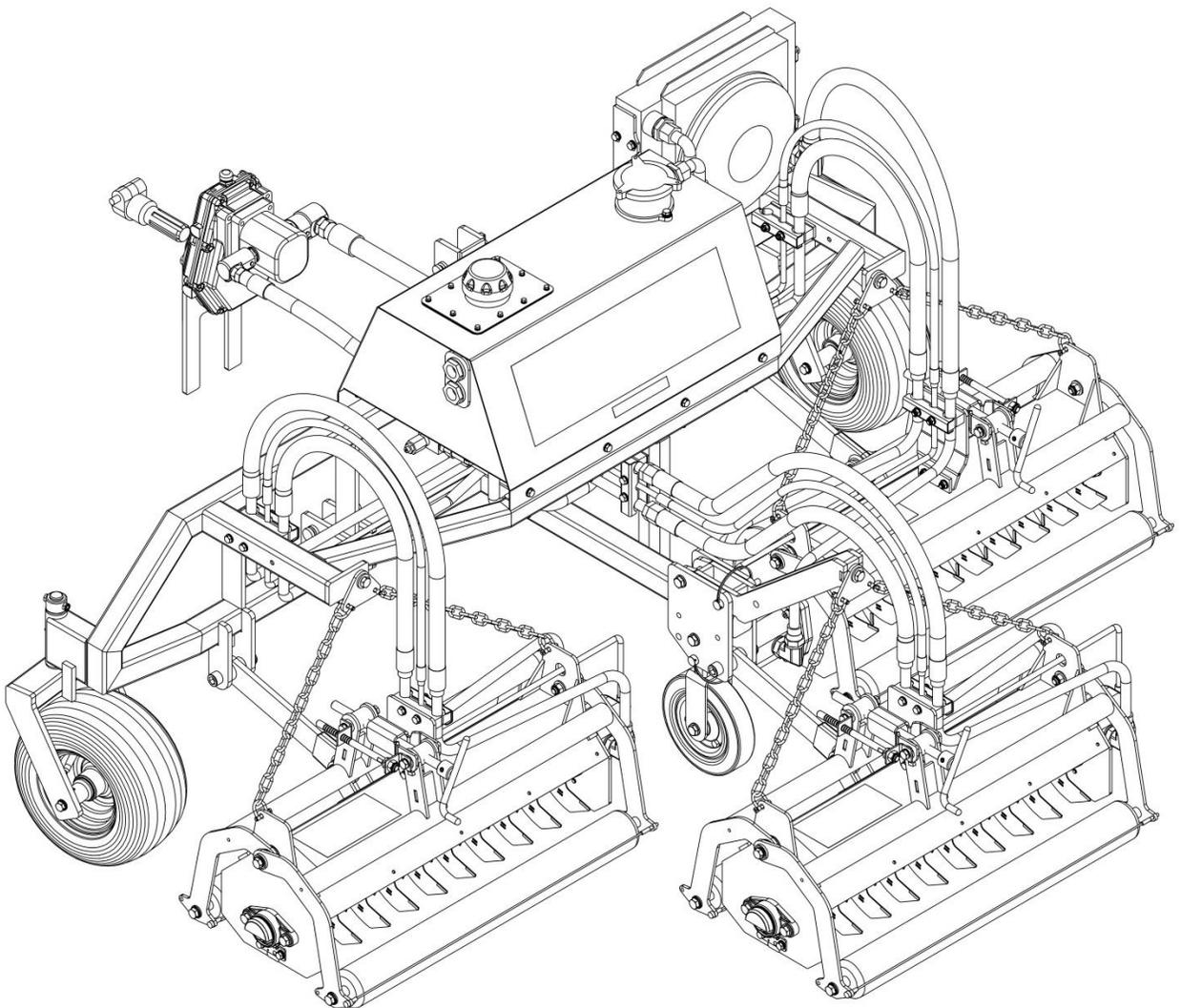


# sisis<sup>®</sup>

## VEEMO MK2 INSTRUCTION MANUAL



# CERTIFICATE OF CONFORMITY

**VEEMO MK2 CN Code: 84322910**

**Manufacturer:-** Howardson Ltd, Howardson Works, Kirk Langley, Derby, DE6 4NJ. UK

**Owner of Technical Document:-** Mr I.D. Howard, Howardson Ltd, Howardson Works Kirk Langley, Derby, DE6 4NJ, UK

**Tested at:-** Howardson Works test site AUGUST 2013

Complies with the applicable requirements of:-  
- Machine Directive 2006/42/EC

**Managing Director**



**Ian Howard**

## SERIAL NUMBERS



**NOTE:-**

*MAKE A NOTE OF THE SERIAL NUMBER OF YOUR MACHINE AND ALWAYS QUOTE IT IN ANY COMMUNICATION WITH PERSONNEL AT DENNIS.*

**MACHINE SERIAL NUMBER**

**ENGINE SERIAL NUMBER**

## INTRODUCTION

The reliability and quality of performance of the **SISIS VEEMO** depends upon some simple care maintenance carried out regularly. This manual has been prepared to allow the user to carry out all such work.

It is advisable to read the instructions carefully. Proper care and attention will enable the machine to give a continuous, satisfactory, and reliable service. Failure to carry out regular lubrication and maintenance as outlined in this manual may render any guarantee or warranty invalid.

In the case of any difficulty, or if further information or advice is required, our Service Department is always at your call. In the interests of speed and accuracy of information please quote the serial numbers of the machine and engine when making enquiries.

For the machine, this is to be found on a plate attached to the side frame. The engine number is stamped on either the crank case or the gear casing facing towards the front of the machine. We suggest you write the numbers on the front page of this book.

	<b>Page</b>
Declaration of Conformity.....	2
Serial Numbers.....	2
Introduction.....	2
Technical Data.....	3
Important Safety Instructions.....	3-4
Operating Instructions.....	5
Maintenance .....	6
Tines .....	7
Parts Listings.....	P0-P9

## TECHNICAL DATA

MODEL	VEEMO MK2
WIDTH (mm)	2175
LENGTH (mm)	2090
HEIGHT (mm)	990
WEIGHT (Kg)	470
APPROX. GROUND COVERAGE AT 9.5Km/h	26.300m
WORKING WIDTH (mm)	1990
OIL TANK CAPACITY (ltr)	43
OIL PRESSURE	160 bar (2320 psi)
OIL FLOW RATE	53L/min

## IMPORTANT SAFETY INTRODUCTIONS



### **CAUTION:-**

*READ THE INSTRUCTIONS. We want you to obtain the best performance from this machine. If you have any difficulty in carrying out the following instructions please contact your local SISIS dealer.*

### **NEVER**

- Carry out adjustments whilst the machine is running.
- Allow any unauthorised person to handle machines in any way at any time.

### **ALWAYS**

- Read the operating instructions carefully and understand the controls before commencing work.
- Use safety guards and make sure they are correctly in position. They are supplied for your protection.
- Before starting work always visually check machine for damage or wear to parts.
- Look behind before starting to reverse and watch out for children or pedestrians.
- Respect powered machines. Always keep hands and feet clear of moving parts and remember that tine cylinders or drums can continue to rotate even after the power unit is switched off.
- Switch off the power before making adjustments or repairs and never lift or carry a machine whilst any parts are moving.

### **EYE PROTECTION**

In dry, dust or windy conditions it may be necessary to wear eye protection to protect your eyes from flying debris.

in order to operate the machine safely please follow these health and safety guidelines.

## **TRAINING**



**CAUTION** - *Read the instructions contained in this manual with care. If you are in any doubts ask your employer or contact us direct at SISIS.*

- Be familiar with the controls and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the machine. Local regulations or insurance may restrict the age of the operator.
- Never operate while people, especially children, or pets are nearby.
- Keep in mind that the operator or the user is responsible for accidents or hazards occurring to other people on their property.

## **PREPERATION**

- While operating always wear substantial footwear and long trousers. Do not operate the machine in bare foot or in open sandals.
- Thoroughly inspect where the equipment is to be used and remove all stones, sticks, wire, bones and other foreign objects

## **OPERATION**

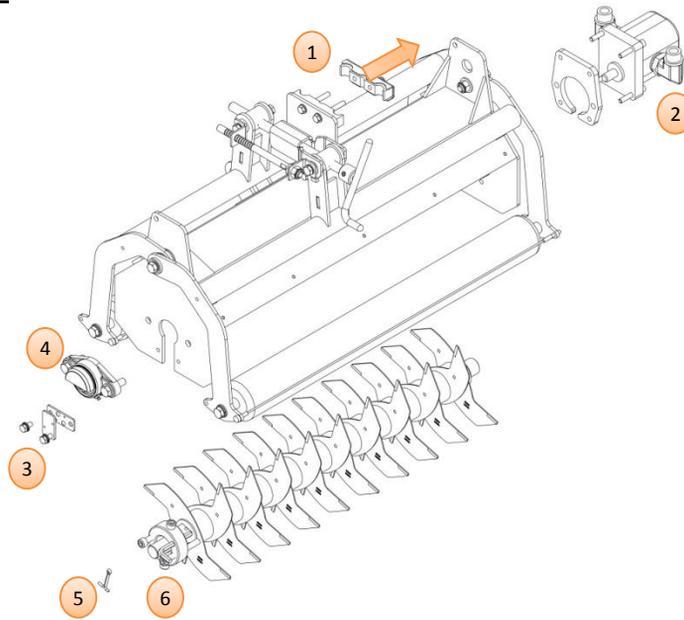
- Operate only in daylight or good artificial light.
- Exercise extreme care on slopes when changing direction.
- Do not operate on excessively steep slopes.
- Use extreme caution when reversing.
- Stop the tines when transporting the machine.
- Do not use speeds higher than 540rpm as damage could be caused to: Pump, Motors or the Gear box.
- Do not put hands or feet near or under moving parts.

# OPERATING INSTRUCTIONS

## **POWER SUPPLY**

Power is transmitted from the tractor PTO shaft at 540rpm to the pump and gearbox assembly. The pump supplies high pressure oil to each of the three hydraulic motors which direct drive the tine reels. A pressure relief valve is fitted to the pump. This is factory set and should not be altered. Oil is returned to the tank through filter.

## To Replace Worn Tine Blades



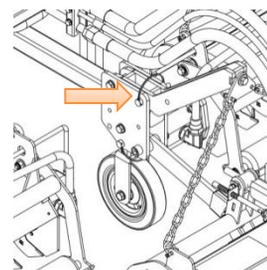
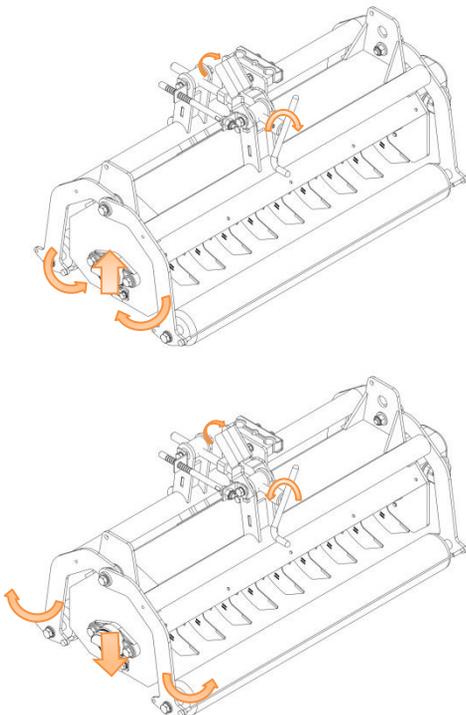
- Detach chains of the head from the main chassis
- Detach pivot point bar releasing the head from the main Veemo assembly.
- Undo the bolts clamping the piping to the head [1]
- Remove the motor and the drive motor end plates by removing securing bolts [2]
- Rest the whole head on its side so that the blades and shaft are easy to access.
- Remove the blanking plates [3] by removing the securing bolts.
- The bearing on the non drive end should then be removed too [4]
- Loosen the grub screws on the drive side bearing to allow the shaft to be removed.
- Remove the split pin on the shaft so that blades and spacers can be removed (the tine compression tool may be needed to take the pressure off the pin so it can be removed more easily) [5]
- Once the maintenance task is completed, reapply the tine compression tool so that the split pin can be repositioned. [6]
- Reassemble the head by reversing the steps taken to disassemble the head.

## Depth Setting

Lift the lock gate clear of the screw adjuster and turn the adjuster clockwise to raise the tines and anti clockwise to lower the tines to the ground. Depth will be determined by the ground conditions. In general the tines will be set to go into the base of the grass sward without soil contact. In deep thatch conditions it will be necessary to slow the forward speed of the tractor.

going too deep will cause premature blade wear and can overheat the oil in the hydraulic system which can cause damage to the motor, pump or gearbox. It will also leave too much debris on the surface. It is much better to remove the thatch layer by scarifying little and often.

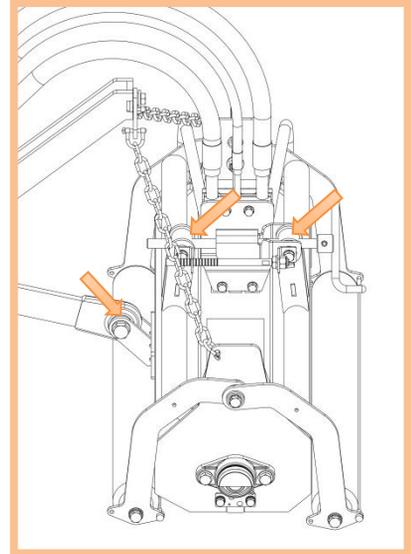
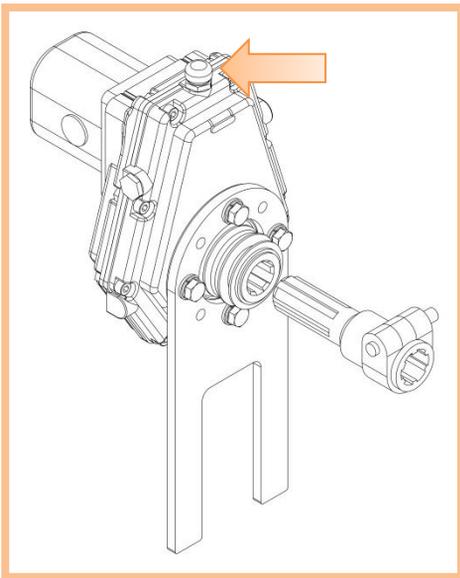
On very undulating ground the rear unit arm may be left in a float position. Remove the pin shown on the right and stow the pin in the spare hole in the arm.



## Maintenance and Lubrication

Check the oil tank level before use. Ensure that the oil level at the centre of the top sight glass. Due to oil expanding when warm it is essential this inspection is carried out before the machine is used. Only use clean, new hydraulic oil.

Apply oil or grease to adjusters and pivot points weekly.

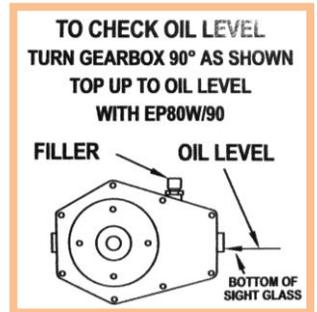


Check the oil level in the gearbox by ensuring that the level is maintained at the middle of the sight glass. If low – top up with SAE90 / EP80W/90 oil or equivalent. See decal on right.

Check all nuts and bolts for tightness

Check hydraulics for leaks

Check tines for wear



HYDRAULIC OIL – As supplied – ATF UNIVERSAL,

Typical Physical Properties

Viscosity Index - 170

Viscosity @ 100°C c/S – 7.0

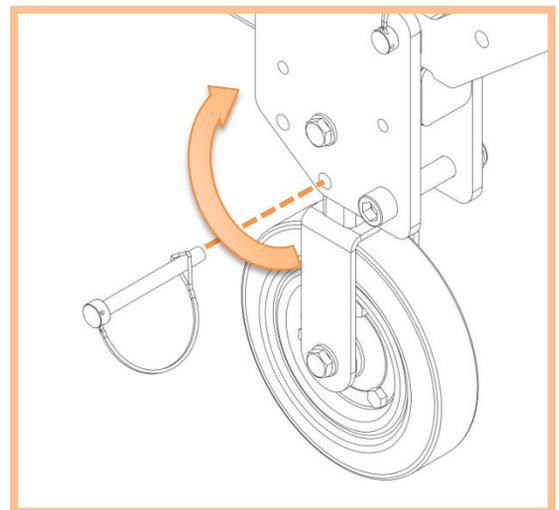
Viscosity @ -23.3°C c/S - 2000

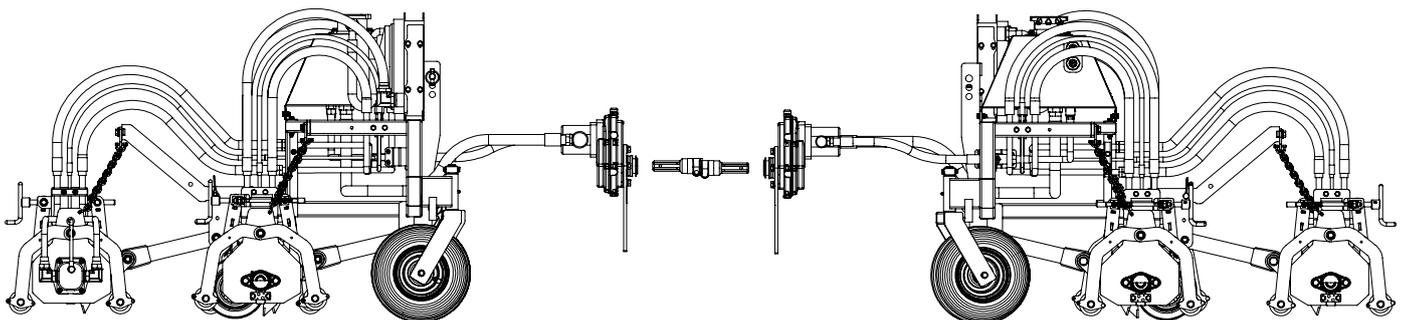
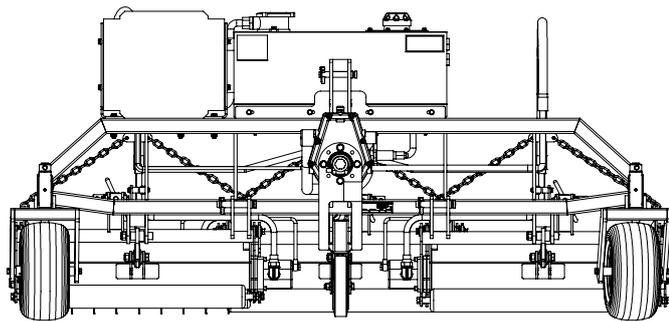
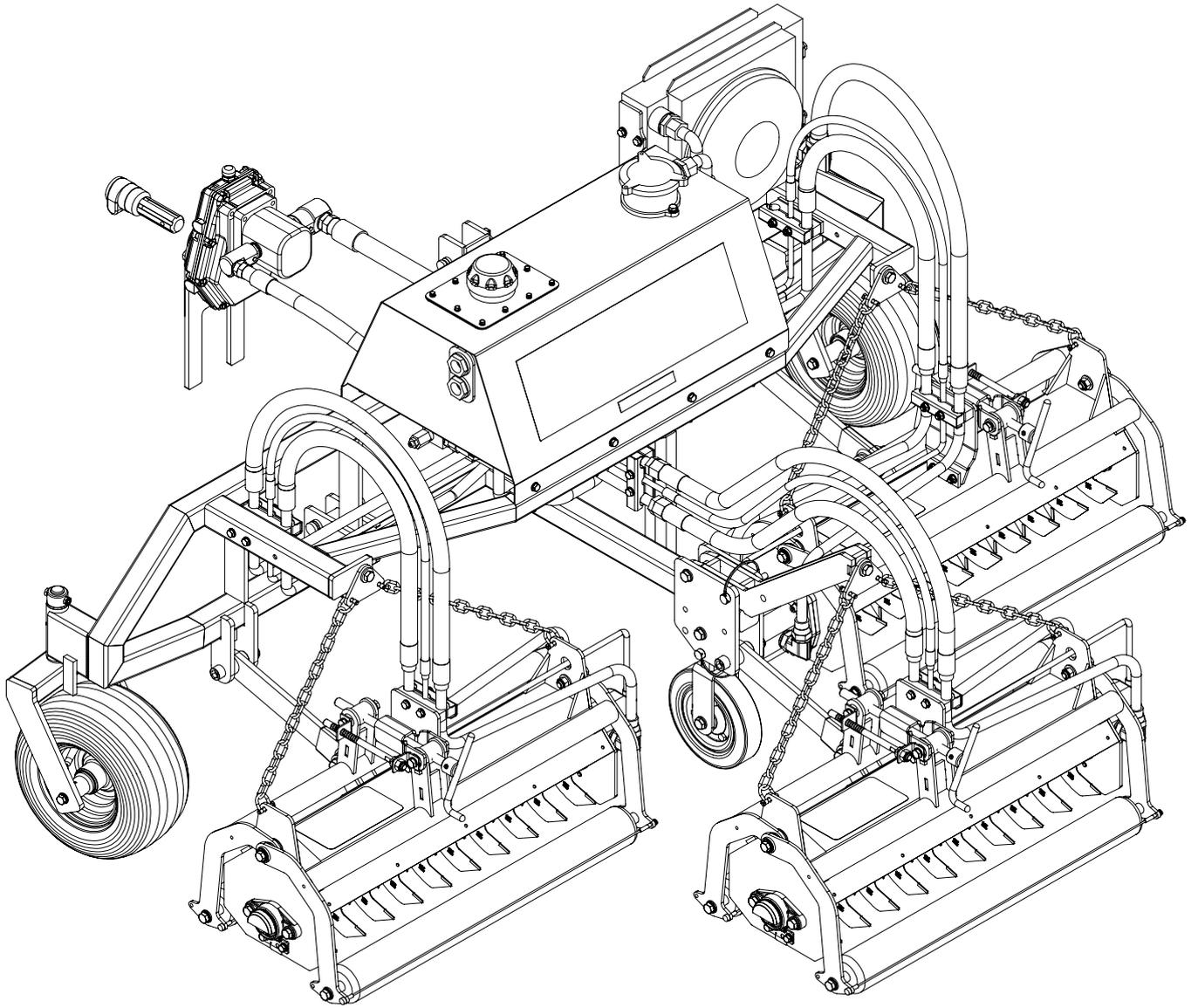
Viscosity @ -40°C c/S – 22000

Flash point COC °C - 180

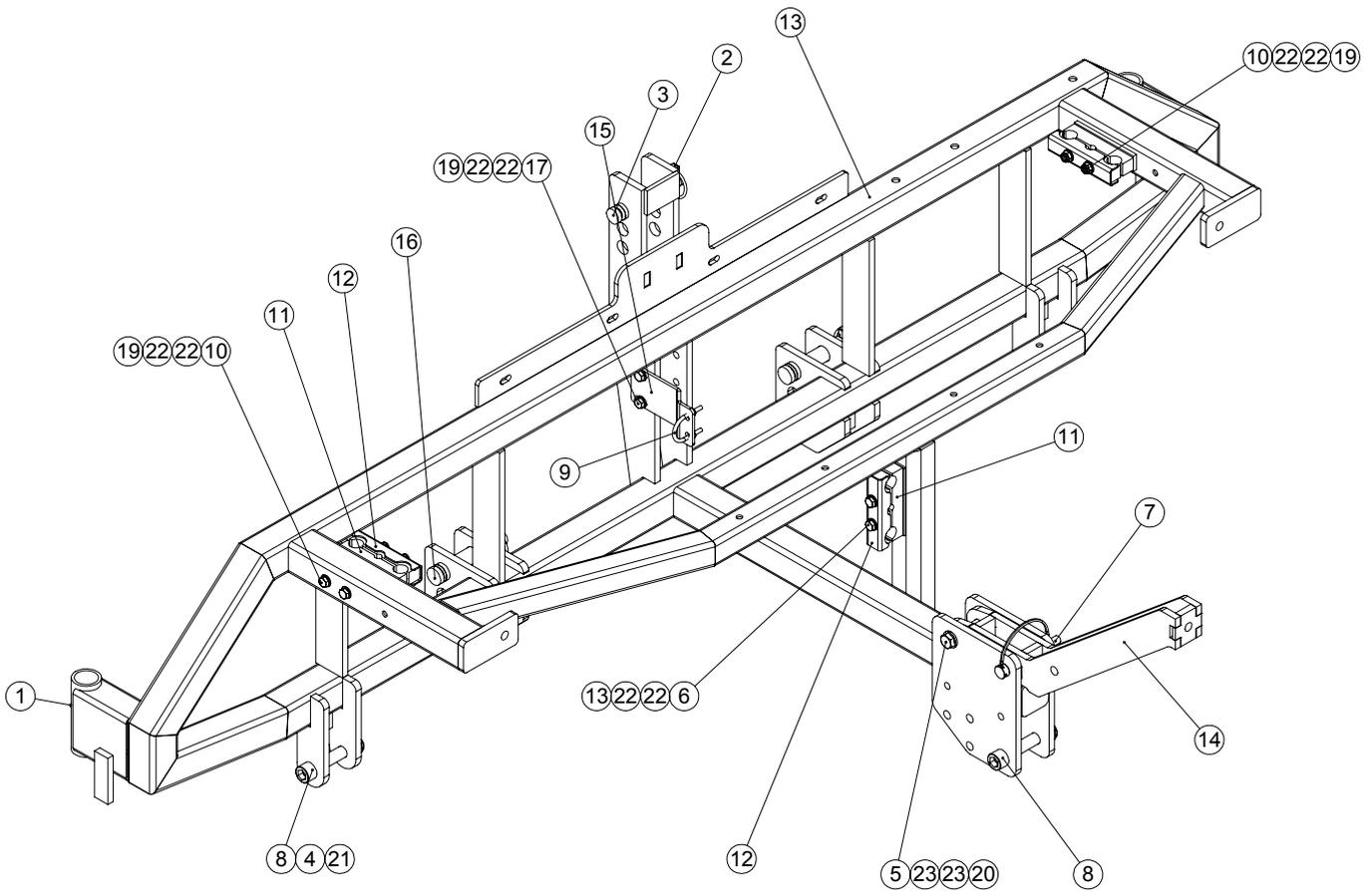
GEAR BOX – Only use SAE90 oil or equivalent (gear lube)

Retract the jockey wheel ensuring that the retaining pin is securely fitted, this will allow the heads to be in contact with the surface of the ground.



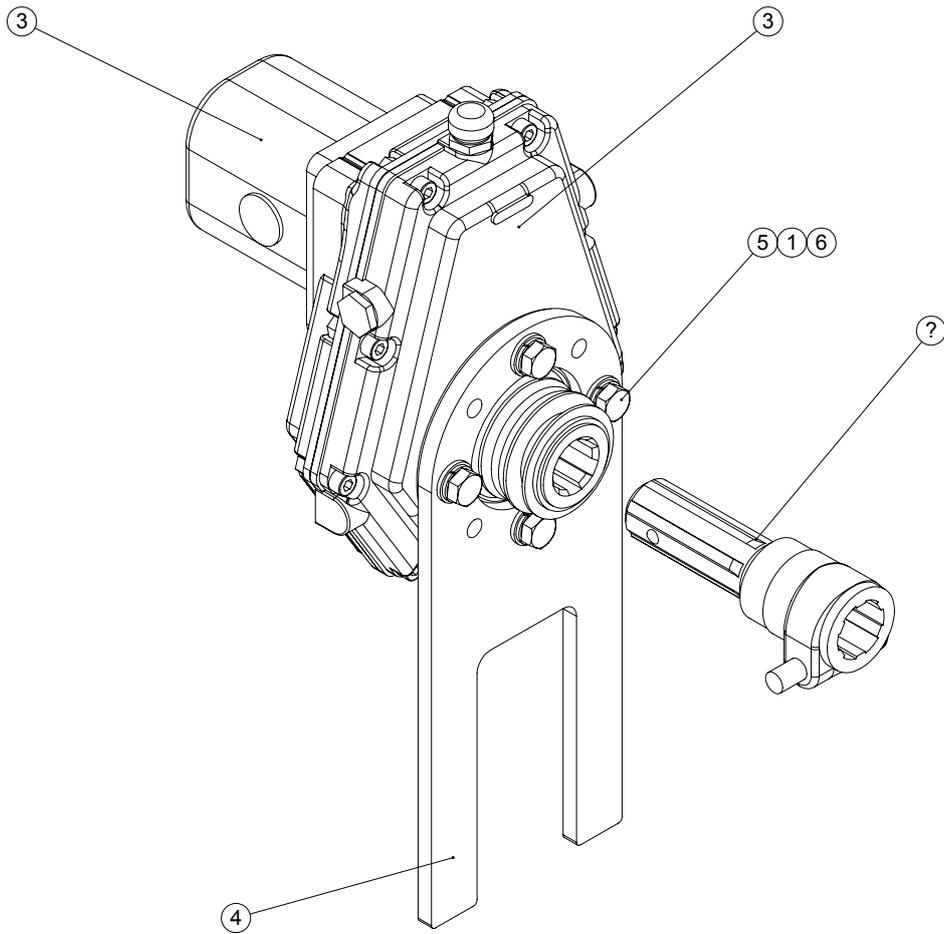


# CHASSIS



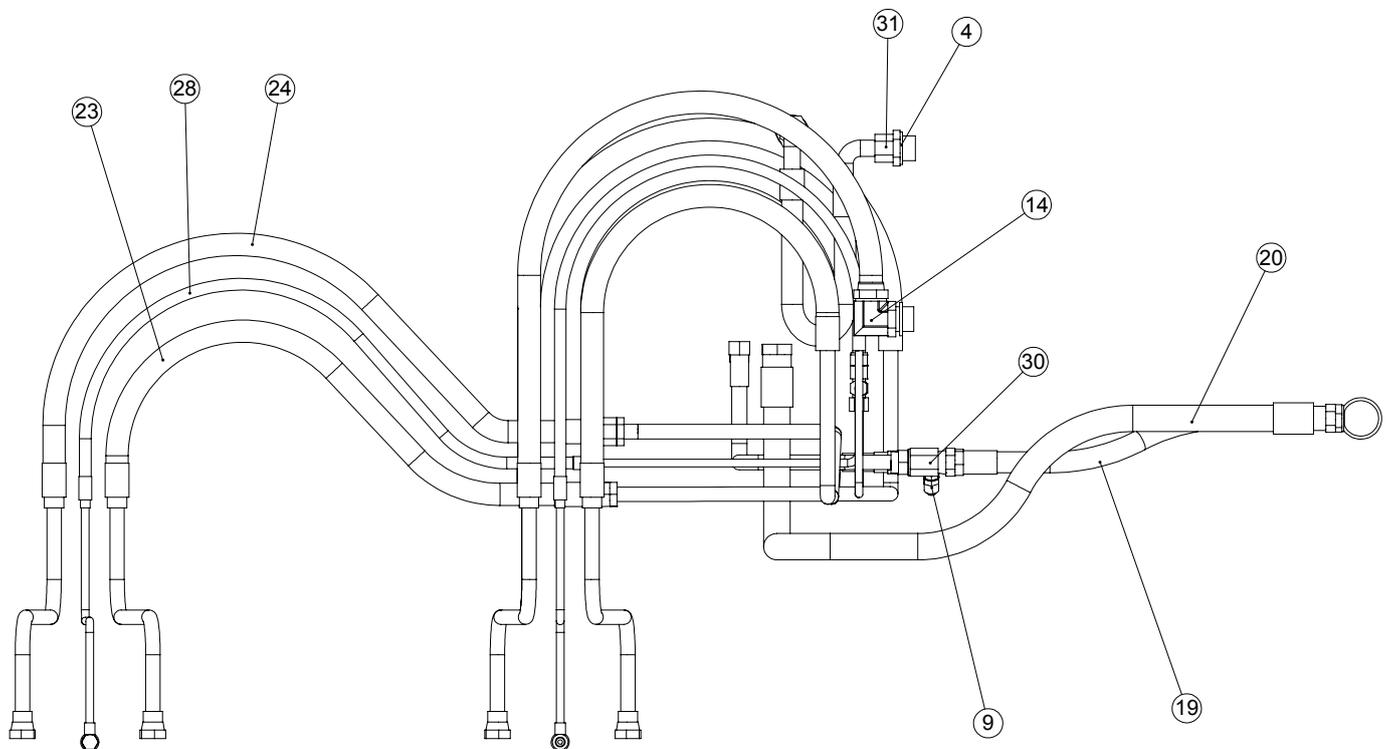
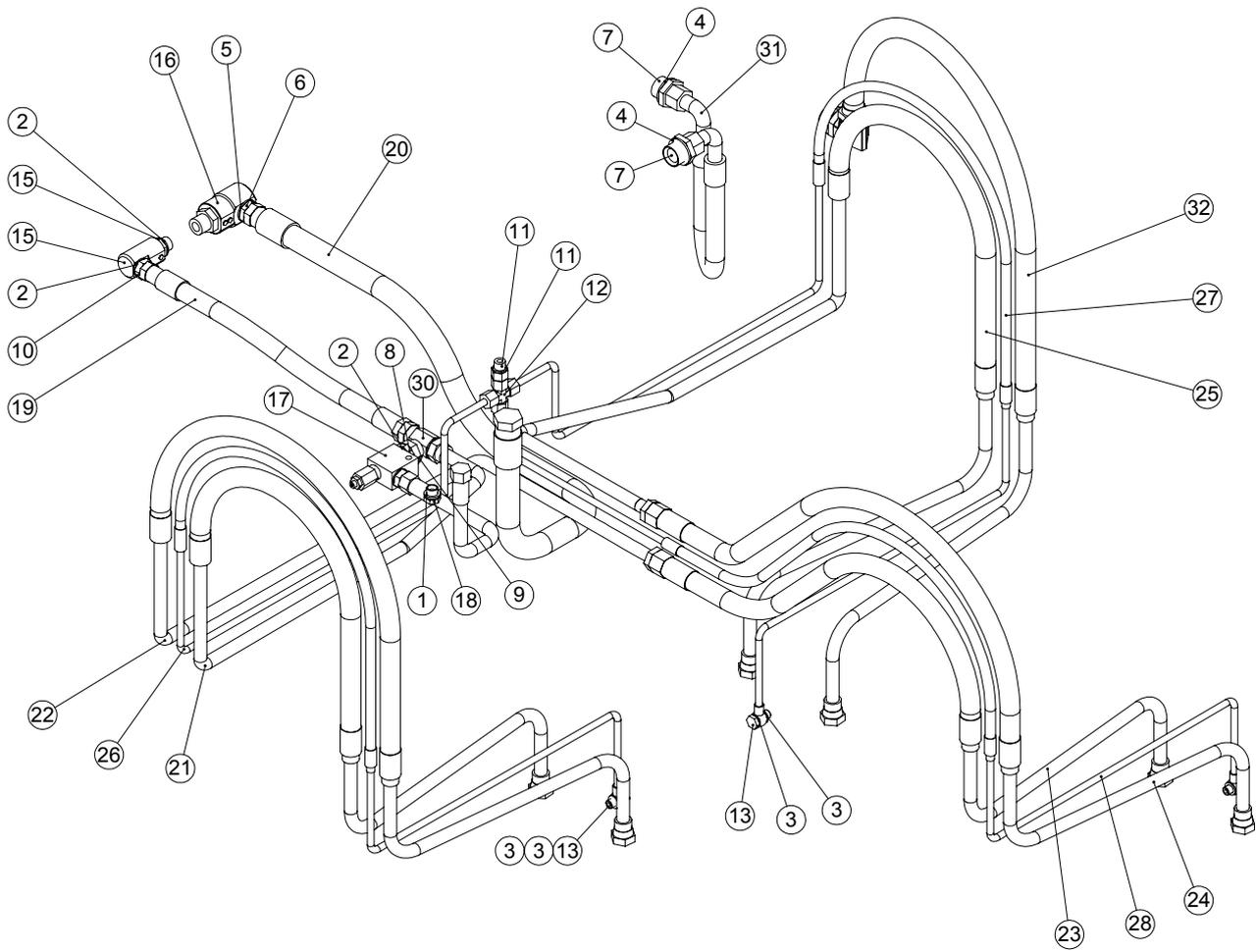
ITEM NO.	PART NUMBER	DESCRIPTION	CHASSIS/QTY.
1	D1947_REV1	GREASE NIPPLE M6	2
2	D8326_REV1	PIN LINCH 7/16"	3
3	D8617_REV1	TOP LINK PIN 3/4"	1
4	E1-1080_REV0	WASHER M16 FORM A	3
5	E1-1150_REV0	HEX SET SCREW M12 X 90	1
6	E1-1422_REV1	HEX SET SCREW M8 X 70	2
7	F20274_REV1	PIN LINCH DIA 10.8	1
8	F21853_REV1	CAP HEAD M16 X 90	3
9	F21952_REV1	U BOLT	1
10	F21981_REV1	HEX BOLT M8 X 110	4
11	F36454-1_REV0	PIPE CLAMP BLOCK	0.12
12	F36454_REV1	PIPE CLAMP ASSY	3
13	F36491_REV5	VEEMO MK2 FRAME ASSY	1
14	F36494_REV2	LIFT ARM	1
15	F36542_REV1	PIPE STAY	1
16	HURM218_REV1	TOP LINK PIN 7/8"	2
17	SP01045_REV0	HEX SET SCREW M8 X 25	2
18	SP02004_REV0	NUT M6 NYLOC	2
19	SP02006_REV0	NUT M8 NYLOC (T)	8
20	SP02010_REV0	NUT M12 NYLOC (T)	1
21	SP02028_REV0	NUT M16 NYLOC (T)	3
22	SP03008_REV0	WASHER M8 FORM A	16
23	SP03012_REV0	WASHER M12 FORM A	2
24	SP03010_REV0	WASHER M6 FORM A	2

# TRACTOR ATTACHMENT



ITEM NO.	PART NUMBER	DESCRIPTION	Tractor fixture/QTY.
1	E1-1065_REV0	SPRING WASHER M12 SQUARE SECTION	4
2	F21024_REV1	PTO EXTENSION	1
3	F22125_REV1	GEARBOX (3.5:1) + PUMP (26CC/REV) ASSY	1
4	HURM110_REV3	PUMP RETAINING LONG PLATE	1
5	SP01078_REV0	HEX SET SCREW M12 X 40	4
6	SP03012_REV0	WASHER M12 FORM A	4

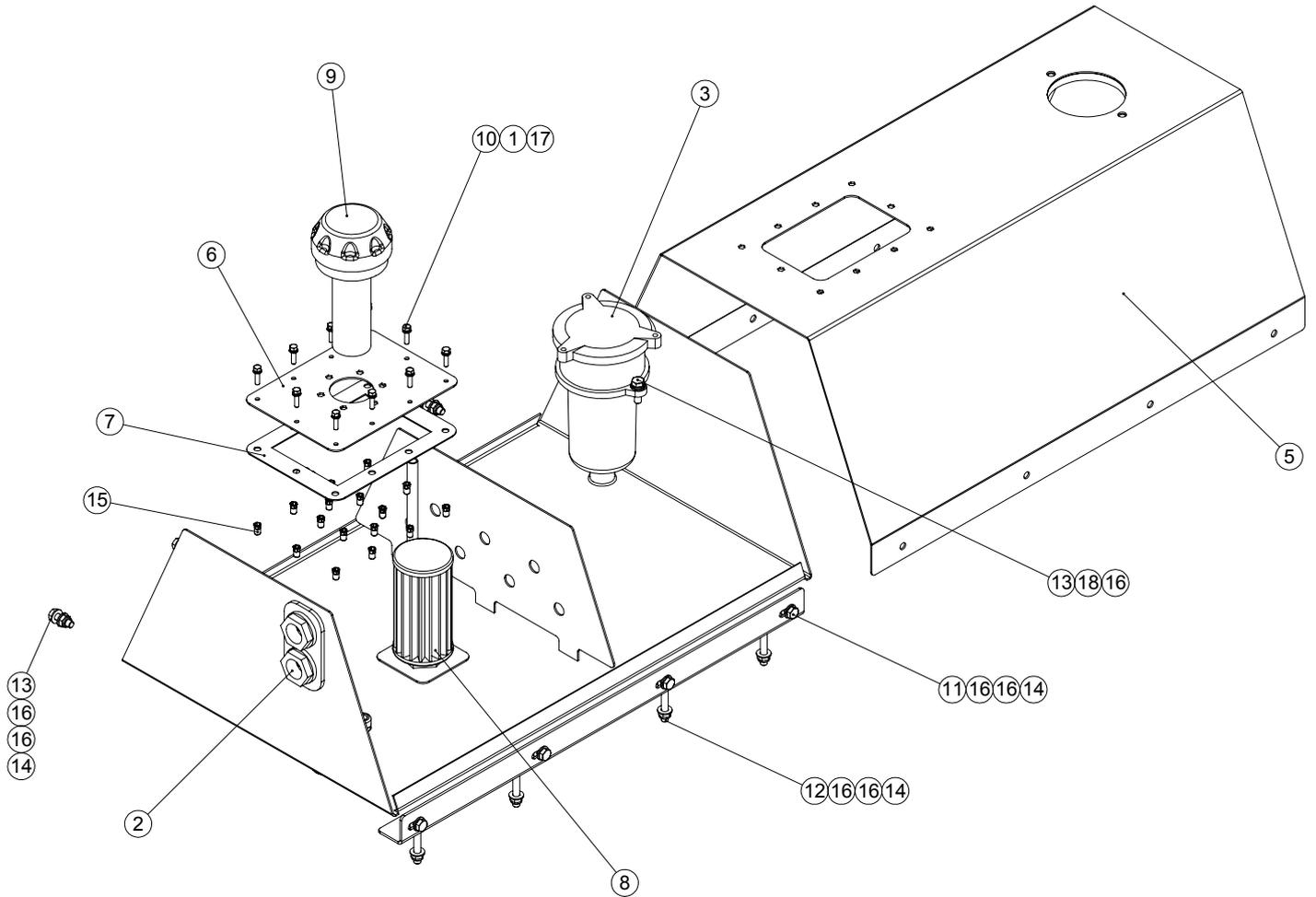
# HYDRAULIC SYSTEM



# HYDRAULIC SYSTEM

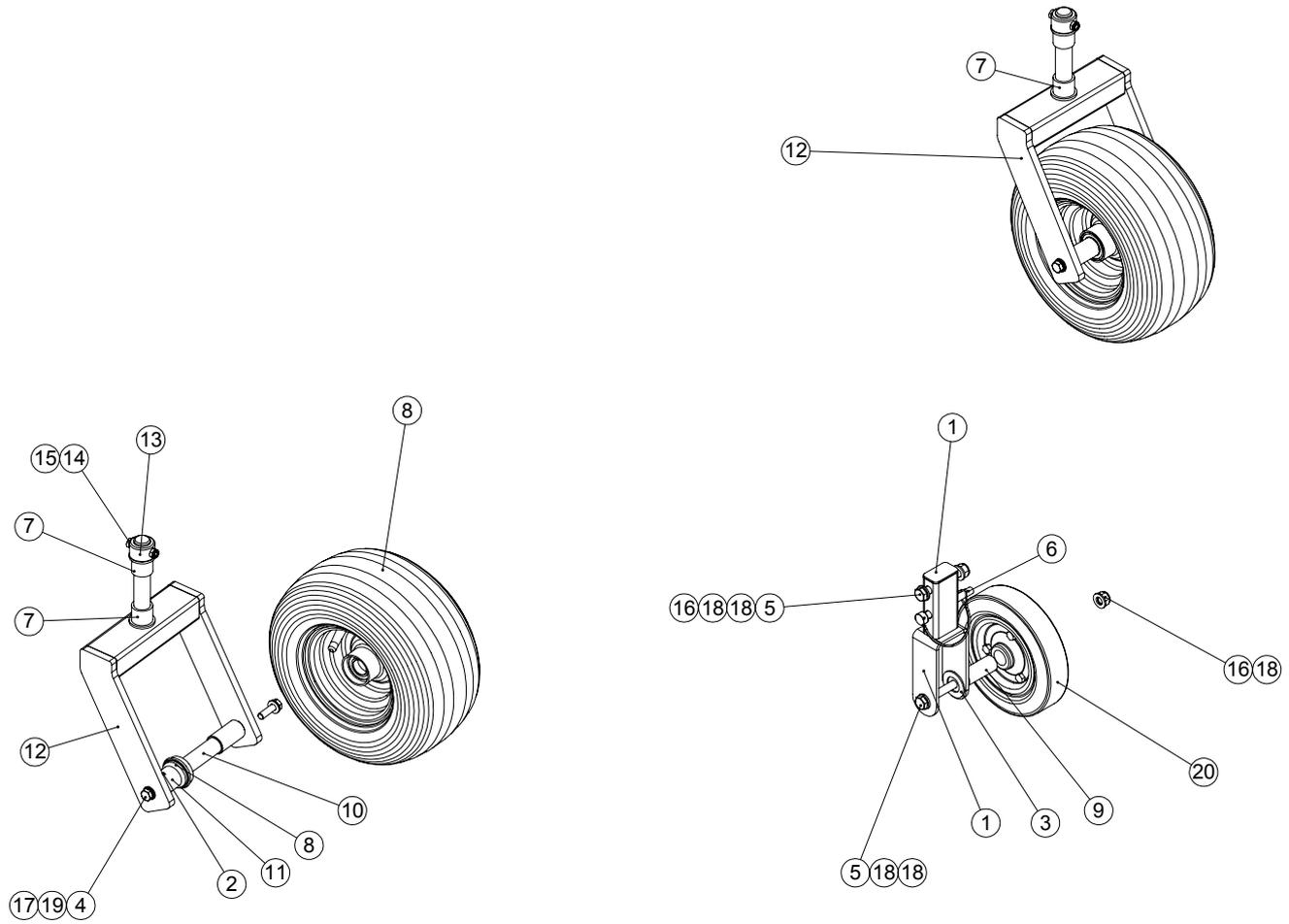
ITEM NO.	PART NUMBER	DESCRIPTION	Hydraulics/QTY.
1	D8227_REV1	DOWTY SEAL 3/8" BSP (21/32" BORE)	1
2	D8385_REV1	DOWTY SEAL 1/2 INCHES	4
3	D8492_REV1	WASHER BONDED 1/4INCHES BSP	6
4	D8858_REV1	DOWTY SEAL 1" BSP (1 5/16" BORE)	2
5	F20024_REV1	DOWTY SEAL 3/4" BSP (1" BORE)	2
6	F20193_REV1	ADAPTOR 3/4" BSP M/M	1
7	F20350_REV1	ADAPTOR 1" X 3/4" BSP M/M	2
8	F20353_REV1	ADAPTOR 1/2" BSP X 3/4" BSP M/M	1
9	F20496_REV1	TEST POINT 1/8" BSP	1
10	F20520_REV1	ADAPTOR M/M 1/2" BSPP	2
11	F20696_REV1	STRAIGHT STUD STANDPIPE	1
12	F20698_REV1	EQUAL CROSS	1
13	F21513_REV1	BANJO BOLT 1/4" BSP	3
14	F21942_REV1	POS. ELBOW 1"x 1" BSP M/M 90DEG	1
15	F22035_REV1	SWIVEL JOINT 1/2" BSP	1
16	F22036_REV1	SWIVEL JOINT 3/4" BSP	1
17	F22038_REV1	PRESSURE RELIEF VALVE 1/2	1
18	F34610_REV1	3/8" BSP PLUG WITH 2mm HOLE	1
19	F36540_REV1	HOSE DETAIL	1
20	F36541_REV1	HOSE DETAIL	1
21	F36641_REV1	PIPE ASSEMBLY (BRAIDED)	1
22	F36642_REV1	PIPE ASSEMBLY (BRAIDED)	1
23	F36643_REV1	PIPE ASSEMBLY (BRAIDED)	1
24	F36644_REV1	PIPE ASSEMBLY (BRAIDED)	1
25	F36645_REV1	PIPE ASSEMBLY (BRAIDED)	1
26	F36647_REV1	PIPE ASSEMBLY (BRAIDED)	1
27	F36648_REV1	PIPE ASSEMBLY (BRAIDED)	1
28	F36649_REV1	PIPE ASSEMBLY (BRAIDED)	1
29	F36845_REV1	HOSE DETAIL	1
30	F37052_REV1	SPECIAL TEE 3/4" BSP M/F/F	1
31	F37532_REV1	HYDRAULIC PIPE	1
32	F37533_REV1	HYDRAULIC PIPE (BRAIDED)	1

# HYDRAULIC TANK



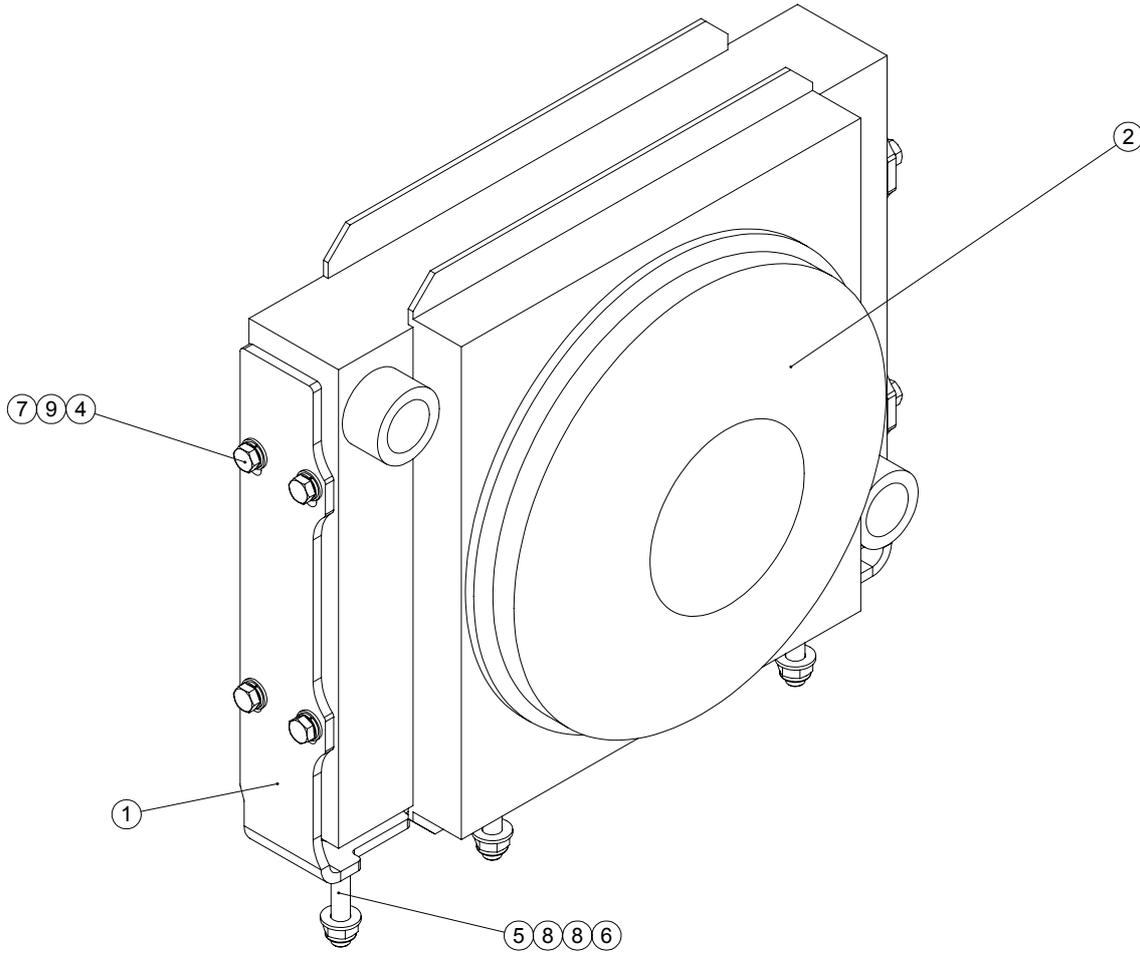
ITEM NO.	PART NUMBER	DESCRIPTION	TANK/QTY.
1	E1-1060_REV0	M5 SPRING WASHER	10
2	F20413_REV1	FLUID LEVEL GLASS	2
3	F20708_REV1	R/L TANK TOP FILTER	1
4	F36464_REV1	TANK MOUNT	1
5	F36492_REV2	OIL TANK	1
6	HU60112_REV2	OIL TANK COVER PLATE	1
7	HU60113_REV1	TANK GASKET	1
8	HURM296_REV1	TANK STRAINER	1
9	HUTM313_REV1	FILLER BREATHER & CAP	1
10	SP01004_REV0	HEX SET SCREW M5 X 20	10
11	SP01009_REV0	HEX SET SCREW M8 X 20	4
12	SP01023_REV0	HEX SET SCREW M8 X 60	4
13	SP01045_REV0	HEX SET SCREW M8 X 25	6
14	SP02006_REV0	NUT M8 NYLOC (T)	12
15	SP02041_REV0	RIVNUT HEX M5 (0.5-3.0) [NO HEAD]	17
16	SP03008_REV0	WASHER M8 FORM A	26
17	SP03009_REV0	WASHER M5 FORM A	10
18	SP03029_REV0	WASHER M8 SPRING LOCK	2

# WHEELS



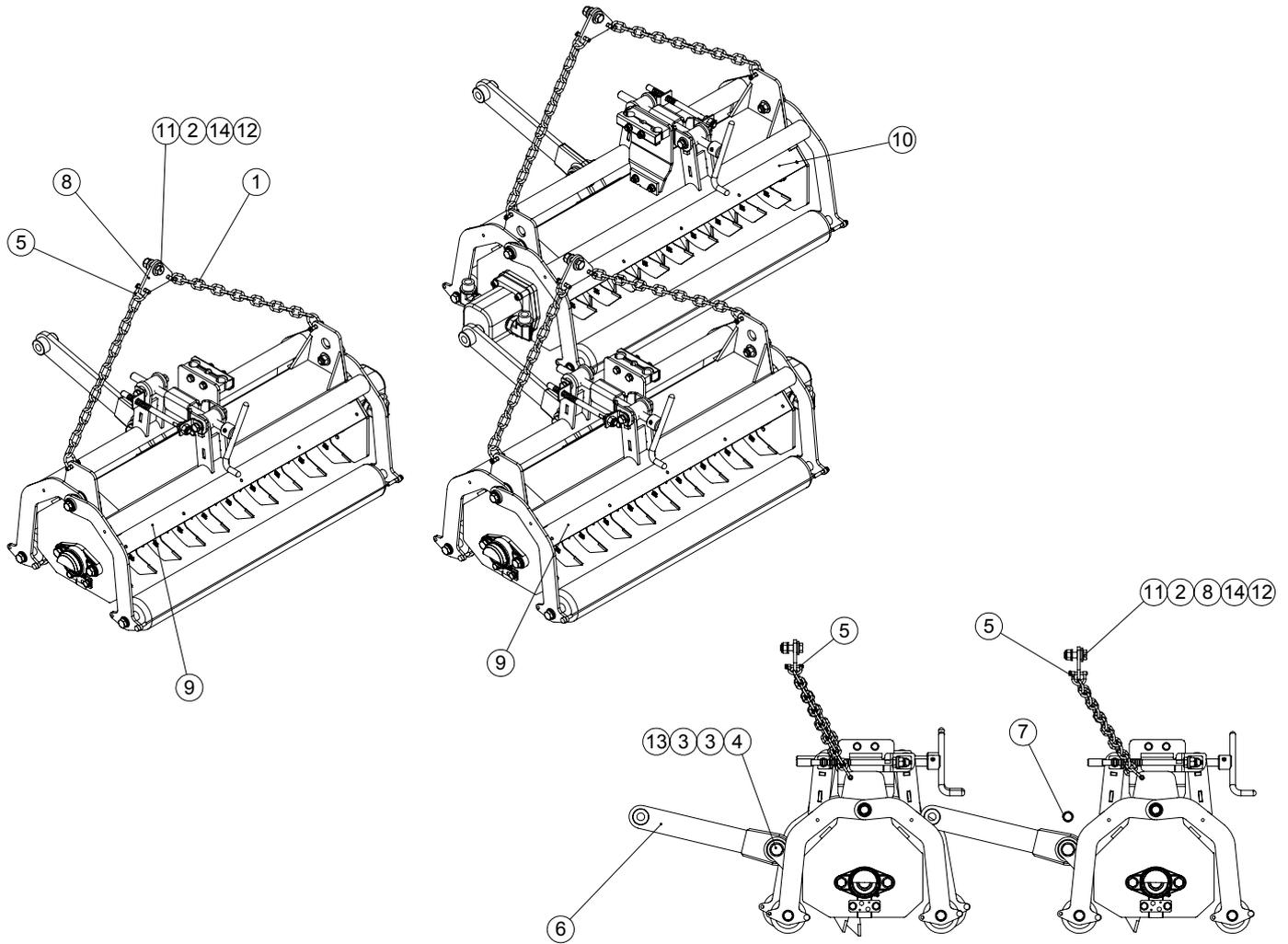
ITEM NO.	PART NUMBER	DESCRIPTION	WHEELS/QTY.
1	403140_REV0	WHEEL FRAME ASSY	1
2	D1989_REV0	GRUB SCREW M6 X 10	2
3	E1-1083_REV1	WASHER M24 FORM B	2
4	E1-1119_REV0	HEX SET SCREW M10 X 35	4
5	E1-1150_REV0	HEX SET SCREW M12 X 90	2
6	F20274_REV1	PIN LINCH DIA 10.8	1
7	F21852_REV0	BUSH AF2532 - 30	4
8	F21940_REV0	WHEEL , TYRE & HUB CAP	2
9	F33061_REV1	JOCKEY WHEEL SHAFT	1
10	F36097_REV2	WHEEL AXLE	2
11	F36098_REV1	SPACER	2
12	F36490_REV1	WHEEL FRAME	2
13	F36537_REV1	COLLAR	2
14	SP01113_REV0	HEX SET SCREW M8 X 45	2
15	SP02006_REV0	NUT M8 NYLOC (T)	2
16	SP02010_REV0	NUT M12 NYLOC (T)	2
17	SP03011_REV0	WASHER M10 FORM A	4
18	SP03012_REV0	WASHER M12 FORM A	4
19	SP03034_REV0	WASHER M10 SPRING LOCK	4
20	SP09003_REV0	WHEEL 8"	1

# COOLER FAN



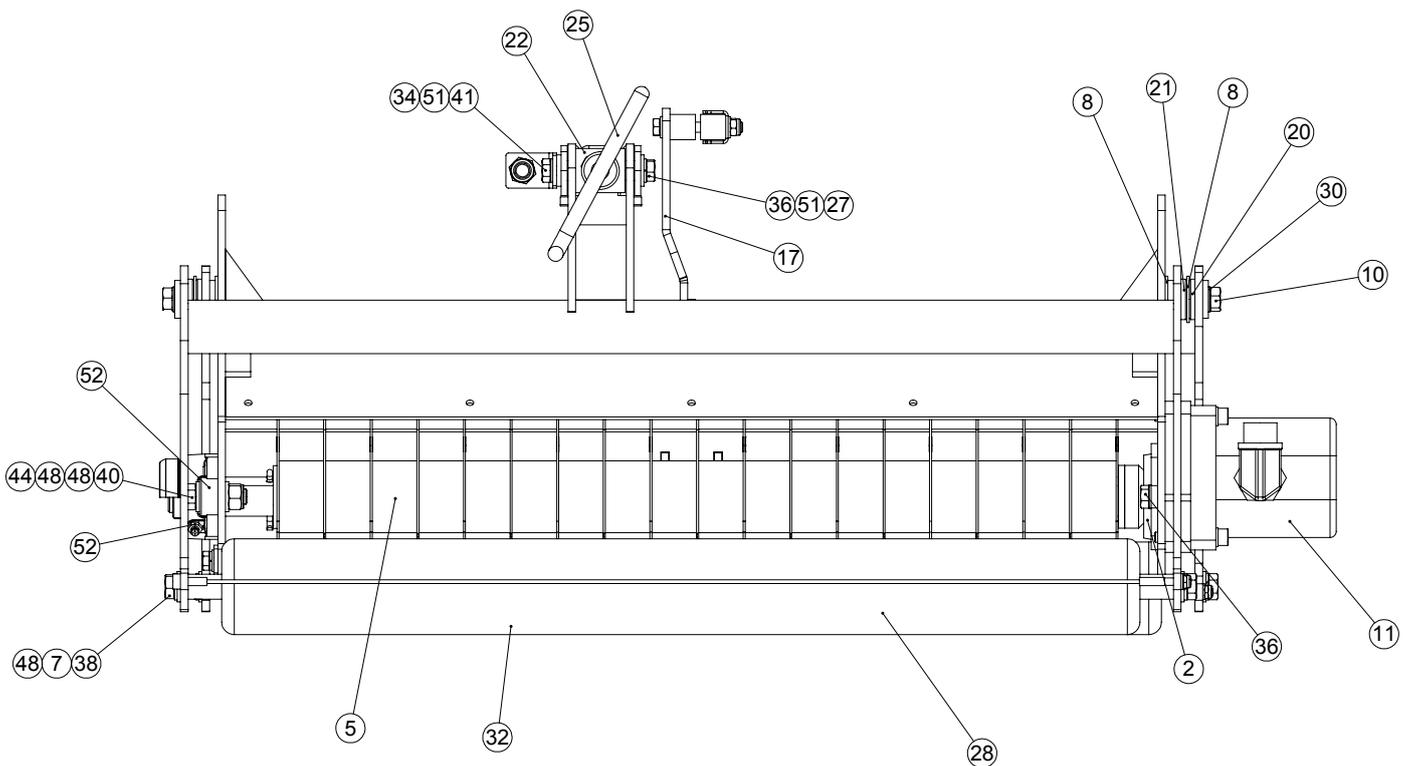
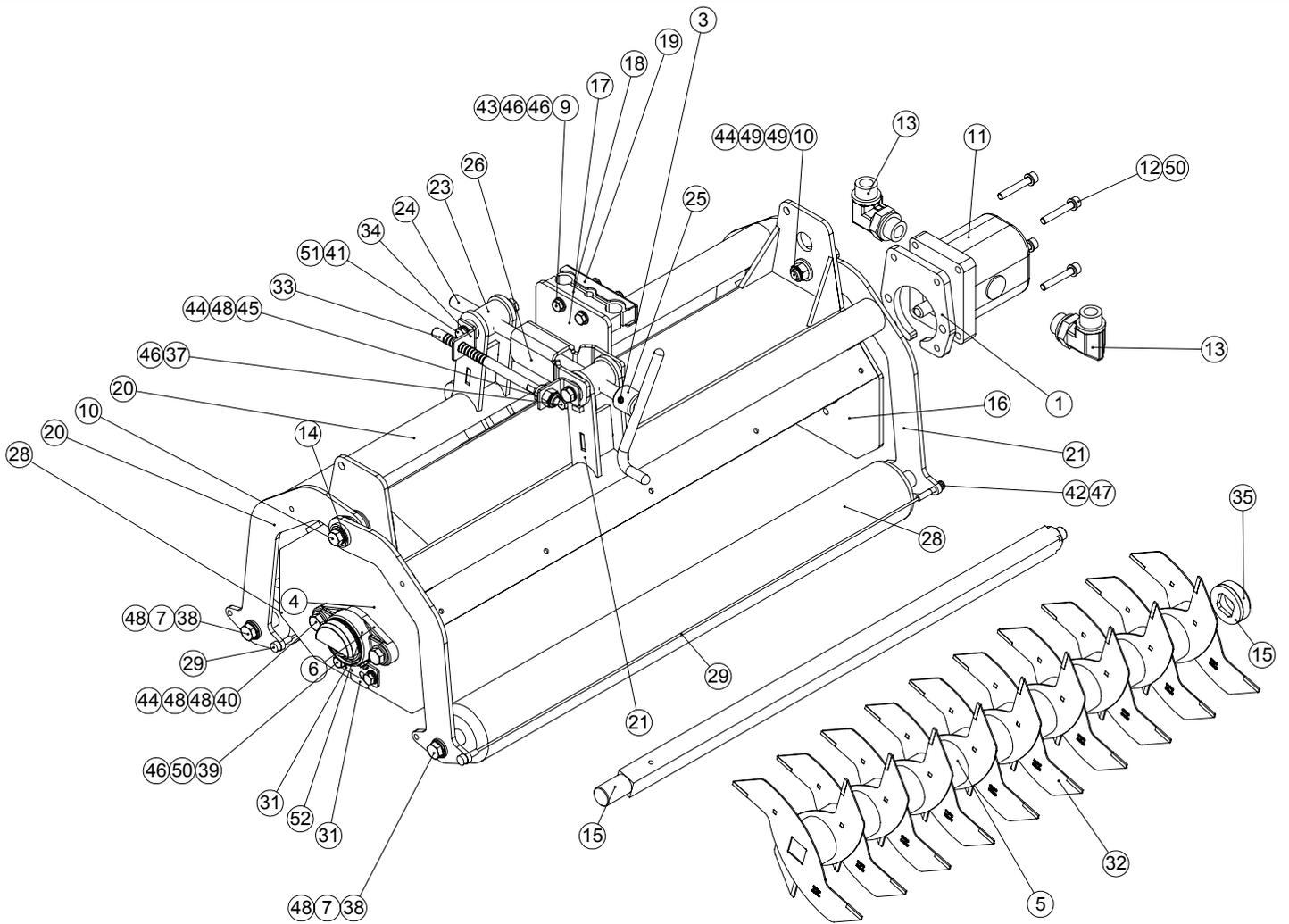
ITEM NO.	PART NUMBER	DESCRIPTION	FAN/QTY.
1	400836_REV2	BRACKET RADIATOR	1
2	F22384_REV1	OIL COOLER (VEEMO-2)	1
3	F37610_REV1	FAN LOOM (NOT SHOWN)	1
4	SP01009_REV0	HEX SET SCREW M8 X 20	8
5	SP01119_REV0	HEX BOLT M10 X 75 (8.8 HT)	3
6	SP02008_REV0	NUT M10 NYLOC (T)	3
7	SP03008_REV0	WASHER M8 FORM A	8
8	SP03011_REV0	WASHER M10 FORM A	6
9	SP03029_REV0	WASHER M8 SPRING LOCK	8

# HEADS



ITEM NO.	PART NUMBER	DESCRIPTION	Heads/QTY.
1	403222_REV0	LIFTING CHAIN	6
2	D6650_REV1	STANDARD FERRULE	3
3	E1-1080_REV0	WASHER M16 FORM A	6
4	E1-1578_REV0	HEX BOLT M16 X 70	3
5	F20995_REV1	D SHACKLE	12
6	F32103_REV1	BALL END LINK	3
7	F32708_REV1	SPACER	3
8	F36719_REV1	CHAIN SWIVEL	3
9	HEAD LH_REV1	SEE PAGE 8.01	2
10	HEAD RH_REV1	SEE PAGE 8.01	1
11	SP01078_REV0	HEX SET SCREW M12 X 40	3
12	SP02010_REV0	NUT M12 NYLOC (T)	3
13	SP02028_REV0	NUT M16 NYLOC (T)	3
14	SP03012_REV0	WASHER M12 FORM A	3

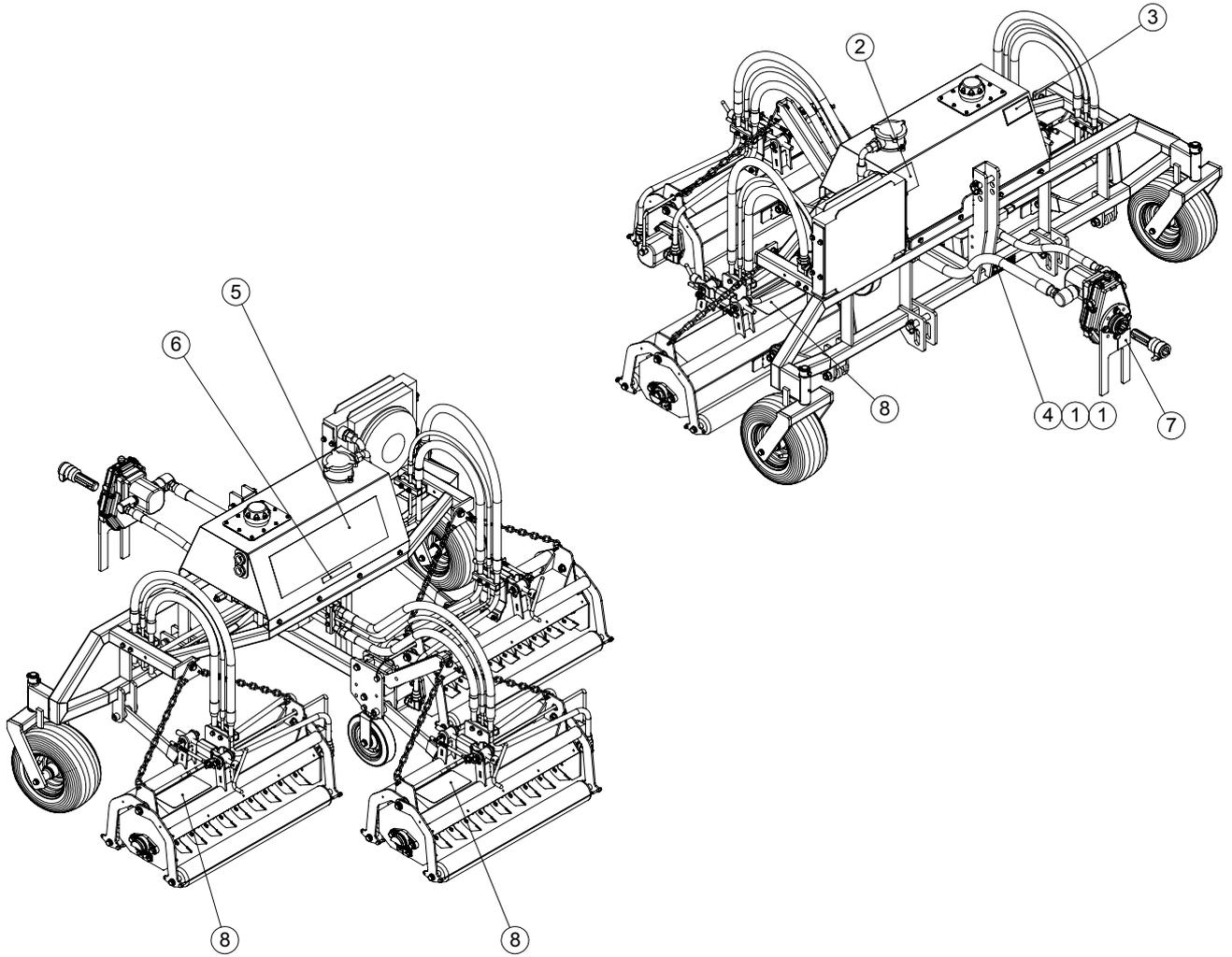
# HEAD DETAIL



# HEAD DETAIL

Head BOM Left Hand (x2)			
ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	403154_REV0	MOTOR SPACER	1
2	D1921_REV1	BEARING BPFL6-30	1
3	D1974_REV0	GRUBSCREW M10 X 10 KNURLED POINT	1
4	D3051_REV2	SQUARE WASHER	1
5	D5247_REV1	TINE RUBBER SPACER	18
6	D5622_REV0	SPLIT PIN DIA5 x 50	1
7	E1-1065_REV0	SPRING WASHER M12 SQUARE SECTION	4
8	E1-1081_REV0	WASHER M20 FORM B	4
9	E1-1114_REV0	HEX BOLT M8 X 65	2
10	E1-1160_REV0	HEX BOLT M12 X 60	2
11	F21733_REV0	HYDRAULIC MOTOR	1
12	F21939_REV0	CAP HEAD M8 X 50	4
13	F21941_REV1	POS. ELBOW 3/4"X3/4" BSP M/M 90	2
14	F21969_REV0	BUSH AM2025 - 15	4
15	F36449_REV2	TINE SHAFT ASSY	1
16	F36451_REV5	L.H. UNIT ASSY	1
17	F36453_REV1	PIPE SUPPORT	1
18	F36454-1_REV0	PIPE CLAMP BLOCK	0.04
19	F36454_REV1	PIPE CLAMP ASSY	1
20	F36455_REV1	FRONT ROLLER FRAME	1
21	F36456_REV1	REAR ROLLER FRAME	1
22	F36457_REV1	ADJUSTER SWIVEL	1
23	F36458_REV1	ADJUSTER SWIVEL LH THREAD	1
24	F36459_REV2	ADJUSTER	1
25	F36460_REV1	HANDLE ASSY	1
26	F36461_REV2	ADJUSTER LOCK	1
27	F36462_REV1	FERRULE	4
28	F36463_REV1	ROLLER	2
29	F36465_REV1	ROLLER SCRAPER	2
30	F36468_REV1	ROLLER PIVOT	2
31	F36535_REV1	INFILL 1	1
32	F36560_REV4	TINE 2 BLADE 2MM TIPPED (VEEMO)	19
33	F36880_REV1	DEPTH GAUGE	1
34	F36881_REV1	MOUNTING ANGLE	2
35	F37069_REV1	SPACER	1
36	SP01035_REV0	HEX SET SCREW M10 X 25	4
37	SP01045_REV0	HEX SET SCREW M8 X 25	2
38	SP01065_REV0	HEX SET SCREW M12 X 30	4
39	SP01076_REV0	HEX SET SCREW M8 X 16	2
40	SP01078_REV0	HEX SET SCREW M12 X 40	2
41	SP01105_REV0	HEX SET SCREW M10 X 30	2
42	SP02004_REV0	NUT M6 NYLOC	2
43	SP02006_REV0	NUT M8 NYLOC (T)	4
44	SP02010_REV0	NUT M12 NYLOC (T)	5
45	SP02014_REV0	NUT M12 LOCK (THIN)	1
46	SP03008_REV0	WASHER M8 FORM A	10
47	SP03010_REV0	WASHER M6 FORM A	2
48	SP03012_REV0	WASHER M12 FORM A	9
49	SP03017_REV0	WASHER M12 FORM C	2
50	SP03029_REV0	WASHER M8 SPRING LOCK	6
51	SP03034_REV0	WASHER M10 SPRING LOCK	6
52	SP06023_REV0	BEARING SFT25 (RHP) INC P25 COVER	1
Head Differences Right Hand (x1)			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
16	F36452_REV1	R.H. UNIT ASSY	1

# DECALS



ITEM NO.	PART NUMBER	DESCRIPTION	DECALS/QTY.
1	D1871_REV1	RIVET 3.2 X 6	2
2	F34045_REV1	DECAL PTO 540 ONLY	1
3	F34053_REV1	DEBRIS WARNING LABEL	1
4	F36000_REV2	SERIAL NO PLATE (SISIS)	1
5	F36561_REV1	LABEL (VEEMO MK2)	1
6	F36860_REV1	LABEL SERIES 2	1
7	F36872_REV1	LABEL OIL LEVEL	1
8	HU60069_REV1	LABEL CAUTION	3



# sisis®

**SISIS, Ashbourne Road, Kirk Langley, Derbyshire, DE6 4NJ, England**

**Tel: +44 (0) 1332 824 777  
Fax: +44 (0) 1332 824 525**

**Email: [info@sisis.com](mailto:info@sisis.com)**

**[www.sisis.com](http://www.sisis.com)**

A division of Howardson Ltd – a proudly British company  
Company reg No: 641526 – Vat No GB 345 9918 12