.291.03	BOLT
13	3	30.070.64	SELF-LOCKING NUT
14	3	9243123	CAPSCREW
15	1	05.122.01	ADAPTOR
16	1	05.123.01	ADAPTOR
17	6	05.129.01	ADAPTOR
18	10	01.099.01	ADAPTOR
19	5	05.835.04	90° SWIVEL ADAPTOR
20	1	8130046	RESTRICTOR - 1.5 A
21	1	8130066	RESTRICTOR - 1.15 M
22	1	8130048	RESTRICTOR - 1.3 C
23	1	8130047	RESTRICTOR - 1.8 B
24	5	02.714.11	SWIVEL ADAPTOR
25	4	04.056.10	TEE ADAPTOR
26	1	8116011	SPRING
27	1	8581209	ADAPTER
28	1	8581214	RESTRICTOR ADAPTER
29	1	8123044	RESTRICTOR DISC - 1.8MM
30	1	7484R2000	RELIEF VALVE BLOCK
31	1	T6986	CHECK VALVE
32	1	04.056.25	TEE ADAPTOR
33	2	05.835.01	90° SWIVEL ADAPTOR
34	2	T7815	TEST POINT
35	4	05.287.08	SELF-LOCKING NUT

ROTOR CONTROL VALVE - Cable

Modules:

Illustrated in Left-Hand build

- 194.157 – L/H Standard Power
- 194.158 – R/H Standard Power
- 194.159 – L/H High Power
- 194.155 – R/H High Power

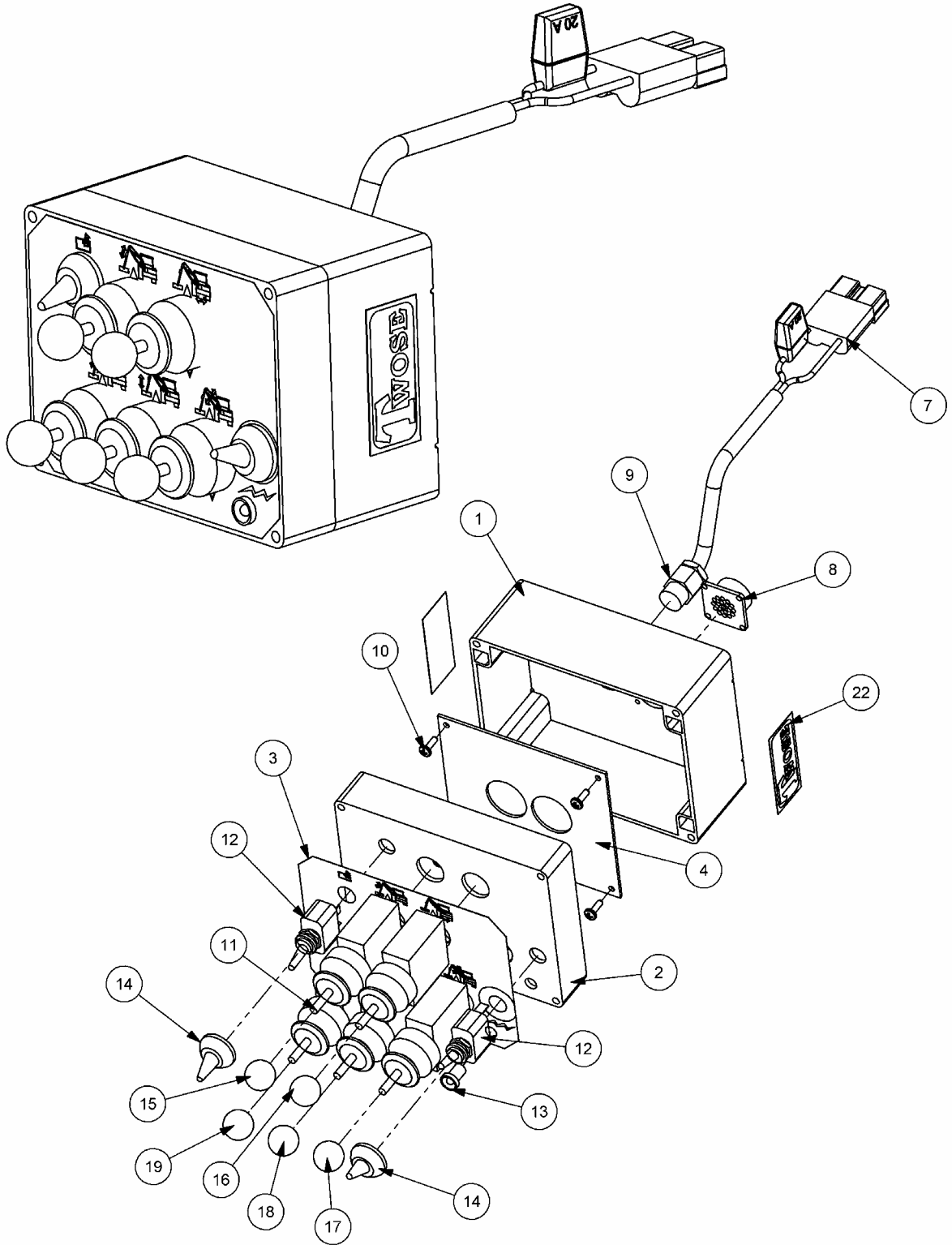


ROTOR CONTROL VALVE - Cable

REF.	QTY.	PART No.	DESCRIPTION
		194.157	ROTOR CONTROL VALVE ASSEMBLY - L/H SP
		194.158	ROTOR CONTROL VALVE ASSEMBLY - R/H SP
		194.159	ROTOR CONTROL VALVE ASSEMBLY - L/H HP
		194.155	ROTOR CONTROL VALVE ASSEMBLY - R/H HP
1	1	8125420	ROTOR CONTROL VALVE - SP for L/H build machines <i>fitted with Standard Power Relief Valve - 8125121</i>
	1	8125421	ROTOR CONTROL VALVE - SP for R/H build machines <i>fitted with Standard Power Relief Valve - 8125121</i>
	1	8125422	ROTOR CONTROL VALVE - HP for L/H build machines <i>fitted with High Power Relief Valve - 8125122</i>
	1	8125423	ROTOR CONTROL VALVE - HP for R/H build machines <i>fitted with High Power Relief Valve - 8125122</i>
2	5	8650106	BONDED SEAL
3	3	8581136	ADAPTOR
4	1	8002086	ADAPTOR
5	1	8581130	ADAPTOR
6	3	T3400	ELBOW - SWEPT 90 MF
7	1	8581215	ELBOW - SWEPT 90 MF
8	1	T7810	TEST POINT
9	1	184.258	CONTROL MOUNTING BRACKET
10	1	184.257	FIXING BRACKET
11	1	9113006	NUT
12	1	9313076	SETSCREW
13	2	9313084	SETSCREW
14	2	9163004	NYLOC NUT
15	3	9213113	BOLT
16	1	8017041	ROTOR CONTROL HEAD & CABLE - 3.5m
17	3	9100103	FLAT WASHER
18	3	9163003	NYLOC NUT
19	2	9343033	CAPSCREW
20	1	T7836	RED KNOB & LENS
21	2	9213085	BOLT
22	2	9163005	NYLOC NUT
23	1	T1840371	ROTOR DECAL
24	1	T7905	ADAPTOR - MF SWIVEL
25	1	8581264	ADAPTOR - MF SWEPT 90
26	1	T1920059	ROTOR DIRECTION SYMBOL

ELECTRIC CONTROL BOX – 5 Lever

Module:
41845.06

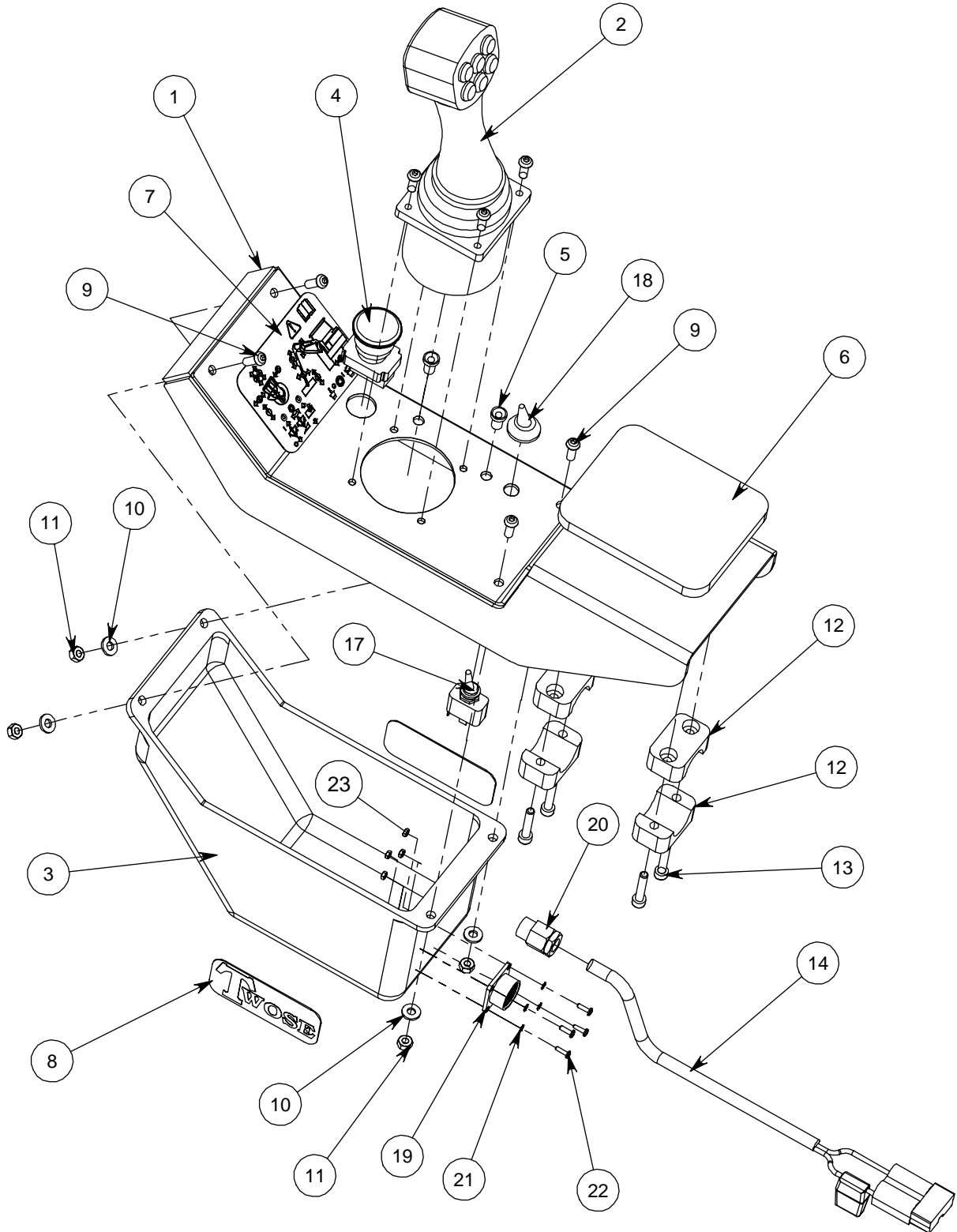


ELECTRIC CONTROL BOX – 5 Lever

REF.	QTY.	PART No.	DESCRIPTION
		41845.06	ELECTRIC CONTROL BOX - 5 Lever
1	1	41845.32	BOX BASE
2	1	41845.42	BOX LID
3	1	1290577 HFX	DECAL - 5 LEVER SWITCH BOX
4	1	41845.43	CIRCUIT BOARD
5	5	41845.34	LOOM - SWITCH UNIT
6	1	41845.37	LOOM - FLOAT SWITCH
7	1	43022.49	CONNECTOR c/w 20A FUSE
8	1	8402189	PANEL MOUNTING SHELL
9	1	8402149	GLAND - PLASTIC
10	4	2800203	SCREW
11	5	8402122	SWITCH UNIT
12	2	8402023	SWITCH - PUMP POWER/RESET
13	1	21010.40	RED L.E.D.
14	2	8402024	SWITCH COVER
15	1	8402198	KNOB - BLUE
16	1	8402056	KNOB - BLACK
17	1	8402028	KNOB - YELLOW
18	1	8402027	KNOB - GREEN
19	1	8402026	KNOB - RED
20	1	8402237	LOOM - POWER SUPPLY
21	14	8402192	SOCKET CONTACT
22	2	21010.49	DECAL - SMALL TWOSE

MONOLEVER ARMREST CONTROLS

Module:
21010.04

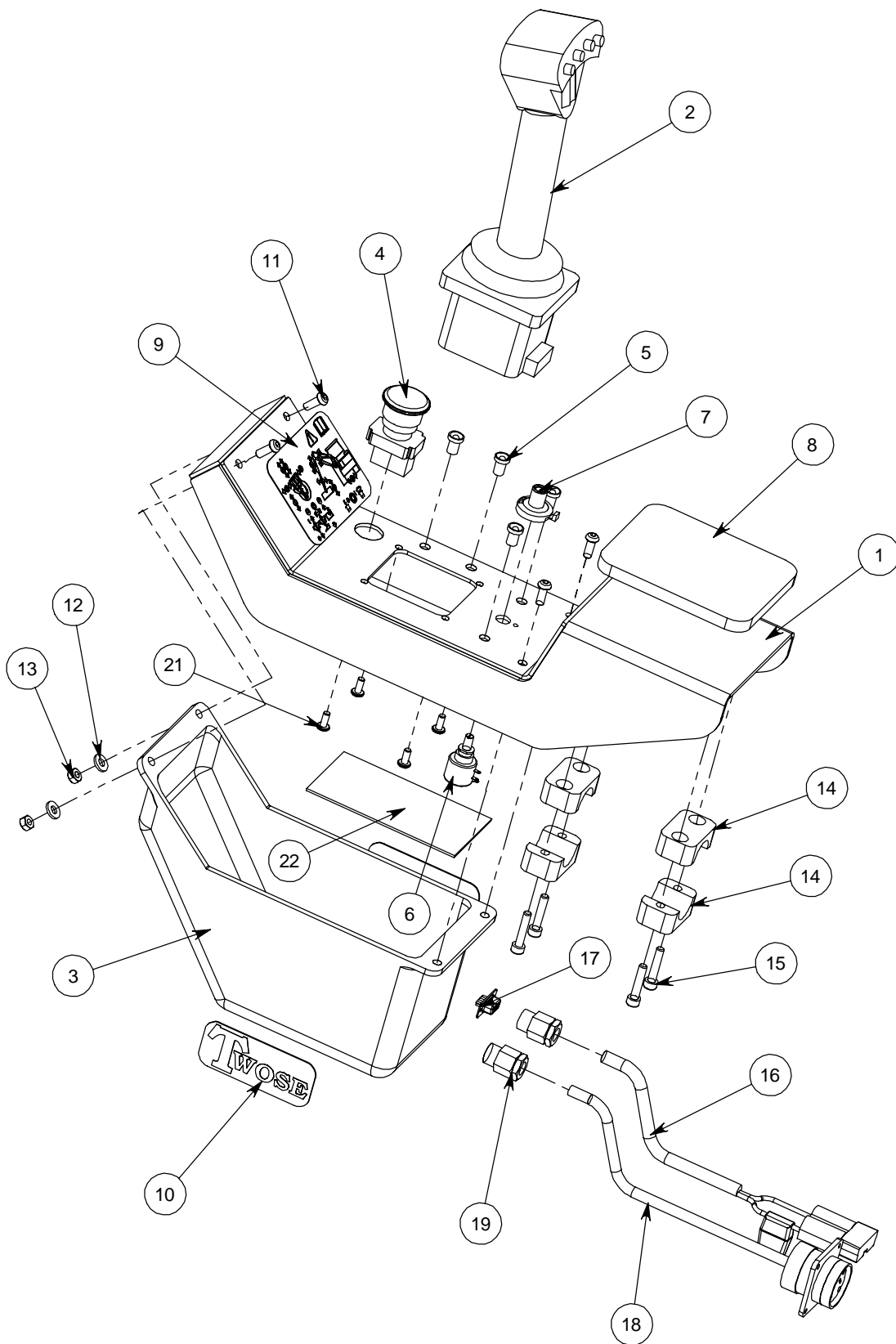


MONOLEVER ARMREST CONTROLS

REF.	QTY.	PART No.	DESCRIPTION
		21010.04	MONOLEVER ARMREST CONTROLS
1	1	21009.11	ARMREST HOUSING
2	1	41590.33	JOYSTICK - 6 BUTTON
3	1	21010.42	ARMREST COVER BOX
4	1	41786.33	SWITCH E/STOP
5	2	21010.40	RED L.E.D.
6	1	21010.45	FOAM ARMREST PAD
7	1	21010.53	MONO CONTROLS DECAL
8	2	21010.48	TWOSE NAME DECAL
9	8	9300125	BUTTON HEAD CAP SCREW
10	4	9100103	FLAT WASHER
11	4	9113003	NUT
12	4	30.209.71	PIPE CLAMP
13	4	9343063	CAPSCREW
14	1	43022.49	CONNECTOR - 1 x 20A FUSE
15	2	43022.56	CABLE GLAND
16	1	8402237	LOOM POWER SUPPLY
17	1	8402023	TOGGLE SWITCH
18	1	8402024	SWITCH COVER
19	1	8402189	PANEL MOUNTING SHELL
20	1	8402149	GLAND - PLASTIC
21	4	9100400	SHAKEPROOF WASHER - EXTERNAL
22	4	9200007	SCREW - PAN HEAD
23	4	9113000	NUT

PROPORTIONAL ARMREST CONTROLS

Module:
21010.03

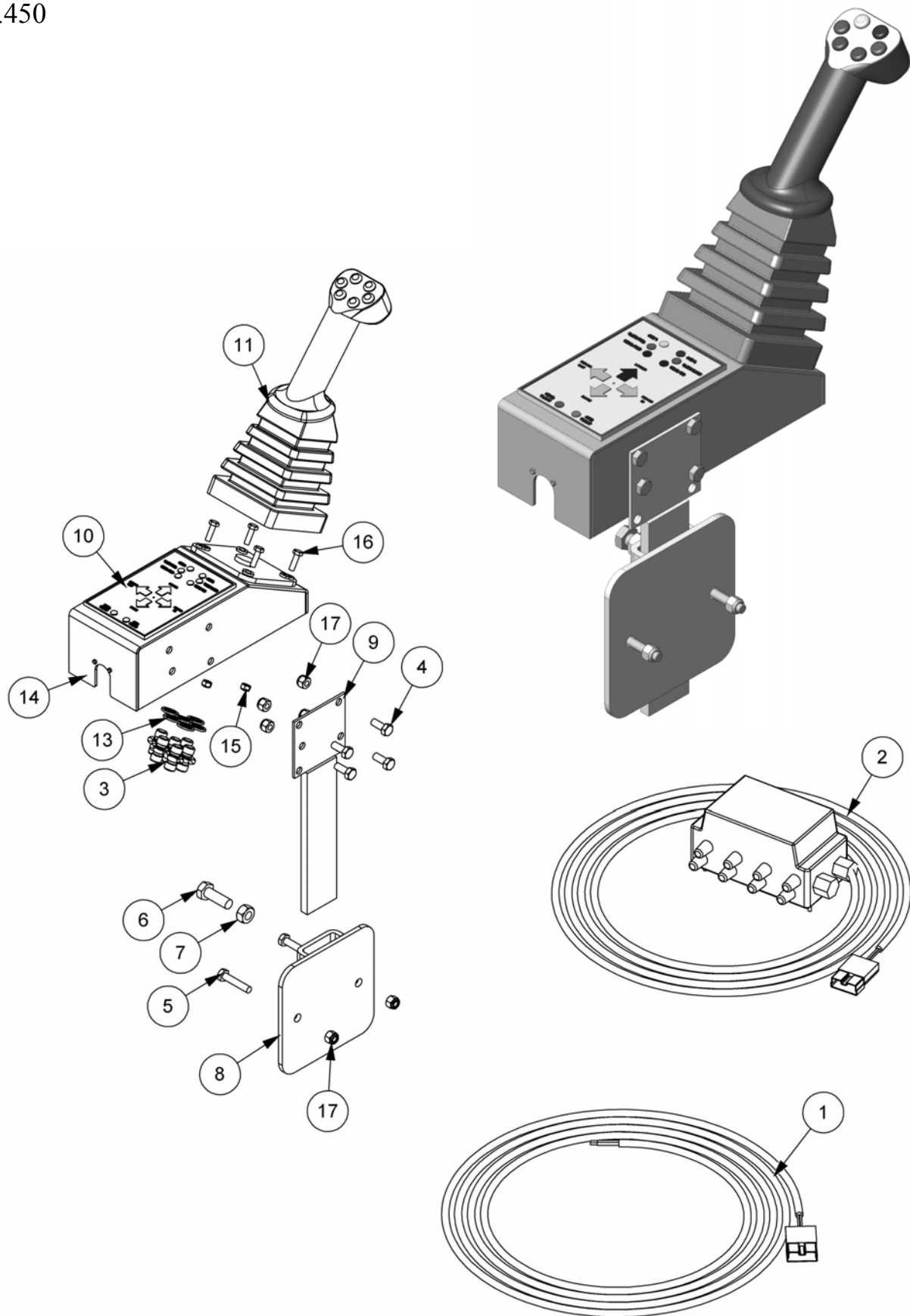


PROPORTIONAL ARMREST CONTROLS

REF.	QTY.	PART No.	DESCRIPTION
		21010.03	PROPORTIONAL ARMREST CONTROLS
1	1	21009.10	ARMREST HOUSING
2	1	21010.50	JOYSTICK - PROPORTIONAL
3	1	21010.42	ARMREST COVER BOX
4	1	41786.33	SWITCH E/STOP
5	4	21010.40	RED L.E.D.
6	1	21010.38	10 TURN POTENTIOMETER
7	1	21010.39	ANALOGUE DIAL
8	1	21010.45	FOAM ARMREST PAD
9	1	21010.55	CONTROL DECAL
10	2	21010.48	TWOSE NAME DECAL
11	4	9300125	BUTTON HEAD CAP SCREW
12	4	9100103	FLAT WASHER
13	4	9113003	NUT
14	4	30.209.71	PIPE CLAMP
15	4	9343063	CAPSCREW
16	1	43022.49	CONNECTOR - 1 x 20A FUSE
17	1	43022.39	CONNECTOR 9 WAY
18	1	43022.46	CONNECTOR & LEAD
19	2	8402149	GLAND - PLASTIC
20	1	8402237	LOOM POWER SUPPLY
21	4	9300142	SELF TAPPING SCREW
22	1	21010.51	CIRCUIT BOARD

LOW PRESSURE CONTROLS

Module:
199.450



LOW PRESSURE CONTROLS

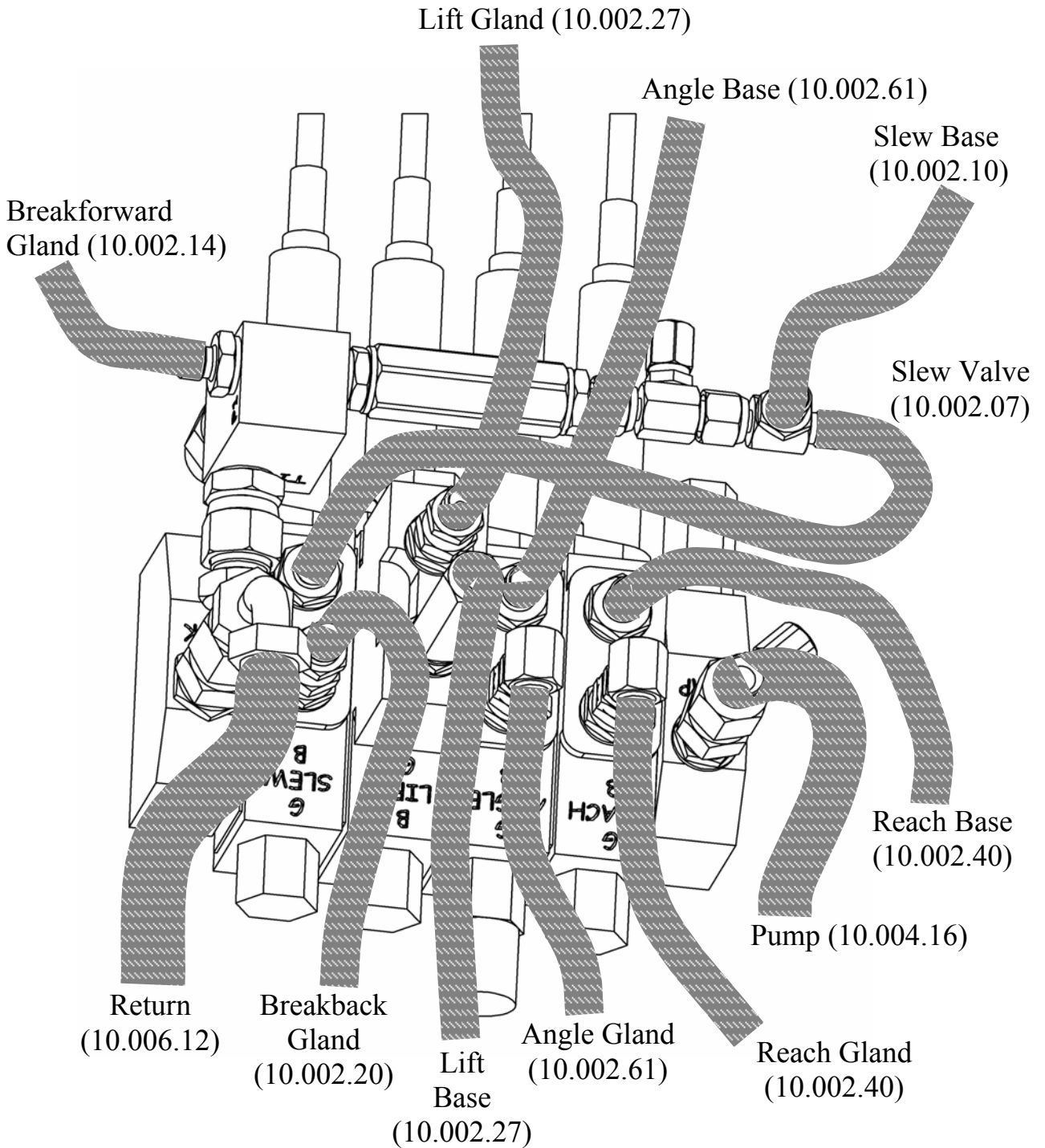
REF.	QTY.	PART No.	DESCRIPTION
		199.450	JOYSTICK - 4 PORT (LOW PRESSURE)
1	1	8402237	LOOM - POWER SUPPLY
2	1	199.373	WIRING HARNESS
3	6	8581169	ADAPTOR
4	4	9313044	SETSCREW
5	2	9313084	SETSCREW
6	1	9313076	SETSCREW
7	1	9113006	NUT
8	1	184.257	FIXING BRACKET
9	1	184.258	CONTROL MOUNTING BRACKET
10	1	199.342	DECAL - LOW PRESSURE JOYSTICK
11	1	199.330	ELECTRO HYDRAULIC JOYSTICK
12	1	T7947	HOSE COVER (<i>not illustrated</i>)
13	6	8650102	BONDED SEAL
14	2	05.839.40	BOLT
15	4	9163003	NYLOC NUT
16	4	9313043	SETSCREW
17	6	9163004	NYLOC NUT

CONTROL VALVE HOSE INSTALLATION – Cable

Modules:

Left-Hand Standard Arm build illustrated.

Refer to Hydraulic Hose Kit pages for specific machine builds.

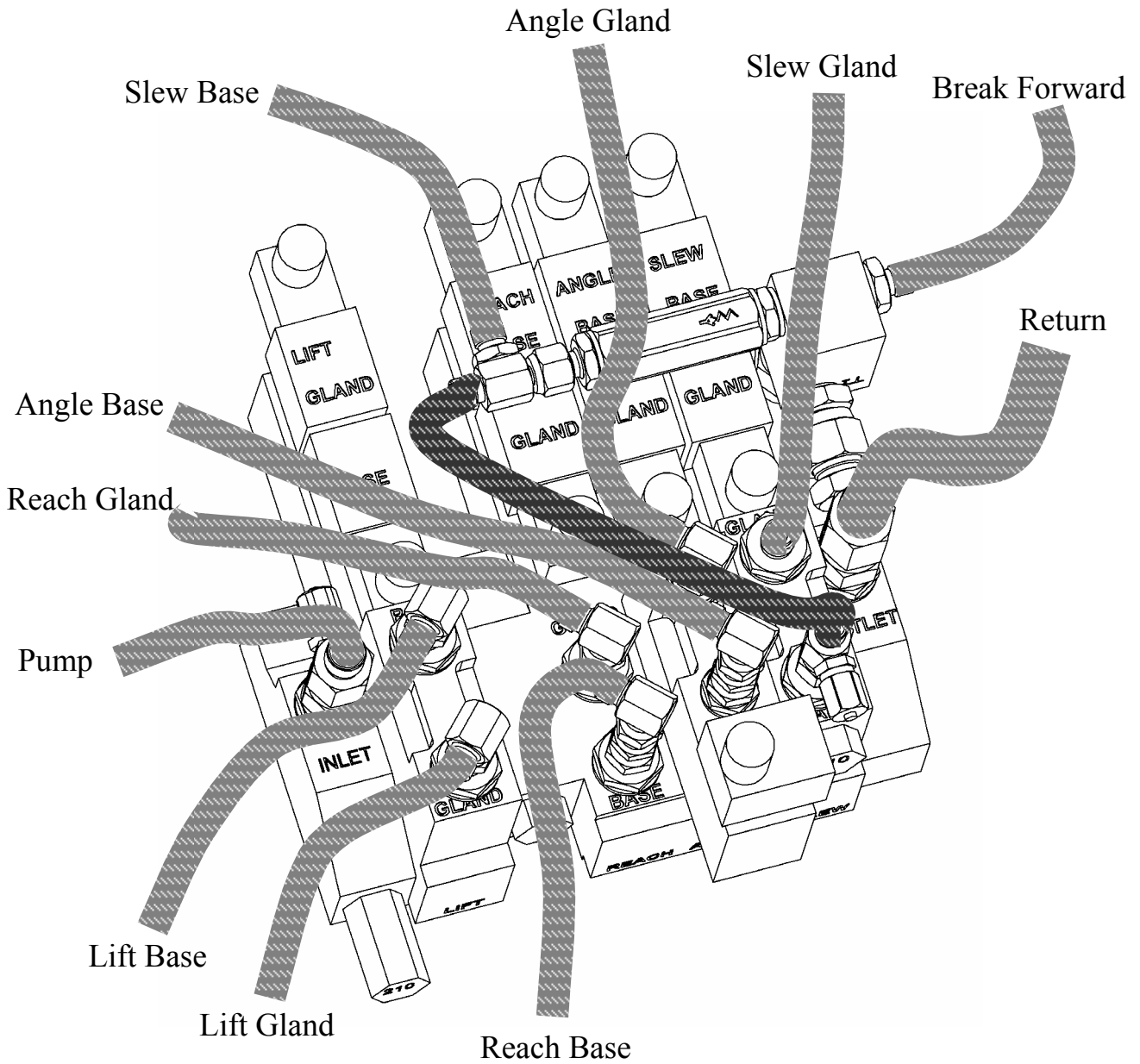


CONTROL VALVE HOSE INSTALLATION – Electric

Modules:

Left-Hand Standard Arm build illustrated.

Refer to Hydraulic Hose Kit pages for specific machine builds.

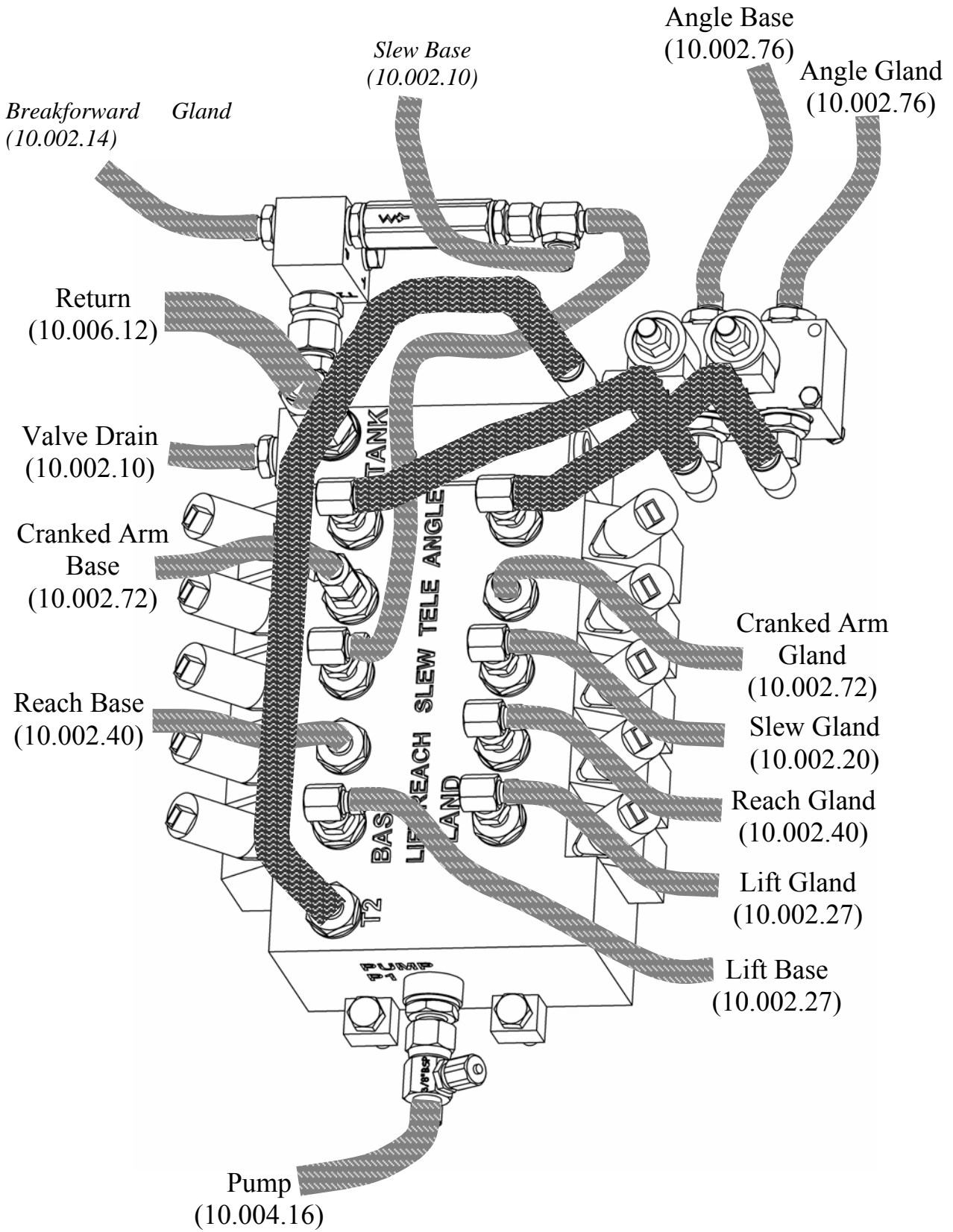


CONTROL VALVE HOSE INSTALLATION – Prop.

Modules:

Illustrated in Left-Hand Cranked Arm build.

Refer to Hydraulic Hose Kit pages for specific machine builds.



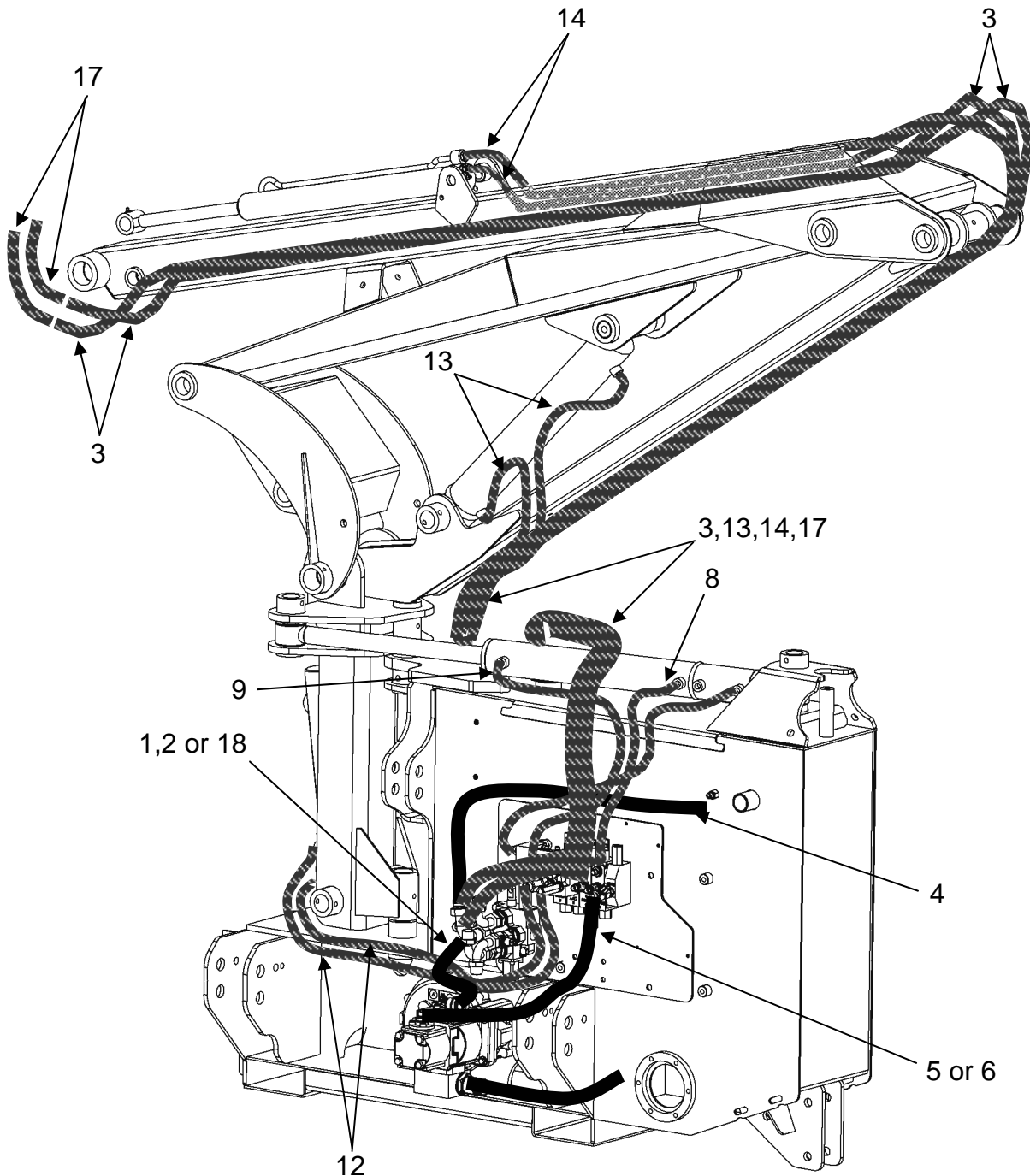
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HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

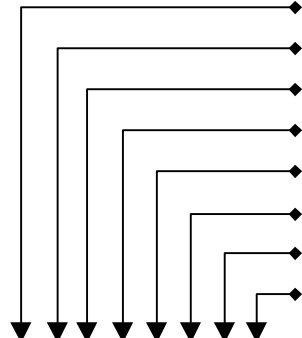
Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE KITS – 460S Models

REF.	QUANTITY	PART No.	DESCRIPTION
		194.7221	460S HOSE KIT - L/H CABLE Std.Power
		194.7222	460S HOSE KIT - L/H CABLE High Power
		194.7223	460S HOSE KIT - R/H CABLE Std.Power
		194.7224	460S HOSE KIT - R/H CABLE High Power
		194.7225	460S HOSE KIT - L/H ELEC/PROP Std. Power
		194.7226	460S HOSE KIT - L/H ELEC/PROP High Power
		194.7227	460S HOSE KIT - R/H ELEC/PROP Std. Power
		194.7228	460S HOSE KIT - R/H ELEC/PROP High Power



1	1 - - - 1 - - -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	- - 1 - - - 1 -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2 2 2 2 2	10.010.76	HOSE - 3/4" BSP FS/F90 x 6600mm Long
4	1 1 1 1 1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	- - 1 1 - - 1 1	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	1 1 - - 1 1 - -	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1 1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	1 1 1 1 2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1 1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1 1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1 1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2 2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2 2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2 2 2 2 2	10.002.61	HOSE - 1/4" BSP FS/F90 x 5100mm Long
15	- 1 - 1 - 1 - 1	10.002.73	HOSE - 1/4" BSP FS/F90 x 6300mm Long
16	- 1 - 1 - 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2 2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1 - 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

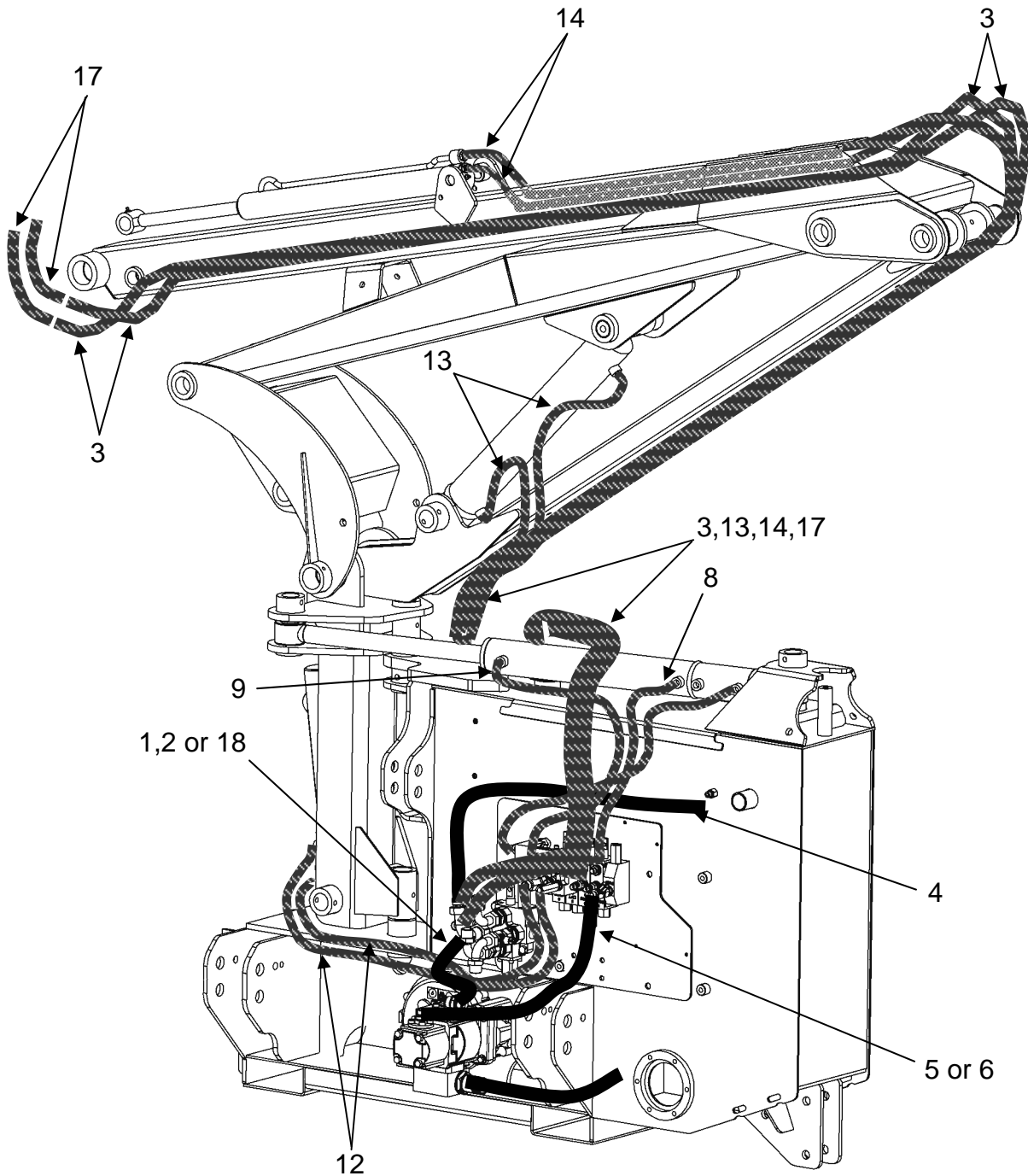
- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90° ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - ANGLE BASE & GLAND (90° ON RAM)
- 15 - DRAIN LINE -TANK TO JUNCTION BRACKET.
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD (x2)

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE KITS – 460S Front Mount Models

REF.	QTY.	PART No.	DESCRIPTION
		194.7229	460S HOSE KIT - L/H ELEC/PROP Std. Power - F/Mount
		194.72210	460S HOSE KIT - L/H ELEC/PROP High Power - F/Mount
		194.72211	460S HOSE KIT - R/H ELEC/PROP Std. Power - F/Mount
		194.72212	460S HOSE KIT - R/H ELEC/PROP High Power - F/Mount
1	- - 1 -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	1 - - -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2	10.010.76	HOSE - 3/4" BSP FS/F90 x 6600mm Long
4	1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	1 1 - -	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	- - 1 1	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2	10.002.61	HOSE - 1/4" BSP FS/F90 x 5100mm Long
15	- 1 - 1	10.002.73	HOSE - 1/4" BSP FS/F90 x 6300mm Long
16	- 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

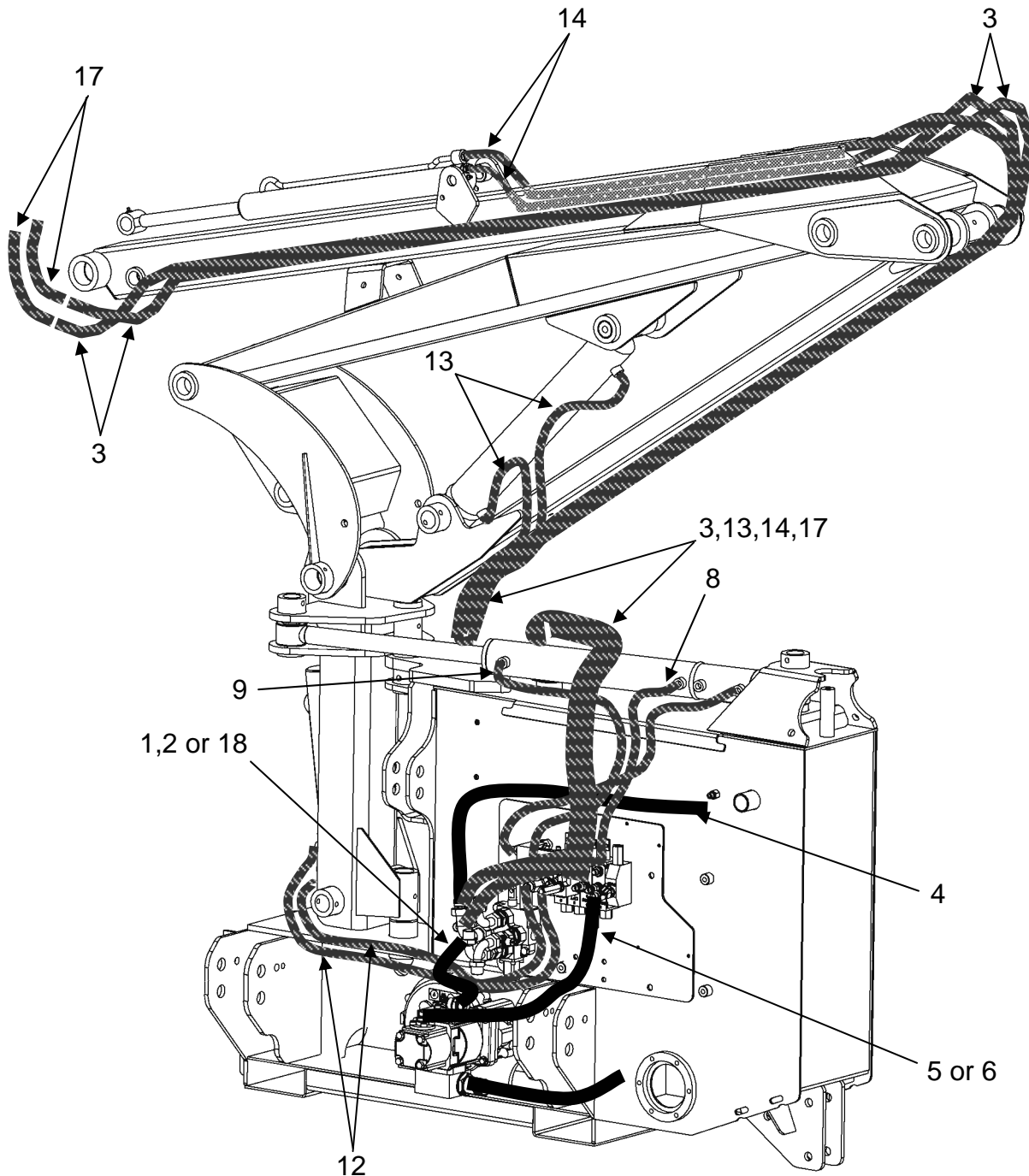
- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90DEG ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - ANGLE BASE & GLAND (90° ON RAM)
- 15 - DRAIN LINE -TANK TO JUNCTION BRACKET.
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD (x2)

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE Kits – 520S Models

REF.	QUANTITY	PART No.	DESCRIPTION
		194.72213	520S HOSE KIT - L/H CABLE Std.Power
		194.72214	520S HOSE KIT - L/H CABLE High Power
		194.72215	520S HOSE KIT - R/H CABLE Std.Power
		194.72216	520S HOSE KIT - R/H CABLE High Power
		194.72217	520S HOSE KIT - L/H ELEC/PROP Std. Power
		194.72218	520S HOSE KIT - L/H ELEC/PROP High Power
		194.72219	520S HOSE KIT - R/H ELEC/PROP Std. Power
		194.72220	520S HOSE KIT - R/H ELEC/PROP High Power
		194.72304	520S HOSE KIT - L/H LOW PRESSURE (HP)

1	1 - - - 1 - - - -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	- - 1 - - - 1 - -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2 2 2 2 2 2	10.010.80	HOSE - 3/4" BSP FS/F90 x 7000mm Long
4	1 1 1 1 1 1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	- - 1 1 - - 1 1 -	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	1 1 - - 1 1 - - -	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1 1 1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	1 1 1 1 2 2 2 2 1	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1 1 1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1 1 1 1 1 2	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1 1 1 1 1 2	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2 2 2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2 2 2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2 2 2 2 2 2	10.002.66	HOSE - 1/4" BSP FS/F90 x 5600mm Long
15	- 1 - 1 - 1 - 1 1	10.002.77	HOSE - 1/4" BSP FS/F90 x 6700mm Long
16	- 1 - 1 - 1 - 1 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2 2 2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1 - 1 - 1 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS
19	- - - - - - - - 1	10.006.16	HOSE - 1/2" BSP ST/90 x 800mm Long
20	- - - - - - - - 1	10.002.06	HOSE - 1/4" BSP FS/F90 x 300mm Long
21	- - - - - - - - 1	10.002.09	HOSE - 1/4" BSP SF/90F x 450mm Long
22	- - - - - - - - 6	10.026.45	HOSE - 1/4" BSP ST/90 x 3500mm Long

HOSE LOCATIONS

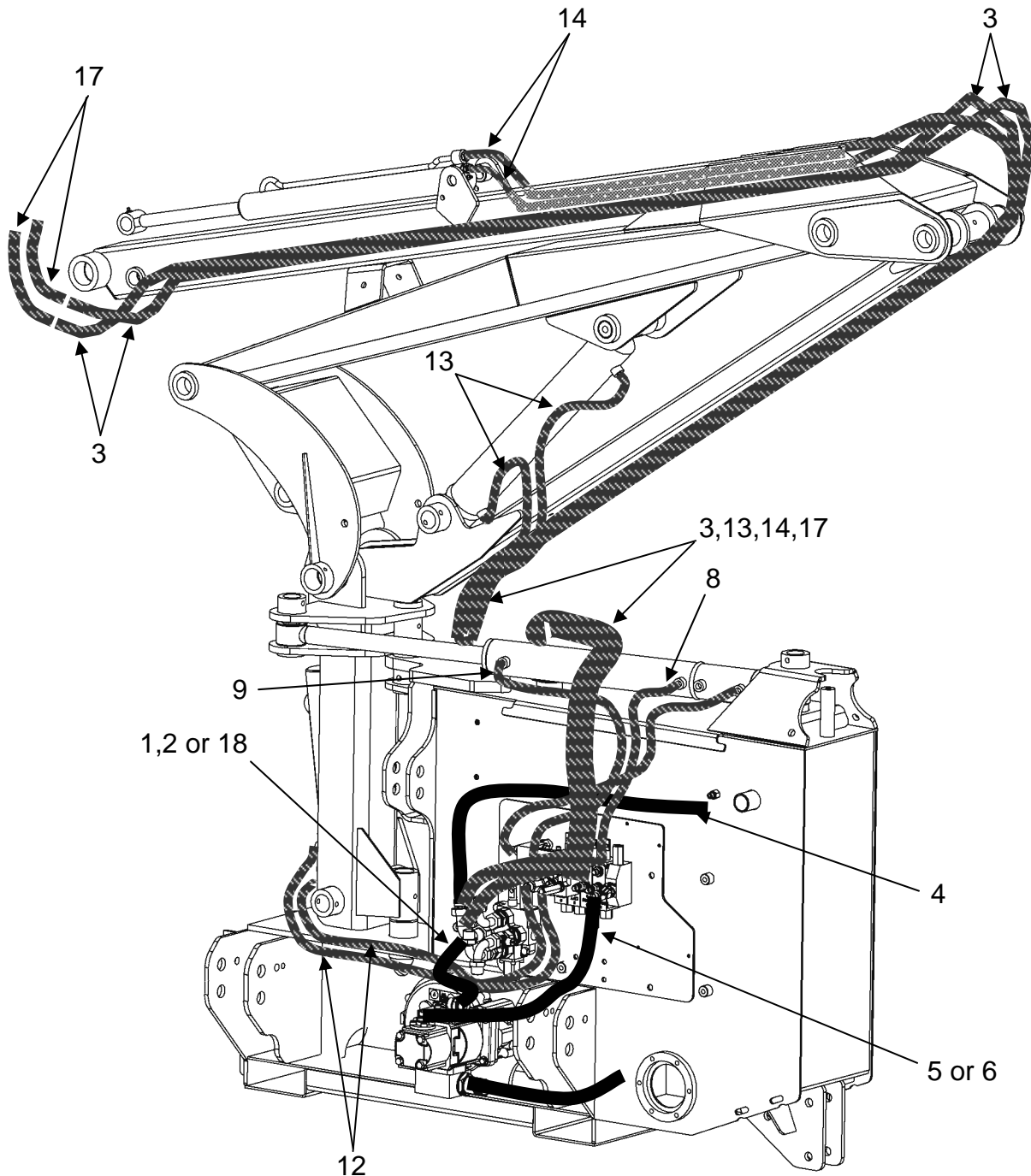
- | | |
|--------------------------------------|---------------------------------------|
| 1 FLAIL PUMP TO RCV | 10 BREAKBACK (90° ON VALVE) |
| 2 FLAIL PUMP TO RCV | 11 VALVE (SLEW) TO TEE (90° ON VALVE) |
| 3 RCV TO HEAD (x2) | 12 LIFT BASE & GLAND (90° ON RAM) |
| 4 RCV TO FILTER | 13 REACH BASE & GLAND (90° ON RAM) |
| 5 CONTROL PUMP TO VALVE | 14 ANGLE BASE & GLAND (90° ON RAM) |
| 6 CONTROL PUMP TO VALVE | 15 DRAIN LINE - TANK TO JUNCTION BKT. |
| 7 CONTROL VALVE TO RCV | 16 DRAIN LINE - JUNCTION BKT TO HEAD |
| 8 SLEW BASE TO TEE & VALVE DRAIN | 17 HEAD JUNCTION BRACKET TO HEAD (x2) |
| 9 SLEW GLAND TO VALVE (90° ON VALVE) | 19 - 22 ADDITIONAL HOSES (LP BUILDS) |

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE KITS – 520S Front Mount Models

REF.	QTY.	PART No.	DESCRIPTION
		194.72221	520S HOSE KIT - L/H ELEC/PROP Std. Power - F/Mount
		194.72222	520S HOSE KIT - L/H ELEC/PROP High Power - F/Mount
		194.72223	520S HOSE KIT - R/H ELEC/PROP Std. Power - F/Mount
		194.72224	520S HOSE KIT - R/H ELEC/PROP High Power - F/Mount
1	- - 1 -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	1 - - -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2	10.010.81	HOSE - 3/4" BSP FS/F90 x 7100mm Long
4	1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	1 1 - -	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	- - 1 1	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2	10.002.66	HOSE - 1/4" BSP FS/F90 x 5600mm Long
15	- 1 - 1	10.002.78	HOSE - 1/4" BSP FS/F90 x 6800mm Long
16	- 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

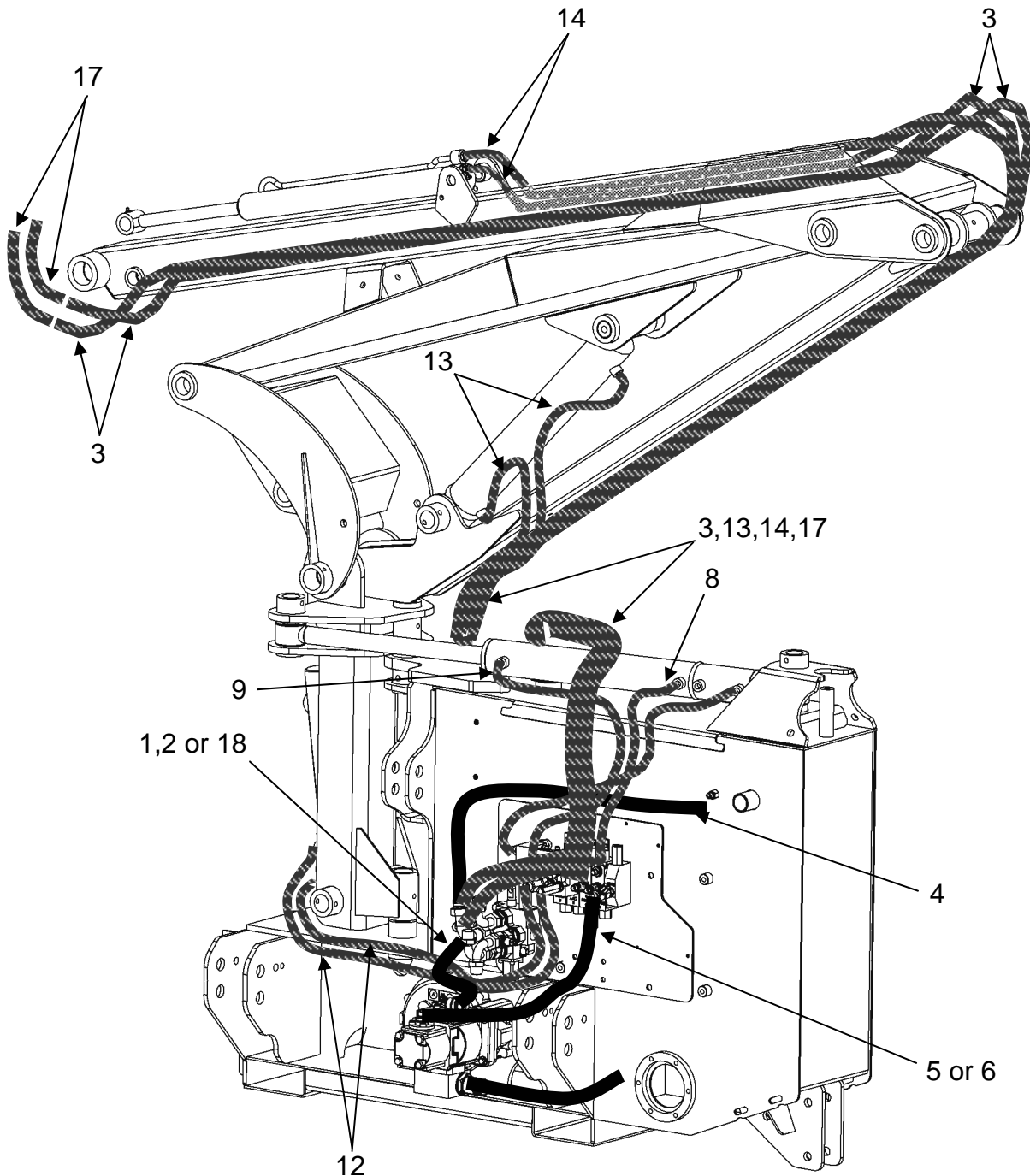
- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90DEG ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - ANGLE BASE & GLAND (90° ON RAM)
- 15 - DRAIN LINE -TANK TO JUNCTION BRACKET.
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD (x2)

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE KITS – 540S Cranked Arm Models

REF.	QUANTITY	PART No.	DESCRIPTION
		194.72225	540S HOSE KIT - L/H CABLE Std.Power
		194.72226	540S HOSE KIT - L/H CABLE High Power
		194.72227	540S HOSE KIT - R/H CABLE Std.Power
		194.72228	540S HOSE KIT - R/H CABLE High Power
		194.72229	540S HOSE KIT - L/H ELEC/PROP Std. Power
		194.72230	540S HOSE KIT - L/H ELEC/PROP High Power
		194.72231	540S HOSE KIT - R/H ELEC/PROP Std. Power
		194.72232	540S HOSE KIT - R/H ELEC/PROP High Power

1	1 - - - 1 - - -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	- - 1 - - - 1 -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2 2 2 2 2	10.010.86	HOSE - 3/4" BSP FS/F90 x 7600mm Long
4	1 1 1 1 1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	- - 1 1 - - 1 1	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	1 1 - - 1 1 - -	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1 1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	1 1 1 1 2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1 1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1 1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1 1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2 2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2 2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2 2 2 2 2	10.002.65	HOSE - 1/4" BSP FS/F90 x 5500mm Long
15	2 2 2 2 2 2 2 2	10.002.71	HOSE - 1/4" BSP FS/F90 x 6100mm Long
16	- 1 - 1 - 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2 2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1 - 1 - 1	10.002.78	HOSE - 1/4" BSP FS/F90 x 6800mm Long
19	- 1 - 1 - 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

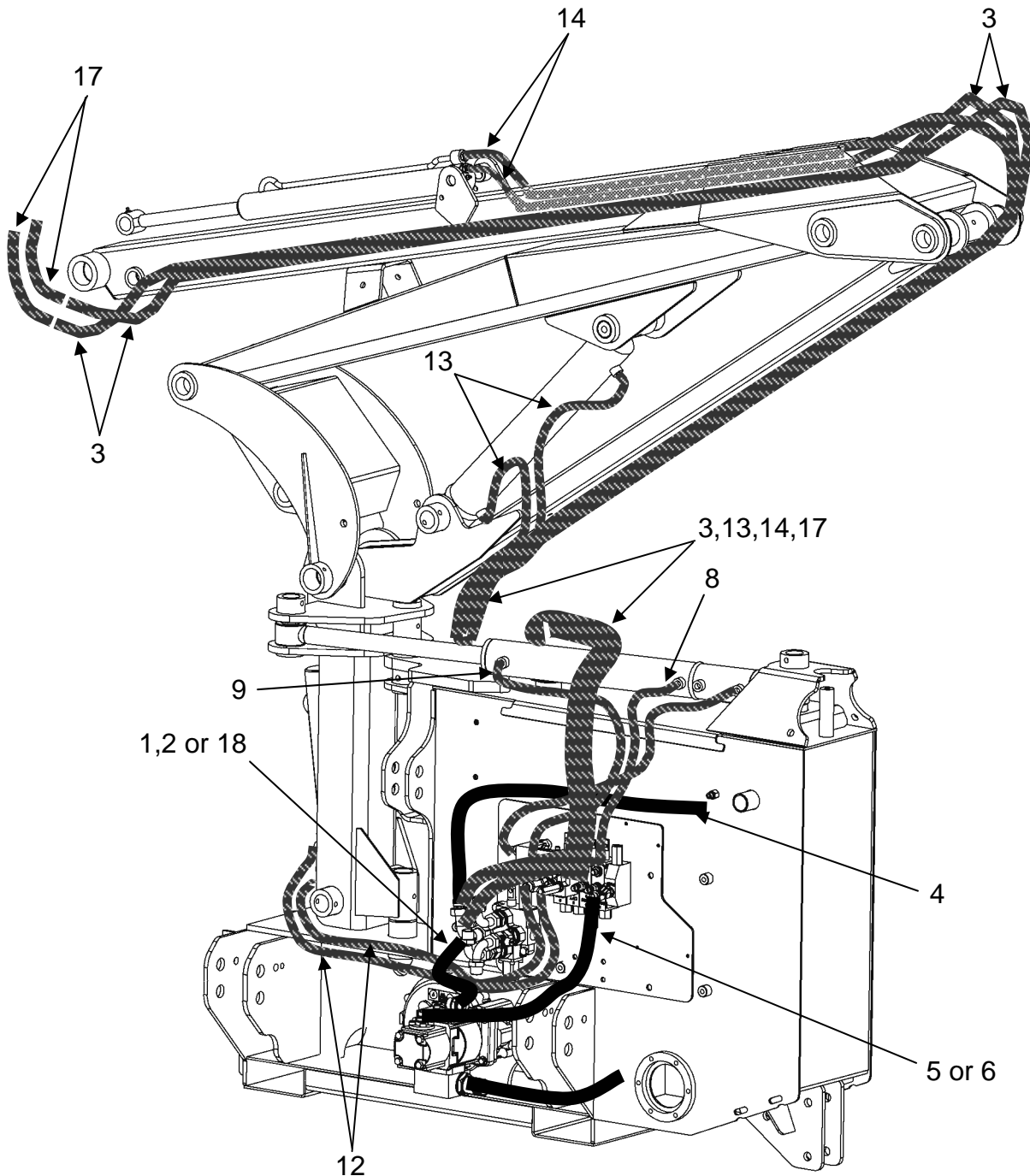
- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90DEG ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - CRANK RAM BASE & GLAND
- 15 - ANGLE BASE & GLAND (90° ON RAM)
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD
- 18 - DRAIN LINE - TANK TO JUNCTION BRACKET.

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build

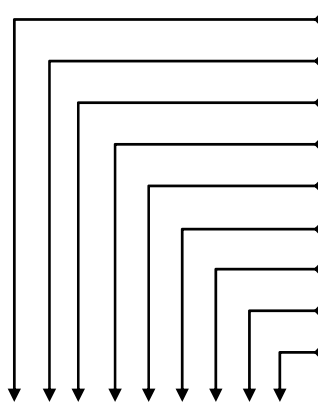


The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.



HYDRAULIC HOSE KIT – 580S Models

REF.	QUANTITY	PART No.	DESCRIPTION
		194.72233	580S HOSE KIT - L/H CABLE Std.Power
		194.72234	580S HOSE KIT - L/H CABLE High Power
		194.72235	580S HOSE KIT - R/H CABLE Std.Power
		194.72236	580S HOSE KIT - R/H CABLE High Power
		194.72237	580S HOSE KIT - L/H ELEC/PROP Std. Power
		194.72238	580S HOSE KIT - L/H ELEC/PROP High Power
		194.72239	580S HOSE KIT - R/H ELEC/PROP Std. Power
		194.72240	580S HOSE KIT - R/H ELEC/PROP High Power
		194.72328	580S HOSE KIT - L/H LOW PRESSURE (HP)



1	1 - - - 1 - - - -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	- - 1 - - - 1 - -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2 2 2 2 2	10.010.86	HOSE - 3/4" BSP FS/F90 x 7600mm Long
4	1 1 1 1 1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	- - 1 1 - - 1 1 -	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	1 1 - - 1 1 - - -	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1 1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	1 1 1 1 2 2 2 2 1	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1 1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1 1 1 1 2	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1 1 1 1 2	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2 2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2 2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2 2 2 2 2	10.002.72	HOSE - 1/4" BSP FS/F90 x 6200mm Long
15	- 1 - 1 - 1 - 1 1	10.002.83	HOSE - 1/4" BSP FS/F90 x 7300mm Long
16	- 1 - 1 - 1 - 1 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2 2 2 2 1	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1 - 1 - 1 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS
19	- - - - - - - 1	10.006.16	HOSE - 1/2" BSP ST/90 x 800mm Long
20	- - - - - - - 1	10.002.06	HOSE - 1/4" BSP FS/F90 x 300mm Long
21	- - - - - - - 1	10.002.09	HOSE - 1/4" BSP SF/90F x 450mm Long
22	- - - - - - - 6	10.026.45	HOSE - 1/4" BSP ST/90 x 3500mm Long

HOSE LOCATIONS

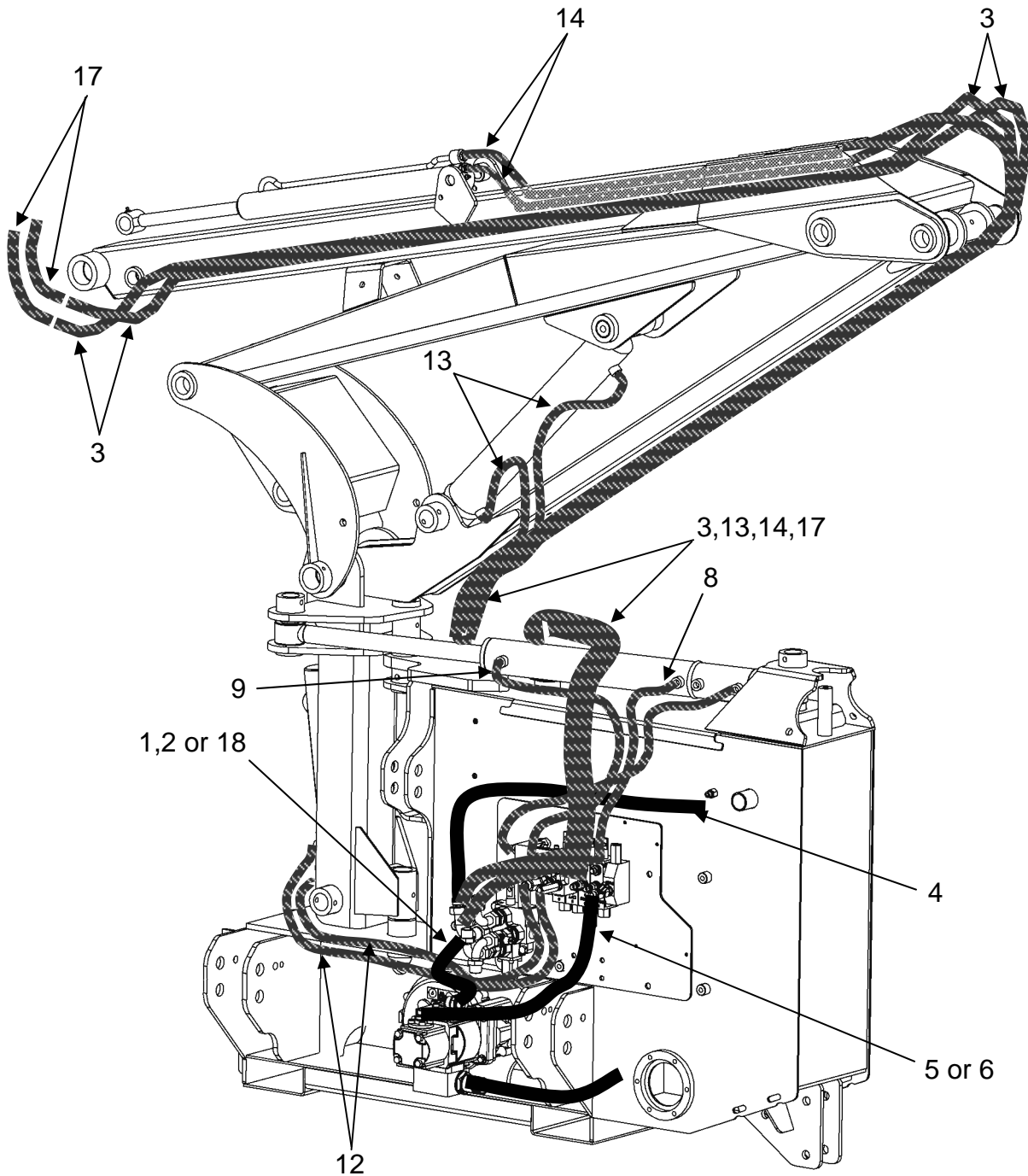
- | | |
|--------------------------------------|---------------------------------------|
| 1 FLAIL PUMP TO RCV | 10 BREAKBACK (90° ON VALVE) |
| 2 FLAIL PUMP TO RCV | 11 VALVE (SLEW) TO TEE (90° ON VALVE) |
| 3 RCV TO HEAD (x2) | 12 LIFT BASE & GLAND (90° ON RAM) |
| 4 RCV TO FILTER | 13 REACH BASE & GLAND (90° ON RAM) |
| 5 CONTROL PUMP TO VALVE | 14 ANGLE BASE & GLAND (90° ON RAM) |
| 6 CONTROL PUMP TO VALVE | 15 DRAIN LINE - TANK TO JUNCTION BKT. |
| 7 CONTROL VALVE TO RCV | 16 DRAIN LINE - JUNCTION BKT TO HEAD |
| 8 SLEW BASE TO TEE & VALVE DRAIN | 17 HEAD JUNCTION BRACKET TO HEAD (x2) |
| 9 SLEW GLAND TO VALVE (90° ON VALVE) | 19 - 22 ADDITIONAL HOSES (LP BUILDS) |

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE KITS – 580S Front Mount Models

REF.	QTY.	PART No.	DESCRIPTION
		194.72241	580S HOSE KIT - L/H ELEC/PROP Std. Power - F/Mount
		194.72242	580S HOSE KIT - L/H ELEC/PROP High Power - F/Mount
		194.72243	580S HOSE KIT - R/H ELEC/PROP Std. Power - F/Mount
		194.72244	580S HOSE KIT - R/H ELEC/PROP High Power - F/Mount
1	- - 1 -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	1 - - -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2	10.010.87	HOSE - 3/4" BSP FS/F90 x 7700mm Long
4	1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	1 1 - -	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	- - 1 1	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2	10.002.72	HOSE - 1/4" BSP FS/F90 x 6200mm Long
15	- 1 - 1	10.002.84	HOSE - 1/4" BSP FS/F90 x 7400mm Long
16	- 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

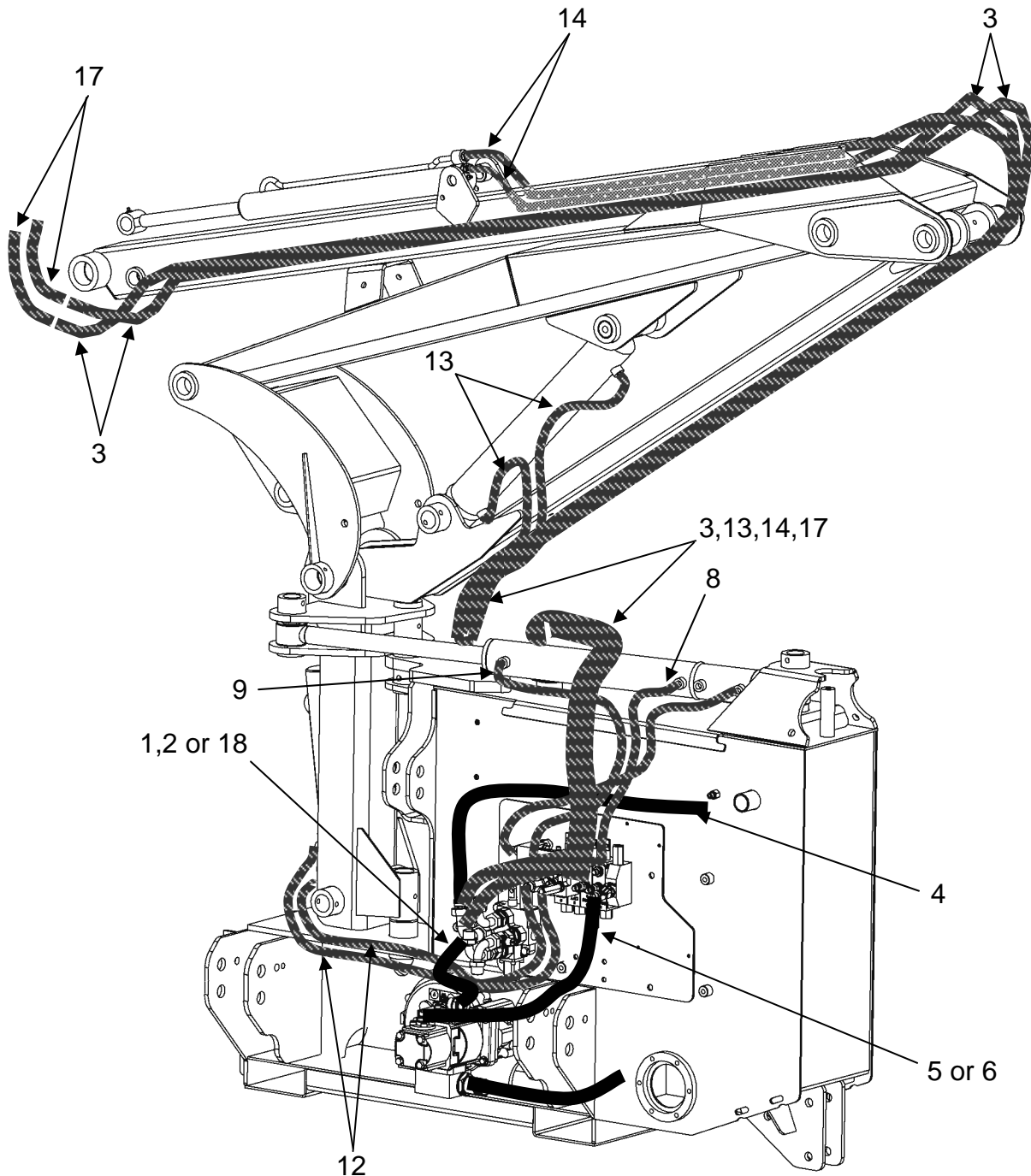
- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90DEG ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - ANGLE BASE & GLAND (90° ON RAM)
- 15 - DRAIN LINE -TANK TO JUNCTION BRACKET.
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD (x2)

HYDRAULIC HOSE INSTALLATION

Modules:

194.7221 to 194.72252 - Refer to relevant Hose Kit list for specific model & build.

Illustrated in Left-Hand build



The diagram above serves only as a general indication of the location and position of the machine hoses – it is a wise precaution to run the new hose alongside the one you are replacing to establish the correct route and position before removal.

HYDRAULIC HOSE INSTALLATION – 600S (Cranked)

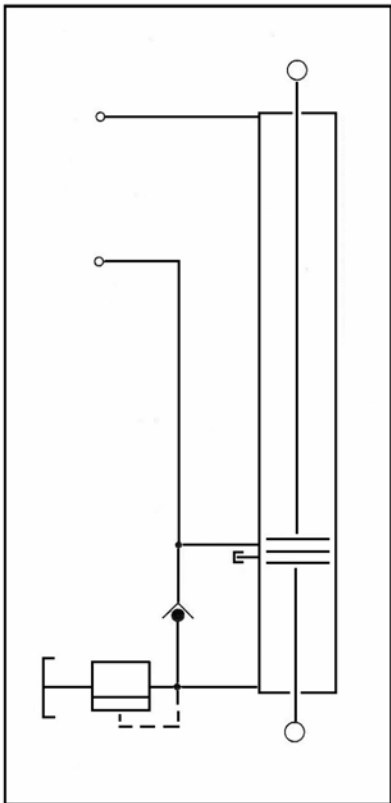
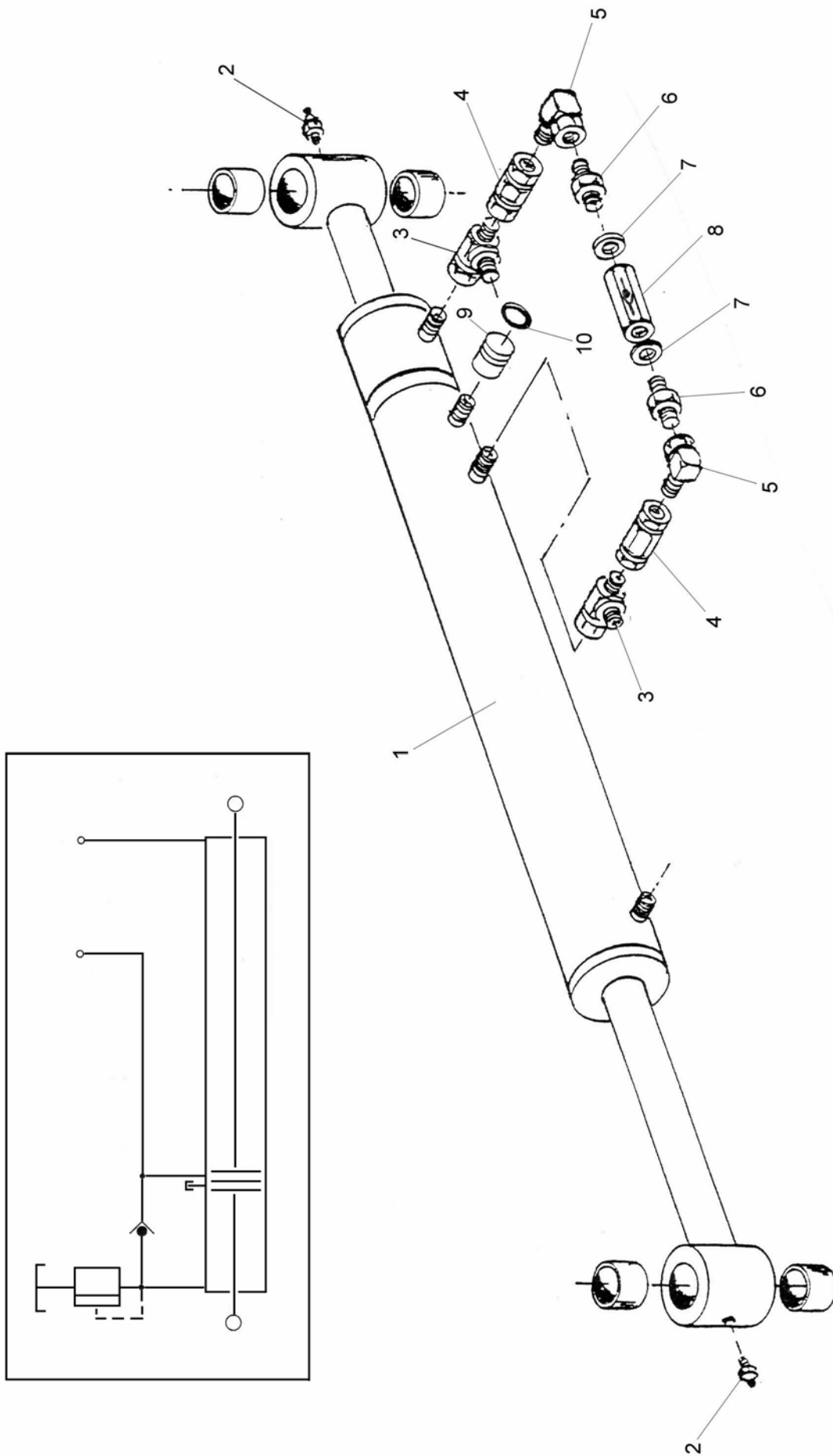
REF.	QUANTITY	PART No.	DESCRIPTION
		194.72245	600S HOSE KIT - L/H CABLE Std.Power
		194.72246	600S HOSE KIT - L/H CABLE High Power
		194.72247	600S HOSE KIT - R/H CABLE Std.Power
		194.72248	600S HOSE KIT - R/H CABLE High Power
		194.72249	600S HOSE KIT - L/H ELEC/PROP Std. Power
		194.72250	600S HOSE KIT - L/H ELEC/PROP High Power
		194.72251	600S HOSE KIT - R/H ELEC/PROP Std. Power
		194.72252	600S HOSE KIT - R/H ELEC/PROP High Power

1	1 1 - - 1 1 - -	10.010.10	HOSE - 3/4" BSP FS/F90 x 500mm Long
2	- - 1 - - - 1 -	10.010.12	HOSE - 3/4" BSP FS/F90 x 600mm Long
3	2 2 2 2 2 2 2 2	10.010.90	HOSE - 3/4" BSP FS/F90 x 8000mm Long
4	1 1 1 1 1 1 1 1	10.012.14	HOSE - 1" BSP FS/F90 x 700mm Long
5	- - 1 1 - - 1 1	10.004.14	HOSE - 3/8" BSP FS/F90 x 700mm Long
6	1 1 - - 1 1 - -	10.004.16	HOSE - 3/8" BSP FS/F90 x 800mm Long
7	1 1 1 1 1 1 1 1	10.006.12	HOSE - 1/2" BSP FS/F90 x 600mm Long
8	1 1 1 1 2 2 2 2	10.002.10	HOSE - 1/4" BSP FS/F90 x 500mm Long
9	1 1 1 1 1 1 1 1	10.002.20	HOSE - 1/4" BSP FS/F90 x 1000mm Long
10	1 1 1 1 1 1 1 1	10.002.14	HOSE - 1/4" BSP FS/F90 x 700mm Long
11	1 1 1 1 1 1 1 1	10.002.07	HOSE - 1/4" BSP FS/F90 x 350mm Long
12	2 2 2 2 2 2 2 2	10.002.27	HOSE - 1/4" BSP FS/F90 x 1700mm Long
13	2 2 2 2 2 2 2 2	10.002.40	HOSE - 1/4" BSP FS/F90 x 3000mm Long
14	2 2 2 2 2 2 2 2	10.002.72	HOSE - 1/4" BSP FS/F90 x 6100mm Long
15	2 2 2 2 2 2 2 2	10.002.76	HOSE - 1/4" BSP FS/F90 x 6600mm Long
16	- 1 - 1 - 1 - 1	10.001.15	HOSE - 1/4" BSP FS/FS x 750mm Long
17	2 2 2 2 2 2 2 2	10.009.15	HOSE - 3/4" BSP FS/F90 x 750mm Long
18	- 1 - 1 - 1 - 1	10.002.87	HOSE - 1/4" BSP FS/F90 x 7700mm Long
19	- 1 - 1 - 1 - 1	8501303	HOSE - 1" SAE FLANGE x 3/4" BSP FS

REF. HOSE LOCATIONS

- 1 - FLAIL PUMP TO RCV
- 2 - FLAIL PUMP TO RCV
- 3 - RCV TO HEAD (x2)
- 4 - RCV TO FILTER
- 5 - CONTROL PUMP TO VALVE
- 6 - CONTROL PUMP TO VALVE
- 7 - CONTROL VALVE TO RCV
- 8 - SLEW BASE TO TEE & VALVE DRAIN
- 9 - SLEW GLAND TO VALVE (90DEG ON VALVE)
- 10 - BREAKBACK (90° ON VALVE)
- 11 - VALVE (SLEW) TO TEE (90° ON VALVE)
- 12 - LIFT BASE & GLAND (90° ON RAM)
- 13 - REACH BASE & GLAND (90° ON RAM)
- 14 - CRANK RAM BASE & GLAND
- 15 - ANGLE BASE & GLAND (90° ON RAM)
- 16 - DRAIN LINE - JUNCTION BRACKET TO HEAD
- 17 - HEAD JUNCTION BRACKET TO HEAD
- 18 - DRAIN LINE - TANK TO JUNCTION BRACKET.

BREKBACK RAM & FITTINGS



BREAKBACK RAM & FITTINGS

REF.	QTY.	PART No.	DESCRIPTION
		T1940047	BREAKBACK RAM ASSEMBLY
1	1	1940047	BREAKBACK RAM
2	2	2923	GREASE NIPPLE
3	2	7181	TEE
4	2	4032	ADAPTOR
5	2	6948	ADAPTOR
6	2	1823	ADAPTOR
7	2	1181	SEAL
8	1	6986	CHECK VALVE
9	1	154.021	BREATHER
10	1	5222	O RING FOR BREATHER
*		1840047.1	COMPLETE SEAL SET FOR 1940047
*		1940047.2	ROD COMPLETE (LONG) FOR 1940047
*		1940047.3	ROD COMPLETE (SHORT) FOR 1940047
*		1940047.4	GLAND NUT FOR 1940047
*		1940047.5	SET OF BUSHES FOR 1940047

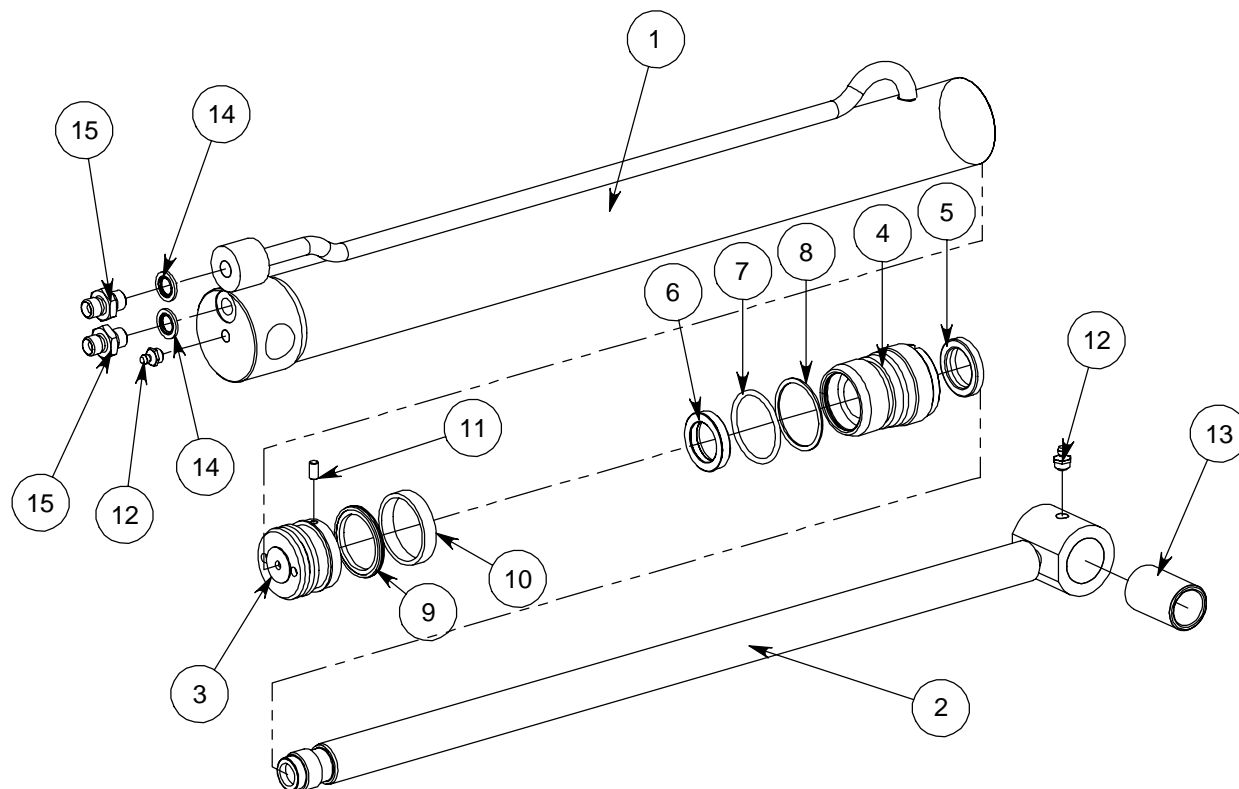
* *Items not illustrated*

NOTE:

On some models the check valve (8) has been moved onto the valve plate, however, its relative position remains as the schematic diagram on the page opposite.

ANGLE RAM ASSEMBLY

Module:
199.119

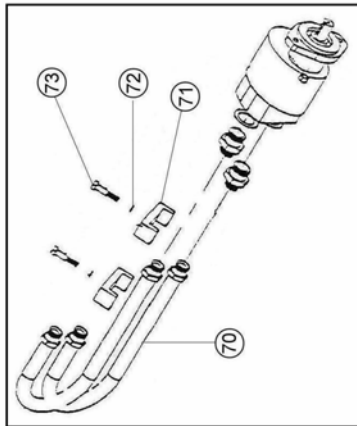


REF.	QTY.	PART No.	DESCRIPTION
		199.119	ANGLE RAM ASSEMBLY
1	1	199.119.31	RAM BARREL
2	1	199.119.34	PISTON ROD
3	1	7560095	PISTON
4	1	7135291	GLAND HOUSING
5	1	8629149	SCRAPER RING
6	1	8629148	GLAND SEAL
7	1	8600302	O RING 224
8	1	8609302	AE RING 224
9	1	8629187	PISTON SEAL
10	1	8629188	GUIDE RING
11	1	9363023	GRUB SCREW
12	2	0901121	GREASE NIPPLE
13	1	08.297.09	BUSH
14	2	8650102	BONDED SEAL
15	2	8581169	ADAPTOR
		199.119.1	SEAL KIT

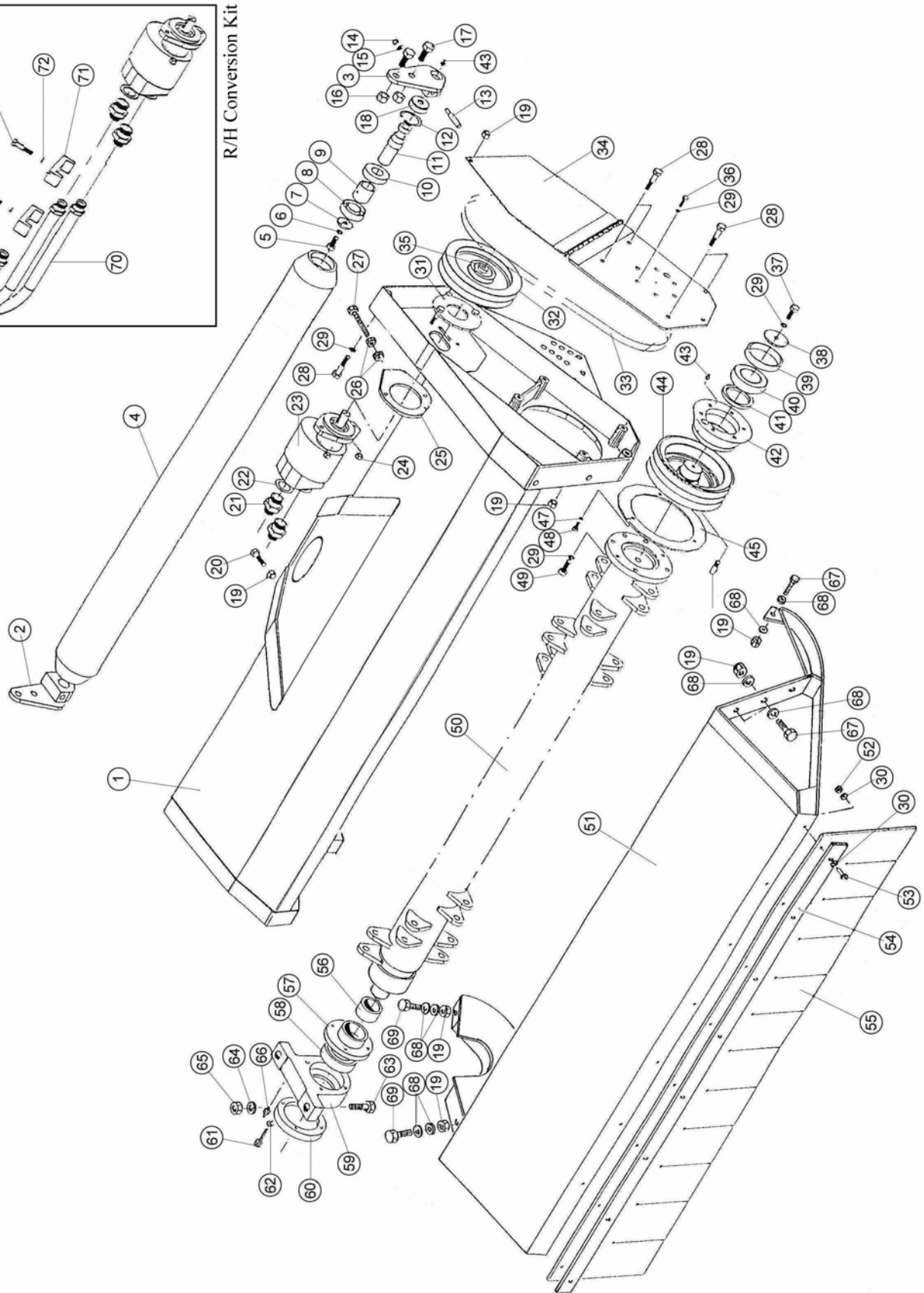
1st & 2nd RAMS - LIFT & REACH (*not illustrated*)

REF.	QTY.	PART No.	DESCRIPTION
		T1940045	1st RAM (LIFT)
1	1	T1940045	RAM ASSEMBLY
2	1	T2923	GREASER STRAIGHT
3	1	T2944	GREASER 90
4	2	8581169	UNION
5	2	8650102	BONDED SEAL
		T1940094	2nd RAM (REACH)
1	1	T1940094	RAM ASSEMBLY
2	2	T2944	GREASER 90
3	2	8581169	UNION
4	2	8650102	BONDED SEAL
5	1	8581190	ADAPTOR ELBOW

FLAIL HEAD ASSEMBLY – DS120 (Double Skinned)



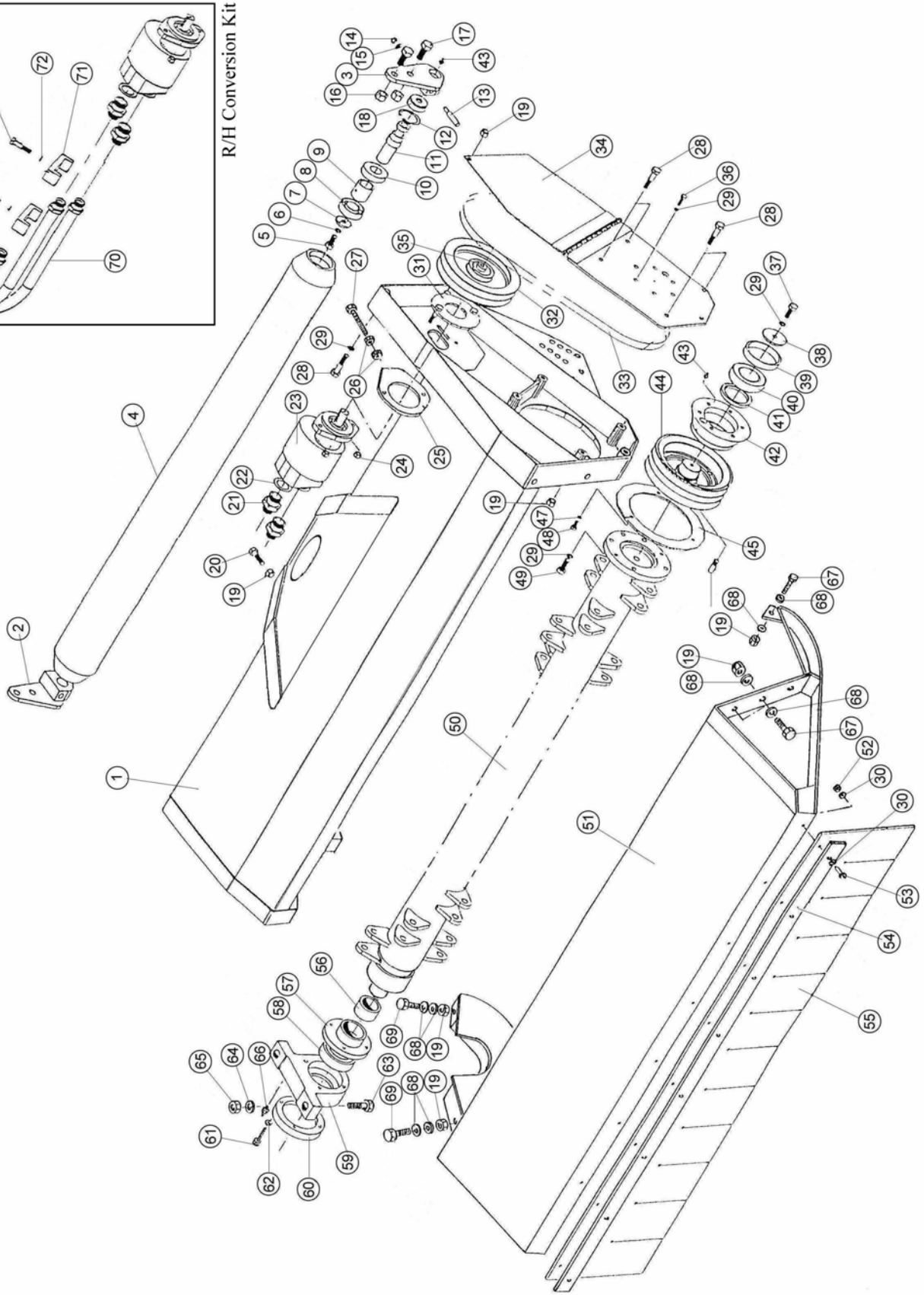
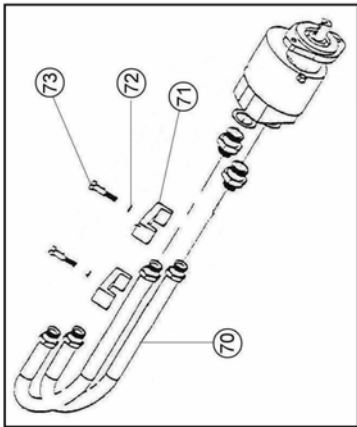
R/H Conversion Kit



FLAIL HEAD ASSEMBLY – DS120 (Double Skinned)

REF.	QTY.	PART No.	DESCRIPTION
			1.2M HEAD ASSEMBLY - Std. Power
			1.2M HEAD ASSEMBLY - High Power
1	1	1	184.615A HEAD ASSEMBLY - 1.2M
2	1	1	184.622R BRACKET ROLLER - R/H
3	1	1	184.622L BRACKET ROLLER - L/H
4	1	1	184.621A ROLLER ASSEMBLY - 1.2M
5	2	2	9313046 SETSCREW
6	2	2	9100206 WASHER - SPRING
7	2	2	174.006 WASHER - SPECIAL
8	2	2	T8029 BEARING
9	2	2	184.589 SPACER
10	2	2	T7898 BEARING
11	2	2	184.588 SHAFT STUB ROLLER
12	2	2	0411262 CIRCLIP
13	2	2	T1840591 COTTER PIN - SPECIAL
14	2	2	9163004 STIFFNUT - NYLOC
15	2	2	T3111 WASHER
16	4	4	9163007 STIFFNUT - NYLOC
17	4	4	9313117 SETSCREW
18	2	2	184.689 SPACER
19	14	14	9163006 STIFFNUT - NYLOC
20	8	8	9213086 BOLT
21	2	2	8581136 ADAPTER
22	2	2	8650106 SEAL
23	1	-	T8027 MOTOR - STANDARD POWER
	-	1	T8097 MOTOR - HIGH POWER
24	2	2	9163005 STIFFNUT - NYLOC
25	1	1	184.624 MOTOR PLATE - STANDARD POWER
	1	1	184.625 MOTOR PLATE - HIGH POWER
26	2	2	9113005 FULLNUT
27	1	1	T8172 SETSCREW
28	6	6	9213166 BOLT
29	11	11	9100206 WASHER - SPRING
30	32	32	T3111 WASHER
31	1	-	184.463 MOTOR FIXING RING - STANDARD POWER
	-	1	188.145 MOTOR FIXING RING - HIGH POWER
32	1	1	188.061 PULLEY MOTOR
33	2	2	T7692 BELT VEE
34	1	1	184.623 DRIVE PLATE
35	1	-	184.691 TAPERLOCK - STANDARD POWER
	-	1	7990.2 TAPERLOCK - HIGH POWER
36	6	6	9313046 SETSCREW
37	4	4	9313066 SETSCREW

FLAIL HEAD ASSEMBLY – DS120 (Double Skinned)



FLAIL HEAD ASSEMBLY – DS120 (Double Skinned)

REF.	QTY.	PART No.	DESCRIPTION
			1.2M HEAD ASSEMBLY - Std. Power
			1.2M HEAD ASSEMBLY - High Power
38	1	184.461	WASHER - SPECIAL
39	1	184.464	SPACER FOR BEARING
40	1	T7840	BEARING
41	1	T7790	OIL SEAL
42	1	184.448	BEARING HOUSING
43	4	T2923	GREASE NIPPLE
44	1	184.446	PULLEY ROTOR
45	1	184.636	GRASS RING
46	1	184.489	DOWEL PIN
47	3	9100204	WASHER - SPRING
48	3	9313044	SETSCREW
49	4	T7855	SETSCREW - FINE
50	1	184.618/9 A/B	ROTOR
51	1	184.616A	NOSE WELD ASSEMBLY - 1.2M
52	16	9163004	STIFFNUT
53	16	9313054	SETSCREW
54	2	184.617A	CLAMP STRIP
55	2	1840476F	CURTAIN
56	1	192.046	SPACER FOR BEARING
57	1	192.026	SHIELD FOR BEARING
58	1	T7941	BEARING
59	1	192.024	HOUSING FOR BEARING
60	1	192.025	CAP FOR BEARING
61	4	T6985	SETSCREW - SOCKET
62	4	T2731	WASHER - SPRING
63	2	9213117	BOLT
64	4	T3747	WASHER
65	2	9163007	STIFFNUT
66	1	T6956	GREASE NIPPLE
67	3	9313066	SETSCREW
68	10	9100106	WASHER
69	2	9213086	SETSCREW

R/H BUILD MACHINES ONLY

70	2	2	186.058	HYDRAULIC STEEL PIPE
71	2	2	184.517	PIPE CLAMP
72	2	2	9213105	BOLT
73	2	2	9100205	WASHER - SPRING

ROTOR & FLAIL OPTIONS FOR THE DS FLAILHEAD

Below are 3 types of rotors and the flail options available to fit each. Part numbers are given for the rotors complete with flails and end bearings whereas flails, spacers, nuts and bolts are individual items. Note: although it is possible to supply rotors balanced without flails we do not recommend this.

184.618 TYPE ROTOR - 30 Stations
Back to Back Flails on Shackles

		Qty.
184.618AU	1.2M ROTOR c/w FLAILS & END BEARING	1
192.053	SPACER - 12.5id	30
T1920071	FLAIL FOR SHACKLE	60
T8095	STIFFNUT M12 - NYLOC FINE	30
T1920069	BOLT M12 x 87 (10.9)	30
T1920052	SHACKLE	30

Boot Flails on Shackles

		Qty.
184.618AV	1.2M ROTOR c/w FLAILS & END BEARING	1
192.053	SPACER - 12.5id	30
09.902.01	BOOT FLAIL	60
T8095	STIFFNUT M12 - NYLOC FINE	30
T1920069	BOLT M12 x 87 (10.9)	30
T1920052	SHACKLE	30

Both the above flail options can be fitted to the same rotor. This rotor is distinguishable from others in that the distance between lugs (inside to inside) is 53mm and the holes are for M12 bolts.

184.619 TYPE ROTOR - 24 Stations
Lump Flails

		Qty.
184.619AC	1.2M ROTOR c/w FLAILS & END BEARING	1
184.106	SPACER - 16.5id	24
1840093C	FLAIL - HEAVY DUTY	24
T7942	STIFFNUT M16 - NYLOC FINE	24
T7943	BOLT M16 x 80 (10.9)	24

Heavy Duty Grass Flails

		Qty.
184.619AD	1.2M ROTOR c/w FLAILS & END BEARING	1
184.106	SPACER - 16.5id	24
T1840330	FLAIL - HEAVY DUTY GRASS	24
T7942	STIFFNUT M16 - NYLOC FINE	24
T7943	BOLT M16 x 80 (10.9)	24

Rigid Back to Back Flails

		Qty.
184.619AA	1.2M ROTOR c/w FLAILS & END BEARING	1
184.500	SPACER - 16.5id	48
1840497	FLAIL - BACK TO BACK	48
T7942	STIFFNUT M16 - NYLOC FINE	24
T7943	BOLT M16 x 80 (10.9)	24

All the above 3 flail options can be fitted to the same rotor. This rotor is distinguishable from others in that the distance between lugs (inside to inside) is 40mm and the holes are for M16 bolts.

ROTOR & FLAIL OPTIONS FOR THE DS FLAILHEAD**184.620 TYPE ROTOR - 20 Stations****Rollicoupe Flails**

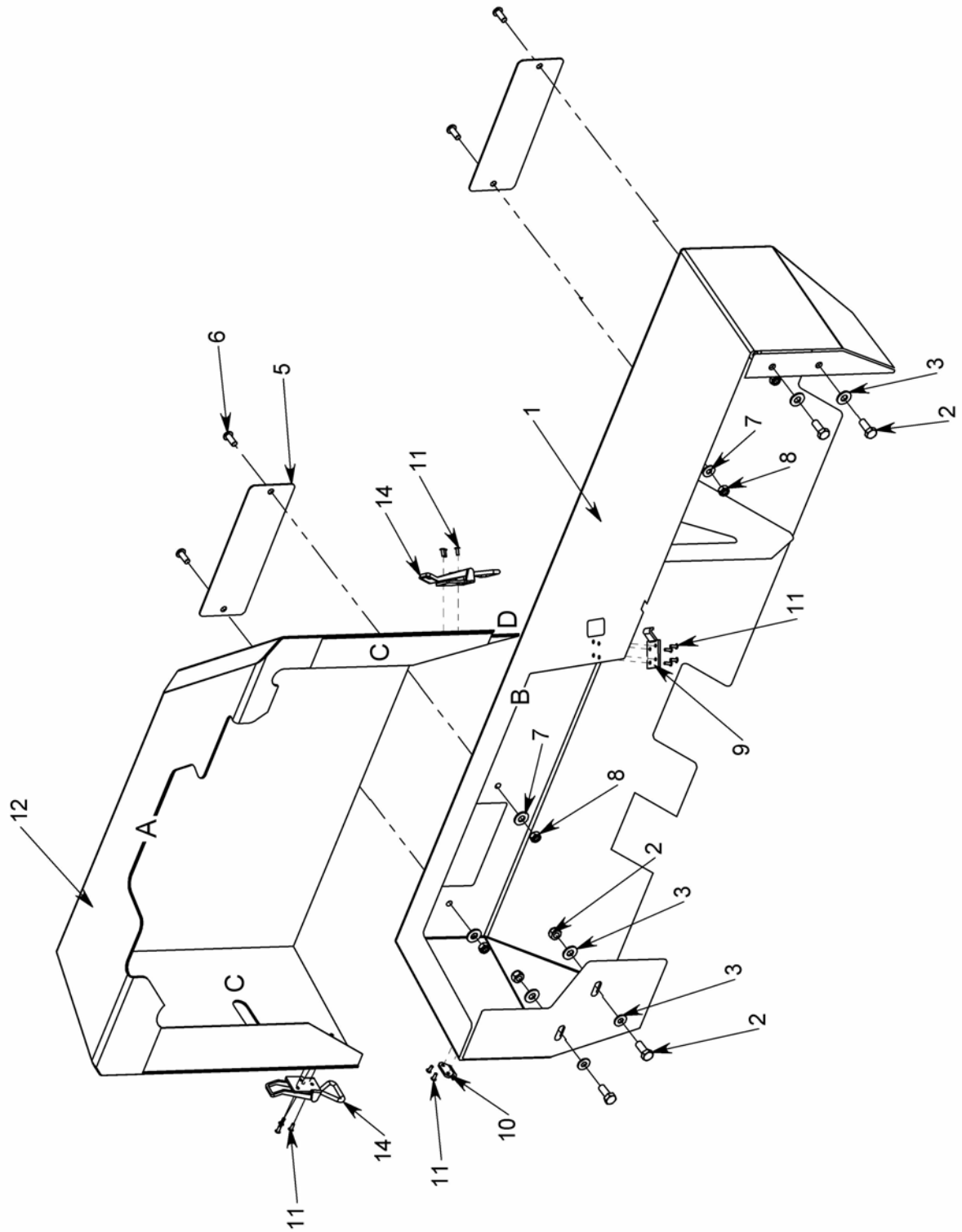
		Qty.
184620G	1.2M ROTOR c/w FLAILS & END BEARING	1
184.571	SPACER - 16.5id	20
1840572	FLAIL - ROLLICOUPE	20
9163007	STIFFNUT M16 - NYLOC	20
8092U	BOLT M16 x 110 (10.9)	20

This is a highly specialised rotor which accepts only the type of flail listed. The rotors appearance is totally different from those illustrated in the flail head diagrams in this publication as the structure resembles a large cylinder into which the flails can retract.

REAR COVERS ASSEMBLY – All Models

Modules:
194.770 – L/H Build
194.771 – R/H Build

Illustrated in Left-Hand build



REAR COVERS ASSEMBLY – All Models

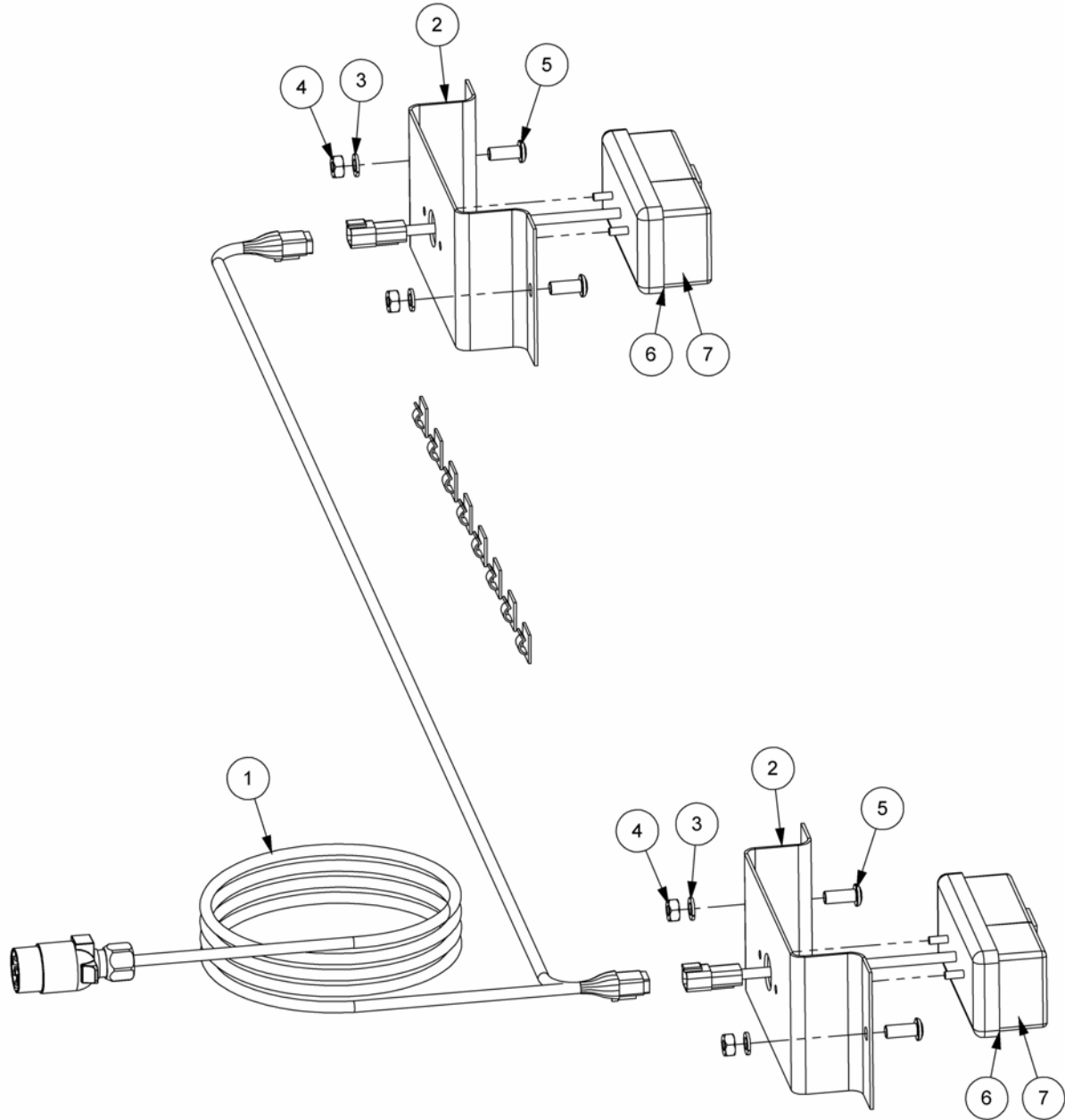
REF.	QTY.	PART No.	DESCRIPTION
		194.770	REAR COVERS ASSEMBLY - L/H BUILD
		194.771	REAR COVERS ASSEMBLY - R/H BUILD
1	1	194.135	REAR COVER - L/H build
	1	194.153	REAR COVER - R/H build
2	4	9313066	SET SCREW
3	6	9100106	PLAIN WASHER
4	2	9163006	NYLOC NUT
5	2	199.043	BLANKING PLATE
6	4	9300154	SOCKET BUTTON HEAD SCREW
7	4	9100105	FLAT WASHER
8	4	9163005	NYLOC NUT
9	1	46007.02	HOOK - LARGE
10	1	46007.01	HOOK - SMALL
11	12	1069088	POP RIVET
12	1	194.136	VALVE COVER - L/H build
	1	194.154	VALVE COVER - R/H build
13	1*	03.231.01	EDGING STRIP (3200mm) - Not illustrated
14	2	43449.01	OVER CENTRE FASTENER

* NOTE: Edging strip has been listed as a quantity of 1 but is utilised for the following locations:

- A Valve Cover Hose Protection
- B Valve Cover - Rear Cover
- C Valve Cover - Hand Hold Cutouts (x2)
- D Valve Cover - Corner Cutout

REAR LIGHTING KIT – Optional Extra

Module:
199.130



REAR LIGHTING KIT – Optional Extra

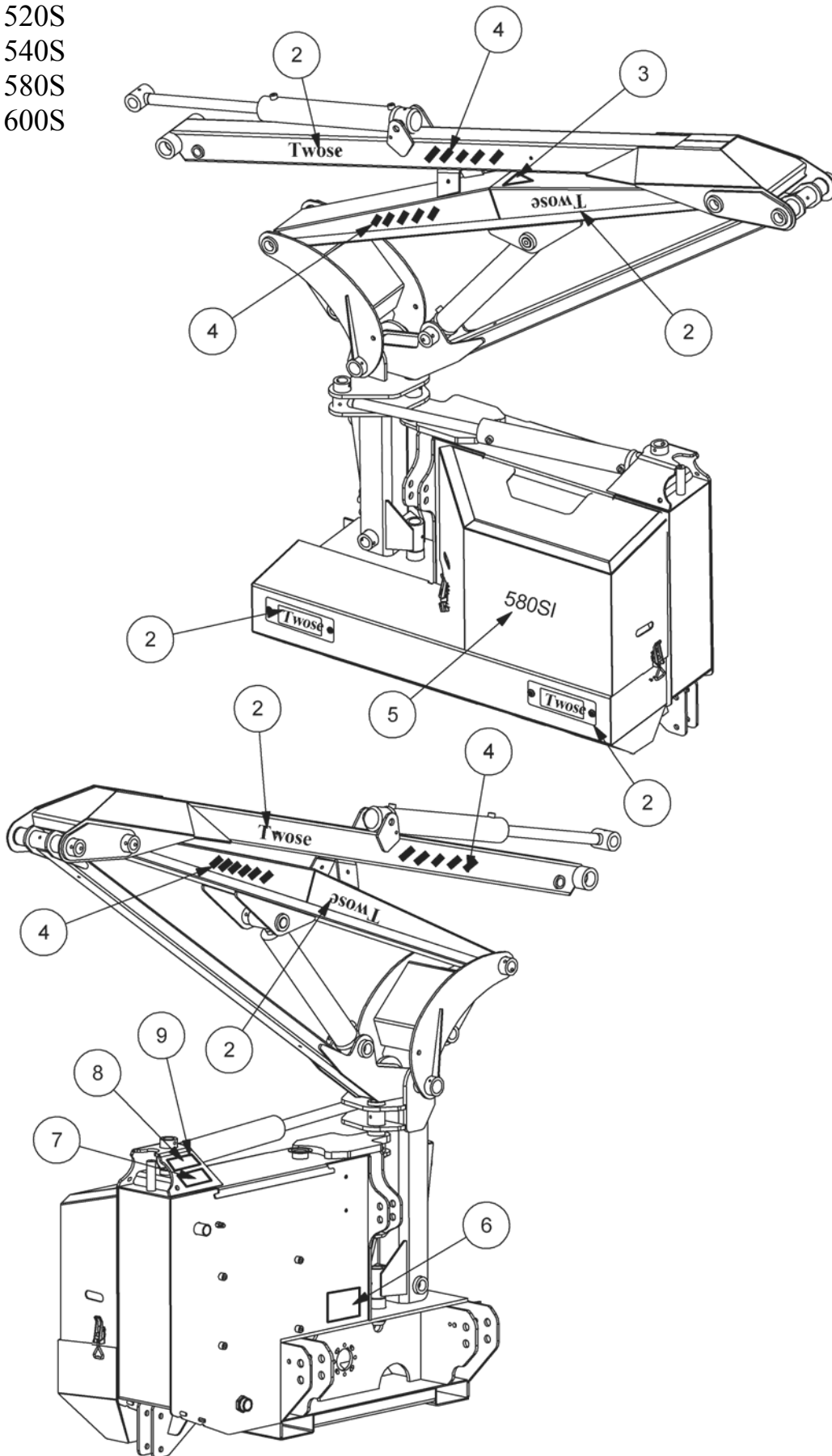
REF.	QTY.	PART No.	DESCRIPTION
		199.130	REAR LIGHTING KIT
1	1	45900.01	LIGHTING KIT - RECTANGULAR
2	2	199.044	MOUNTING
3	4	9100205	SPRING WASHER
4	4	9113005	PLAIN NUT
5	4	9300154	BUTTON HEAD SOCKET SCREW
6	2	45642.01	TAIL LAMP ASSEMBLY (REPLACEMENT)
7	2	45642.39	TAIL LAMP LENS (REPLACEMENT)

MACHINE DECAL KITS

Modules:

- 194.774 – 460S
- 194.775 – 520S
- 194.776 – 540S
- 194.777 – 580S
- 194.778 – 600S

Illustrated in Left-Hand build



MACHINE DECAL KITS

REF.	QTY.	PART No.	DESCRIPTION
		194.774	DECAL KIT - 460S MODELS
		194.775	DECAL KIT - 520S MODELS
		194.776	DECAL KIT - 540S MODELS
		194.777	DECAL KIT - 580S MODELS
		194.778	DECAL KIT - 600S MODELS
1	12	T410201	DECAL - GREASING POINTS
2	6	T410186	DECAL - 'TWOSE' (SMALL)
3	1	T1840209	DECAL - CLOSE BOOM
4	3	T410184	DECAL - '<<<<<<<<>>>>>>>>'
5	1	194.160	DECAL - '460SI'
	1	194.161	DECAL - '520SI'
	1	194.162	DECAL - '540SI'
	1	194.148	DECAL - '580SI'
	1	194.163	DECAL - '600SI'
6	2	T1850152	DECAL - 'WARNING DANGER AREA'
7	1	T1850153	DECAL - 'STOP, IF ANYONE APP.....'
8	1	45429.01	SERIAL NUMBER PLATE
9	4	7103230	POP RIVET