

FLAIL TRIMMERS -

52S, 58S AND 526

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

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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 machines previously delivered.

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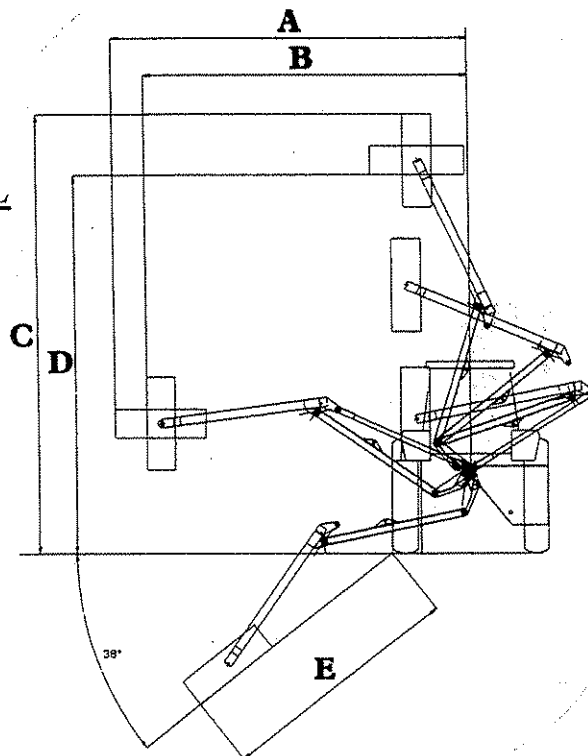
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Cutting Dimensions

GENERAL

Model	SIDE REACH		VERTICAL REACH		DOWNWARD REACH
	Head Horizontal A	Head Vertical B	Head Vertical C	Head Horizontal D	
526	5.85m (19'2")	5.45m (17'10")	6.9m (22'7")	6.05m (19'10")	4.2m (13'9")
580/58S	5.8m (19')	5.4m (17'9")	7m (23')	6.1m (20')	4m (13'2")
520/52S	5.2m (17')	4.8m (15'9")	6.4m (21')	5.5m (18')	3.4m (11'2")



SPECIFICATIONS

52S Machines

Overall Height (machine folded for transport)	3.18m
Overall Width (machine folded for transport taken from tractor's centre line)	1.92m
Overall Length of machine (inc. Head)	1.23m
Total Weight of machine (inc. Oil)	1.3T

58S Machines

Overall Height (machine folded for transport)	3.4m
Overall Width (machine folded for transport taken from tractor's centre line)	1.92m
Overall Length of machine (inc. Head)	1.23m
Total Weight of machine (inc. Oil)	1.32T

526 Machines

Overall Height (machine folded for transport)	m
Overall Width (machine folded for transport taken from tractor's centre line)	m
Overall Length of machine (inc. Head)	m
Total Weight of machine (inc. Oil)	T

Note - Dimensions are approximate and will vary from tractor to tractor.

AIRBORNE NOISE EMISSIONS

The equivalent continuous A - weighted sound pressure level at the workstation (tractor seat) does not exceed 74dB (A). This value was recorded cutting hedges using a Dawe 1405C Sound Meter (BS 3489) on a Massey Ferguson 3090 Tractor complete with M/F Safety Cab.

GENERAL INFORMATION

- NOTE:- The provision of this information is a requirement of the Health & Safety at Work Act 1974.
- NOTE:- This handbook has been written to help the operator and service engineer/mechanic to use and understand the machine fully, safely and efficiently. It is written bearing in mind the Health & Safety requirements and the new CE requirements which came into force from January 1st 1995.
- NOTE:- The handbook/manual is supplied in a waterproof plastic outer cover to prevent damage from rain, condensation etc. The cover of the handbook includes its own part number, which includes information as to the type of machine and issue date of manual in question.
- DANGER**
NOTE:- It is very important that the handbook/manual is read thoroughly - throughout, and is completely understood before attempting to attach, use or maintain the machine in any way.
- NOTE:- Further copies of this handbook/manual can be obtained from:-

TWOSE OF TIVERTON LIMITED
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SAFETY NOTES AND WARNINGS

Throughout the handbook the following sub headings are used to draw attention to various points of importance.



**DANGER
WARNING**

This is used to draw attention to very important instructions which **MUST** be followed precisely to avoid injury or death.

CAUTION

This is used to draw attention to instructions which MUST be followed to avoid damage to operator, machine, process or the environment.

NOTE:-

This is used to highlight points used for supplementary information.

ABOUT THESE MACHINES

These machines are Hedgetrimmers of the type known throughout the agricultural industry as a "Flail Hedgetrimmer".

The 52S and the 58S models are intended to be attached to an agricultural vehicle by means of either the "Three-point-Linkage" couple-up system whose linkage is locked into position (to prevent movement between tractor and Hedgetrimmer) by means of a pair of adjustable Tie arms - forming an 'A' frame to ensure a rigid attachment/lock system, OR by using an optional "SUB-FRAME MOUNTING" Kit.

The 526 model Hedgetrimmer is only offered with the 'SUB-FRAME MOUNTING' option.

The purpose for their production and their sole intention is to cut/trim hedges, banks and verges etc.

AT NO TIME must these machines be used for anything other than, or to do any job other than that for which they have been designed (see above).

In particular:- "NEVER USE JIB ARMS AS A CRANE!"

52S, 58S AND 526
FLAIL HEDGETRIMMERS/MOWERS



Models for Contractors & Farmers.

52S = 5.2m (17ft) reach.

58S = 5.8m (19ft) reach.

526 = 5.2m (17ft) extending to 6.0m (19'6") reach.

Models Left or Right Hand cut.

Safety Breakback and Forward.

95° power slew back/10° forward.

52S and 58S - Three point linkage or sub-frame mount option.

526 - Sub-frame mounted.

Folds directly behind tractor for easy transport.

68 HP Hydraulic motor drive to cutter.

Telescopic outer boom on 526 only.

Parallel linkage.

Various control options:- Cable, Electronic switch to pilot operated spool valves, or Full electronic proportional valves with powered float and Joystick Control.

TWOSE

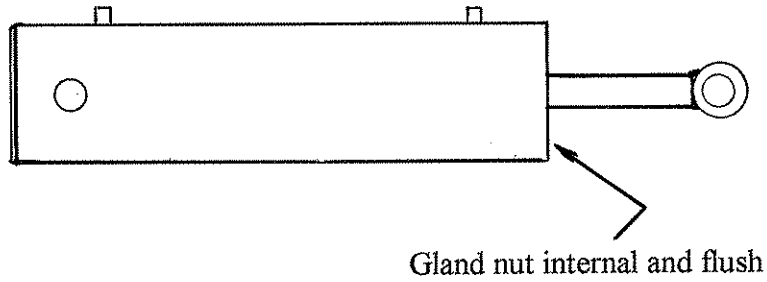
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RAM IDENTIFICATION

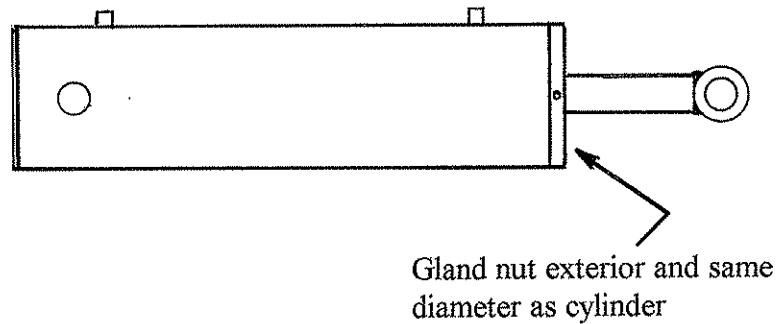
When ordering SEAL SETS, RAM PARTS ETC., please follow the simple guidelines below to ensure receipt of COMPATIBLE PARTS.

Examine the Ram in question at the GLAND NUT.. It will be one of THREE TYPES.

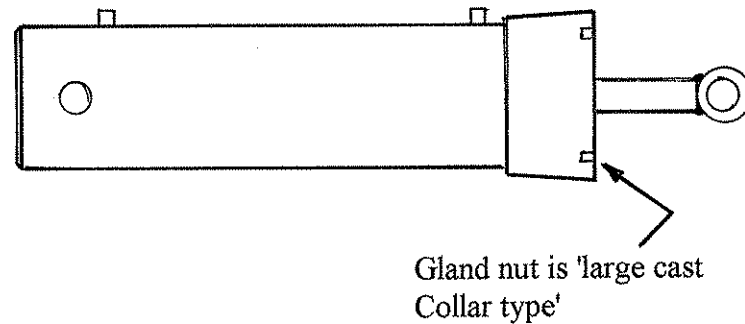
TYPE 'A'



TYPE 'B'



TYPE 'C'



WHEN ORDERING PARTS STATE WHETHER TYPE 'A', 'B' OR 'C'

This does NOT apply when a COMPLETE RAM is required, since all ram types are FULLY INTERCHANGEABLE.

HEALTH AND SAFETY POINTS



DANGER
WARNING

Never attempt to assemble, couple up, or operate machinery until you understand fully the functions, controls and safety precautions required, as shown in the operators manual.



DANGER
WARNING

Always follow tractor safety operations and instructions VERY carefully.



DANGER
WARNING

NEVER TAKE RISKS



DANGER
WARNING

NEVER LEAVE TRACTOR SEAT WHILST ENGINE - OR MACHINE IS RUNNING



DANGER
WARNING

NEVER USE HEDGETRIMMER BOOM ARMS AS A CRANE IN ANY FORM.



DANGER
WARNING

It may be necessary to stabilize the whole unit once coupled up - by ballasting tractor's rear wheels and/or fitting counterbalance weights to tractor.

Tractor rear wheel track setting could also be widened as a further method of increasing stability. (Check with agent).

CAUTION - Be aware of all warning and instruction stickers on the machine as care must be taken and instructions obeyed.

CAUTION - Contact your dealer should you need advice, assistance, or if you do not understand any part of the manual or machine.
NEVER ASSUME - if you are not sure - ASK.

CAUTION - A machine MUST NOT be altered or modified in any way without permission.
No liability will be accepted in respect of a machine which has been modified without the manufacturers permission.



DANGER
WARNING

Never attempt to service/work on/adjust in any way any machinery that is in an unsupported or poorly supported state.

Most machines will need additional support in order that the worker's safety is not reliant only on hydraulic or other services of the machine or tractor.

For example: Any three point linkage mounted machinery
Front Loaders
Digger Booms
Hedge trimmer booms
etc.

Always ensure that machinery is safely supported and propped in position.



DANGER
WARNING

Always ensure that the wheels of any wheeled implement or machine are chocked firmly and that the implement will not move, before attempting to service or work on the implement/machine in any way or form.



DANGER
WARNING

Always SWITCH OFF tractor engine before attempting to carry out adjustments, service repairs or inspections on machinery.



**DANGER
WARNING**

Always be aware of your surroundings, and operate machinery accordingly. Beware of confined or tight areas and restricted height due to buildings, overhangs, etc. Drive and operate machines with weather conditions in mind; such as sun, rain, ice, snow, wind, etc. **Make allowances for all situations.**

CAUTION -

Never operate machine in a reckless or uncaring manner. Respect other road users and be patient.

HIGHWAY USE

When operating machinery on the Highways the operator should consult the local Highways Department regarding notification and approval, as rules and regulations will vary from local authority area to area. The Highways Department regulations must be followed.

NOTE:-

In general it is expected that the tractor/implement will follow (go with) the flow of traffic - but this should be confirmed by consulting the local Highway Authority rules.

Always use 'STOP/GO' boards or whatever system the local Highways Department advise and ensure that these are positioned correctly in relation to the machine's operating area.

Have respect for passing traffic and keep any passing lane free from obstruction.

Allow time for walkers and cyclists to clear the site. Consult the Lighting Regulations for correct procedures when using or travelling on the highway.

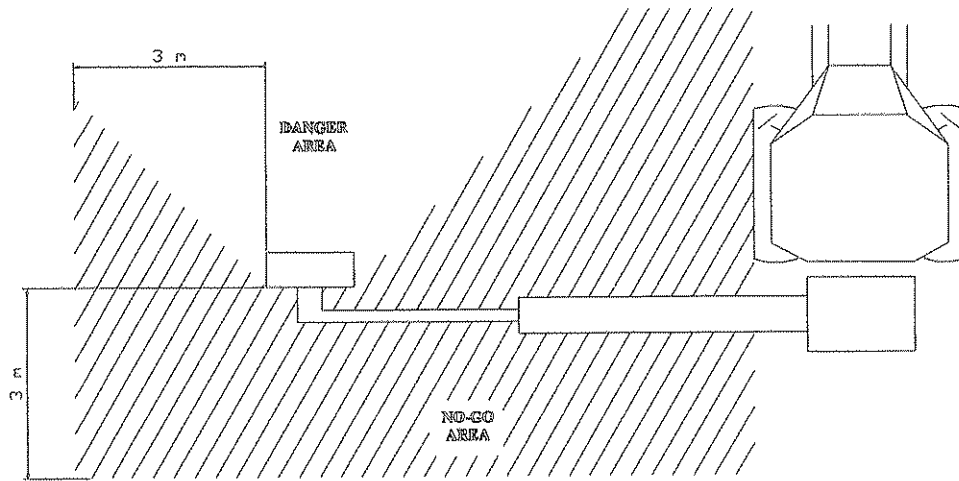
CAUTION

Never carry passengers on machinery or on tractors.

Ensure bystanders/onlookers are kept well away from the operational area of the machine.

NOTE:- NEVER ALLOW ONLOOKERS/BYSTANDERS TO STAND IN FRONT OF CUTTER HEAD OR IN LINE WITH FLYING DEBRIS.

A sideways and rearward NO-GO area should be kept:



CAUTION - Never operate cutting rotor with blades looking towards operator or towards others. Cutters must always be operated towards hedge or bank/verge etc.

CAUTION - Never walk underneath the machine for any reason, especially if unit is still operating.

PARKING MACHINE.

When machine is being removed from tractor linkage and being 'parked up' it is essential that a good firm base and level site be found.

CAUTION Always chock and prop machine to ensure a good firm position for parking. Ensure that stand legs of machine are correctly locked into position.

CAUTION Never allow children to play on, or around, parked machinery.

CAUTION

Never wear loose fitting or ragged clothing which could get caught in machinery or controls.



DANGER
WARNING

Always ensure safety screens are fitted into position to protect operator from flying debris.

CAUTION

Ensure visibility through cab-screens is clear at all times.

CAUTION

Ensure workstation controls, joysticks, cable levers etc. are positioned correctly to suit operator, and not obstructing other driving functions.
Controls **MUST** not obstruct entry and exit to cab.

Worn-out and spent waste oil, grease and other noxious substances must always be disposed of in suitable and legally approved dumping containers suitable for the waste in question.

CAUTION

Always dispose of discarded or worn out parts thoughtfully - by disposing of them in an approved and specified legal scrap site, bin or skip.

If the booms and head are not placed onto the buffers provided during transportation from job to job and especially between bouts, whip can be caused in the booms due to uneven surfaces, etc. Such whip will stress the machine much more than typical work.

The rubber buffers fitted to the machines are there to eliminate this whip, but **RELY** on the operator making the effort to use them.

CAUTION

Ensure booms are folded onto the rubber buffers fitted and that the whole machine is folded in as close to the tractor as possible for transportation.

SAFETY OF CONTROL LEVERS/JOYSTICK CONTROLLERS.

The control levers which operate the hydraulic boom cylinders on all machines will automatically centralise themselves in the centre-off position when the control lever is released. This reduces the chance of unwanted movement or overrun of booms.

NOTES

AMENDMENT

DATE

DETAILS

GENERAL INSTRUCTIONS

1. Before attaching any machine to a tractor or loader ensure that implement is still standing firmly on a good solid level site. (This will depend of course on how well the site was chosen previously).
Check that any wheels are chocked correctly and that supports/props are in position where necessary to prevent booms, etc. from dropping.
2. Before and during the manoeuvring of the tractor or vehicle to attach machinery/implements, make sure that No other persons are in the vicinity. Keep other persons well clear and make known your intentions, all the while keeping a sharp lookout whilst reversing and aligning machines for coupling up.
3. Always ensure that brakes are applied correctly to secure the tractor into the selected position. This will prevent the vehicle from moving off on its own to cause injury and damage.
4. Make sure that the lift arms and top link ball ends of the tractor are properly fitted to the machine/implement by using correct adapter sleeves where necessary. Retaining pins of the correct type should be used on all three point linkage points. Secure pins with relevant pin and ring assembly.
5. If the machine is of the drawbar type - check that the hitch on the tractor is in good condition and that the hitch pin used is of the correct size and type, and is properly secured when fitted.
6. Should it become necessary to make any adjustments or service the machine while raised on the tractor linkage, or raised on a front end loader, trestles or suitable supports MUST be positioned to support machine to prevent accidental dropping of lift arms, loader arms or mechanical failure.
[MACHINE MUST ALWAYS BE PROPPED AND CHOCKED]
7. Never attempt to work on, adjust or service/repair machinery of any kind whilst it is still running or working. Always stop the machine and **STOP THE TRACTOR ENGINE** before any adjustments/service/repairs begin.
(SWITCH OFF TRACTOR ENGINE BEFORE LEAVING TRACTOR SEAT)

8. In transit always use transport stays or locking devices where provided. If, as in the case of some longer machines, the unit is transported lengthways, make sure that the front of the tractor is suitably ballasted to maintain stability. A method of achieving this is to add suitable weights to a correctly specified and fitted front weight frame.

9. Always use machines in a sensible and reasonable manner and do not attempt to use them for work for which they are not intended. Avoid overloading and abusing them as this can cause damage to machine and tractor and can be very dangerous.

10. When unhitching/detaching a machine from a three point linkage or from a front end loader ensure that any stands or legs are securely positioned. The machine must be parked where it will not be a safety hazard or cause annoyance to others. Make sure that chosen parking site is firm and level.

11. Carry out regular periodic maintenance, always with safety in mind.

12. Ensure regular maintenance procedures are maintained for the lifetime of the machine.

13. **HEALTH AND SAFETY RULES AND REGULATIONS MUST BE ADHERED TO IN ALL AGRICULTURAL RESPECTS.**

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INTRODUCTION.

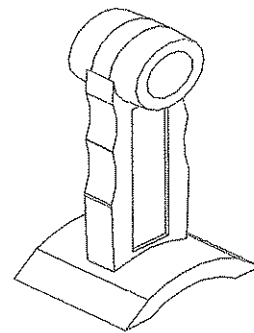
1. The construction is of welded steel fabricated assemblies with various options available covering such things as controls, hydraulics, heads, booms, etc. The cutting head is of a double skin construction.

2. The cutting flail blades offered are:-

(a) Heavy, double-edged design, one piece.

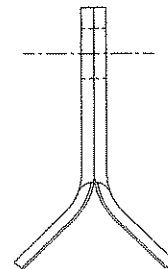
- For UP or DOWN cutting

- Suitable for all types of conditions and growth.



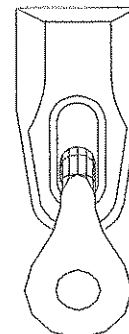
(b) Back to back rigid, one piece blade, in pairs.

- For UP or DOWN cutting, grass mowing and trimming.



(c) Back to back on shackle, in pairs.

- For UP or DOWN cutting of grass and mowing.



(d) Heavy single edge blade flail (twisted pattern).

- For grass cutting and hedge trimming

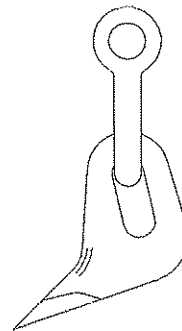
- Cuts one direction only



(e) Boot Flail (on shackle).

- For grass cutting and hedge trimming

- Cuts one direction only.



3. The cutter head design is of a double skin construction for greater strength and longer life. The drive is by vee belts from the hydraulic motor to the rotor.
4. Twin vee belts take the drive from motor to rotor; giving the reliability and shock protection that a belt drive system provides.
5. Forward looking booms are available as an optional extra to give a MIDCUT position (head alongside tractor) as opposed to the in line geometry of standard Hedgecutter booms.
6. A hydraulically powered break back system is built into all models. This protects components when encountering obstructions, but can also act as an aid when cutting in difficult and awkward corners.
7. All machines have a relief valve on the main lift ram which prevents the head unit from being powered into the ground causing undue stresses. This protects the whole machine and is most useful when cutting verges, banks, etc. (Relief is on the drop side of the cylinder only).
8. Hydraulic hoses on the machines have been made and routed to be as unobtrusive as possible.

9. Float control - Cable Controlled Machines.

The control valve slice for angling the cutting head has a detent facility for head flotation which is of value when cutting verges, banks, etc.

Float control - Electric Controlled Machines.

The head float ON - OFF facility is by a toggle switch on the electronic control boxes.

These machines also have a boom float facility that is also switched ON - OFF by a toggle switch. The float pressure of the booms can be varied over a controlled range by the use of a variable potentiometer on the control box.

10. The 'nose' or front guard of the flail head incorporates a welded-in strip which is there to reduce the risk of wire being dragged onto the rotor at high speed. This is not, however, as good a safeguard as ensuring that the machine does not come into contact with wire in the first place.

11. Never attempt to unfold or operate booms whilst machine is in the transport position, i.e. inline with the tractor. This would put unrealistic loads on pivots 'especially the top link'.

OPERATIONS .
TRACTOR SELECTION FOR
52S, 58S AND 526
FLAIL HEDGETRIMMERS

for 52S:-	Tractor size must be a minimum of 45kW (60 HP)
for 58S:-	Tractor size must be a minimum of 45kW (60 HP)
for 526:-	Tractor size must be a minimum of 56kW (75 HP)

The tractor must be equipped with a power take off shaft which must be run at 450 R.P.M during operation.

The P.T.O shaft should run clockwise when looking at the rear of tractor and should be 1 3/8" S.A.E - 6 spline type enabling the standard P.T.O shaft supplied to be fitted.

It may be necessary to fit counterbalance weights (on approved mountings) or to ballast the tractor's rear wheels. **It is vital to ensure that the unit is stable.**
A wider track setting can be advantageous in curing stability problems: contact your agent for advice.

Four wheel drive tractors, with their extra weight, larger front wheels and better grip tend to be more stable when operating these machines.

ATTACHING MACHINE TO TRACTOR (Standard Three Point Linkage Mounted Machine Only).

IMPORTANT:-

Ensure machine is parked on a firm and level site without any bystanders or onlookers.

READ AND UNDERSTAND the general and Health and Safety instructions given in this manual.

1(a). FOR PIN TYPE LOWER LINKAGE EYES ONLY:-

Remove spring pins, lift pins and spacers 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 the lower jaws of the linkage frame and that the 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 the pins, in between the jaws and outboard of the lift arms. Spacers are provided to prevent sideways movement of link arms. Secure lift pin into position using the 7/16" diameter pin and ring assembly.

1(b). FOR AUTOMATIC QUICK CROOK-ON ONLY LOWER LINKS:-

Remove spring pins, lift pins and spacers supplied with Hedgetrimmer from lower link positions of linkage frame. Then reassemble lift pin and spacer together with tractor lower link ball end onto lift pin and between ears of frame: with spacers to the outside. Then secure into position using 7/16" diameter pin and ring also supplied.

Next, slowly and very carefully reverse the tractor towards the machine's linkage frame.

Carefully ensure that tractor lower links fit between the lower jaws of the linkage frame and are aligned with the 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 the housing in the lift arm.

2. The main 20mm diameter locating pin which goes through both stabiliser arm assemblies should be removed after first removing its 7/16" diameter lock-pin and ring.

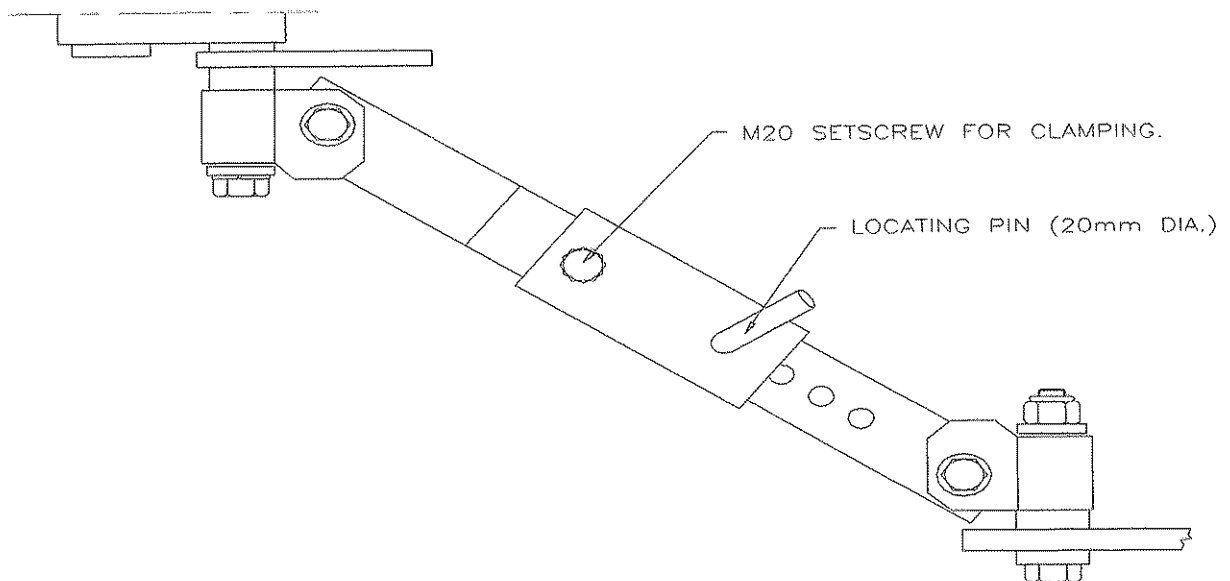
Next slacken off the M20 Setscrews which clamp both halves together.

The pair of stabiliser arms can now be telescoped upwards and forwards to allow the top link coupler to be fitted to the tractor top link position. Secure the upper end of the stabiliser to the tractor's top link point using tractor top link pin and spring pin/linch pin and ring.

The top link stay, between Hedgetrimmer and stabiliser frame, may have to be lengthened/adjusted to suit.

Note:-

It is recommended that the top link assembly should be that of the 'Sprung Type' which is supplied with the Hedgetrimmer if ordered. These 'Sprung' units are designed to reduce shock loads exerted on the tractor by these larger machines especially during high speed transit.



3. Start up tractor. Raise the whole machine on the linkage until a height is reached which is a compromise between a horizontal path for the PTO shaft and 300mm (12") of ground clearance for the main frame.

With machine at this height the 20mm diameter locating pins for the stabiliser arms should be fitted through the nearest pair of matching holes and secured with 7/16" pins and rings. Ensure that the chosen setting is the same on both arms.

Tighten the M20 setscrews on each stabiliser arm to lock them together.

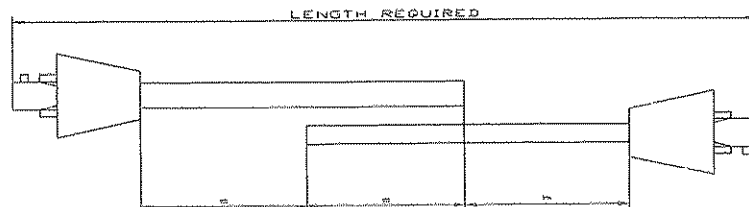
Lower the three point linkage to allow weight of machine to be taken on stabilisers.

Tractor lower linkage check chains assemblies should now be tightened to ensure that tractor arms are locked and machine is positioned centrally at rear of tractor. Loose check chains are the primary cause of machines rocking on the back of the tractor.

Top link should now be adjusted to ensure Hedgetrimmer is level from front to rear.

4. Check the length of the P.T.O shaft.

When connected from tractor to machine the shaft should engage by 1/3rd of the total shaft length, male part should be halfway from disengaged to fully bottomed out.



Do not use the machine until shafts have been cut to the correct length.

5. Fit the P.T.O shaft.

Ensure the shaft is correctly fitted to matching splines at both ends.
Fit the anti-spin chains of the PTO guard to a rigid non-turning assembly.

Note that the rear guard is designed to allow the fitting of a lighting board. This allows the operator to make the machine more visible to other road users should he so wish, or should future legislation specify so.

6. The mesh safety screens should now be fitted.



DANGER
WARNING

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

The screens are designed to be fitted to the tractor cab on the cutting head side (i.e. for left-hand cut machines to left-hand side of cab). Bolts, nuts and washers are supplied for fixing purposes.

8. Fixing of valve control handles and Electronic control boxes into position.

Control levers are supplied bolted together as a unit. Cables should not be forced into arcs of less than 150mm (6") in radius otherwise the controls will be stiff to operate and the cables will be damaged. Electronic control boxes require an electric cable to also be routed into the cab. Care must be taken that the cable(s) are not excessively clamped or that they run over any sharp or wearing edges which will damage the cable. The units include a support leg, which will slot into a bracket supplied for fitting to the tractor. Depending on the model there may be 4, 5 or one cable controller in the set plus one control box. 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 the bracket is fitted to the left-hand wing for left-hand cut machines and right-hand wing for right-hand cut machines. Where an electronic box is used it may be applicable to fit the single cable control on one side and the electronic control box on the other to ensure they are both easily accessible.

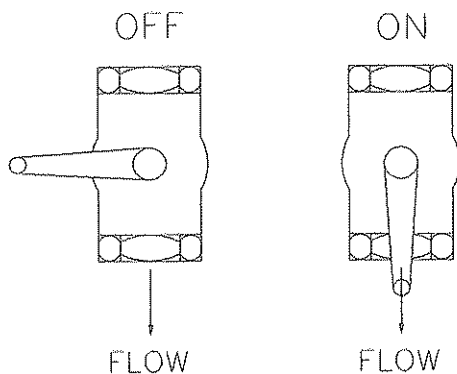
Once the bracket(s) is fitted to the cab side the controller unit can be lowered into the slot in the bracket and secured by tightening securing screw (clockwise).

9. Wiring of the Oil Cooler (where fitted).

A cable (orange) complete with a 20 amp inline fuse is fitted to the fan control switch in the factory. This needs to be wired to a suitable power supply of over 20 amps on the tractor (battery etc.) before the Hedgetrimmer can be used. The fuse must at all times be kept in the circuit.

10. **IMPORTANT** - check the oil level within the tank, it should be halfway up the small bullseye sight glass on the side of the tank.

11. Ensure the ball valve at the base of the tank is in the 'ON' position as shown.



CAUTION.

Never in any circumstances try to run the PTO shaft of the Hedge Cutter with the ball valve in the Off position.

12. The tractor's power take off can now be engaged **CAREFULLY**.

Check that P.T.O. is running correctly and that the guard is not spinning.

Oil will now be pumping within the hydraulic system.

13. Check the movement of the hydraulic valves by operating the control handles or Joystick. This should be done with great care until the operator gets a good 'feel' for the controls and feels competent. Each control lever top is individually labelled as to which operation it controls.

ATTACHING MACHINE TO TRACTOR (Sub-frame Mounted Machine Only).

IMPORTANT

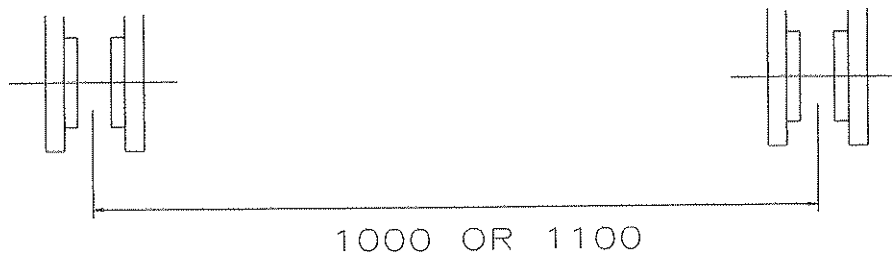
Ensure machine is parked on a firm and level site without any bystanders or onlookers.

1. Fit rear axle brackets to the tractor (Technorton).

The brackets supplied will only be suitable for the model of tractor to which the Hedgetrimmer is to be fitted as they are made specifically to suit individual makes and models. For this reason it is important that the correct make and model of tractor was specified when the sub-frame kit was ordered.

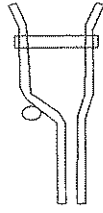
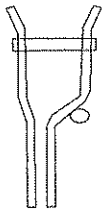
A complete set of fitting instructions will accompany each set of axle brackets supplied. These instructions are supplied by the approved bracket manufacturer.

The brackets can either be fitted at 1000 or 1100 centres as shown below:-

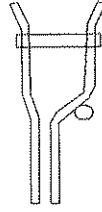
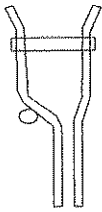


2. Setting sub-frame to suit tractor (to be carried out by the dealer).

The width of the brackets first needs to be set to suit the width at which the axle brackets were fitted, either 1000 or 1100 centres. This is shown in the diagram below.

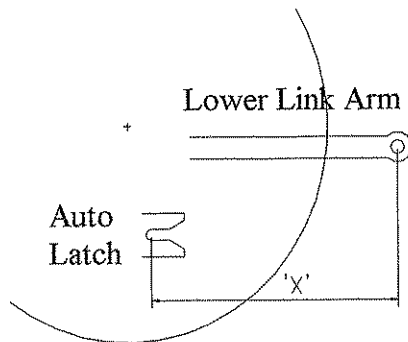


Cranked jaw assemblies set for 1000 centres.

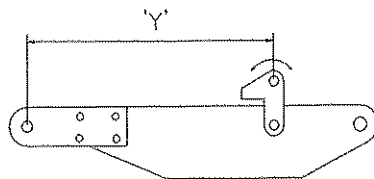


Cranked jaw assemblies now opposite and set for 1100 centres.

2.1 The overall length of the sub-frame now needs to be set



First set tractor link arm so that it is horizontal, then measure the horizontal distance between the centre of the lower link eye and the centre of the Auto latch, distance 'X'.



The cranked jaw assemblies must now be bolted to the sub-frame using the bolts supplied ensuring that the correct width is selected and that length 'Y' is the same as length 'X' (to within 50mm).

If this is not achievable using the pre drilled holes extra holes may need drilling.

The correct width and length should now be set

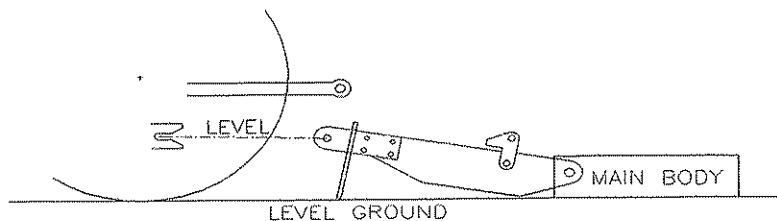
To check the settings are correct:

- a) Attach sub frame to axle bracket latches making sure that they are 'home'.
- b) With the rear of the sub-frame resting on the floor attach the lower link arms to the swinging links on the sub-frame ensuring this can be easily achieved within the arc movement of the link.
- c) The sub-frame should now be carefully raised until horizontal ensuring at all times that the frame does not catch anything or that the swinging link on the sub-frame never reaches the end of its arc movement (adjust if necessary).
- d) Now that the correct position of the cranked jaw assemblies has been achieved these jaw assemblies must now be welded to the sub-frame **100%** by a **QUALIFIED WELDER**.

Note:

The sub-frame must be welded complete before attaching to the hedge trimmer.

3. Sub-frame stand leg height.



The sub-frame can now be attached to the hedge trimmer using the pins supplied. The height of the sub-frame stand leg can now be set so that the pins on the cranked jaws of the sub-frame are at the same height as the axle brackets (or up to 25mm below) when the hedge trimmer is parked on level ground (as shown above.)

4. Attaching hedge trimmer to tractor.
 - a) First fit lower link balls to swing link bracket on sub-frame where tractor is fitted with automatic lower link coupling or remove the relevant pins from the swing links in the case of the tractor be fitted with conventional lower link ends.
 - b) Reverse tractor toward the sub-frame ensuring that it is inline while slowly lowering the link arms over the cross member towards the swing links. Ensuring the sub-frame is in the correct position for the axle brackets keep reversing until the latches on the axle brackets are automatically tripped and locked.
 - c) The lower link arms should now be in the correct position for the auto hitch ends to pick up the link balls or for the bottom link pins to be inserted in the case of the conventional link ends, always use the correct pins as supplied and ensure that the auto hitch ends are used correctly.
 - d) The top link should now be fitted using the correct pins provided.
 - e) The trimmer should now be raised by operating the tractors three point linkage to a height where the PTO drive is approximately level, the arms should then be locked into position using the tractors hydraulic transport lock or the stops on the tractors quadrant control.
 - f) **STOP TRACTOR ENGINE AND APPLY HANDBRAKE.** The sub-frame stand leg can now be raised and held in position with the R-clip.
 - g) Now follow instructions from Item 4 on Page 25.

REMOVING HEDGETRIMMER FROM TRACTOR

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

2. **IMPORTANT**
Using the hydraulics, close the head angling and break back rams and then the first and second rams to bring the machine to a stable closed position. With the booms FULLY closed there is no tendency for the booms to creep open. DO NOT place the head on the ground as this would take away much of the weight counterbalancing the oil tank and compromise the stability of the unit.

3. Disengage the PTO drive and STOP THE TRACTOR ENGINE.

4. Take the stand leg from its stored position and lower it to the correct height, securing it with the R clip provided (Sub frame only).

5. Slacken both M20 setscrews on stabiliser arms (3 point linkage mounted), remove the 7/16" diameter lynch pins from the stabiliser locating pins, and remove pins. It may be necessary to raise three point linkage slightly to free pins for removal. Lower the hedge trimmer so that it stands on the floor (with tractor 3 point linkage). Top link may have to be adjusted to ensure trimmer is upright and safe. Make sure that trimmer is properly settled and safe. Disconnect top link assembly (from stabiliser end 3 point linkage mounted).

Uncouple stabiliser 'A' frame from tractor top link position by removing 7/16" lynch pin and tractor top link pin (3 point linkage mounted only).

6. Remove control handle set(s) from tractor and stow on trimmer.

7. Disconnect PTO shaft and anti-spin chains (tractor end).

8. For pin type lower link arms: Remove lower lift pins from linkage.
For Quick hitch crook-on arms: Release crook locking levers and lower arms away.

Tractor linkage arms are now free of trimmer.

9. Pull rope to release axle brackets (sub-frame mounted only).
10. Draw tractor slowly away. Many operators stop about 300mm (12") away to double-check that tractor and machine have completely parted company and that no connections or couplings have been forgotten for any reason.

Safety screens can now be removed if so desired.
11. Replace pins through stabiliser arms and secure in position with linch pins.
12. Reconnect top link bar assembly onto stabiliser with pin and linch pin provided.
13. Replace lower linkage pins back into relevant positions on mounting frame and secure with linch pins.
14. Make sure tractor top link pin is replaced and secured with its linch pin.

OPERATING THE HEDGETRIMMER

INTRODUCTION

The vehicle driver should be conversant with all tractor controls and capabilities. It is always advisable for the driver to practice the controls and operations of the hedge trimmer **before** commencing work.

The speed of cutting when trimming will depend on the size, quantity, and type of growth to be cut. A speed slow enough to suit the conditions should be selected, ensuring that engine speed gives a PTO speed of 450 rpm for general use.

This 450 rpm is recommended for best trimming results and performance.

Variation from this recommended rpm should be kept to a minimum and never at any time should PTO rpm exceed 540 rpm.



**DANGER
WARNING**

Cutting head should be kept as close to tractor as conditions and cutting position permit. This ensures the maximum stability of the unit.

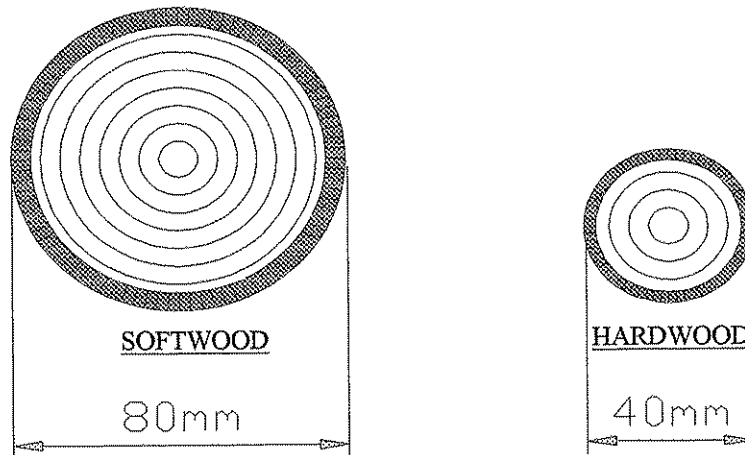


**DANGER
WARNING**

At **NO TIME** should the rotor be cutting upwards at front with front cowling removed.

CUTTING THICKNESS LIMIT.

Never operate rotor with cutter flails directly towards operator, i.e., underside of head towards operator.



ROTOR ROTATION DIRECTION

A choice of rotation direction is offered on fully-independent machines only.

The 'upward' cut is recommended for trimming grass and one to two years' growth of hedge. The 'downward' cut is **NOT RECOMMENDED** and should only be considered by really heavy cutting of large diameter growth. Even then, it is important that down cutting be limited to a minimum and only for very short periods.

There is a risk of serious damage to the hydraulic system should the rotor direction be reversed without it first coming to rest.



**DANGER
WARNING**

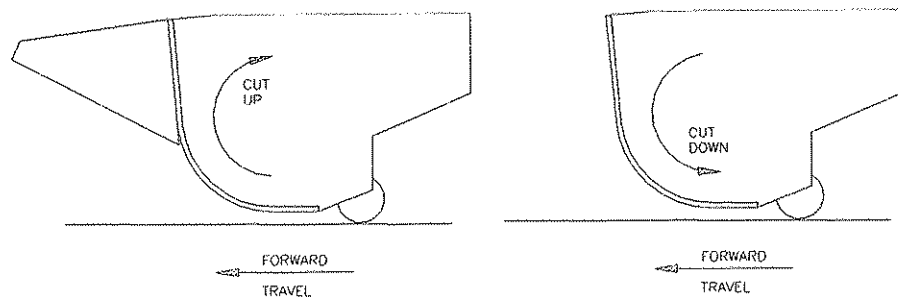
With rotor cutting downwards at the front the roller must not be removed.



**DANGER
WARNING**

NEVER CHANGE DIRECTION OF CUT WHILST ROTOR IS STILL TURNING.

On leaving the factory the machine will be set for upward rotor cutting.



The motor spool control lever has a 'balk lock' control built into it to ensure that the rotor's cut direction cannot be accidentally reversed. The control allows the lever to be moved in one direction only, from centre OFF position to selected rotor cut direction.

The controller/cable sets (where fitted) come from two suppliers and though physically different, their actions are similar. When the lever is rotated to its extent (Morse - red cables) or pin is rotated till horizontal (TMC - grey cables) the control handle can be moved to and from neutral in that direction. On the TMC controller placing the pin vertically stops the lever from being moved at all.

HYDRAULIC CONTROLS - CUTTING POSITION

The cutting head must at all times be lowered gently into its cut position. Never drop the head into work 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.

IMPORTANT: Ensure rotor and roller do not get involved in high obstacle forces such as rocks, stones, stumps etc. Keep rotor away and free from wire, as to entangle wire into rotor is very dangerous and very costly.

Should large obstacles be encountered or wire be caught in rotor then you must **STOP IMMEDIATELY**. Reset or clear before starting.

Normal obstacles and level variations should be overcome by operator slowing the forward speed and raising or lowering the head to suit.

CUTTING HEAD

The rotor of the cutting head has been balanced prior to fitting, this is to ensure a vibration free cutting unit.

Should the rotor become blocked, 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 that will also be transmitted to other parts of the machine.

Should vibration occur **STOP IMMEDIATELY**, as to continue working could have serious consequences, besides damaging bearings and weakening the structure.

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

In severe cases, perhaps, as a result of hitting solid objects with serious force, rotors can become bent, which will also cause vibrations. In such cases the rotor will have to be re-balanced, repaired and re-balanced or even replaced.

BREAKAWAY

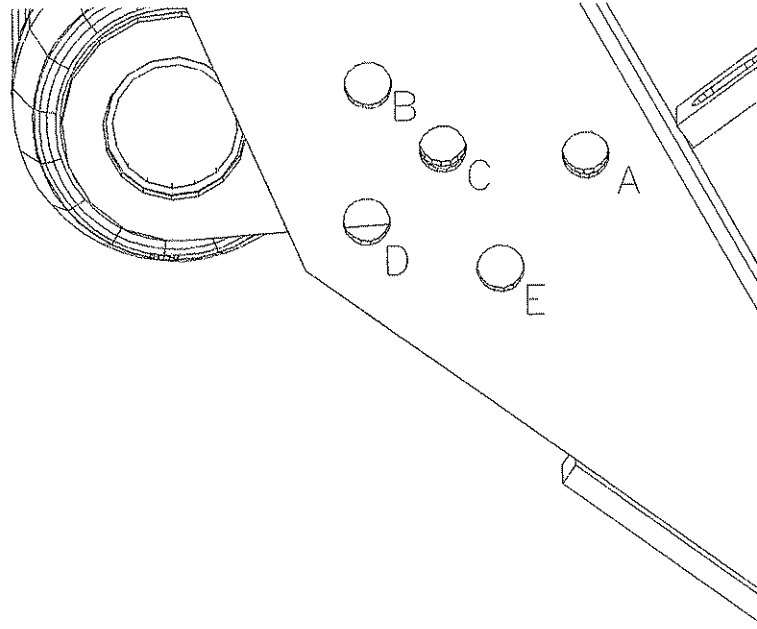
When the head meets an obstruction the breakaway ram closes steadily due to the action of a relief valve built into the valve block. This allows the outer boom to pivot backwards around its near end. In order to reset the position of the cutting head the control lever for the breakaway will need to be operated.

TRANSPORTATION

- (1) Disengage rotor drive.
- (2) Turn cutting head until head is approximately at right angles to outer boom with flails away from tractor.
- (3) Swing machine rearwards by powering the break back ram, to a position where the booms point directly behind and in line with tractor.
- (4) Fold in second boom completely, until it hits its 'STOP'
- (5) Operate the main lift ram to raise booms, until 'TIE ARM' clears tractor cab roof by approx. 100mm ('MIN')
Take care not to hit tractor cab during this operation).
- (6) The unit is now ready for transport.

TO ADJUST ROLLER HEIGHT

The roller controlling the flail head cutting height can be set in various positions:



Bolt position A is the main pivot position, about which the roller bracket will normally pivot. From the pivot position A, the second bolt can be put in any of the positions, B, C, D or E. This sequence B to E is that from shortest to longest cut length.

To alter roller position, pivot bolt A should be slacked off approximately 1 turn. The other bolt should then be removed and repositioned in either of the four settings; B, C, D or E as required. This must obviously be done to match at both ends of head assembly.

For hedging work the roller can be adjusted to be completely up out of the way. This is achieved by bringing bracket to use position C, removing bolt A and swinging bracket (this time pivoting on C) unit position E can be used.

Then both bolts should be tightened, dead tight, at both ends.

ELECTRIC CONTROL MACHINES

These models include all basic specifications as listed for non-electric machines. All models have fingertip joystick controls with solenoid operated valves. One model has a power boom float facility. The main components, such as tank, booms and head remain unchanged. The power supply required to operate the electrical components is taken from the tractor 7 pin rear trailer socket. The side light terminals being the contact points used as power supply, this means that the tractor side lights MUST be ON at all times whilst the flail is in use.

The power float system incorporated allows the head to floor contact pressure to vary.

This system will reduce downward force and therefore produce less 'drag' on the head, which in turn protects the booms and pivots by reducing load on these parts.

LEVER OPERATION

Test the hydraulic control systems of the machine by operating the joystick or switch control levers. Operate the controls with great care to ensure smooth and gentle movements of booms and rams , etc. The controls should be tested until operator has a good feel for all the operation movements.

HEAD FLOAT (BLUE LAMP)

This allows the head (only) to float about its centre pivot axis.

Switch head float ON (blue lamp will show)

NOTE:- After prolonged use of float on banks/verges a slight delay may occur when joystick switch for head rotation is energised, this is due to the cylinder recharging with oil.

IMPORTANT:- Float switch must be OFF if float not required.

FUSE

The electrical system is protected by a 5 amp fuse (1" x 1/4") BS1362.

MAIN FLOAT (RED LAMP) - FULL FLOAT MACHINE ONLY

This function is only required when bank/verge cutting.

1. Ensure head is resting on the floor.
2. Switch float ON (red lamp will show).
3. Adjust float pressure by turning potentiometer knob either clockwise for lighter/raise, or anticlockwise for heavier/down pressure.

IMPORTANT:- Ensure setting of float gives a slight downward force to prevent machine rising from work. This can be achieved by turning clockwise to find where machine rises and then turning anticlockwise to lower machine back to floor, adding approximately 1/2 turn to settle.

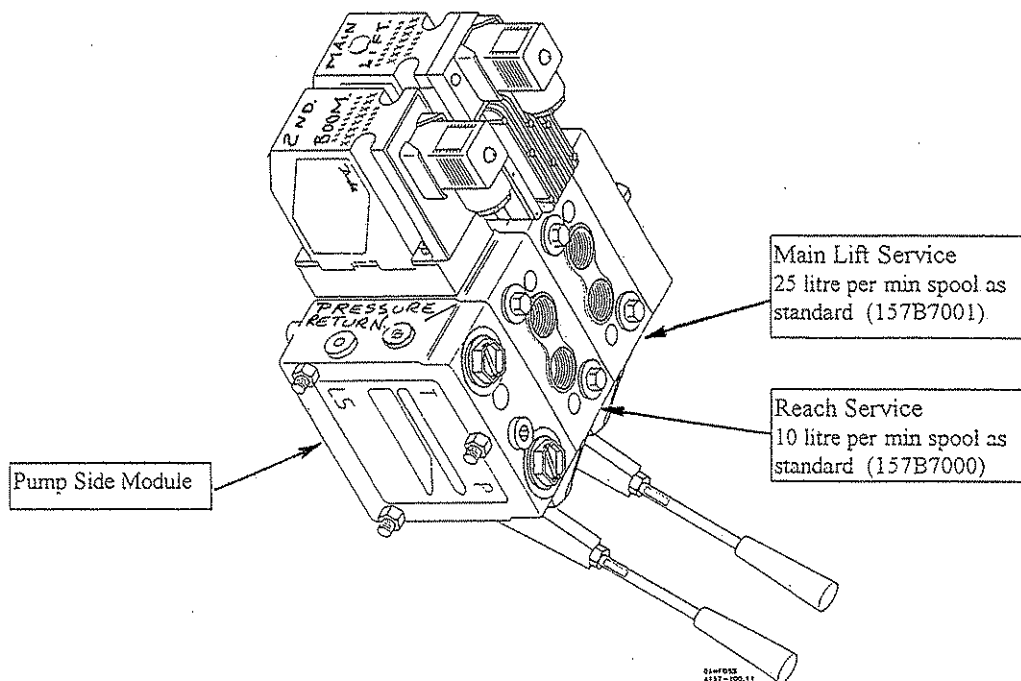
Float can be overridden by moving joystick or switch to the raise position. On returning joystick or switch back to its neutral position the float will automatically come back into operation.

NOTE: If head is raised from ground (with float switch ON) and joystick is returned to neutral position the head will gradually return to the floor, at this time normal float conditions will resume.

IMPORTANT:- Float switch must be in OFF position if float not required.

PIPING ARRANGEMENT FOR DANFOSS VALVE BLOCKS

The Danfoss valve on this machine supplies oil to 2 double-acting services, accurately metering the flow between zero and a preset maximum. The maximum is determined by the spool fitted. As supplied, the service nearest to the pump side module (section containing main pressure and tank ports) has a spool capable of supplying 10 litres per minute, and that for the other service 25 litres per minute. It is intended that the 10 litres per minute service supplies the reach ram and the 25 litre the main lift ram: if this is not so the main lift could operate more slowly than is desirable.

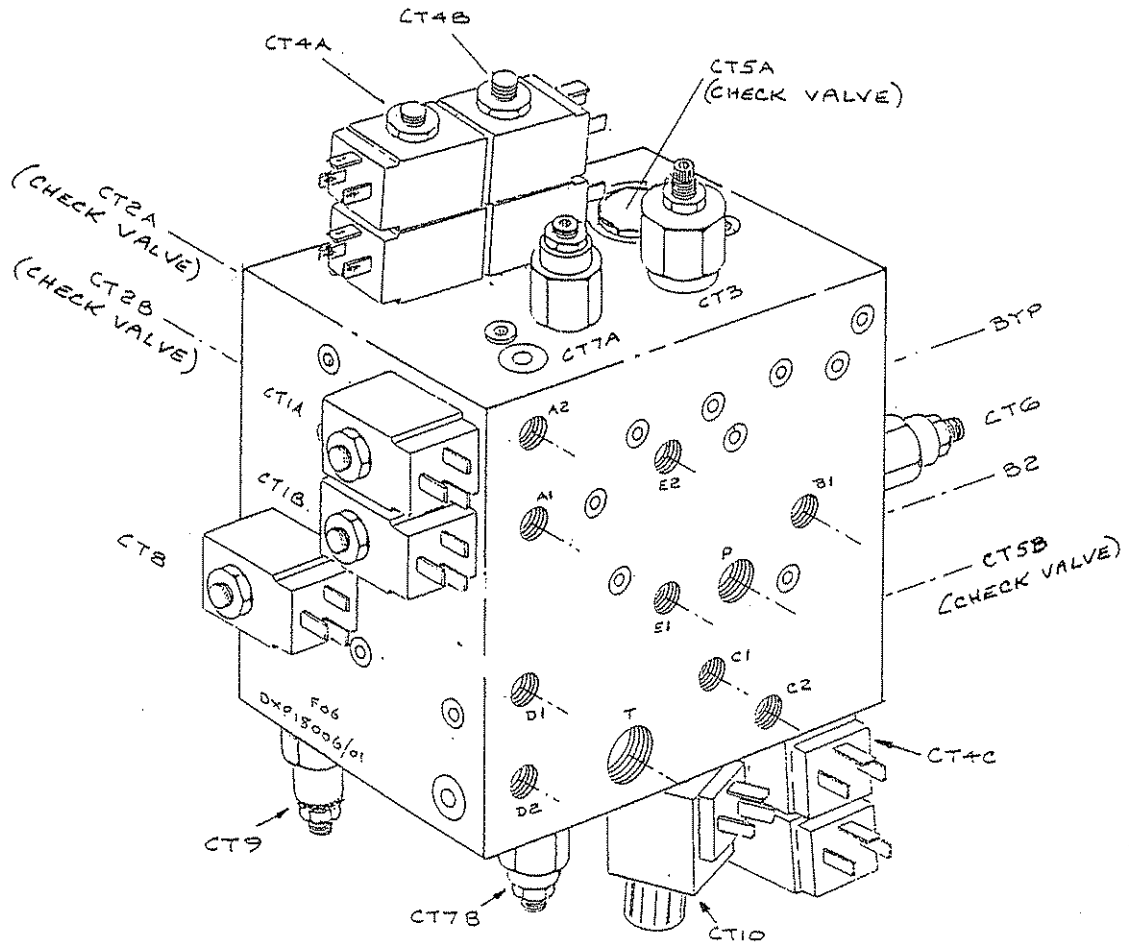


If the installation is incorrect, two solutions are possible.

- Remove the electrical plug and the pipes from each service of the valve, and replace on the other service. It may be necessary to exchange the two pipes on a service to retain the control logic (i.e., that 'up' still gives up etc.)
- Or - Remove each spool from its section and exchange them (they are designed to allow this). This will entail removing the end cap to which the manual lever is fitted. (Etched onto the spools at the clevis end will be 157B7000 for the 10 litre spool and 157B7001 for the 25 litre).

The former is likely to be easier, given the lack of room around the base of the valve. In each case it is strongly recommended that a note of the change is made on the 'Amendments' page of this parts book.

INTEGRATED HYDRAULIC VALVE BLOCK



HYDRAULIC PORTS

A1	=	HEAD ROTATION
A2	=	HEAD ROTATION
B1	=	BREAKBACK 'FORWARD'
B2	=	BREAKBACK 'BACK'
C1	=	TELESCOPIC 'IN'
C2	=	TELESCOPIC 'OUT'
E1	=	1ST RAM 'ROD END ON RAM'
E2	=	1ST RAM 'ROD END TO DANFOSS'
D1	=	2ND RAM 'ANCHOR END ON RAM'
D2	=	1ST RAM 'ANCHOR END TO DANFOSS'
P	=	PRESSURE 'FROM 2ND PUMP'
T	=	TANK LINK 'RETURN'
BYP	=	PRESSURE TO DANFOSS (BYPASS)

CARTRIDGE SOLENOID

CT1A AND B	=	HEAD FLOATATION	
CT4A (2 OFF)	=	HEAD FLOATATION	
CT4B (2 OFF)	=	BREAKBACK	
CT4C (2 OFF)	=	TELESCOPIC	
CT8	=	ON/OFF	} POWER
CT10	=	PROPORTIONAL RELIEF	} FLOAT

CARTRIDGE RELIEF AND FLOW DIVIDER

CT3	=	FLOW DIVIDER
CT6	=	BREAKBACK (SET AT 138 BAR)
CT7A	=	1ST RAM ROD END (PRESSURE INTO GROUND) (SET AT 28 BAR)
CT9	=	MAIN RELIEF (SET AT 170 BAR)
CT7B	=	OVER CENTRE CHECK (SET AT 210 BAR)

MAINTENANCE

GREASE POINTS

On each pivot of booms, links or rams a grease nipple will be found and its position will be highlighted by a transfer symbolising a grease gun. These should be greased daily.

PTO SHAFT

The PTO shaft should be examined weekly, both in regard to its mechanical condition and that of its plastic guarding. Any damage to the guarding should be rectified with urgency and the anti-spin chains **must** be used. Universal joints should be greased sparingly at this time. Fortnightly the internal shaft should be greased along its length to ensure that it will continue to allow the unit to telescope.

HYDRAULIC OIL

The hydraulic system will have been run-up and checked at factory prior to the machine being dispatched.

The hydraulic tank will be fitted with EXCELUBE ULTRA 46 hydraulic oil when the machine is delivered.

NOTE: The filler/breather on the top of the tank is equipped with a strainer to ensure all oil is strained on entering the tank. For this reason the strainer basket should never be removed and all hydraulic oil filling must be done through the strainer.

It is advisable NEVER to mix hydraulic oils, but if another suppliers' oil is to be used, then one that is known to be compatible must be chosen (Check with oil supplier).

A bypass will operate should the return filter become excessively clogged. Though this protects the operator and other personnel it does mean that filtration then ceases. It is important therefore that:-

THE OIL FILTER MUST BE CHANGED AT 50 HOURS INITIALLY AND EVERY 250 HOURS THEREAFTER.

The oil level in the tank should be checked daily, using the sight glass near to the return filter.

Contamination of the oil will necessitate it being changed: this is indicated by a darkening in its colour and/or it smelling 'burnt'.

Keeping the area around the filler cap clean (particularly when removing the cap), changing filters on time and using clean containers will all help to reduce oil contamination.

GEARBOX FOR HYDRAULIC PUMP

The gearbox powering the hydraulic pump(s) will be pre-filled to the correct volume of 0.5 litres, with S.A.E EP 90 gear oil. This grade must be used when topping up. Level should be checked every few months using the sight glass on the gearbox and the oil should be replaced every 2 years.

HOSES

Hoses should be regularly checked to ensure that the metal braiding is undamaged. Should damage have occurred, affected hoses should be replaced as their ability to withstand pressure will be reduced, increasing the risk of their bursting. Care should be exercised when replacing hoses to ensure that each new hose terminates at the same places as the hose it replaces and that its route is as the original.

Hose ends and other hydraulic connections should be checked daily to ensure there are no leaks.

CABLES AND CONTROL HANDLES

No maintenance of the cables or controllers is necessary and cables should **not** be lubricated. Should the controls become difficult to operate the route of the cables should be checked to ensure that there are no kinks or excessively small radii.

FLAIL HEAD

Keep the cutting blades VERY SHARP, this 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 pair should be renewed also to maintain balance.

Check vee belt tension on cutter head daily: a load of 5 Kgs (10lb) 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.

LAYING-UP

Clean the machine and note any damage or repairs needed. Arrange for spares and repairs as required in preparation for next season.

The machine should be lubricated fully and any exposed bright surfaces greased **particularly** any exposed rods or rams.

Store machine in dry conditions, preferably undercover.

Vee belt tension on cutter head drive should be released to protect the belts.

PARTS LIST

Always order **Twose** genuine spare parts for your machine. They are designed and manufactured to give the best operational results. In some cases parts will be of a higher specification than their usual counterparts and this will not be immediately apparent.

ORDERING SPARE PARTS

In order for both **Twose** and your dealer to give the best possible service when ordering spare parts, please specify:-

- (a) Machine type and Serial No.
- (b) Part no. of component(s)
- (c) Description of component(s)
- (d) Quantity required
- (e) Full address to which spares are to be sent
- (f) Method of delivery required

In the absence of specific instructions consignments will be sent by post or carrier, if it is not possible to deliver by our own transport.

Please double-check that you have ordered the correct parts and a sufficient quantity to complete the job.

Twose have a policy of continuous improvement which means that parts may be modified/replaced in the course of time due to the introduction of new materials, or improved design. The latest parts, if compatible, will be supplied whenever possible.

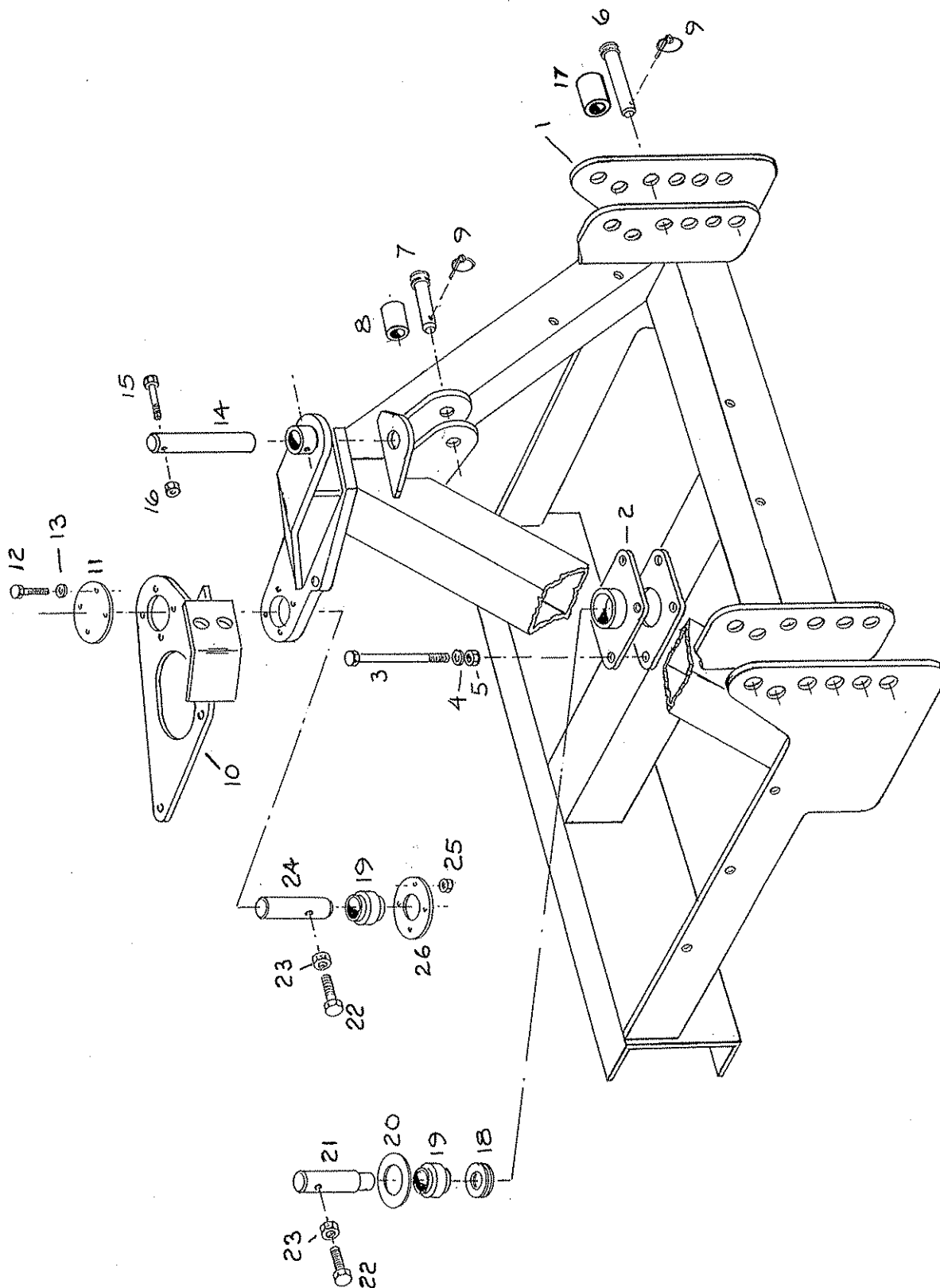
Should it become necessary to return any item for exchange or credit please state the number of our invoice or sales slip and the reason for the return.

WARRANTY AND SPARE PARTS

Enquiries regarding these machines and orders for spare parts should be addressed to:-

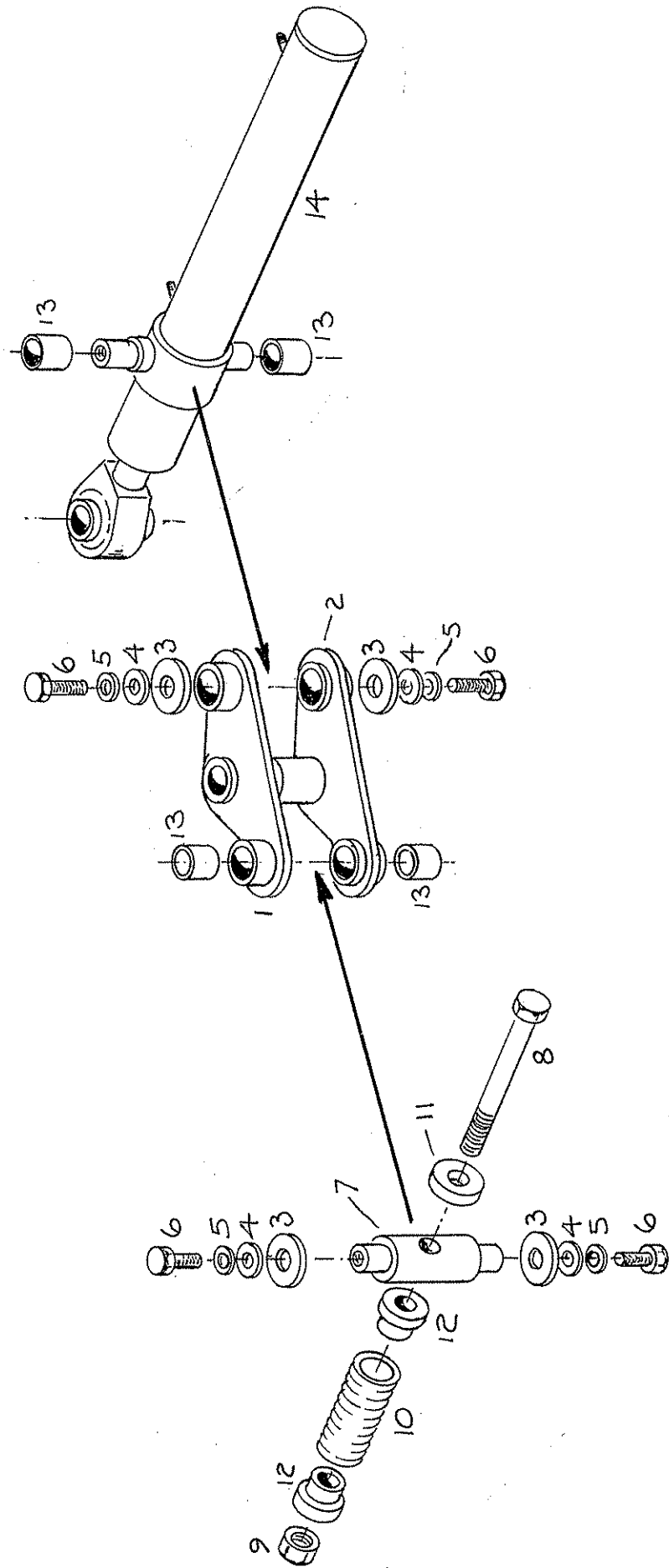
**TWOSE OF TIVERTON LIMITED
BLUNDELLS ROAD
TIVERTON
DEVON
EX16 4JT**

**TELEPHONE (01884) 253691
FAX (01884) 255189**



SUB FRAME

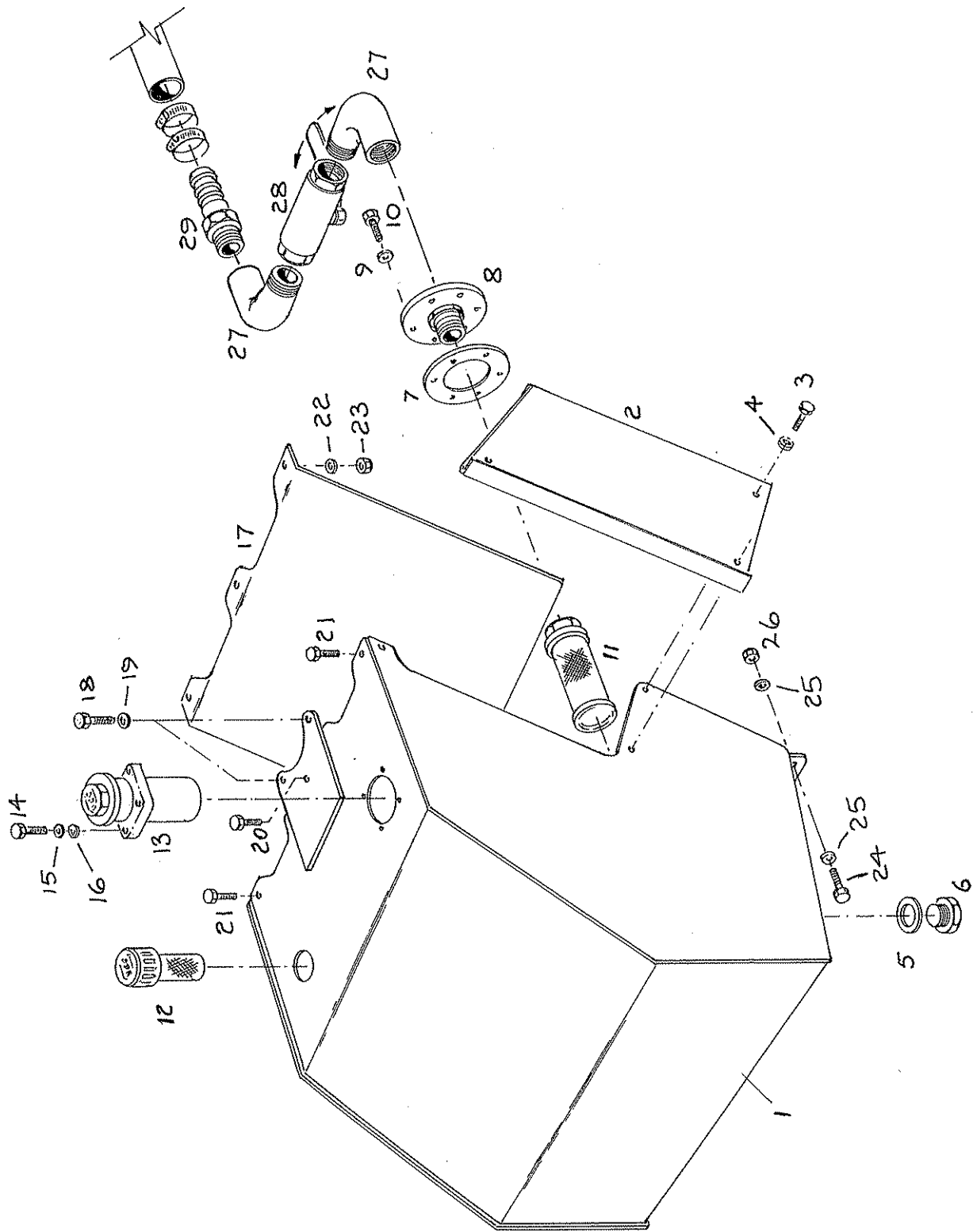
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.105	Sub frame	1
2	188.106	Bearing Housing	1
3	4398	Bolt M12 x 140 (8.8)	4
4	3192	Washer M12 flat form 'C'	4
5	3082	Stiffnut M12 Nyloc	4
6	7482	Bottom link pin	2
7	2584	Top link pin	1
8	7956	Toplink sleeve (CAT1-CAT2)	1
9	0832	7/16" lynch pin	3
10	188.109	Breakback ram bracket	1
11	188.127	Cover plate disc	1
12	2962	Setscrew M12 x 35 (8.8)	4
13	2729	Spring Washer M12	4
14	188.118	Pivot pin for breakback	1
15	3262	Bolt M8 x 60 (8.8)	1
16	3182	Stiffnut M8 'Nyloc'	1
17	184.308	Lower link - spacer	2
18	7966	Thrust race	1
19	7965	Bearing 'GE 35S'	2
20	188.008	Dust ring - cover	1
21	188.015	Lower pin	1
22	2962	Setscrew M12 x 35 (8.8)	2
23	2721	Fullnut M12	2
24	188.014	Upper pin	1
25	3082	Stiffnut M12 'Nyloc'	4
26	188.126	Bearing capture disc	1
*	186.161B	Sprung top link assembly	1



BREAKBACK

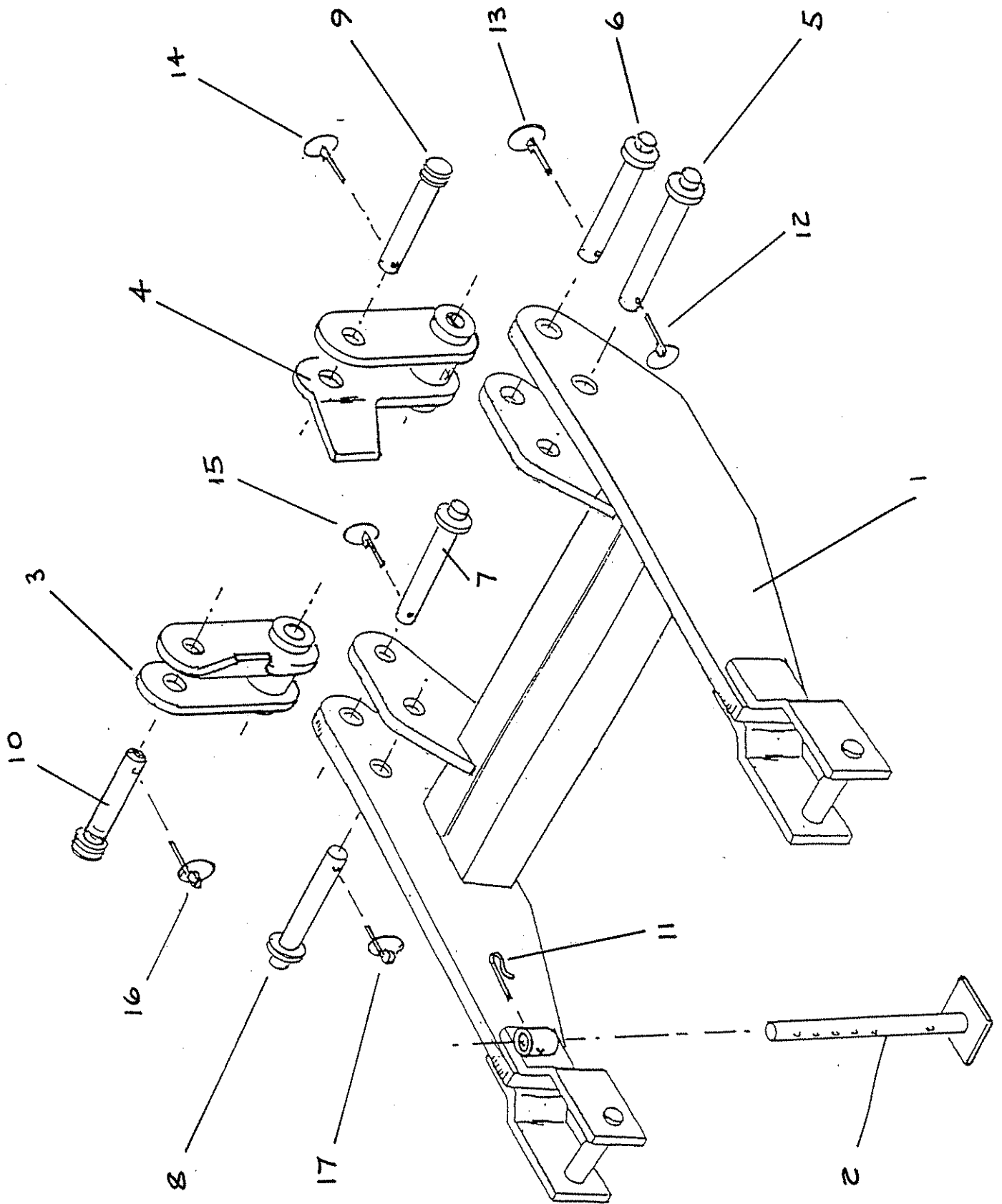
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1.	188.112A	Breakback bracket	1
2	188.112B	Breakback bracket	1
3.	186.125	Washer (special)	4
4	3219	Washer M10 'flat' (form A)	4
5	2728	Washer M10 'Spring'	4
6	2917	Setscrew M10 x 25 (8.8)	4
7	188.111	Pin 'shouldered'	1
8	8101	Bolt M24 x 280 (8.8)	1
9	2992	Stiffnut M24 'Nyloc'	1
10	7710	Spring	1
11	186.102	Washer - Special	1
12	186.103	Spacer - Special	2
13	6257G	Bush	4
14	1860088	Ram (Breakback)	1
*	1860088.1	Rod complete (spares)	
*	1860088.2	Seal Set (spares)	
*	1860088.3	Gland nut (spares)	

* Indicates not illustrated



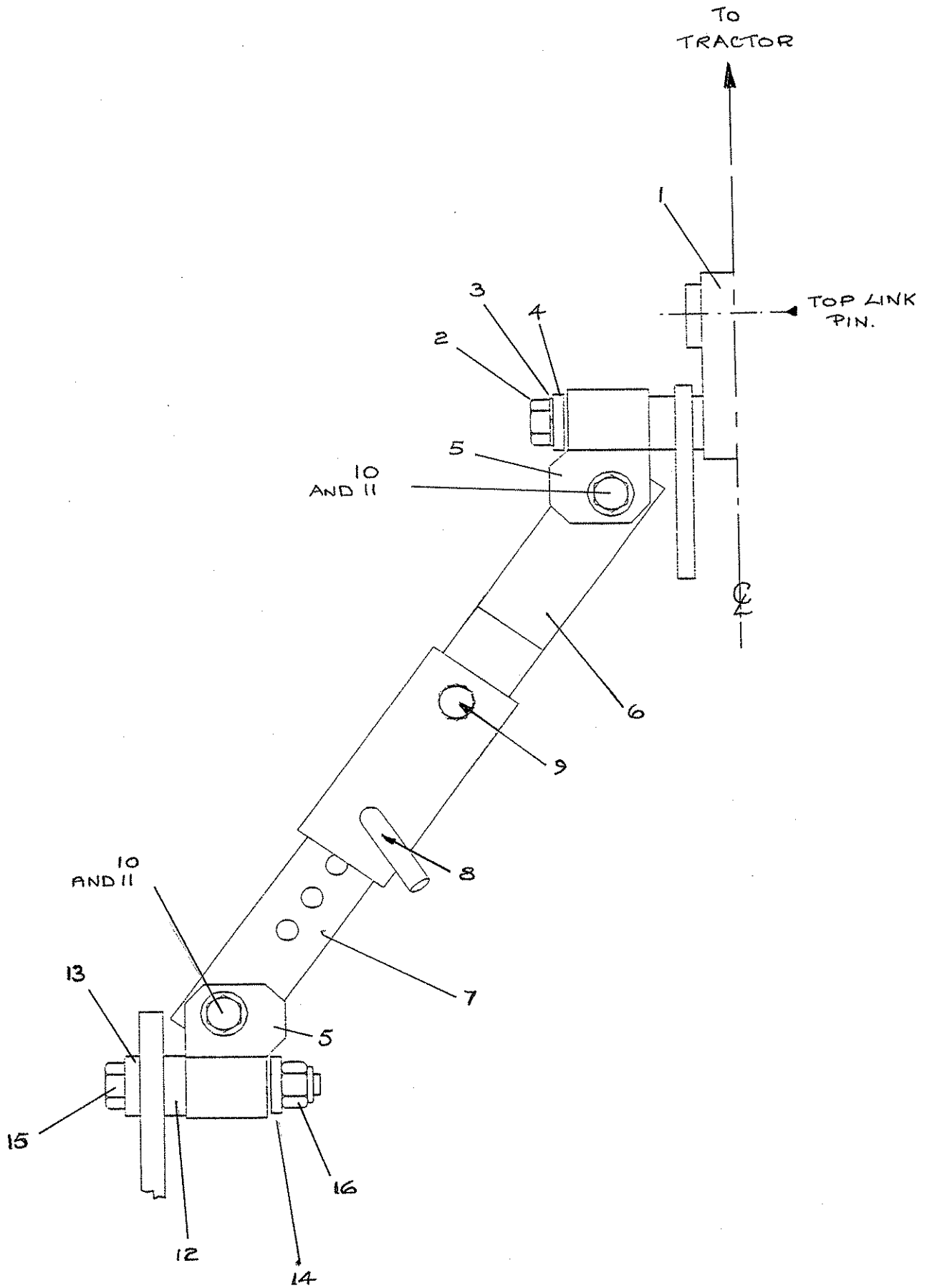
TANK

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.108	Tank Assembly	1
2	188.115A/B	Cover panels	1A & 1B
3	2793	Setscrew M8 x 20 (8.8)	6
4	3001	Spring Washer M8	6
5	3078	Seal 1 1/2" BSP	1
6	7894	Plug 1 1/2" BSP	1
7	1840402	Gasket	1
8	188.065	Strainer mounting plate	1
9	2728	Washer-Spring M10	6
10	2917	Setscrew M10 x 25 (8.8)	6
11	3717	Strainer-suction UC-SE-1324	1
12	6334	Filler-breather	1
13	7761	Filter - Tank top	1
14	3110	Setscrew M8 x 30 (8.8)	4
15	3001	Washer M8 Spring	4
16	3111	Washer M8 flat (Form 'A')	4
17	188.135	Valve plate	1
18	2962	Setscrew M12 x 35 (8.8) }	2
19	3192	Washer 'flat' M12 (form 'C') }	2
*	3082	Stiffnut M12 Nyloc (for 2962) }	2
20	2987	Setscrew M8 x 25 (8.8)	1
21	2793	Setscrew M8 x 20 (8.8)	2
22	3111	Washer 'flat' M8 (form A)	3
23	3182	Stiffnut M8 'Nyloc'	3
24	2962	Setscrew M12 x 35 (8.8)	3
25	3192	Washer 'flat' M12 (form C)	6
26	3082	Stiffnut M12 'Nyloc'	3
27	8002	Elbow 1 1/2" BSP M/FM 90°	2
28	7619	Tap 1 1/2" BSP	1
29	7999	Hose connector 1 1/2" BSP	1



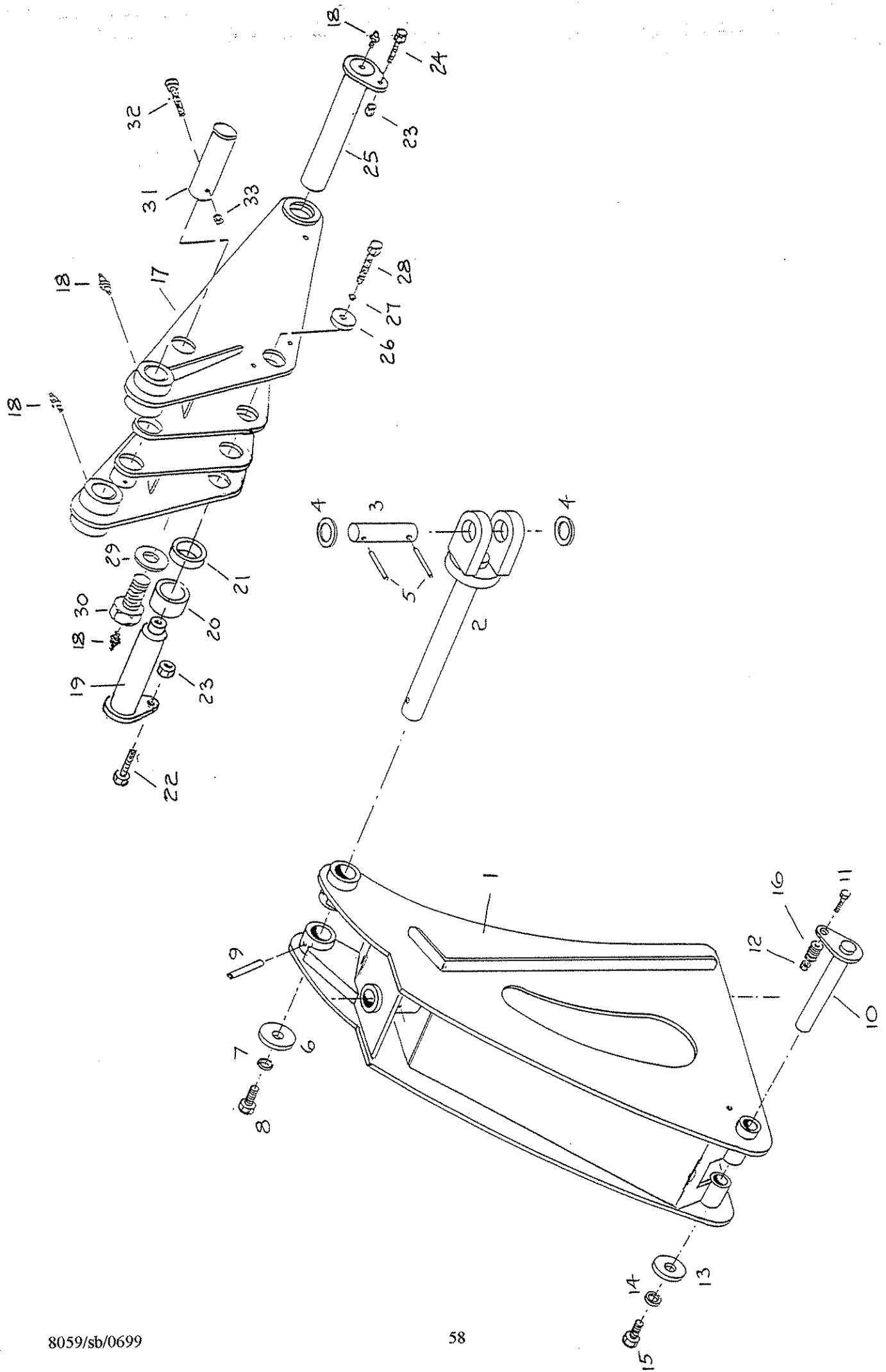
SUB FRAME ATTACHMENT BRACKET
52S, 58S AND 526

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	186.165	'A' Frame	1
2	186.166	Stand	1
3	186.164L	Swing link bracket	1
4	186.164R	Swing link bracket	1
5	186.172	Pin	1
6	186.172	Pin	1
7	186.172	Pin	1
8	186.172	Pin	1
9	7482	Left Pin	1
10	7482	Right Pin	1
11	0806	'R' Clip	1
12	0832	7/16" Linch Pin	1
13	0832	7/16" Linch Pin	1
14	0832	7/16" Linch Pin	1
15	0832	7/16" Linch Pin	1
16	0832	7/16" Linch Pin	1
17	0832	7/16" Linch Pin	1



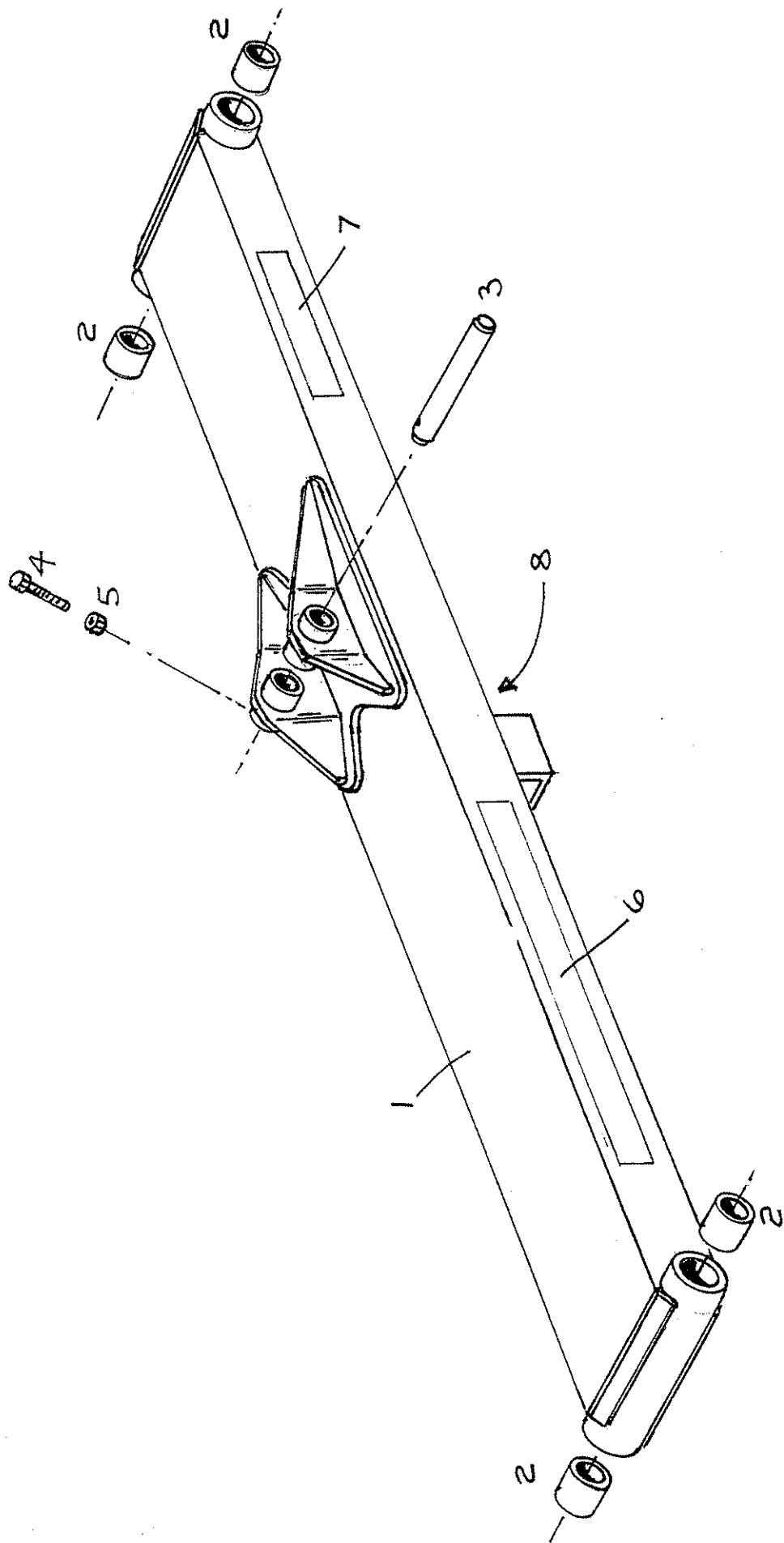
STABILISER KIT (52S OR 58S ONLY)
NON SUB-FRAME MOUNTED MACHINES

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.435A/B	Top link coupler (Nose bracket)	1A or 1B
*	2584	Pin (linkage) 1" Dia (to tractor)	1
2	2892	Setscrew M16 x 40 (8.8)	2
3	2730	Washer 'Spring' M16	2
4	186.436	Washer 'Special' M16	2
5	184.430	Anchor bracket	4
6	184.431	Box - stabiliser	2
7	184.432	Inner slide	2
or	184.524	Inner slide	2
8	184.437	Pin	2
9	3904	Setscrew M20 x 45 (8.8)	2
10	2705	Bolt M20 x 75	4
11	3732	Stiffnut M20 'Nyloc'	4
12	187.053A	Lift pin - stabiliser	2
13	184.436	Washer M16 'special'	2
14	185.096	Washer M16 'special'	2
15	2864	Bolt M16 x 100 (8.8)	2
16	3747	Stiffnut M16 'Nyloc'	2



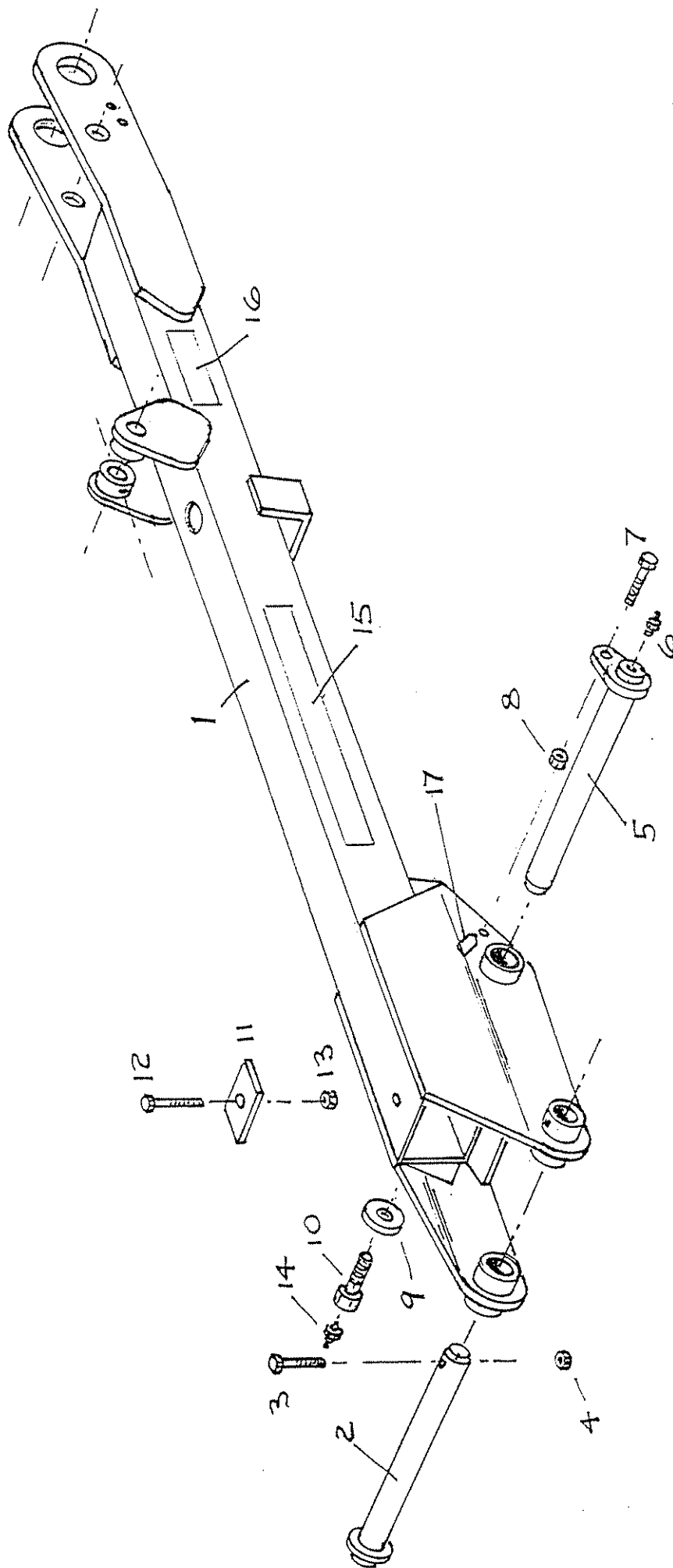
SPINE/ROCKER

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.107	Spine assembly	1
2	188.116	Main pivot pin	1
3	188.117	Pin for breakback ram (Rod end)	1
4	3770	Washer	2
5	3714	Spring pin M10 x 60	2
6	184.403	Washer (special)	1
7	2729	Washer M12 Spring	1
8	2962	Setscrew M12 x 35 (8.8)	1
9	8013	Spirol 'spring pin'	1
10	188.144	Pin (1st ram anchor)	1
11	3059	Setscrew M10 x 35 (8.8)	1
12	4421	Stiffnut M10 (Nyloc)	1
13	184.403	Washer (Special)	1
14	2729	Washer M12 Spring	1
15	2962	Setscrew M12 x 35 (8.8)	1
16	3332	Washer M10 form 'C' (packers)	5
17	184.422	Rocker	1
18	2923	Grease Nipple M10 x 1.5	4
19	188.129	Pin (1st ram 'rod')	1
20	188.132B	Spacer 'Long'	1
21	188.132A	Spacer 'Short'	1
22	2710	Setscrew M10 x 30 (8.8)	1
23	4421	Stiffnut M10 'Nyloc'	2
24	3059	Setscrew M10 x 35 (8.8)	1
*		Washer M10 flat (for 184.065)	5
25	184.065	Pin 1st Boom	1
26	184.403	Washer M12 'Special'	1
27	2729	Washer M12 Spring	1
28	2962	Setscrew M12 x 35 (8.8)	1
29	184.098	Washer M25 'Special'	1
30	184.089	Special Setscrew M24 x 40	1
31	184.238	Pin 2nd ram anchor	1
32	3133	Setscrew M10 x 50 (8.8)	1
33	4421	Stiffnut M10 Nyloc	1



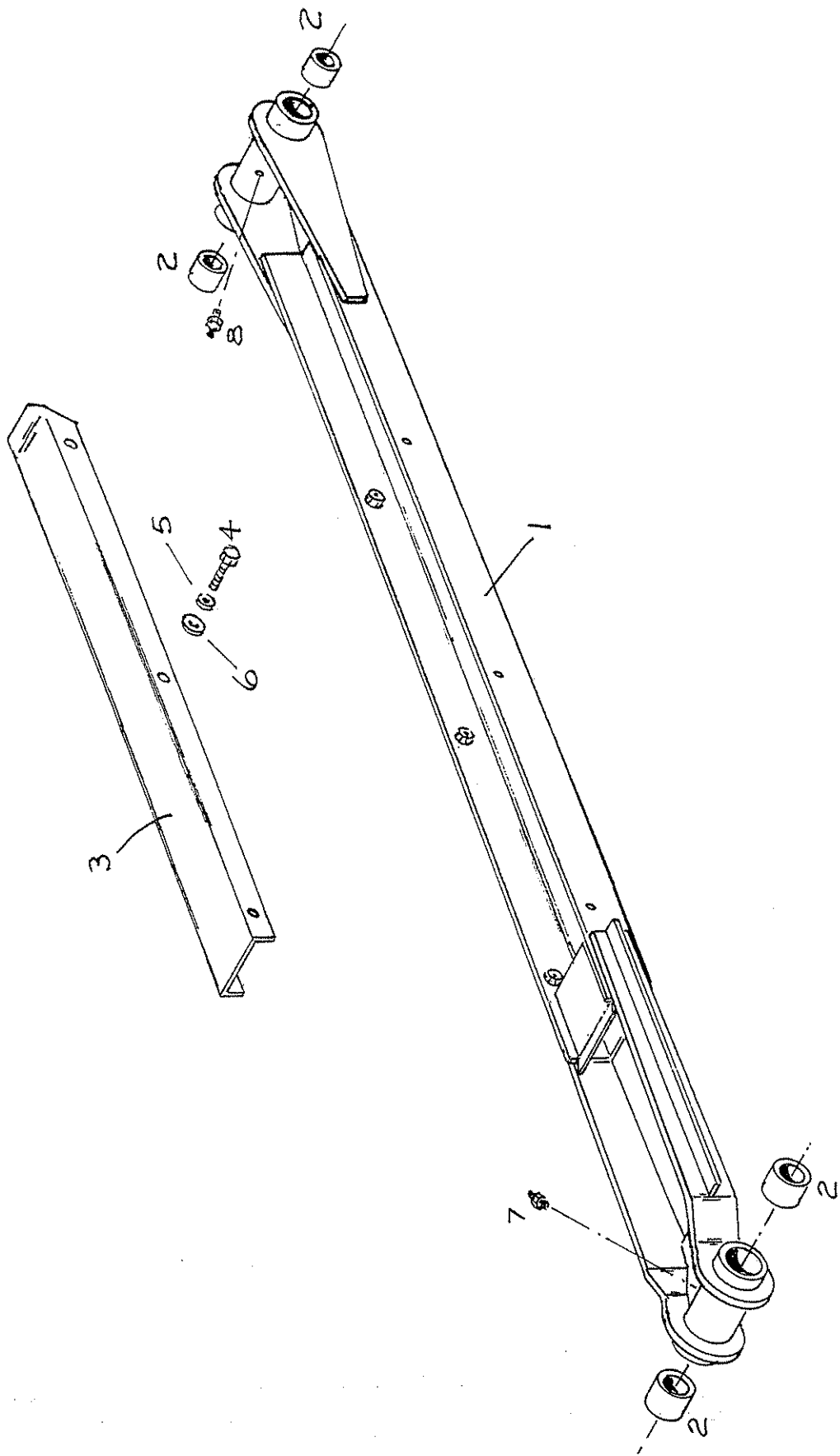
FIRST BOOM

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.551	First Boom (58S)	1
or	184.231	First Boom (52S and 526)	1
2	7488	Bush 4540M	4
3	184.604	Pin (for 2nd ram)	1
4	3262	Bolt M8 x 60 (8.8)	1
5	3182	Stiffnut M8 Nyloc	1
6	410184	Transfer “(<<<<<<<<<)”	2
7	410186	Transfer “Twose” (sm. black)	2
8	1840209	Transfer “Close Boom...”	1



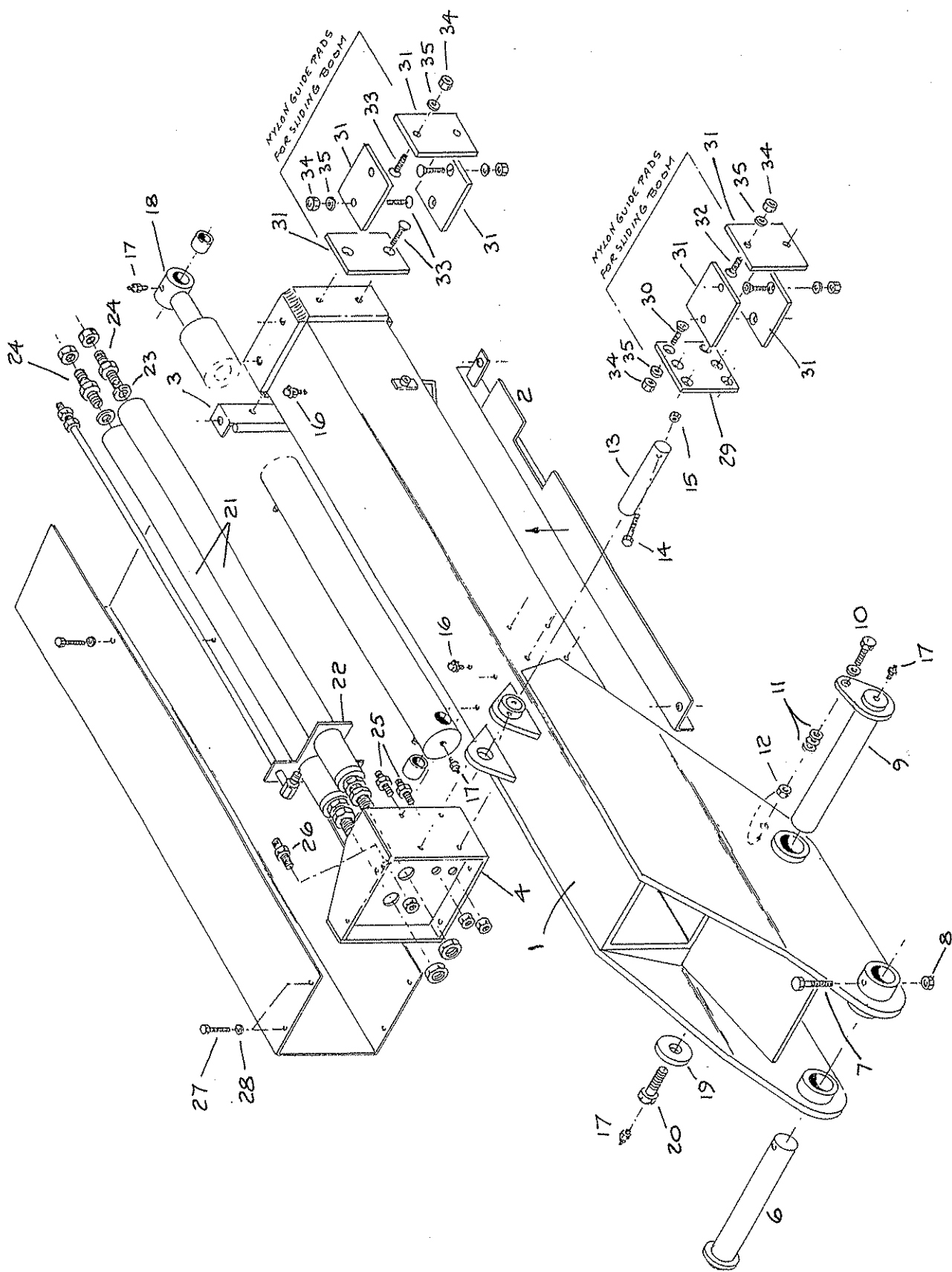
SECOND BOOM

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.552	Second Boom 58S	1
or	184.560	Second Boom 52S	1
2	184.555	Pin 45 Dia EN8 x 325	1
3	3191	Setscrew M8 x 75 (8.8)	1
4	3182	Stiffnut M8 Nyloc	1
5	184.065	Pin-First Boom	1
6	2923	G Nipple M10 x 1.5	1
7	2710	Setscrew M10 x 30 (8.8)	1
8	4421	Stiffnut M10 Nyloc	1
9	184.098	Washer 25 ID	1
10	184.089	Setscrew M24 x 40 (Tapped)	1
11	184.495	Clamp Strip	1
12	2942	Bolt M10 x 55 (8.8)	1
13	4421	Stiffnut M10 Nyloc	1
14	2923	G Nipple M10 x 1.5	1
15	410184	Transfer “<<<<<<<<<“	2
16	410186	Transfer “Twose” (sm. black)	2
17	410201	Transfer “Grease-gun”	2



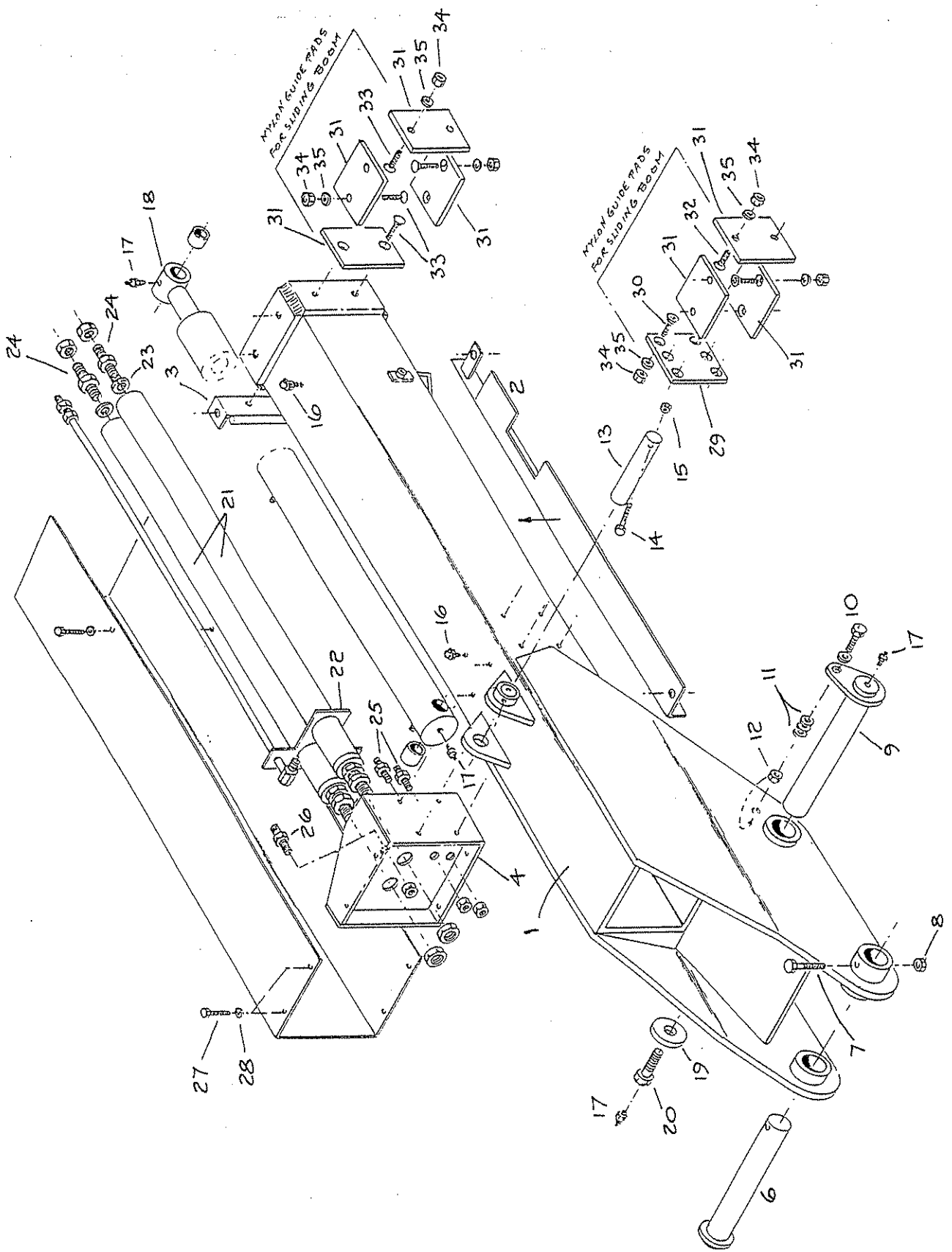
TIE ARM

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.553	Tie Arm - 58S	1
or	184.562	Tie Arm - 52S and 526	1
2	7488	Bush 4540M	4
3	184.554	Pipe guard - 58S	1
or	184.563	Pipe guard - 52S and 526	1
4	3731	Setscrew M8 x 16 (8.8) for 184.563	6
or	3731	Setscrew M8 x 16 (8.8) for 184.554	8
5	3001	Washer M8 Spring for 184.563	6
or	3001	Washer M8 Spring for 184.554	8
6	3111	Washer M8 (Form 'A') for 184.563	6
or	3111	Washer M8 (Form 'A') for 184.554	8
7	2923	Grease Nipple M10 x 1.5	1
8	2923	Grease Nipple M10 x 1.5	1



SECOND BOOM (526)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.077	Second Boom	1
2	188.143L/R	Telescopic Hose Guide	1L or 1R
3	188.079	Guard bracket	1
4	188.101	Bracket for steel tele-pipes	1
5	188.084	Guard	1
6	184.555	Pin tie arm to 2nd boom	1
7	7041	Bolt M8 x 75 (8.8)	1
8	3182	Stiffnut M8 'Nyloc'	1
9	184.065	Pin '1st boom - 2nd boom'	1
10	3059	Setscrew M10 x 35 (8.8)	1
11	3332	Washer - flat M10 'form C' (spacers)	5
12	4421	Stiffnut M10 'Nyloc'	1
13	186.072	Crowd ram pin (Anchor end)	1
14	3262	Bolt M8 x 60 (8.8)	1
15	3182	Stiffnut M8 'Nyloc'	1
16	2944	Grease Nipple M10 (90°)	2
17	2923	Grease nipple M10 straight	4
18	1860089	Ram - boom extension	1
*	1860089.1	Seal set complete	} Spares
*	1860089.2	Rod complete	} for
*	1860089.3	Gland nut	} ram
*	5178	Bush for ram	} 1860089
19	184.098	Washer (Special)	1
20	184.089	Setscrew (Special) M24 x 40 tapped	1
21	1880085	Hydraulic 'Tele' Tube	2
*	1880085.1	Seal set complete	} Spares
*	1880085.2	Rod complete	} for
*	1880085.3	Gland nut	} Ram 1880085
22	188.082	Steel pipe guide (Tele)	1
23	0934	Seal 3/4" BSP	2
24	8085	Bulkhead fitting 3/4" BSP	2

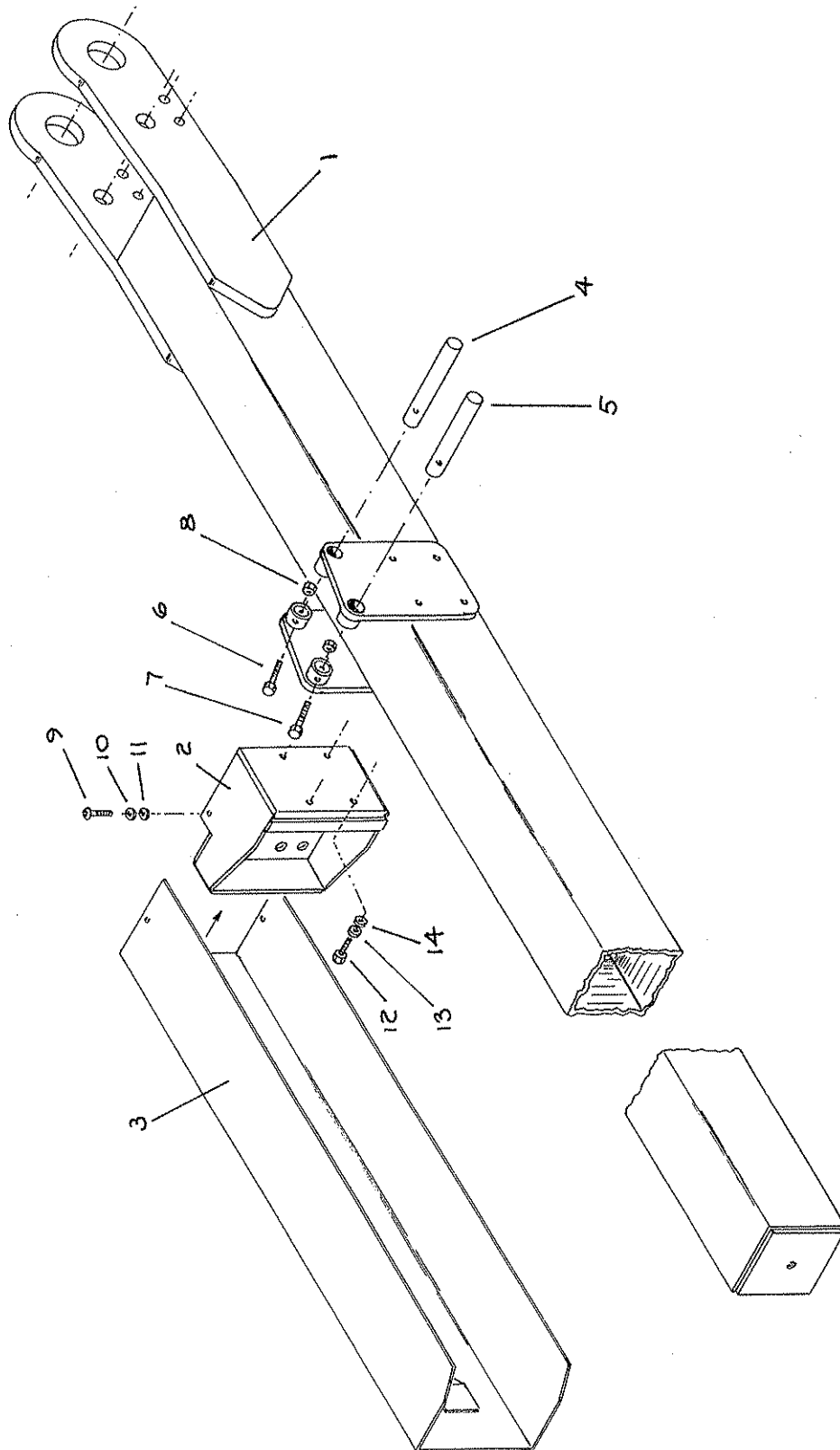


SECOND BOOM (526)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
25	8071	Bulkhead fitting 1/4" BSP	2
26	8072	Bulkhead fitting 3/8" BSP	1
27	2793	Setscrew M8 x 20 (8.8)	6
28	3001	Washer Spring M8	6
29	188.099	Nylaplas wear pad	1
30	8086	Setscrew M10 x 45 C/SK (to 188.099)	4
31	1860097	Nylaplas wear bar	7
32	7886	Setscrew M10 x 25 C/SK (to 1860097)	6
33	7910	Setscrew M10 x 35 C/SK (to 1860097)	8
34	4421	Stiffnut M10 (Nyloc)	18
35	3332	Washer Flat M10	18

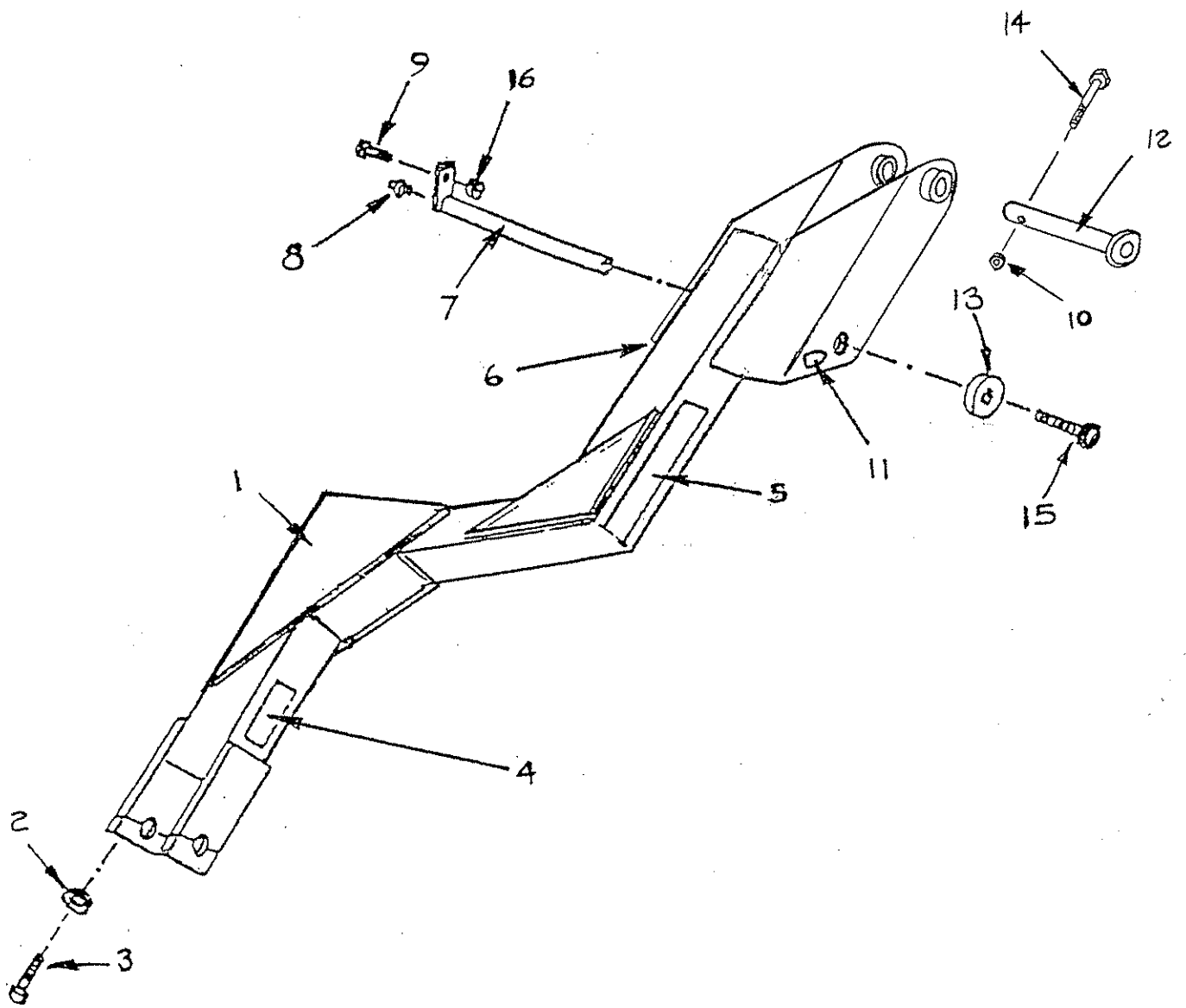
SHIMS FOR WEAR PAD ADJUSTMENT

*	186.188A (.95)	as required
*	186.188B (1.2)	as required
*	186.188C (1.6)	as required



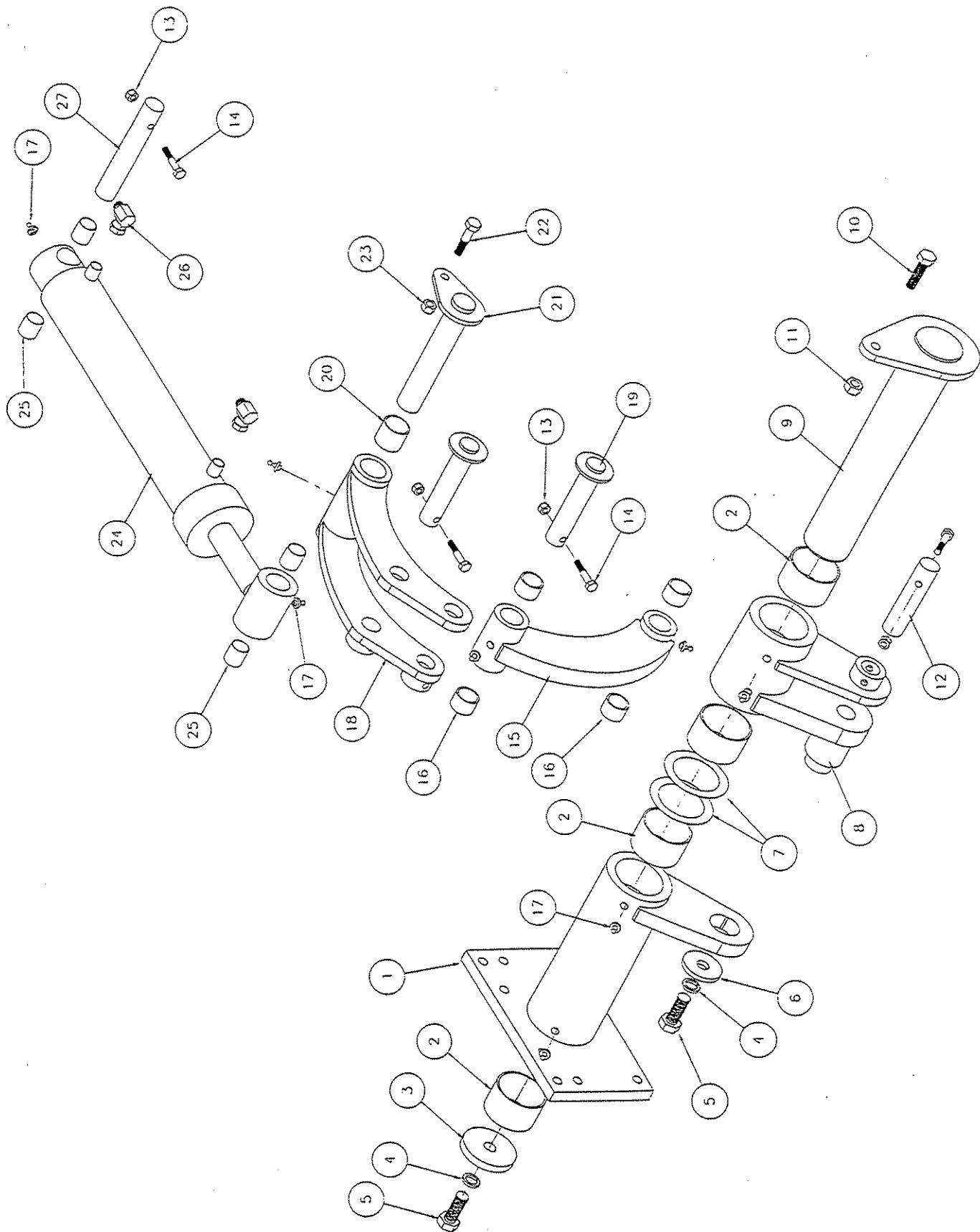
TELESCOPIC BOOM (526)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.078	Extending boom	1
2	188.102	Bracket for steel tele pipes	1
3	188.083	Guard	1
4	184.492C	Pin (Crowd ram)	1
5	186.072	Pin (Telescopic ram)	1
6	3548	Bolt M8 x 50 (8.8)	1
7	3262	Bolt M8 x 60 (8.8)	1
8	3182	Stiffnut M8 'Nyloc'	2
9	8070	Setscrew M8 x 20 Button head	2
10	3001	Spring washer M8	2
11	3111	Flat Washer M8	2
12	2710	Setscrew M10 x 30 (8.8)	4
13	2728	Spring Washer M10	4
14	3219	Flatwasher M10	4



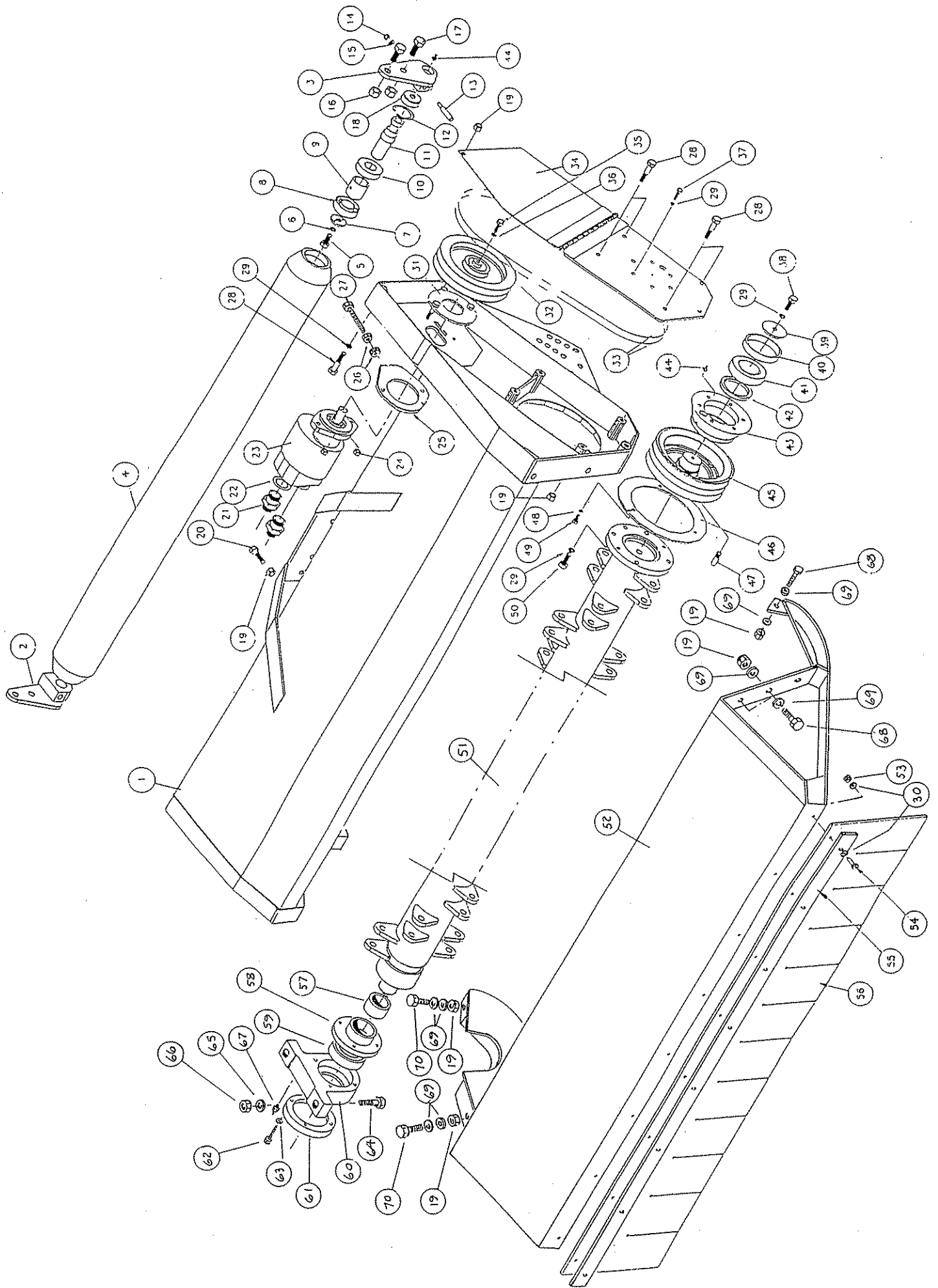
SIMPLE FORWARD BOOM
(52S AND 58S)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.412C	Second Boom	1
2	7530	Washer tab M12	4
3	2986	Bolt M12 x 80	4
4	410185	Transfer	1
5	410184	Transfer	1
6	410192	Transfer	1
7	184.065	Pin first boom	1
8	2923	Grease nipple M10	1
9	2698	Bolt M10 x 40	1
10	3182	Stiffnut M8 nyloc	1
11	410201	Transfer 'grease gun'	1
12	184.555	Pin	1
13	184.098	Washer 60 od	1
14	3191	Setscrew M8 x 75	1
15	184.089	Setscrew M24 x 40 tapped	1
16	4421	Stiffnut M10 nyloc	1



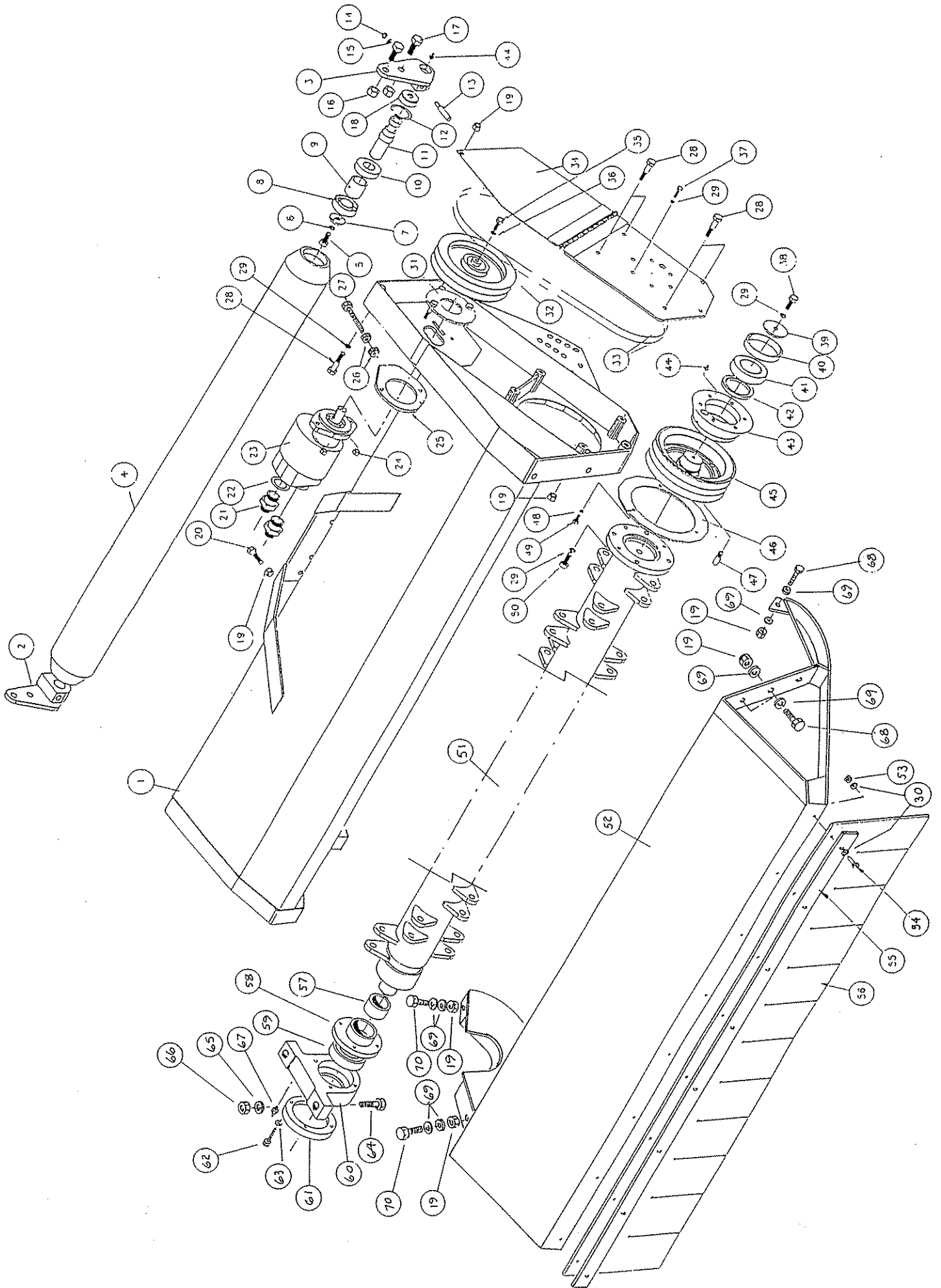
HEAD PIVOT AND LINKAGE ASSEMBLY

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.494BL	Bracket Head Long LH Machine	1
or	184.494BR	Bracket Head Long RH Machine	1
2	6935	Bush	4
3	184-488-	Washer M16 Special	1
4	2730	Washer M16 Spring	2
5	2892	Setscrew M16 * 40 (8.8)	2
6	185-096-	Washer M16 Special	1
7	184.353	Thrust Washer	2
8	184.485	Bracket Head Angle	1
9	184.600A	Pin head pivot	1
or	184.600B	Pin head pivot long	1
10	5693	Setscrew M12 * 45 (8.8)	1
11	3082	Stiffnut M12 Nyloc	1
12	184.492B	Pin	1
13	3182	Stiffnut M8 Nyloc	4
14	3548	Bolt M8 * 50 (8.8)	4
15	184.491	Banana link Assy	1
16	7854	Bush Nylon	4
17	2923	Grease Nipple M10 x 1.5	8
18	184.486	Banana Double	1
19	184.492A	Pin assembly	2
20	5178	Bush Nylon	2
21	184.483	Pin Anchor for Banana	1
22	2698	Bolt M10 * 40 (8.8)	1
23	4421	Stiffnut M10 Nyloc	2
24	1840493	Ram Head Angle	1
*	1840493.1	Seal Set (Spares)	
*	1840493.2	Rod complete (Spares)	
*	1840493.3	Gland nut (Spares)	
25	8039	Bush 2520M	4
26	6948	Adaptor 1/4 bsp M-FLN 91	2
27	184.492C	Pin	1



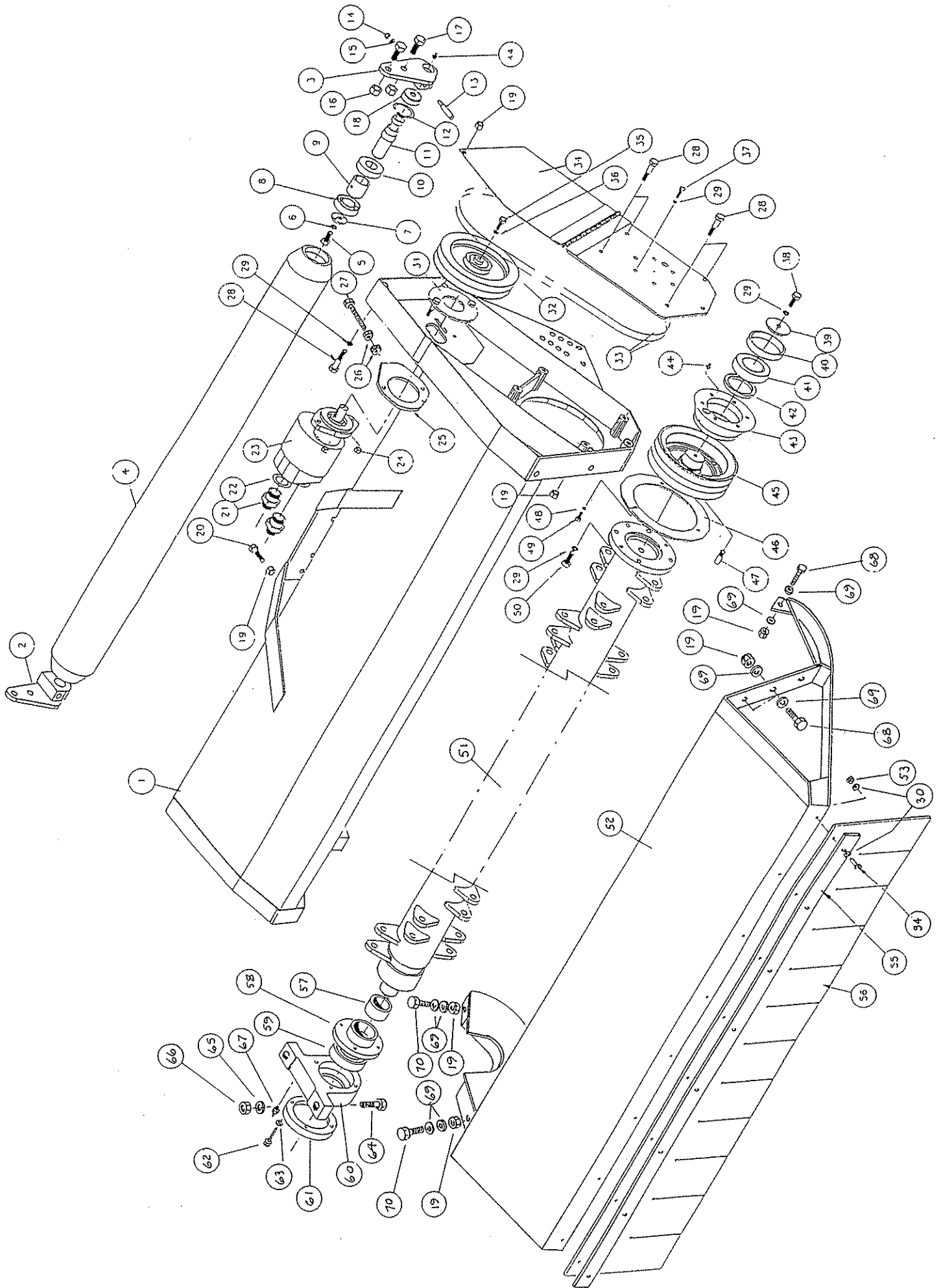
HEAD ASSEMBLY
1.2M AND 1.52M

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.615A	Head 1.2m Weld Assy	1
or	184.615B	Head 1.52m Weld Assy	1
2	184.622R	Bracket Roller RH	1
3	184.622L	Bracket Roller LH	1
4	184.621A	Roller Assy 1.2m	1
or	184.621B	Roller Assy 1.52m	1
5	2711	Setscrew M12 x 20 (8.8)	2
6	2729	Washer M12 Spring	2
7	174.006	Washer M12 Special	2
8	8029	Bearing	2
9	184.589	Spacer	2
10	7898	Bearing	2
11	184.588	Shaft Stub Roller	2
12	8030	Circlip	2
13	1840591	Cotter Pin Special 1/4"	2
14	3182	Stiffnut M8 Nyloc	2
15	3111	Washer M8 Form A	2
16	3747	Stiffnut M16 Nyloc	4
17	2901	Setscrew M16 x 35 (8.8)	4
18	184.587	Spacer 30id	2
19	3082	Stiffnut M12 Nyloc	14
20	2733	Bolt M12 x 40 (8.8)	8
21	0935	Adapter 3/4 BSP	2
22	0934	Seal 3/4"	2
23	8027	Motor Gear Type for H/T	1
24	4421	Stiffnut M10 Nyloc	2
25	184.625	Motor plate assembly	1
26	2799	Fullnut M10	2
27	8172	Setscrew M10 x 80 (8.8)	1
28	2986	Bolt M12 X 80 (8.8)	6
29	2729	Washer M12 Spring	11
30	3111	Washer M8 Form 'A' for 1.2m Head	32
or	3111	Washer M8 Form 'A' for 1.52m Head	40
31	184.463	Motor Fixing Ring	1



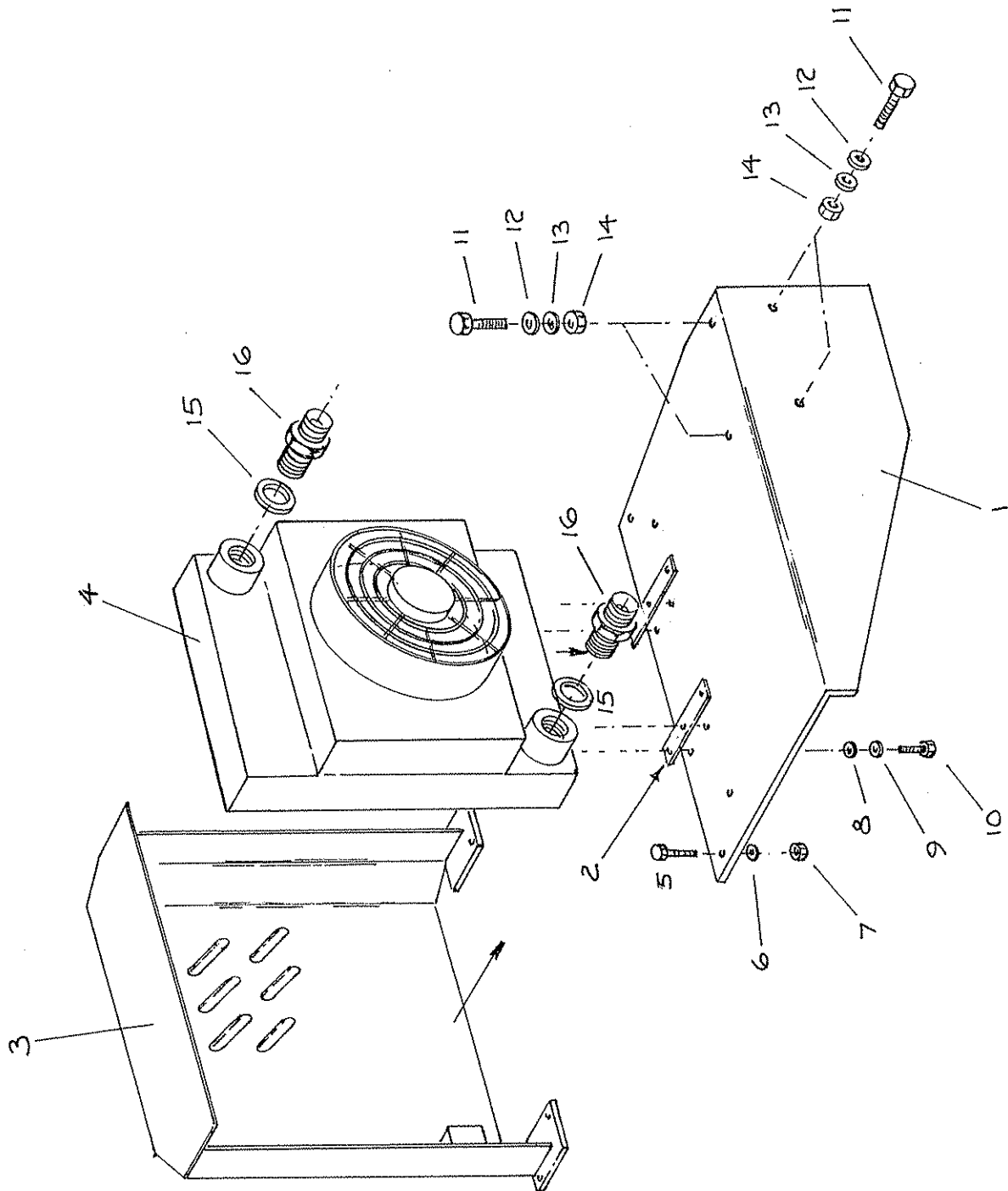
HEAD ASSEMBLY
(1.2M AND 1.52M)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
32	184.445	Pulley Motor 242 PCD	1
33	7692	Belt Vee	2
34	184.623	Drive Plate	1
35	7491	Bolt 3/8" UNF x 1"	1
36	0872	Washer Imp 3/8 Spring	1
37	2711	Setscrew M12 x 20 (8.8)	6
38	2950	Setscrew M12 x 30 (8.8)	4
39	184.461	Washer M12 Special	1
40	184.464	Spacer for Bearing	1
41	7840	Bearing	1
42	7790	Oil Seal	1
43	184.448	Bearing Housing	1
44	2923	G/Nipple M10 x 1.5	4
45	184.446	Pulley Rotor 200 PCD	1
46	184.636	Grass Ring	1
47	184.489	Dowel Pin	1
48	3001	Washer M8 Spring	3
49	2793	Setscrew M8 x 20 (8.8)	3
50	7855	Setscrew M12 x 35 FINE	4
51	184.618A	Rotor 1.2m Balanced - No flails, shackle type	1
or	184.618B	Rotor 1.52m Balanced - No flails, shackle type	1
or	184.619A	Rotor 1.2m Balanced - No flails, standard flails	1
or	184.619B	Rotor 1.52m Balanced - No flails, standard flails	1
or	184.620	Rotor 1.2m Rollicoupe Type	1
52	184.616A	Nose Weld Assy 1.2m	1
or	184.616B	Nose Weld Assy 1.52m	1
53	3182	Stiffnut M8 (for 1.2m head)	16
or	3182	Stiffnut M8 for (1.52m head)	20
54	2987	Setscrew M8 x 25 (8.8) (for 1.2m Head)	16
or	2987	Setscrew M8 x 25 (8.8) (for 1.52m Head)	20
55	184.617A	Clamp Strip for 1.2m Head	2
or	184.617B	Clamp Strip for 1.52m Head	2
56	1840476F	Curtain for 1.2m Head	2
or	1840581	Curtain for 1.52m Head	2



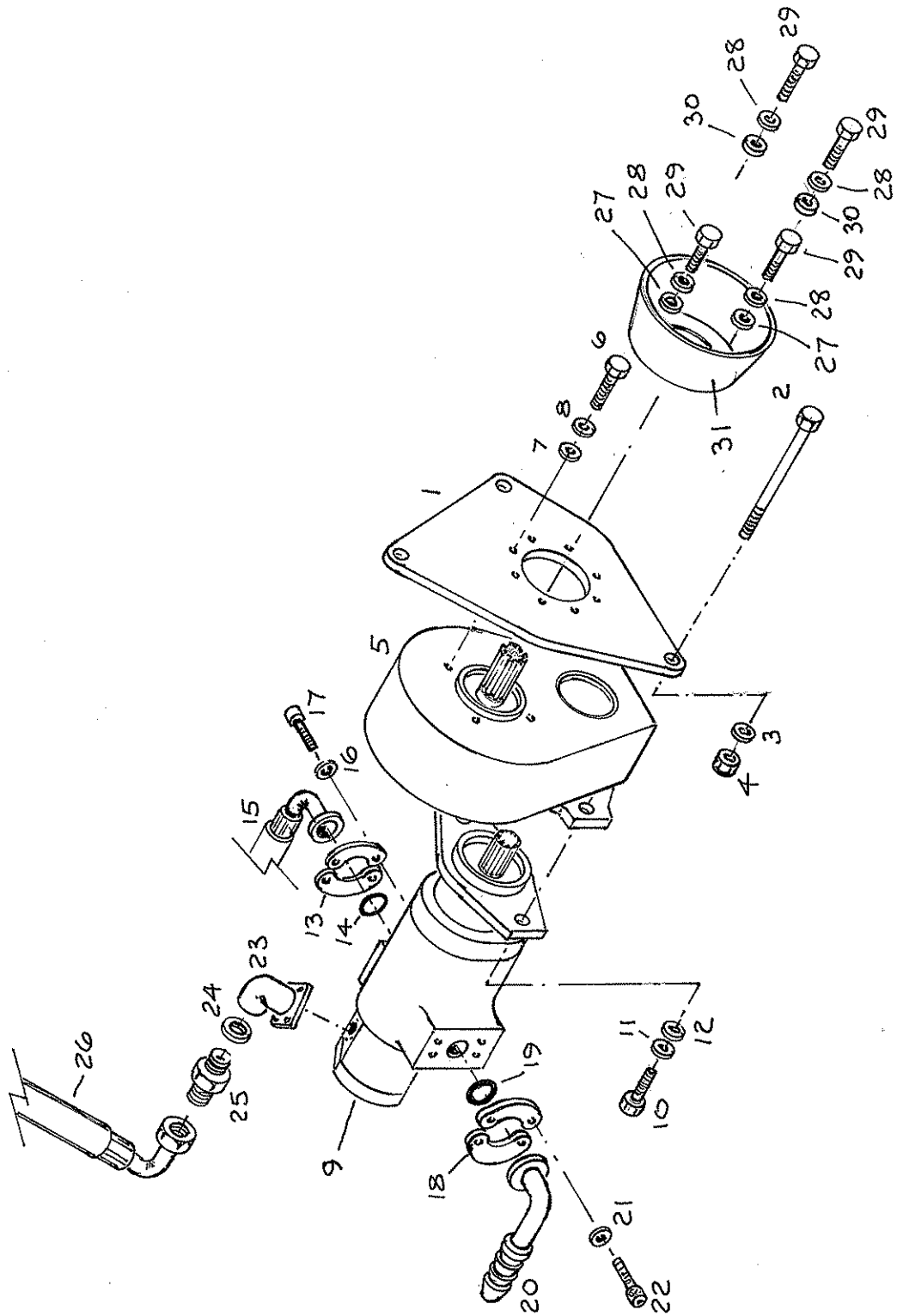
HEAD ASSEMBLY
(1.2M AND 1.52M)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
57	192.046	Spacer for bearing	1
58	192.026	Shield for Bearing	1
59	7941	Bearing	1
60	192.024	Housing for bearing	1
61	192.025	Cap for Bearing	1
62	6985	Setscrew-Socket M6 x 45 Cap	4
63	2731	Washer Spring M6	4
64	2878	Bolt M16 x 55 (8.8)	2
65	3747	Washer M16 Form 'A'	4
66	2867	Stiffnut M16	2
67	6956	Grease Nipple M6	1
68	2950	Setscrew M12 x 30 (8.8)	3
69	3192	Washer M12 Form 'C'	10
70	2962	Setscrew M12 x 35	2



HYDRAULIC - COOLER
(HI-POWER PACK)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.137L/R	Mounting bracket	1L or 1R
2	186.153	Packing piece	2
3	188.186	Guard	1
4	7950	Cooler	1
5	3110	Setscrew M8 x 30 (8.8) } for 188.186	4
6	3111	Washer M8 'Form A' } to 188.137	4
7	3182	Stiffnut M8 'Nyloc'	4
8	3111	Washer M8 'Form A' } for 7950	4
9	3001	Washer M8 Spring } to 188.137	4
10	2987	Setscrew M8 x 25 (8.8) }	4
11	2962	Setscrew M12 x 35 (8.8)	4
12	2729	Washer M12 Spring	4
13	2716	Washer M12 flat form 'A'	4
14	3082	Stiffnut M12 'Nyloc'	4
15	1934	Seal 1" BSP	2
16	2450	Adaptor 1" BSP x 1" BSP	2

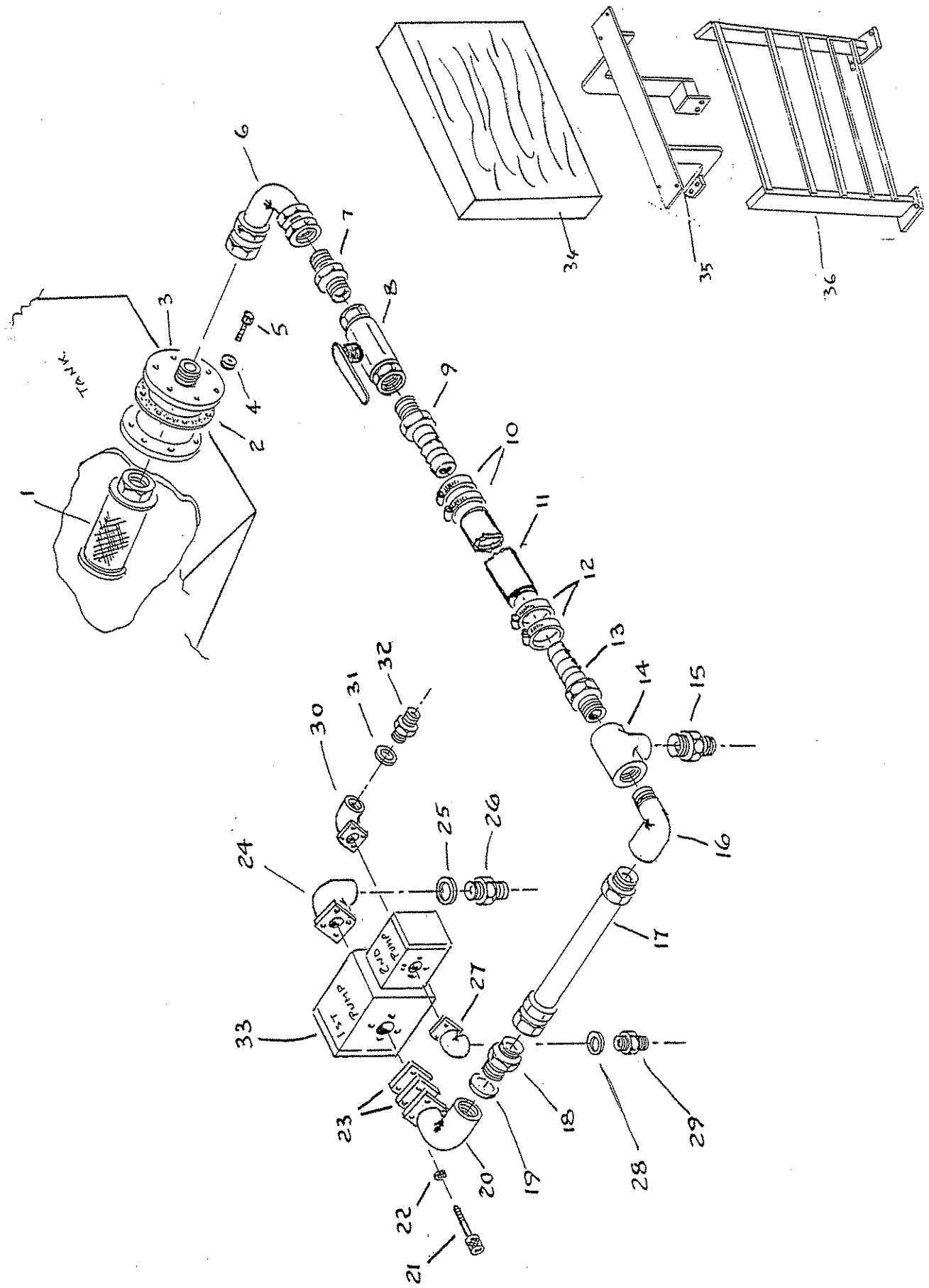


HYDRAULIC - P.T.O, GEARBOX AND PUMPS

526.

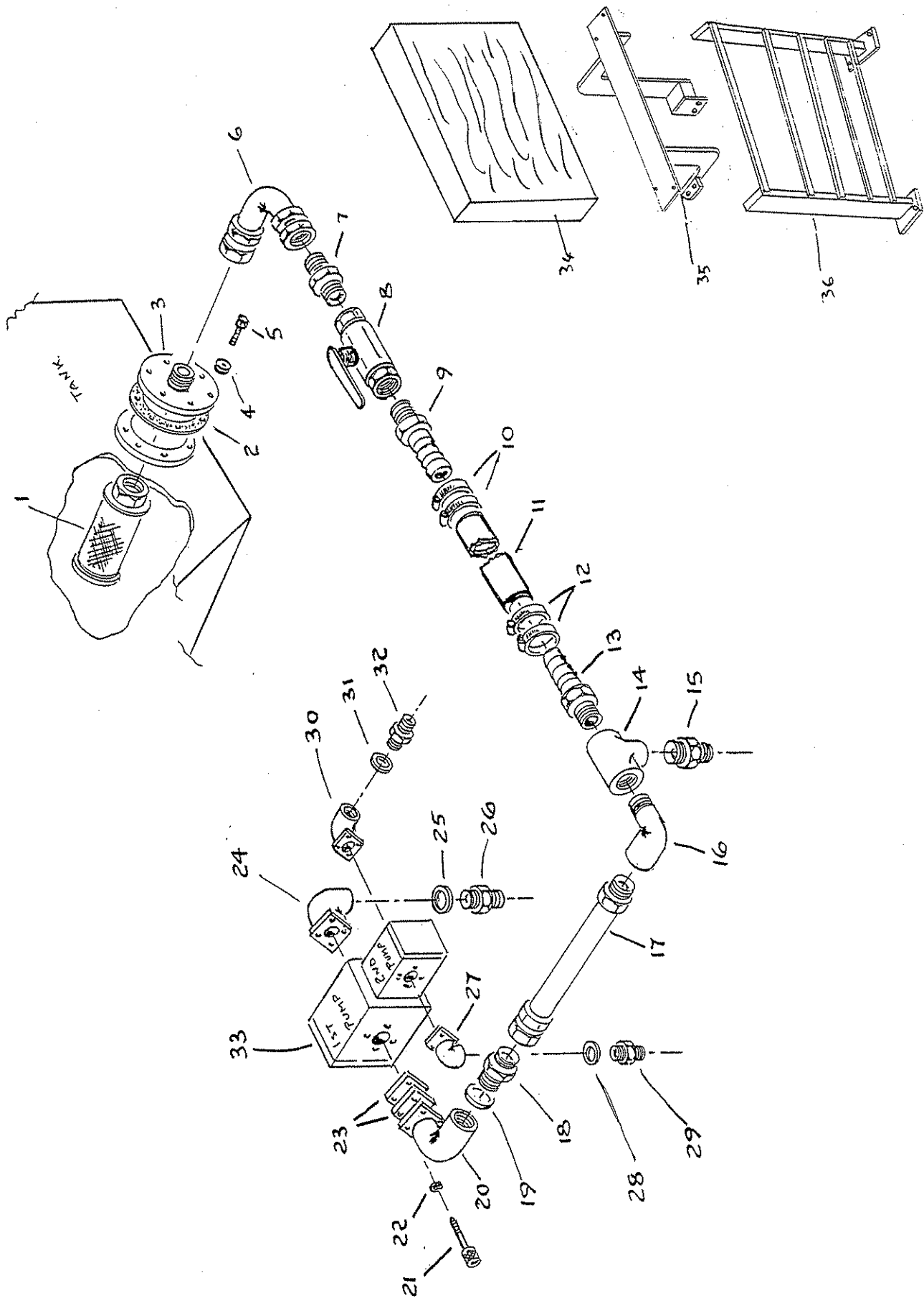
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.110	Gearbox mounting plate	1
2	4398	Bolt M12 x 140 (8.8)	3
3	2729	Washer M12 Spring	3
4	3082	Stiffnut M12 'Nyloc'	3
5	7973	PTO Gearbox 1:3.6 'HI-TON'	1
6	2950	Setscrew M12 x 30 (8.8)	4
7	2716	Washer 'flat' M12 (form A)	4
8	2729	Washer 'Spring' M12	4
9	8098(52,19)	Pumps-dual, Commercial (P350A)	1
10	3643	Setscrew M10 x 40 (8.8)	2
11	2728	Washer 'Spring' M10	2
12	3219	Washer 'Flat M10 - Form A'	2
13	7988.1	1" Split flange (Ref. RX16SFC-3)	2
14	8149	'O' Ring, 1" SAE/BS 219	1
15	004.710	Hose	1
16	2729	Washer Spring M12	4
17	4234	Setscrew M10 x 30 Caphead	4
18	7989.1	1 1/4" split flange (Ref. RX20SFC-3)	2
19	8150	'O' Ring 1 1/4 SEA/BS 222	1
20	8103	Hose-end, 1 1/2" to 1 1/4" (FL90) no ferrule	1
21	2729	Washer Spring M12	4
22	4234	Setscrew M10 x 30 Caphead	4
23	7553	Elbow, 3/4" T40/20 c/w 'O' ring and screws	1
24	0934	Seal 3/4" BSP	1
25	1834	Adaptor 3/4" BSP x 1/2" BSP	1
26	004.534	Hose 1/2" ST x 90 x 2000	1
27	3192	Washer M12 Form C	2
28	2729	Washer M12 Spring	4
29	2950	Setscrew M12 x 30 (8.8)	4
30	2716	Washer M12 Form 'A'	2
31	6385	PTO Guard	1
*	7749	PTO Shaft A5-AX5 -095P-003A-003A	

* Denotes not illustrated



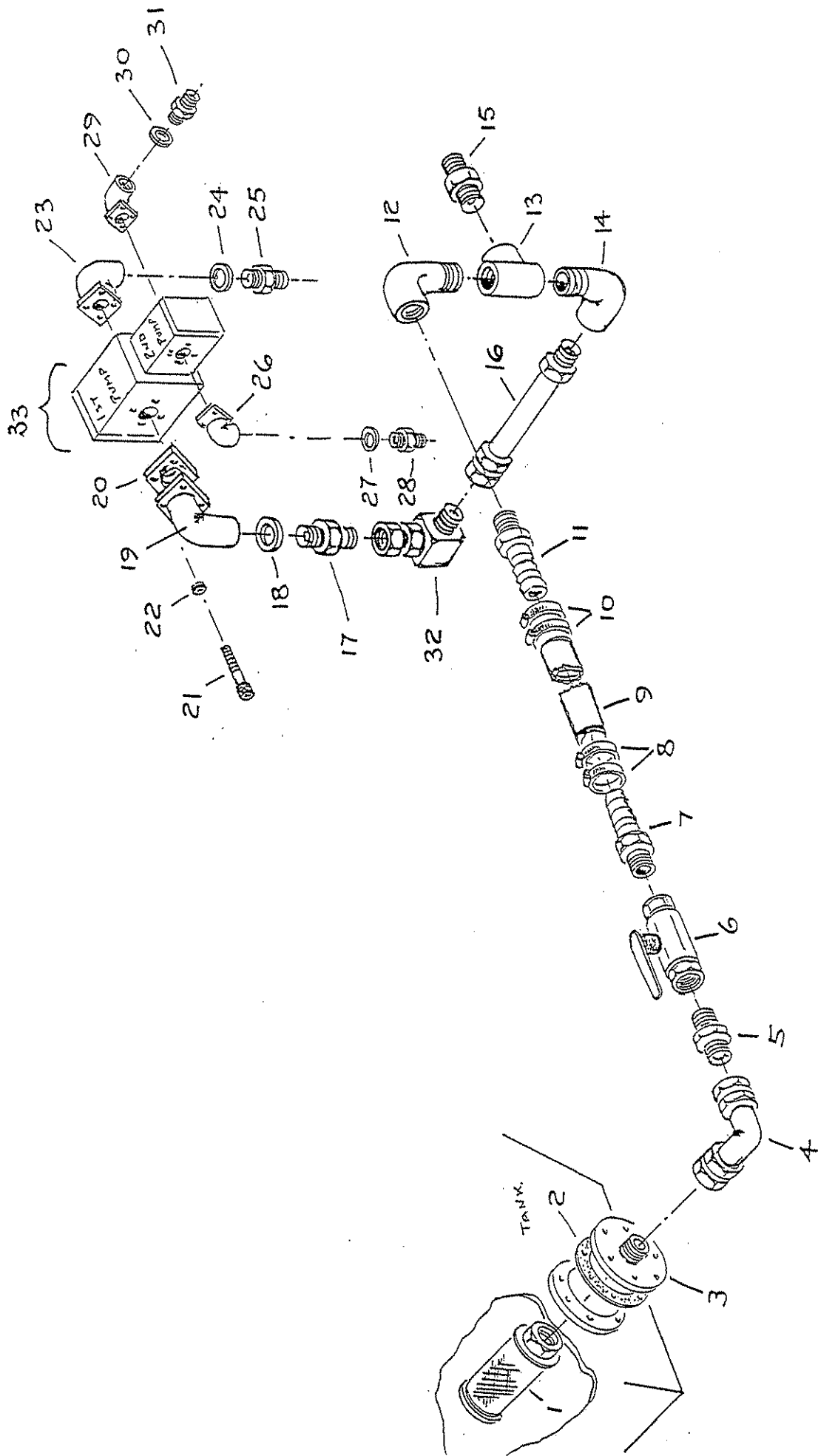
PUMPS AND SUCTION LINE 52S & 58S LEFT HAND CUT.
ULTRA TANDEM PUMPS.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
*	188.018	Tank weld assembly	1
*	6334	Filter/breather for tank	1
*	5371	Oil level gauge for tank	1
*	7753	Drain plug 1/2" Magnetic body.	2
*	0909	Seal 1/2" dowty bonded (tank drain plugs)	2
1	3717	Strainer (In tank)	1
2	1840402	Gasket	2
3	188.065	Strainer mounting bracket	2
4	2728	Washer M10 Spring	12
5	2917	Setscrew M10 * 25 (8.8)	12
6	7997	Adaptor 1.1/2" bsp FLN - FLN 90	1
7	7998	Adaptor 1.1/2" bsp	1
8	7619	Ball valve 1.1/2" bsp	1
9	7999	Hose tail 1.1/2" bsp male	1
10	7455	Hose clip	2
11	8000	Suction Hose 1.1/2"	0.75m
12	7455	Hose clip	2
13	7999	Hose tail 1.1/2" bsp male	1
14	8001	Tee 1.1/2" bsp FM	1
15	8010	Adaptor 3/4" - 1.1/2" bsp	1
16	8002	Elbow 1.1/2" bsp M - FM	1
17	188.066B	Steel pipe 1.1/2 - 1.1/4" bsp	1
18	5241	Adaptor 1.1/4" - 1 bsp	1
19	1934	Seal 1" bsp Dowty bonded	1
20	7939-E08	Elbow 1" (c/w 'o' ring)	1
21	7899	Setscrew M10 * 70 (Cap head)	3
22	2728	Washer M10 Spring	3
23	8006	Spacer block (c/w 'o' ring)	2
24	7939-E06	Elbow 3/4" bsp (c/w 'o' ring and bolts)	1
25	0934	Seal 3/4" bsp	1
26	0935	Adaptor 3/4" bsp	1
27	7939-E04	Elbow 1/2" bsp (c/w 'o' rings and bolts)	1
28	0909	Seal 1/2" bsp	1
29	1834	Adaptor 1/2" - 3/4" bsp	1
30	7939-E04	Elbow 1/2" bsp (c/w 'o' rings and bolts)	1
31	0909	Seal 1/2" bsp	1
32	1826	Adaptor 1/2" bsp	1



PUMPS AND SUCTION LINE 52S & 58S LEFT HAND CUT.
ULTRA TANDEM PUMPS.
CONTINUED

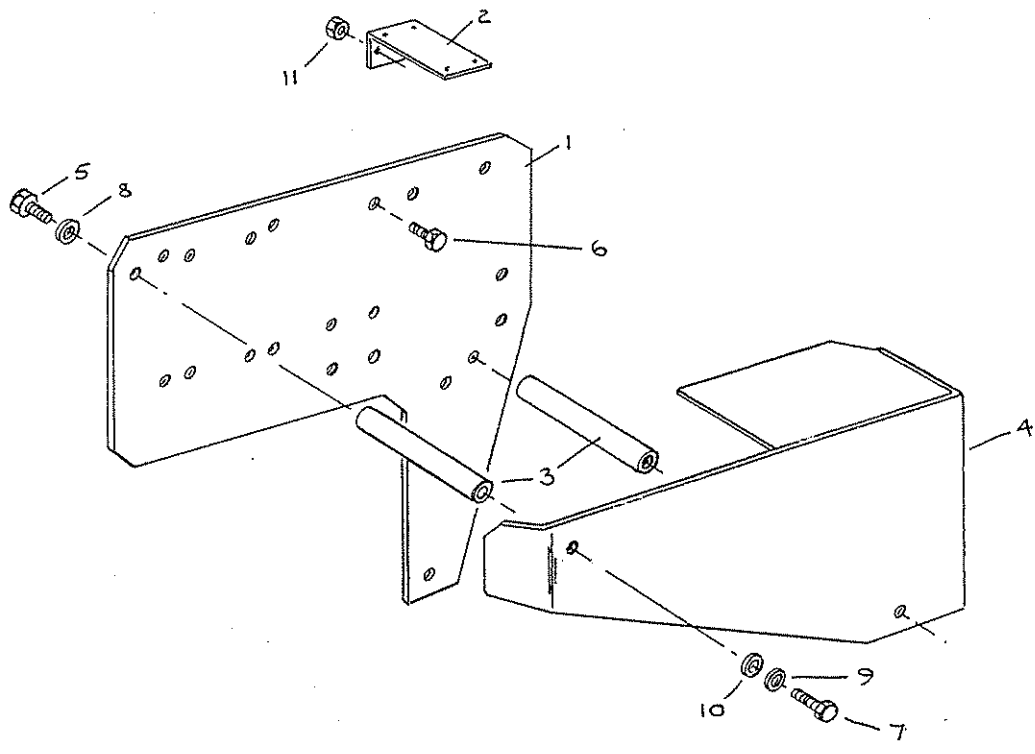
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
33	7939(50.14.0)	Pump assembly (ultra)	1
*	7556	PTO Gearbox ML 52 1: 3/4	1
*	2950	Setscrew M12 * 30	4
*	2729	Spring washer M12	4
*	5639	Setscrew M10 * 40 Caphead pump - Gbox	4
*	2728	Washer M10 spring (pump - Gearbox)	4
*	2716	Washer M10 (pump gearbox)	4
*	7551	Drive coupling GR3 taper (pump drive)	1
34	7950	Cooler + Fan (c/w mounting screws)	1
35	188.095	Cooler bracket	1
*	5693	Setscrew M12 x 45	2
*	3082	Stiffnut M12 Nyloc	2
*	3133	Setscrew M10 x 50	2
*	4421	Stiffnut M10 Nyloc	2
36	186.151	Cooler 'Guard frame'	1
*	2793	Setscrew M8 x 20	4
*	3182	Stiffnut M8 Nyloc	4



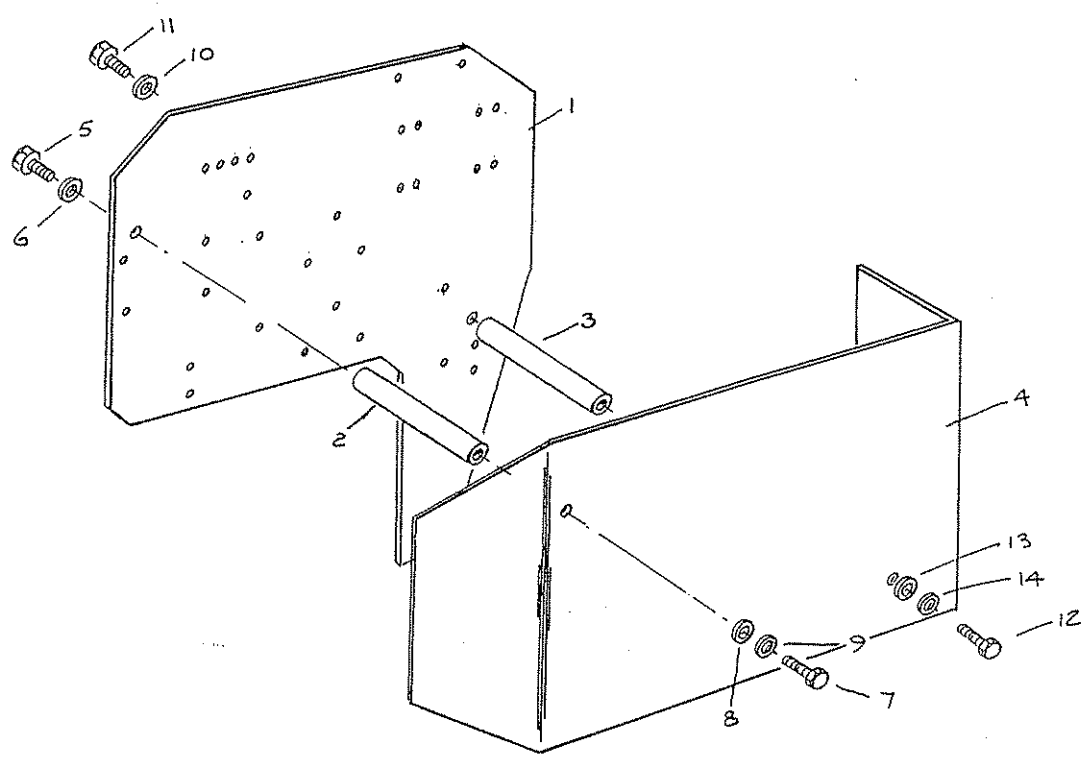
PUMPS AND SUCTION LINE 52S & 58S RIGHT HAND CUT.
ULTRA TANDEM PUMPS.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
*	188.018	Tank weld assembly	1
*	6334	Filter/breather for tank	1
*	5371	Oil level gauge for tank	1
*	7753	Drain plug 1/2" Magnetic body.	2
*	0909	Seal 1/2" dowty bonded (tank drain plugs)	2
1	3717	Strainer (In tank)	1
2	1840402	Gasket	2
3	188.065	Strainer mounting bracket	2
*	2728	Washer M10 Spring	12
*	2917	Setscrew M10 * 25 (8.8)	12
4	7997	Adaptor 1.1/2" bsp FLN - FLN 90	1
5	7998	Adaptor 1.1/2" bsp	1
6	7619	Ball valve 1.1/2" bsp	1
7	7999	Hose tail 1.1/2" bsp male	1
8	7455	Hose clip	2
9	8000	Suction Hose 1.1/2"	0.75m
10	7455	Hose clip	2
11	7999	Hose tail 1.1/2" bsp male	1
12	8002	Elbow 1.1/2" bsp M - FM	1
13	8001	Tee 1.1/2" bsp FM	1
14	8002	Elbow 1.1/2" bsp M - FM	1
15	8010	Adaptor 3/4" - 1.1/2" bsp	1
16	188.066A	Steel pipe 1.1/2 - 1.1/4" bsp	1
17	5241	Adaptor 1.1/4" - 1 bsp	1
18	1934	Seal 1" bsp Dowty bonded	1
19	7939-E08	Elbow 1" (c/w 'o' ring)	1
20	8006	Spacer block (c/w 'o' ring)	2
21	7899	Setscrew M10 * 70 (Cap head)	3
22	2728	Washer M10 Spring	3
23	7939-E06	Elbow 3/4" bsp (c/w o ring and bolts)	1
24	0934	Seal 3/4" bsp	1
25	0935	Adaptor 3/4" bsp	1
26	7939-E04	Elbow 1/2" bsp (c/w o rings and bolts)	1
27	0909	Seal 1/2" bsp	1
28	1834	Adaptor 1/2" - 3/4" bsp	1
29	7939-E04	Elbow 1/2" bsp (c/w o rings and bolts)	1
30	0909	Seal 1/2" bsp	1
31	1826	Adaptor 1/2" bsp	1
32	7980	Adaptor 1.1/4" bsp M - FLN 91	1
33	7939(50.14.0)	Pump assembly (ultra)	1
*	7556	PTO Gearbox ML 52 1: 3/4	1
*	2950	Setscrew M12 * 30	4
*	2729	Spring washer M12	4
*	5639	Setscrew M10 * 40 Caphead pump - Gbox	4
*	2728	Washer M10 spring (pump - Gearbox)	4
*	2716	Washer M10 (pump gearbox)	4
*	7551	Drive coupling GR3 taper (pump drive)	1

VALVE PLATE AND COVER PANEL 52S WITH HYPRO VALVE.



VALVE PLATE AND COVER PANEL 52S & 58S WITH DANFOSS, VMA & V3.

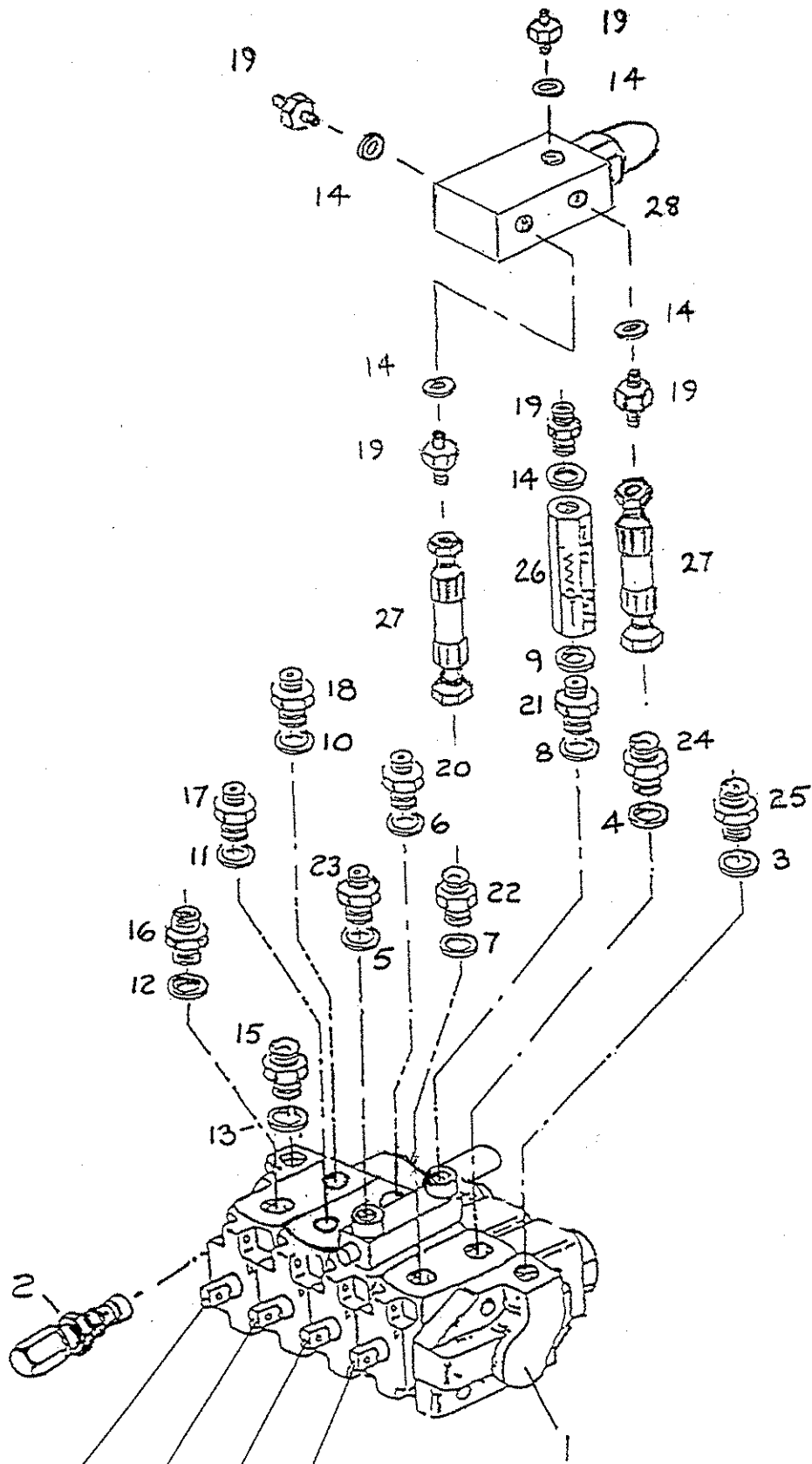


VALVE PLATE AND COVER PANEL 52S
WITH HYPRO VALVE.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.021	Valve mounting plate	1
2	186.049	Electric box bracket	1
3	186.047	Guard spacers	2
4	188.069 L or R	Valve cover panel	1
5	2793	Setscrew M8 * 20	2
6	2793	Setscrew M8 * 20	2
7	2793	Setscrew M8 * 20	2
8	3001	Washer M8 spring	2
9	3001	Washer M8 spring	2
10	3111	Washer M8	2
11	3182	Stiffnut M8 Nyloc	2

VALVE PLATE AND COVER PANEL 52S & 58S
WITH DANFOSS, VMA & V3.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.054	Valve mounting plate	1
2	188.058	Spacer for guard	1
3	188.058	Spacer for guard	1
4	188.057 L or R	Valve cover panel	1
5	2793	Setscrew M8 * 20	1
6	3001	Washer M8 spring	1
7	2793	Setscrew M8 * 20	1
8	3111	Washer M8	1
9	3001	Washer M8 spring	1
10	2793	Setscrew M8 * 20	1
11	3001	Washer M8 spring	1
12	2793	Setscrew M8 * 20	1
13	3111	Washer M8	1
14	3001	Washer M8 spring	1



SECOND BOOM

HEAD ANGLING

MAIN RAM

BREAKBACK

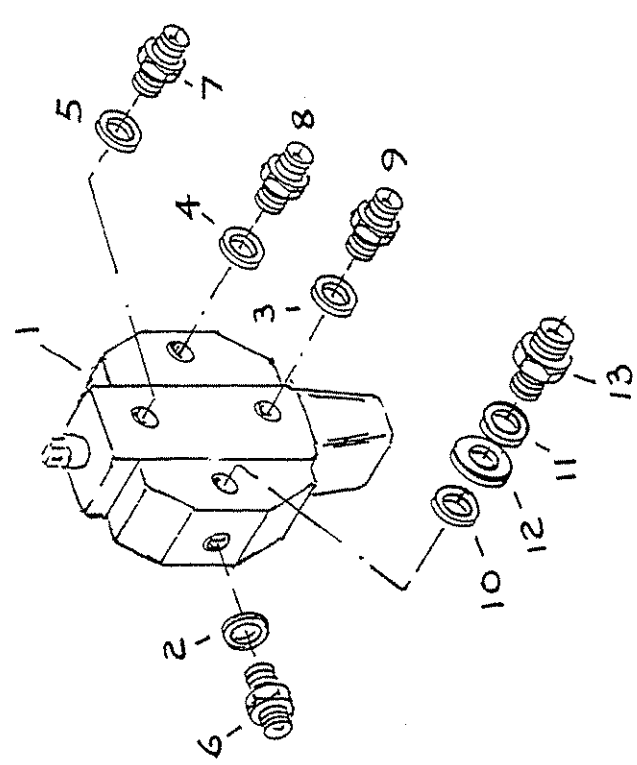
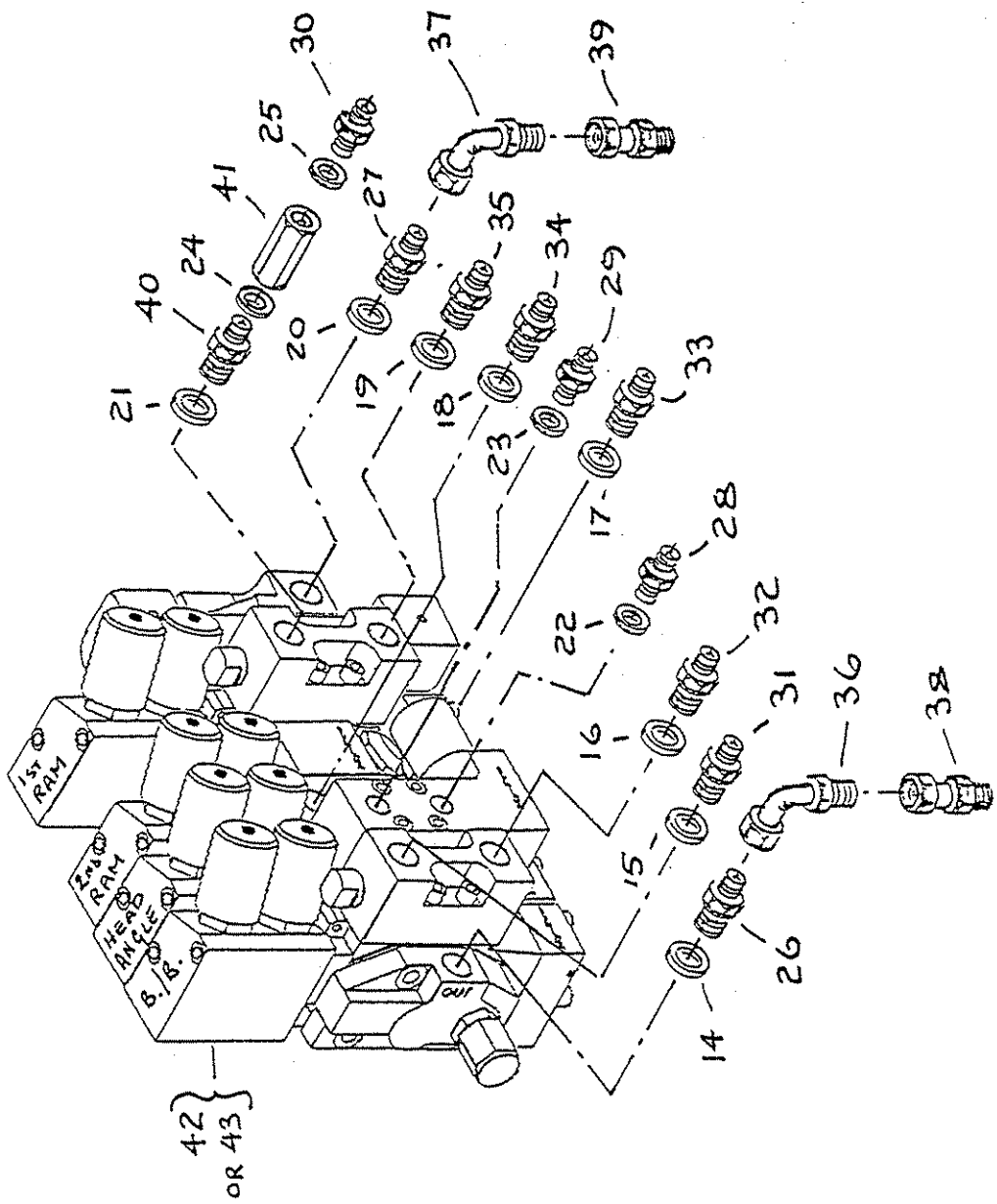
VALVE BLOCK
FOR INDEPENDENT HYDRAULIC MACHINES)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	7698	Valve Block (Inc. Relief valve)	1
2	7698.4	Relief Valve (Spares only) set at 170 bar (2500 PSI)	1
3	0670	Seal 3/8" BSP	1
4	0670	Seal 3/8" BSP	1
5	0670	Seal 3/8" BSP	1
6	0670	Seal 3/8" BSP	1
7	0670	Seal 3/8" BSP	1
8	0670	Seal 3/8" BSP	1
9	1181	Seal 1/4" BSP	1
10	0670	Seal 3/8" BSP	1
11	0670	Seal 3/8" BSP	1
12	0670	Seal 3/8" BSP	1
13	0670	Seal 3/8" BSP	1
14	1181	Seal 1/4" BSP	5
15	0914	Adaptor 3/8" BSP x 1/2" BSP	1
16	1180	Adaptor 3/8" BSP x 1/4" BSP	1
17	1180	Adaptor 3/8" BSP x 1/4" BSP	1
18	1180	Adaptor 3/8" BSP x 1/4" BSP	1
19	1823	Adaptor 1/4" BSP x 1/4" BSP	5
20	1180	Adaptor 3/8" BSP x 1/4" BSP	1
21	1180	Adaptor 3/8" BSP x 1/4" BSP	1
22	1180	Adaptor 3/8" BSP x 1/4" BSP	1
23	1180	Adaptor 3/8" BSP x 1/4" BSP	1
24	1180	Adaptor 3/8" BSP x 1/4" BSP	1
25	0914	Adaptor 3/8" BSP x 1/2" BSP	1
26	7813	Restrictor (1 way) 1.8 (0.5 Bar)	1
27	004.439	1/4 hose x 75, ST x ST	2
28	7484 R2000	Relief Block @ 2000 PSI (Relief block situated on valve block on non-electric machines only)	1

VALVE BLOCK MOUNTING PLATE AND SCREWS (NOT SHOWN - *)

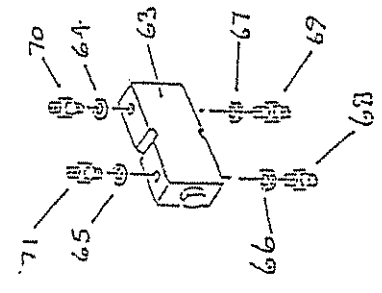
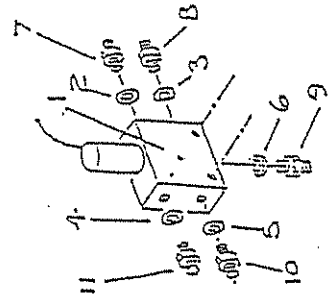
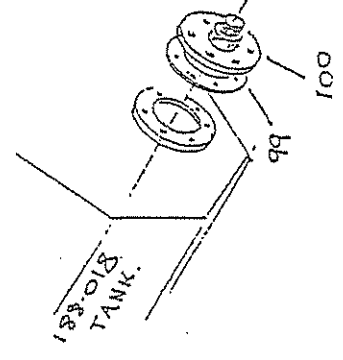
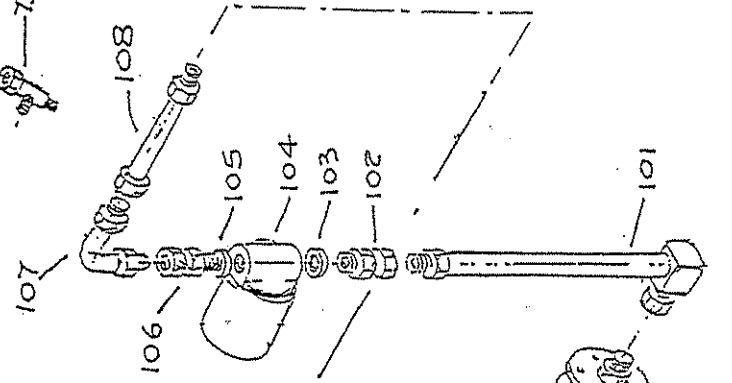
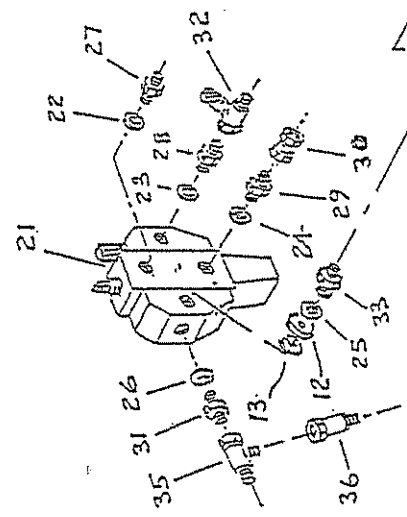
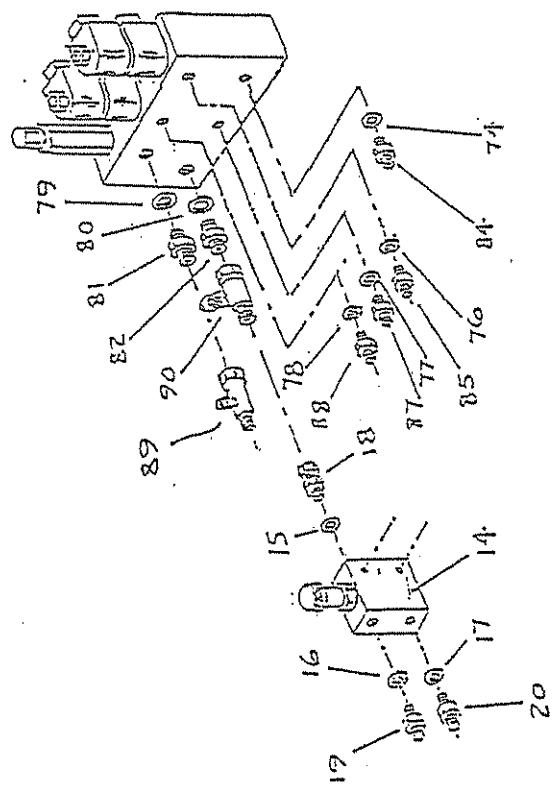
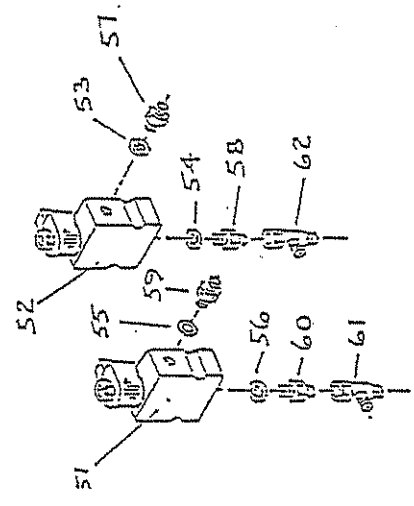
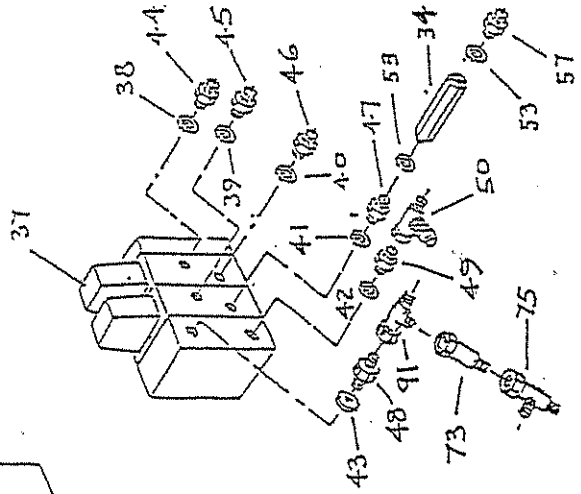
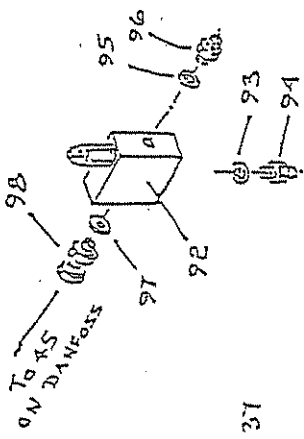
*	2793	Setscrew M8 x 20 (8.8)	4
*	3111	Washer M8 Form 'A'	4
*	3001	Washer M8 Spring	4
*	184.409	Valve block mounting plate	1

NOTE:- Drawing shows valve set for 'GREY' cables
(TELE-MECANIKUES)
for MORSE 'RED' cables, components 5 and 13 must
be changed with components 8, 21, 9, 26, 14 and 19



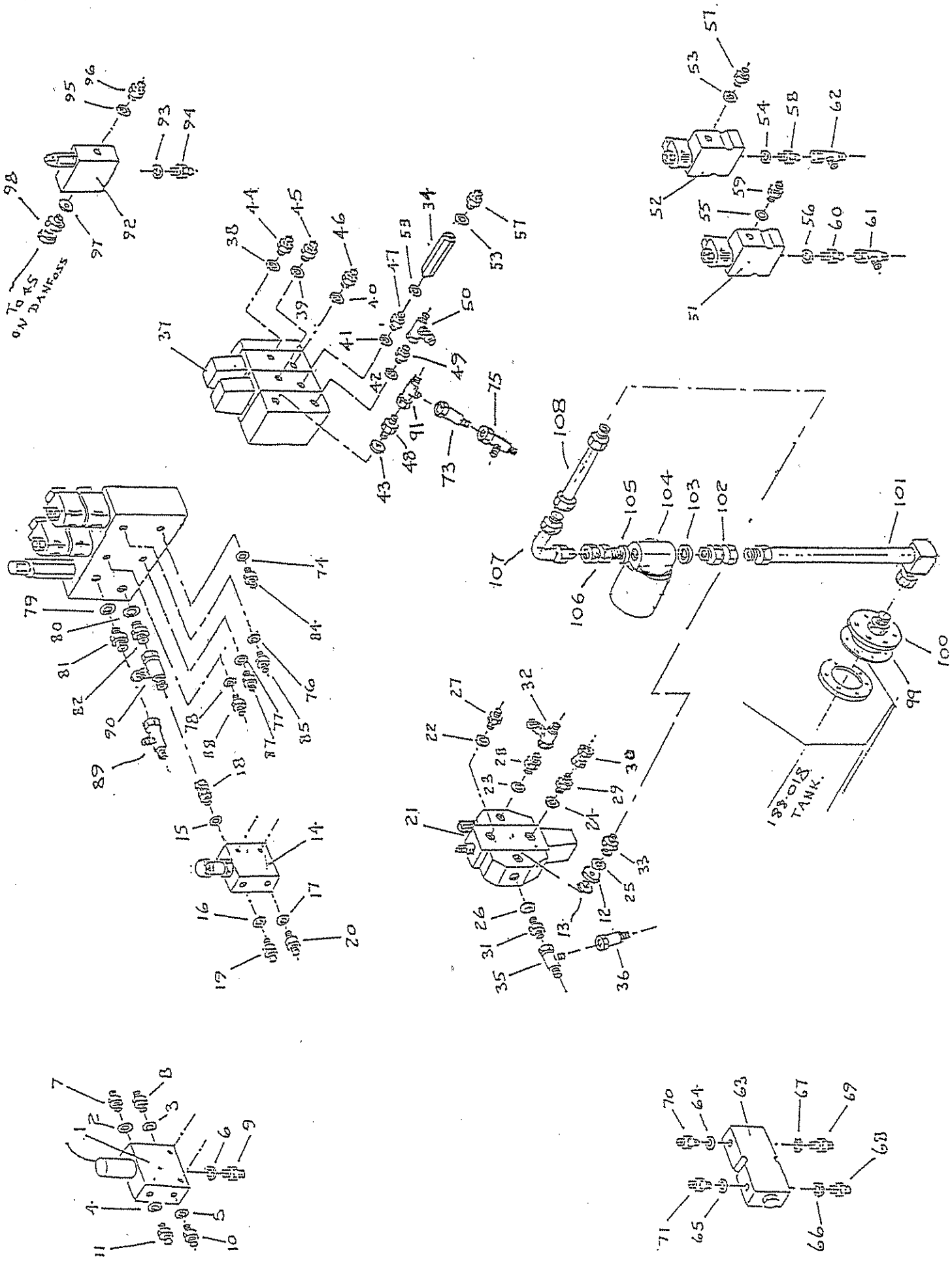
HYDRAULIC VALVES AND FITTINGS 52S & 58S.
ELECTRONIC SWITCH CONTROL.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	7542	Valve Block V3	1
*	7542.1	Relief Cartridge (V3028) 'Spares'	
*	7542.2	Seal kit V3000 'Spares'	
*	7542.3	Seal kit end plate 'spares'	
*	3183	Bolt M 8 * 45 (8.8)	3
*	3182	Stiffnut M 8 Nyloc	3
*	3111	Washer M 8 Form A	3
2	0909	Seal 1/2" Dowty Bonded	1
3-5	0934	Seal 3/4" Dowty Bonded	1
6	1826	Adaptor 1/2 Bsp	1
7-9	0935	Adaptor 3/4 Bsp	1
10	0934	Seal 3/4" Dowty Bonded	1
11	0934	Seal 3/4" Dowty Bonded	1
12	188.068	Spacer	1
13	5342	Adapter	1
14-17	0670	Seal 3/8" Dowty Bonded	1
18	0670	Seal 3/8" Dowty Bonded	1
18	1823	Adaptor 1/4 bsp	1
19-21	0670	Seal 3/8" Dowty Bonded	1
22-25	1181	Seal 1/4" Dowty Bonded	1
26-27	0665	Adaptor 3/8 bsp	1
28-30	1823	Adaptor 1/4 bsp	1
31-35	1180	Adaptor 1/4 bsp x 3/8	1
36-37	6988	Adapter 3/8 Bsp M - FLN 90	1
38-39	4928	Adapter 3/8 -1/2 Bsp M - FLN	1
40	1180	Adaptor 1/4 bsp x 3/8	1
41	7813	Restrictor One Way ≈	1
42	7951A	Valve Solenoid Full Float	1
OR 43	7949A	Valve Solenoid	OR 1
*	3038	Bolt M 8 * 40 (8.8)	4
*	3001	Washer M 8 Spring	4
*	3111	Washer M 8 Form A	4
*	187.098	Spacer	4



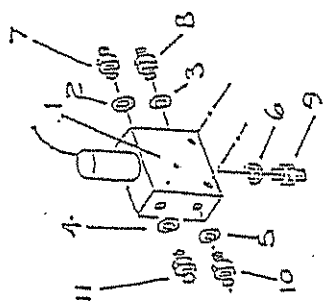
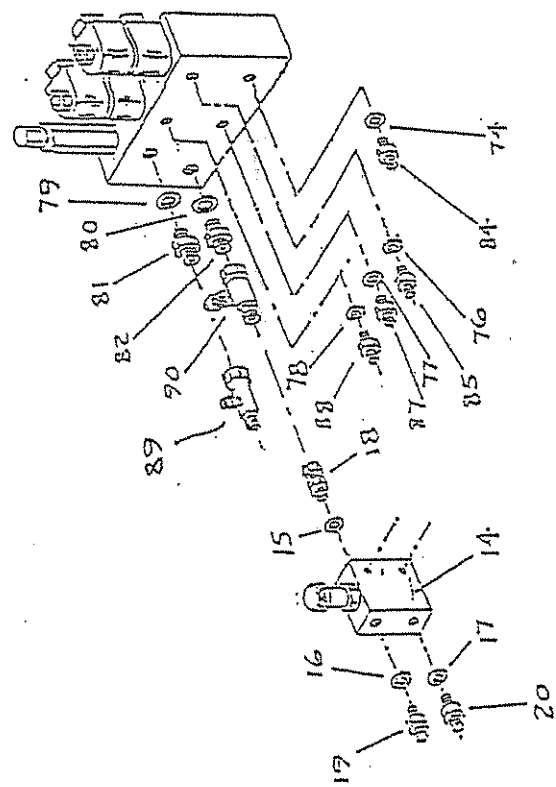
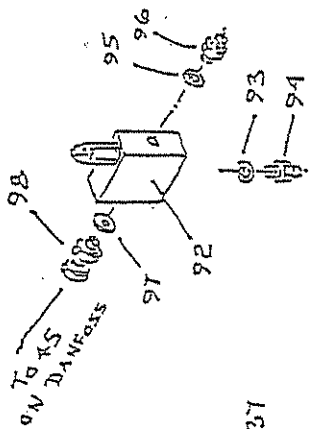
HYDRAULIC VALVES AND FITTINGS 52S & 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	7859	Solenoid Valve - R3605C	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	3001	Washer M 8 Spring	2
2-6	1181	Seal 1/4" Dowty Bonded	1
7-11	1823	Adapter 1/4 BSP	1
12	188.068	Spacer washer	1
13	0934	Seal 3/4" Dowty Bonded	1
14	7878	Flow divider	1
*	2916	Bolt M6 * 65 (7878 to Valve plate)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2715	Washer M 6 Form A Bright	2
15-17	0909	Seal 1/2" Dowty Bonded	1
18-20	1826	Adapter 1/2 BSP	1
21	7542	Motor Spool Valve Block V3 (c/w check valve)	1
*	7542.1	Relief cartridge (V3028) 'Spares only'	
*	7542.2	Seal kit (V3000) 'Spares only'	
*	7542.3	Seal kit end cover 'Spares only'	
*	3183	Bolt M 8 * 45 (8.8)	3
*	3182	Stiffnut M 8 Nyloc	3
22-25	0934	Seal 3/4" Dowty Bonded	1
26	0909	Seal 1/2" Dowty Bonded	1
27-29	0935	Adapter 3/4 BSP	1
30	7905	Adapter 3/4 BSP M-FLN	1
31	1826	Adapter 1/2 BSP	1
32	7810	Adapter 3/4 BSP TEST	1
33	1836	Adapter 3/4 BSP x 1	1
34	7813	Restricted One Way	1
35	5002	Tee 1/2 M-F-M	1
36	7832	Adapter 1/4 BSP x 1/2	1
37	7577	Danfoss Valve Proportional PVG32	1
*	2793	Setscrew M8 * 20 (8.8)	3
*	3001	Washer M 8 Spring	3
*	3111	Washer M 8 Form A	3
38-41	0909	Seal 1/2" Dowty Bonded	1
42-43	0934	Seal 3/4" Dowty Bonded	1
44-47	1825	Adapter 1/4 BSP x 1/2	1
48-49	1834	Adapter 1/2 BSP x 3/4	1
50	7811	Adapter 1/2 BSP TEST	1
51	7583	Valve Relief Proportional	1

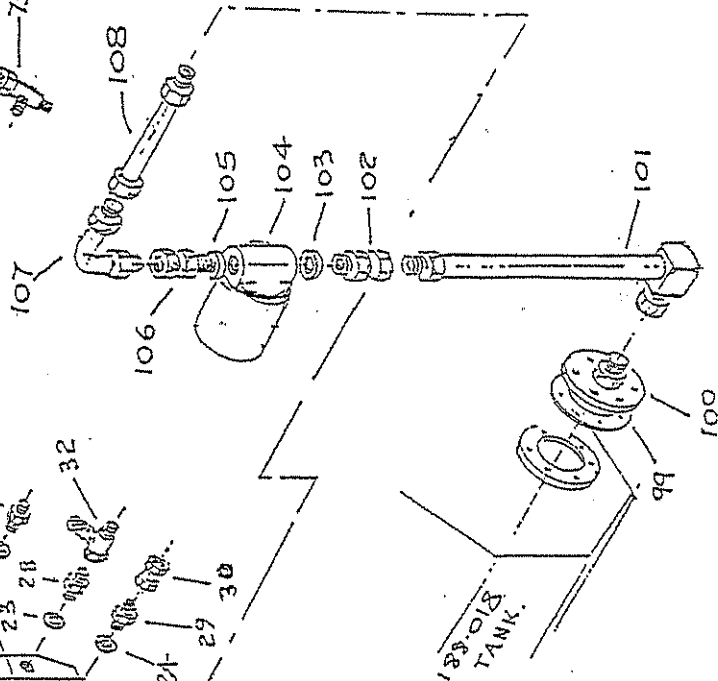
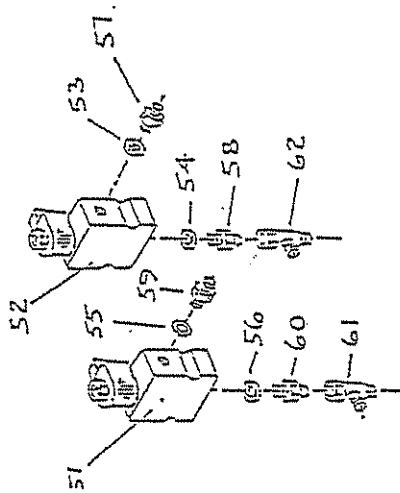
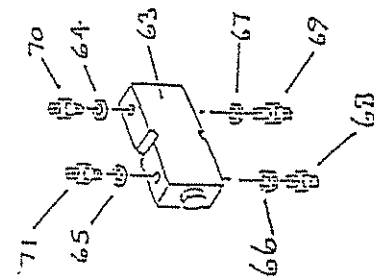
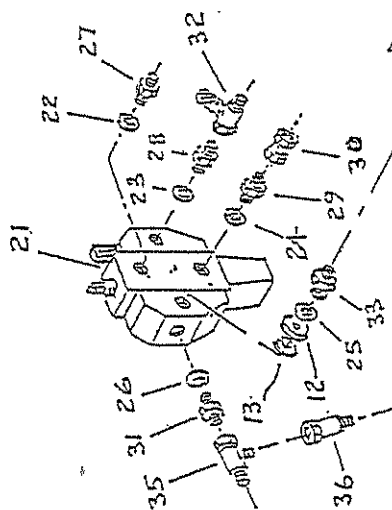
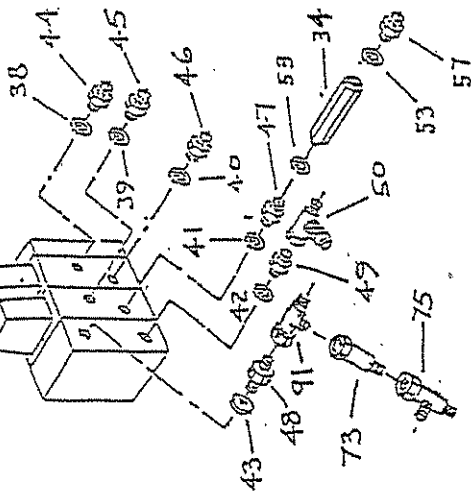


HYDRAULIC VALVES AND FITTINGS 52S & 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
52	7584	On/Off Valve	1
*	184.408	Studding M 6 * 92	2
*	2715	Washer M 6 Form A Bright	4
*	4776	Stiffnut M 6 Nyloc	4
*	186.051	Mounting Bracket, Solenoid Valves	1
53-56	1181	Seal 1/4" Dowty Bonded	3
57-59	1823	Adapter 1/4 BSP	2
60	1823	Adapter 1/4 BSP	6
61-62	7323	Tee 1/4 M-F-M	1
63	7716	Valve Check Double Pilot	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2731	Washer M 6 Spring	2
64-67	0670	Seal 3/8" Dowty Bonded	1
68-71	1180	Adapter 1/4 BSP x 3/8	1
72	7706A	Block Assy VMA1035B	1
*	3731	Setscrew M 8 * 16 (8.8)	2
*	2987	Setscrew M 8 * 25 (8.8)	2
*	3001	Washer M 8 Spring	2
*	3111	Washer M 8 Form A	2
73	7832	Adapter 1/4 BSP x 1/2	1
74	1181	Seal 1/4" Dowty Bonded	1
75	7323	Tee 1/4 M-F-M	1
76-78	1181	Seal 1/4" Dowty Bonded	1
79	0909	Seal 1/2" Dowty Bonded	1
80	0670	Seal 3/8" Dowty Bonded	1
81	1826	Adapter 1/2 BSP	1
82	0914	Adapter 3/8 - 1/2 BSP	1
84-88	1823	Adapter 1/4 BSP	1
89	5002	Tee 1/2 M-F-M	1
90	7811	Adapter 1/2 BSP TEST	1
91	5002	Tee 1/2 M-F-M	1
92	4135 R400	Relief Block @ 400psi	1
93	0670	Seal 3/8" Dowty Bonded	1
95	0670	Seal 3/8" Dowty Bonded	1
96	1180	Adapter 1/4 BSP x 3/8	1

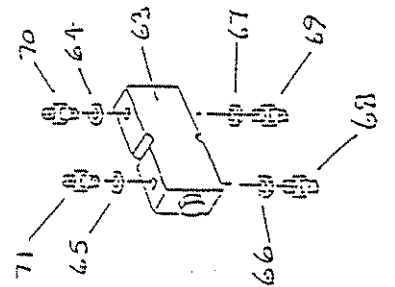
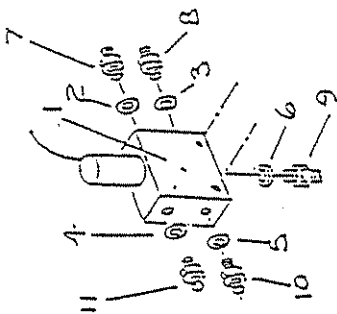
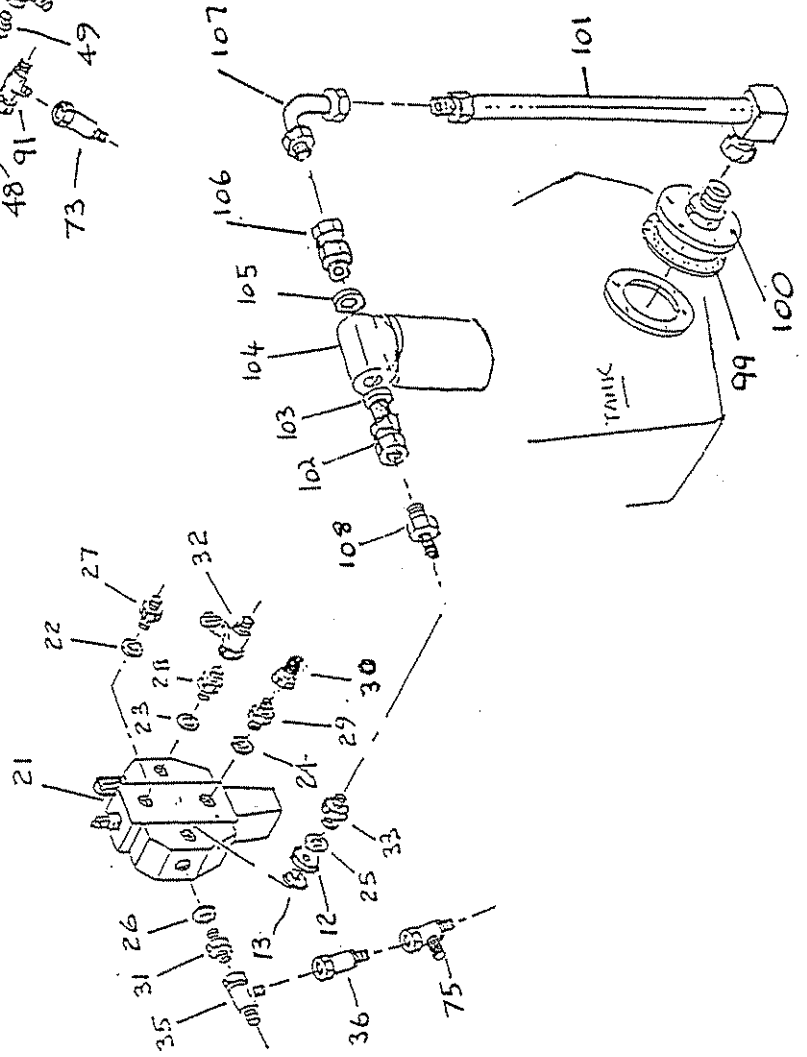
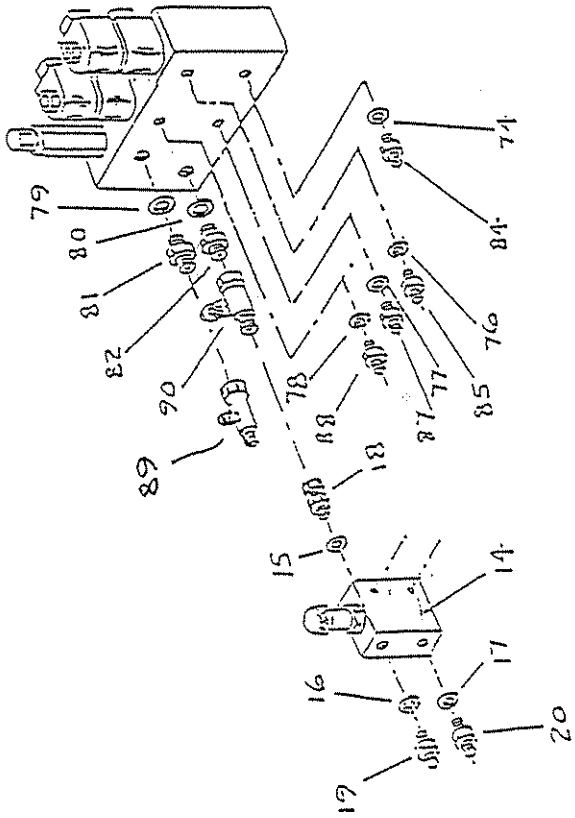
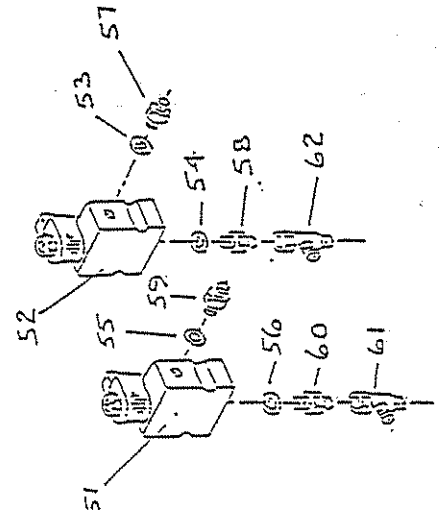
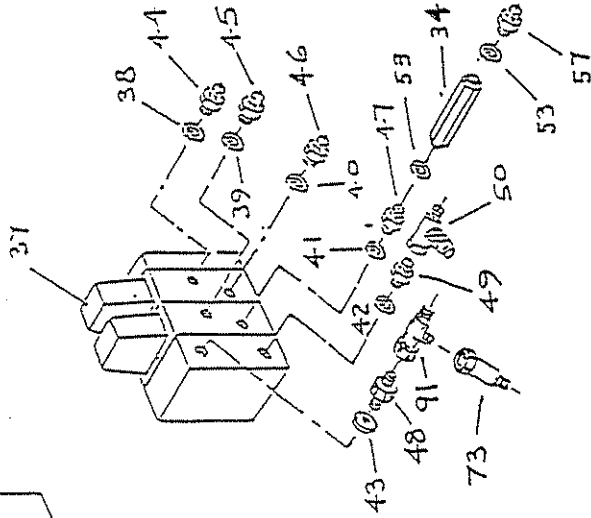
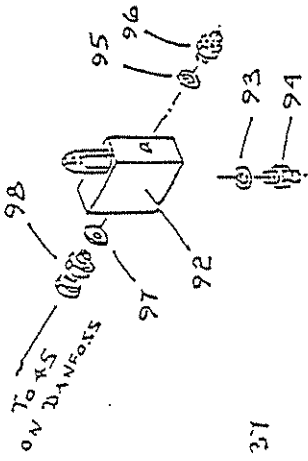


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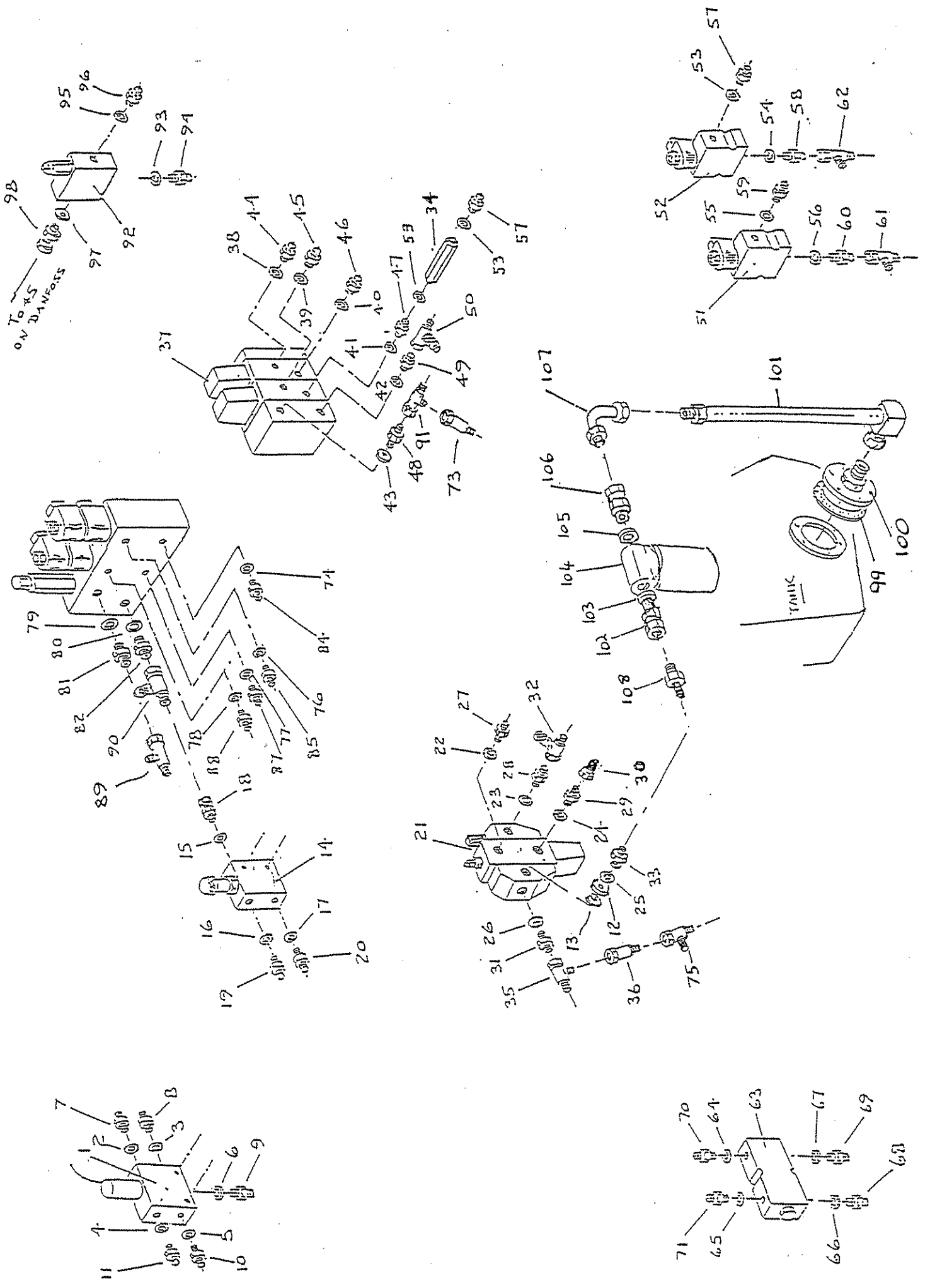
HYDRAULIC VALVES AND FITTINGS 52S & 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
97	0670	Seal 3/8" Dowty Bonded	1
98	7833	Adapter 1/4 BSP x 3/8 FLN-M	1
99	1840402	Gasket for filler plate	2
100	188.065	Filter mounting plate	2
101	188.086	Steel Hydraulic pipe (Return)	1
102	7896	Adapter 1.1/4 BSP M-FLN	1
103	3155	Seal 1.1/4" Dowty Bonded	1
104	3126	Filter (25 Micron)	1
105	3155	Seal 1.1/4" Dowty Bonded	1
106	7896	Adapter 1.1/4 BSP M-FLN	1
107	7985	Adapter 1.1/4" M-FLN 90	1
108		Steel Hydraulic Pipe	1
*	186.047	Spacer for Guard	2
*	186.052	Spacer Plate	2
*	188.054	Valve Plate	1
*	2793	Setscrew M 8 * 20 (8.8) (Guard)	8
*	3001	Washer M 8 Spring (Guard)	8
*	3111	Washer M 8 Form A (Guard)	8



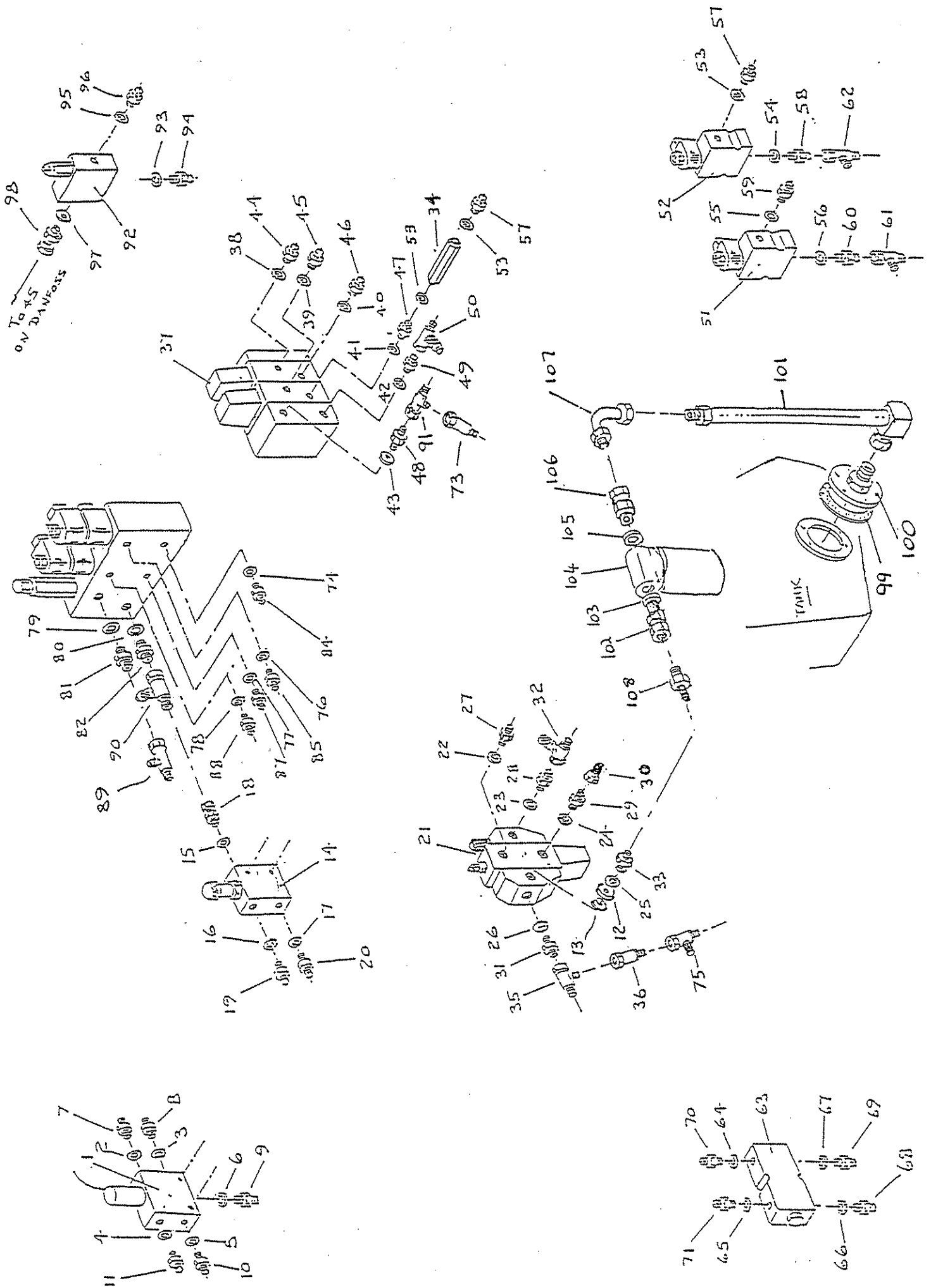
HYDRAULIC VALVES AND FITTINGS 52S & 58S RH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1		Solenoid Valve - R3605C	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	3001	Washer M 8 Spring	2
2-6	1181	Seal 1/4" Dowty Bonded	1
7-11	1823	Adapter 1/4 BSP	1
12	188.068	Spacer washer	1
13	0934	Seal 3/4" Dowty Bonded	1
14	7878	Flow divider	1
*	2916	Bolt M6 * 65 (7878 to Valve plate)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2715	Washer M 6 Form A Bright	2
15-17	0909	Seal 1/2" Dowty Bonded	1
18	1826	Adapter 1/2 BSP M-FLN	1
19	1826	Adapter 1/2 BSP	1
20	1826	Adapter 1/2 BSP	1
21	7542	Motor Spool Valve Block V3 (c/w check valve)	1
*	7542.1	Relief cartridge (V3028) 'Spares only'	
*	7542.2	Seal kit (V3000) 'Spares only'	
*	7542.3	Seal kit end cover 'Spares only'	
*	3183	Bolt M 8 * 45 (8.8)	3
*	3182	Stiffnut M 8 Nyloc	3
22-25	0934	Seal 3/4" Dowty Bonded	1
26	0909	Seal 1/2" Dowty Bonded	1
27-29	0935	Adapter 3/4 BSP	1
30	7905	Adapter 3/4 BSP M-FLN	1
31	1826	Adapter 1/2 BSP	1
32	7810	Adapter 3/4 BSP TEST	1
33	1836	Adapter 3/4 BSP x 1	1
34	7813	Restricted One Way	1
35	5002	Tee 1/2 M-F-M	1
36	7832	Adapter 1/4 BSP x 1/2	1
37	7577	Danfoss Valve Proportional PVG32	1
*	2793	Setscrew M8 * 20 (8.8)	3
*	3001	Washer M 8 Spring	3
*	3111	Washer M 8 Form A	3



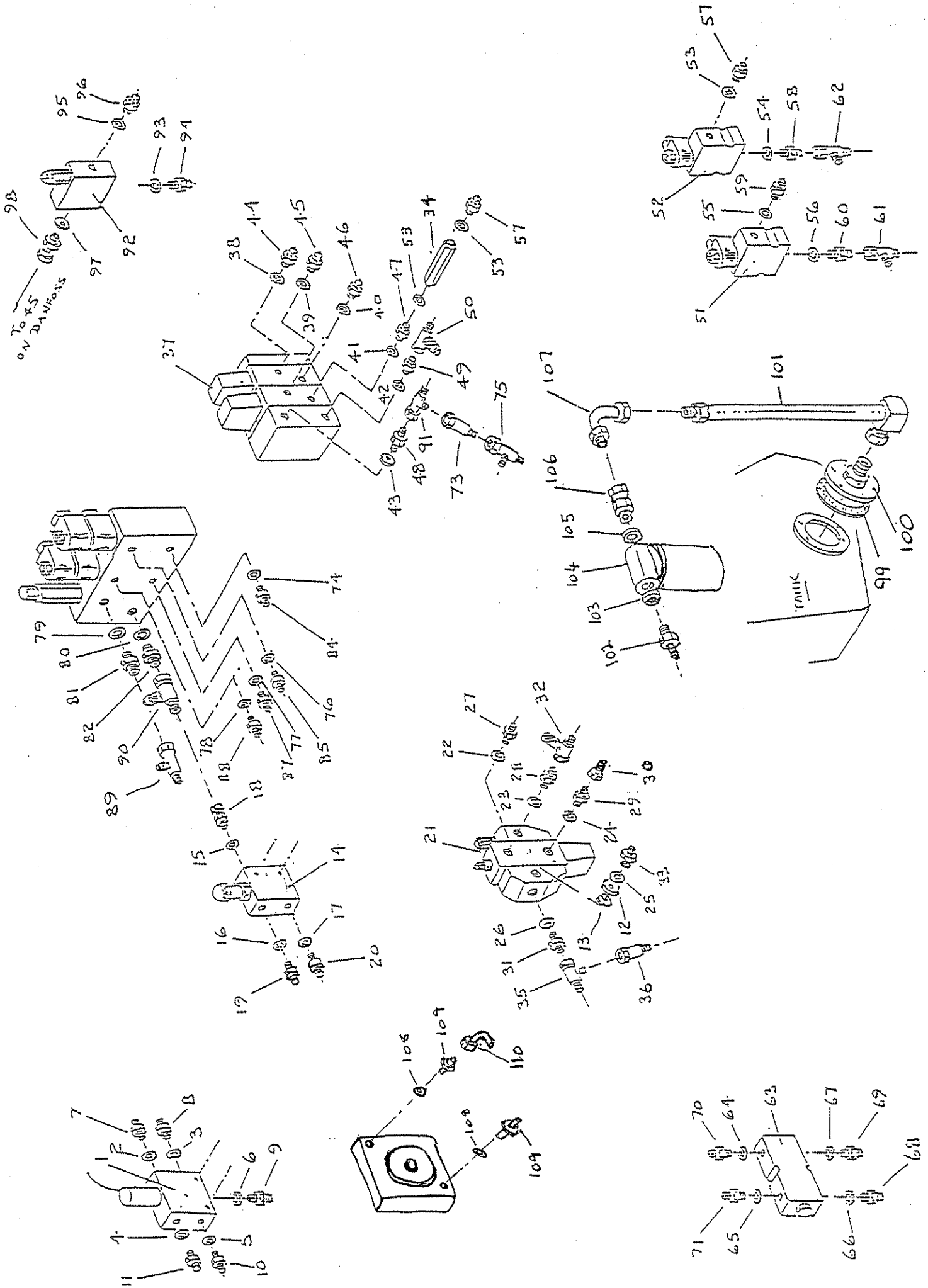
HYDRAULIC VALVES AND FITTINGS 52S & 58S RH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
38-41	0909	Seal 1/2" Dowty Bonded	1
42	0934	Seal 3/4" Dowty Bonded	1
43	0934	Seal 3/4" Dowty Bonded	1
44-47	1825	Adapter 1/4 BSP x 1/2	1
48	1834	Adapter 1/2 BSP x 3/4	1
49	1834	Adapter 1/2 BSP x 3/4	1
50	7811	Adapter 1/2 BSP TEST	1
51	7583	Valve Relief Proportional	1
52	7584	On/Off Valve	1
*	184.408	Studding M 6 * 92	2
*	2715	Washer M 6 Form A Bright	4
*	4776	Stiffnut M 6 Nyloc	4
*	186.051	Mounting Bracket, Solenoid Valves	1
53	1181	Seal 1/4" Dowty Bonded	3
54-56	1181	Seal 1/4" Dowty Bonded	1
57	1823	Adapter 1/4 BSP	2
58-59	1823	Adapter 1/4 BSP	1
60	1823	Adapter 1/4 BSP	6
61-62	7323	Tee 1/4 M-F-M	1
63	7716	Valve Check Double Pilot	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2731	Washer M 6 Spring	2
64-67	0670	Seal 3/8" Dowty Bonded	1
68-71	1180	Adapter 1/4 BSP x 3/8	1
72	7706A	Block Assy VMA1035B	1
*	3731	Setscrew M 8 * 16 (8.8)	2
*	2987	Setscrew M 8 * 25 (8.8)	2
*	3001	Washer M 8 Spring	2
*	3111	Washer M 8 Form A	2
73	7832	Adapter 1/4 BSP x 1/2	1
74	1181	Seal 1/4" Dowty Bonded	1
75	7323	Tee 1/4 M-F-M	1
76-78	1181	Seal 1/4" Dowty Bonded	1
79	0909	Seal 1/2" Dowty Bonded	1



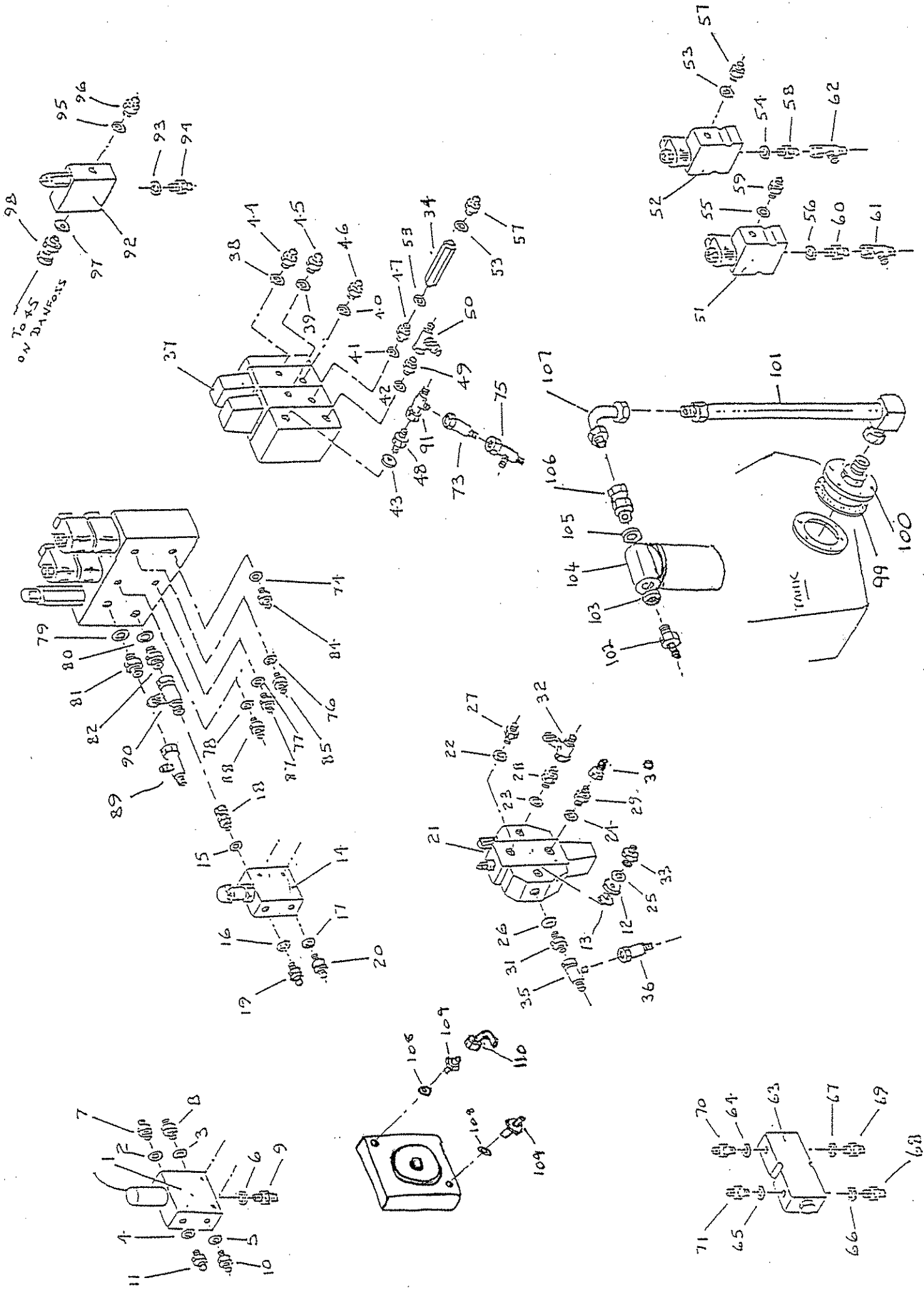
HYDRAULIC VALVES AND FITTINGS 52S & 58S RH CUT.
ELECTRONIC PROPORTIONAL VALVES (45 H.P.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
80	0670	Seal 3/8" Dowty Bonded	1
81	1826	Adapter 1/2 BSP	1
82	0914	Adapter 3/8 - 1/2 BSP	1
84-88	1823	Adapter 1/4 BSP	1
89	5002	Tee 1/2 M-F-M	1
90	7811	Adapter 1/2 BSP TEST	1
91	5002	Tee 1/2 M-F-M	1
92	4135 R400	Relief Block @ 400psi	1
93	0670	Seal 3/8" Dowty Bonded	1
95	0670	Seal 3/8" Dowty Bonded	1
96	1180	Adapter 1/4 BSP x 3/8	1
97	0670	Seal 3/8" Dowty Bonded	1
98	7833	Adapter 1/4 BSP x 3/8 FLN-M	1
99	1840402	Gasket for filler plate	2
100	188.065	Filter mounting plate	2
101	188.086	Steel Hydraulic pipe (Return)	1
102	7896	Adapter 1.1/4 BSP M-FLN	1
103	3155	Seal 1.1/4" Dowty Bonded	1
104	3126	Filter (25 Micron)	1
105	3155	Seal 1.1/4" Dowty Bonded	1
106	7896	Adapter 1.1/4 BSP M-FLN	1
107	7985	Adapter 1.1/4" M-FLN 90	1
108	7962	Adapter 1.1/4" BSP	1
*	186.047	Spacer for Guard	2
*	186.052	Spacer Plate	2
*	188.054	Valve Plate	1
*	2793	Setscrew M 8 * 20 (8.8) (Guard)	8
*	3001	Washer M 8 Spring (Guard)	8
*	3111	Washer M 8 Form A (Guard)	8



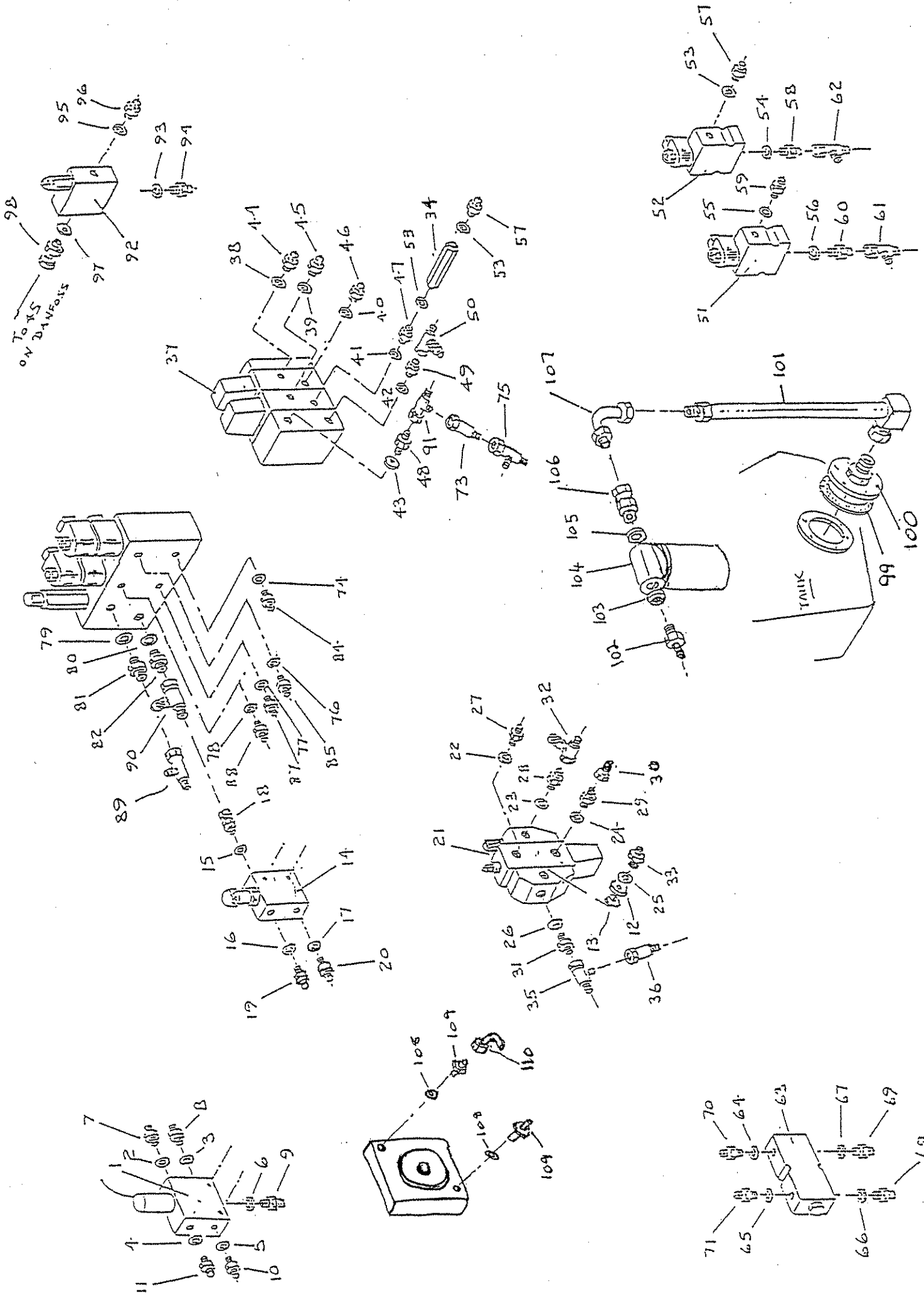
HYDRAULIC VALVES AND FITTINGS 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (55 H.P + COOLER.)

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	7859	Solenoid Valve - R3605C	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	3001	Washer M 8 Spring	2
2-6	1181	Seal 1/4" Dowty Bonded	1
7-11	1823	Adapter 1/4 BSP	1
13	0934	Seal 3/4" Dowty Bonded	1
14	7878	Flow divider	1
*	2916	Bolt M6 * 65 (7878 to Valve plate)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2715	Washer M 6 Form A Bright	2
15-17	0909	Seal 1/2" Dowty Bonded	1
18-20	1826	Adapter 1/2 BSP M-FLN	1
21	7542	Motor Spool Valve Block V3 (c/w check valve)	1
*	7542.1	Relief cartridge (V3028) 'Spares only' @ 190bar.	
*	7542.2	Seal kit (V3000) 'Spares only'	
*	7542.3	Seal kit end cover 'Spares only'	
*	3183	Bolt M 8 * 45 (8.8)	3
*	3182	Stiffnut M 8 Nyloc	3
22-25	0934	Seal 3/4" Dowty Bonded	1
26	0909	Seal 1/2" Dowty Bonded	1
27-29	0935	Adapter 3/4 BSP	1
30	7905	Adapter 3/4 BSP M-FLN	1
31	1826	Adapter 1/2 BSP	1
32	7810	Adapter 3/4 BSP TEST	1
33	1836	Adapter 3/4 BSP x 1	1
34	7813	Restricted One Way	1
35	5002	Tee 1/2 M-F-M	1
36	7832	Adapter 1/4 BSP x 1/2	1
37	7577	Danfoss Valve Proportional PVG32	1
*	2793	Setscrew M8 * 20 (8.8)	3
*	3001	Washer M 8 Spring	3
*	3111	Washer M 8 Form A	3
38-41	0909	Seal 1/2" Dowty Bonded	1
42	0934	Seal 3/4" Dowty Bonded	1
43	0934	Seal 3/4" Dowty Bonded	1
44-47	1825	Adapter 1/4 BSP x 1/2	1
48-49	1834	Adapter 1/2 BSP x 3/4	1
50	7811	Adapter 1/2 BSP TEST	1
51	7583	Valve Relief Proportional	1



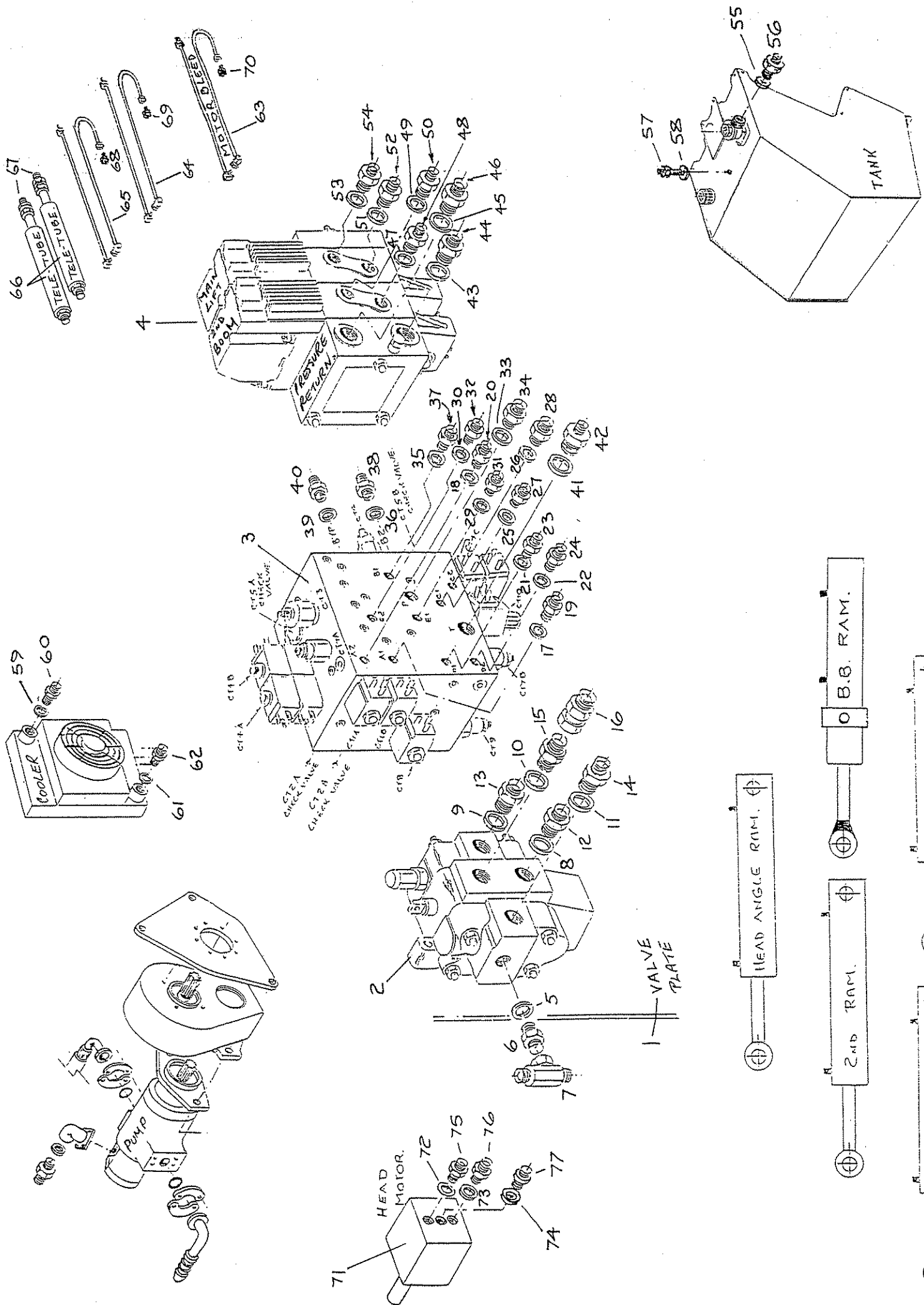
HYDRAULIC VALVES AND FITTINGS 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (55 H.P + COOLER.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
52	7584	On/Off Valve	1
*	184.408	Studding M 6 * 92	2
*	2715	Washer M 6 Form A Bright	4
*	4776	Stiffnut M 6 Nyloc	4
*	186.051	Mounting Bracket, Solenoid Valves	1
53	1181	Seal 1/4" Dowty Bonded	3
54-56	1181	Seal 1/4" Dowty Bonded	1
57	1823	Adapter 1/4 BSP	2
58-59	1823	Adapter 1/4 BSP	1
60	1823	Adapter 1/4 BSP	6
61-62	7323	Tee 1/4 M-F-M	1
63	7716	Valve Check Double Pilot	1
*	6981	Bolt M 6 * 50 (8.8)	2
*	4776	Stiffnut M 6 Nyloc	2
*	2731	Washer M 6 Spring	2
64-67	0670	Seal 3/8" Dowty Bonded	1
68-71	1180	Adapter 1/4 BSP x 3/8	1
72	7706A	Block Assy VMA1035B	1
*	3731	Setscrew M 8 * 16 (8.8)	2
*	2987	Setscrew M 8 * 25 (8.8)	2
*	3001	Washer M 8 Spring	2
*	3111	Washer M 8 Form A	2
73	7832	Adapter 1/4 BSP x 1/2	1
74	1181	Seal 1/4" Dowty Bonded	1
75	7323	Tee 1/4 M-F-M	1
76-78	1181	Seal 1/4" Dowty Bonded	1
79	0909	Seal 1/2" Dowty Bonded	1
80	0670	Seal 3/8" Dowty Bonded	1
81	1826	Adapter 1/2 BSP	1
82	0914	Adapter 3/8 - 1/2 BSP	1
84-88	1823	Adapter 1/4 BSP	1
89	5002	Tee 1/2 M-F-M	1
90	7811	Adapter 1/2 BSP TEST	1
91	5002	Tee 1/2 M-F-M	1
92	4135 R400	Relief Block @ 400psi	1
93-95	0670	Seal 3/8" Dowty Bonded	1



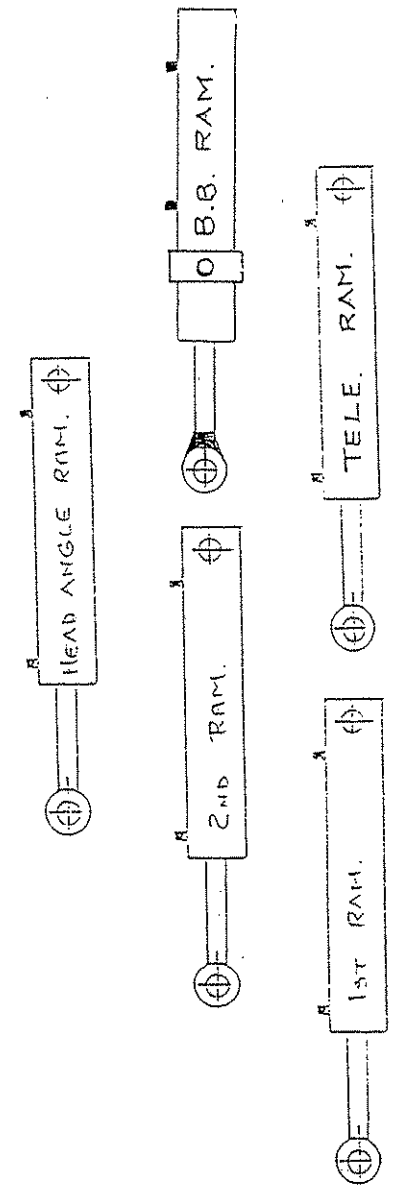
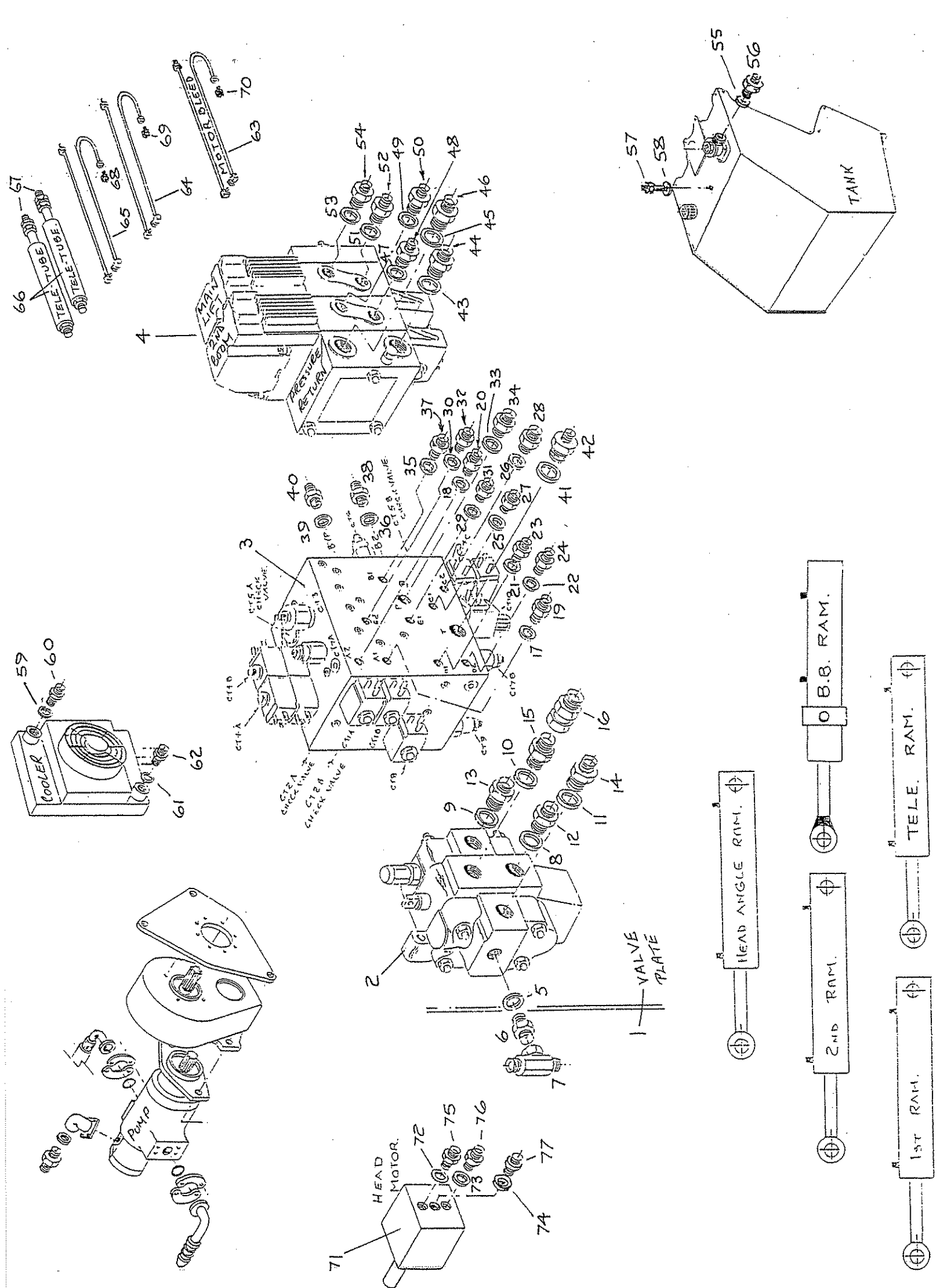
HYDRAULIC VALVES AND FITTINGS 58S LH CUT.
ELECTRONIC PROPORTIONAL VALVES (55 H.P + COOLER.)
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
96	1180	Adapter 1/4 BSP x 3/8	1
97	0670	Seal 3/8" Dowty Bonded	1
98	7833	Adapter 1/4 BSP x 3/8 FLN-M	1
99	1840402	Gasket for filler plate	2
100	188.065	Filter mounting plate	2
101	188.086	Steel Hydraulic pipe (Return)	1
102	5241	Adapter 1 - 1.1/4 BSP	1
103	3155	Seal 1.1/4" Dowty Bonded	1
104	7676	Filter (10 Micron)	1
105	3155	Seal 1.1/4" Dowty Bonded	1
106	7896	Adapter 1.1/4 M-FLN	1
107	7978	Adapter 1.1/4" M - FLN 90	1
108	1934	Seal 1" Dowty Bonded	2
109	2450	Adapter 1" BSP	2
110	7978	Adapter 1.1/4 M - FLN 90	1
*	186.047	Spacer for Guard	2
*	186.052	Spacer Plate	2
*	188.054	Valve Plate	1
*	2793	Setscrew M 8 * 20 (8.8) (Guard)	8
*	3001	Washer M 8 Spring (Guard)	8
*	3111	Washer M 8 Form A (Guard)	8



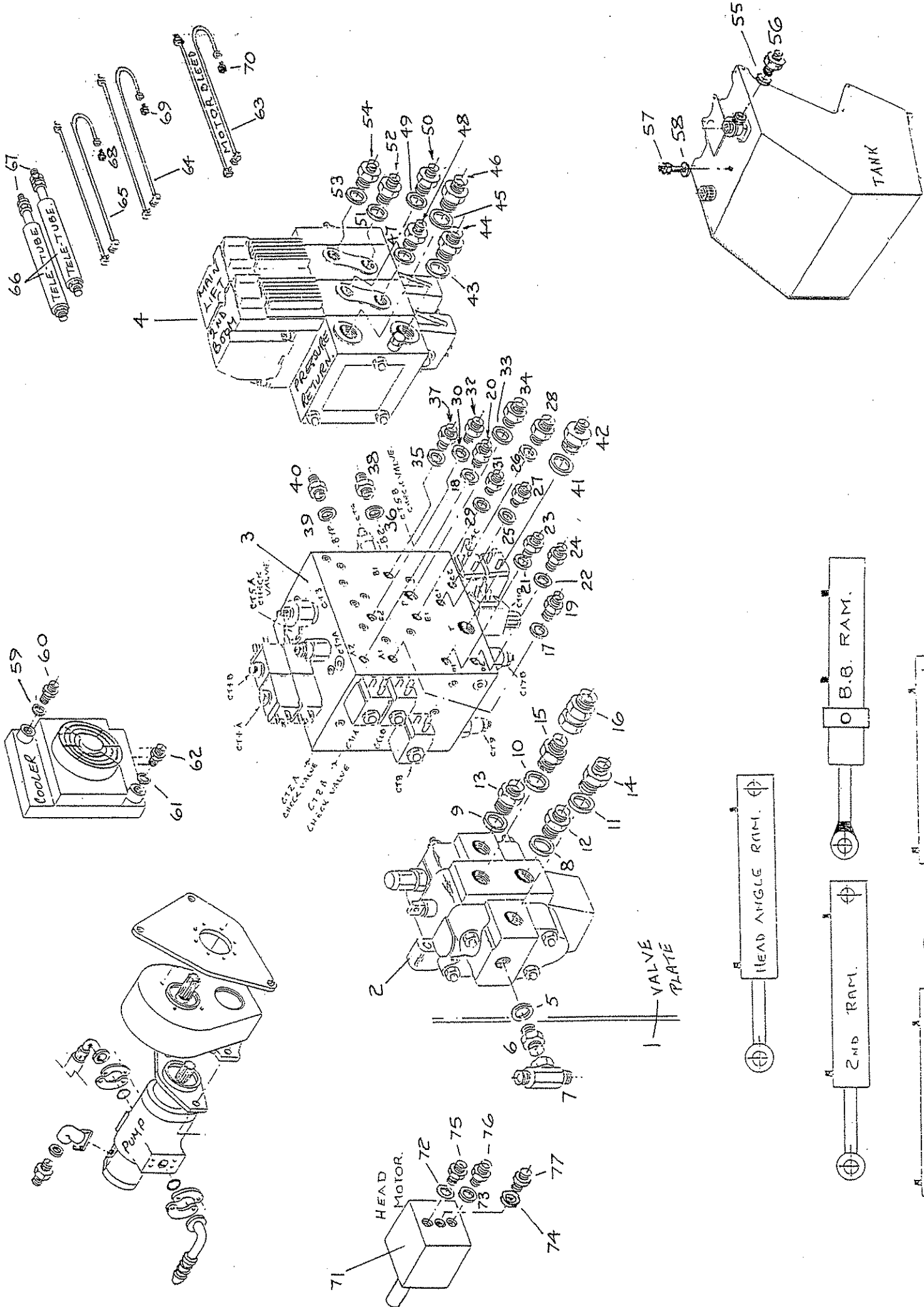
HYDRAULIC COMPONENTS 526 LH CUT.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	188.135	Valve plate assembly	1
2	8145	Valve-Motor spool (DIN OIL) relief set @ 280 bar (DL-G*-D3-NONE-PITTI)	1
*	8145.1	Relief Cartridge @ 280 bar (spares)	as reqd
*	8144	Cable cont assy. BAULK (3.0m) for 8145	1
*	3262	Bolt M8 x 60 (8.8)	3
*	3001	Washer Spring M8	3
*	3182	Stiffnut M8 Nyloc	3
3	8123	Valve block (Integrated) DXP18006-01	1
*	2793	Setscrew M8 x 20 (8.8)	4
*	3001	Washer-Spring M8	4
*	3111	Washer-flat M8 (form 'A')	4
4	7577	Valve-proportional PVG.32, 2 slice code 15/N2110 @ 115 bar	1
*	2793	Setscrew M8 x 20 (8.8)	4
*	3001	Washer-Spring M8	4
*	3111	Washer-flat M8 (form 'A')	4
5	0909	Seal 1/2"	1
6	1826	Adapter 1/2" x 1/2" BSP	1
7	4933	Tee 1/2" BSP M/M/FM	1
8	0934	Seal 3/4" BSP	1
9	0934	Seal 3/4" BSP	1
10	0934	Seal 3/4" BSP	1
11	0934	Seal 3/4" BSP	1
12	0935	Adaptor 3/4" BSP	1
13	0935	Adaptor 3/4" BSP	1
14	1836	Adaptor 3/4" BSP x 1" BSP	1
15	0935	Adaptor 3/4" BSP	1
16	7905	Adaptor 3/4" BSP M/FLN	1
17	1881	Seal 1/4"	1
18	1181	Seal 1/4"	1
19	1823	Adaptor 1/4" BSP	1
20	1823	Adaptor 1/4" BSP	1
21	1181	Seal 1/4"	1
22	1181	Seal 1/4"	1
23	1823	Adaptor 1/4" BSP	1
24	1823	Adaptor 1/4" BSP	1



HYDRAULIC COMPONENTS 526 LH CUT.
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
25	1181	Seal 1/4"	1
26	1181	Seal 1/4"	1
27	1823	Adaptor 1/4" BSP	1
28	1823	Adaptor 1/4" BSP	1
29	1181	Seal 1/4"	1
30	1181	Seal 1/4"	1
31	1823	Adaptor 1/4" BSP	1
32	1823	Adaptor 1/4" BSP	1
33	0670	Seal 3/8"	1
34	0914	Adaptor 3/8" BSP x 1/2" BSP	1
35	1181	Seal 1/4"	1
36	1181	Seal 1/4"	1
37	1823	Adaptor 1/4" BSP	1
38	1823	Adaptor 1/4" BSP	1
39	0909	Seal 1/2" BSP	1
40	1826	Adaptor 1/2" BSP x 1/2" BSP	1
41	0909	Seal 1/2" BSP	1
42	1826	Adaptor 1/2" BSP x 1/2" BSP	1
43	0934	Seal 3/4"	1
44	1834	Adaptor 1/2" BSP x 3/4" BSP	1
45	0934	Seal 3/4"	1
46	1834	Adaptor 1/2" BSP x 3/4" BSP	1
47	0909	Seal 1/2"	1
48	1825	Adaptor 1/4" BSP x 1/2" BSP	1
49	0909	Seal 1/2"	1
50	1825	Adaptor 1/4" BSP x 1/2" BSP	1
51	0909	Seal 1/2"	1
52	1825	Adaptor 1/4" BSP x 1/2" BSP	1
53	0909	Seal 1/2"	1
54	1825	Adaptor 1/4" BSP x 1/2" BSP	1
55	3155	Seal 1 1/4"	1
56	5241	Adaptor 1" x 1 1/4"	1
57	0670	Seal 3/8"	1
58	8072	Adaptor 3/8" BSP 'Bulkhead' c/w L/nut	1
59	1934	Seal 1"	1
60	2450	Adaptor 1" BSP x 1" BSP	1
61	1934	Seal 1"	1
62	2450	Adaptor 1" BSP x 1" BSP	1
63	004.794	3/8 Hose ST x 91 x 1200	1



HYDRAULIC COMPONENTS 526 LH CUT.
CONTINUED

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
64	004.689	1/4 Hose ST x 91 x 1200	1
65	004.689	1/4 Hose ST x 91 x 1200	1
66	1880085	Tele-tubes	2
67	8085	Adaptor 3/4 BSP Bulkhead c/w L. nut	2
68	1823	Adaptor 1/4" BSP x 1/4" BSP	1
69	1823	Adaptor 1/4" BSP x 1/4" BSP	1
70	0665	Adaptor 3/8" BSP x 3/8" BSP	1
71	8097	Motor-Commercial 40.4CC	1
72	0934	Seal 3/4" BSP	1
73	0934	Seal 3/4" BSP	1
74	0670	Seal 3/8" BSP	1
75	0935	Adaptor 3/4" x 3/4" BSP	1
76	0935	Adaptor 3/4" x 3/4" BSP	1
77	0665	Adaptor 3/8" x 3/8" BSP	1

SET OF HOSES 52S WITH HYPRO VALVES

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	004.441	Hose 1/2" STx90x 370	1
2	004.566	Hose 1/4" 90x90x 312	1
3	004.540	Hose 3/4" STx90x8150	1
4	004.549	Hose 3/4" 90x90x1920	1
5	004.540	Hose 3/4" STx90x8150	1
6	004.552	Hose 1/4" 90x90x1740 @315	1
7	004.550	Hose 1/4" 90x90x1050 @180	1
8	004.545	Hose 1/4" 90x90x6420 @90	1
9	004.553	Hose 1/4" 90x90x1700 @315	1
10	004.554	Hose 1/4" 90x90x6740	1
11	004.551	Hose 1/4" 90x90x1550 @180	1
12	004.556	Hose 1/4" 90x90x1210 @90	1
13	004.548	Hose 1/2" STx90x1780	1
14	004.566	Hose 1/4" 90x90x1210 @90	1

SET OF HOSES 52S LEFT HAND CUT
ELECTRONIC PROPORTIONAL VALVES
(45HP ULTRA PUMPS)

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.398	Hose 1/4 90x90x 185 @180 ---VMA - Check valve	1.0
004.402	Hose 1/4 90x90x 180 @000 ---Prop - On/Off	1.0
004.481F	Hose 1/4 90x90x 230 @000 ---VMA - Head float	2.0
004.491F	Hose 1/4 STx90x 225 ---Danfoss Relief - Danfoss return	1.0
004.503	Hose 1/4 90x90x1900 ---Danfoss - 2nd ram rod	1.0
004.506	Hose 1/4 STx90x 180 ---Head float - Danfoss return	1.0
004.524	Hose 1/2 90x90x 320 @090 ---Danfoss - VMA return	1.0

004.532	Hose 1/4 STx90x 980	1.0
	---Check - Break back ram anchor	
004.533	Hose 1/4 90x90x1000 @270	1.0
	---Check - Break back rod	
004.535	Hose 3/4 90xFLx1930 @030	1.0
	--1st pump - V3	
004.536	Hose 1/4 STxSTx1330	1.0
	---Break back relief - V3 return	
004.538	Hose 1/4 90x90x1280 @270	1.0
	---On/Off - 1st ram rod	
004.538	Hose 1/4 90x90x1280 @270	1.0
	---Prop - 1st ram anchor	
004.564	Hose 3/4 STx90x 540	1.0
	---2nd Pump suction.	
004.565	Hose 1/4 90x90x1595	1.0
	---Danfoss - 2nd ram anchor	
004.577	Hose 1/2 90x90x 200 @90	1.0
	---VMA - V3 return	
004.632	Hose 1/4 90x90x 460	1.0
	---Danfoss - Prop valve	
004.662	Hose 1/4 90x90x5820 @090	2.0
	---Head float valve - Ram	
004.663	Hose 1/4 90x90x 485	1.0
	---Danfoss - On/Off valve	
004.664	Hose 1/4 90x90x 140	1.0
	---VMA - Check valve	
004.665	Hose 1/2 90x90x 410	1.0
	---Flow divider - Danfoss	
004.666	Hose 1/2 STx90x2140	1.0
	2nd pump - Flow divider	
004.667	Hose 3/4 STx90x7150	2.0
	---V3 - Motor	
40180	Hose 1.1/4 90x90x 250 @280	1.0
	---V3 return - Filter	
8000	Hose Suction 38mm id	0.55
	---1st pump suction	

SET OF HOSES 52S RIGHT HAND CUT
ELECTRONIC PROPORTIONAL VALVES (45HP ULTRA PUMPS)

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.346	Hose 1/2 STx90x 350 ---F divider - Danfoss	1.0
004.346	Hose 1/2 90x90x 350 @000 ---Danfoss - Motor spool	1.0
004.399	Hose 1/4 90x90x 145 @180 ---VMA - Check valve	1.0
004.402	Hose 1/4 90x90x 180 @000 ---Prop - On/Off	1.0
004.442	Hose 3/4 STxSTx 635 ---Steel pipes - Motor	2.0
004.468F	Hose 1/4 STx90x 180 ---Head float - VMA return	1.0
004.474	Hose 1/4 90x90x 445 @270 ---Head float - VMA	1.0
004.480E	Hose 1/4 90x90x 490 @270 ---Head float - VMA	1.0
004.491F	Hose 1/4 STx90x 225 ---Danfoss relief - Danfoss return	1.0
004.503	Hose 1/4 90x90x1900 ---Danfoss - 2nd ram rod	1.0
004.531	Hose 1/4 90x90x 590 @000 ---Danfoss relief - On/Off	1.0
004.532	Hose 1/4 STx90x 980 ---Check - Break back anchor	1.0
004.534	Hose 1/2 STx90x2000 ---2nd pump - F divider	1.0
004.538	Hose 1/4 90x90x1280 @270 ---On/Off - 1st ram rod	1.0
004.558	Hose 1/4 90x90x1000 @090 ---Check - Break back rod	1.0
004.564	Hose 3/4 STx90x 540 ---2nd pump suction	1.0
004.565	Hose 1/4 90x90x1595 ---Danfoss - 2nd ram anchor	1.0
004.581	Hose 1/4 STx90x1120 ---Break back relief - V3 return	1.0
004.620	Hose 1/4 STx90x1200 ---Prop - 1st ram anchor	1.0
004.658	Hose 1/4 90x90x 190 @140 ---VMA - Check valve	1.0

004.659	Hose 1/2 90x90x 450 @ 90 ---VMA - Danfoss	1.0
004.660	Hose 3/4 90x90x1930 @270 ---1st pump - M. spool	1.0
004.661	Hose 3/4 STx90x7550 ---Motor spool - S pipes	2.0
004.662	Hose 1/4 90x90x5820 @090 ---Head float valve - Ram	2.0
004.687	Hose 1/4 90x90x 500 @090 ---Danfoss - Prop valve	1.0
40180	Hose 1.1/4 90x90x 250 @280 ---V3 - Return filter	1.0
8000	Hose Suction 38mm id ---1st pump suction	0.55 m

SET OF HOSES 58S RI (INC. FORWARD BOOM)
FULLY INDEPENDENT HYDRAULICS

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.186	Hose 1/2 STx90x1810 ---2nd Pump V1	1.0
004.334	Hose 1/4 STx90x6500 ---Head Angling Ram	2.0
004.549	Hose 3/4 90x90x1920 @000 ---1st Pump - V3	1.0
004.599	Hose 1/4 90x90x1250 ---Break back anchor	1.0
004.600	Hose 1/4 90x90x1420 @000 ---Break Back rod	1.0
004.601	Hose 1/4 STx90x1280 ---1st Ram	1.0
004.602	Hose 1/4 90x90x1280 @240 ---1st Ram	1.0
004.603	Hose 1/4 90x90x2120 @270 ---2nd Ram	1.0
004.604	Hose 1/4 90x90x1860 @270 ---2nd Ram	1.0
004.605	Hose 1/2 90x90x 290 @270 ---V3 - Valve Block	1.0
004.606	Hose 3/4 90x90x 180 ---2nd Pump Suction	1.0
004.607	Hose 3/4 STx90x7900 ---V3 - Motor	2.0

SET OF HOSES 58S RIEL
ELECTRONIC SWITCH CONTROLS

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.441	Hose 1/2 STx90x 370 ---V1 - V3	1.0
004.540	Hose 3/4 STx90x8150 ---V3 - Head motor	2.0
004.545	Hose 1/4 90x90x6420 @090 ---V1 - Head angling ram anchor	1.0
004.548	Hose 1/2 STx90x1780 ---V1 - 2nd pump	1.0
004.549	Hose 3/4 90x90x1920 @000 ---V3 - 1st pump	1.0
004.550	Hose 1/4 90x90x1050 @180 ---V1 - 1st ram anchor	1.0
004.551	Hose 1/4 90x90x1550 @180 ---V1 - 1st ram rod	1.0
004.552	Hose 1/4 90x90x1740 @315 ---V1 - 2nd ram rod	1.0
004.553	Hose 1/4 90x90x1700 @315 ---V1 - 2nd ram anchor	1.0
004.554	Hose 1/4 90x90x6740 @000 ---V1 - Head Angling Ram rod	1.0
004.555	Hose 1/4 90x90x1230 @270 ---V1 - Break Back ram anchor	1.0
004.556	Hose 1/4 90x90x1210 @090 ---V1 - Break Back ram rod	1.0
004.566	Hose 1.1/4 90x90x 312 @045 ---Tank - V3	1.0
004.567	Hose 3/4 90x90x 360 @315 ---Tank - 2nd pump	1.0

SET OF HOSES 58S RIEP LEFT HAND CUT
ELECTRONIC PROPORTIONAL VALVES

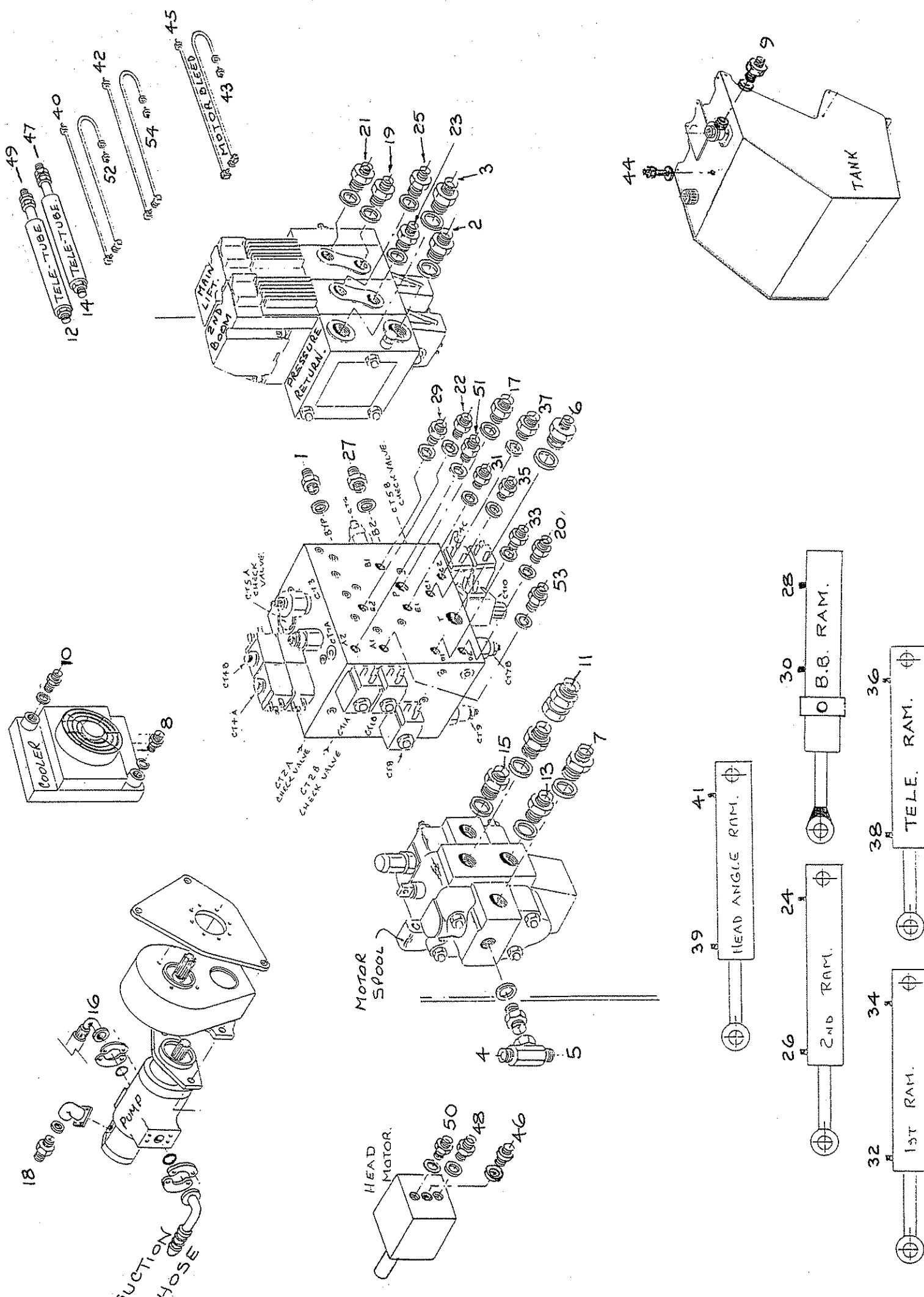
<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.402	Hose 1/4 90x90x 180 @000 --On/Off - Proportional	1.0
004.466F	Hose 1/4 STx90x 320 ---Danfoss - Prop Relief	1.0
004.468F	Hose 1/4 STx90x 180 ---Head Float - VMA	1.0
004.491F	Hose 1/4 STx90x 225 ---Relief - Motor Spool	1.0
004.503	Hose 1/4 90x90x1900 ---Danfoss - 2nd Ram Rod	1.0
004.524	Hose ½ 90x90x 320 @090 ---Danfoss - VMA Block	1.0
004.525	Hose ½ 90x90x 380 @270 ---VMA - Motor Spool	1.0
004.526	Hose ½ 90x90x 550 @015 ---Flow Divider - Danfoss	1.0
004.527	Hose 1/4 90x90x 200 @090 --Head Float top - VMA bottom	1.0
004.528	Hose 1/4 90x90x 140 @090 --Head Float bottom - VMA top	1.0
004.529	Hose 1/4 90x90x 180 @160 ---VMA top - Check Valve left	1.0
004.530	Hose 1/4 90x90x 130 @160 --VMA bottom - Check Valve right	1.0
004.531	Hose 1/4 90x90x 590 @000 ---Danfoss Relief - On/Off valve	1.0
004.532	Hose 1/4 STx90x 980 ---Check Valve(R) - Break Back Anchor	1.0
004.533	Hose 1/4 90x90x1000 @270 ---Check Valve(L) - BB Rod	1.0
004.534	Hose 1/2 STx90x2000	1.0
004.535	Hose 3/4 90xFLx1930 @030 --1st Pump - Motor Spool Pressure	1.0
004.536	Hose 1/4 STxSTx1330 ---BB Relief - VMA tank	1.0
004.537	Hose 1/4 90x90x 780 @250 --Prop Relief -1st Ram Anchor	1.0

004.538	Hose 1 1/4" 90 x 90 x 1280 @ 270 ---On/Off - 1st Ram Rod	1.0
004.539	Hose 3/8 STxSTx1250 ---Motor bleed on head	1.0
004.540	Hose 3/4 STx90x8150 --Motor Spool - Steel Pipes	2.0
004.545	Hose 1/4 90x90x6420 @090 ---Head Float - Head Angling Ram	2.0
004.546	Hose 3/8 STxSTx7500 ---Bleed MSV - St Pipes	1.0
004.564	Hose 3/4 STx90x 540 ---Motor - Steel Pipes	2.0
004.565	Hose 1/4 90x90x1595 ---Danfoss - 2nd Ram Anchor	1.0
004.566	Hose 1.1/4 90x90x 312 @045 ---Tank - V3	1.0
004.567	Hose 3/4 90x90x 360 @315 ---Tank - 1st pump	1.0

SET OF HOSES 58S LEFT HAND CUT
ELECTRONIC PROPORTIONAL VALVES
(55 HP + COOLER)

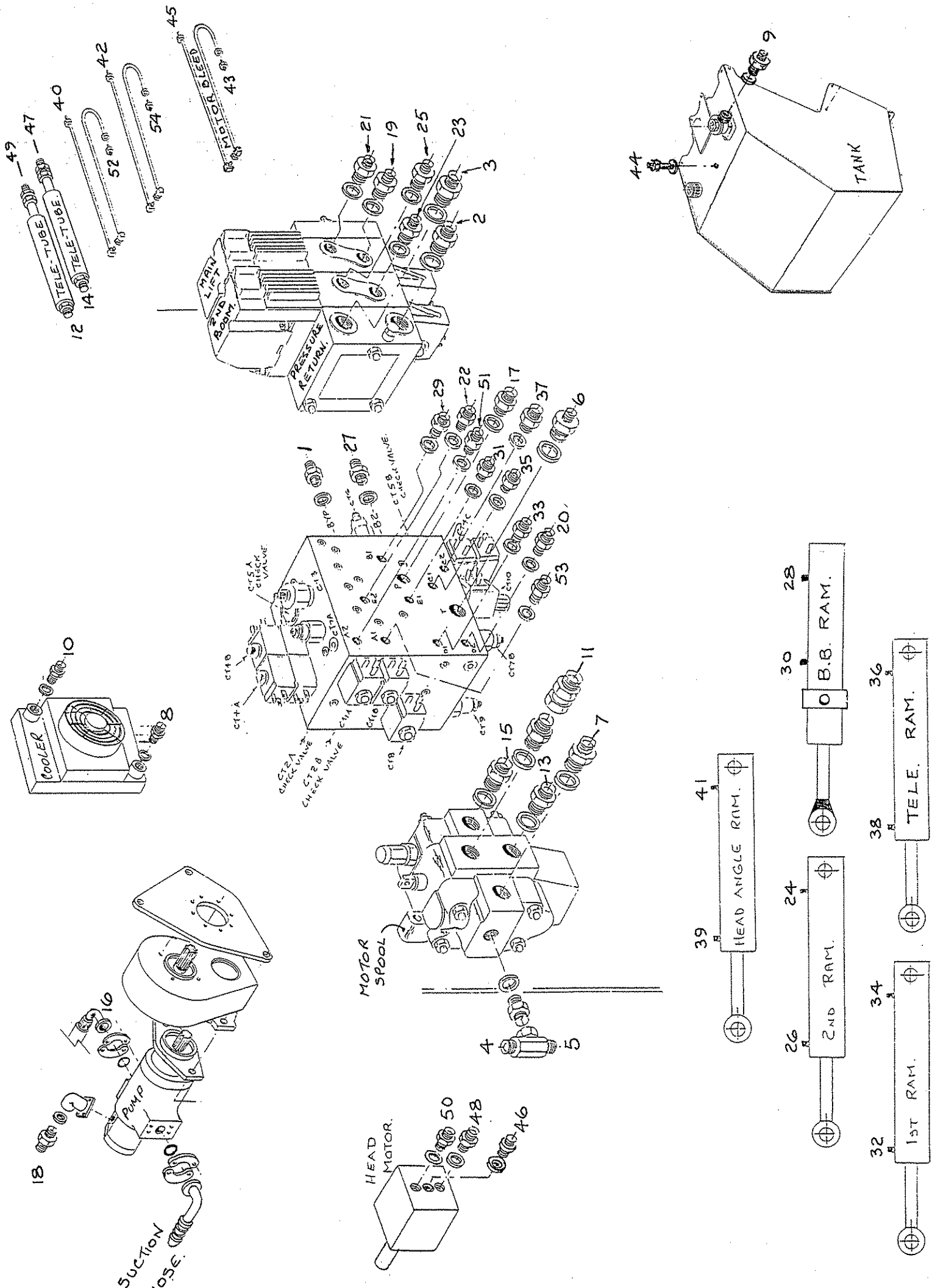
<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
004.398	Hose 1/4 90x90x 185 @180 ---VMA - Check valve	1.0
004.402	Hose 1/4 90x90x 180 @000 ---Prop - On/Off	1.0
004.481F	Hose 1/4 90x90x 230 @000 ---VMA - Head float	2.0
004.491F	Hose 1/4 STx90x 225 ---Danfoss Relief - Danfoss return	1.0
004.503	Hose 1/4 90x90x1900 ---Danfoss - 2nd ram rod	1.0
004.506	Hose 1/4 STx90x 180 ---Head float - Danfoss return	1.0
004.524	Hose 1/2 90x90x 320 @090 ---Danfoss - VMA return	1.0
004.532	Hose 1/4 STx90x 980 ---Check - Break back ram anchor	1.0

004.533	Hose 1/4 90x90x1000 @270 ---Check - Break back rod	1.0
004.535	Hose 3/4 90xFLx1930 @030 --1st pump - V3	1.0
004.571	Hose 1/4 STx90x1100 ---Break back relief - V3 return	1.0
004.620	Hose 1/4 STx90x1200 ---On/Off - 1st ram rod	1.0
004.538	Hose 1/4 90x90x1280 @270 ---Prop - 1st ram anchor	1.0
004.668	Hose 3/4 90x90x 330 ---2nd Pump suction.	1.0
004.565	Hose 1/4 90x90x1595 ---Danfoss - 2nd ram anchor	1.0
004.577	Hose 1/2 90x90x 200 @90 ---VMA - V3 return	1.0
004.632	Hose 1/4 90x90x 460 ---Danfoss - Prop valve	1.0
004.662	Hose 1/4 90x90x5820 @090 ---Head float valve - Ram	2.0
004.663	Hose 1/4 90x90x 485 ---Danfoss - On/Off valve	1.0
004.664	Hose 1/4 90x90x 140 ---VMA - Check valve	1.0
004.665	Hose 1/2 90x90x 410 ---Flow divider - Danfoss	1.0
004.534	Hose 1/2 STx90x2000 2nd pump - Flow divider	1.0
004.667	Hose 3/4 STx90x7150 ---V3 - Motor	2.0
004.447F	Hose 1 STx90x 540 ---Cooler - Return filter	1.0
004.669	Hose 1 90x90x1270 @ 90 ---V3 - Cooler	1.0
8000	Hose Suction 38mm id ---1st pump suction	0.72m



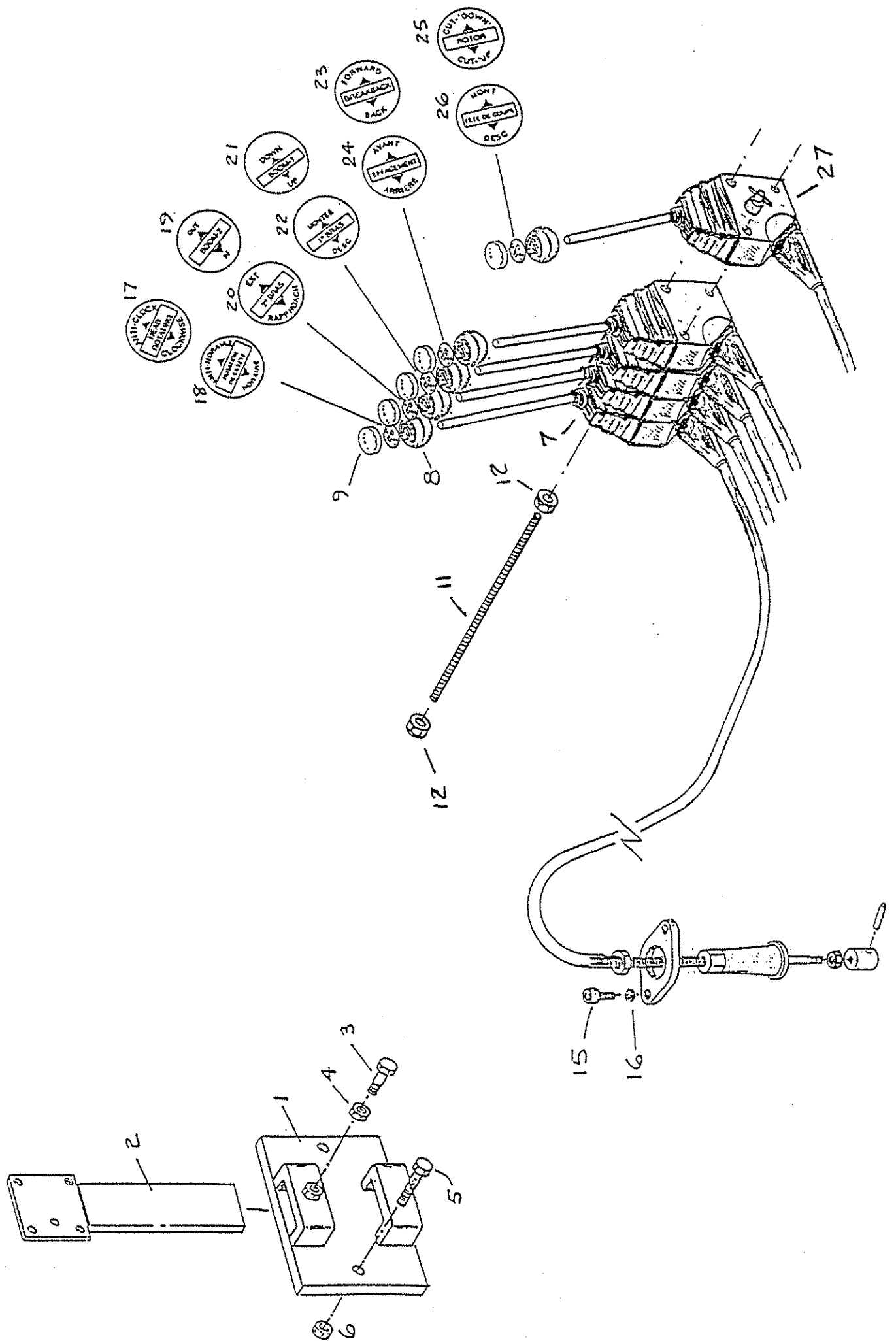
526 HEDGETRIMMER (R.H) HOSE
CONNECTION POSITIONS AND HOSE DESCRIPTIONS

1-2 004.783	Integrated block 'BYP' to Danfoss pressure 1/2" hose 90 x ST x 390
3-4 004.782	Motor Spool 'tee' to Danfoss 1/2" hose 90 x 90 x 460 @ 90°
5-6 004.781	Motor Spool 'tee' to Integrated block 'T' 1/2" hose 90 x ST x 425
7-8 004.799	Motor Spool to Cooler (lower) 1" Hose 90 x 90 x 380 @ 270°
9-10 004.800	Tank top - filter to Cooler (Top) 1" Hose 90 x 90 x 640 @ 180°
11-12 004.795	Motor Spool (top) to Tele-tube 3/4" Hose ST x 90 x 4070
13-14 004.795	Motor Spool (bottom) to Tele-tube 3/4" Hose ST x 90 x 4070
15-16 004.792	Motor Spool to 1st Pump Pressure 3/4" Hose 90 x 90 flange x 1170 @ 300°
17-18 004.786	Integrated port 'P' to 2nd pump 1/2" Hose 90 x 90 x 1060 @ 180°
19-20 004.785	Danfoss to Integrated (D2) 1/4" Hose 90 x 90 x 210 @ 0°
21-22 004.784	Danfoss to Integrated (E2) 1/4" Hose 90 x 90 x 190 @ 0°
23-24 004.789	Danfoss to 2nd Ram (Anchor) 1/4" Hose 90 x 90 x 1810 @ 270°
25-26 004.788	Danfoss to 2nd Ram (Rod) 1/4" Hose 90 x 90 x 2000 @ 270°
27-28 004.791	Integrated (B2) to B.B Ram (Anchor) 1/4" Hose 90 x 90 x 1290 @ 300°



526 HEDGETRIMMER (R.H)
HOSE CONNECTION POSITIONS
AND HOSE DESCRIPTIONS - CONTINUED

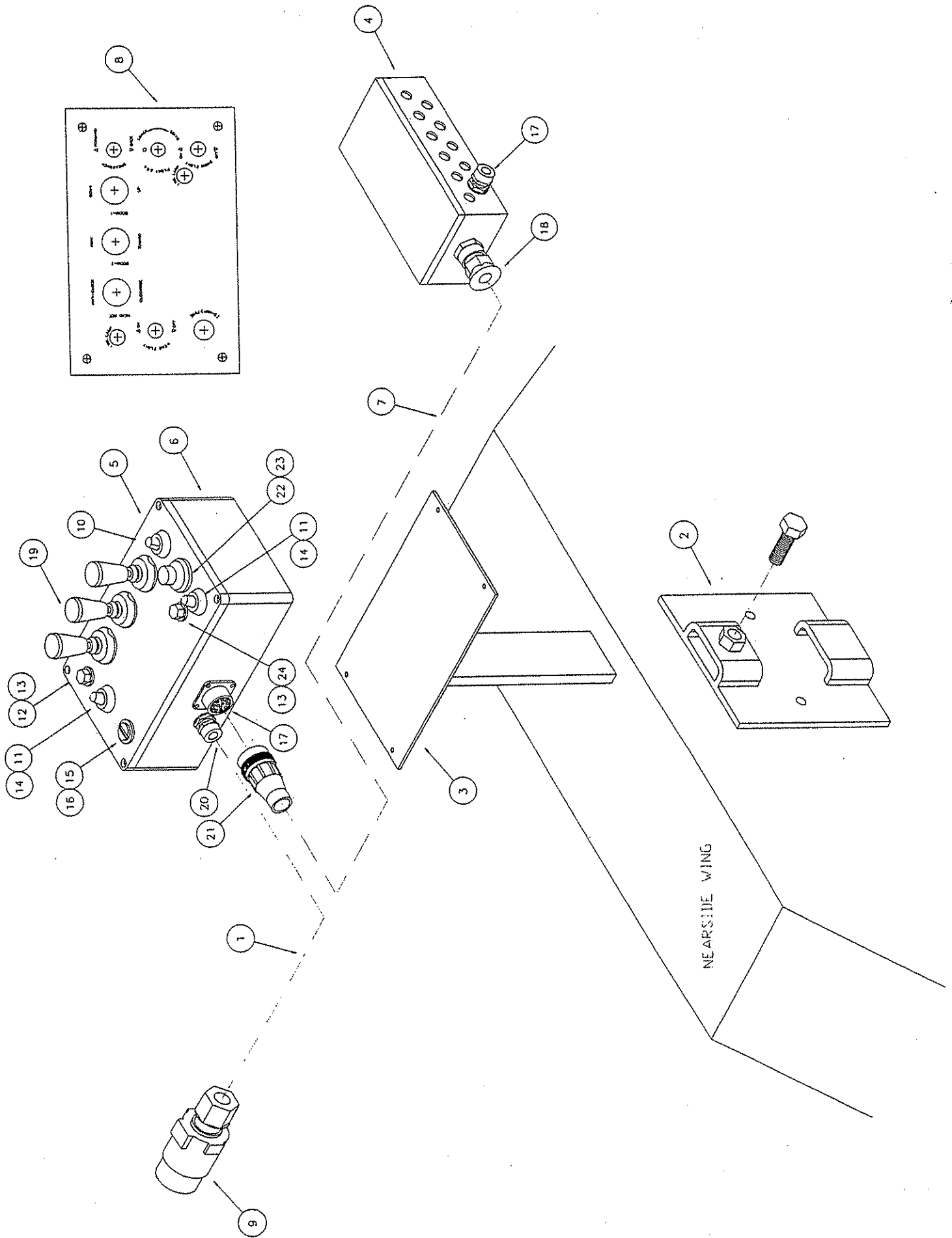
29-30 004.790	Integrated (B1) to B.B Ram (Rod) 1/4" Hose 90 x 90 x 870 @ 90°
31-32 004.533	Integrated (E1) to 1st Ram (Rod) 1/4" Hose 90 x 90 x 1000 @ 270°
33-34 004.787	Integrated (D1) to 1st Ram (Anchor) 1/4" Hose 90 x 90 x 970 @ 270°
35-36 004.797	Integrated (C1) to Tele-Ram (Anchor) 3/8" Hose 90 x (ST 1/4" Nut) x 3900
37-38 004.798	Integrated (C2) to Tele-Ram (Rod) 3/8" Hose 90 x (ST 1/4" Nut) x 4600
39-40 004.332	Head angle ram to 'Top' Tube 1/4" Hose ST x 90 x 490
41-42 004.583	Head angle ram to 'Bottom' Steel Pipe 1/4" Hose ST x 90 x 230
43-44 004.796	Motor Bleed hose - to tank 3/8 Hose ST x 90 x 4400
45-46 004.793	Tele-tubes to steel pipes (Motor bleed) 3/8 hose ST x ST x 1560
47-48 004.647	Tele-tubes to steel pipes 'Motor' 3/4 hose ST x ST x 1560
49-50 004.647	Tele-tubes to steel pipes 'Motor' 3/4 hose ST x ST x 1560
51-52 004.797	Integrated (A1) to 'Rod' Head angle - via steel tele-tub 3/8 Hose (1/4" ST x 8028) x 90° x 3900
53-54 004.797	Integrated (A2) to 'anchor' head angle - via steel tele-tube 3/8 Hose (1/4" ST - 8028) x 90° x 3900



5-BANK CONTROLLERS AS FOR RI MACHINES
(T.M.C CONTROLLERS)

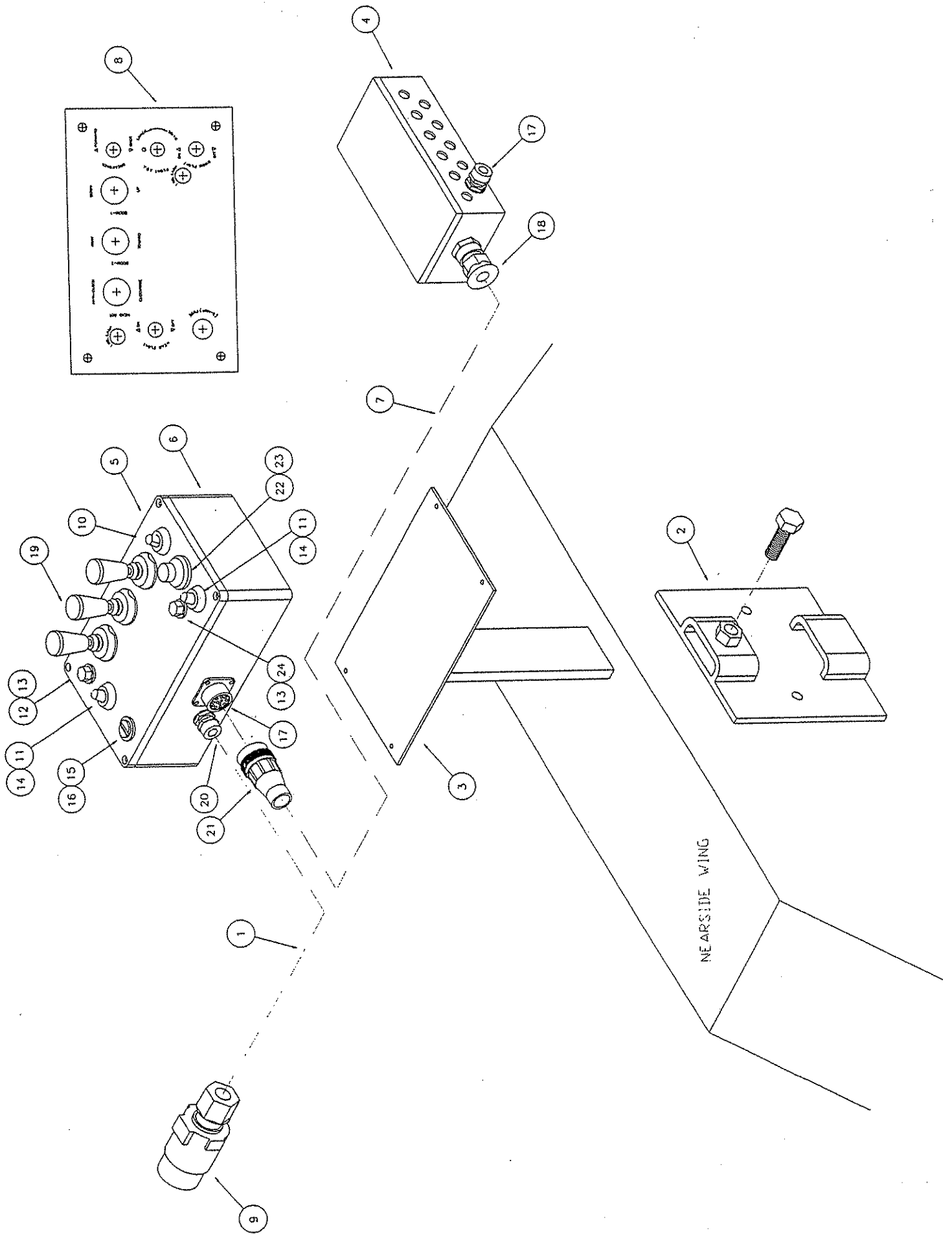
GREY CABLES

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
7	7822	Complete Controller	4
8	7835	Knob (Black) with lens	4
9	7836	Knob (Red) with lens	1
11	184.481B	Tie bolt stud (M6 x 275)	3
12	4776	M6 Nyloc Stiffnut	6
15	4695	Caphead Screw M6 x 15	10
16	2731	Spring Washer M6	10
17	1840375	Head Rotating Transfer (English)	1
18	1840375F	Head Rotating Transfer (French)	1
19	1840374	Boom '2' Transfer (English)	1
20	1840374F	Boom '2' Transfer (French)	1
21	1840373	Boom '1' Transfer (English)	1
22	1840373F	Boom '1' Transfer (French)	1
23	1840372	Breakback Transfer (English)	1
24	1840372F	Breakback Transfer (French)	1
25	1840371	Rotation-cut Transfer (English)	1
26	1840371F	Rotation-cut Transfer (French)	1
27	7823	Controller Complete (Baulk Lock)	1



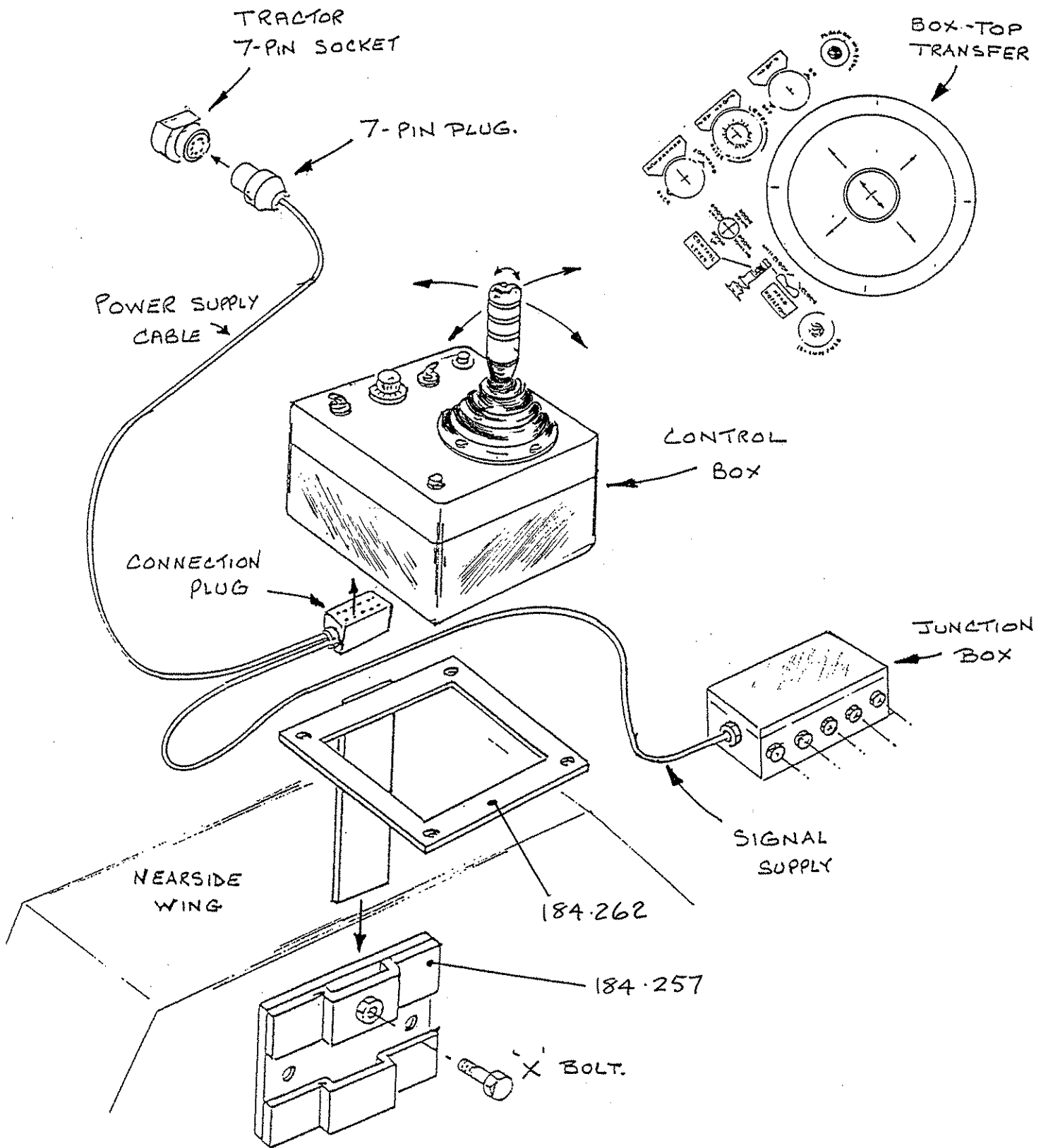
ELECTRONIC SWITCH CONTROLS

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	184.194	Cable Twin x 1700 long	1
2	184.257	Fixing Brackets	1
3	187.071	Control Box Support bracket	1
4	187.097	Box. Modified 7629	1
5	187.087	Lid for Control Box	1
6	187.074	Box Control	1
7	187.075	Cable 12 Core x 2600	1
8	1870086	Transfer Control Box	1
9	7211	Plug 7 Pin Electrical	1
10	7596	Switch for Break Back 3 Way	1
11	7597	Switch for float	2
12	7598-R	Lamp holder Red	1
13	7599	Bulb for 7598	2
14	7602	Toggle Cover	3
15	7603	Fuse holder	1
16	7634	Fuse 5 amp	1
17	7637	Terminal Block 12 Way	0.083
18	7639	Cable Gland	1
19	7946	Joystick switch compact	3
21	8023	Cable shell plug 19	1
22	7588	Potentiometer 1Kohm RS 173-388	1
22	8024	Chassis shell socket 19	1
23	7593	Knob	1
24	7598-B	Lamp holder Blue	1
#	184.157	Circuit Board	1
#	184.171	Wire Brown 50 Long	1
#	184.174	Wire Green/Yellow 85 Long	1
#	184.175	Wire Green/Yellow 50 Long	1
#	187.078	Wire Assy Brown	1
#	187.082	Base for Control Box	1
#	187.083	Circuit Board	1
#	187.084	Cable 12 Core x 300	1
#	187.089	Wire Green/Yellow 200 Long	2
#	187.090	Wire Assy Red/Black	1
#	187.091	Wire Pink 50 Long	1
#	187.092	Wire Assy Red/Black	1
#	187.093	Wire Red 80 Long	1



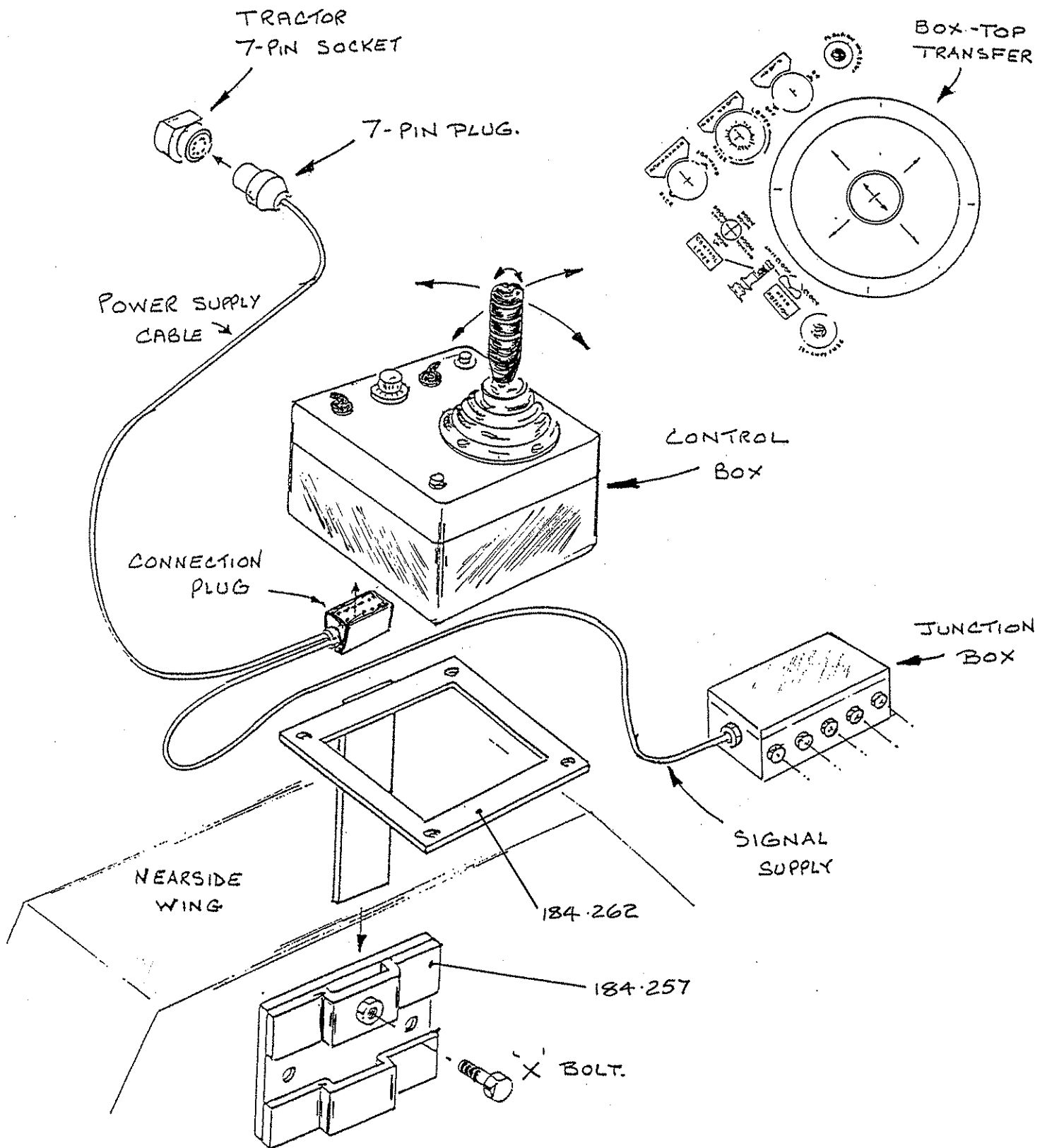
ELECTRONIC SWITCH CONTROLS

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
#	187.094	Wire Assy Red/Black	1
#	187.095	Wire Assy Green/Yellow	1
#	187.096	Wire Red 100 Long	2
#	1870101	Transfer 12 Way Term	0.857
#	7592	Diode	2
#	7637	Terminal Block 12 Way	0.75
#	7638	Cable Gland	12
#	7640	Connector Crimp 0.25"	4
#	7644	Fullnut M 3	8
#	7644	Fullnut M 3	4
#	7644	Fullnut M 3	4
#	7644	Fullnut M 3	4
#	7645	Setscrew M 3 * 6	4
#	7646	Setscrew M 3 * 20	8
#	7649	Terminal Block 12 Way	0.1667
#	7649	Terminal Block 12 Way	0.1667
#	7651	Connector Crimp 0.187"	1
#	7891	Bootlace Ferrule 12 C/C	12
#	7927	Setscrew M 3 * 12	4
#	7927	Setscrew M 3 * 12	4
#	7948	Diode	1
#	7954	Insert Pins	12
#	7954	Insert Pins	7
#	7955	Insert Sockets	12
#	7955	Insert Sockets	7



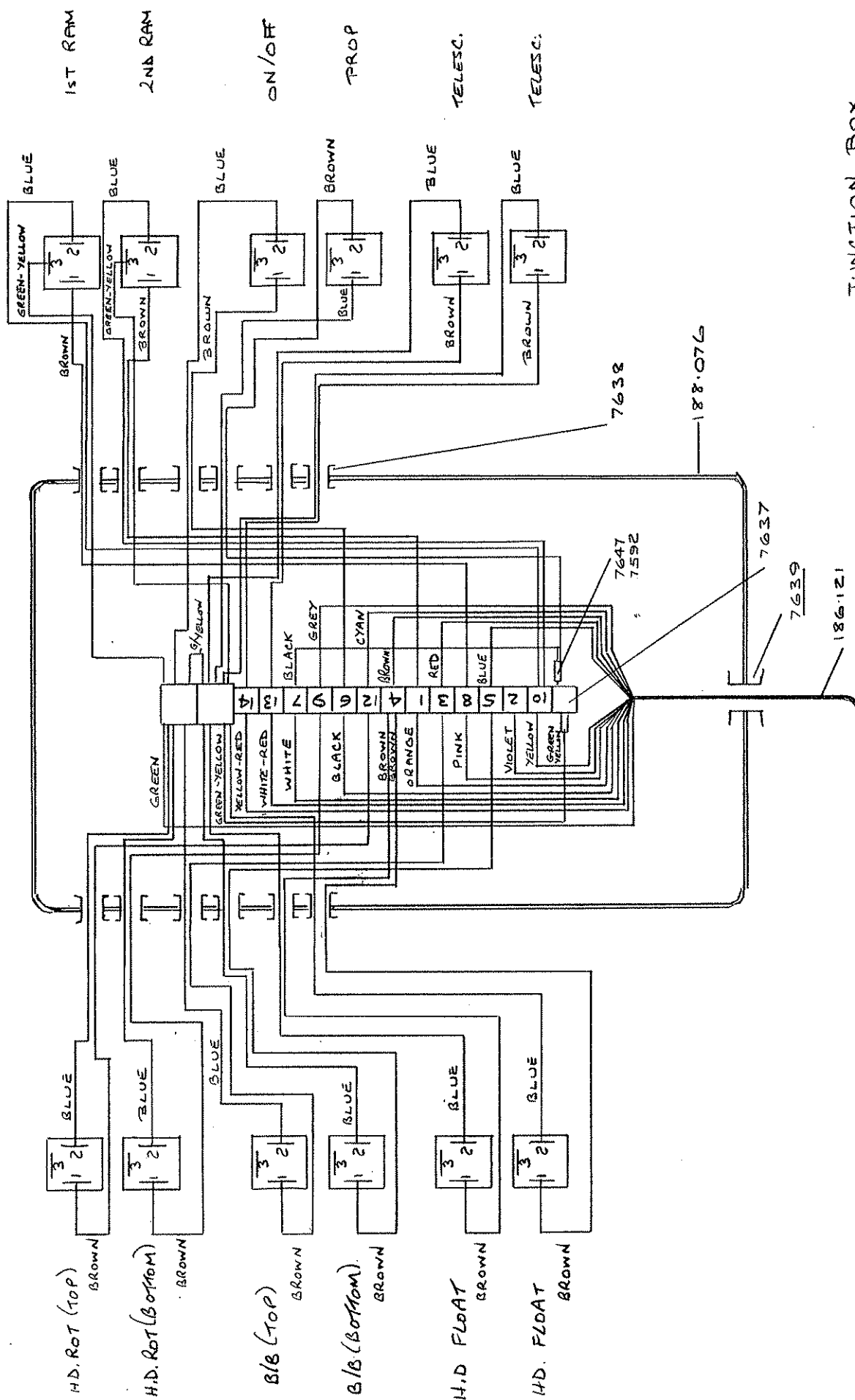
ELECTRONIC PROPORTIONAL VALVE
CONTROL COMPONENTS

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	184.201	Control Box (Tractor Side)	1
		<u>COMPRISING THE FOLLOWING:-</u>	
	184.154	Box control	1
	184.155	Base for Control Box	1
	184.156	Mtg Rail Din 46277-3 75 Lg	1
	184.157	Circuit Board	1
	184.159A	Wire Assy Red/Blue c/w conns	1
	184.159B	Wire Assy Red/Blue c/w conns	1
	184.160A	Wire Assy Green/Yellow c/w conns	1
	184.160B	Wire Assy Violet c/w conns	1
	184.161	Wire Assy Red/Black c/w conns	1
	184.162	Wire Assy Grey/Blue 440 Lg c/w conns	1
	184.163	Wire White/Red 340 Lg c/w conn	1
	184.164	Wire Pink 400 Lg c/w conn	1
	184.165	Wire Orange 400 Lg c/w conn	1
	184.166	Wire Grey 400 Lg c/w conn	1
	184.167	Wire Brown 400 Lg c/w conn	1
	184.168	Wire Green/Red 400 Lg c/w conn	1
	184.169	Wire Blue 440 Lg c/w conn	1
	184.170	Wire Red 440 Lg c/w conn	1
	184.171	Wire Brown 50 Lg	1
	184.172	Wire Black 140 Lg	1
	184.173	Wire Red/Blue 50 Lg	2
	184.174	Wire Green/Yellow 85 Lg	4
	184.176	Wire Pin 160 Lg	1
	184.177	Wire Orange/Black 110 Lg	1
	184.178	Wire Yellow 150 Lg	2
	184.179	Wire White 180 Lg	1
	184.180	Wire Red/Black 150 Lg	1
	184.181	Wire Red/Blue 150 Lg	1
	184.183	Wire Green/Yellow 250 Lg	1
	184.184	Wire Brown 360 Lg	1
	184.185	Wire White/Black 320 Lg	1
	184.262	Bracket Joystick Mtg	1
	1840508	Transfer for Joystick	1
	3447	Washer M5 Form C Bright Plated	2



ELECTRONIC PROPORTIONAL VALVE
CONTROL COMPONENTS

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	184.201	Control Box (Tractor Side)	1
		<u>COMPRISING THE FOLLOWING:-</u>	
	4776	Stiffnut M6 Nyloc	2
	7578	Joystick	1
		155B 4275 PVRE	
	7588	Potentiometer 1Kohm	1
		RS 173-388	
	7593	Knob	1
		RS 509-973	
	7594	Relay 4PCO 12V dc	2
		RS 348-879	
	7595	Base for Relay	2
		RS 403-257	
	7596	Switch for Bback 3 way	1
		Autolec 0-496-00	
	7597	Switch for float	1
		RS 316-822	
	7598-B	Lampholder Blue	1
		RS 564-920	
	7598-R	Lampholder Red	1
		RS 564-958	
	7599	Bulb for 7598	2
		RS 587-939	
	7601	Socket Electrical	1
		RS 480-355	
	7602	Toggle Cover	2
		RS 316-967	
	7603	Fuseholder RS 414-099	1
	7634	Fuse 5 amp RS 412-5761	
	7636	Spacer Insulated RS 601-158	2
	7642	Setscrew M4 * 12 Chshd RS 523-890	4
	7643	Fullnut M4 RS 525-896	4
	7644	Fullnut M3 RS 527-230	4
	7645	Setscrew M3 * 6 RS 523-828	4
	7648	Setscrew M6 * 25 Chshd RS 523-963	4
	7722	Tie Cable Small Nylon RS 543-428	4

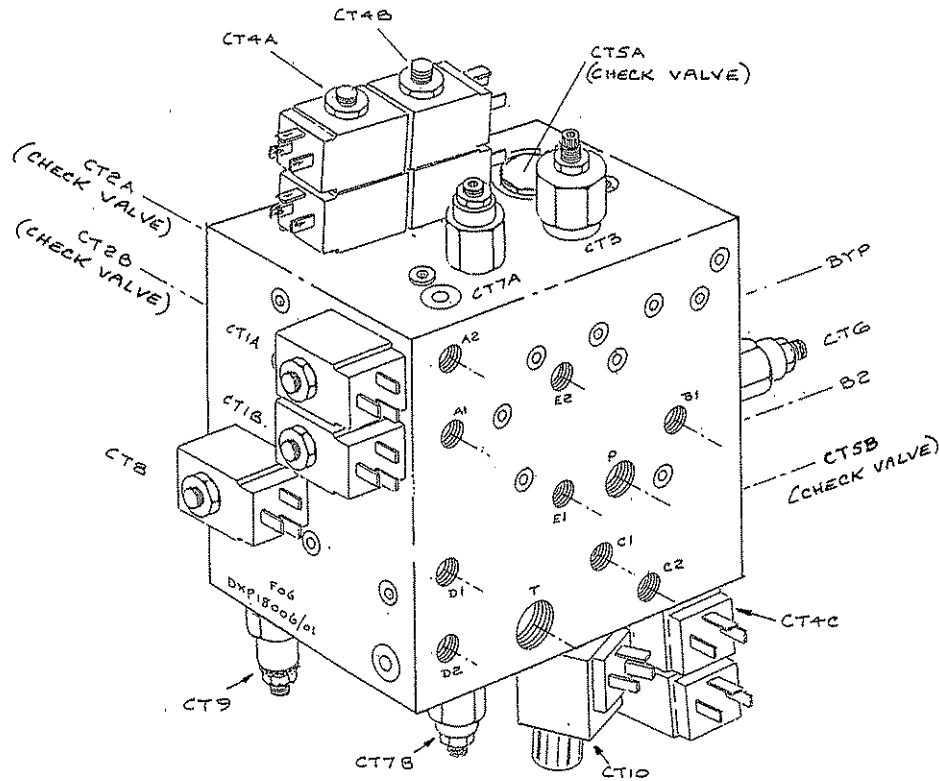


JUNCTION BOX
WIRING DRAWING.

526 R.H. TRIMMER (FRENCH), APRIL 1998

- INTEGRATED 'ALL-IN' BLOCK
- DANFOSS TVG32 PROPORTIONAL
- BYPY MOTOR VALVE.

INTEGRATED HYDRAULIC VALVE BLOCK



HYDRAULIC PORTS

A1	=	HEAD ROTATION
A2	=	HEAD ROTATION
B1	=	BREAKBACK 'FORWARD'
B2	=	BREAKBACK 'BACK'
C1	=	TELESCOPIC "IN" (ROD END)
C2	=	TELESCOPIC "OUT" (ANCHOR END)
E1	=	1ST RAM 'ROD END ON RAM'
E2	=	1ST RAM 'ROD END TO DANFOSS'
D1	=	1ST RAM 'ANCHOR END ON RAM'
D2	=	1ST RAM 'ANCHOR END TO DANFOSS'
P	=	PRESSURE 'FROM 2ND PUMP'
T	=	TANK LINK 'RETURN'
BYP	=	PRESSURE TO DANFOSS (BYPASS)

CARTRIDGE SOLENOID

CT1A AND B	=	HEAD FLOTATION
CT4A (2 OFF)	=	HEAD ROTATION
CT4B (2 OFF)	=	BREAKBACK
CT4C (2 OFF)	=	TELESCOPIC
CT8	=	ON/OFF
CT10	=	PROPORTIONAL RELIEF
		} POWER
		} FLOAT

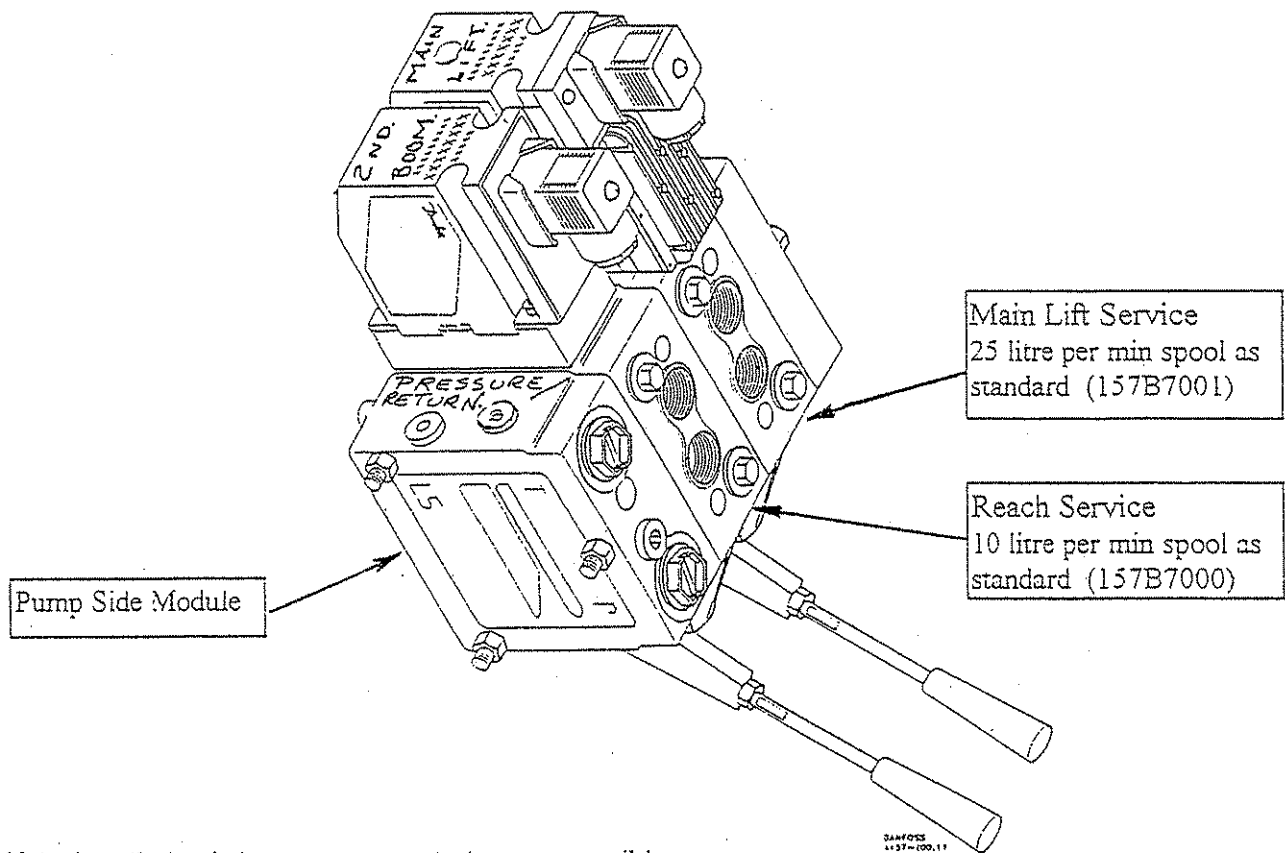
CARTRIDGE RELIEF AND FLOW DIVIDER

CT3	=	FLOW DIVIDER
CT6	=	BREAKBACK (SET AT 138 BAR)
CT7A	=	1ST RAM ROD END [PRESSURE INTO GROUND] (SET AT 28 BAR)
CT7B	=	MAIN RELIEF (SET AT 170 BAR)
CT9	=	OVER CENTRE CHECK (SET AT 210 BAR)

TWOSE

Piping arrangement for Danfoss valve blocks:

The Danfoss valve on this machine supplies oil to 2 double-acting services; accurately metering the flow between zero and a preset maximum. The maximum is determined by the spool fitted. As supplied, the service nearest to the pump side module (section containing main pressure and tank ports) has a spool capable of supplying 10 litres per minute, and that for the other service 25 litres per minute. It is intended that the 10 litres per minute service supplies the reach ram and the 25 litre the main lift ram: if this is not so the main lift could operate more slowly than is desirable.



If the installation is incorrect, two solutions are possible -

- Remove the electrical plug and the pipes from each service of the valve, and replace on the other service. It may be necessary to exchange the two pipes on a service to retain the control logic (i.e., that 'up' still gives up etc.)
- Or - Remove each spool from its section and exchange them (they are designed to allow this). This will entail removing the end cap to which the manual lever is fitted. (Etched onto the spools at the clevis end will be 157B7000 for the 10 litre spool and 157B7001 for the 25 litre).

The former is likely to be easier, given the lack of room around the base of the valve. In each case it is strongly recommended that a note of the change is made on the 'Amendments' page of the machine's parts book.