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# DIRECT DRILL

## 2023 Mounted Range (DD)

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 need clarification, please contact us on the details given previously.

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# 1 Machine Range Summary

The Sumo Direct Drill (DD) system is based on the zero-till approach to farming. This system allows crop residues to be left in the field which the DD coulter will aid the incorporation of into the soil profile, this adds organic matter to the soil which aids structure and the health of the microbes and worms which live within the soil. Residues also provide cover for the soil at a critical time of the year and moisture is also locked into these areas and is ready for young crops to use.

The DD patented coulter system works in three stages:

## **Stages One – Disc & Tine**

A leading disc cuts through crop trash and cover crops to help stop the build-up of debris around the coulter, aids incorporation of the trash / cover crop and starts the seed furrow cleanly by reducing surface tear.

The seed coulter leg is located near to the disc and the distance can be adjusted by a depth wheel on this, allowing for accurate seed and fertiliser (on selected models) placement. The seed coulter only creates the very minimum depth furrow required, reducing soil disturbance which is beneficial to the microbial & worm health, soil structure is improved by doing this and keeps the maximum amount of soil in cohesion with itself reducing the risk of erosion.

## **Stage Two – Seed Coulter & Fertiliser**

There is a seed tab following this coulter which stops seed bounce, ensuring that the seed is in the optimum place for germination.

The cleated wheel which is slightly behind the coulter leg fractures the side wall of the furrow and starts to close the furrow over the seed.

## **Stage Three – Covering Discs & Consolidation**

Following at the end is a scalloped covering disc which covers the seed trench with the displaced soil and collapses any of the side wall of the seed trench which the cleated tyre has left ensuring good coverage of the seed. The amount of force which this covering disc exerts can be adjusted depending on the soil type and the consolidation required. The heavier the soil i.e. clay loam will require force to break the furrow side walls.

Good consolidation is crucial as for the seed to germinate the seed requires the contact to extract the moisture from the soil. This coverage and consolidation reduce the risk of slugs attacking the seeds as slugs can only travel through the gaps within the soil, they can't make their own way through the soil.

Note: These stage descriptions are based on our standard offering but will change depending on selected options. Consult the Drills Operators manual for more information.

## 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.

### DD Mounted Range

Code	DTS3
Working Width	3.0m
Transport Width	3.0m
Hopper Capacity	1900 Litres
Row Spacing	187.5mm
Rows	16
Double Seed Row	As Standard
Seed Row Width	187.5mm

### Available Options

Code	Option Code	Description	Specifications
DD3	DD3.DM	Wing Markers	-
	DD3.TRAMLINING.KIT	Tramlining Shut Off	Tramlines spacing 1998mm (Other Spacing available upon request)
	DD3.WT	Weight Transfer Kit	
	DD3.OPTION.AUX.FERT. UPSTACK	Auxiliary Fertiliser Up-Stack	16 Outlet Distribution Head. 101mm Transfer Ducting Interface
	DD3.OPTION.AUX.FERT . UPSTACK.TRAMLINING	Auxiliary Fertiliser Up-Stack with Tramlining	9 Outlet Distribution Head. 101mm Transfer Ducting Interface Includes 2 Row Shut Off Units for Tramlining
	SWB1075	Variable Seed Rate	Unlock code for RDS System

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.

#### Mounted DD

Due to the mounted and adjustable nature of the DD machines, they do not have a set transport position, but it is advised that: All coulters are retracted/lifted to ensure they do not contact the ground and the Depth Wheels are pinned in the shallowest depth (Highest pinnable position). Ensure all Markers are fully retracted and securely locked into place. Ensure rear lights and reflectors are suitably angled down. Turn off all working lights so as not to dazzle other road users.

#### 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 implement positions, chassis height/angle, and reversing pins with handles. It is solely the owner/operator's responsibility to ensure they transport the machine within local legislation & laws.

#### Mounted Machines (Excluding Options)

Code	Length	Width	Height
DD3	3220	3000	2600

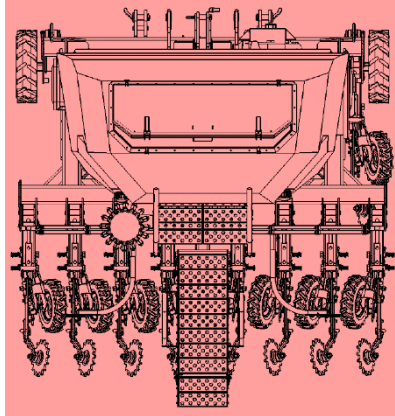
#### Mounted Machines (Including Options)

Code	Length	Width	Height
DD3.DM	-	-	-
DD3.TRAMLINING.KIT	-	-	-
DD3.WT	-	-	-
DD3.OPTION.AUX.FERT.UPSTACK	-	-	-
DD3.OPTION.AUX.FERT.UPSTACK.TRAMLINING	-	-	-
SWB1075	-	-	-

## 4 Danger Zone

The area marked red indicates the Danger Zone of the machine. This refers to both folded & unfolded states.

**Mounted DD**



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 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 Drills Operators Manual.

## 5 Risk Assessments

**Model:** Mounted DD

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

**Purpose of machine:** Primarily designed to direct drill into stubble, minimum tillage, or plough-based systems.

**Description of machine:** A three-point-linkage mounted farm implement consisting of multiple elements:

1. A row of hydraulically actuated coulter legs, consisting of a leading disc and tine, a seed boot, covering disc & consolidation depth wheel.
2. A pressurised grain tank with access stairs and lid.
3. An auger metering unit connected to an electrically controlled application rate system.
4. A hydraulically powered pneumatic transfer and distribution system.
5. A hydraulically powered ground pressure system.

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 & 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 stickers, maintain safe distance from moving parts, wear gloves. Clear excess soil (weight) from legs before attempting to adjust legs.
Risk of crushing: - When coupling a tractor to the Sumo implements. - When changing points. - Rotating parts	Operator	4 Mid – High	Warnings, Maintenance Stands	Take extreme care when working on legs, changing depth, replacing parts etc, make sure the machine is on a suitably 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 Sumo implements.

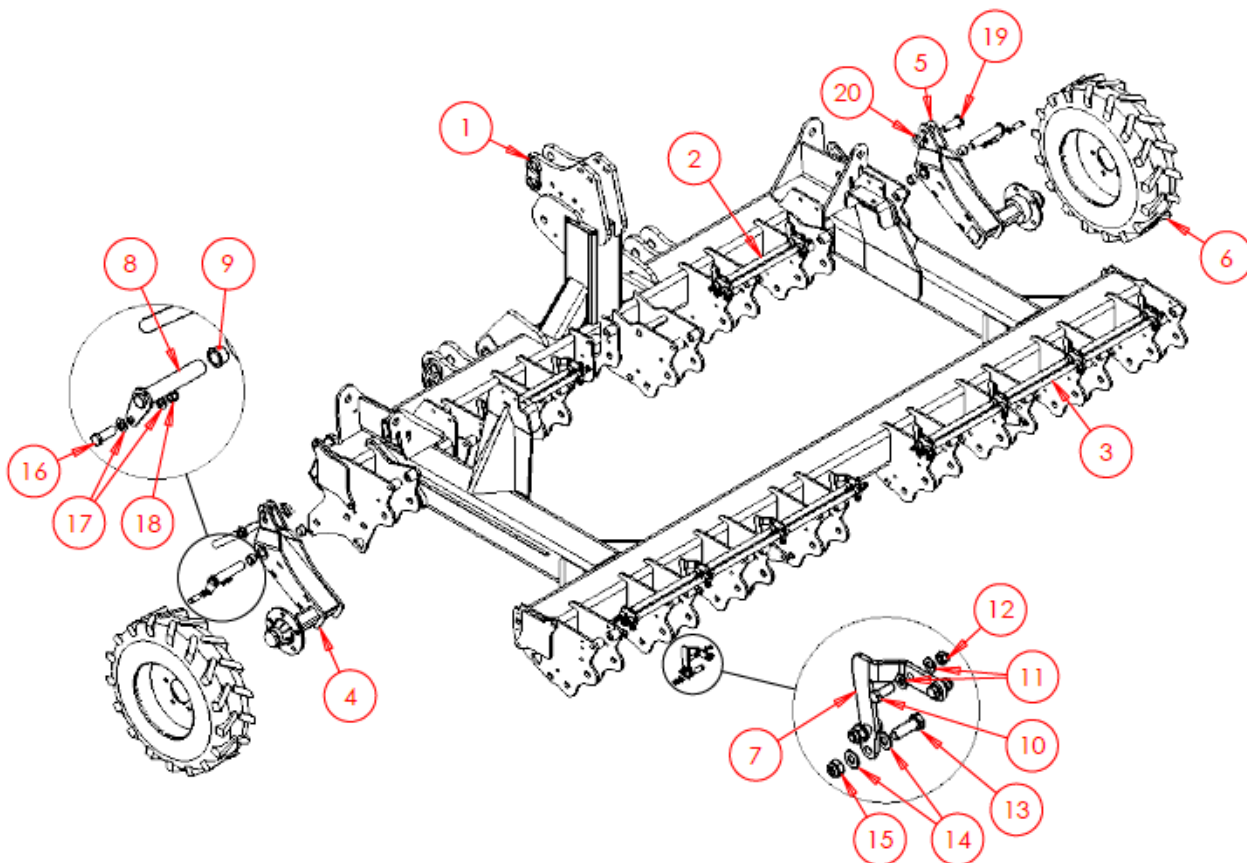
## 5 Risk Assessments - Continued

<b>Hazard Identified in Using Machine</b>	<b>Who Might Be Harmed</b>	<b>Risk Evaluation /Level (1-5)</b>	<b>Precautions In Place</b>	<b>Further Action Required</b>
Falling from machine	Operator	2 Low - Mid	Most alterations and maintenance do not require the operator to climb on the machine. For access to the grain tank, use steps and handrails provided.	Lower the machine to the floor to allow access for greasing discs, checking bearings etc...
Pressurised oil/ Burst hoses	Operator	4 Mid - High	Warning stickers	Always wear appropriate PPE. Do not remove hoses whilst pressurised. Do not feel for leaks. If contact with oil is made, wash affected area immediately. Do not inhale or consume.

## 6 Parts Book Index

For older machines, please see Manuals & Part Books available on the Sumo website.

### 6.1 DD3 Base Machine



Item No.	Part Number	Description	Qty
1	SW6639	Main Frame	1
2	SW6640	Manifold - 2 Outlet	2
3	SW6641	Manifold - 4 Outlet	2
4	SW2356	Axle LH	1
5	SW2357	Axle RH	1
6	SWB530	Wheel	2
7	SWS13217	Manifold Bracket	12
8	SWP25X145	Pin	2
9	SWB492	Bush	4
10	SWM825	M8x25 Screw	24
11	SWM8001	M8 Washer - Flat	48
12	SWM8004	M8 Nut - Nylock	24



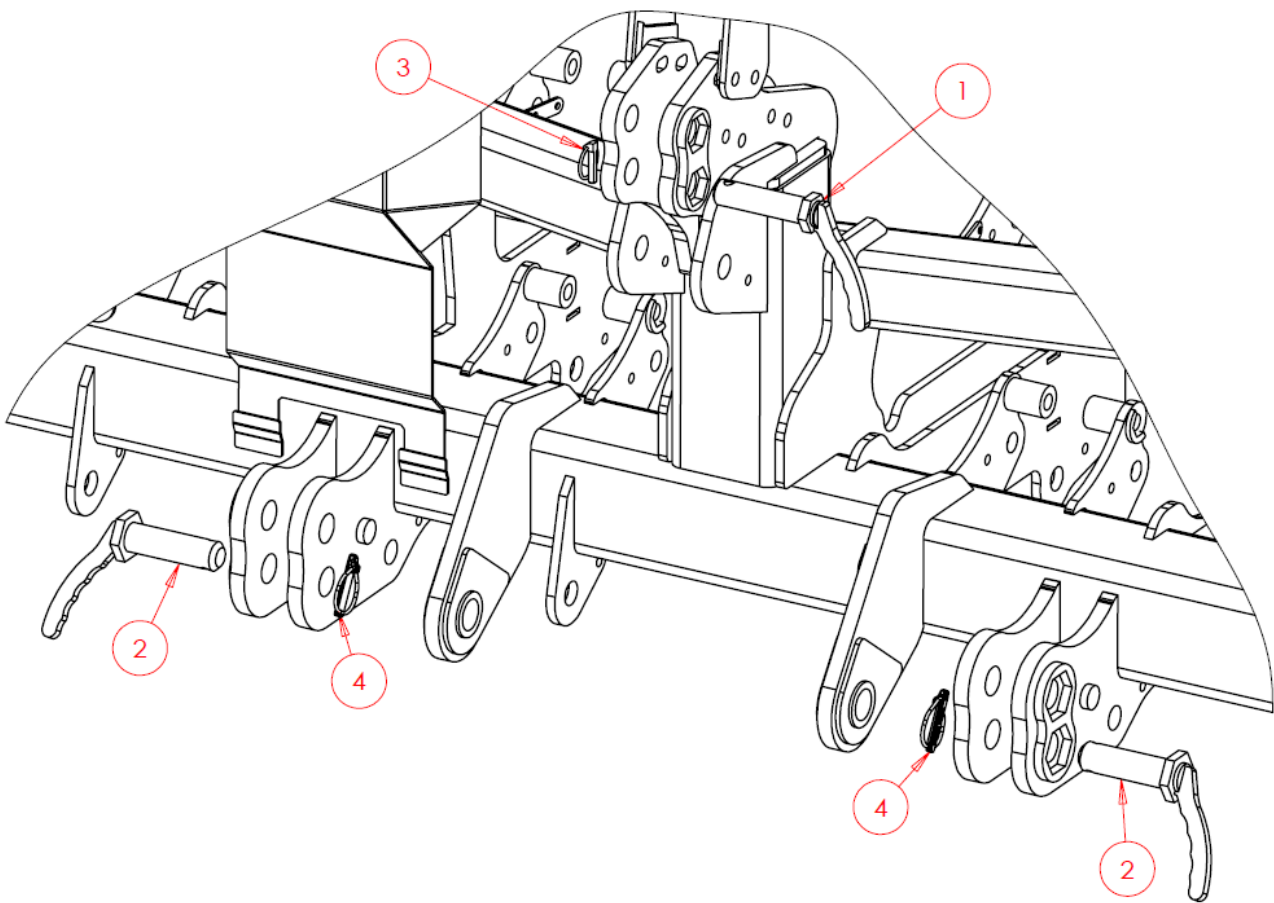
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13	SWM1035	M0x35 Screw	24
14	SWM10001	M10 Washer - Flat	48
15	SWM10004	M10 Nut - Nylock	24
16	SWM1240	M12x40 Screw	2
17	SWM12001	M12 Washer - Flat	4
18	SWM12004	M12 Nut - Nylock	2
19	SWP20X55H	Pin - Handle	2
20	SWB105	Lynch Pin	2

## 6.2 Standard Assemblies

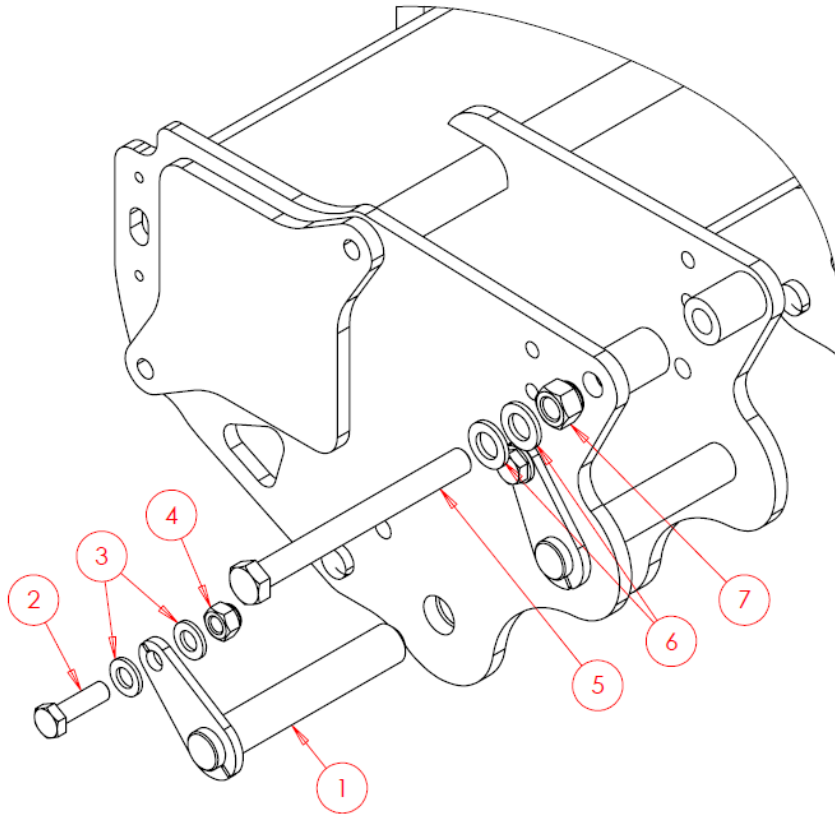
### 6.2.1 Three Point Linkage Pins



Item No.	Part Number	Description	Qty
1	SW627	Top Hitch Pin	1
2	SW626	Lower Hitch Pin	2
3	SWB105	Lynch Pin	1
4	SWB107	Lynch Pin	2

## 6.2.2 Coulter System

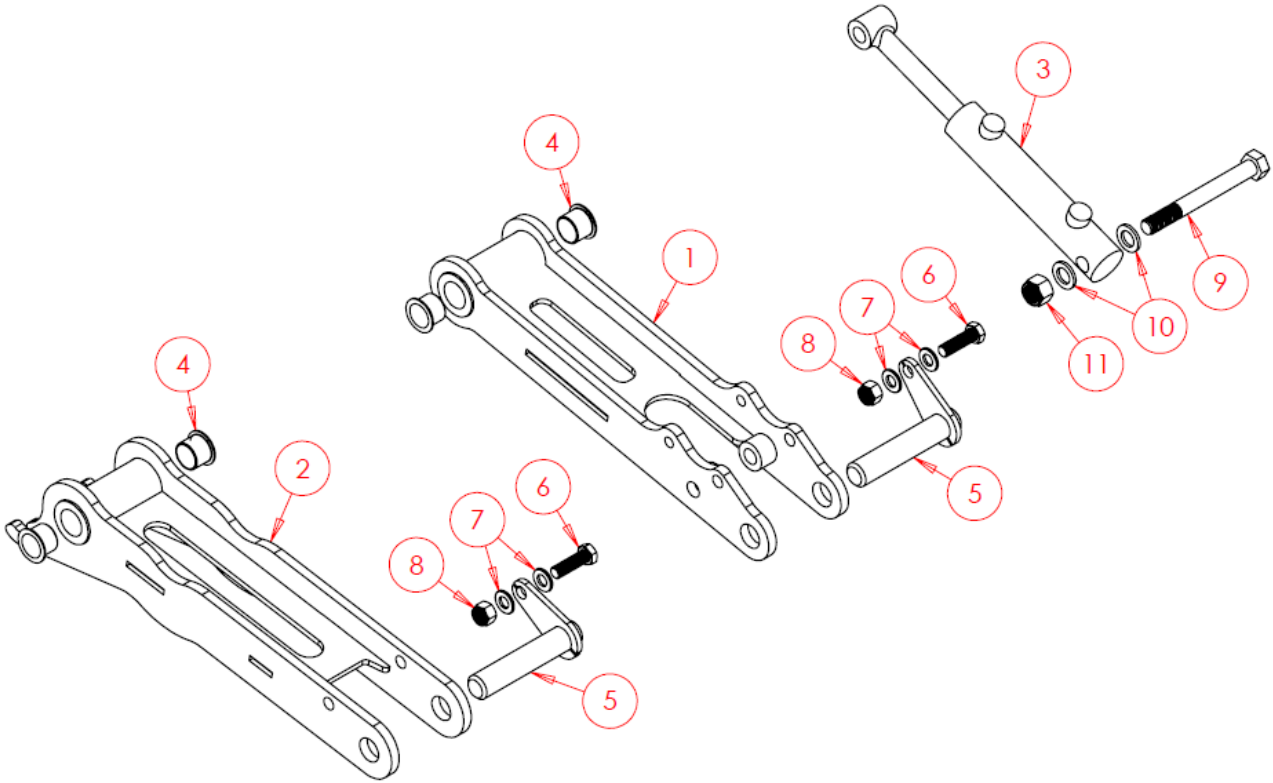
### 6.2.2.1 Coulter Arrangement – Standard Mounting Set Up



Quantities are per coulter set up.

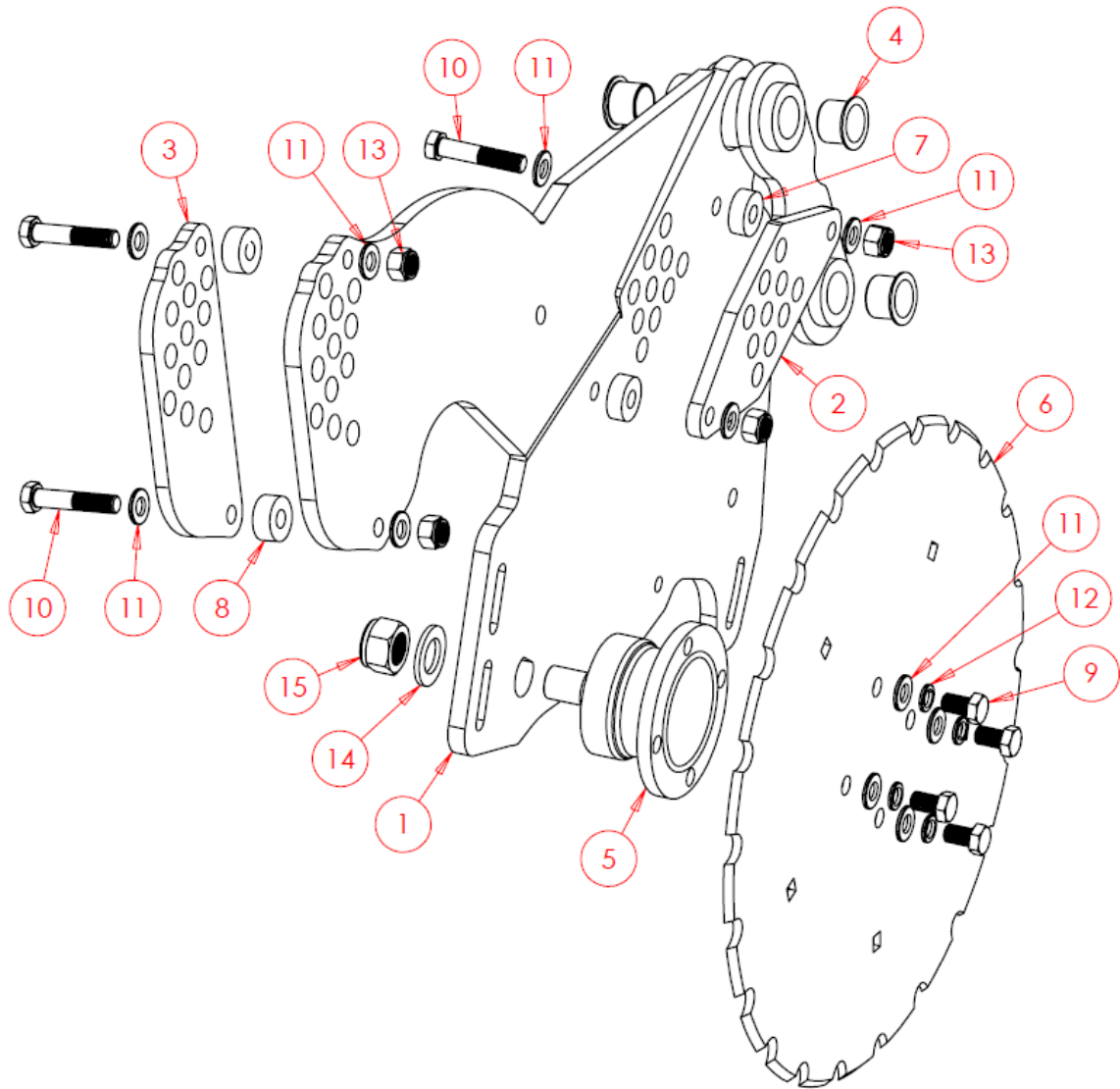
Item No.	Part Number	Description	Qty
1	SWP25X145	Pin	2
2	SWM1240	M12x40 Screw	2
3	SWM12001	M12 Washer - Flat	4
4	SWM12004	M12 Nut - Nylock	2
5	SWM16170	M16x170 Bolt	1
6	SWM16001	M16 Washer - Flat	2
7	SWM16004	M16 Nut - Nylock	1

### 6.2.2.2 Coulter Arrangement – Standard Parallel Linkages



Item No.	Part Number	Description	Qty
1	SW2718	Top Linkage	1
2	SW2719	Lower Linkage	1
3	SWH323	Hydraulic Cylinder	1
4	SWB492	Bush	4
5	SWP25X115	Pin	2
6	SWM1240	M12x40 Screw	1
7	SWM12001	M12 Washer – Flat	2
8	SWM12004	M12 Nut – Nylock	1
9	SWM16140	M16x140 Screw	1
10	SWM16001	M16 Washer – Flat	2
11	SWM16004	M16 Nut – Nylock	1

### 6.2.2.3 Coulter Arrangement – Main Body & Leading Disc



Both Left and Right-hand assemblies required. Left Hand version shown.

Item No.	Part Number	Description	Qty
1	SW2097	Main Body LH	1
1	SW2512	Main Body RH (Not Shown)	-
2	SW2099	Depth Wheel Guide	1
3	SW2098	Closing Disc Arm Guide	1
4	SWB492	Bush	4
5	SWB399	Bearing	1
6	SWB442	Disc	1
7	SW2500	Spacer	2
8	SW2509	Spacer	2
9	SWM1220FP	M12x20 Fine Thread Screw	4

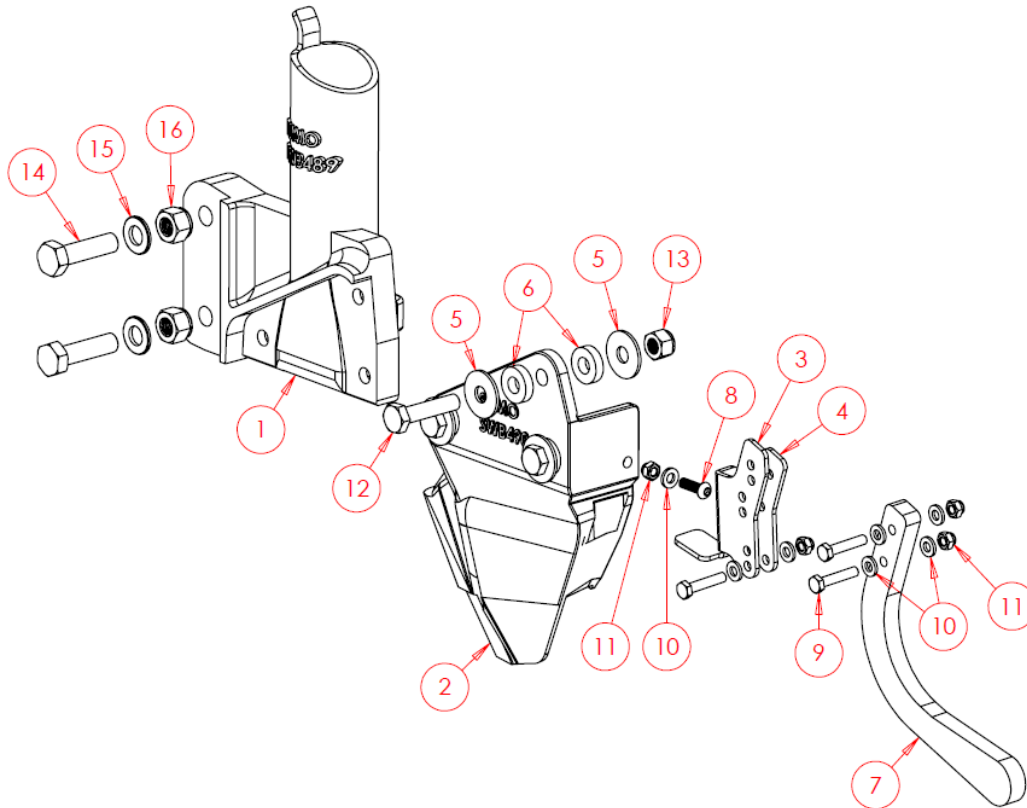


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10	SWM1260	M12x60 Bolt	4
11	SWM12001	M12 Washer - Flat	12
12	SWM12002	M12 Washer - Spring	4
13	SWM12004	M12 Nut - Nylock	4
14	SWM22001	M22 Washer - Flat	1
15	SWM22004FP	M22 Fine Thread Nut - Nylock	1

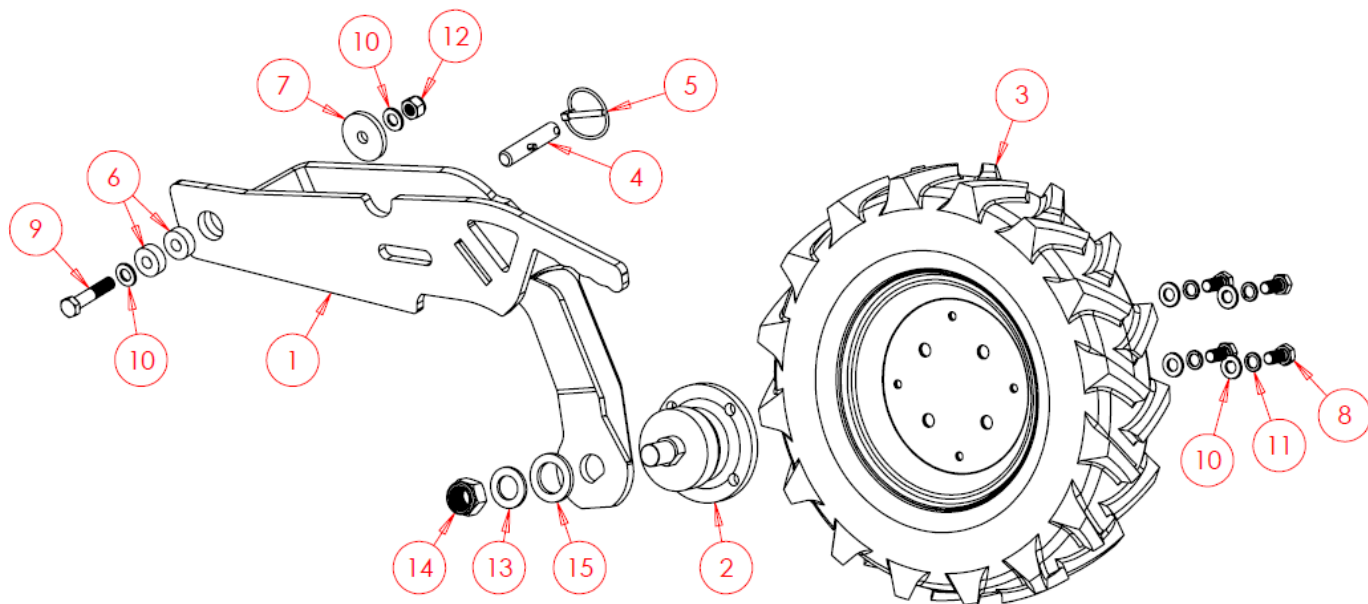
### 6.2.2.4 Coulters Arrangement - Seed Boot



Both Left and Right-hand assemblies required. Left Hand version shown.

Item No.	Part Number	Description	Qty
1	SWB489	Coulter Casting LH	1
1	SWB487	Coulter Casting RH (Not Shown)	-
2	SWB490	Seed Boot LH	1
2	SWB488	Seed Boot RH (Not Shown)	-
3	SW3221	Seed Tab Bracket LH	1
3	SW3524	Seed Tab Bracket RH (Not Shown)	1
4	SW3222	Seed Tab Clamping Plate	1
5	SW3133	Ex Large Washer	6
6	SWB794	Spacer	6
7	SWB795	Seed Tab	1
8	SWM620BTH	M6x20 Button Head Screw	1
9	SWM630	M6x30 Screw	3
10	SWM6001	M6 Washer - Flat	7
11	SWM6004	M6 Nut - Nylock	4
12	SWM1045	M10x45 Screw	3
13	SWM10004	M10 Nut - Nylock	3
14	SWM1245	M12x45 Screw	2
15	SWM12001	M12 Washer - Flat	2
16	SWM12004	M12 Nut - Nylock	2

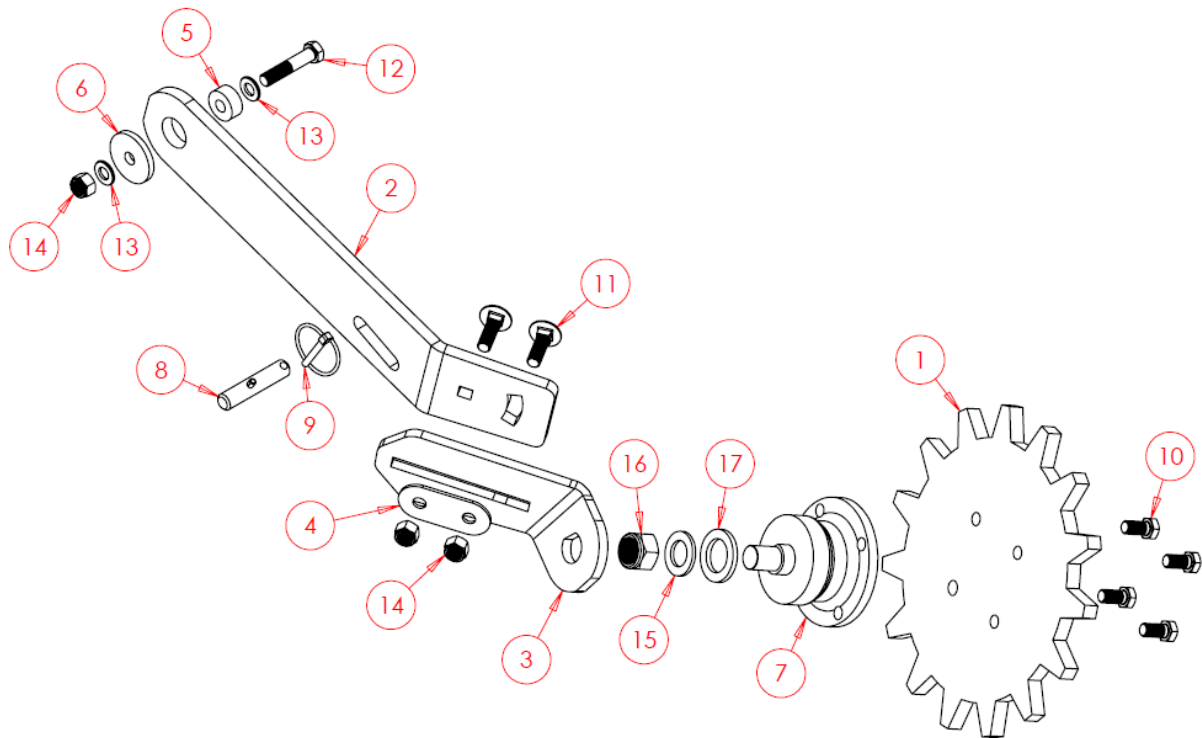
## 6.2.2.5 Coulter Arrangement - Depth/Closing Wheel



Both Left and Right-hand assemblies required. Left Hand version shown.

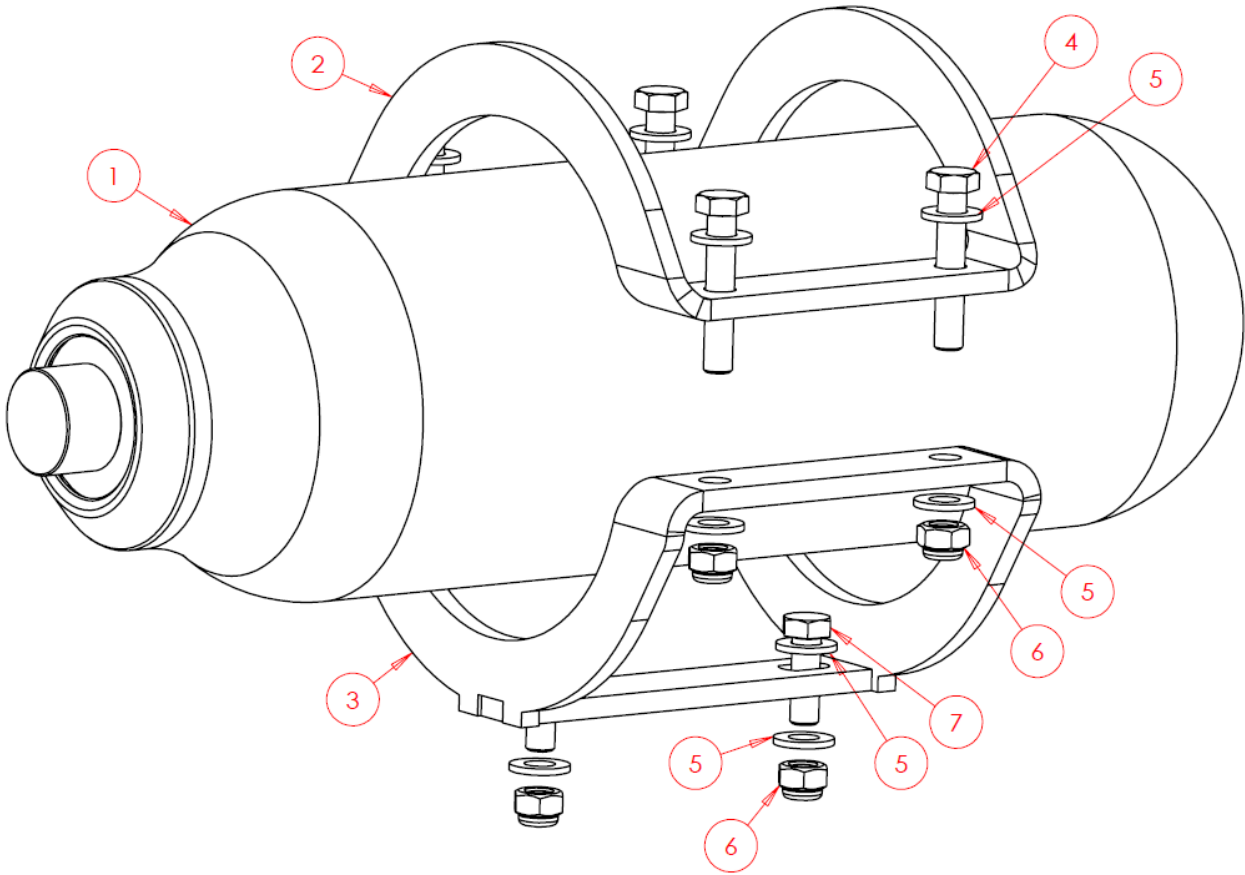
Item No.	Part Number	Description	Qty
1	SW2507	Handle LH	1
1	SW2517	Handle RH (Not Shown)	-
2	SWB399	Bearing	1
3	SWB452PU	Press Wheel - PU Filled	1
4	SWP16X46RP	Depth Pin	1
5	SWB758	Lynch Pin	1
6	SW2500	Spacer Bearing	2
7	SW2518	Clamp Plate	1
8	SWM1225FP	M12x25 Fine Thread Screw	4
9	SWM1260	M12x60 Bolt	1
10	SWM12001	M12 Washer - Flat	6
11	SWM12002	M12 Washer - Spring	4
12	SWM12004	M12 Nut - Nylock	1
13	SWM22001	M22 Washer - Flat	1
14	SWM22004FP	M22 Fine Thread Nut - Nylock	1
15	SWM30001	M30 Washer - Flat	1

### 6.2.2.6 Coulters Arrangement – Closing Disc Arm



Both Left and Right-hand assemblies required. Left Hand version shown.

Item No.	Part Number	Description	Qty
1	SW2508	Closing Disc	1
2	SW2748	Upper Bracket Arm LH	1
2	SW2750	Upper Bracket Arm RH (Not Shown)	-
3	SW2749	Lower Bracket Arm LH	1
3	SW2751	Lower Bracket Arm RH (Not Shown)	-
4	SWS17368	Adjustment Washer	1
5	SW2509	Spacer	1
6	SW2518	Clamping Washer	1
7	SWB399	Bearing	1
8	SWP16X42RP	Pin	1
9	SWB758	Lynch Pin	1
10	SWM1225FP	M12x25 Fine Thread Screw	4
11	SWM1240CHSQ	M12x40 Cup Head Square Screw	2
12	SWM1260	M12x60 Screw	1
13	SWM12001	M12 Washer – Flat	4
14	SWM12004	M12 Nut – Nylock	3
15	SWM22001	M22 Washer – Flat	1
16	SWM22004FP	M22 Fine Thread Nut – Nylock	1
17	SWM30001	M30 Washer – Flat	1

**6.2.3 2.8 Litre Membrane Accumulator**

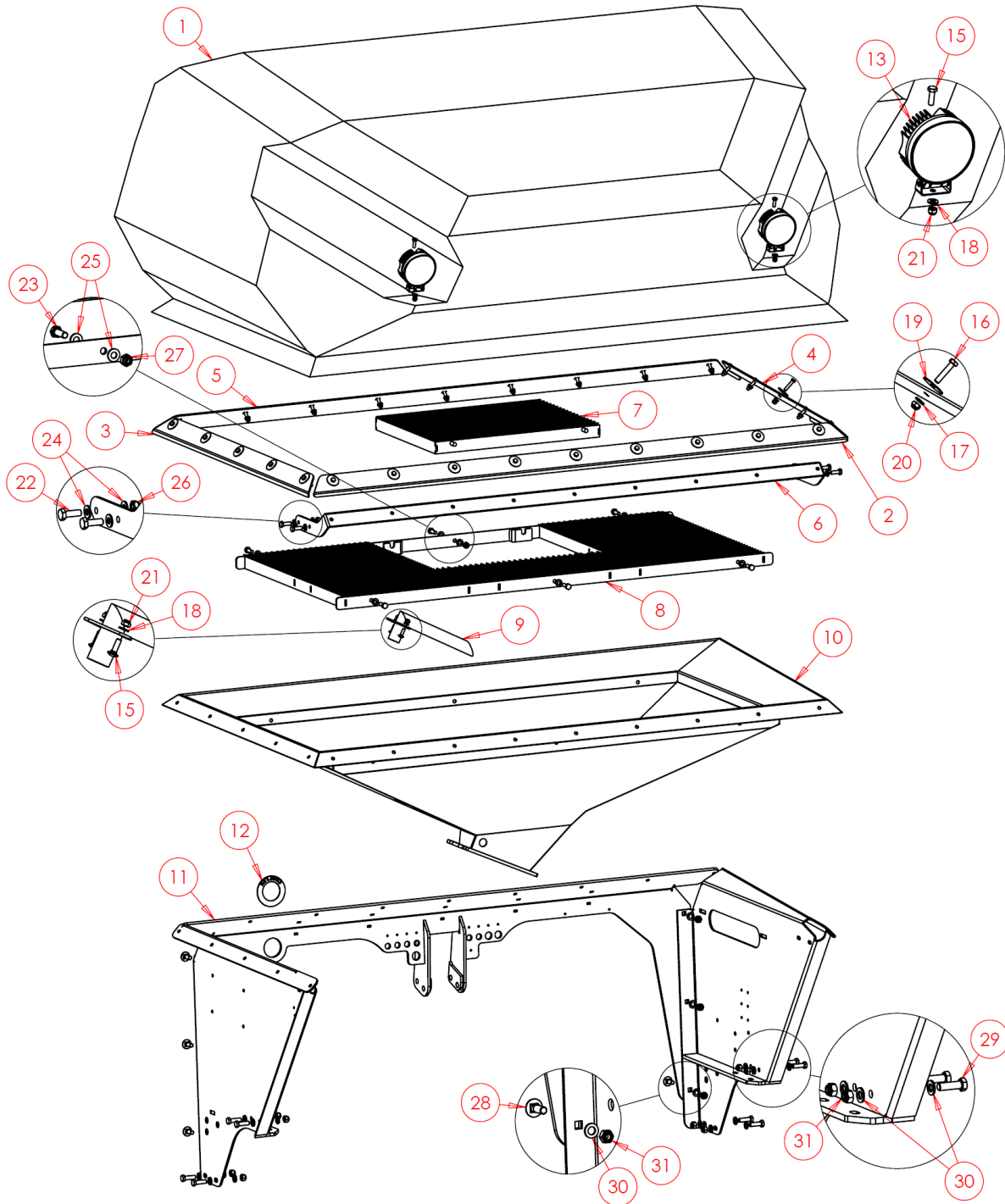
Item No.	Part Number	Description	Qty
1	SWH686	2.8 Litre Membrane Accumulator	1
2	SW1510	Top Bracket	1
3	SW1511	Base Bracket	1
4	SWM845	M8x45 Bolt	4
5	SWM8001	M8 Washer - Flat	12
6	SWM8004	M8 Nut - Nylock	6
7	SWM825	M8x25 Screw	2



**6.2.4 Tank Lid -Continued**

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

## 6.2.5 Tank & Lower Hopper



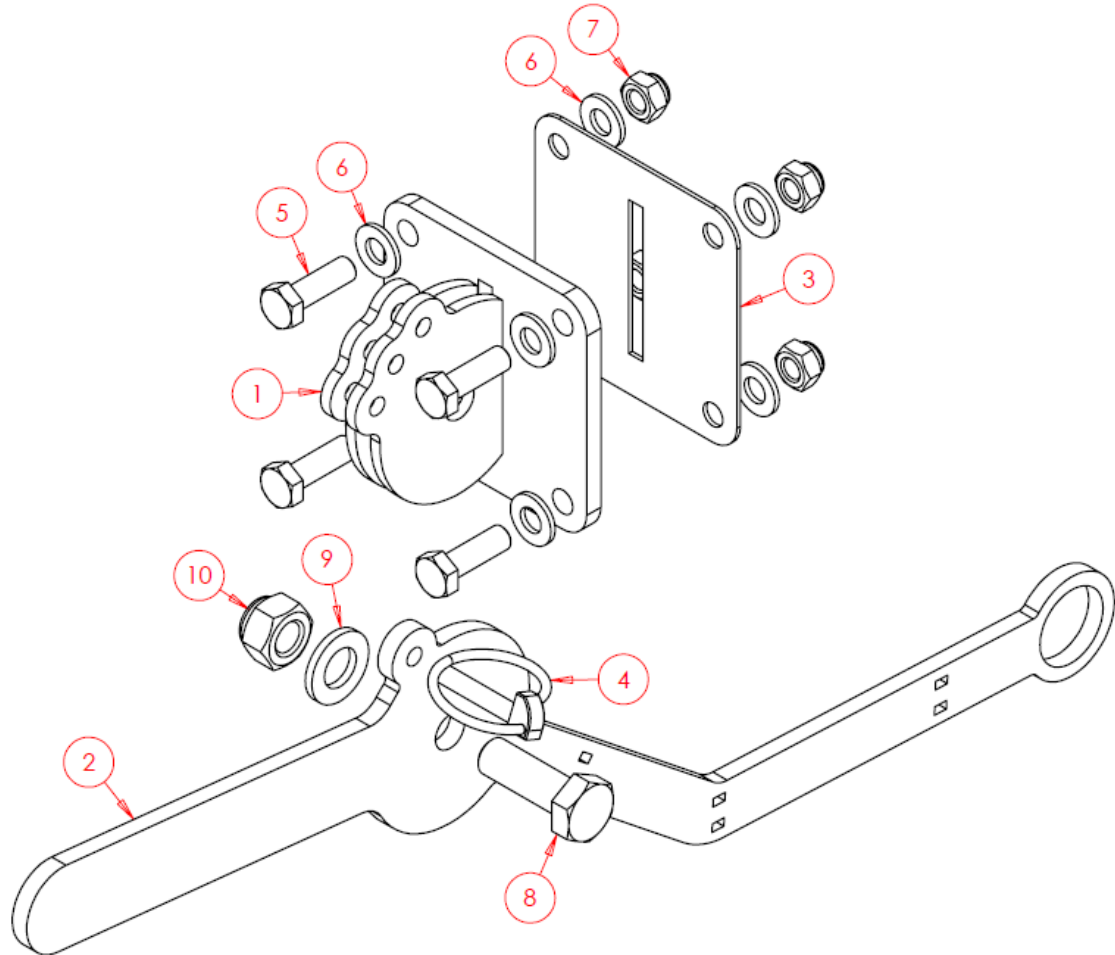


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## 6.2.5 Tank & Lower Hopper - Continued

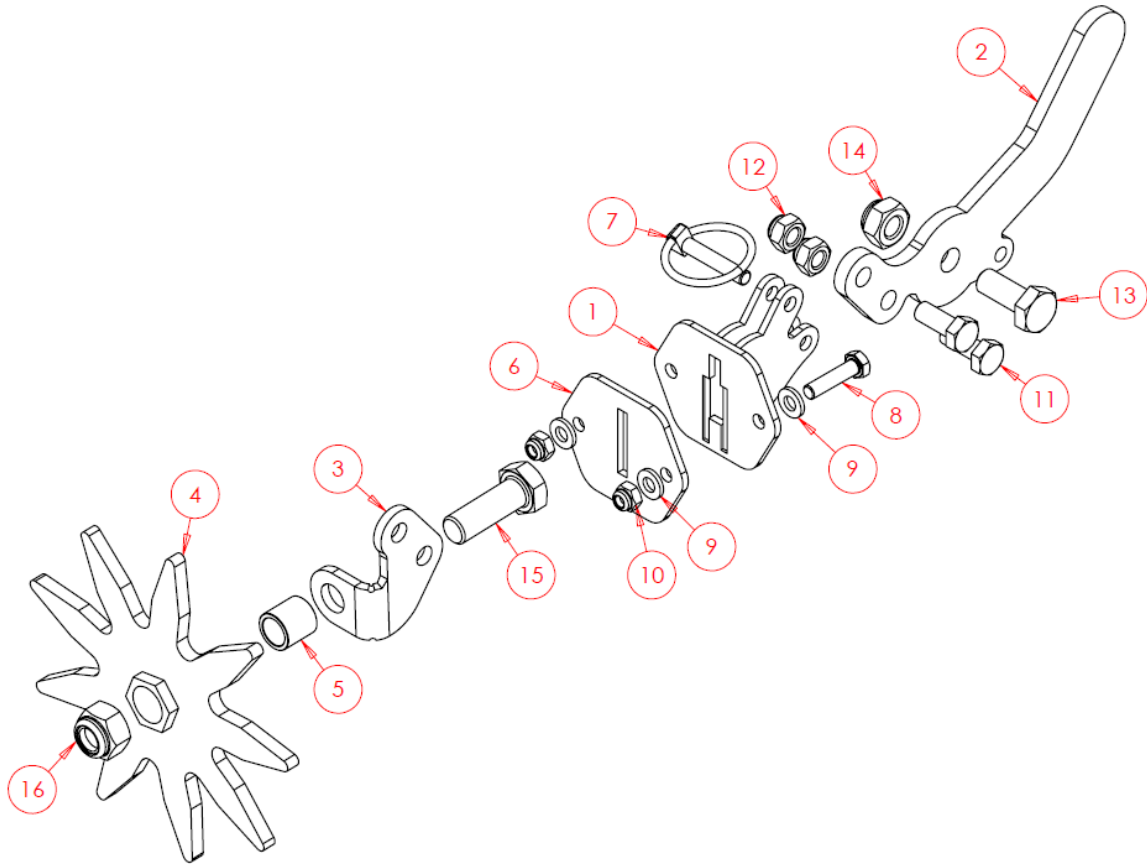
Item No.	Part Number	Description	Qty
1	SWB1284	Tank	1
2	SW3057	Skirt Rear	1
3	SW3058	Skirt Side LH	1
4	SW3059	Skirt Side RH	1
5	SW3060	Skirt Front	1
6	SW2702	Skirt Reinforcement Beam	1
7	SWA1851	Grate Door	1
8	SWA2123	Grate	1
9	SWA1872	Breather Pipe	1
10	SW2700	Lower Hopper	1
11	SW2699	Lower Hopper Base Frame	1
12	SW3072	Coulter Pressure Ring	1
13	SWB446	Working Lights	2
14	SWM825CHSQST	M8x25 Stainless Cup Head Square Screw	2
15	SWM825ST	M8x25 Stainless Screw	2
16	SWM840ST	M8x40 Screw	28
17	SWM8001ST	M8 Washer - Flat	28
18	SWM8001ST	M8 Stainless Washer - Flat	4
19	SWM8001XL	M8 Extra Large Washer - Flat	28
20	SWM8004	M8 Nut - Nylock	28
21	SWM8004ST	M8 Stainless Nut - Nylock	4
22	SWM1030	M10x30 Screw	4
23	SWM1030ST	M10x30 Stainless Screw	6
24	SWM10001	M10 Washer - Flat	8
25	SWM10001ST	M10 Stainless Washer - Flat	12
26	SWM10004	M10 Nut - Nylock	4
27	SWM10004ST	M10 Stainless Nut - Nylock	6
28	SWM1235CHSQ	M12x35 Cup Head Square Screw	6
29	SWM1240	M12x40 Bolt	8
30	SWM12001	M12 Washer - Flat	22
31	SWM12004	M12 Nut - Nylock	14

### 6.2.6 Hopper Level Sensor



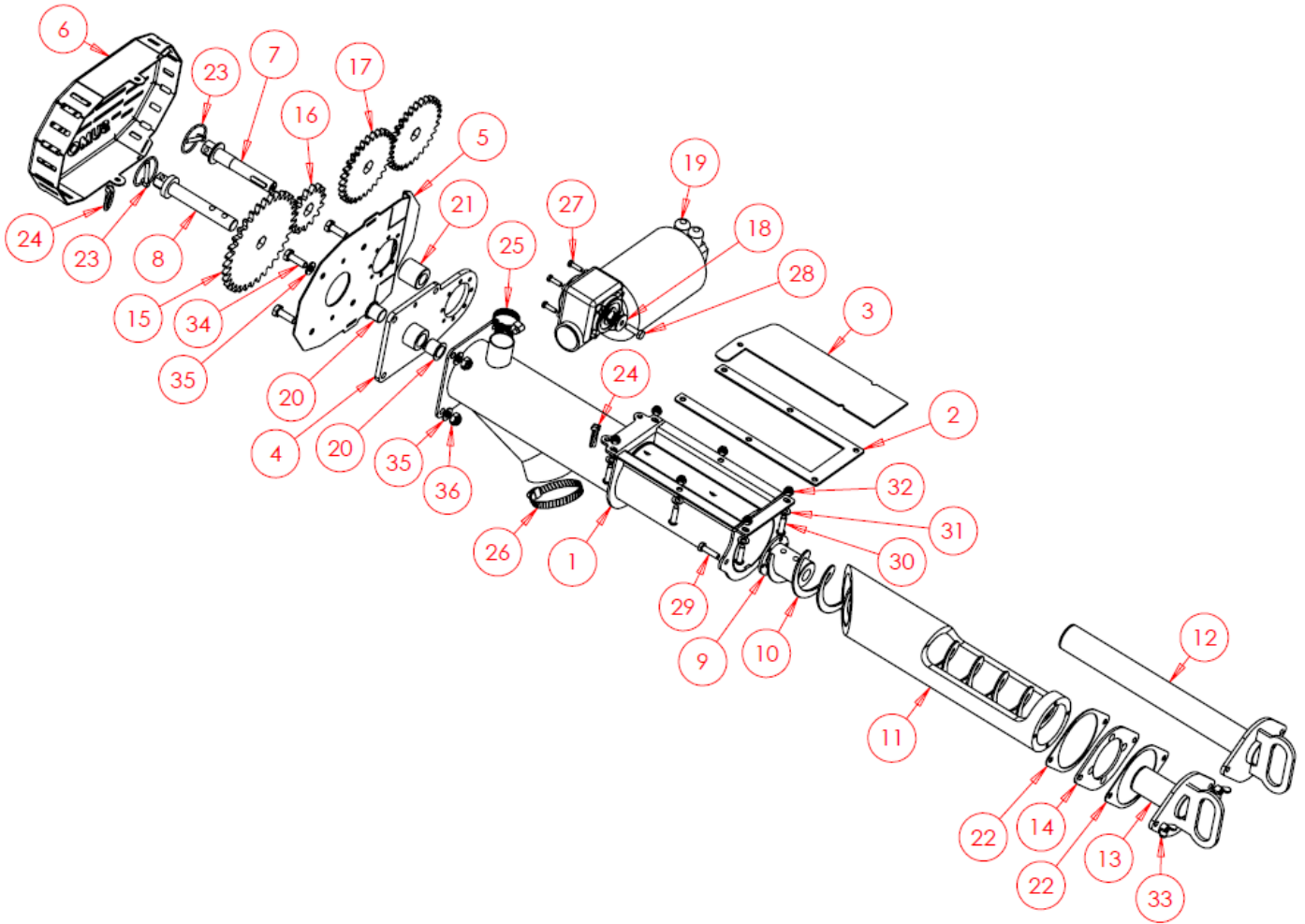
Item No.	Part Number	Description	Qty
1	SWA1814	Adjustable Hopper level Bracket	1
2	SW3068	Sensor Arm	1
3	SWB846	Gasket	1
4	SWB1391	Lynch Pin	1
5	SWM825ST	M8x25 Stainless Screw	4
6	SWM8001ST	M8 Stainless Washer – Flat	8
7	SWM8004ST	M8 Stainless Nut – Nylock	4
8	SWM1235	M12x35 Screw	1
9	SWM12001	M12 Washer – Flat	2
10	SWM12004	M12 Nut – Nylock	1

### 6.2.7 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

### 6.2.8 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

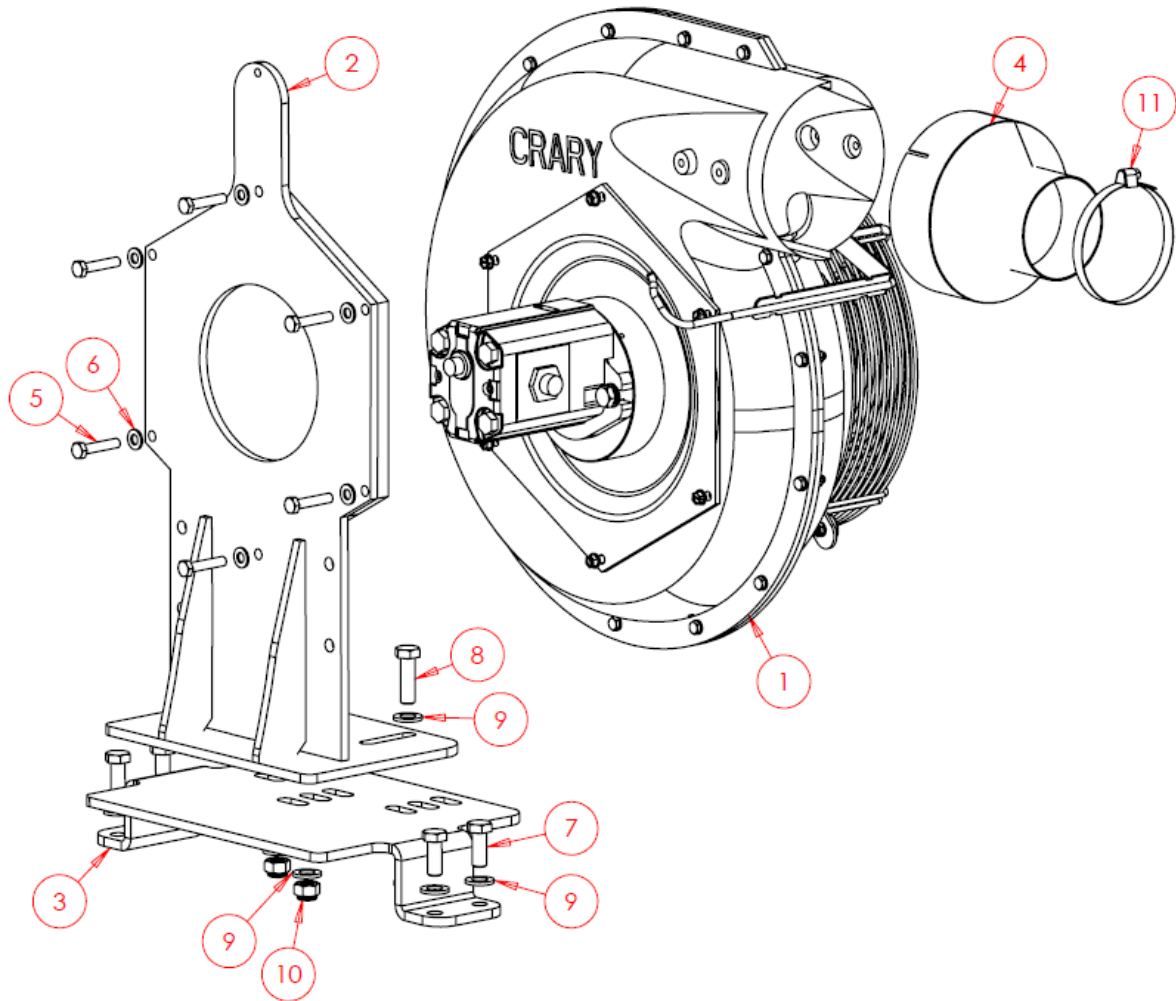
**6.2.8 Orga Metering Unit – Continued**

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.

### 6.2.9 Fan Assembly

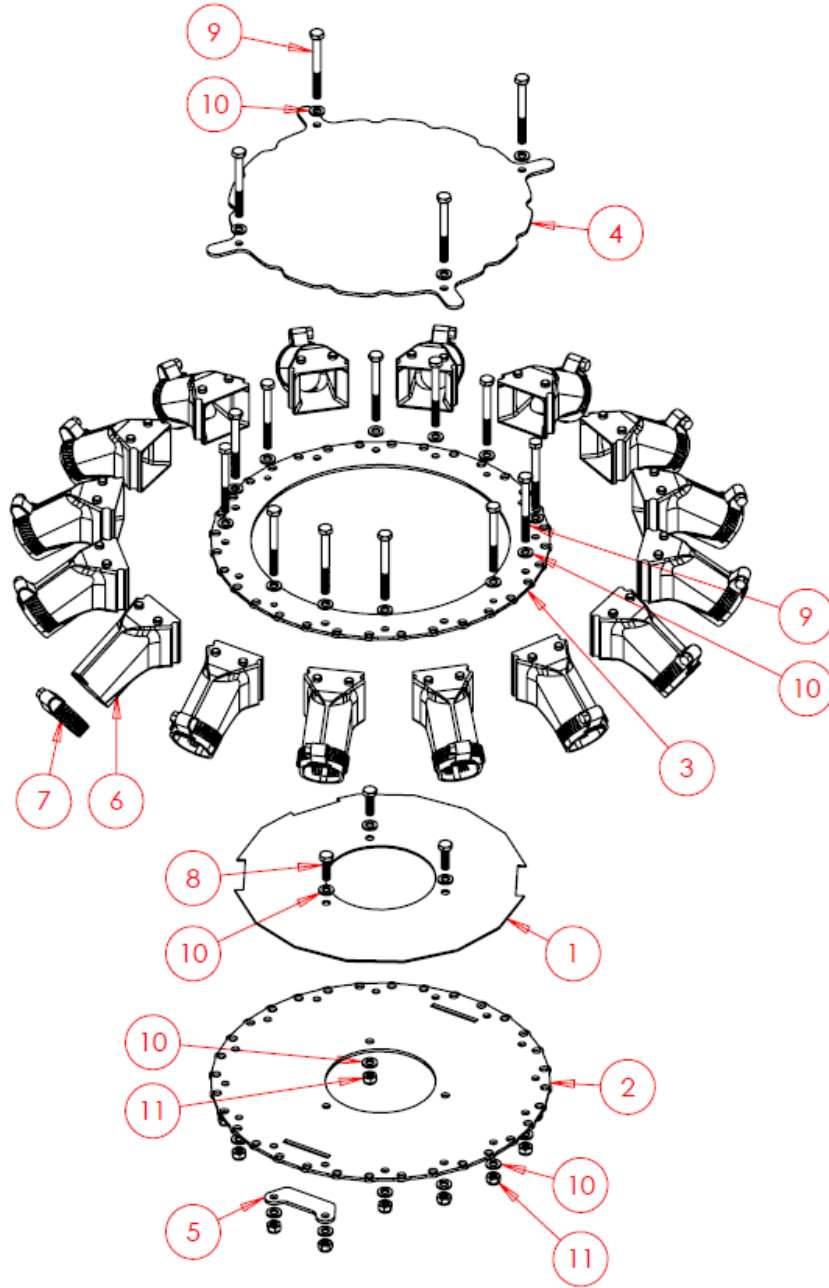


Item No.	Part Number	Description	Qty
1	SWB1288	Fan Unit	1
2	SWA2692	Fan Bracket	1
3	SWS23700	Base Bracket	1
4	SW2254	Reducer	1
5	SWM840	M8x40 Screw	6
6	SWM8001	M8 Washer – Flat	6
7	SWM1230	M12x30 Screw	4
8	SWM1240	M12x40 Screw	3
9	SWM12001	M12 Washer – Flat	10
10	SWM12004	M12 Nut – Nylock	3
11	SWB497	Stainless Jubilee Clip – 100mm	1
12	SWB458	89mm Hose *	1

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

## 6.2.10 Distribution Head & Transfer Pipes

### 6.2.10.1 Sixteen Outlet Modular Distribution Head Assembly



Item No.	Part Number	Description	Qty
1	SWS23565	Upper Mounting Plate	1
2	SWS23566	Lower Mounting Plate	1
3	SWS23567	Lower Clamp Plate	1
4	SWS23568	Upper Clamp Plate	1
5	SWS24777	Tramline Blanking Plate *	2
5 *	SW3195 *	Tramline Open Plate *	-

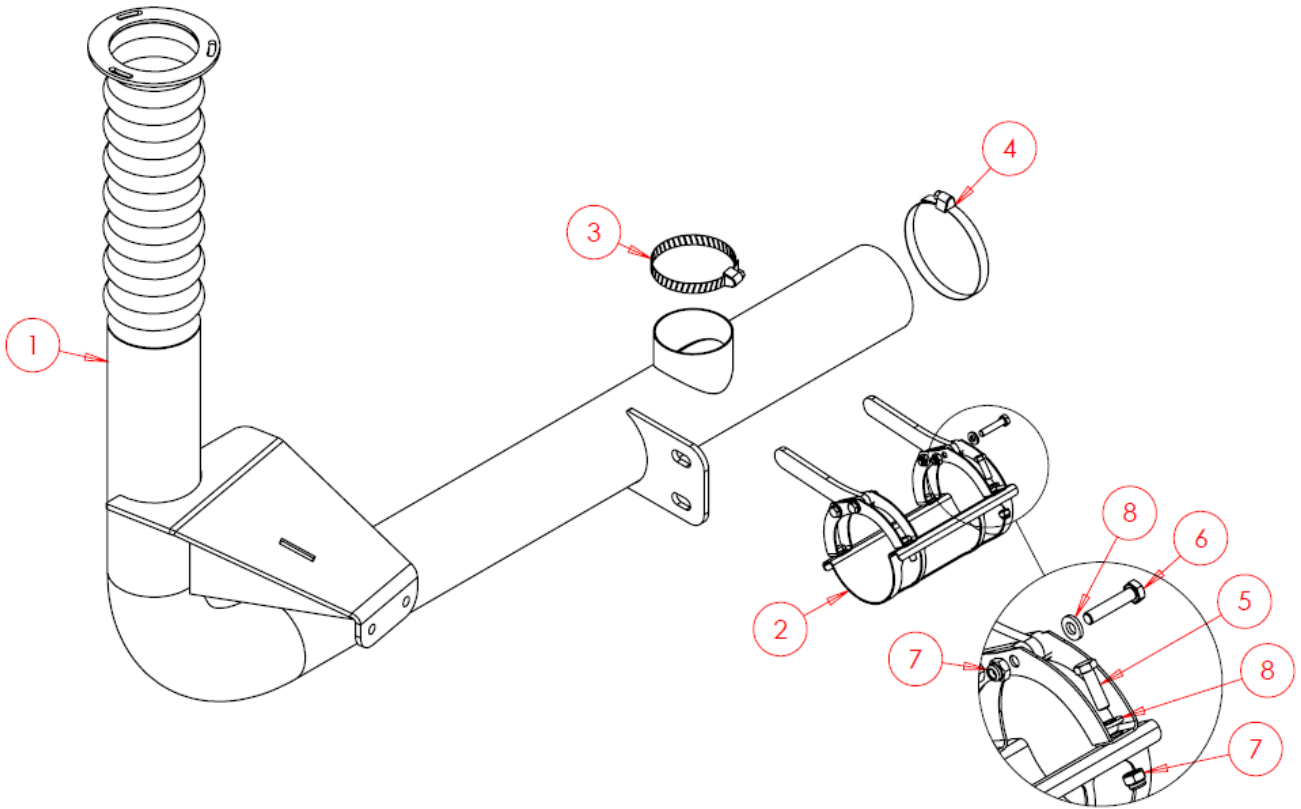
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6	SWB667	38mm Moulded Outlet	16
7	SWB496	Jubilee Clip – 50mm	16
8	SWM620ST	M6x20 Stainless Screw	3
9	SWM670ST	M6x70 Stainless Bolt	16
10	SWM6001ST	M6 Stainless Washer – Flat	38
11	SWM6005ST	M6 Stainless Nut – Thin Nylock	19
**	SWB470	38mm Seed Hose	N/A

\* Tramline blanking plates are only provided when tramlines are not fitted. If tramlines are fitted, tramline Open plates are provided.

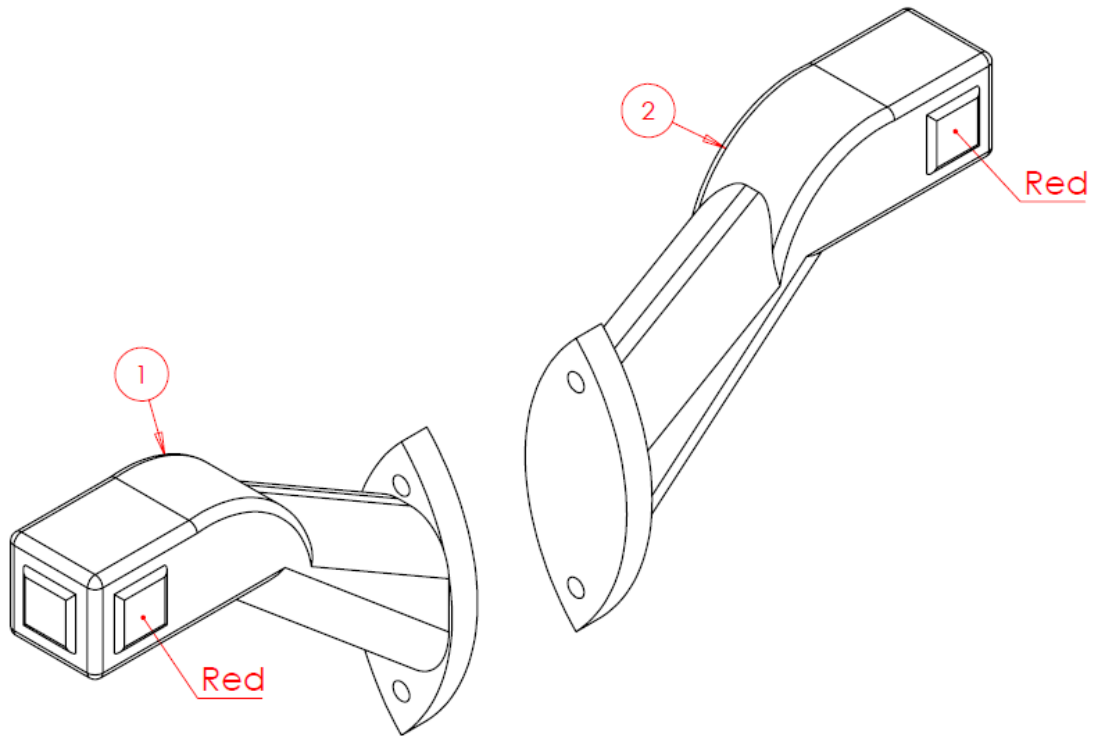
\*\* Hose is typically sold in metres, provide desired cut length when requesting.

## 6.2.10.2 Calibration/Transfer Pipe



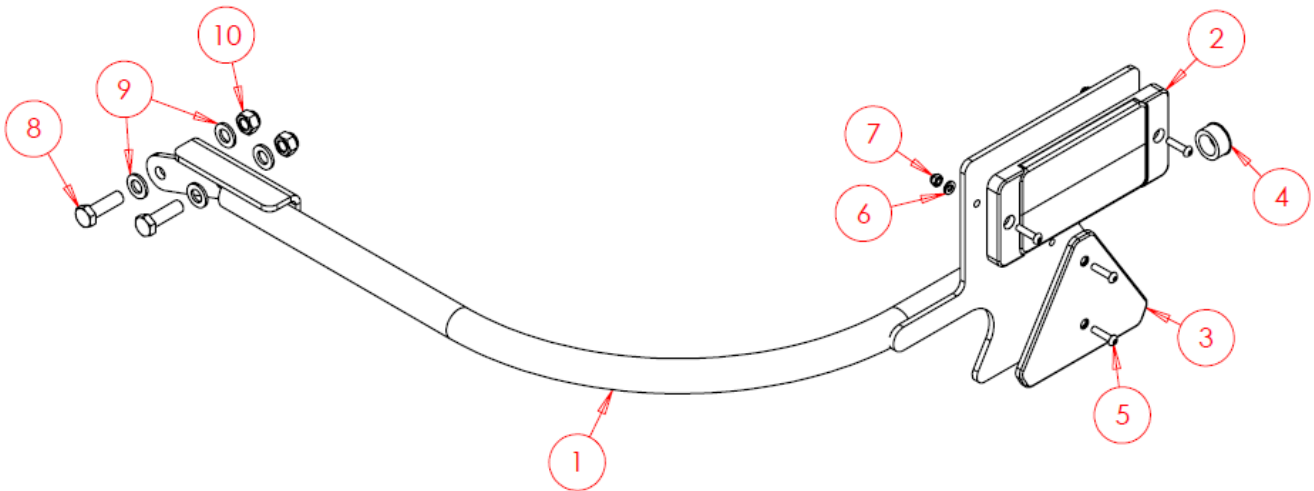
Item No.	Part Number	Description	Qty
1	SW2590	Calibration / Transfer Pipe	1
2	SW1899	Calibration Slide	1
3	SWB738	Jubilee Clip - 80mm	1
4	SWB497	Jubilee Clip - 100mm	1
5	SWM620ST	M6x20 Stainless Bolt	4
6	SWM630ST	M6x30 Stainless Bolt	4
7	SWM6001ST	M6 Stainless Washer - Flat	8
8	SWM6004ST	M6 Stainless Nut - Nylock	8

## 6.2.11 Side Indicator Lights



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

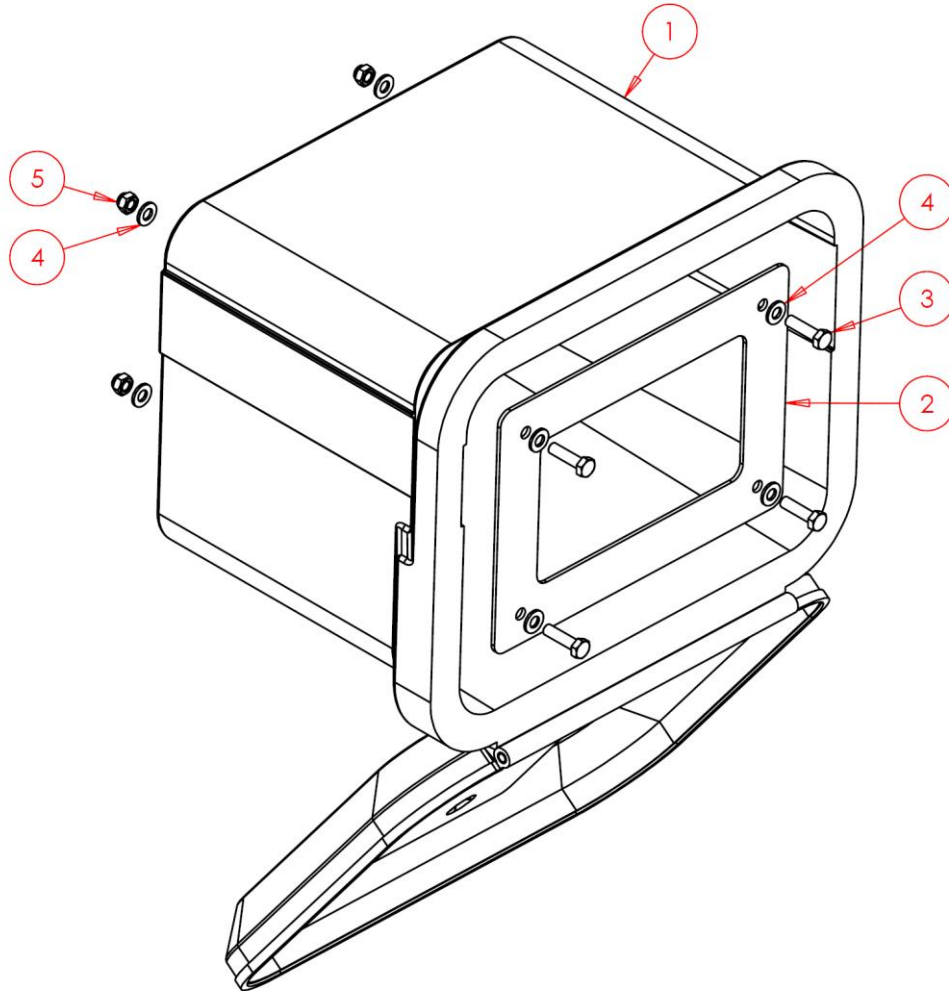
### 6.2.12 Lights Bracket Assembly



Left & Right-Hand Versions Required  
(Right-Hand Arrangement Shown)

Item No.	Part Number	Description	Qty
1	SW2527	Light Bracket RH	1
1	SW2526	Light Bracket LH (Not Shown)	1
2	SWB715	Rear Stop Light/Indicator	1
3	SWB162	Reflector – Red Triangle	1
4	SWB541	Plastic Bung	2
5	SWM625BTH	M6x25 Button Head Screw	6
6	SWM6001	M6 Washer – Flat	6
7	SWM6004	M6 Nut – Nylock	6
8	SWM1240	M12x40 Screw	2
9	SWM12001	M12 Washer – Flat	4
10	SWM12004	M12 Nut – Nylock	2

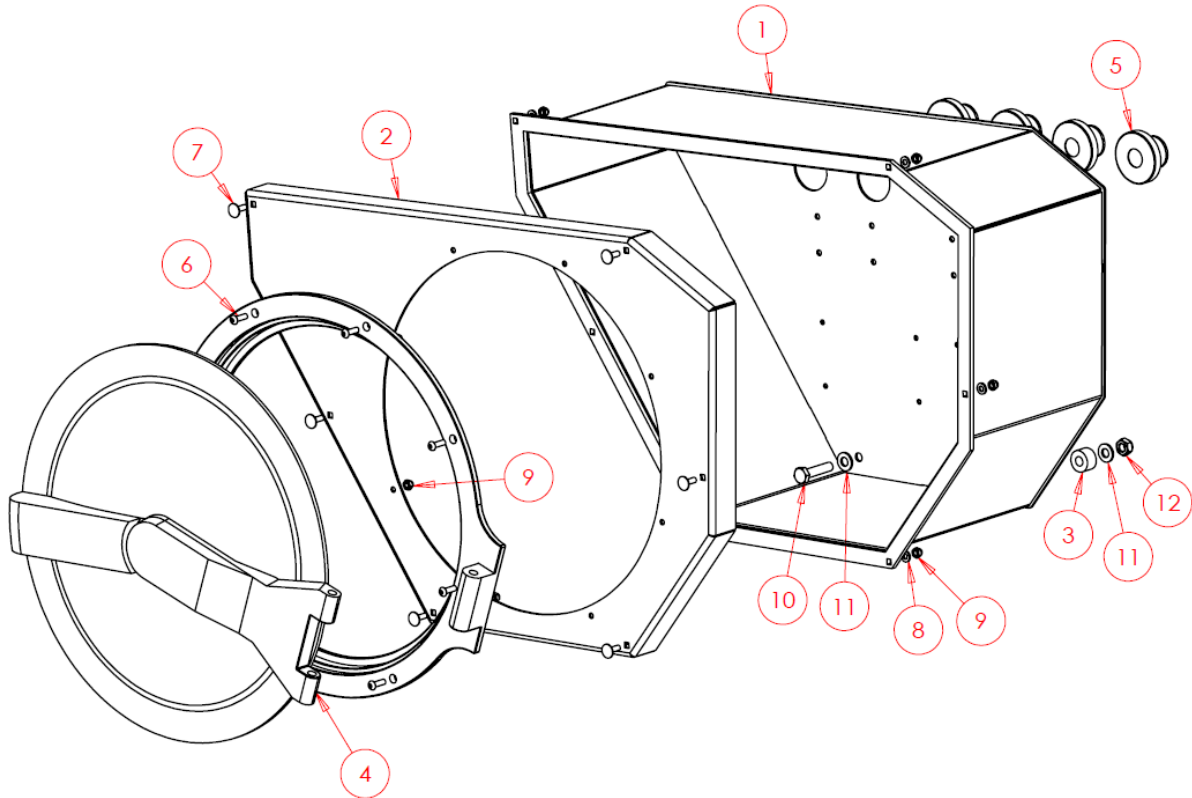
## 6.2.13 Toolbox



Item No.	Part Number	Description	Qty
1	SWB1302	Toolbox	1
2	SW6609	Sandwich Plate	1
3	SWM830	M8x30 Screw	4
4	SWM8001	M8 Washer - Flat	8
5	SWM8004	M8 Nut - Nylock	4

### 6.2.14 Electrical Box

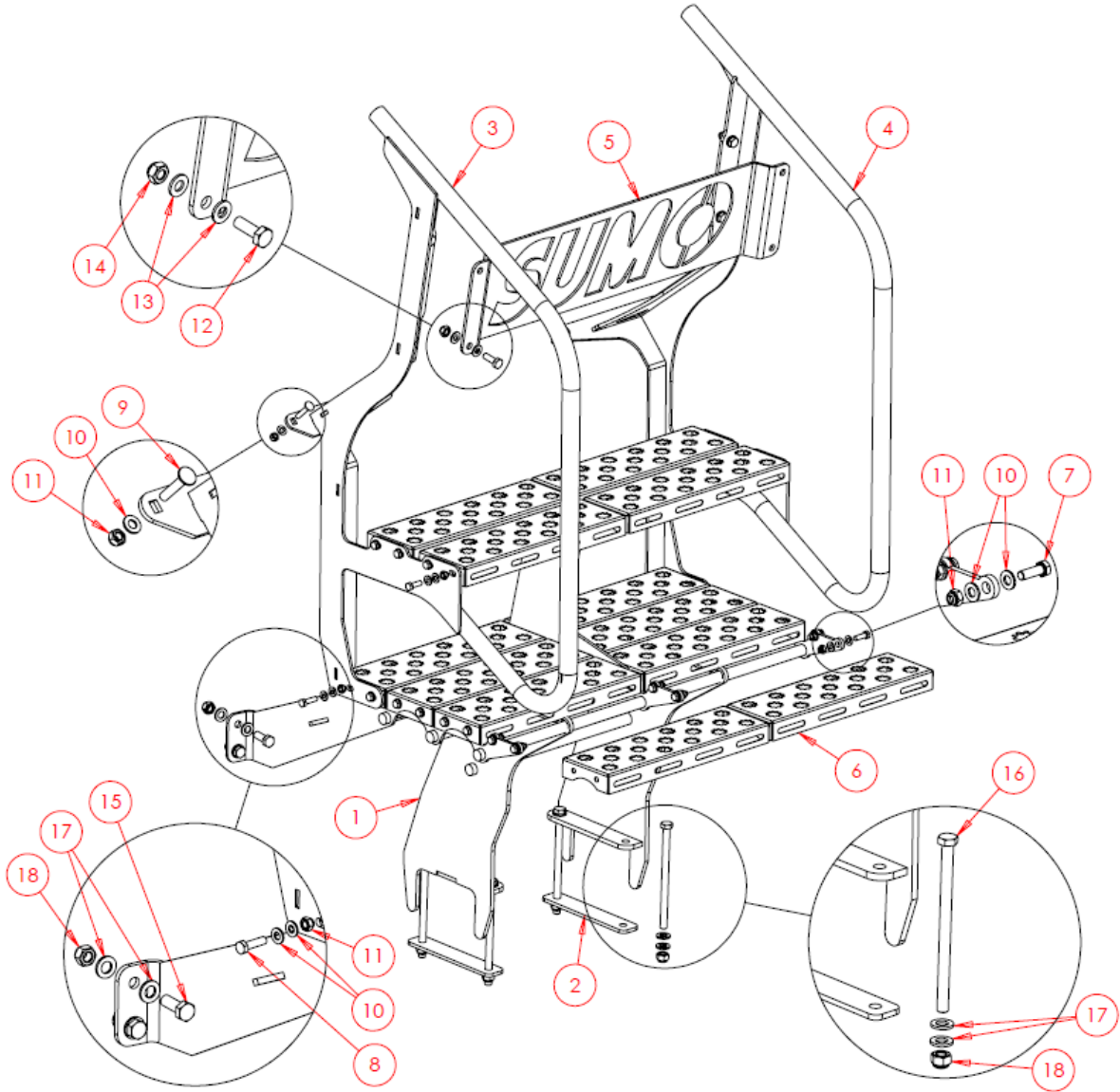
For RDS Topcon Metering System details, please see Manufacturers Manual.



Item No.	Part Number	Description	Qty
1	SWA2377	Electrical Box	1
2	SWS21595	Lid	1
3	SWS23177	Spacer	2
4	SWB629	Door	1
5	SWB563	Gromet	4
6	SWM620BTH	M6x20 Button Head Screw	8
7	SWM625CHSQ	M6x25 Cup Head Square Screw	6
8	SWM6001	M6 Washer - Flat	6
9	SWM6004	M6 Nut - Nylock	14
10	SWM1045	M10x45 Bolt	2
11	SWM10001	M10 Washer - Flat	4
12	SWM10004	M10 Nut - Nylock	2

## 6.2.15 Steps

### 6.2.15.1 Steps Upper Section



Item No.	Part Number	Description	Qty
1	SW2521	Main Frame	1
2	SWS24409	Stair Clamp	2
3	SW2696	Handrail LH	1
4	SW2697	Handrail RH	1
5	SW3062	Nameplate / Handrail Tie	1
6	SW1290	Step	12
7	SWM825	M8x25 Screw	32
8	SWM830	M8x30 Screw	4
9	SWM840	M8x40 Screw	4
10	SWM8001	M8 Washer - Flat	76

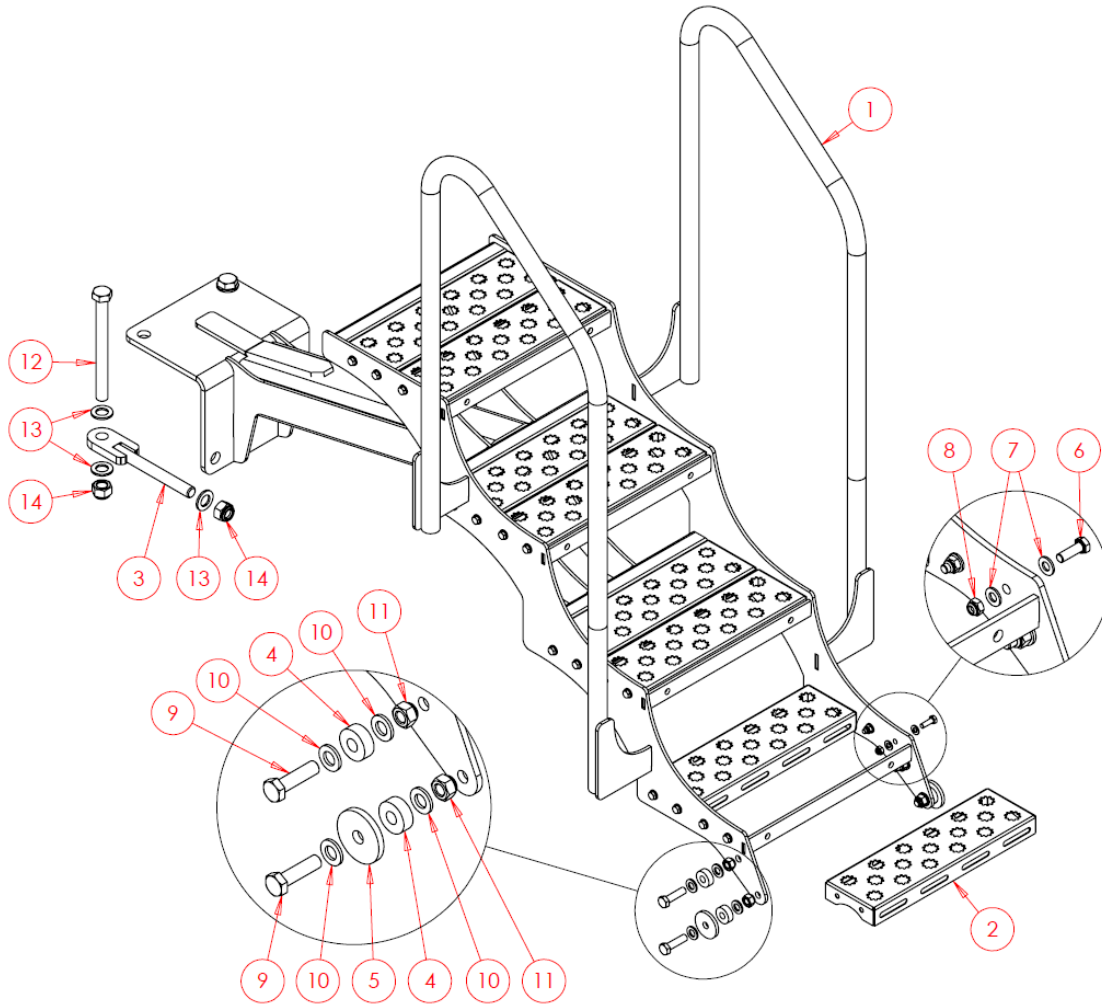


GROWING WITH YOU

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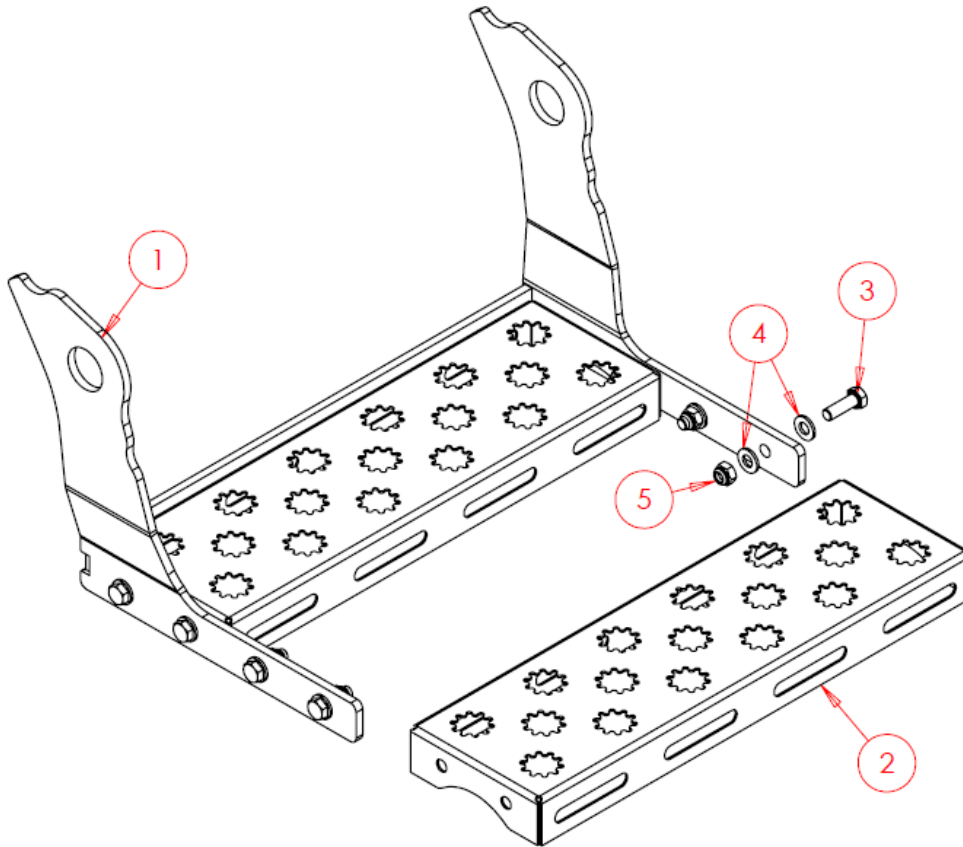
11	SWM8004	M8 Nut - Nylock	40
12	SWM1030	M10x30 Screw	4
13	SWM10001	M10 Washer - Flat	8
14	SWM10004	M10 Nut - Nylock	4
15	SWM1235	M12x35 Screw	2
16	SWM12190	M12x190 Screw	4
17	SWM12001	M12 Washer - Flat	12
18	SWM12004	M12 Nut - Nylock	6

## 6.2.15.2 Steps Middle Section



Item No.	Part Number	Description	Qty
1	SW2093	Main Frame	1
2	SW1290	Step	8
3	SW2056	Eye Bolt Bracket	2
4	SW2500	Spacer	4
5	SW2518	Ex Large Washer	2
6	SWM825	M8x25 Screw	32
7	SWM8001	M8 Washer - Flat	64
8	SWM8004	M8 Nut - Nylock	32
9	SWM1245	M12x45 Screw	4
10	SWM12001	M12 Washer - Flat	8
11	SWM12004	M12 Nut - Nylock	4
12	SWM20210	M20x210 Bolt	2
13	SWM20001	M20 Washer - Flat	6
14	SWM20004	M20 Nut - Nylock	4

### 6.2.15.3 Steps Lower Section

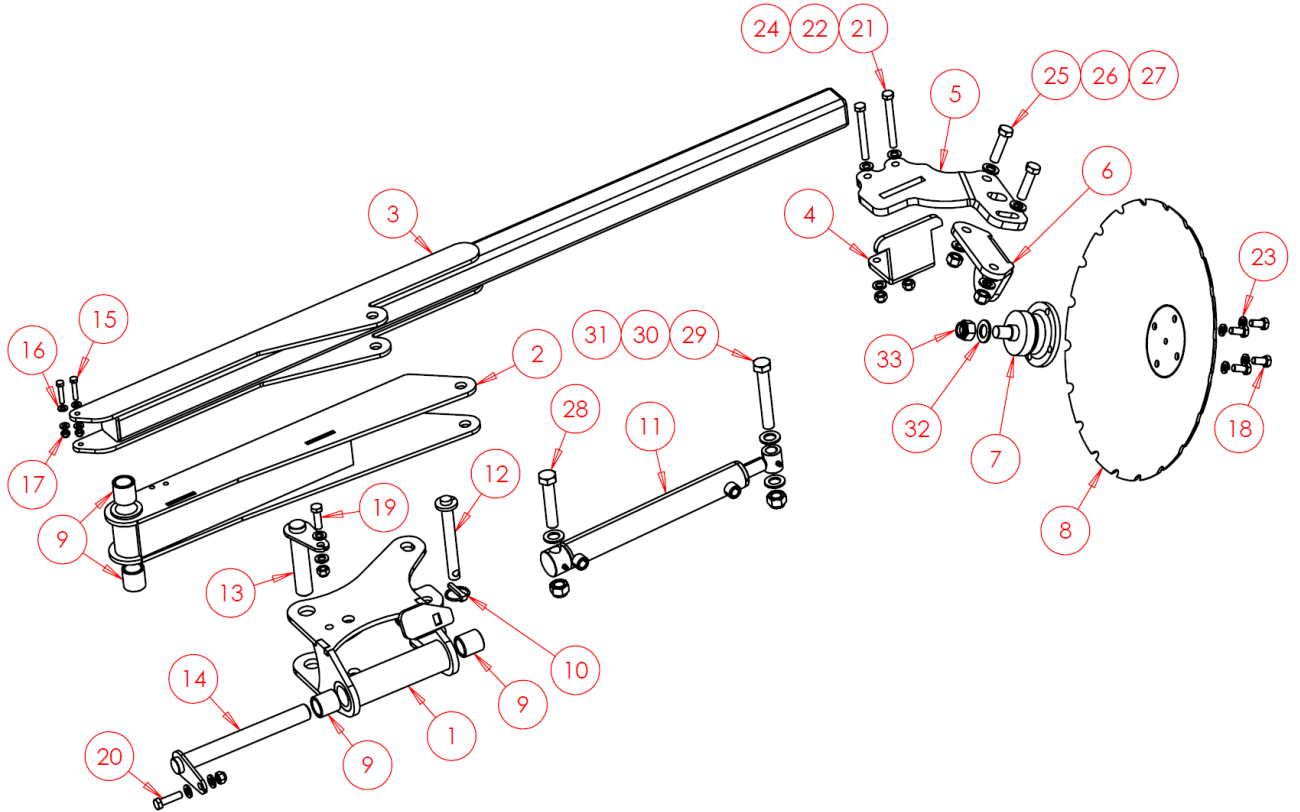


Item No.	Part Number	Description	Qty
1	SW3125	Lower Step Frame	1
2	SW1290	Step	2
3	SWM825	M8x25 Screw	8
4	SWM8001	M8 Washer - Flat	16
5	SWM8004	M8 Nut - Nylock	8

### 6.3 Optional Extras/Attachments

#### 6.3.1 Markers

Left & Right-Hand marker arms required – Right-Hand version shown.



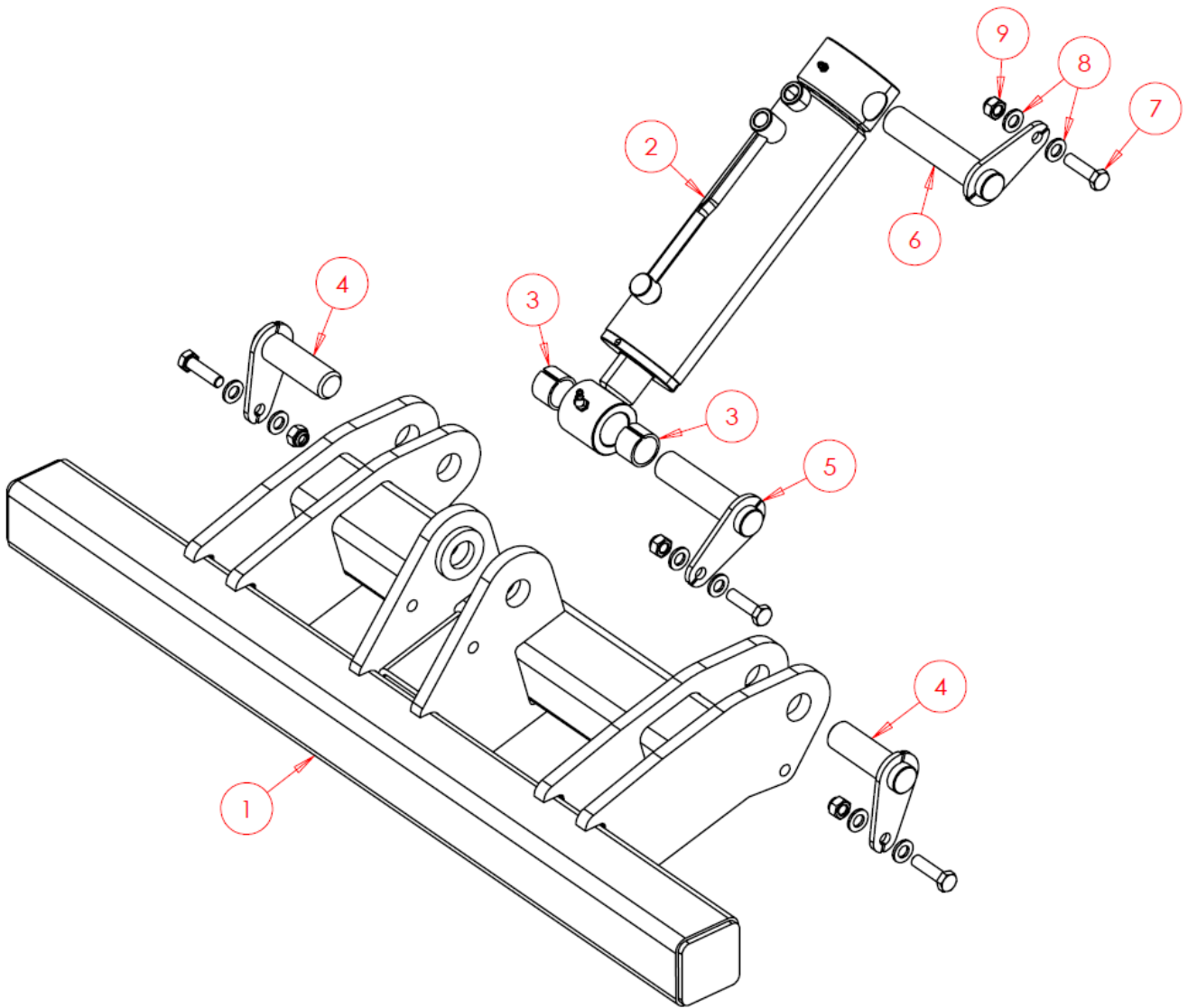
Quantities below are for both Left & Right-Hand marker arms combined.

Item No.	Part Number	Description	Qty
1	SW2808	Knuckle RH	1
1	SW2809	Knuckle LH (Not Shown)	1
2	SW2810	Arm Pivot	2
3	SW2812	Marker Arm	2
4	SW2524	Clamp	2
5	SW2523-R	Mount RH	1
5	SW2523-L	Mount LH (Not Shown)	1
6	SW2552	Bearing Mount	2
7	SWB399	Bearing	2
8	SWB863	Disc	2
9	SWB411	Oilite Bush	8
10	SWB105	Lynch Pin	2
11	SWH103	Hydraulic Cylinder	2
12	SWP20X140W	Pin	2

**6.3.1 Markers - Continued**

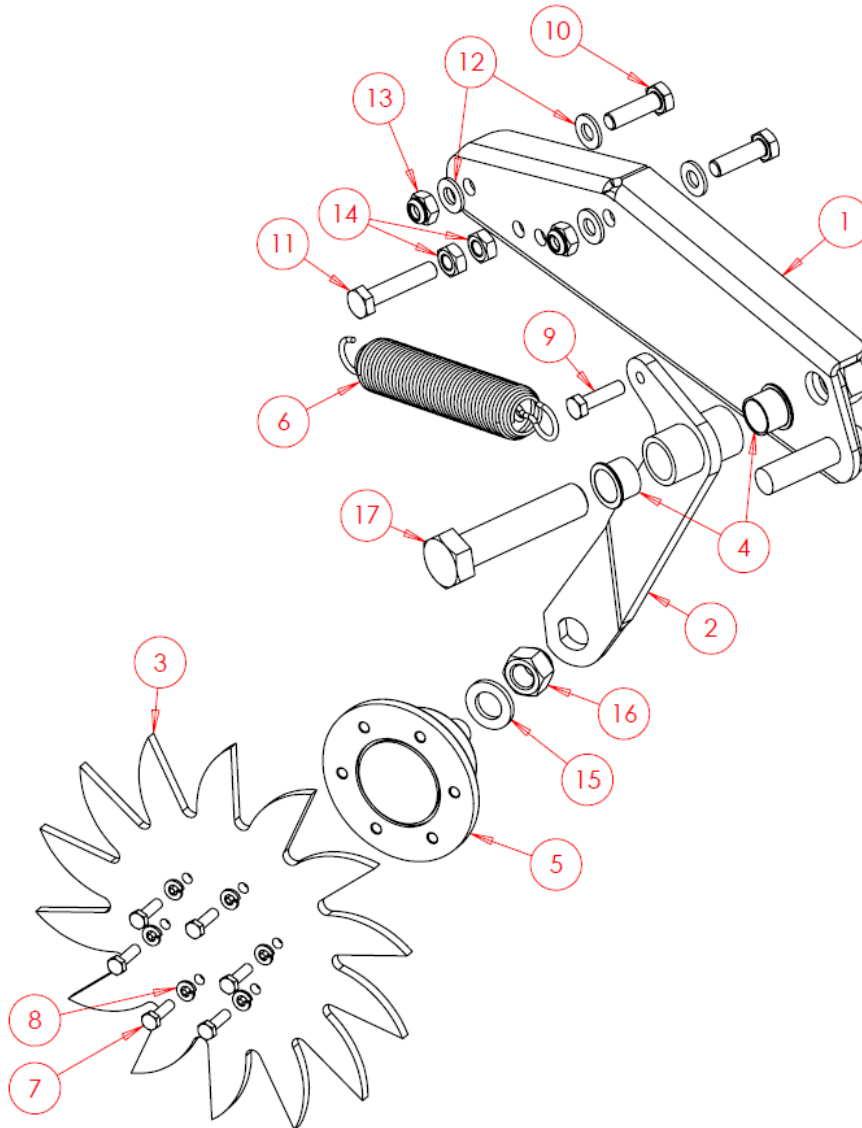
<b>Item No.</b>	<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
13	SWP30X135	Pin	2
14	SWP30X265	Pin	2
15	SWM840	M8x40 Screw	4
16	SWM8001	M8 Washer - Flat	8
17	SWM8004	M8 Nut - Nylock	4
18	SWM1225FT	M12x25 Fine Thread Screw	8
19	SWM1240	M12x40 Screw	2
20	SWM1245	M12x45 Screw	2
21	SWM12110	M12x110 Screw	4
22	SWM12001	M12 Washer - Flat	16
23	SWM12002	M12 Washer - Spring	8
24	SWM12004	M12 Nut - Nylock	8
25	SWM1660	M16x60 Bolt	4
26	SWM16001	M16 Washer - Flat	8
27	SWM16004	M16 Nut - Nylock	4
28	SWM20100	M20x100 Bolt	2
29	SWM20130	M20x130 Bolt	2
30	SWM20001	M20 Washer - Flat	6
31	SWM20004	M20 Nut - Nylock	4
32	SWM22001	M22 Washer - Flat	2
33	SWM22004FT	M22 Fine Thread Nut - Nylock	2

## 6.3.2 Weight Transfer Unit



Item No.	Part Number	Description	Qty
1	SW2379	Weight Transfer Frame	1
2	SWH125	Hydraulic Cylinder	1
3	SWB374	Split Tension Bush	2
4	SWP30X90	Pin	2
5	SWP30X120	Pin	1
6	SWP30X140	Pin	1
7	SWM1245	M12x45 Bolt	4
8	SWM12001	M12 Washer - Flat	8
9	SWM12004	M12 Nut - Nylock	4

## 6.3.3 Row Cleaners



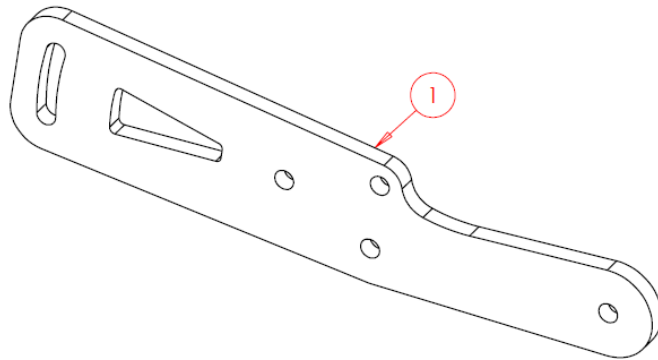
Both Left and Right-hand assemblies required. Right Hand version shown. Quantities are per row cleaner.

Item No.	Part Number	Description	Qty
1	SW6646	Mounting Bracket RH	1
1	SW6760	Mounting Bracket LH (Not Shown)	-
2	SW6645	Arm RH	1
2	SW6758	Arm LH (Not Shown)	-
3	SW2511	Cleaning Wheel	1
4	SWB810	Plastic Bush 23x20x15	2
5	SWB952	Bearing	1
6	SWB1393	Spring	1
7	SWM620	M6x20 Bolt	6

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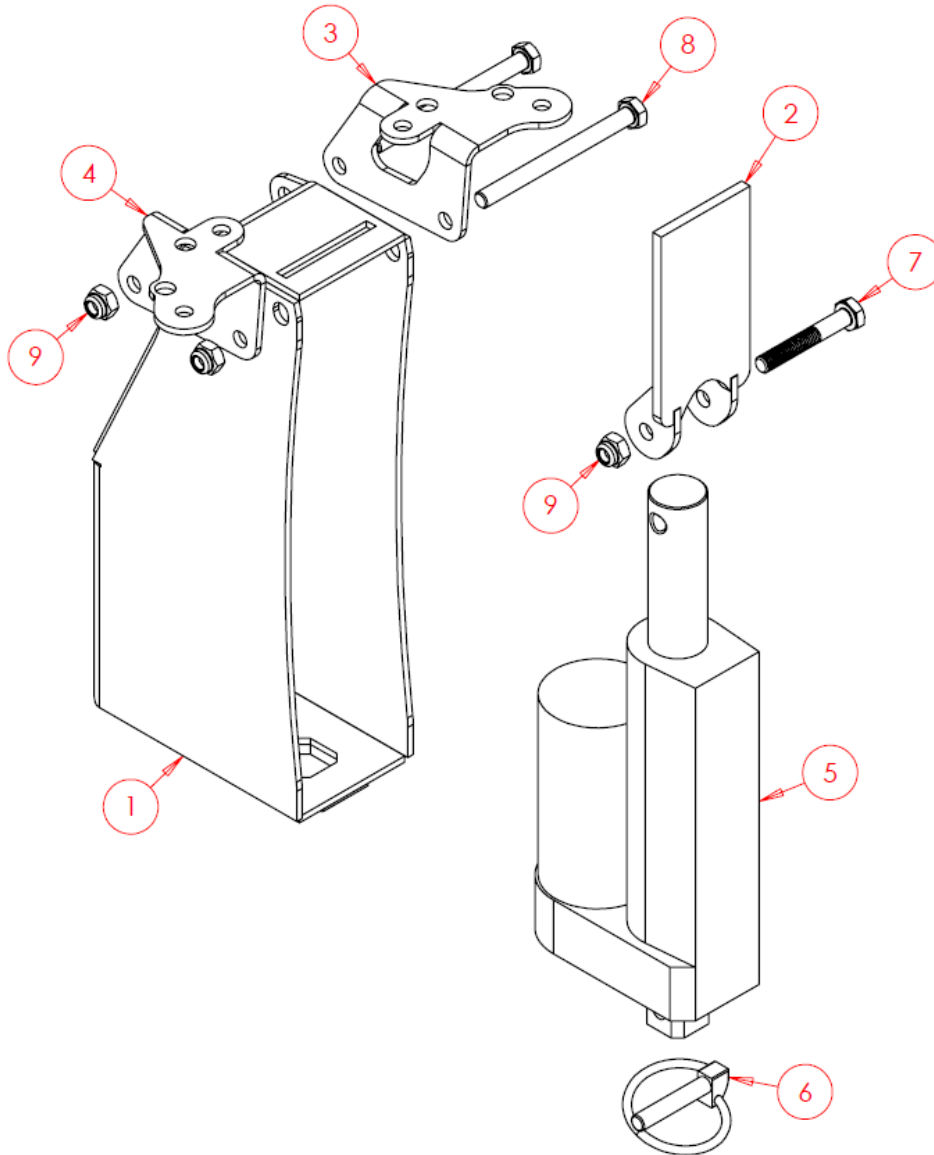
8	SWM6002	M6 Washer - Spring	6
9	SWM830	M8x30 Screw	1
10	SWM1035	M10x35 Screw	2
11	SWM1050	M10x50 Bolt	1
12	SWM10001	M10 Washer - Flat	4
13	SWM10004	M10 Nut - Nylock	2
14	SWM10005	M10 Nut - Plain	2
15	SWM16001	M16 Washer - Flat	1
16	SWM16004	M16 Nut - Nylock	1
17	SWM2090	M20x90 Bolt	1

### 6.3.4 Front Central Row Cleaner Extension



Item No.	Part Number	Description	Qty
1	SWS24531	Row Cleaner Extension Bracket	1

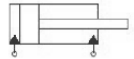

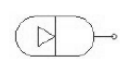
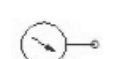
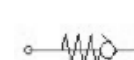
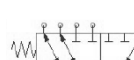

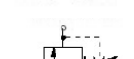
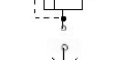
## 6.3.5 Tramline Shut Off



Item No.	Part Number	Description	Qty
1	SW1836	Actuator Guard	1
2	SW1837	Tramline Shut Off Slide	1
3	SW1838	Bracket LH	1
4	SW1839	Bracket RH	1
5	SWB508	Actuator	1
6	SWB1391	Lynch Pin	1
7	SWM640ST	M6x40 Stainless Bolt	1
8	SWM670ST	M6x70 Stainless Bolt	2
9	SWM6004ST	M6 Stainless Nut - Nylock	3

## 7 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
	=	Pilot Operated Relief Valve
	=	Flow Restrictor

## 7.1 DD3 - Hydraulic Function Schematic

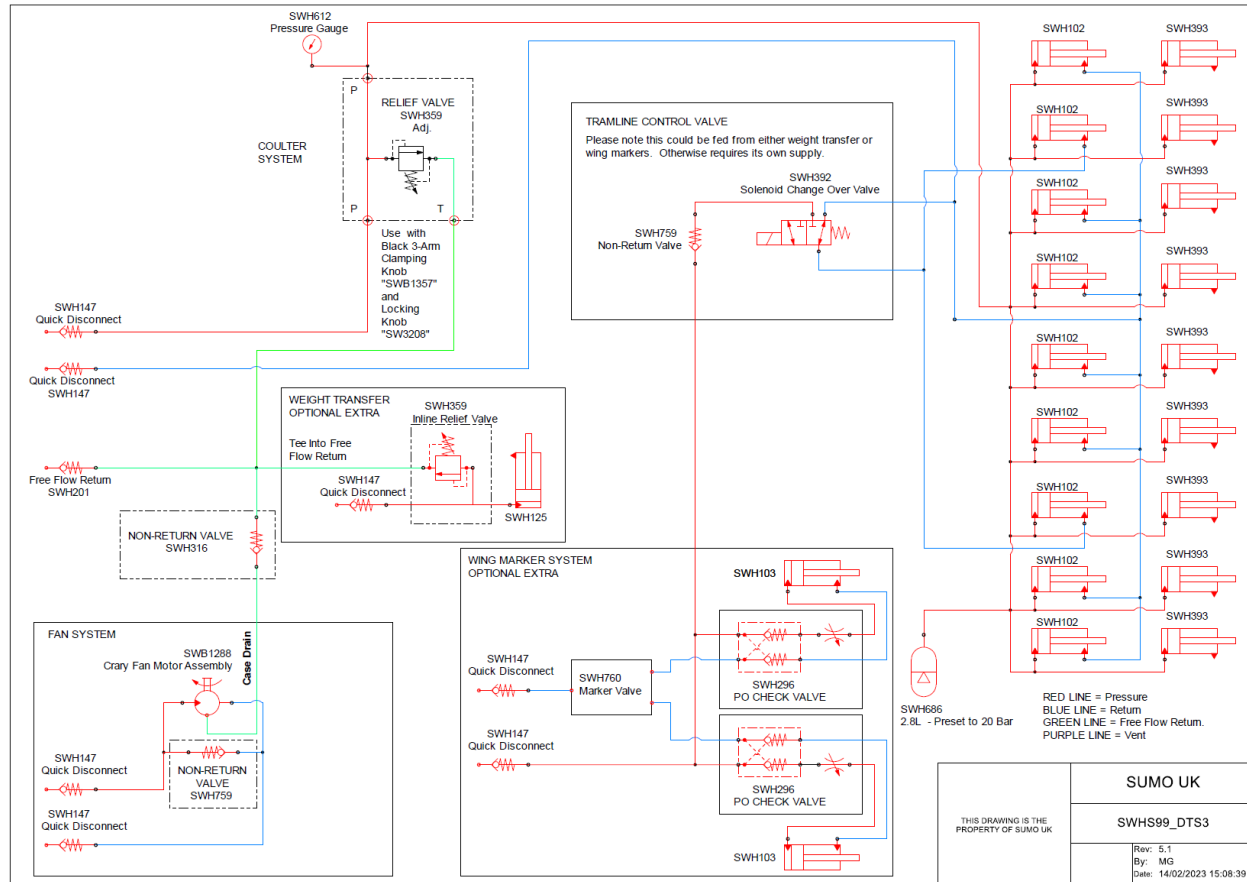
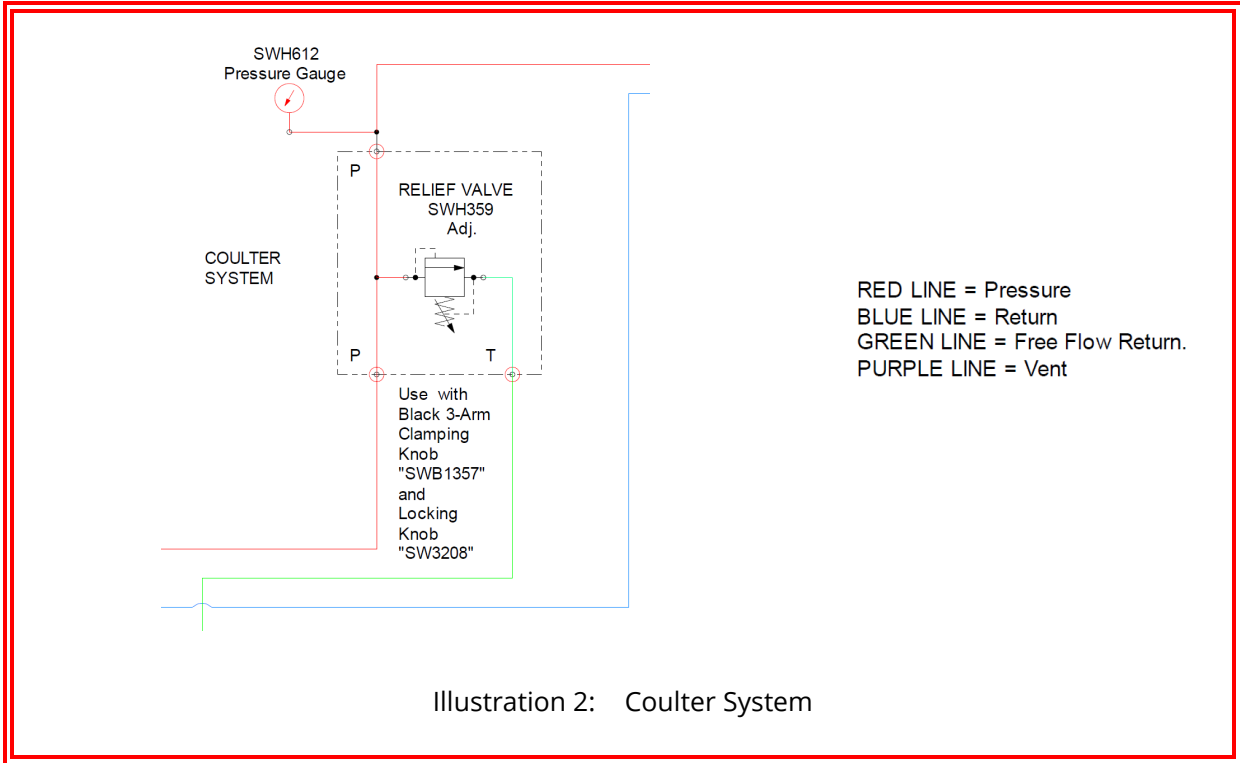
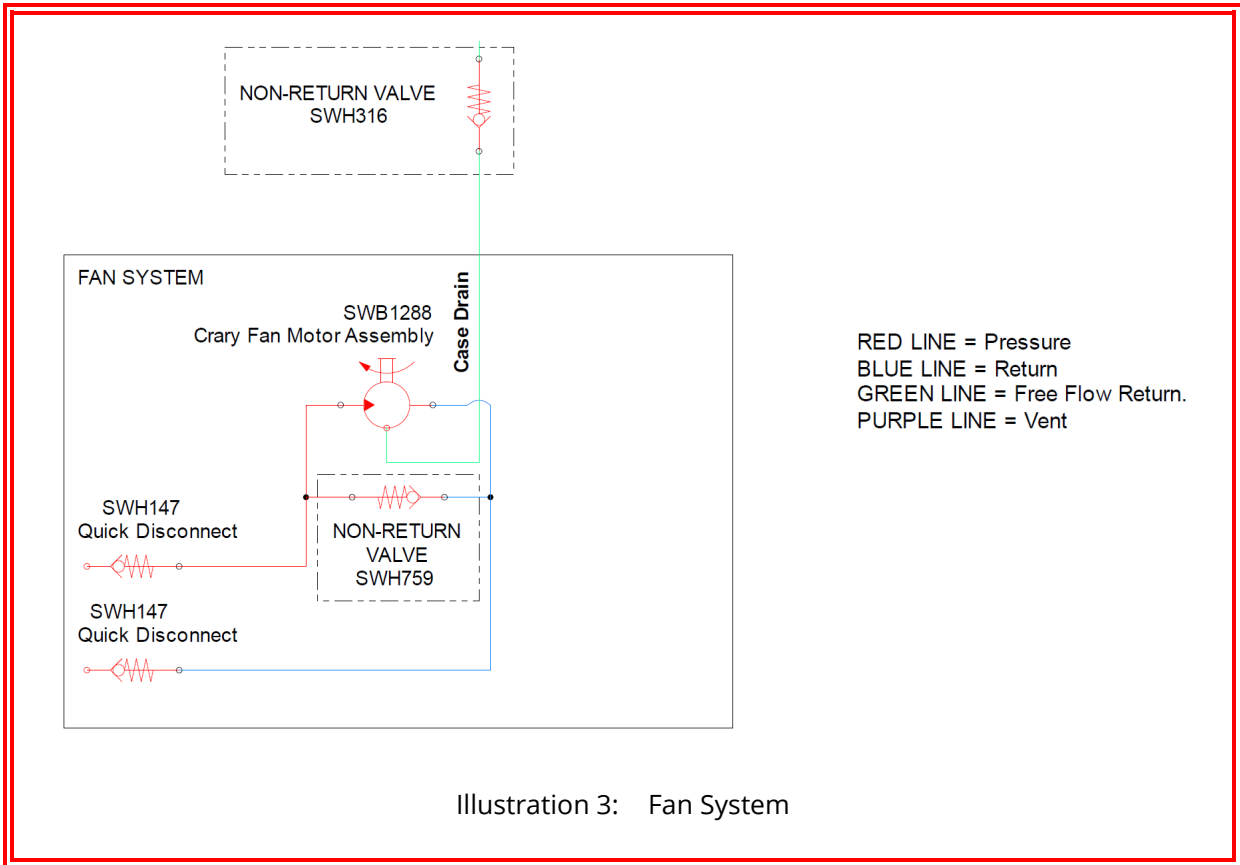


Illustration 1: SWH - Hydraulic Schematic DD3

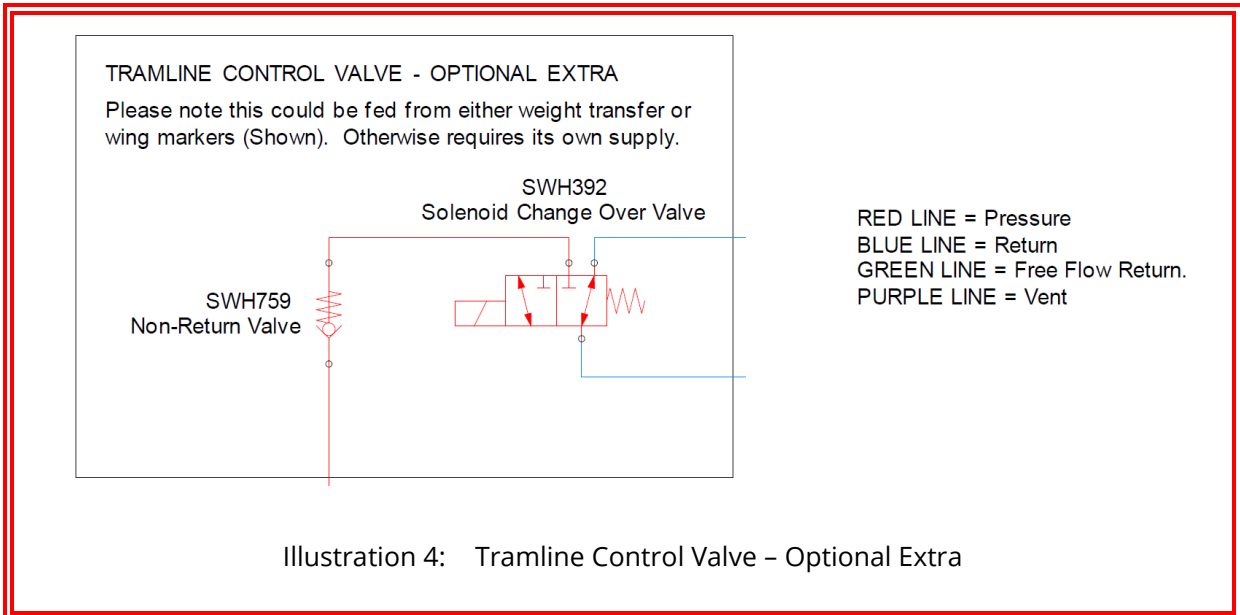
## 7.2 Coulter System Pressure Control



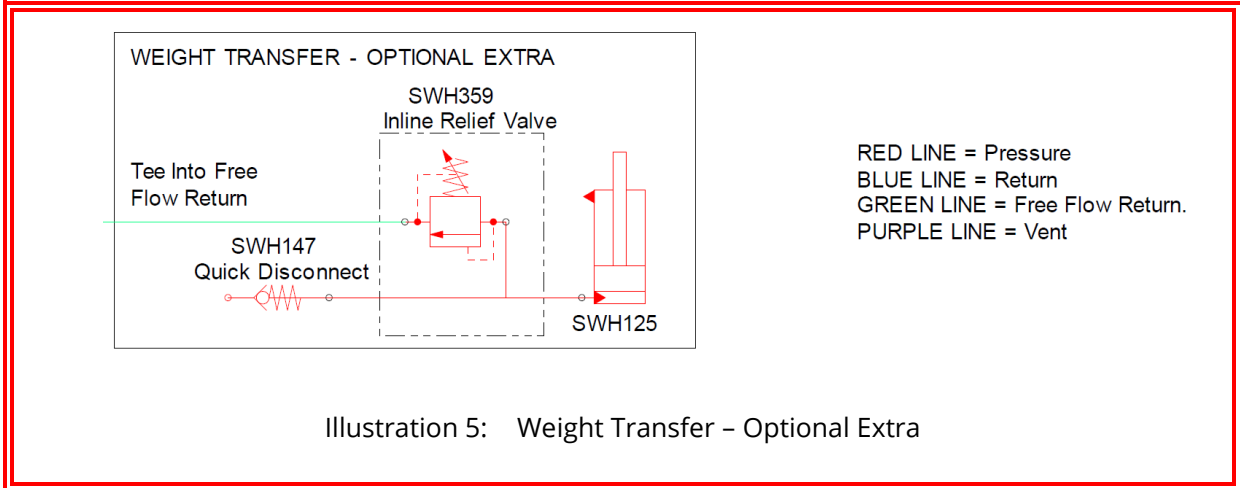
## 7.3 Fan System Circuit



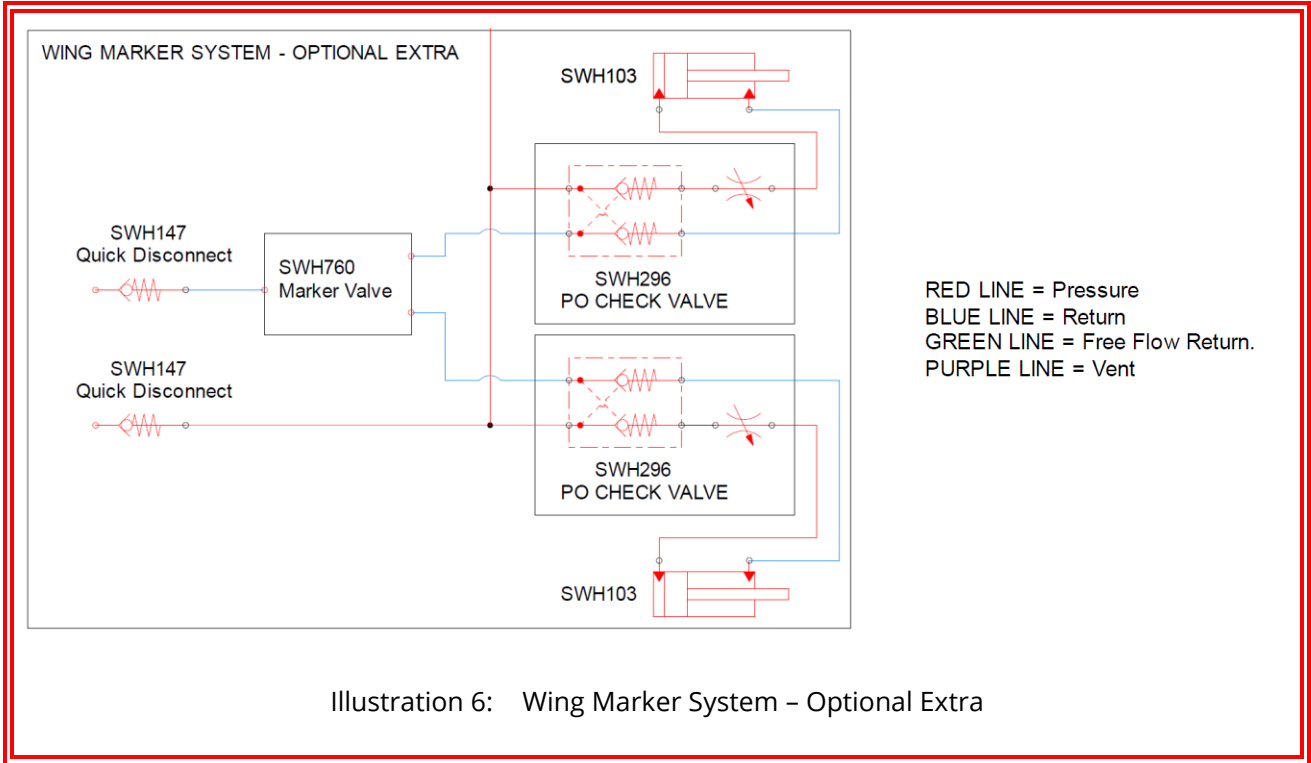
### 7.4 Tramline Control Valve (Optional Extra) Circuit



### 7.5 Weight Transfer (Optional Extra) Circuit

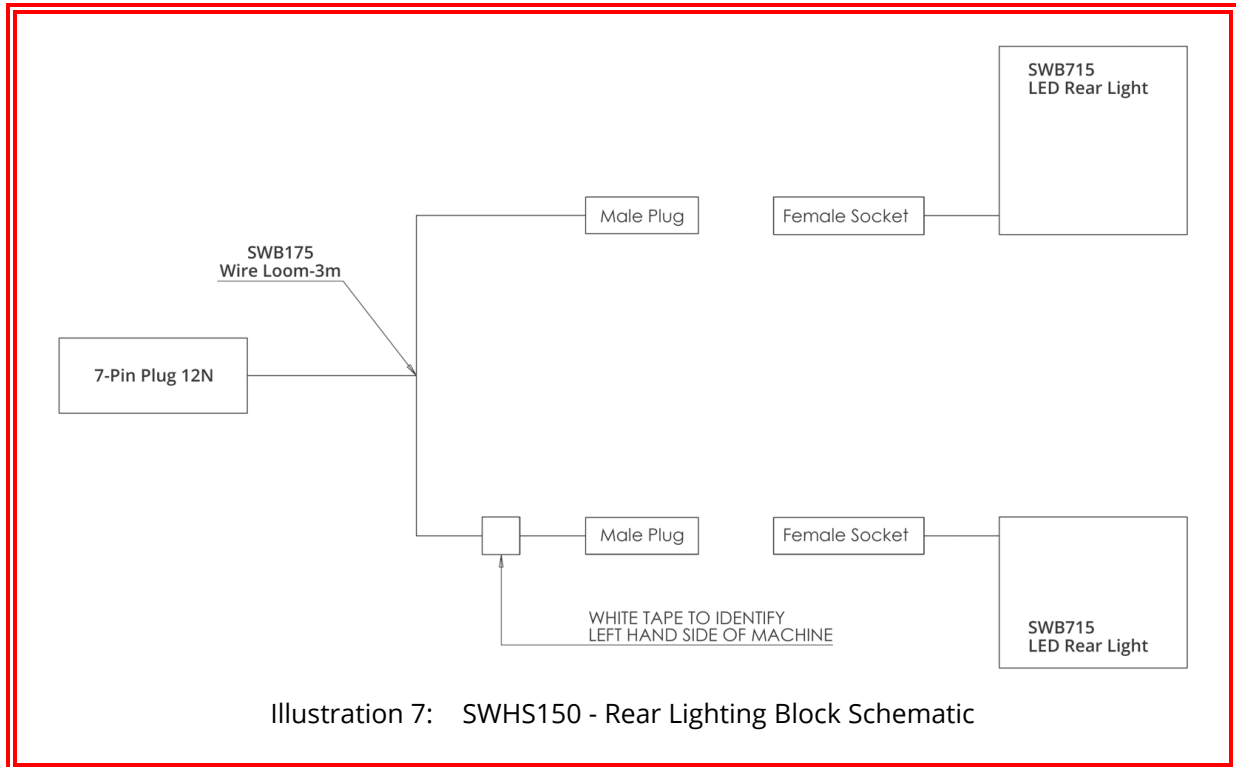


## 7.6 Wing Marker System (Optional Extra) Circuit



## 8 Electrical Schematics

### 8.1 Rear Road Lighting



### 8.2 Metering System

For RDS Topcon Metering System details, please see Manufacturers Manual.

## 9 Standard Torque Values

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

<b>Standard Toque Values (Nm)</b> (Unless Otherwise Stated)			
<b>Thread</b>	<b>Grade 8.8</b>	<b>Grade 10.9</b>	<b>Stainless Steel</b>
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](#)