



GROWING WITH YOU

FRONT HOPPER

2023 Mounted Range (FH)

Machine Manual & Parts Book

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Introduction

Before reading this Machine Manual & Parts Book, please read the Drills Operator Manual in Full. This manual contains information specific to the machine/range but does not include all the general safety guidelines and practices necessary to understand and correctly use the machine. It is required that both manuals be read and understood before using any Sumo machine. For more information contact your local dealership/Sumo directly.

Please note, specifications, descriptions and illustrations in this manual are accurate, as known, at the time of publication but may be subject to change. If you notice any discrepancy and are in need of clarification, please contact us on the details given previously.

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1. Machine Range Summary

The Front Hopper is designed to complement any rear-mounted implement and enables up to 1000kg of grain or fertiliser to be accurately dispensed via the Sumo ORGA metering system. An RDS Artemis controller enables variable rate application from 1.0 – 350kg/ha for a varying range of products.

Seeding with the Sumo Front Hopper, complete with hydraulic fan, together with a Sumo DTS, DD or your own toolbar means you'll benefit from a proper ballast rig, ideal for smaller HP tractors.

2. Product Specifications

For standard machine dimensions and weight, see Drills Operators Manual. Note: Weights is described as the maximum laden mass but will increase with optional extras and attachments.

Front Hopper

Spec	Front Hopper
Code	FH
Tank Capacity	1900 Litres
Seed Rate	1-350kg/ha
Machine Type	Rigid

Available Options

Code	Option Code	Description	Specifications
FH	FH.FW	Front Weight	5000kg
	FH.TP	Transfer Pipe	*
	FH.U	Upstack	12x38mm Outlets
	FH.TSO	Tramline Shut Off	Pair

* Transfer pipe does not come with Tractor specific mounting brackets.

Other options may be available – See Sumo website / Contact your local dealer.

3. Transport Positions & Dimensions

The following transport positions must be followed before taking the specified Sumo machine on any public road. Failure to do so may mean the machine is no longer considered road legal. It is the sole responsibility of the owner/operator to ensure the machine is correctly positioned prior to transport and complies with all local laws and regulations.

For all Sumo guidelines and safety protocols, read the related Sumo Drills Operators Manual thoroughly.

Transport Dimensions (Approximate)

Note: Due to the fabricated and assembled construction of Sumo machines dimensions may vary and should only be used for reference.

Shown dimensions are of maximum extremities (Excluding assembly/fabrication tolerances) but can be reduced/increased by adjusting step position, chassis height/angle, and opening the hopper tank lid. It is solely the owner/operator's responsibility to ensure they transport the machine within local legislation & laws.

Machines (Excluding Options)

Code	Length	Width	Height
FH	1685	2377	1680

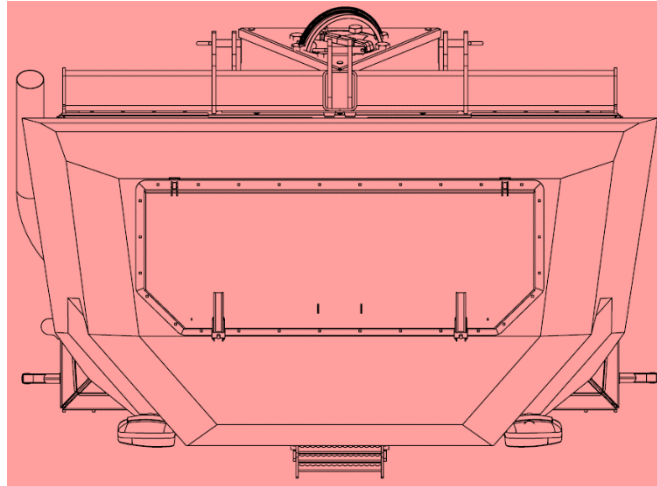
Machines (Including Options)

Code	Length	Width	Height
FH.FW	1842	-	-
FH.TP	-	-	-
FH.U	-	-	-
FH.TSO	-	-	-

4. Danger Zone

The area marked red indicates the Danger Zone of the machine. This refers to both lifted and standing states.

Front Hopper



The danger zone around the machine poses the following endangerments:

- Accidental operation of the hydraulic system can trigger dangerous movements of the machine.
- Defective or not correctly fastened electric lines can cause electric shocks.
- With the drive still running, machine parts may rotate or swing out.
- Hydraulically raised machine parts can lower slowly and unnoticed.

Failing to pay attention to the danger zone can result in severe or even fatal physical injuries.

- Do not stand under lifted loads. Lower such loads to the ground first.
- Instruct persons to leave the danger zone around the machine and tractor.
- Before working in the danger zone of the machine or between machine and tractor: Shut down the tractor! This also applies for short-term inspection work. Many accidents happen because of carelessness and running machines!
- Follow all safety guidelines and procedures as outlined within the Cultivator Operators Manual.

5. Risk Assessments

Model: Front Hopper

Notes: Ensure the Drills Operators Manual, & Machine Manual are read and fully understood.

Purpose of machine: Primarily designed to transfer seed to attached cultivation or drills equipment via a hopper and hydraulically controlled fan system.

Description of machine: A three-point-hitch rigid farm implement consisting of 3 major elements.

1. A electric Orga system.
2. A hydraulic fan.
3. A pressurised tank.

All the above is arranged in a heavy-duty fabricated steel framework. The machine is designed to couple to a suitably powered tractor.

Hazard Identified in Using Machine	Who Might Be Harmed	Risk Evaluation /Level (1-5)	Precautions In Place	Further Action Required
Machine collision while in transport.	Operator, Members of The Public	2 Low - Mid	Tail lights, Side Lights & Indicator, reflectors.	Take care when using in both field and road situations. Maintain good visibility at all times.
Trapped fingers during leg depth position change.	Operator	1 Low	Warning Stickers	Observe warning signs, maintain safe distance from moving parts, wear gloves. Ensure both of the stands are down. Clear excess soil (weight) from points before attempting to adjust legs.

5 Risk Assessments - Continued

Hazard Identified in Using Machine	Who Might Be Harmed	Risk Evaluation /Level (1-5)	Precautions In Place	Further Action Required
<p>Risk of crushing:</p> <ul style="list-style-type: none"> - When coupling a tractor to the Sumo implements. - When lifting/ lowering the machine - Machine tipping over 	Operator	4 Mid - High	Warnings, Maintenance Stands	<p>Take extreme care when working on the machine, make sure stands are down and the machine is on a suitable firm piece of land. Ensure tractor hydraulics are in good working order. Ensure tractor is safely positioned and the parking brake is engaged when coupling up to the Sumo implements. Stay clear of any moving elements. Lower machine slowly and evenly to the ground to ensure the machine does not tip over. Be mindful of environmental factors.</p>
Falling from machine	Operator	2 Low - Mid	Most alterations and maintenance do not require the operator to climb on the machine.	Lower the machine to the floor
Pressurised oil/ Burst hoses	Operator	4 Mid - High	Warnings	<p>Always wear appropriate PPE. Do not remove hoses whilst pressurised, do not feel for leaks. If contact is made, wash affected area immediately. Do not inhale or consume.</p>
Risk of crush during machine roll back	Operator, Members of The Public	4 Mid - High	Warnings, Parking stands and Features.	<p>Always park correctly on a solid stable land and firmly apply brakes, stands and any other parking features. If the machine still seems unstable use wooden chocks etc.</p>

6. Front Hopper Settings



SAFETY NOTICE: Never operate Sumo ORGA Metering without gear guard in place. Never put any fingers into the Sumo ORGA Metering until unit is isolated from the power. Failure to do so may result in injury.

	Rape	Rape	Grass	Linseed
Drilling rate (kg/ha)	3	10	20	20
Insert *	Long	Long	Short	Short
Gear on Motor ***	Small	Small	Large	Small
Gear on ORGA ***	Large	Large	Small	Large
Min Fan speed (rpm)	1800	1800	1900	2200

	Cereals	Cereals	Cereals	Cereals
Drilling rate (kg/ha)	80	100	150	200
Insert *	Short	Short	Short	Short
Gear on Motor ***	Large	Large	Large	Large
Gear on ORGA ***	Small	Small	Small	Small
Min Fan speed (rpm)	2500	2600	2750	2900

	Cereals	Beans ****	Peas ****
Drilling rate (kg/ha)	250	150	150 / 250
Insert *	Short	Short	Short
Gear on Motor ***	Large	Large	Large
Gear on ORGA ***	Small	Small	Small
Min Fan speed (rpm)	3000	2500	2500

This table is to be used as a guideline to assist in setting up the drill. Fine tuning may be needed depending on environment.

* - Internal inserts are supplied in long and short lengths. The longer insert approximately halves the rate that the notched slide lets through its aperture. They also act as a guide to align the Sumo ORGA.

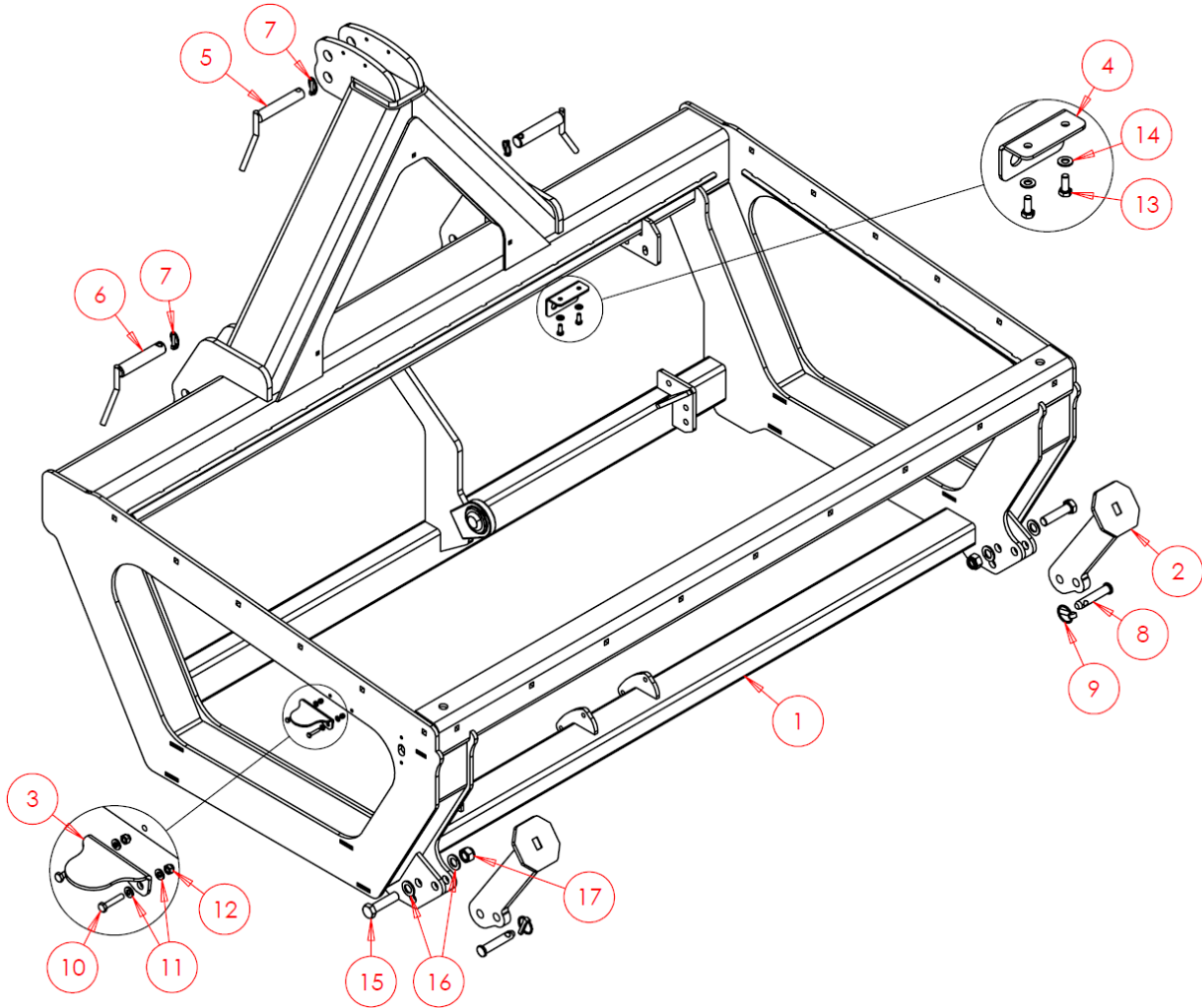
*** - The Gears supplied with the Sumo ORGA are specifically designed for the width of Drill that is specified. There will always be a small and a large gear supplied.

**** Nylon insert not to be used

7. Parts Book Index

For older machines, see manuals & parts book available on the Sumo website.

7.1 Front Hopper Base Chassis



Item No.	Part Number	Description	Qty
1	SW3080	Chassis	1
2	SWS2711	Stands	2
3	SW3175	Sat Speed Sensor Bracket	1
4	SWS24600	Bulkhead Plate	1
5	SW268	Cat II Top Linkage Pin	1
6	SW267	Cat II Bottom Linkage Pin	2
7	SWB1391	Lynch Pin	3
8	SW1256	Pin	2
9	SWB105	Lynch Pin	2
10	SWM630	M6x30 Screw	2

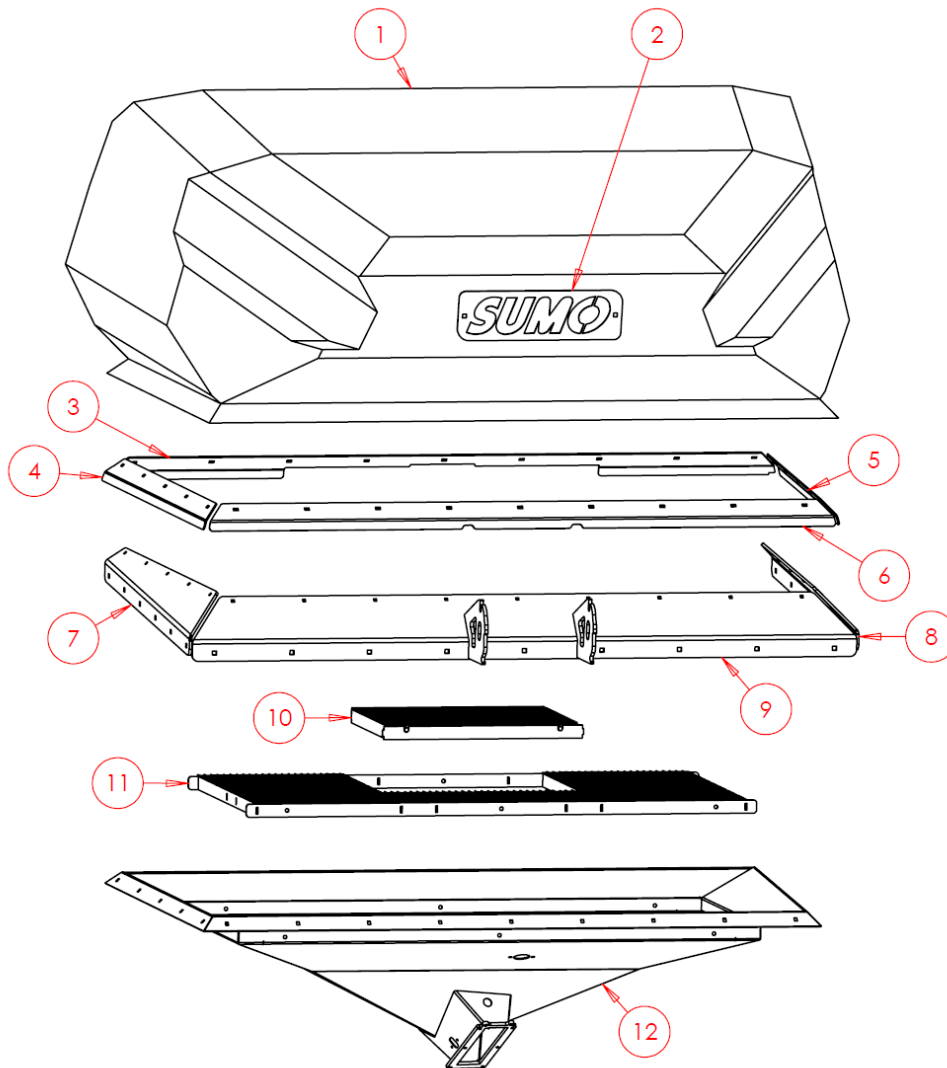


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11	SWM6001	M6 Washer - Flat	4
12	SWM6004	M6 Nut - Nylock	2
13	SWM820	M8x20 Screw	2
14	SWM8001	M8 Washer - Flat	2
15	SWM2080	M20x80 Screw	2
16	SWM20001	M20 Washer - Flat	4
17	SWM20004	M20 Nut - Nylock	2

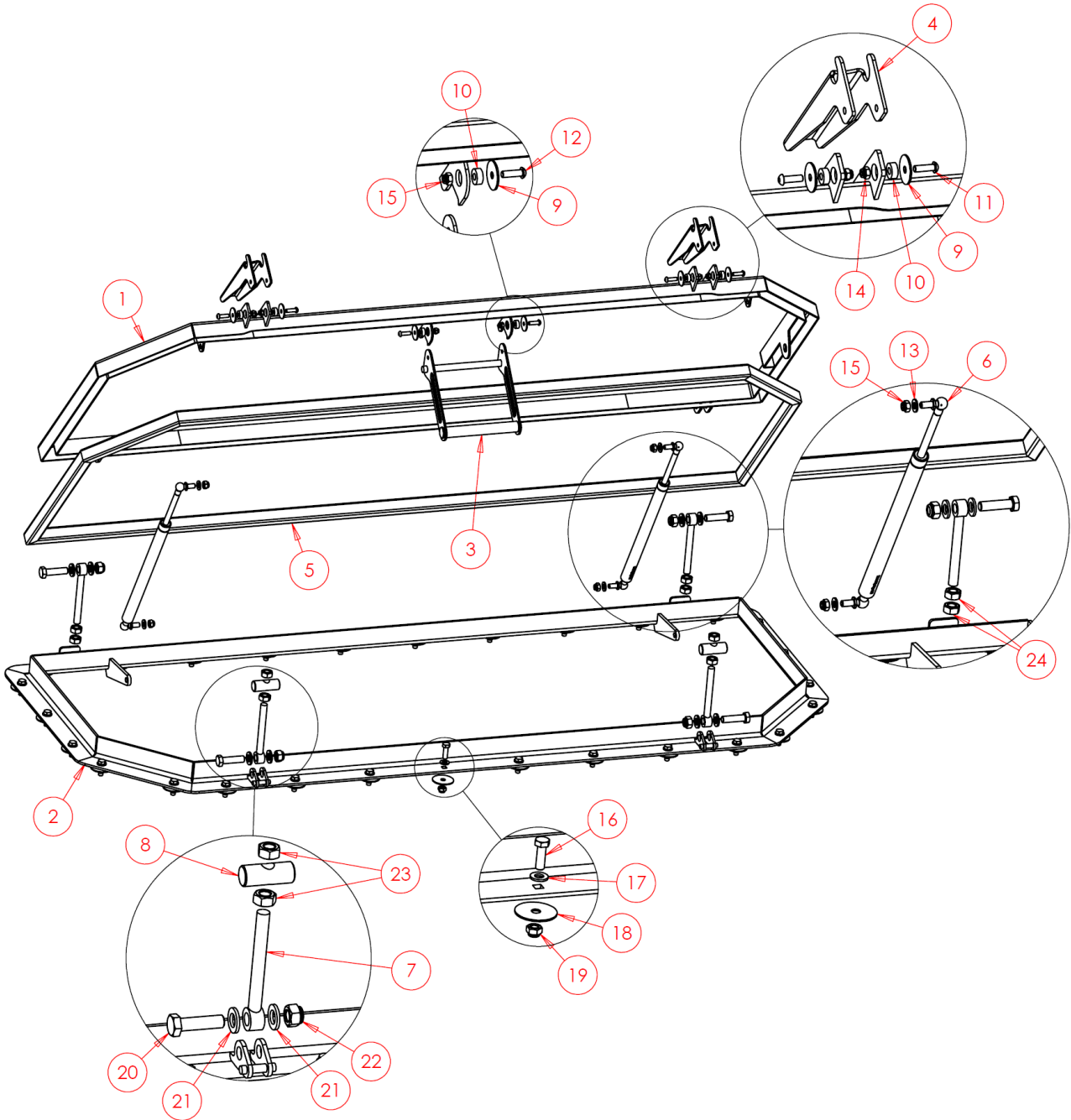
7.2 Standard Assemblies

7.2.1 Tank Assembly



Item No.	Part Number	Description	Qty
1	SWB854	Plastic Tank	1
2	SW3091	Sumo Branding	1
3	SW3090	Skirt Rear	1
4	SW3089	Left Skirt LH	1
5	SW3200	Right Skirt RH	1
6	SW3088	Skirt Front	1
7	SW3083	Mounting Bracket LH	1
8	SW3082	Mounting Bracket RH	1
9	SW3081	Mounting Bracket Front	1
10	SWA1851	Trap Door	1
11	SWA2123	Mesh Platform	1
12	SW2335	Lower Hopper	1

7.2.2 Tank Lid Assembly



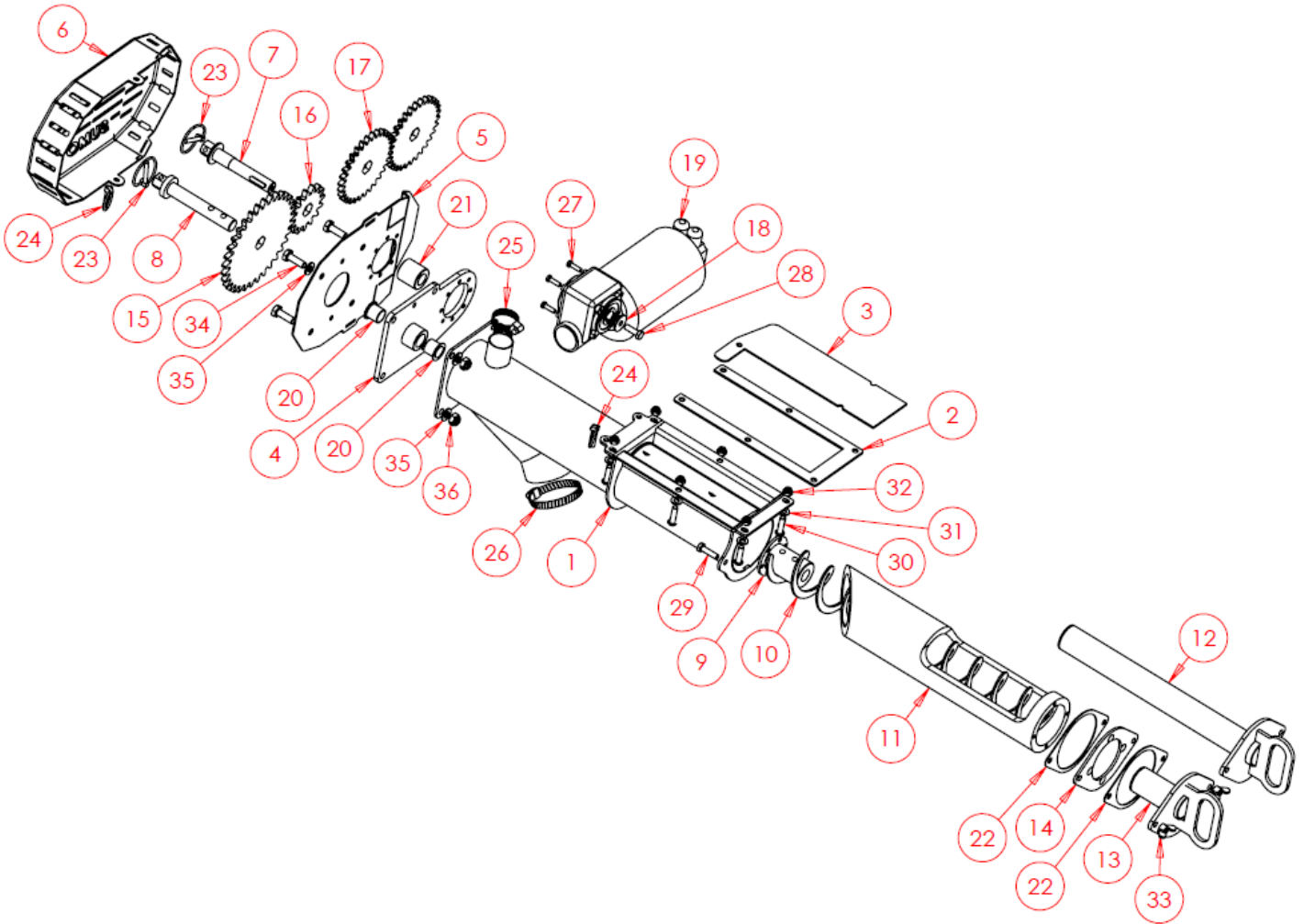


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Item No.	Part Number	Description	Qty
1	SW6349	Lid	1
2	SW6348	Frame	1
3	SWA3027	Handle	1
4	SW2392	Clamp Handle	2
5	SWB845	Gasket	1
6	SWB998	Gas Strut	2
7	SWB838	M12 Eye Bolt	4
8	SW2393	Trunnion Nut	2
9	SW3046	Extra Large Washer	6
10	SW3047	Spacer	6
11	SWM620BTH	M6x20 Button Head Screw	4
12	SWM620BTHST	M6x20 Stainless Button Head Screw	2
13	SWM6001ST	M6 Stainless Washer - Flat	4
14	SWM6004	M6 Nut - Nylock	4
15	SWM6004ST	M6 Stainless Nut - Nylock	6
16	SWM825ST	M8x25 Stainless Screw	28
17	SWM8001ST	M8 Stainless Washer - Flat	28
18	SWM8001XLST	M8 Stainless Extra-Large Washer - Flat	28
19	SWM8004ST	M8 Stainless Nut - Nylock	28
20	SWM1245	M12x45 Bolt	4
21	SWM12001	M12 Washer - Flat	8
22	SWM12004	M12 Nut - Nylock	4
23	SWM12003	M12 Nut - Plain	4
24	SWM12003ST	M12 Stainless Nut - Plain	4

7.2.3 Orga Metering Unit



Item No.	Part Number	Description	Qty
1	SW1801	Main Body	1
2	SW1807	Slide Guide	1
3	SW1806	Slide	1
4	SWA1816	Motor Mounting Plate	1
5	SWS21380	Gears Mounting Plate (LH Shown) *	1
6	SW3048	Gear Guard	1
7	SW1803	Motor Shaft	1
8	SW1804	Orga Shaft	1
9	SW1811	Orga Flight Coupling Boss	1
10	SW2220	Orga Flight	1
11	SW2238	Plastic Insert	1
12	SW1814	Stainless Insert - Long	1
13	SW1812	Stainless Insert - Short	1

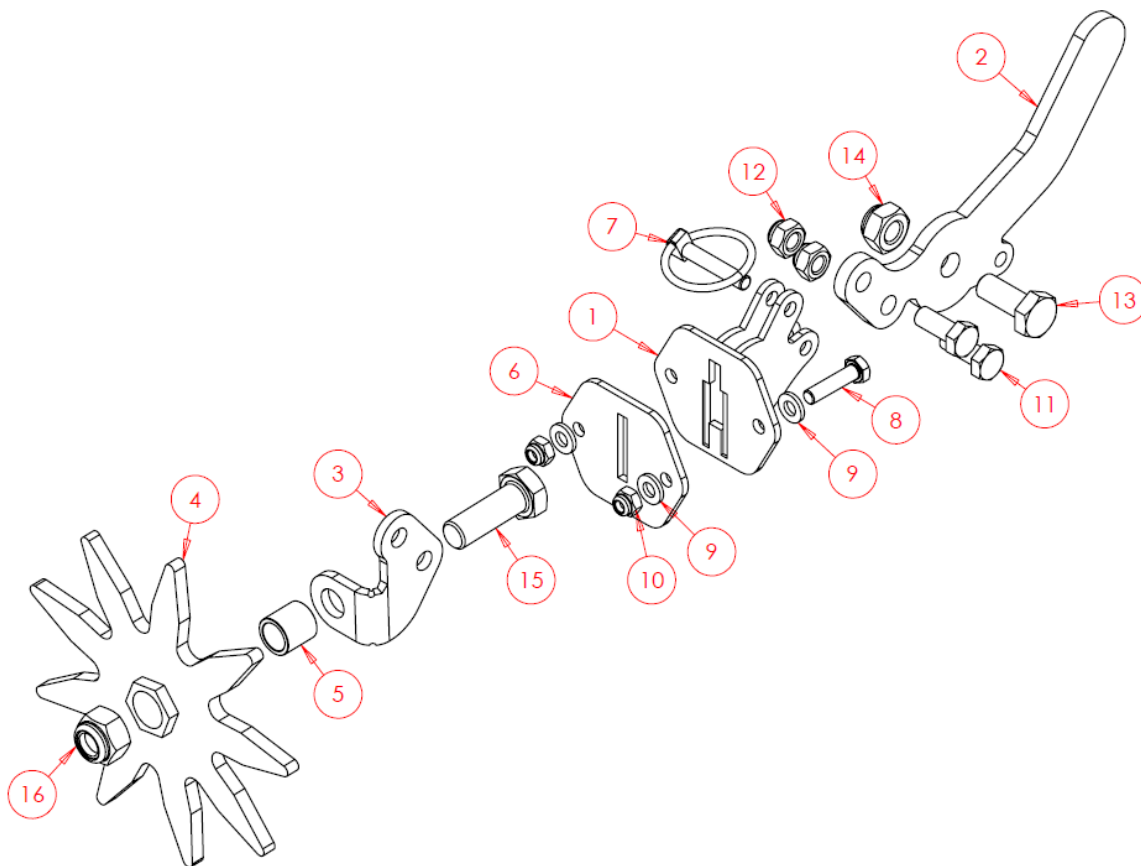
7.2.3 Orga Metering Unit – Continued

Item No.	Part Number	Description	Qty
14	SWS14178	Insert Flange	1
15	SW1809	Gear 2.2:1 – Large	1
16	SW1810	Gear 2.2:1 – Small	1
17	SW3002	Gear 1:1	2
18	SW3045	Washer	1
19	SWB1247	Motor	1
20	SWB650	Top Hat Bush	2
21	SWB855	Gear Spacer Bush	1
22	SWB847	Gasket	2
23	SWB691	Lynch Pin	2
24	SWB1391	Lynch Pin	3
25	SWB496	Stainless Jubilee Clip – 50mm	1
26	SWB738	Stainless Jubilee Clip – 80mm	1
27	SWM620AKH	M6x20 Socket Head Stainless Screw	4
28	SWM825ST	M8x25 Stainless Screw	1
29	SWM830ST	M8x30 Stainless Screw	2
30	SWM830BTH	M8x30 Button Socket Head Screw	6
31	SWM8001ST	M8 Stainless Washer – Flat	6
32	SWM8004ST	M8 Stainless Nut – Nylock	6
33	SWM8003WNS	M8 Stainless Nut – Wing	2
34	SWM1030ST	M10x30 Stainless Screw	4
35	SWM10001ST	M10 Stainless Washer – Flat	8
36	SWM10004ST	M10 Stainless Nut – Nylock	4
37	SWB470	38mm Hose **	1
38	SWB648	76mm Hose **	1

* Handed part. Ensure to specify which hand is required.

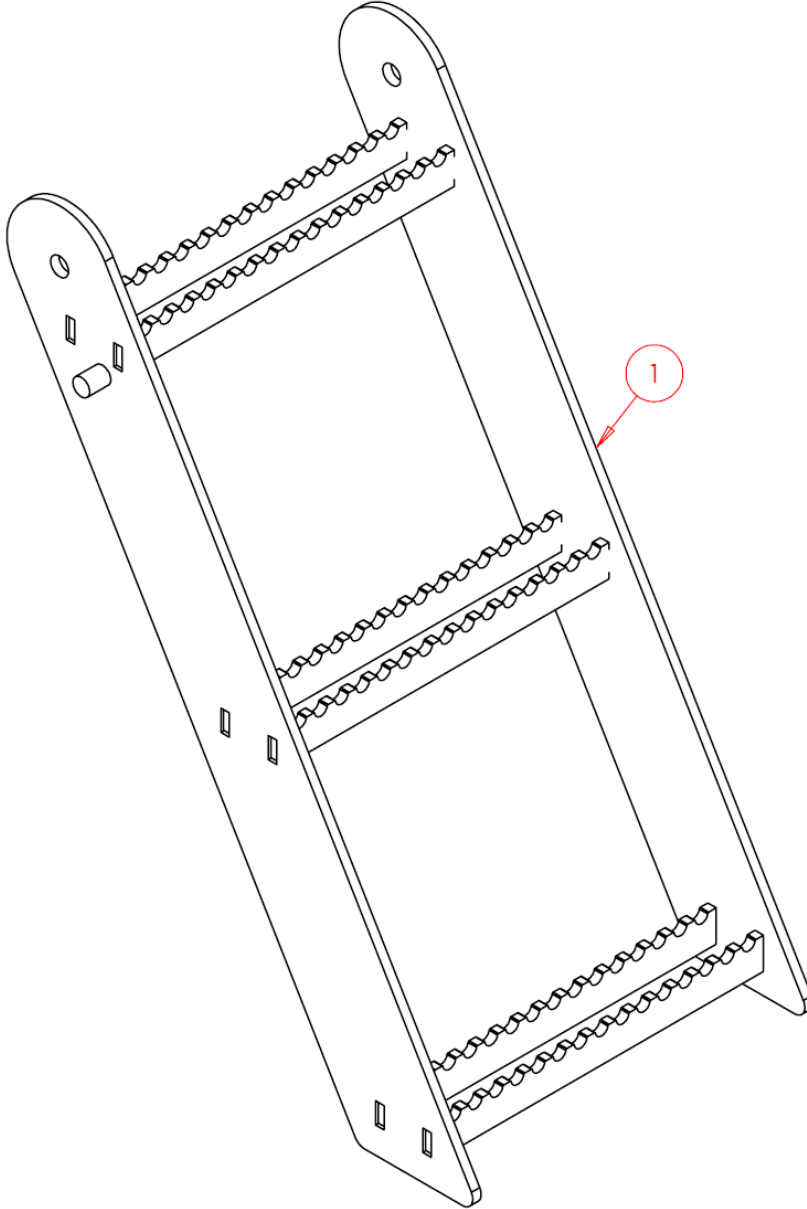
** Hose is typically sold in metres, provide desired cut length when requesting.

7.2.4 Hopper Agitator



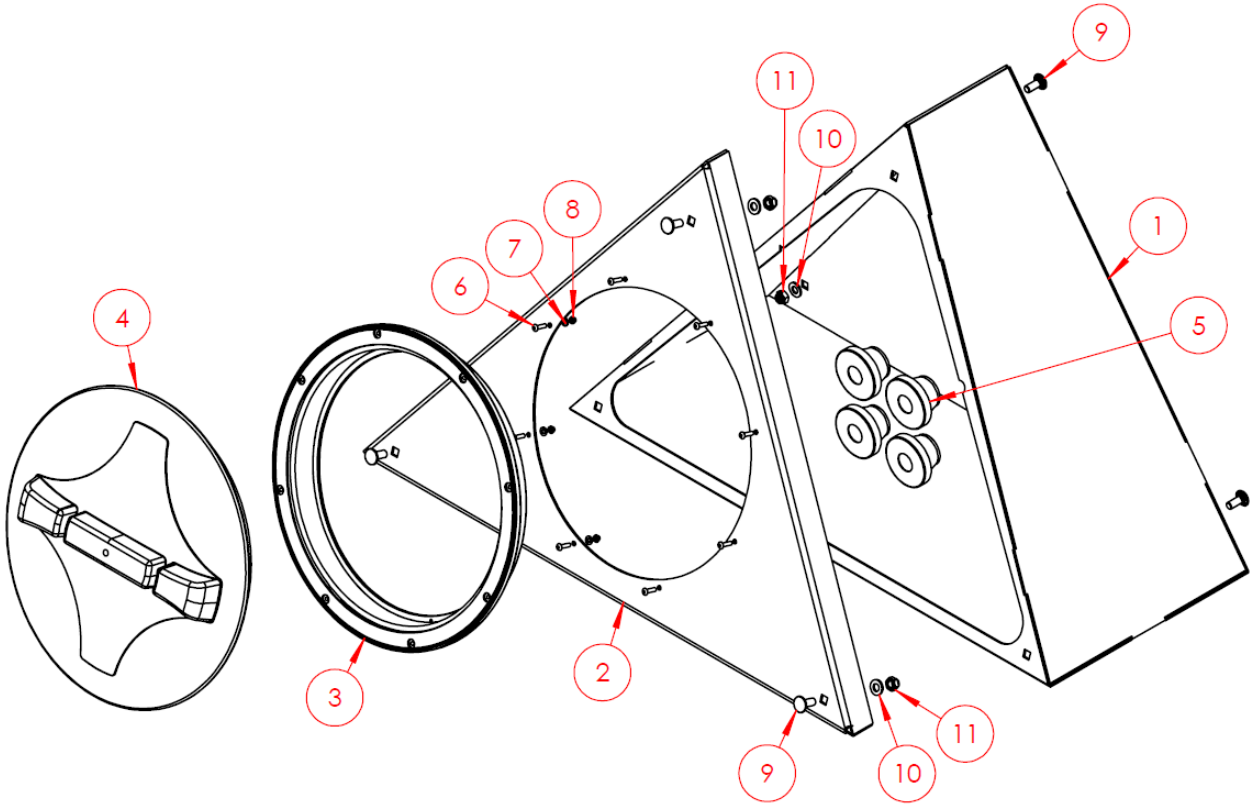
Item No.	Part Number	Description	Qty
1	SW2740	Adjustable Agitator Bracket	1
2	SW2221	Lever Arm	1
3	SW2222	Agitator Mounting Bracket (Left Hand Shown)	1
3	SW2223	Agitator Mounting Bracket (Right Hand Not Shown)	N/A
4	SW6305	Agitator	1
5	SWB652	Bush	1
6	SWB856	Gasket	1
7	SWB1391	Lynch Pin	1
8	SWM625ST	M6x25 Stainless Screw	2
9	SWM6001ST	M6 Stainless Washer – Flat	4
10	SWM6004ST	M6 Stainless Nut – Nylock	2
11	SWM820ST	M8x20 Stainless Screw	2
12	SWM8004ST	M8 Stainless Nut – Nylock	2
13	SWM1025	M10x25 Screw	1
14	SWM10004	M10 Nut – Nylock	1
15	SWM1235ST	M12x35 Screw	1
16	SWM12004ST	M12 Nut – Nylock	1

7.2.5 Ladder



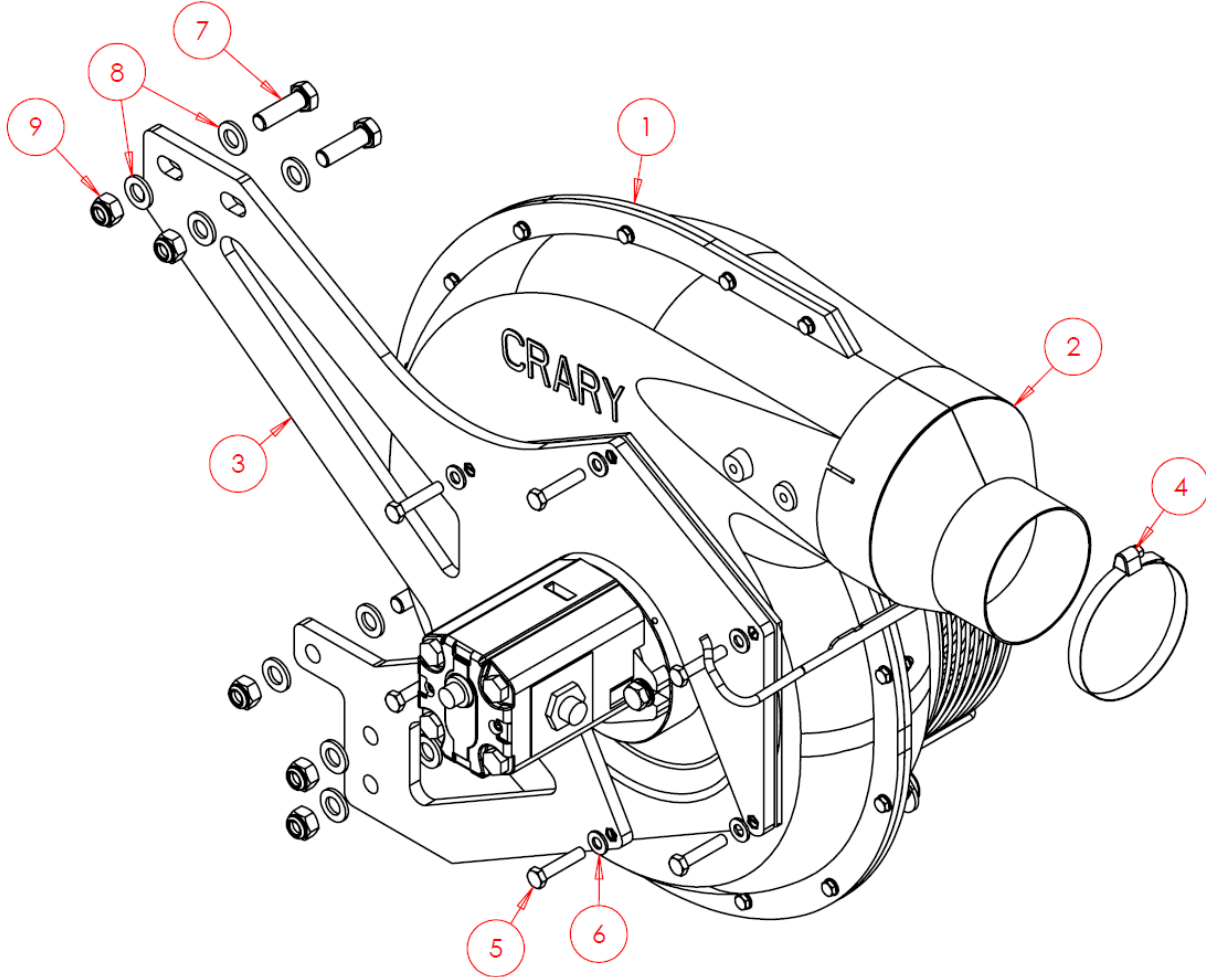
Item No.	Part Number	Description	Qty
1	SW3086	Ladder	1

7.2.6 Electrics Box



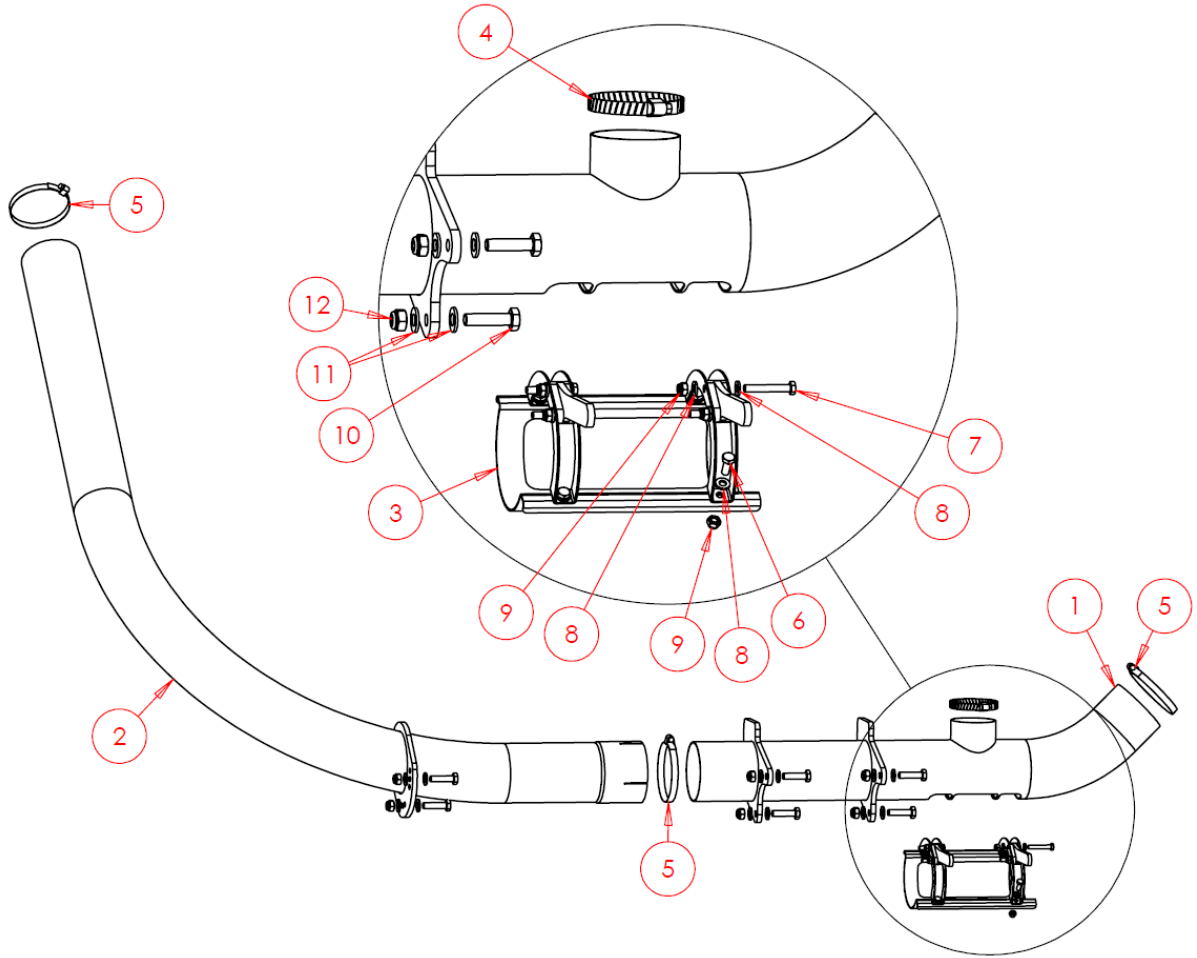
Item No.	Part Number	Description	Qty
1	SWA2131	Electrical Compartment	1
2	SWS14108	Front Plate	1
3	SWB379	Inner Lid	1
4	SWB378	Outer Lid	1
5	SWB563	Cable Gland	4
6	SWM416BTH	M4x16 Button Head Screw	8
7	SWM4001	M4 Washer – Flat	8
8	SWM4004	M4 Nut – Nylock	8
9	SWM820BTH	M8x20 Cup Head Square Screw	6
10	SWM8001	M8 Washer – Flat	6
11	SWM8004	M8 Nut – Nylock	6

7.2.7 Fan System



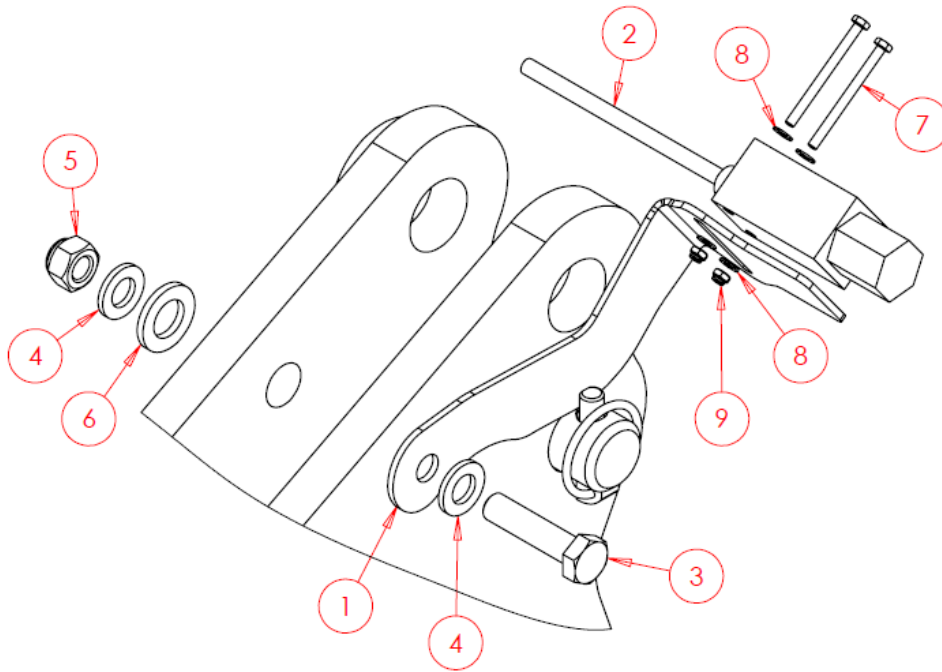
Item No.	Part Number	Description	Qty
1	SWB1288	Fan	1
2	SW6633	Reducer	1
3	SWS24299	Mounting Bracket	1
4	SWB497	Jubilee Clip	1
5	SWM840	M8x40 Screw	6
6	SWM8001	M8 Washer - Flat	6
7	SWM1240	M12x40 Screw	5
8	SWM12001	M12 Washer - Flat	10
9	SWM12004	M12 Nut - Nylock	5

7.2.8 Standard Transfer Pipe Assembly



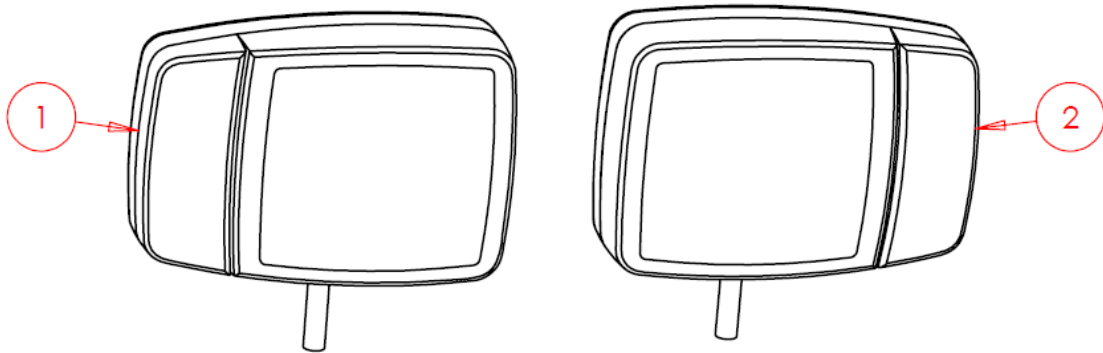
Item No.	Part Number	Description	Qty
1	SW6650	Calibration Tube	1
2	SW3224	Side Pipe	1
3	SW2217	Calibration Slide	1
4	SWB738	Jubilee Clip	1
5	SWB497	Jubilee Clip	3
6	SWM616	M6x16 Screw	4
7	SWM640	M6x40 Bolt	4
8	SWM6001	M6 Washer - Flat	12
9	SWM6004	M6 Nut - Nylock	8
10	SWM1040	M10x40 Bolt	6
11	SWM10001	M10 Washer - Flat	12
12	SWM10004	M10 Nut - Nylock	6

7.2.9 Finger Switch Assembly



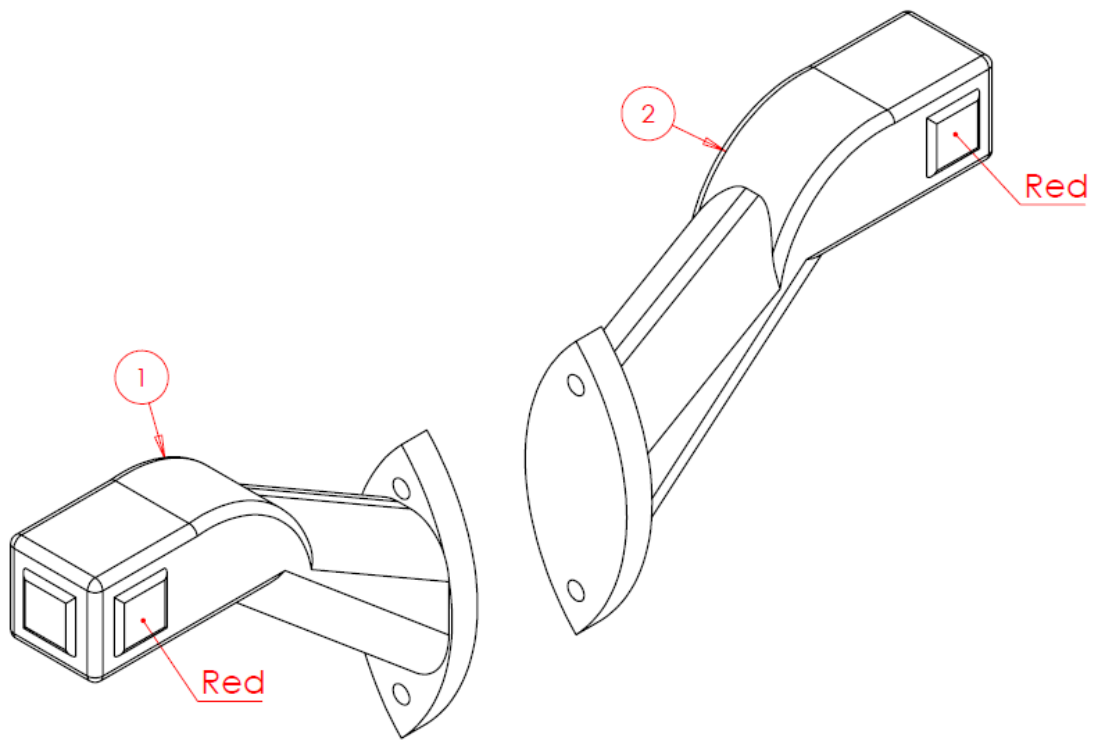
Item No.	Part Number	Description	Qty
1	SW1176	Bracket	1
2	SWB850	Finger Switch	1
3	SWM1250	M12x50 Bolt	1
4	SWM12001	M12 Washer - Flat	2
5	SWM12004	M12 Nut - Nylock	1
6	SWM16001	M16 Washer - Flat	1
7	SWM450	M4x50 Screw	2
8	SWM4001	M4 Washer - Flat	4
9	SWM4004	M4 Nut - Nylock	2

7.2.10 Headlights

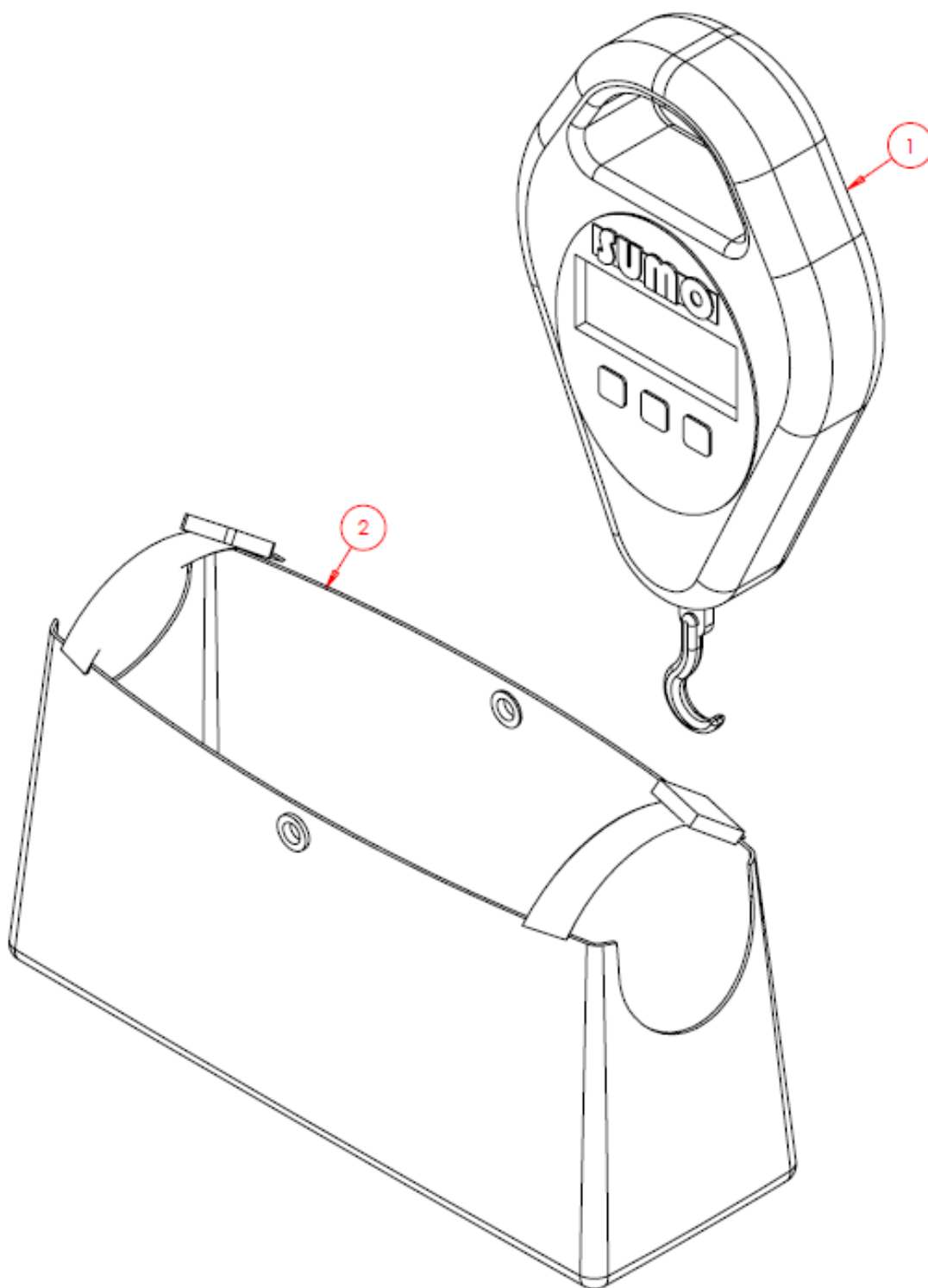


Item No.	Part Number	Description	Qty
1	SWB764	Headlight RH	1
2	SWB763	Headlight LH	1

7.2.11 Side Indicators



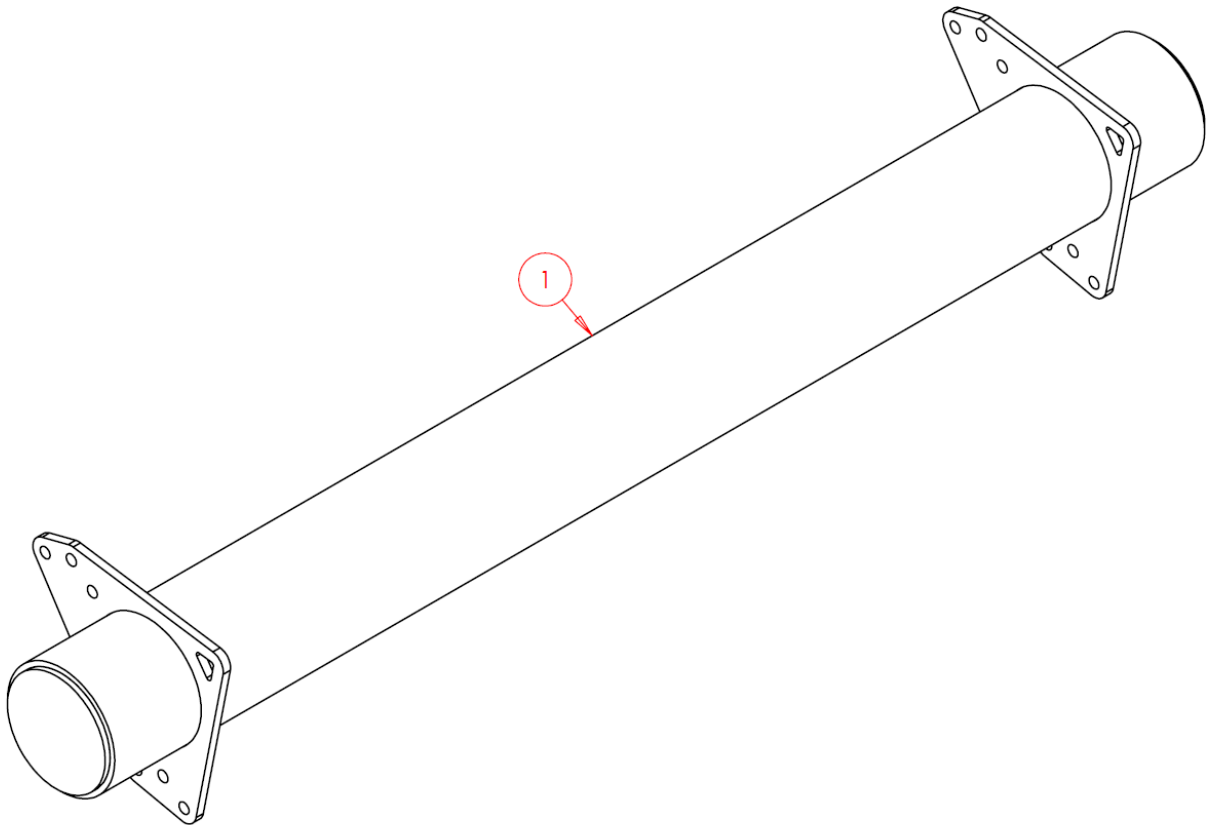
Item No.	Part Number	Description	Qty
1	SWB172	Side Indicator LH	1
2	SWB173	Side Indicator RH	1

7.2.12 Calibration Bag & Weight Scales

Item No.	Part Number	Description	Qty
1	SWB1270	Calibration Bag	1
2	SWB337	Weight Scales	1

7.3 Optional Extras/Attachments

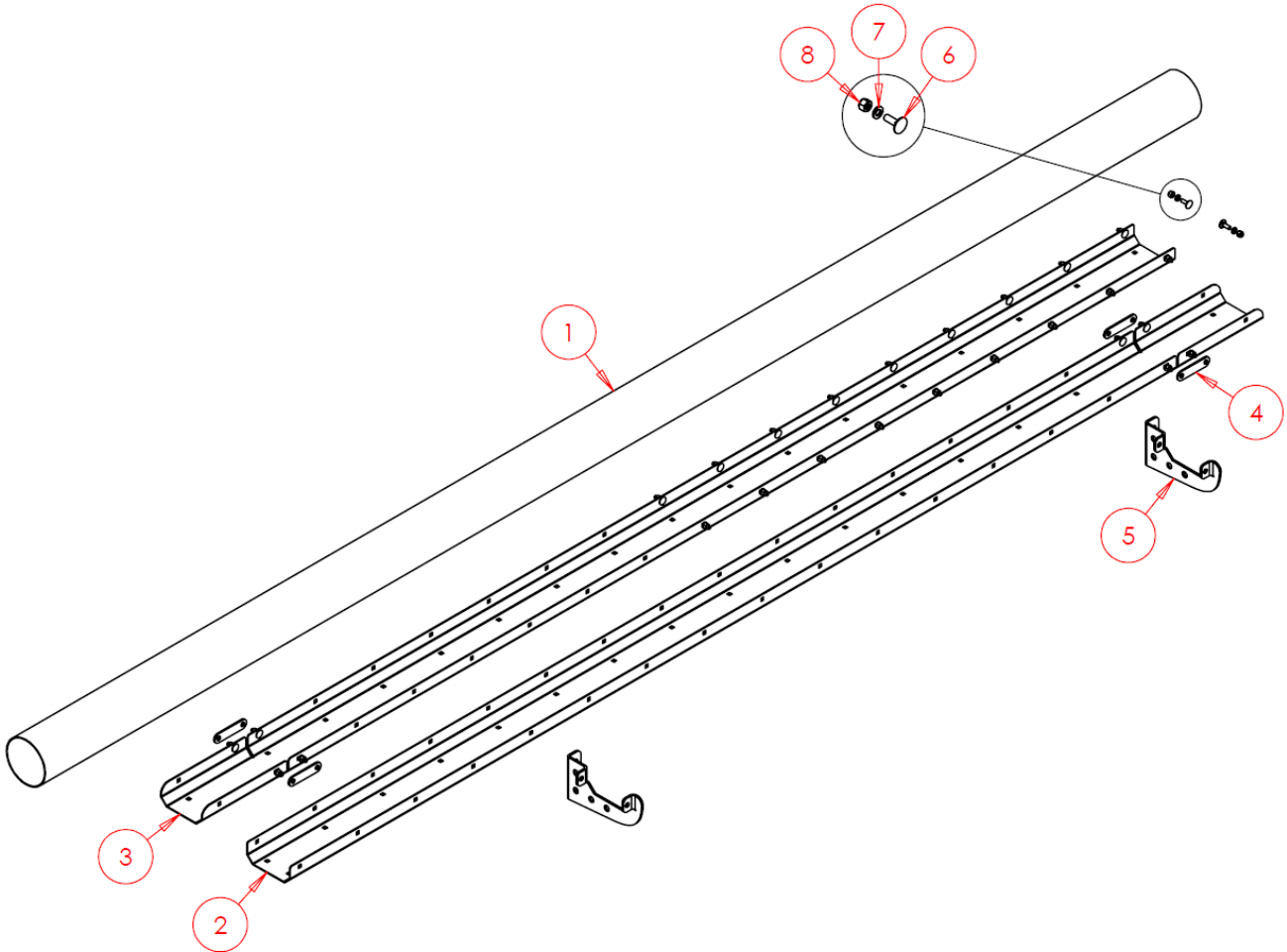
7.3.1 Front Weight 500kg



Item No.	Part Number	Description	Qty
1	SWA2672	Front Weight 500kg	1

7.3.2 Transfer Pipe (Tractor)

Note: Sumo do not supply tractor specific mounting brackets. These will need to be sourced from the tractor manufacturer.

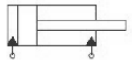

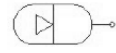

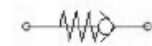
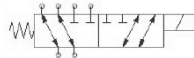

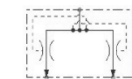
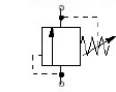



Item No.	Part Number	Description	Qty
1	-	101 Pipe *	1
2	SW2568	Lower Conduit	1
3	SW2567	Upper Conduit	1
4	SW2569	Slot Adjusters	4
5	SW2570	Brackets	2
6	SWM616	M6x16 Screw	28
7	SWM6001	M6 Washer - Flat	28
8	SWM6004	M6 Nut - Nylock	28

* Standard length is 3 Metres. Variable lengths available, please specify when ordering.

8. Hydraulic Function Diagrams

Standard Symbols Key:

	=	Double Acting Cylinder
	=	Single Acting Cylinder
	=	Accumulator
	=	Pressure Gauge
	=	Quick Release/Check Valve
	=	Six Way Changeover Valve
	=	Ball Valve
	=	Flow Divider/Combiner
	=	Pilot Operated Relief Valve
	=	Flow Restrictor

8.1 FH - Hydraulic Function Schematic

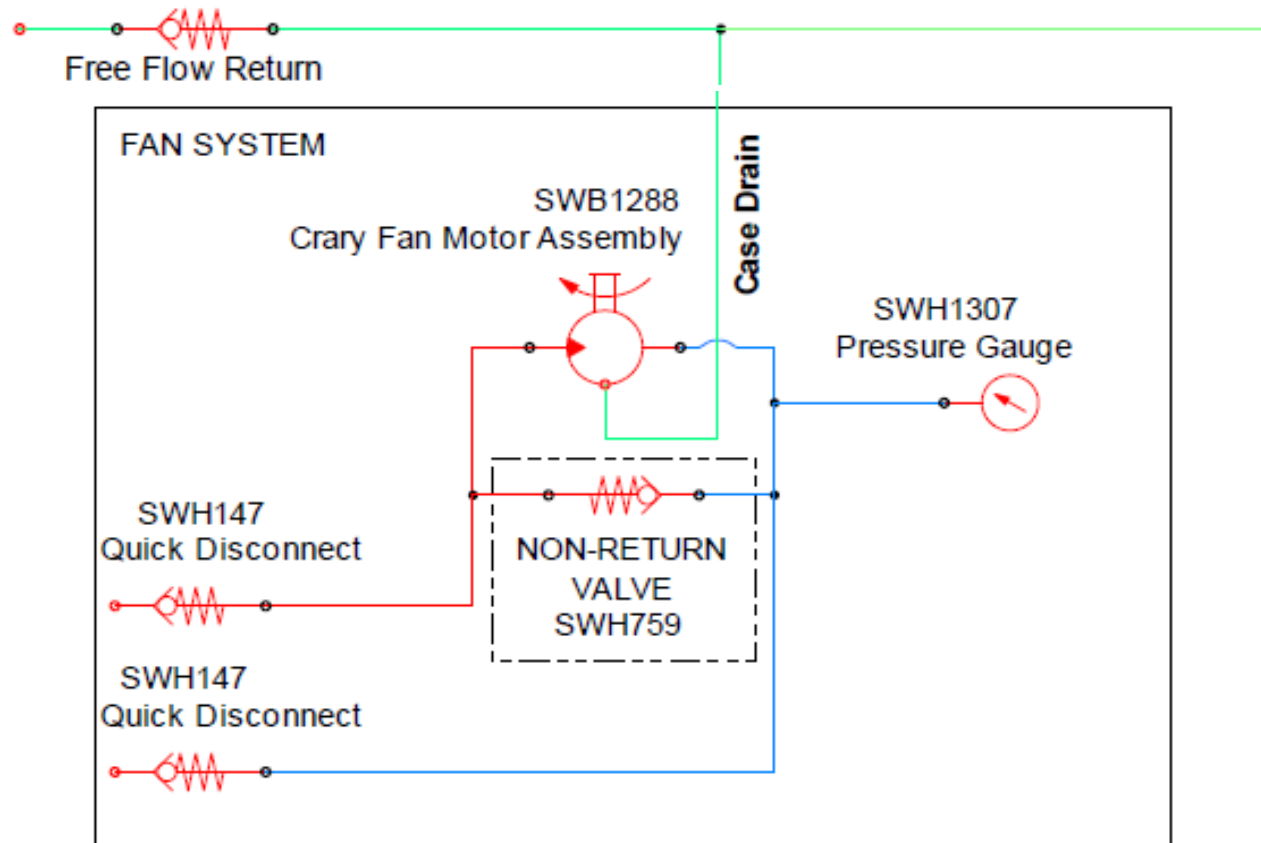
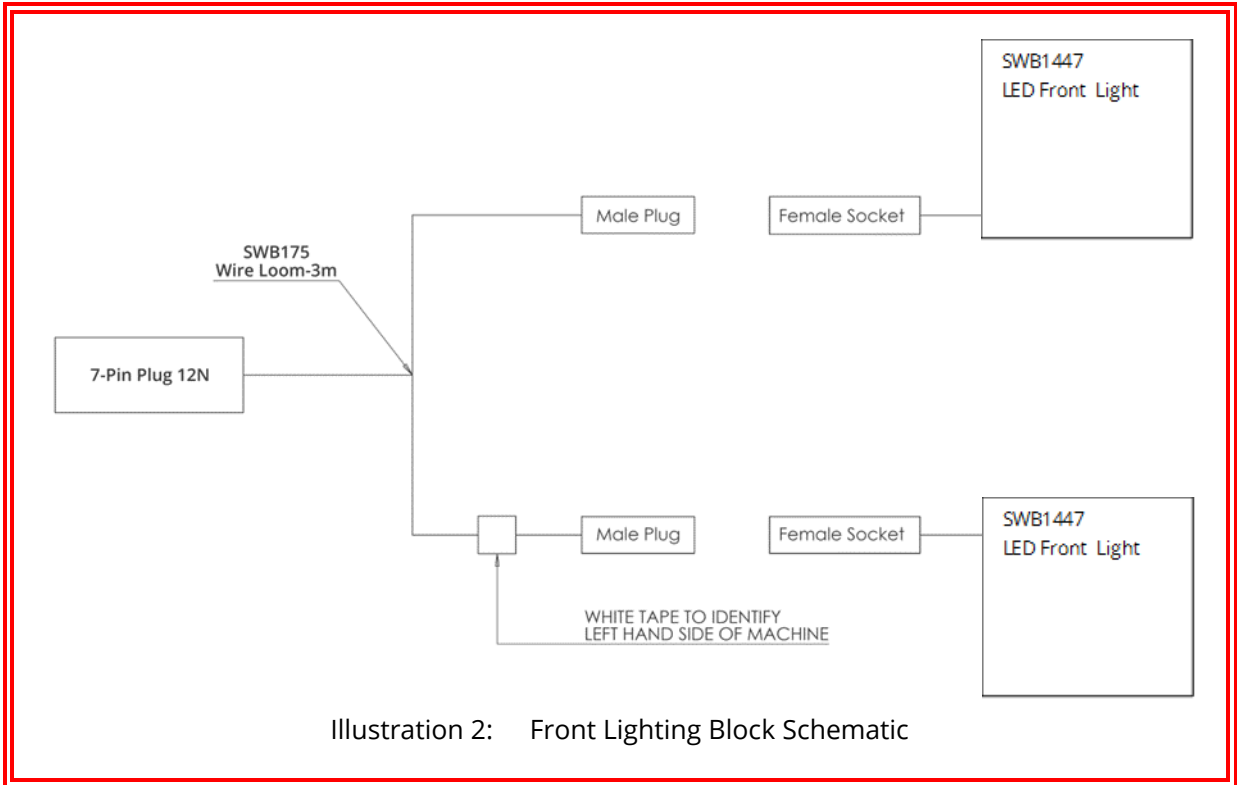


Illustration 1: Hydraulic Schematic FH

9. Electrical Schematics



10. Standard Torque Values

Non-Standard torque values will appear in the parts book section of this document.

Standard Torque Values (Nm) (Unless Otherwise Stated)			
Thread	Grade 8.8	Grade 10.9	Stainless Steel
M6	10	14	7
M8	25	36	17
M10	50	70	33
M12	86	121	57
M16	215	314	140
M20	410	580	273
M24	710	1000	472
M30	1400	1450	930

For any arrangement using Nord-Lock washers, see Nord-Lock website:

[Torque Guide for Nord-Lock Washers - Nord-Lock Group](#)