

SUMO

GROWING WITH YOU

S U B S O I L E R

2023 Mounted Range (S)

Machine Manual & Parts Book

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Introduction

Before reading this Machine Manual & Parts Book, please read the Cultivators 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 Subsoiler is designed for heavy duty loosening and consolidation of soil in compact conditions. It does this in two stages:

Stages One

Sumo subsoilers feature a strong V shaped frame which allows soil and trash to flow more efficiently, allowing the legs to be run closer together giving total loosening. This aggressive action increases the aeration, leaving a surface 50-100mm raised up. The Sumo range of Subsoilers can be used successfully as a primary and a secondary source of cultivation, leaving the surface weatherproof and ready to drill.

The legs are manufactured from 20mm Hardox 500 and are available with either shear pin or hydraulic auto reset protection.

Stage Two

The patented Multipacka fulfils a number of criteria, comprising of a round tube mounted on heavy duty quality bearings fitted with notched cutting/ drive rings to keep turning in arduous conditions. The ring shoulders feature a convex shape adjacent to the barrel, creating consolidation and cracking even on the top of the ridge. Further to this is the ability to unbolt every individual packer quadrant for replacement without having to use any heat or cutting equipment. All these features make a packer which presses and firms to a higher quality with a lower power requirement than any other packer available.

Note: This stage description is based on our standard offering but will change depending on packer selected. Consult the Cultivation Operators manual for more information.

2. Product Specifications

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

Subsoiler Mounted Range

Code	S3SP	S3AR	S4SP	S4AR	S5SP	S5AR
Leg Qty	3	3	4	4	5	5
Leg Spacing	900mm	900mm	650mm	650mm	650mm	650mm
Leg Depth	0-500mm	0-500mm	0-500mm	0-500mm	0-500mm	0-500mm
Machine Type	Rigid	Rigid	Rigid	Rigid	Rigid	Rigid

Available Options

Code	Option Code	Description	Specifications
S3SP	S3SP.MP	Multipacker	Rings: 11 – Spacing: 250mm
	S3SP.HB	Hazard Boards	Rear Only
S3AR	S3AR.MP	Multipacker	Rings: 11 – Spacing: 250mm
	S3AR.HB	Hazard Boards	Rear Only
S4SP	S4SP.MP	Multipacker	Rings: 11 – Spacing: 250mm
	S4SP.HB	Hazard Boards	Rear Only
S4AR	S4AR.MP	Multipacker	Rings: 11 – Spacing: 250mm
	S4AR.HB	Hazard Boards	Rear Only
S5SP	S5SP.MP	Multipacker	Rings: 13 – Spacing: 250mm
	S5SP.HB	Hazard Boards	Rear Only
S5AR	S5AR.MP	Multipacker	Rings: 13 – Spacing: 250mm
	S5AR.HB	Hazard Boards	Rear Only

Leg Depths only applies to standard Sumo subsoiler legs & points.

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 Cultivator Operators Manual thoroughly.

Mounted Rigid Subsoilers

Due to adjustable nature of mounted folding machines, the Mounted folding Subsoilers do not have a set transport position, but it is advised that all legs are retracted/lifted to ensure they do not contact the ground and the packer is in its shallowest depth (Highest pinnable position). Ensure all stands are fully lifted and securely pinned. Ensure rear lights and reflectors are suitably angled down.

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.

Machines (Excluding Options)

Code	Length	Width	Height
S3SP	1238	3100	1653
S3AR	1585	3100	1632
S4SP	1236	3080	1653
S4AR	1619	3080	1632
S5SP	1345	3555	1653
S5AR	1776	3555	1632

Machines (Including Options)

Code	Length	Width	Height
S3SP.MP	2485	-	-
S3SP.HB	2485	-	-
S3AR.MP	2812	-	-
S3AR.HB	2812	-	-
S4SP.MP	2479	-	-
S4SP.HB	2479	-	-
S4AR.MP	2810	-	-
S4AR.HB	2810	-	-

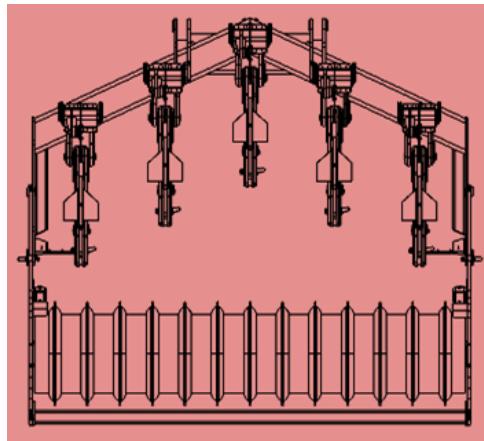
S5SP.MP	2596	-	-
S5SP.HB	2596	-	-
S5AR.MP	2930	-	-
S5AR.HB	2930	-	-

Height only applies to standard Sumo low disturbance legs & points

4. Danger Zone

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

Mounted Subsoilers



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: Mounted Subsoiler

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

Purpose of machine: Primarily designed to alleviate compaction and improve soil structure in an agricultural environment.

Description of machine: A three-point-linkage mounted farm implement consisting of 2 major elements.

1. A bank of staggered low disturbance subsoiler legs.
2. A rigid packer roller.

All of the above is arranged in a heavy-duty fabricated steel framework.

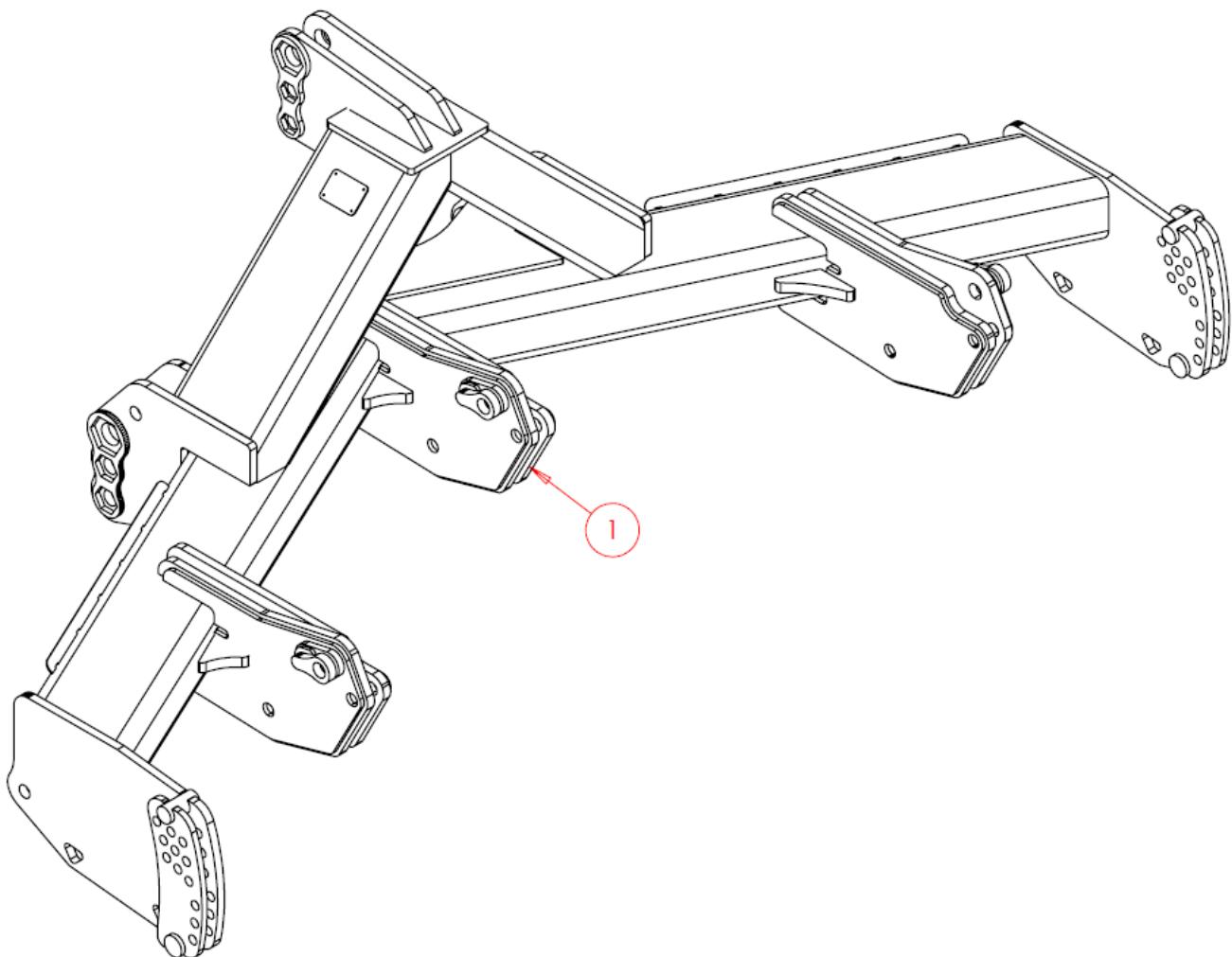
Hazard identified in using machine	Who might be harmed	Risk evaluation /level (1-5)	Precautions in place	Further action required
Machine collision while in transport.	Operator, members of the public	2 Low - Mid	Tail lights, reflectors, narrowing soil deflectors.	Take care when using in both field and road situations. Maintain good visibility at all times.
Trapped fingers during leg depth position change.	Operator	1 Low	Warnings, maintenance stands	Observe warning signs, maintain safe distance from moving parts, wear gloves. Ensure all stands are down. Clear excess soil (weight) from points 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 points etc, 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.
Falling from machine	Operator	2 Low - Mid	Most alterations and maintenance do not require the operator to climb on the machine. If a seeder is fitted, then steps	Lower the machine to the floor to allow access for greasing parts, checking bearings etc...

			and a handrail will also be fitted to allow access.	
Pressurised oil/ Burst hoses	Operator	4 Mid - High	Warnings	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.

6. Parts Book Index

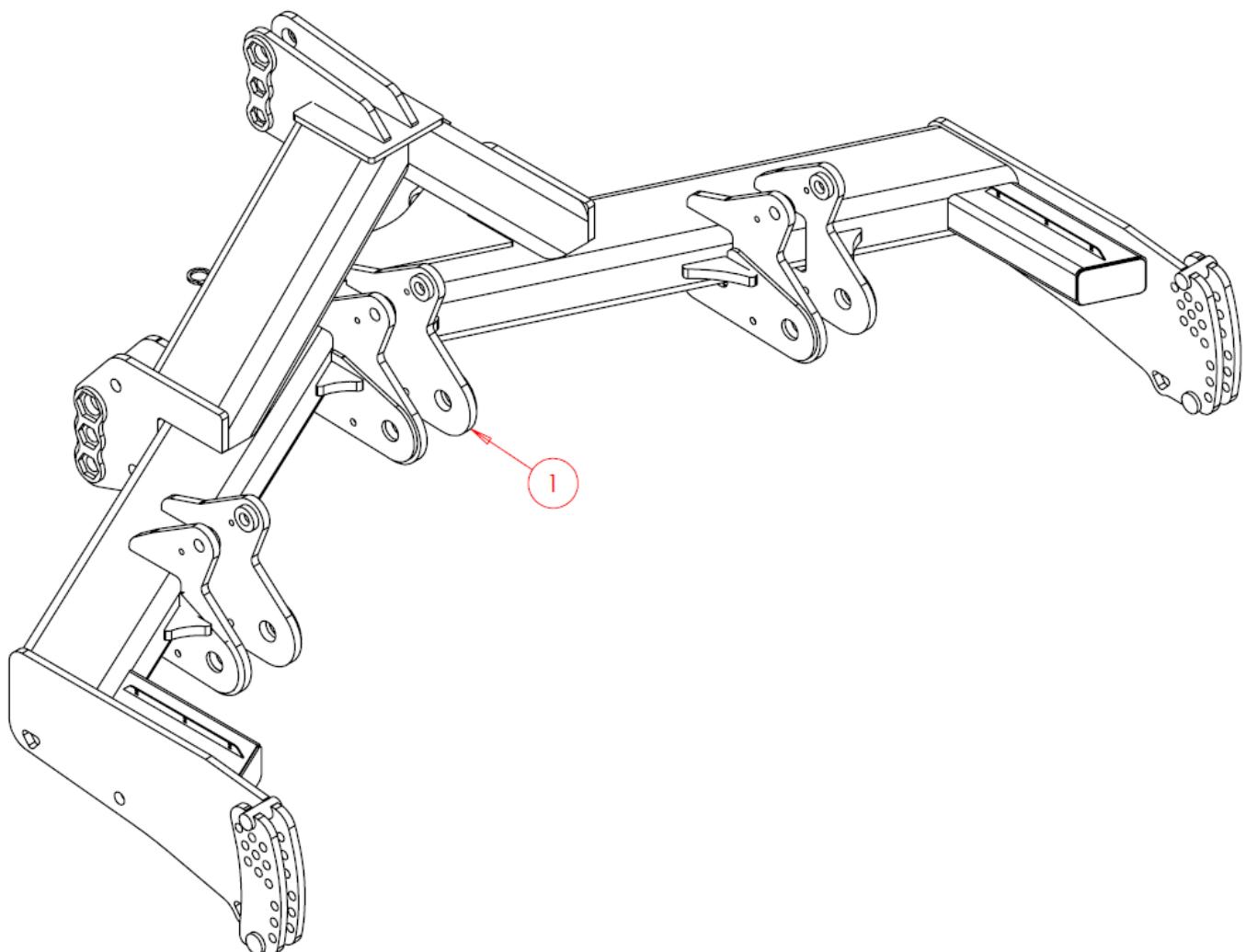
For older machines, see manuals & parts book available on the Sumo website.

6.1 S3SP Base Chassis



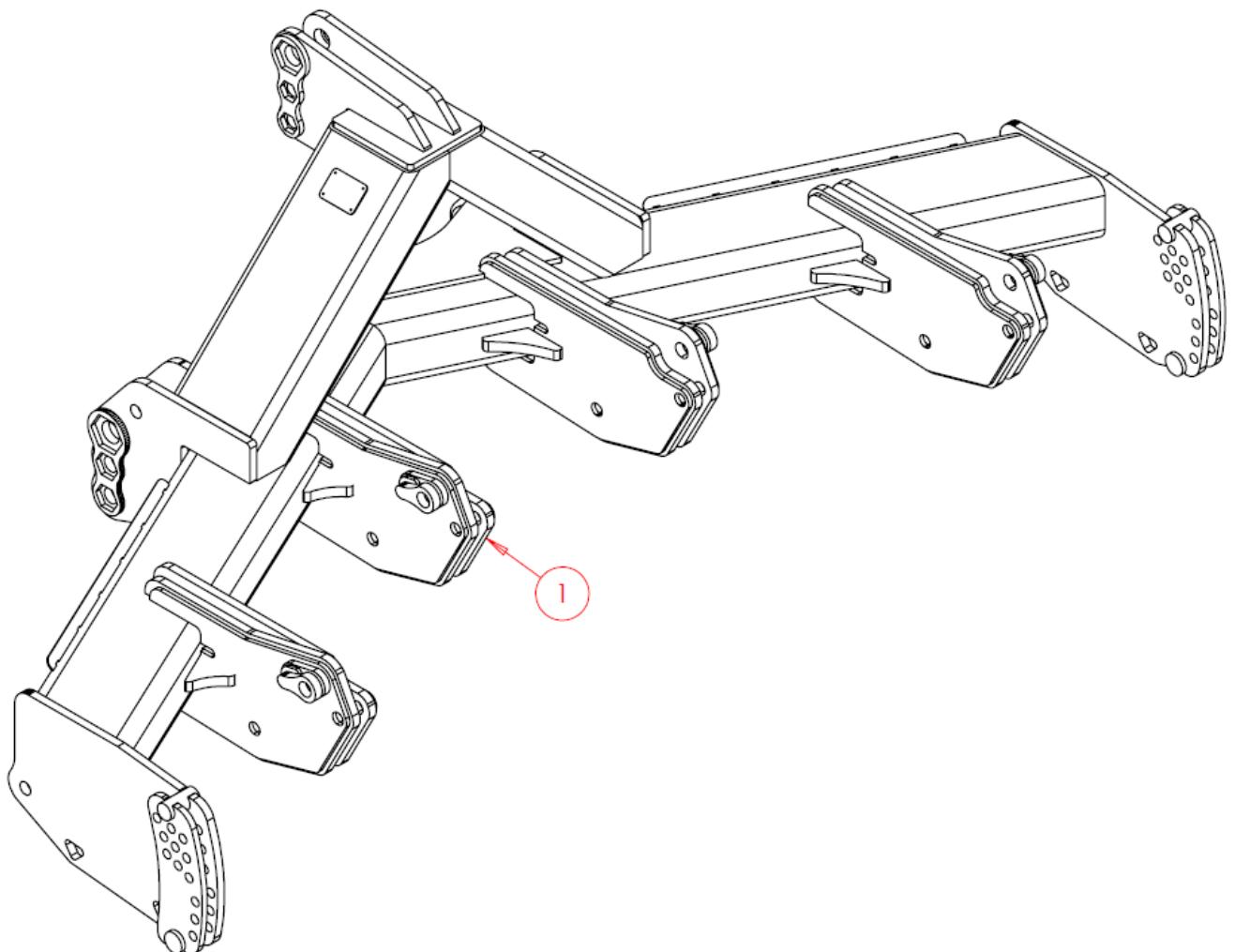
Item No.	Part Number	Description	Qty
1	SW249	Main Chassis	1

6.2 S3AR Base Chassis



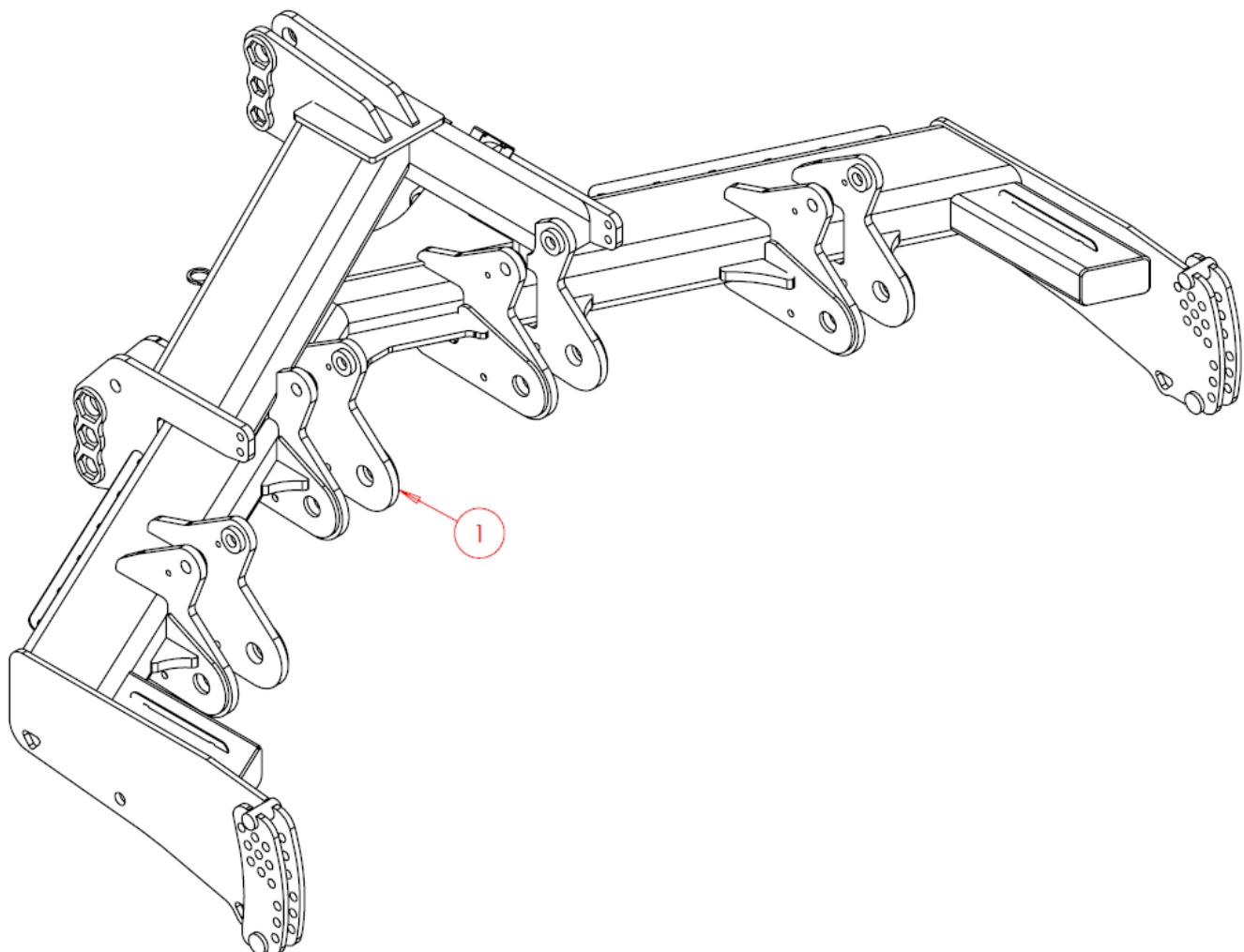
Item No.	Part Number	Description	Qty
1	SW3510	Main Chassis	1

6.3 S4SP Base Chassis



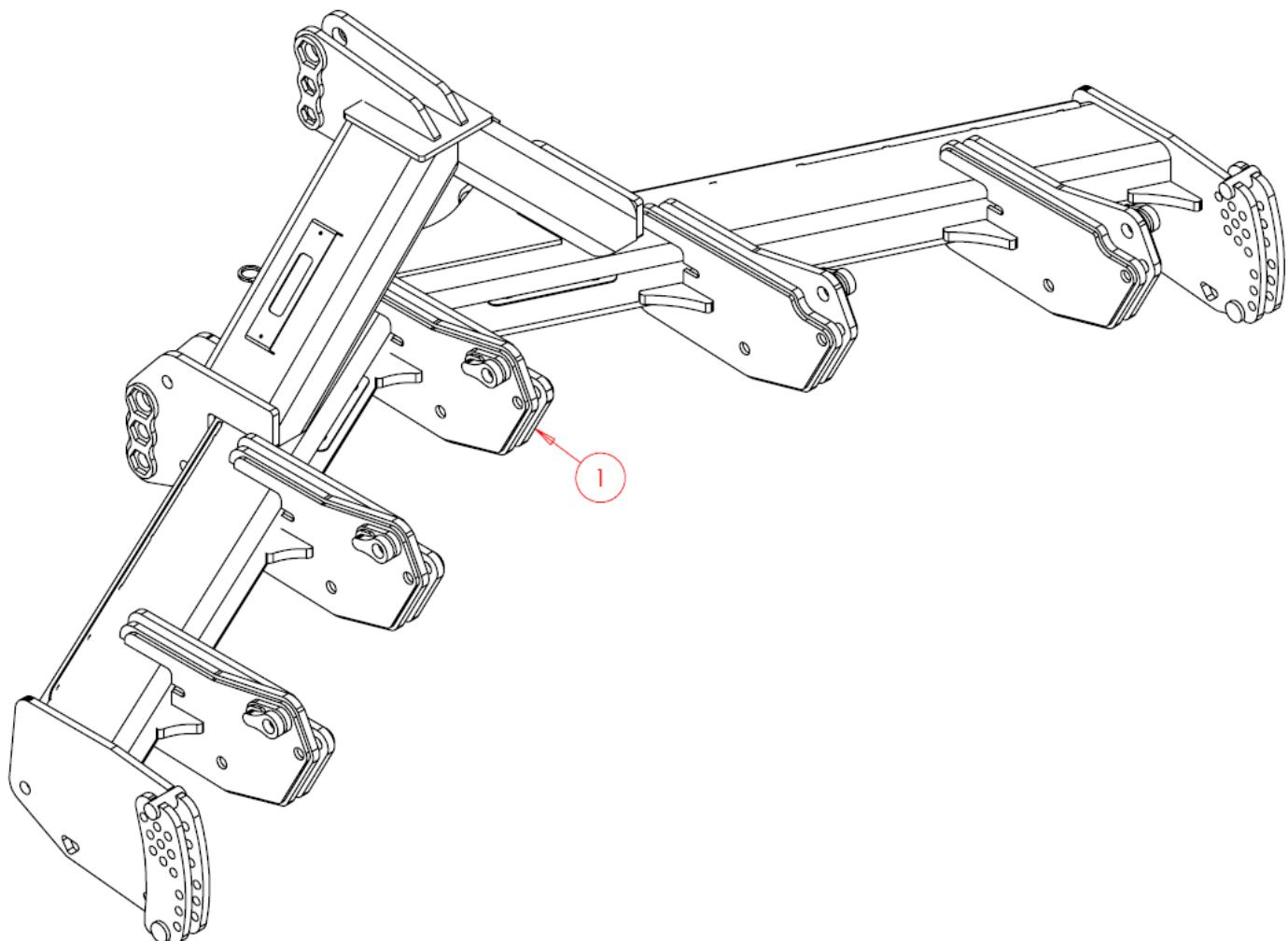
Item No.	Part Number	Description	Qty
1	SW1202	Main Chassis	1

6.4 S4AR Base Chassis



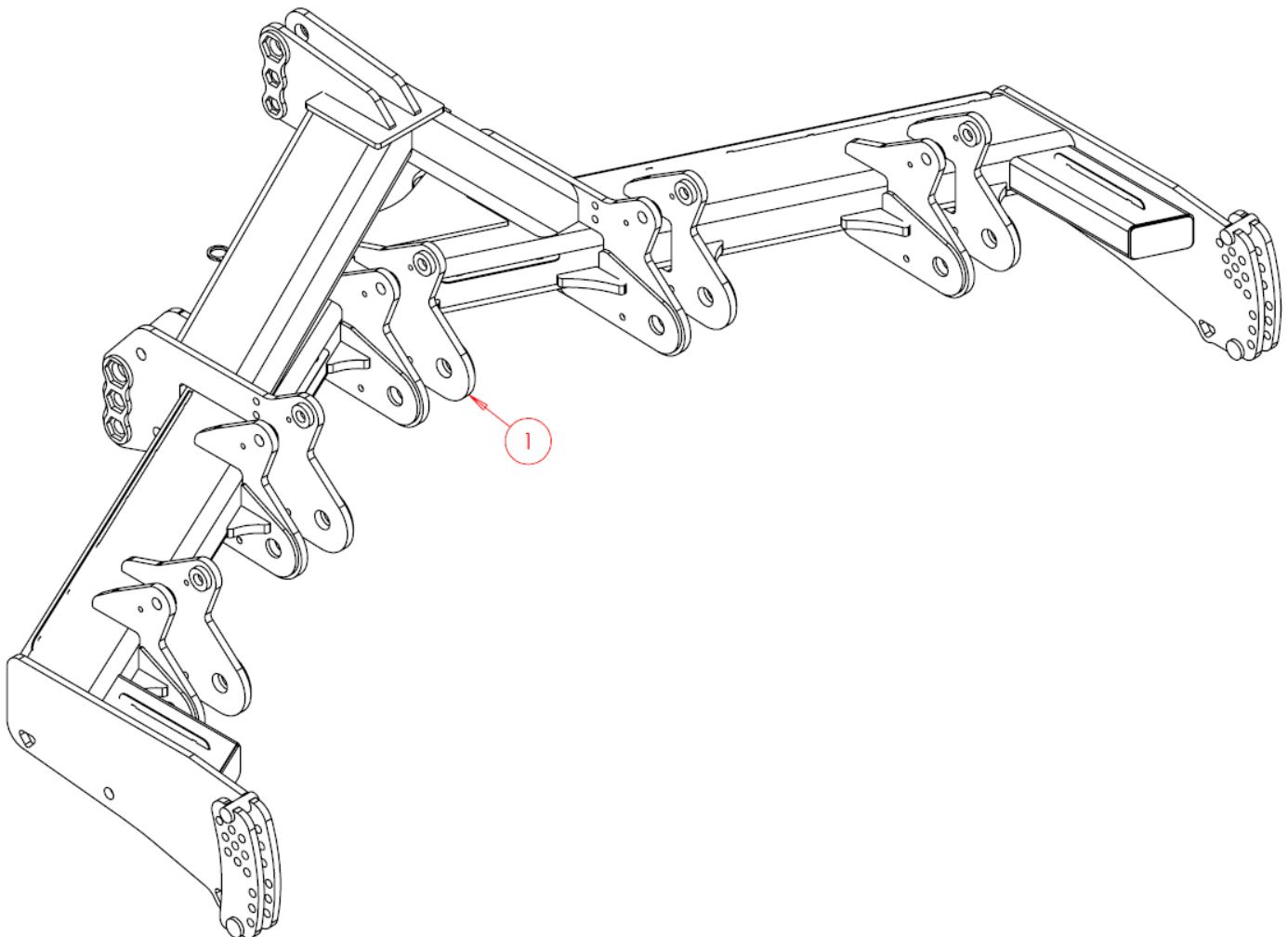
Item No.	Part Number	Description	Qty
1	SW1203	Main Chassis	1

6.5 S5SP Base Chassis



Item No.	Part Number	Description	Qty
1	SW3661	Main Chassis	1

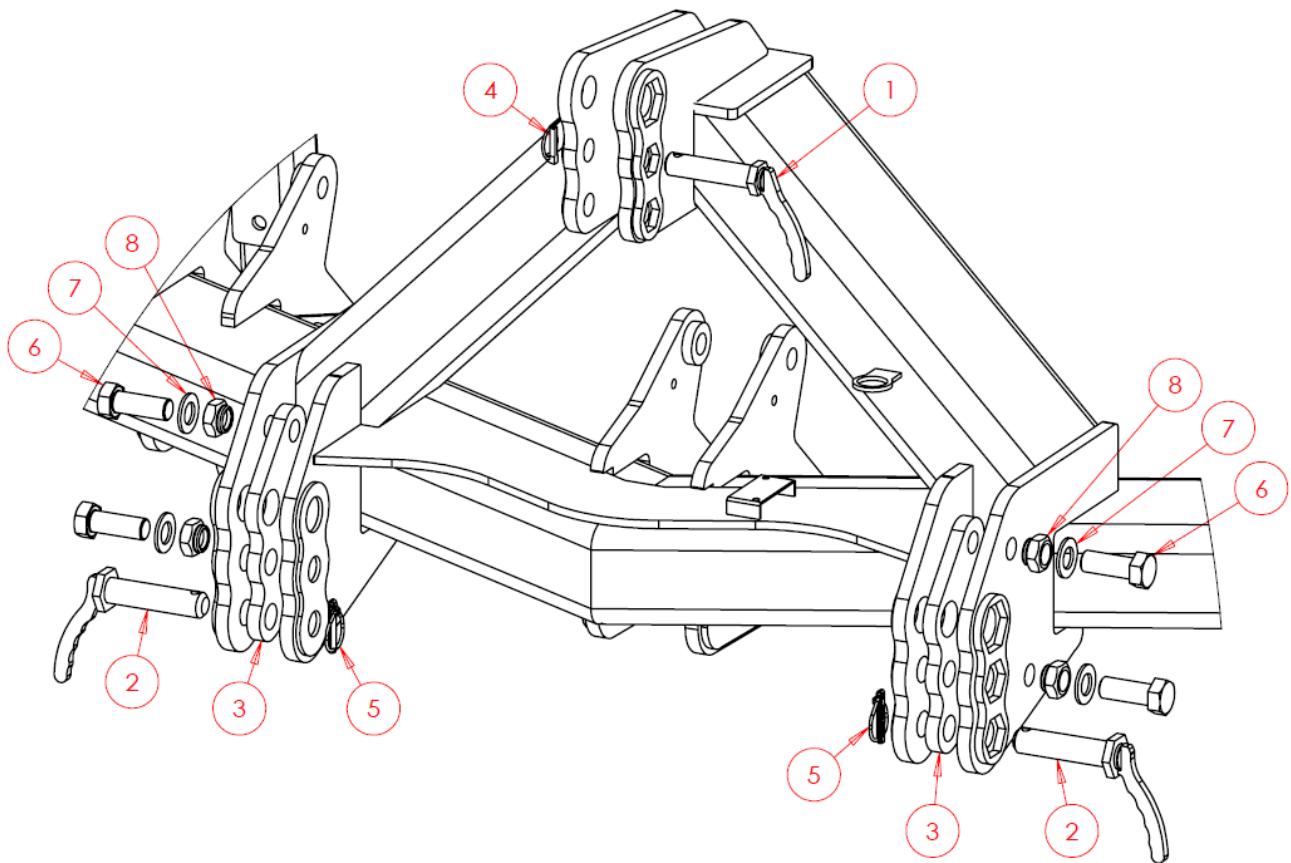
6.6 S5AR Base Chassis



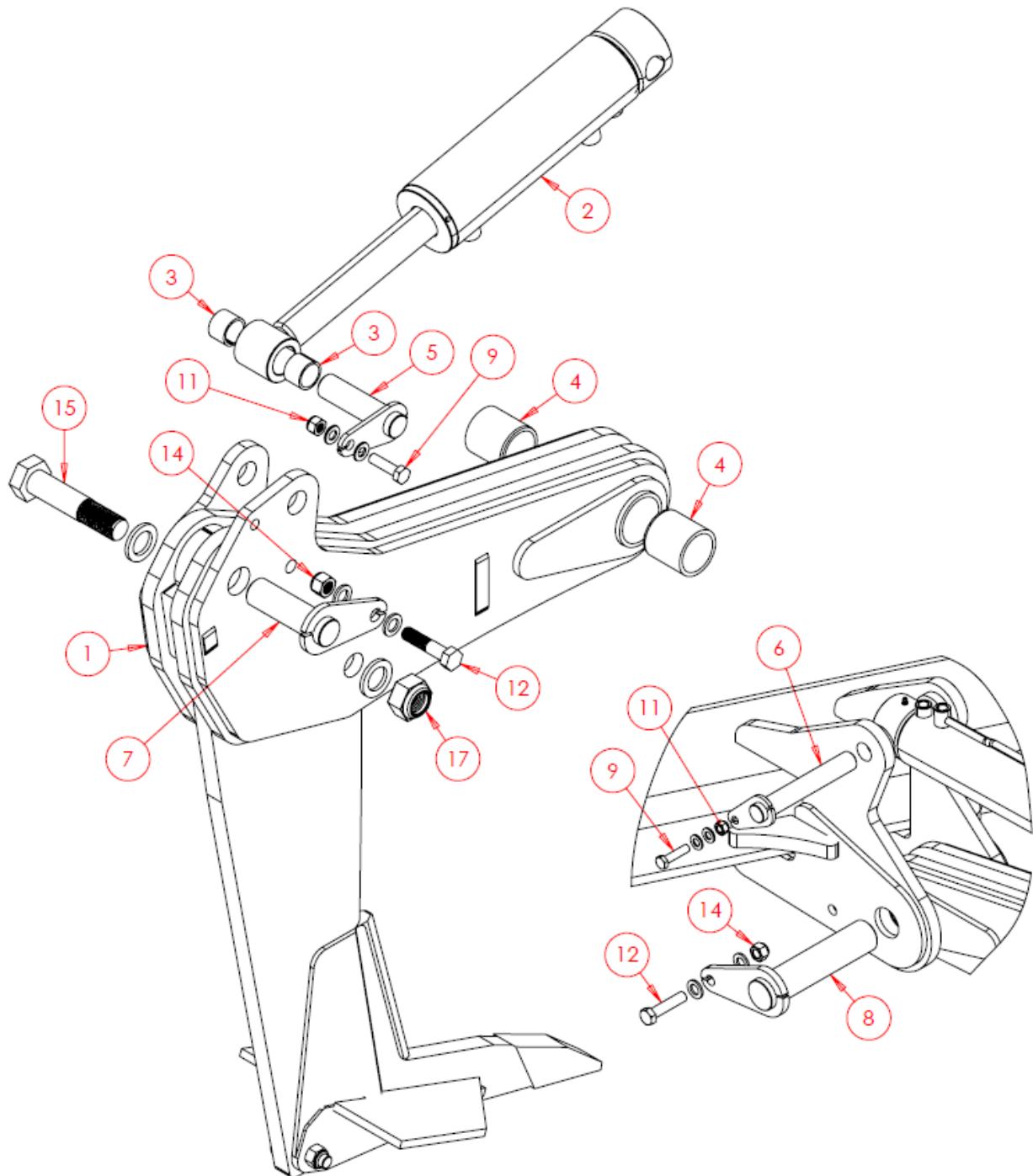
Item No.	Part Number	Description	Qty
1	SW2986	Main Chassis	1

6.7 Standard Assemblies

6.7.1 Three Point Linkage Pins



Item No.	Part Number	Description	Qty
1	SW627ext	Top Linkage Pin	1
2	SWS626ext	Bottom Linkage Pin	2
3	SW3161	Shim	2
4	SWB105	Lynch Pin	1
5	SWB107	Lynch Pin	2
6	SWM3080	M30x80 Bolt	4
7	SWM30001	M30 Washer - Flat	4
8	SWM30004	M30 Nut - Nylock	4

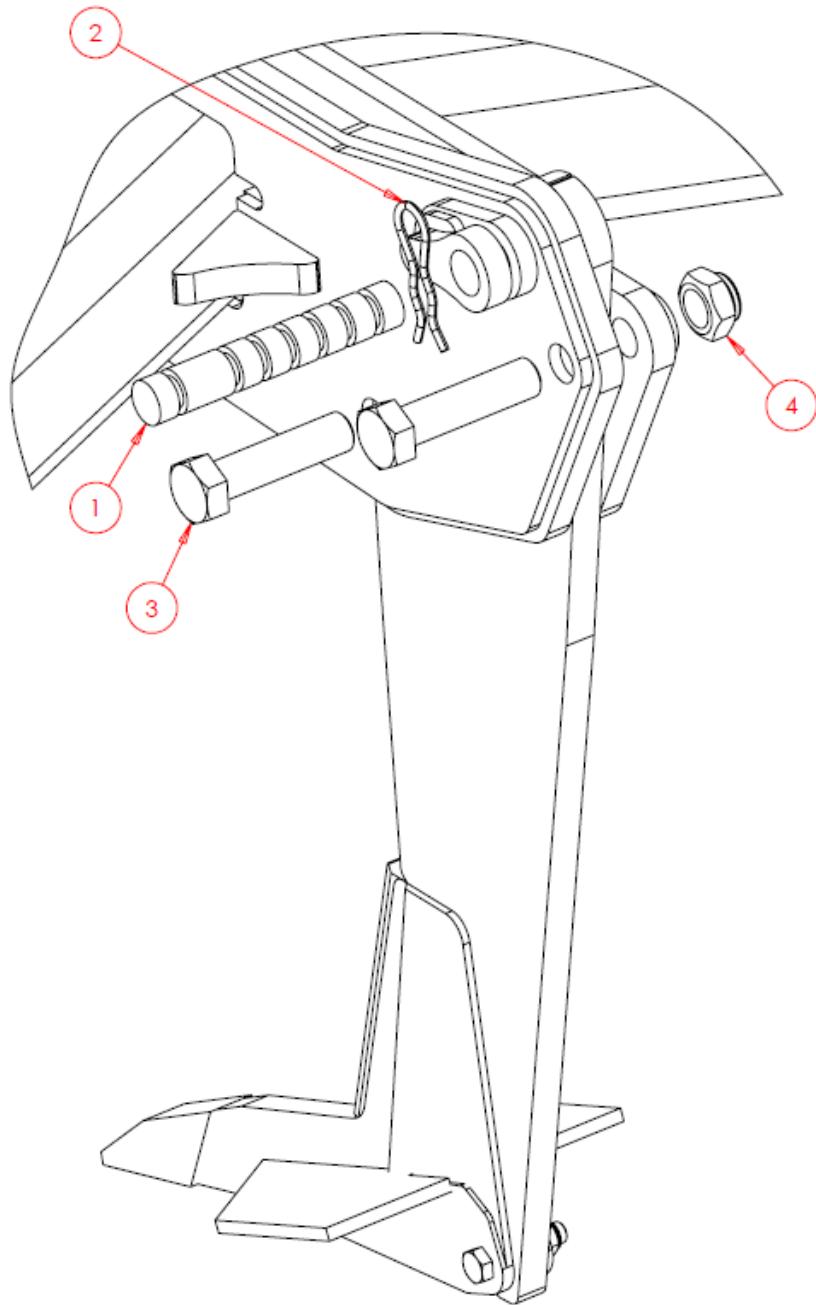
6.7.2 Auto-Reset Leg

Quantities below are per leg, not per machine.

Item No.	Part Number	Description	Qty
1	SW399	Leg Socket	1
2	SWH125	Hydraulic Cylinder	1
3	SWB374	Split Tension Bush	2

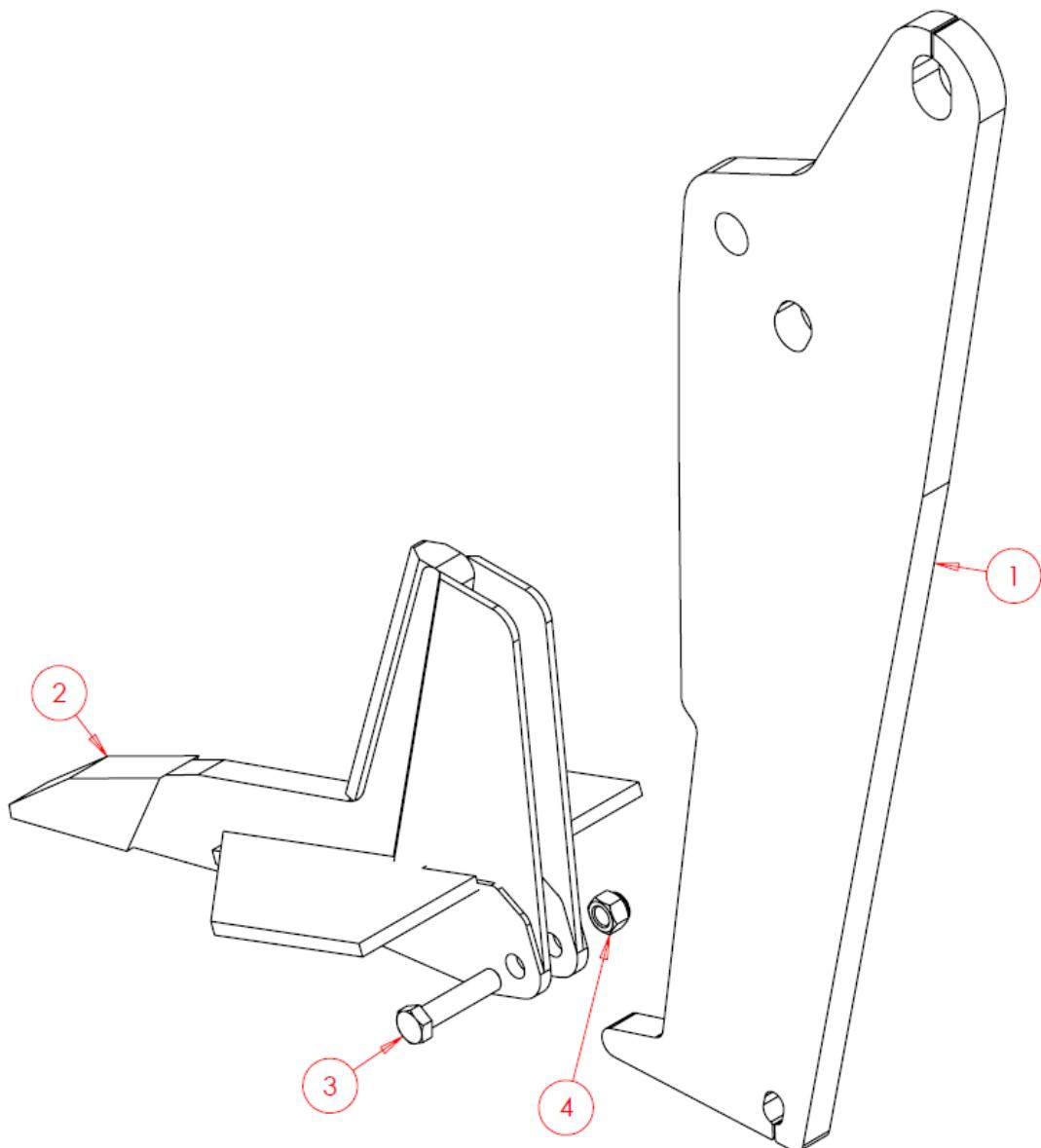
4	SWB1004	Self-Lubricating Bush	2
5	SWP30X105	Pin	1
6	SWP30X180	Pin	1
7	SWP35X105	Pin	1
8	SWP50X205	Pin	1
9	SWM1250	M12x50 Bolt	2
10	SWM12001	M12 Washer - Flat	4
11	SWM12004	M12 Nut - Nylock	2
12	SWM1670	M16x70 Bolt	2
13	SWM16001	M16 Washer - Flat	4
14	SWM16004	M16 Nut - Nylock	2
15	SWM30140	M30x140 Bolt	1
16	SWM30001	M30 Washer - Flat	2
17	SWM30004	M30 Nut - Nylock	1

6.7.3 Shear Pin Set Up



Quantities below are per leg, not per machine.

Item No.	Part Number	Description	Qty
1	SW355	Shear Pin	1
2	SWB106	Retention Pin	1
3	SWM30120	M30x120 Bolt	1
4	SWM30004	M30 Nut - Nylock	1

6.7.4 Standard Subsoiler Leg & Points

Quantities below are per leg, not per machine.

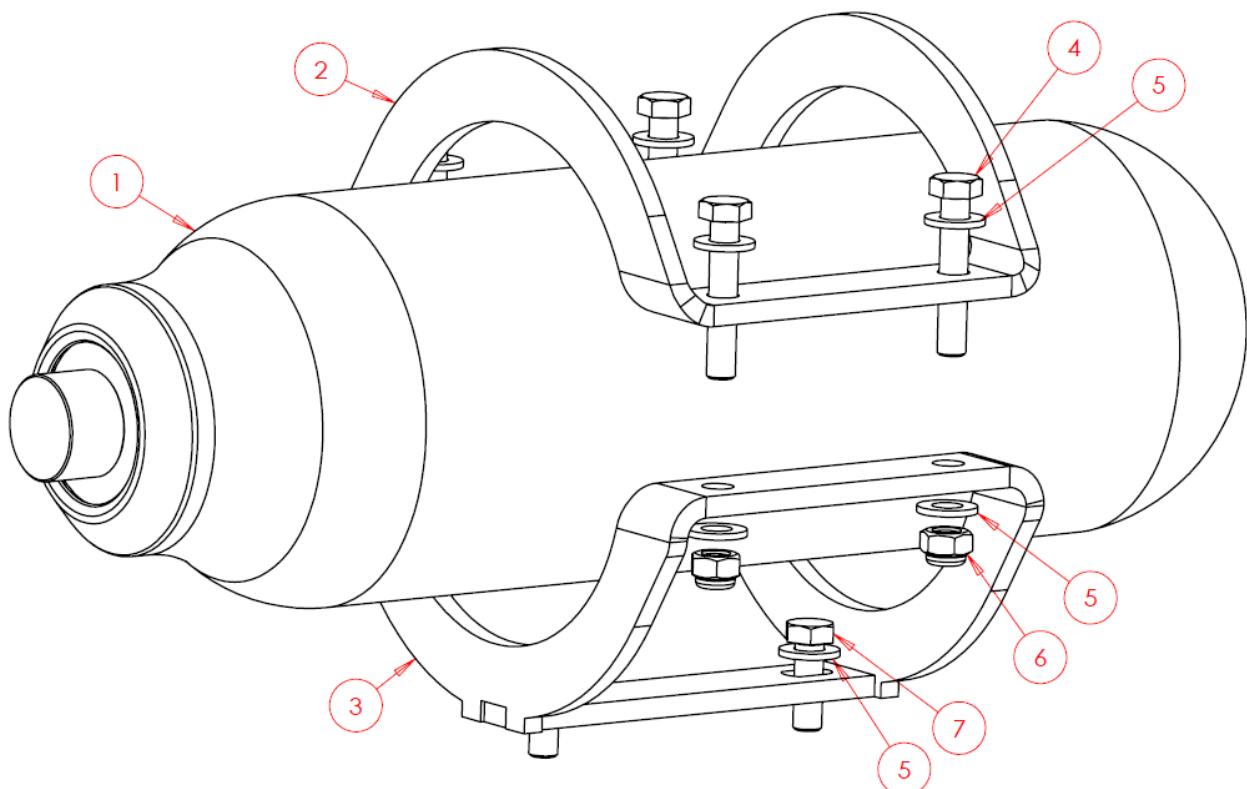
Complete Assembly - SWA2886

Item No.	Part Number	Description	Qty
1	SW191	Subsoiler Leg	1
2	SW194M	Subsoiler Point	1
3	SWM1670	M16x70 Bolt	1
4	SWM16004	M16 Nut - Nylock	1

6.7.5 Accumulators & Valve Block (Auto Reset Only)

For full system details see Hydraulic Connection Diagrams.

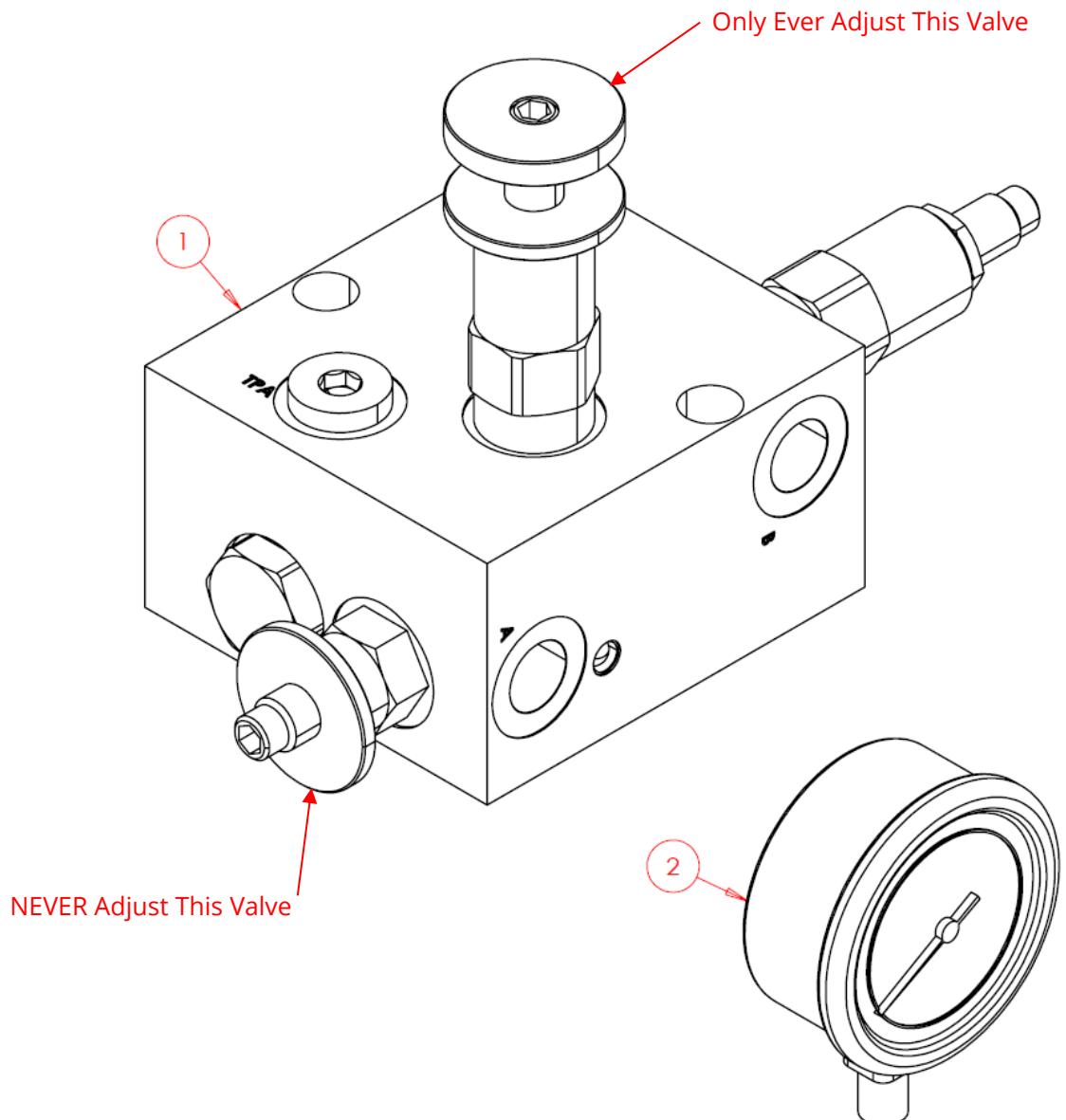
6.7.5.1 2.8 Litre Membrane Accumulator



Complete Assembly – SWA2153

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	10
6	SWM8004	M8 Nut – Nylock	4
7	SWM825	M8x25 Screw	2

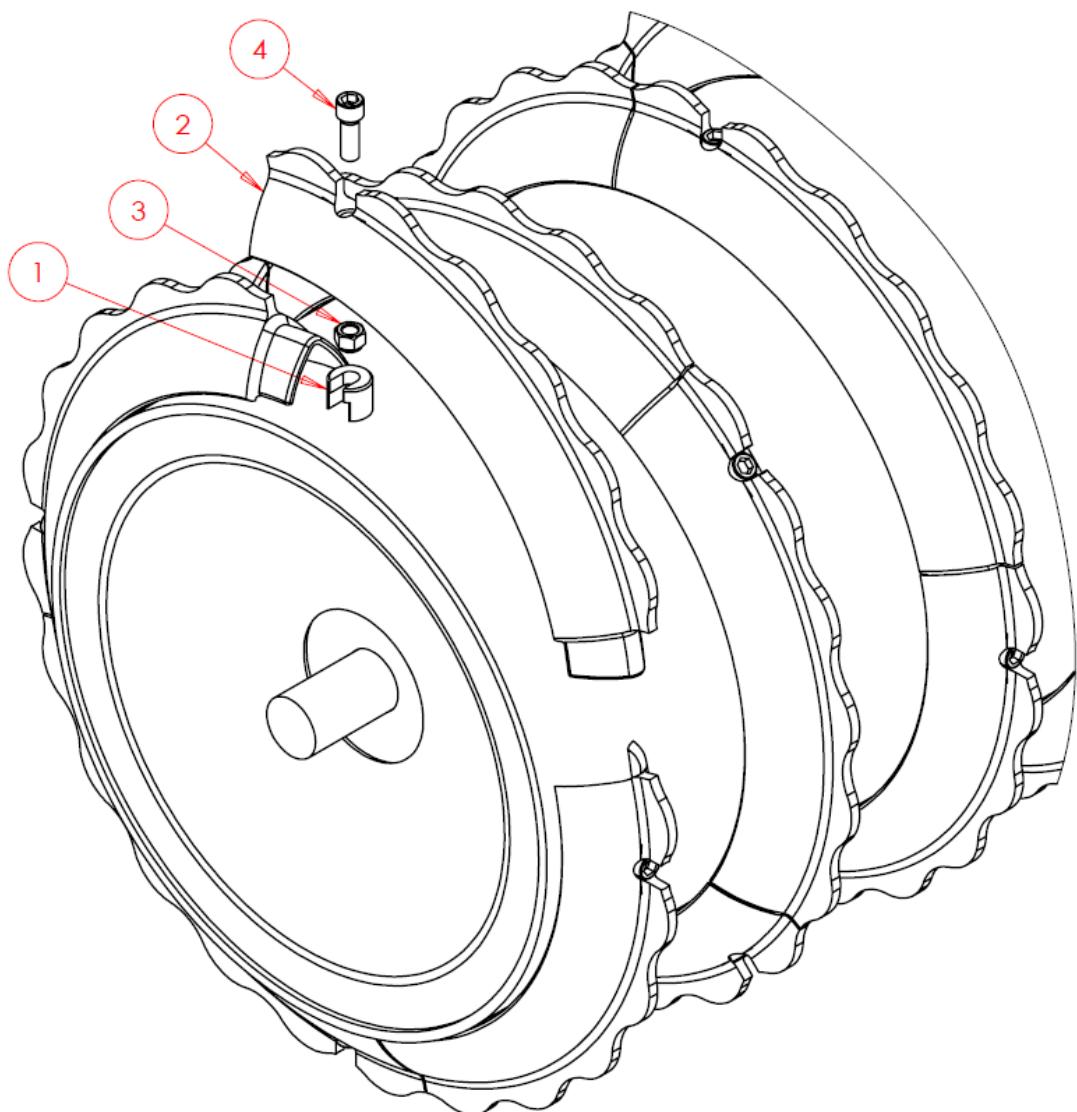
6.7.5.2 Standard Auto Reset Valve Block & Pressure Gauge



Item No.	Part Number	Description	Qty
1	SWH298	Auto Reset Valve Assembly	1
2	SWH612	Pressure Gauge	1

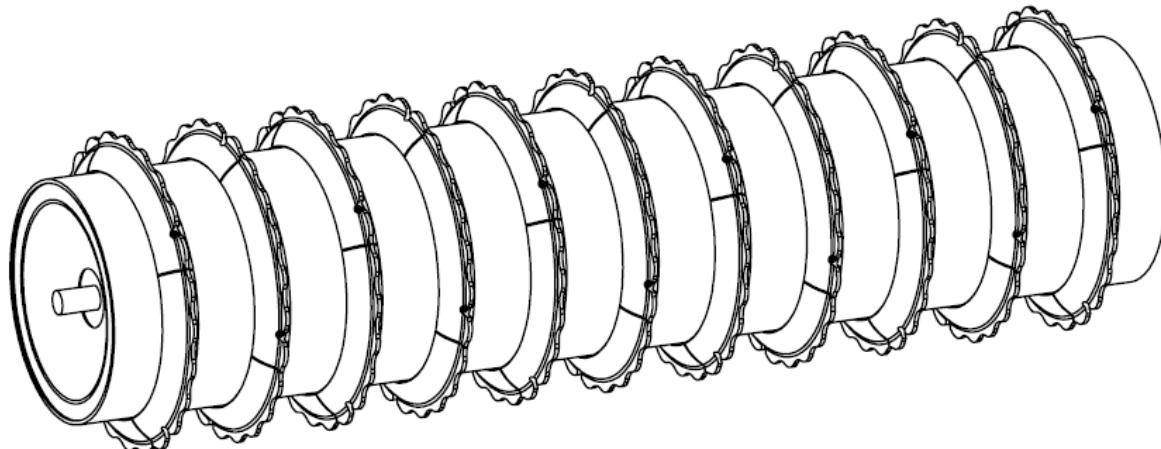
6.7.6 Packers Options

6.7.6.1 Quadrant Assembly Per Ring - All 609 Multipackers



Item No.	Part Number	Description	Qty
1	SWB608	610 Weld-On Nut Retainer	4
2	SWB609	610 Quadrant - Plain	4
3	SWM16004	M16 Nut - Nylock	4
4	SWM1645CH	M16x45 Cap Head Screw	4

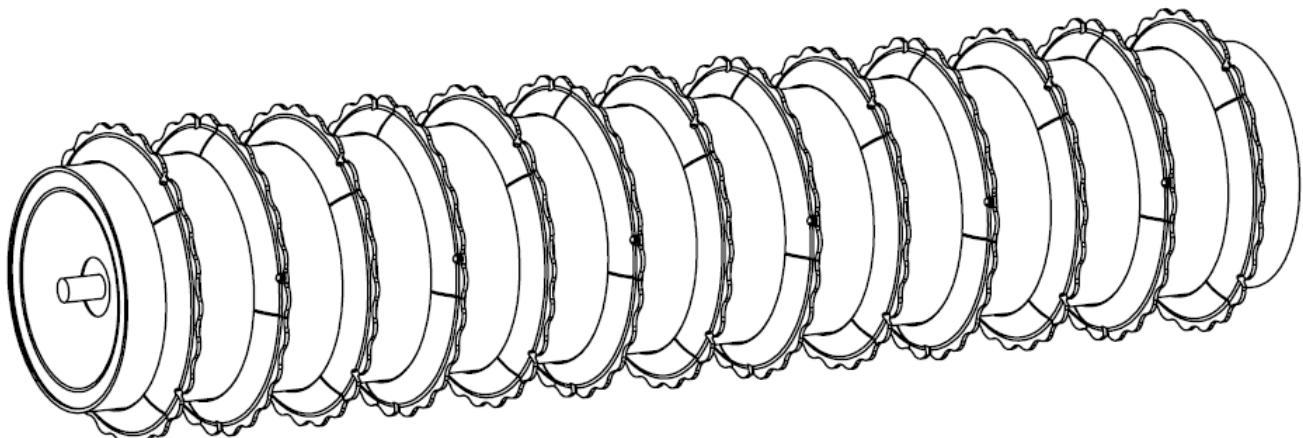
6.7.6.2 S3 & S4 – 609 Multipacker



S3 & S4 – Complete Assembly – SW3994

Item No.	Part Number	Description	Qty
1	SWB608	610 Weld-On Nut Retainer	44
2	SWB609	610 Quadrant – Plain	44
3	SWM16004	M16 Nut – Nylock	44
4	SWM1645CH	M16x45 Cap Head Screw	44

6.7.6.3 S5 Only – 609 Multipacker

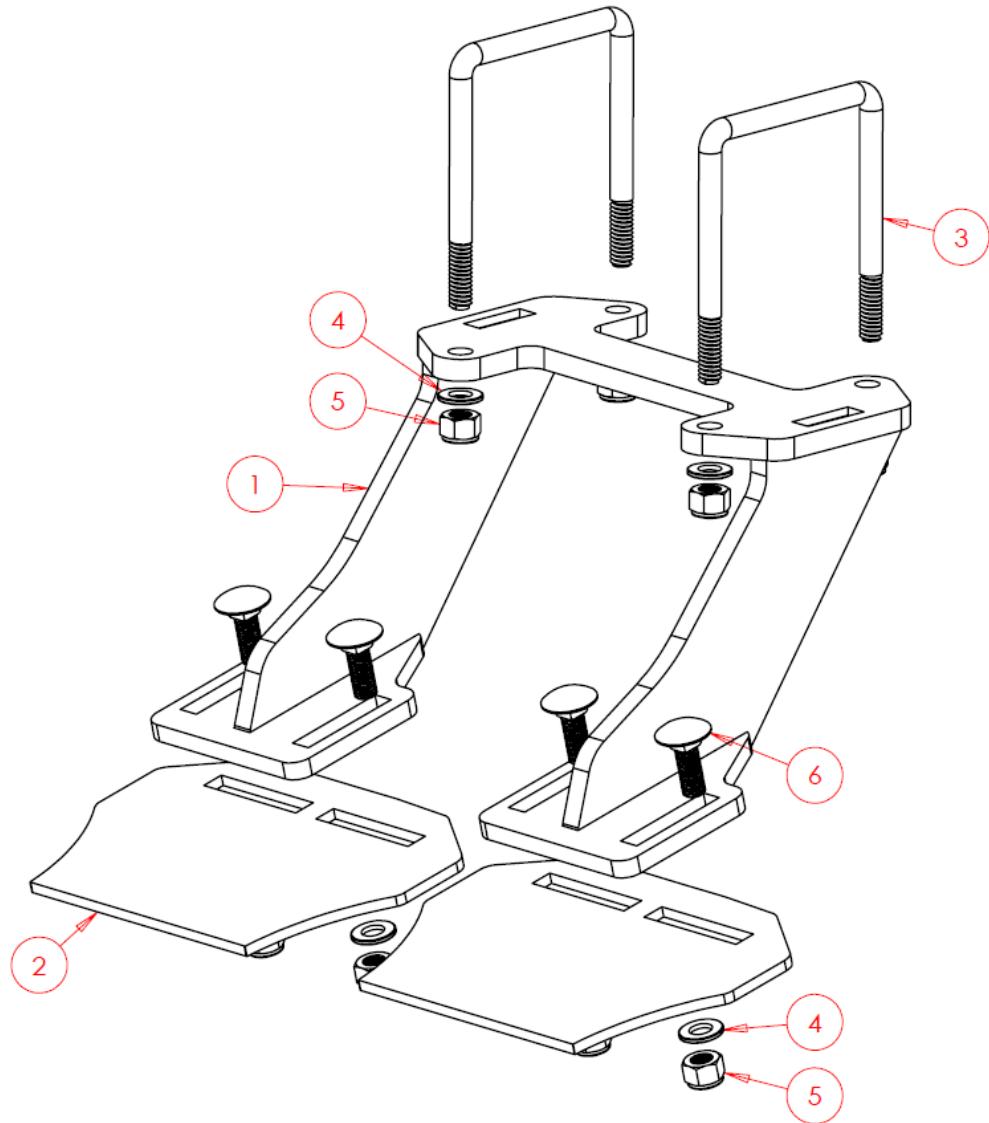


S5 Only – Complete Assembly – SW3505

Item No.	Part Number	Description	Qty
1	SWB608	610 Weld-On Nut Retainer	52
2	SWB609	610 Quadrant – Plain	52
3	SWM16004	M16 Nut – Nylock	52
4	SWM1645CH	M16x45 Cap Head Screw	52

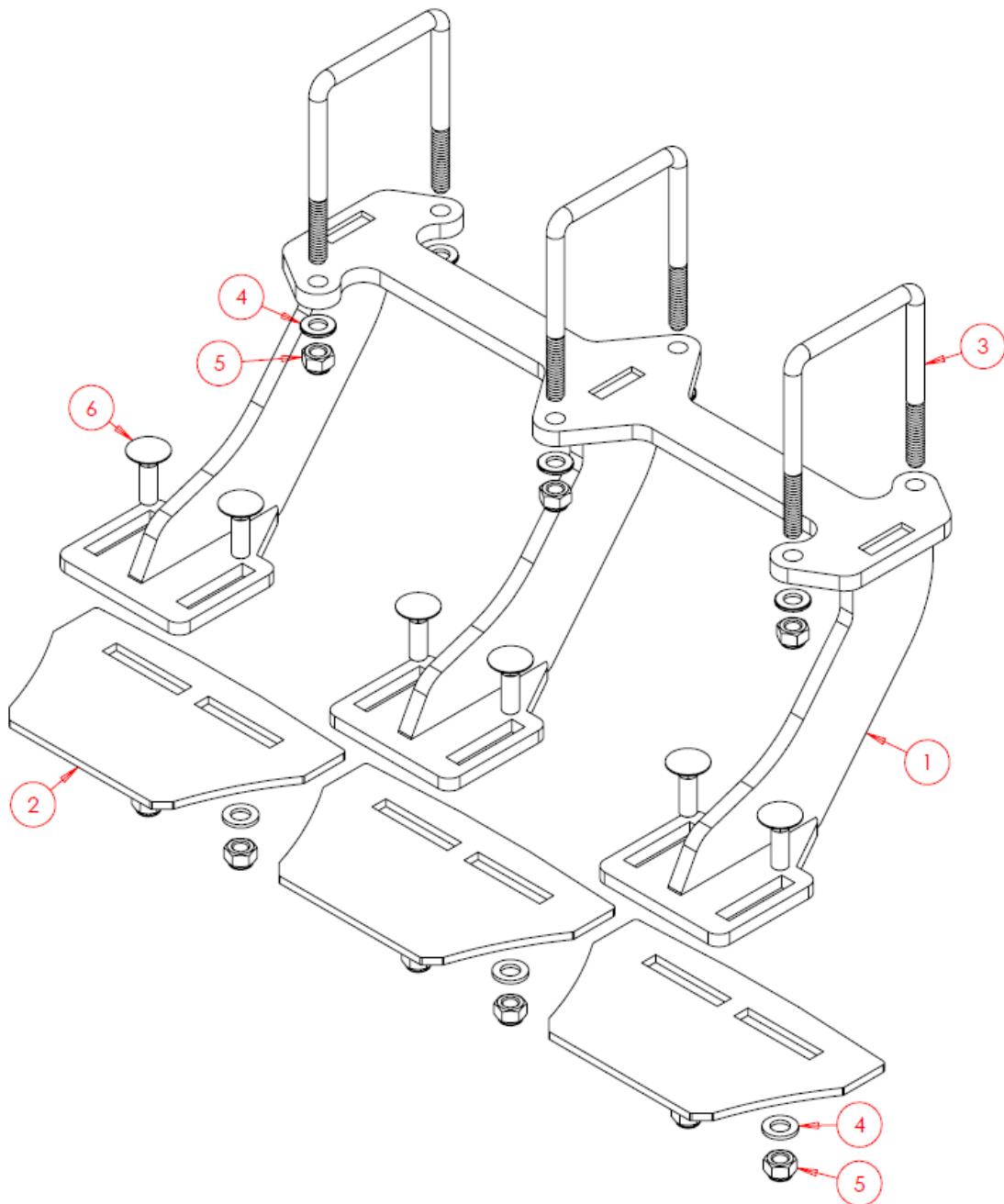
6.7.7 Scraper Assemblies

6.7.7.1 All Multipacker Options – Double Scraper



Complete Assembly – SW1388

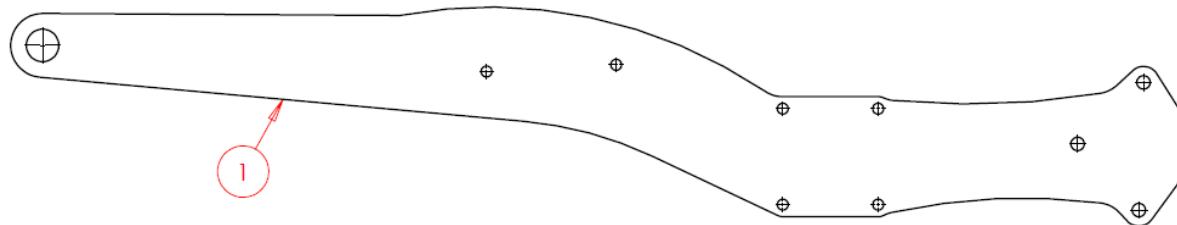
Item No.	Part Number	Description	Qty
1	SW1044	Hanger	1
2	SW1043	Scraper	2
3	SWM12100UB	M12x100 U bolt	2
4	SWM12001	M12 Washer – Flat	8
5	SWM12004	M12 Nut – Nylock	8
6	SWM1240CHSQ	M12x40 Bolt – Cup Head Square Bolt	4

6.7.7.2 All Multipacker Options – Triple Scraper**Complete Assembly - SW1930**

Item No.	Part Number	Description	Qty
1	SW1003	Hanger	1
2	SW651	Scraper	3
3	SWM12100UB	M12x100 U bolt	3
4	SWM12001	M12 Washer – Flat	12
5	SWM12004	M12 Nut – Nylock	12
6	SWM1240CHSQ	M12x40 Bolt – Cup Head Square Bolt	6

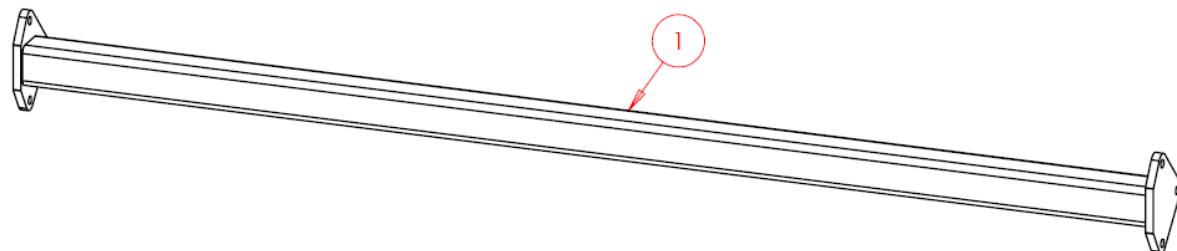
6.7.8 Packer Arms & Scraper Bars

6.7.8.1 Packer Arms (All Multipackers)



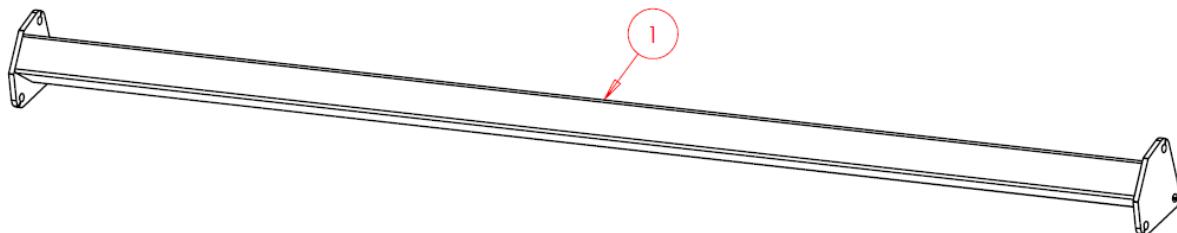
Item No.	Part Number	Description	Qty
1	SW248	Packer Arms (All Multipacker)	2

6.7.8.2 Scraper Bar (All S3 & S4 Only)

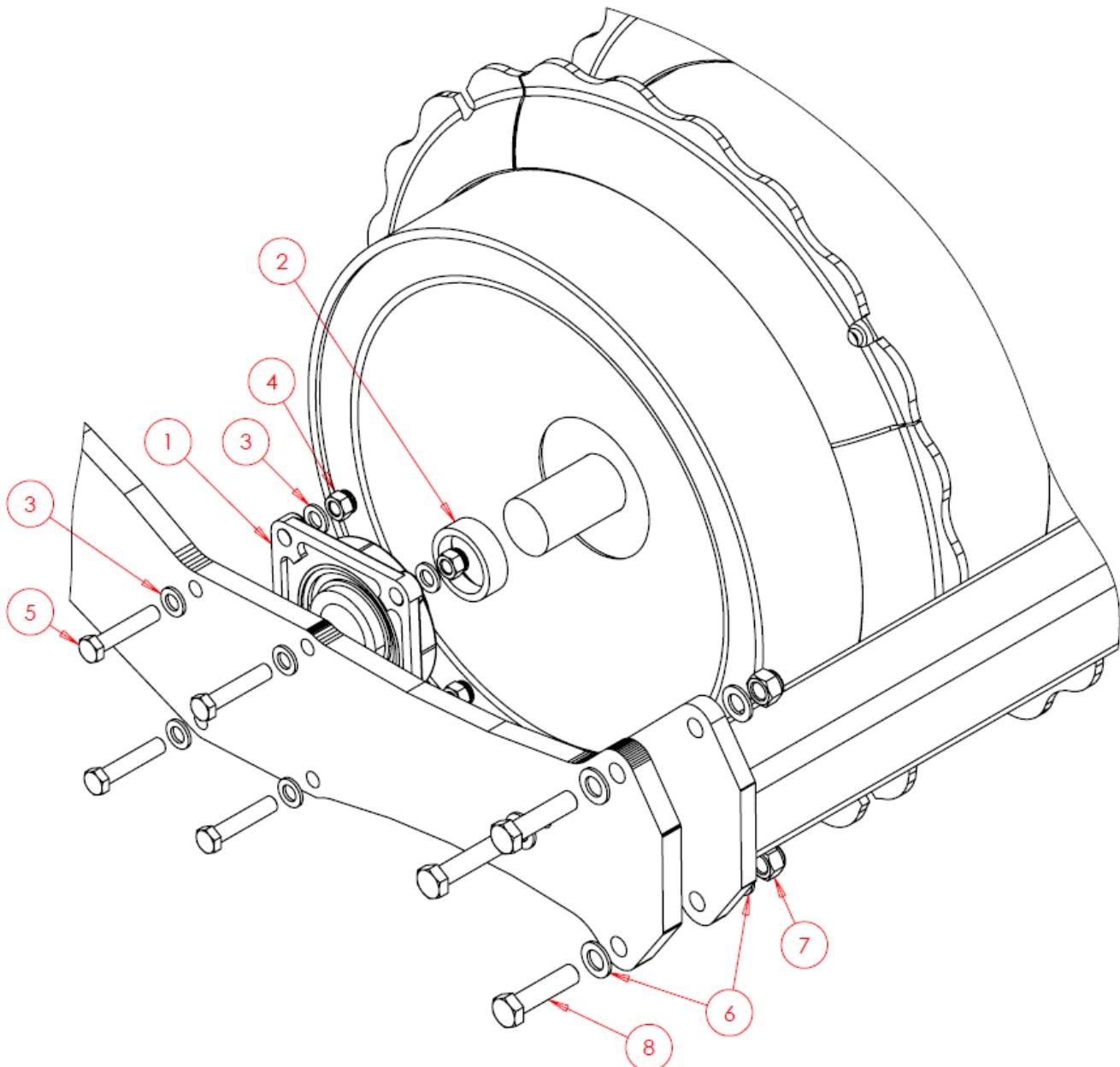


Item No.	Part Number	Description	Qty
1	SW1201	Scraper Bar (All S3 & S4 Only)	1

6.7.8.3 Scraper Bar (All S5 Only)



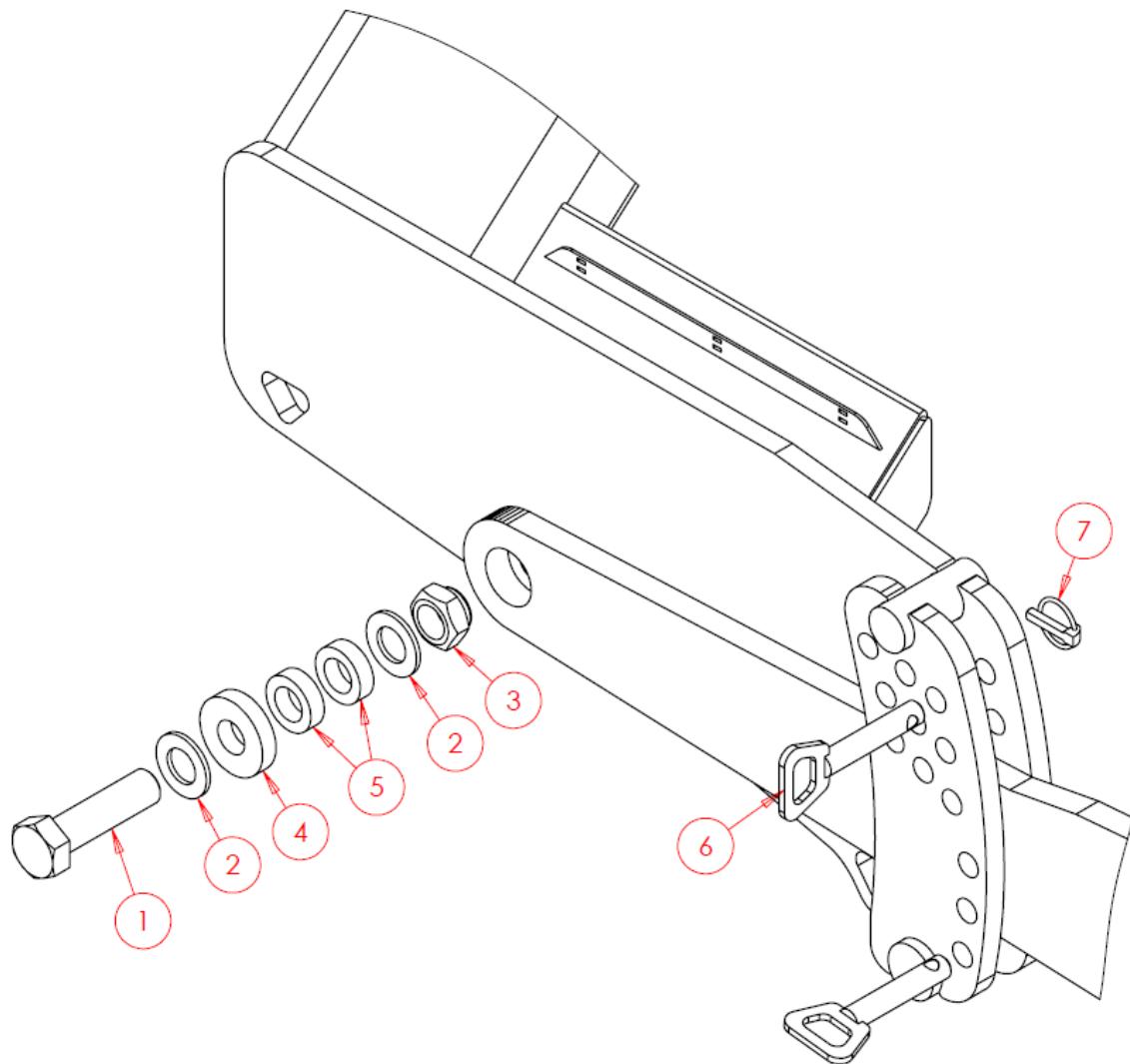
Item No.	Part Number	Description	Qty
1	SW3506	Scraper Bar (All S5 Only)	1

6.7.9 Packer Bearings & Scraper Bar Assembly

Item No.	Part Number	Description	Qty
1	SWB389	Bearing	2
2	SWS3272	Spacer Collar	2
3	SWM16001	M16 Washer - Flat	16
4	SWM16006	M16 Nut - Aerotight	8
5	SWM1680	M16x80 Bolt	8
6	SWM20001	M20 Washer - Flat	12
7	SWM20004	M20 Nut - Nylock	6
8	SWM2080	M20x80 Bolt	6

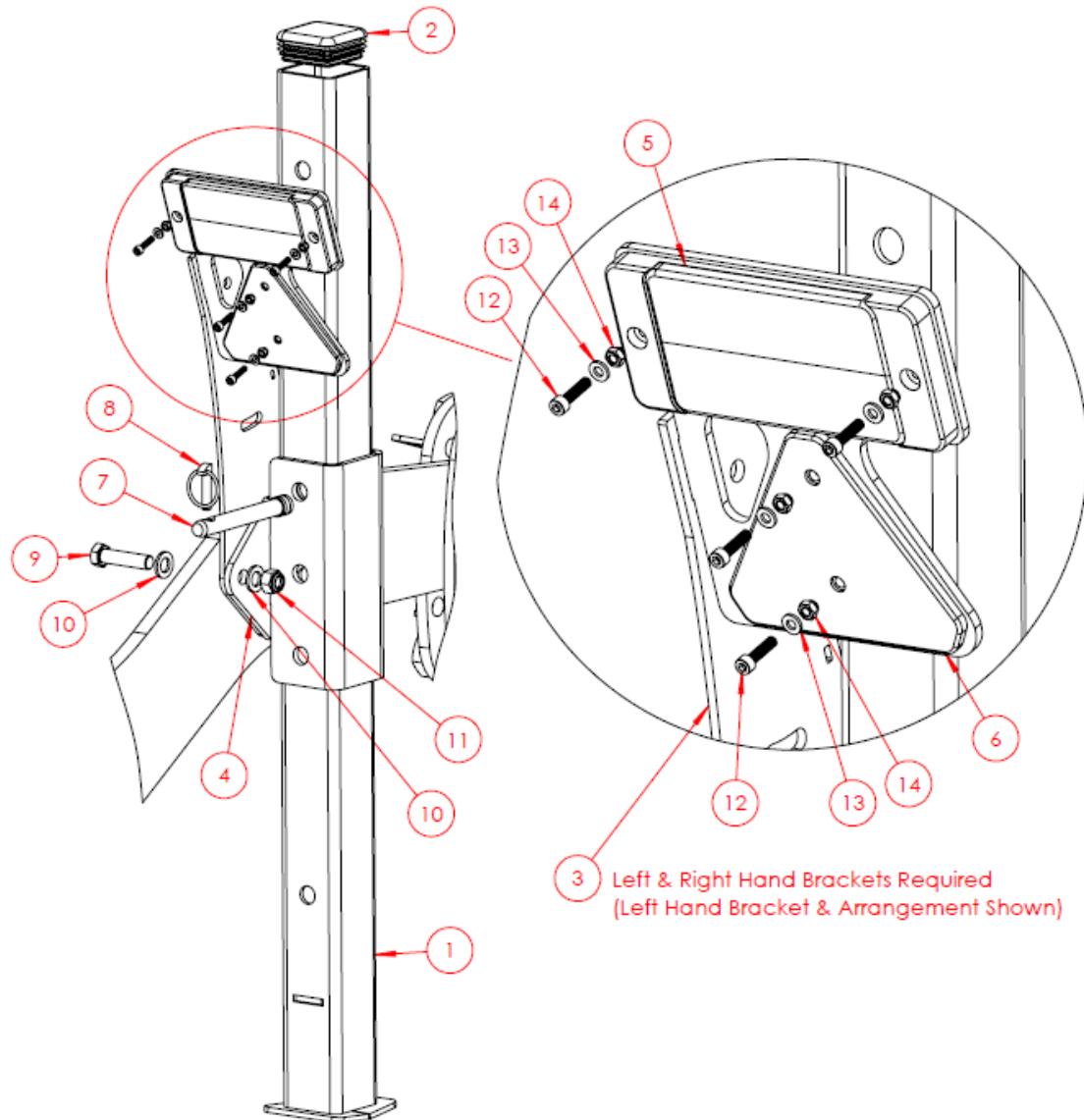
6.7.10 Packer Mounting Arrangement

Note: Auto Reset frame used for reference. Shear pin frame will be visually different, but arrangement remains the same.



Item No.	Part Number	Description	Qty
1	SWM30110	M30x110 Bolt	2
2	SWM30001	M30 Washer – Flat	4
3	SWM30004	M30 Nut – Nylock	2
4	SW129	Packer Arm Retention Plate	2
5	SW227	Spacer – 15mm	4
6	SWP20x80HDP	Pin – Handle Depth Pin	4
7	SWB105	Lynch Pin	4

6.7.11 Stand & Lights Bracket Assembly

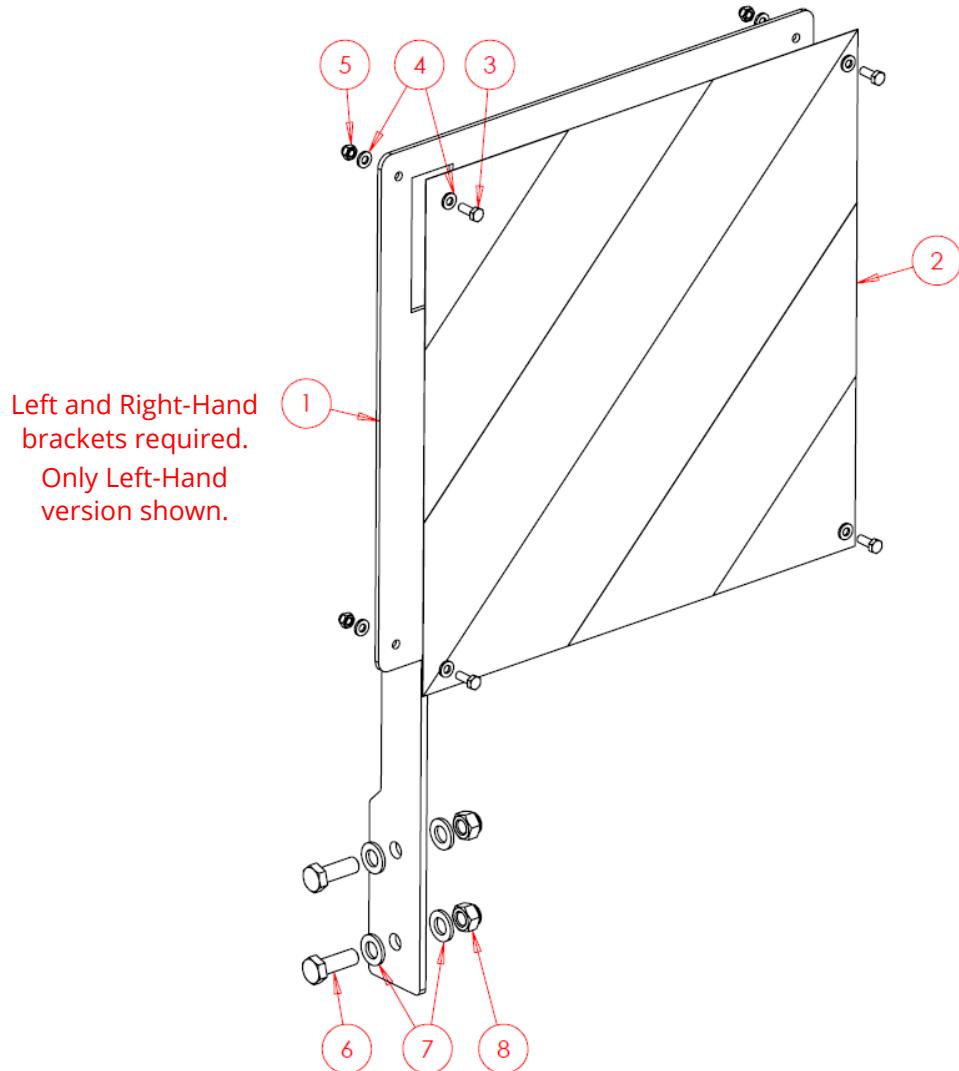


Item No.	Part Number	Description	Qty
1	SW117	Stand	2
2	SWB144	Plastic Bung	2
3	SW761	Light Bracket LH	1
3	SW760	Light Bracket RH (Not Shown)	1
4	SW112	Stand Guide	2
5	SWB715	Rear Light Stop Light / Indicator	2
6	SWB162	Reflector - Red Triangle	2
7	SW118	Stand Pin	2
8	SWB105	Lynch Pin	2
9	SWM1665	M16x65 Bolt	4
10	SWM16001	M16 Washer - Flat	8

11	SWM16004	M16 Nut – Nylock	4
12	SWM625AKH	M6x25 Cap Head Screw	8
13	SWM6001	M6 Washer – Flat	8
14	SWM6004	M6 Nut – Nylock	8

6.8 Optional Extras/Attachments

6.8.1 Hazard Boards

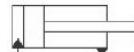
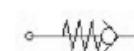
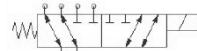
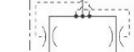


Quantities below are per machine.

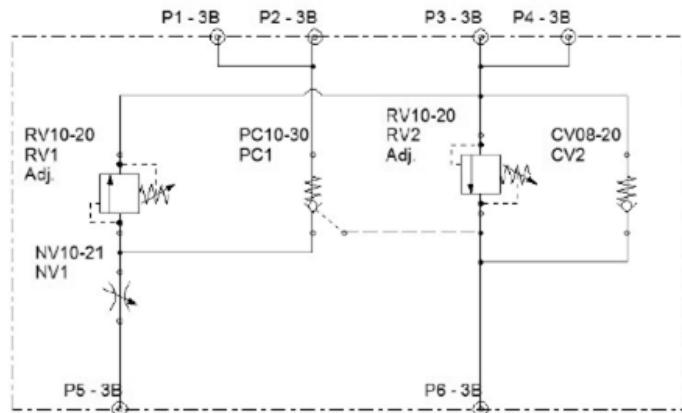
Item No.	Part Number	Description	Qty
1	SWA2665	LH Bracket	1
1	SWA2664	RH Bracket (Not Shown)	1
2	SWB651	Hazard Board	2
3	SWM616	M6x16 Screw	8
4	SWM6001	M6 Washer - Flat	16
5	SWM6004	M6 Nut - Nylock	8
6	SWM1235	M12x35 Screw	4
7	SWM12001	M12 Washer - Flat	8
8	SWM12004	M12 Nut - Nylock	4

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
	= Flow Divider/Combiner
	= Pilot Operated Relief Valve
	= Flow Restrictor

Auto Reset Valve:



7.1 S3AR - Hydraulic Function Schematic

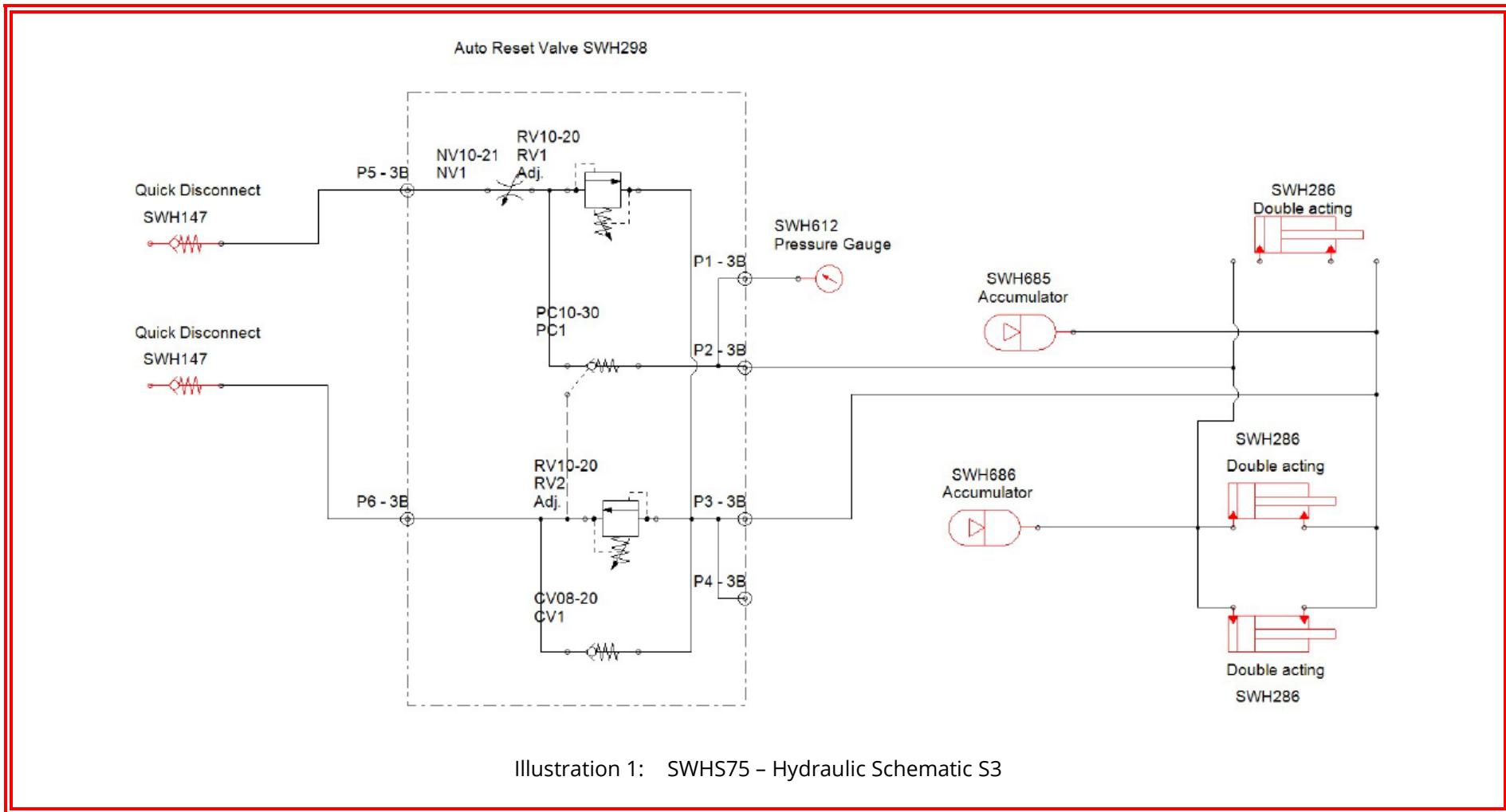


Illustration 1: SWHS75 – Hydraulic Schematic S3

7.2 S4AR - Hydraulic Function Schematic

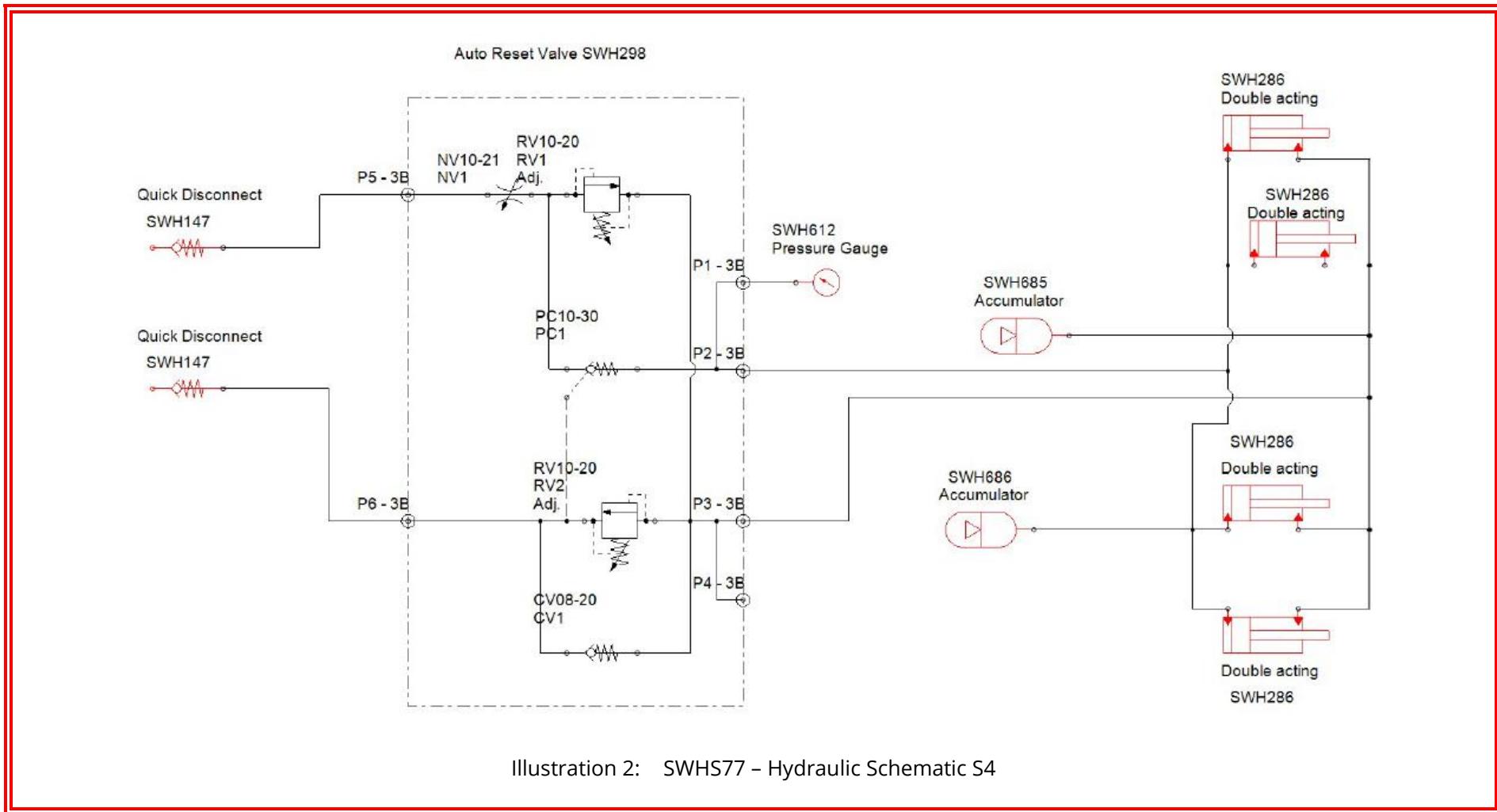


Illustration 2: SWHS77 – Hydraulic Schematic S4

7.3 S5AR - Hydraulic Function Schematic

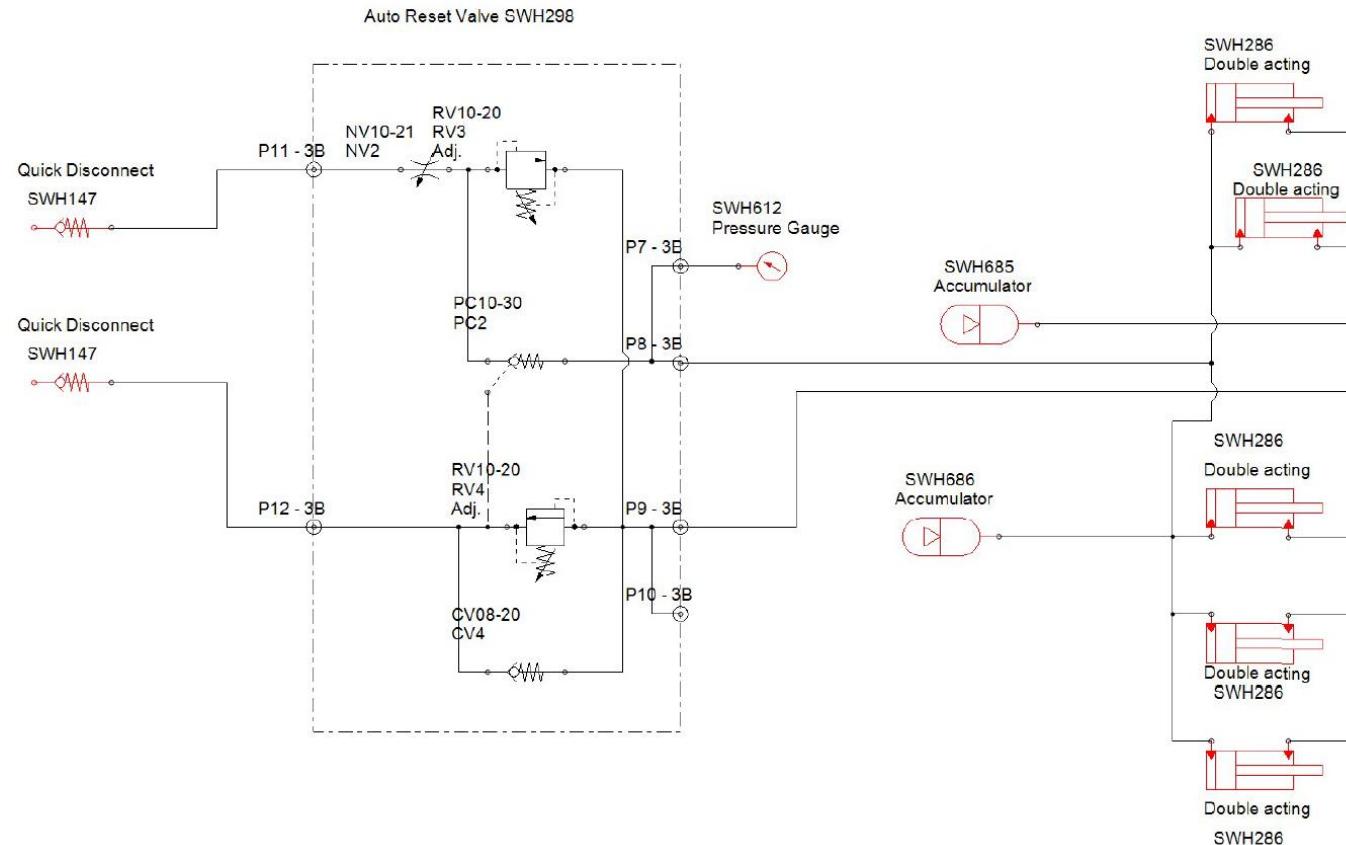
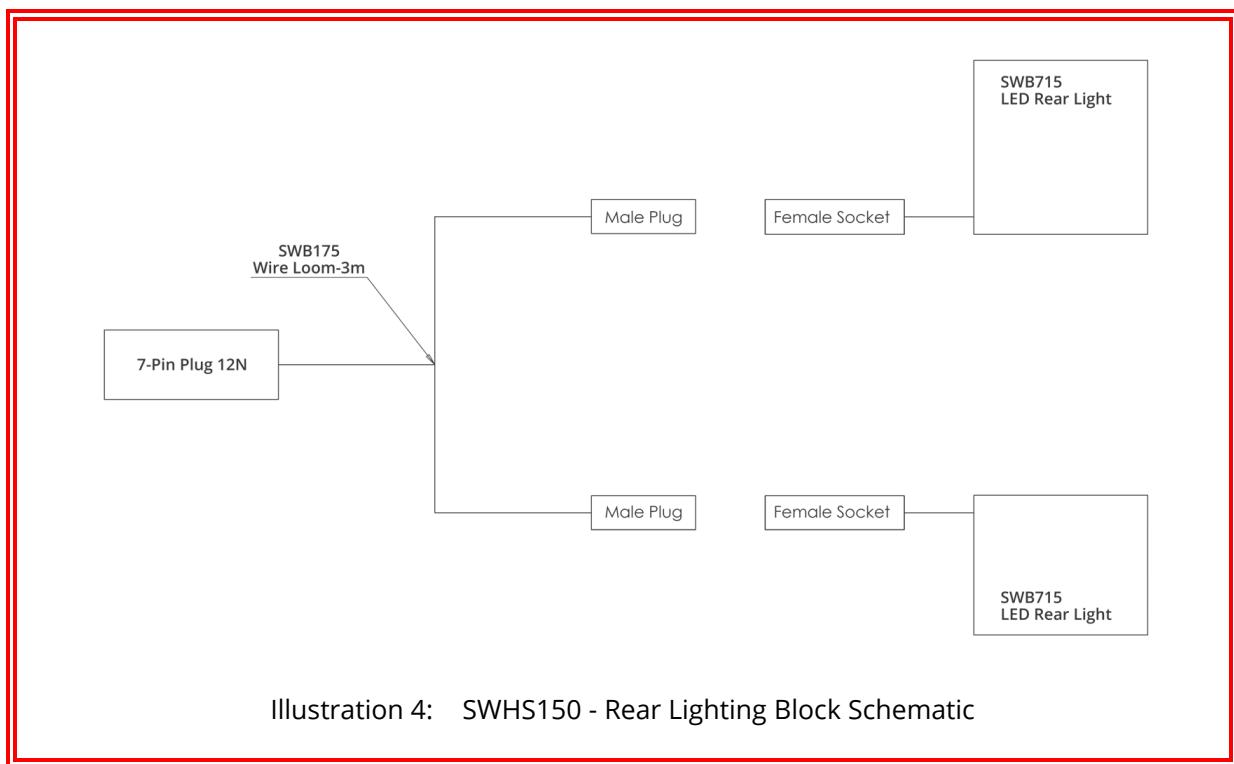


Illustration 3: SWHS79 – Hydraulic Schematic S5

8. Electrical Schematics



9. Standard Torque Values

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

Standard Toque 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](#)