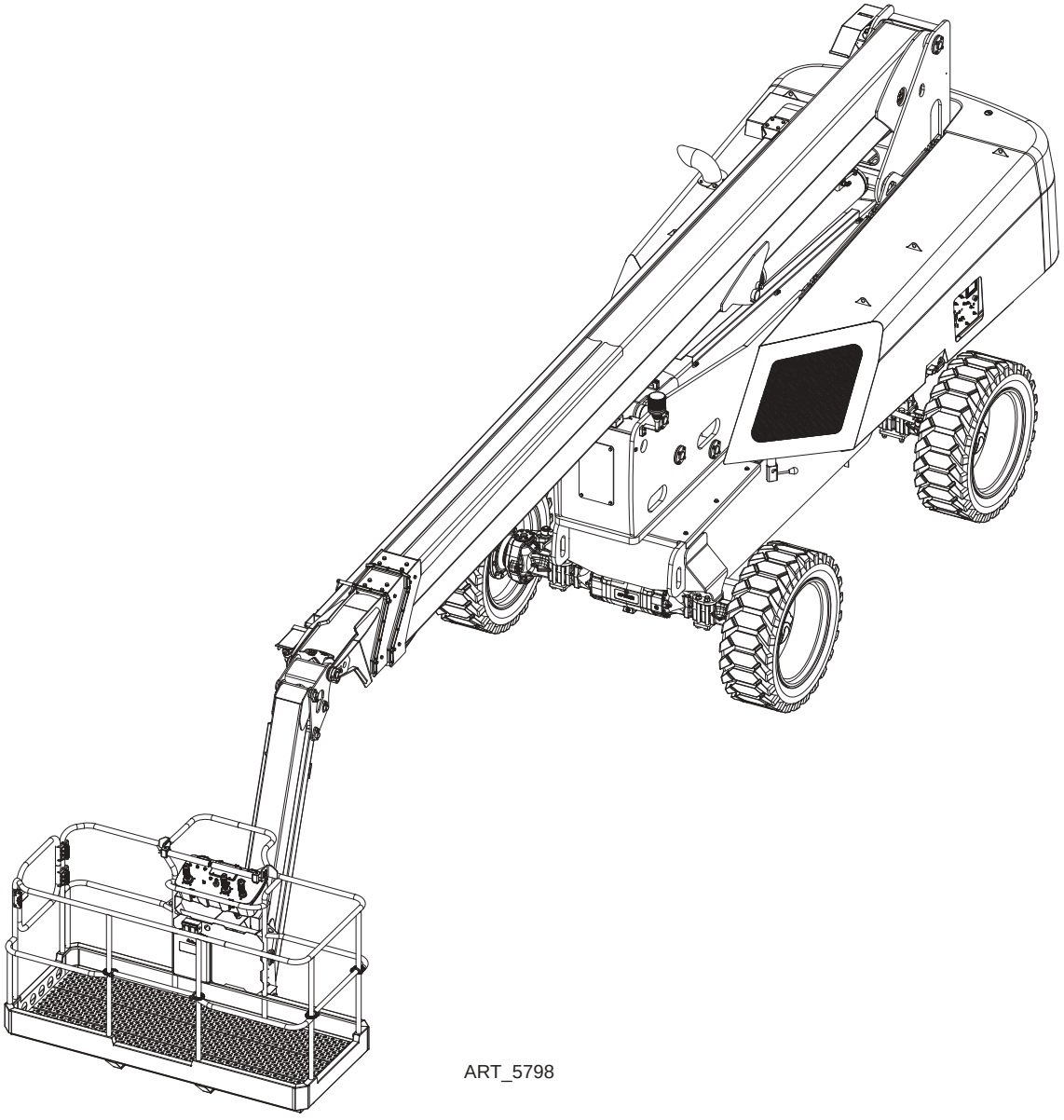
Service & Parts Manual

85-J Diesel



ART_5798

Meets requirements of ANSI A92.20-2020 and CSA B354.6-2019.

Serial Number Range 14900000 - Up

Part # 95804
October 2024

Revision History

Date	Reason for Update
June 2024	New Release
September 2024	Added 48180 Added Lockout Cylinder Valve Assembly Updated descriptions of 47702, 47706, 47708, 47710, 47712, 47714, 47728
October 2024	Added 49013

MEC Aerial Work Platforms

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Table of Contents

Service Introduction

This Service section is designed to provide you, the customer, with the instructions needed to properly maintain the MEC self-propelled aerial work platform. When used in conjunction with the illustrated Parts section in this manual and the Operator's Manual (provided separately), this manual will assist you in making necessary adjustments and repairs, and identifying and ordering the correct replacement parts.

All parts represented here are manufactured and supplied in accordance with MEC quality standards. We recommend that you use genuine MEC parts to ensure proper operation and reliable performance.

To obtain maximum benefits from your MEC Aerial Work Platforms, always follow the proper operating and maintenance procedures. Only trained authorized personnel should be allowed to operate or service this machine. Service personnel should read and study the Operator's, and the Service and Parts Manuals in order to gain a thorough understanding of the unit prior to making any repairs.

MEC Operator Policy

Note: *The best method to protect yourself and others from injury or death is to use common sense. If you are unsure of any operation,* ***don't start*** *until you are satisfied that it is safe to proceed and have discussed the situation with your supervisor.*

Service personnel and machine operators must understand and comply with all warnings and instructional decals on the body of the machine, at the ground controls, and platform control console.

DANGER

MODIFICATIONS OF THIS MACHINE FROM THE ORIGINAL DESIGN AND SPECIFICATIONS WITHOUT WRITTEN PERMISSION FROM MEC ARE STRICTLY FORBIDDEN. A MODIFICATION MAY COMPROMISE THE SAFETY OF THE MACHINE, SUBJECTING OPERATOR(S) TO SERIOUS INJURY OR DEATH.

MEC's policies and procedures demonstrate our commitment to Quality and our relentless ongoing efforts towards Continuous Improvement, due to which product specifications are subject to change without notice.

Any procedures not found within this manual must be evaluated by the individual to assure oneself that they are "proper and safe."

Your MEC Aerial Work Platform has been designed, built, and tested to provide many years of safe, dependable service. Only trained, authorized personnel should be allowed to operate or service the machine.

MEC, as manufacturer, has no direct control over machine application and operation. Proper safety practices are the responsibility of the user and all operating personnel.

If there is a question on application and/or operation, contact MEC Aerial Work Platforms:

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Safety Symbols & General Safety Tips

MEC manuals and decals use symbols, colors and signal words to help you recognize important safety, operation and maintenance information.

DANGER	**RED and the word DANGER – Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**
WARNING	**ORANGE and the word WARNING – Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**
CAUTION	**YELLOW with alert symbol and the word CAUTION – Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**
CAUTION	**YELLOW without alert symbol and the word CAUTION – Indicates a potentially hazardous situation which, if not avoided, may result in property damage.**
NOTICE	**GREEN and the word NOTICE – Indicates operation or maintenance information.**

Regular inspection and constant maintenance is the key to efficient economical operation of your aerial work platform. It will help to assure that your equipment will perform satisfactorily with a minimum of service and repair.

The actual operating environment of the machine governs the inspection schedule. Correct lubrication is an essential part of the preventative maintenance to minimize wear on working parts and ensure against premature failure. By maintaining correct lubrication, the possibility of mechanical failure and resulting downtime is reduced to a minimum.

- Never leave hydraulic components or hoses open. They must be protected from contamination (including rain) at all times.
- Never open a hydraulic system when there are contaminants in the air.
- Always clean the surrounding area before opening hydraulic systems.
- Use only recommended lubricants. Improper lubricants or incompatible lubricants may be as harmful as no lubrication.
- Watch for makeshift “fixes” which can jeopardize safety as well as lead to more costly repair.

Specifications

Work Height[1]		92ft	28.1m
Platform Height		85ft 8in	26.1m
Maximum Drive Height		85ft 8in	26.1m
Maximum Outreach	Telescopic	70ft	21.3m
	Articulated	56ft	17m
Turntable Swing		360° Continuous	
Jib Range Of Motion		133°	
Platform Rotation		180° (90° Each Side)	
Machine Weight[2] (Unloaded)		37,480lbs	17,000kg
Lift Capacity	Unrestricted	600lbs	272kg
	Restricted	900lbs	408kg
Maximum Occupants		2 Person	
Stowed Height		9ft 5in	2.92m
Overall Length		37ft 3in	11.37m
Overall Width		8ft 4in	2.59m
Tailswing		5ft 6in	1.71m
Wheel Base		9ft 1in	2.8m
Platform Details	Width	90in	2.28m
	Depth	40in	1m
	Entry	1 End Swing Gate, 2 Slide Bar Entries	
Turning Radius, Inside		6ft 1in	1.87m
Ground Clearance		1ft 3in	0.41m
Lift Speed		55-70 seconds	
Extend Speed		50-60 seconds	
Jib Lift Speed		24-36 seconds	
Drive Speed (Proportional)	Stowed	3.7mph	6km/h
	Raised/Extended	0.6mph	1.1km/h
Gradeability	Stowed, Downhill	45% (24.2°)	
	Stowed, Uphill	45% (24.2°)	
Breakover Angle		40% (22°)	
Axle Oscillation		14° (7° Each Side)	
Maximum Wind Speed		28mph	12.5m/sec (45km/h)
Engine		75hp Deutz TD 2.9 L4	
Fuel Type		Diesel	
Fuel Capacity		35gal	135L
Hydraulic Fluid Capacity		52gal	200L

Meets requirements of ANSI A92.20-2020 and CSA B354.6-2019.
Allowable ambient temperature range: -20° F to 120° F (-29° C to 49°C).
Consult with MEC for operation outside of this range.
[1] Working Height adds 6 feet (2 meters) to platform height.
[2] Weight may increase with certain options.

Bolt Torque Specification - American Standard

Fasteners

Use the following values to apply torque unless a specific torque value is called out for the part being used.

American Standard Cap Screws								
SAE Grade	**5**				**8**			
Cap Screw Size (Inches)								
	Torque				**Torque**			
	Ft. Lbs		**Nm**		**Ft. Lbs**		**Nm**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13
1/4 - 28	8	9	11	12	10.5	12	14	16
5/16 - 18	14	15	19	20	18.5	20	25	27
5/16 - 24	17.5	19	12	26	23	25	31	34
3/8 - 16	26	28	35	38	35	37	47.5	50
3/8 - 24	31	34	42	46	41	45	55.5	61
7/16 - 14	41	45	55.5	61	55	60	74.5	81
7/16 - 20	51	55	69	74.5	68	75	92	102
1/2 - 13	65	72	88	97.5	86	96	116	130
1/2 - 20	76	84	103	114	102	112	138	152
9/16 - 12	95	105	129	142	127	140	172	190
9/16 - 18	111	123	150	167	148	164	200	222
5/8 - 11	126	139	171	188	168	185	228	251
5/8 - 18	152	168	206	228	203	224	275	304
3/4 - 10	238	262	322	255	318	350	431	474
3/4 - 16	274	302	371	409	365	402	495	544
7/8 - 9	350	386	474	523	466	515	631	698
7/8 - 14	407	448	551	607	543	597	736	809
1 - 8	537	592	728	802	716	790	970	1070
1 - 14	670	740	908	1003	894	987	1211	1137

Torque values apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil.

If special graphite grease, molydisulphide grease, or other extreme pressure lubricants are used, these torque values do not apply.

Bolt Torque Specification - Metric Standard

Fasteners

Use the following values to apply torque unless a specific torque value is called out for the part being used.

Metric Cap Screws								
Metric Grade	**8.8**				**10.9**			
Cap Screw Size (Millimeters)								
	Torque				**Torque**			
	Ft.	**Lbs**	**Nm**		**Ft.**	**Lbs**	**Nm**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
M6 × 1.00	6	8	8	11	9	11	12	15
M8 × 1.25	16	20	21.5	27	23	27	31	36.5
M10 × 1.50	29	35	39	47	42	52	57	70
M12 × 1.75	52	62	70	84	75	91	102	123
M14 × 2.00	85	103	115	139	120	146	163	198
M16 × 2.50	130	158	176	214	176	216	238	293
M18 × 2.50	172	210	233	284	240	294	325	398
M20 × 2.50	247	301	335	408	343	426	465	577
M22 × 2.50	332	404	450	547	472	576	639	780
M24 × 3.00	423	517	573	700	599	732	812	992
M27 × 3.00	637	779	863	1055	898	1098	1217	1488
M30 × 3.00	872	1066	1181	1444	1224	1496	1658	2027

Torque values apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil.

If special graphite grease, molydisulphide grease, or other extreme pressure lubricants are used, these torque values do not apply.

Hydraulic Components Torque Table

Note: Always lubricate threads with clean hydraulic fluid prior to installation.

Use the following values to torque hydraulic components when a specific value is not available. Always check for torque values in the following places before relying on the Hydraulic Components Torque Table.

- Parts drawings and service instructions in this manual.
- Packaging and instruction sheets provided with new parts.
- Instruction manuals provided by the manufacturer of the component being serviced.

SAE Port Series	Cartridge Poppet		Fittings		Hoses	
	Ft. lbs	Nm	Ft. lbs	Nm	In. lbs	Nm
#4	N/A	N/A	N/A	N/A	135 - 145	15 - 16
#6	N/A	N/A	10 - 20	14 - 27	215 - 245	24 - 28
#8	25 - 30	31 - 41	25 - 30	34 - 41	430 - 470	49 - 53
#10	35 - 40	47 - 54	35 - 40	47 - 54	680 - 750	77 - 85
#12	85 - 90	115 - 122	85 - 90	115 - 122	950 - 1050	107 - 119
#16	130 - 140	176 - 190	130 - 140	176 - 190	1300 - 1368	147 - 155

Supporting the Boom Assembly

WARNING **NEVER perform work under the boom assembly with the platform elevated without first supporting the boom assembly.**

DO NOT work beneath the boom assembly with the platform elevated unless the boom assembly is properly supported.

Use two slings and overhead hoist rated for 5 tons (4,536kg) or more.

Thread the sling through the opening in the boom post as shown below. Connect it to the overhead hoist, then lift enough that the weight of the boom assembly is being supported by the hoist.

BEWARE OF CABLE TRACK WHEN THREADING THE SLING ON THE BOOM!

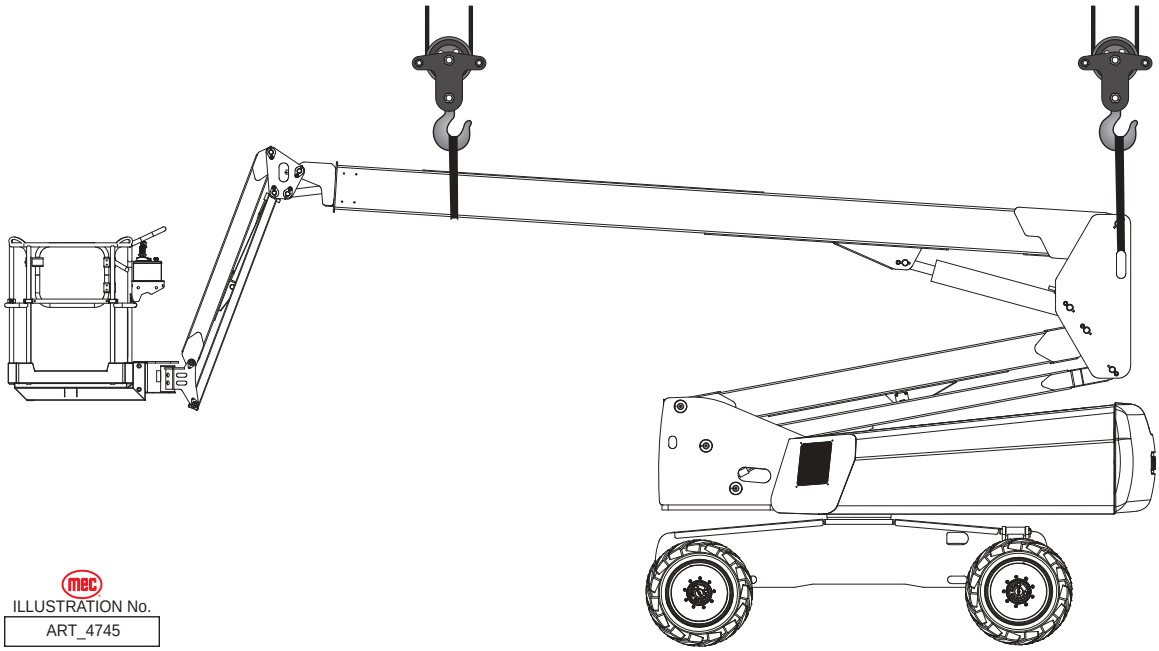


ILLUSTRATION No.
ART_4745

Machine Systems

Hydraulic System

WARNING

HYDRAULIC FLUID UNDER PRESSURE CAN PENETRATE AND BURN SKIN, DAMAGE EYES, AND MAY CAUSE SERIOUS INJURY, BLINDNESS, AND EVEN DEATH. CORRECT LEAKS IMMEDIATELY.

HYDRAULIC FLUID LEAKS UNDER PRESSURE MAY NOT ALWAYS BE VISIBLE. CHECK FOR PIN HOLE LEAKS WITH A PIECE OF CARDBOARD, NOT YOUR HAND.

CAUTION

Hydraulic fluid leaks under pressure may not always be visible. Check for pin hole leaks with a piece of cardboard, not your hand.

Electrical System

CAUTION

Prevent damage to battery and/or electrical system;

- **Always disconnect the negative battery cable first.**
- **Always connect the positive battery cable first.**

When the negative cable is installed, a spark will occur if contact is made between the positive side of the battery and a metal surface on the machine. This can cause damage to the electrical system, battery explosion, and personal injury.

Total System

WARNING

ENGINE COOLANT LEVEL MUST BE CHECKED ONLY AFTER ENGINE HAS COOLED. IF RADIATOR CAP IS REMOVED WHILE THE COOLANT IS AT NORMAL OPERATING TEMPERATURE, PRESSURE WITHIN THE COOLANT SYSTEM WILL FORCE HOT LIQUID OUT THROUGH THE FILLER OPENING AND MAY CAUSE SEVERE SCALDING.

FAILURE TO PERFORM PREVENTIVE MAINTENANCE AT RECOMMENDED INTERVALS MAY RESULT IN THE UNIT BEING OPERATED WITH A DEFECT THAT COULD RESULT IN INJURY OR DEATH OF THE OPERATOR.

IMMEDIATELY REPORT TO YOUR SUPERVISOR ANY DEFECT OR MALFUNCTION. ANY DEFECT SHALL BE REPAIRED PRIOR TO CONTINUED USE OF THE AERIAL WORK PLATFORM.

INSPECTION AND MAINTENANCE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL FAMILIAR WITH THE EQUIPMENT.

Component Locations

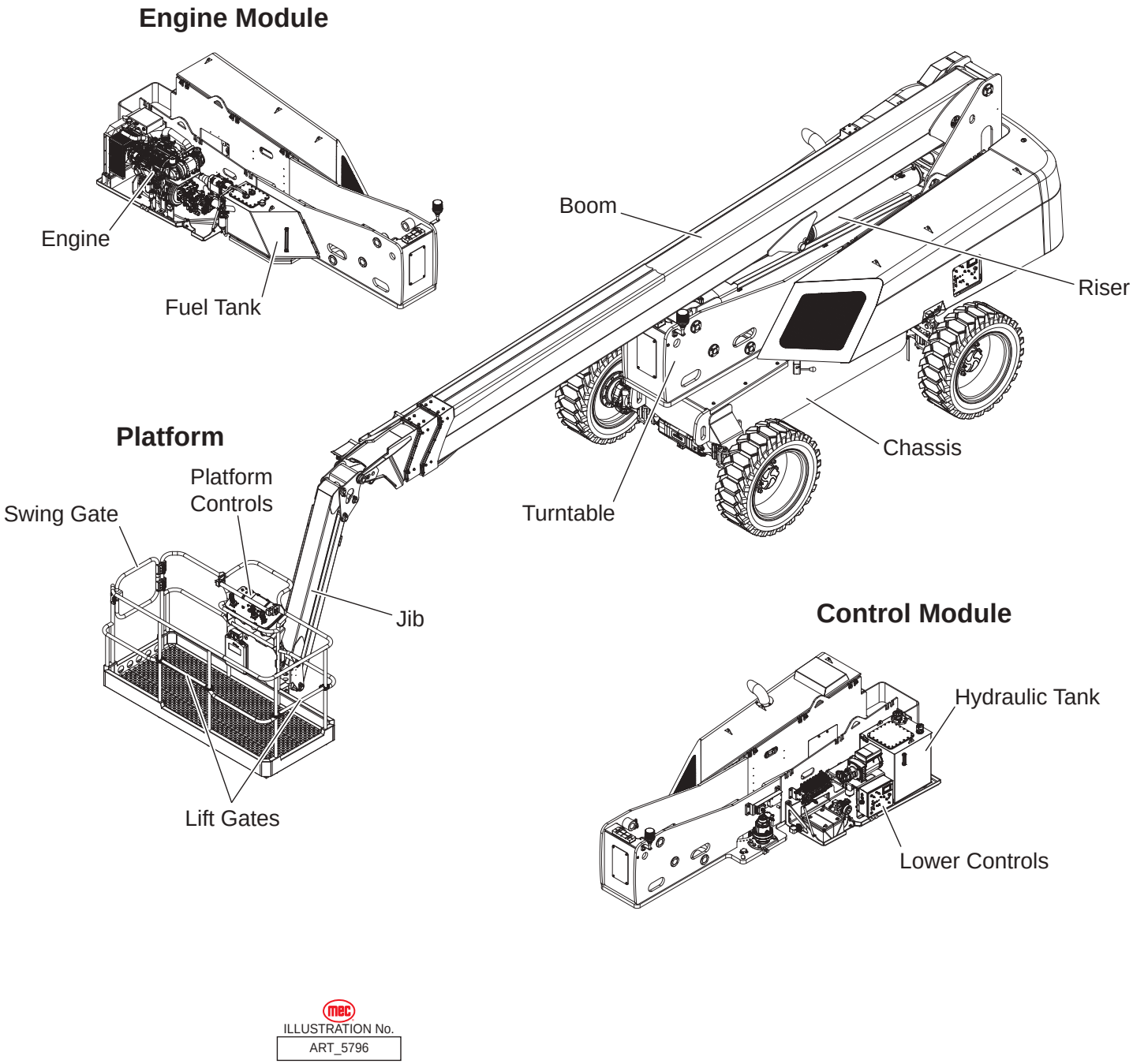


ILLUSTRATION No.
ART_5796

Emergency Systems and Procedures

WARNING

IF THE CONTROL SYSTEM FAILS WHILE THE PLATFORM IS ELEVATED, HAVE AN EXPERIENCED OPERATOR USE THE EMERGENCY LOWERING PROCEDURE TO SAFELY LOWER THE PLATFORM.

DO NOT ATTEMPT TO CLIMB DOWN ELEVATING ASSEMBLY.

Emergency Stop

The machine is equipped with an Emergency Stop switch on both control panels.

- Press the Emergency Stop switch at any time to stop all machine functions.
- Pull the button to reset it.

Selector Switch set to Platform

- Either switch will stop all machine functions.
- Both switches must be reset or machine will not operate.

Selector Switch is set to Base

- The upper controls are locked out.
- The lower controls switch must be reset or the machine will not operate.
- The machine will operate from the lower controls if the upper controls switch is tripped.

ART_3353

Auxiliary Power System & Test

If primary power fails while the platform is elevated, use the Auxiliary Power System to safely lower the platform.

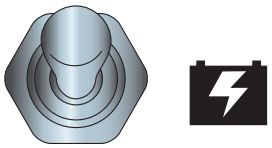
WARNING

Do not climb down the boom assembly or exit the platform while elevated.

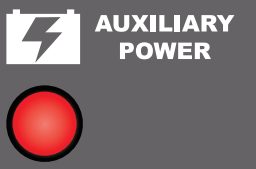
ALWAYS check over, under and around the machine for personnel, structures and obstructions before activating any control function and continue to watch for hazards while operating the machine.

Platform Controls

Upper Auxiliary Power Switch

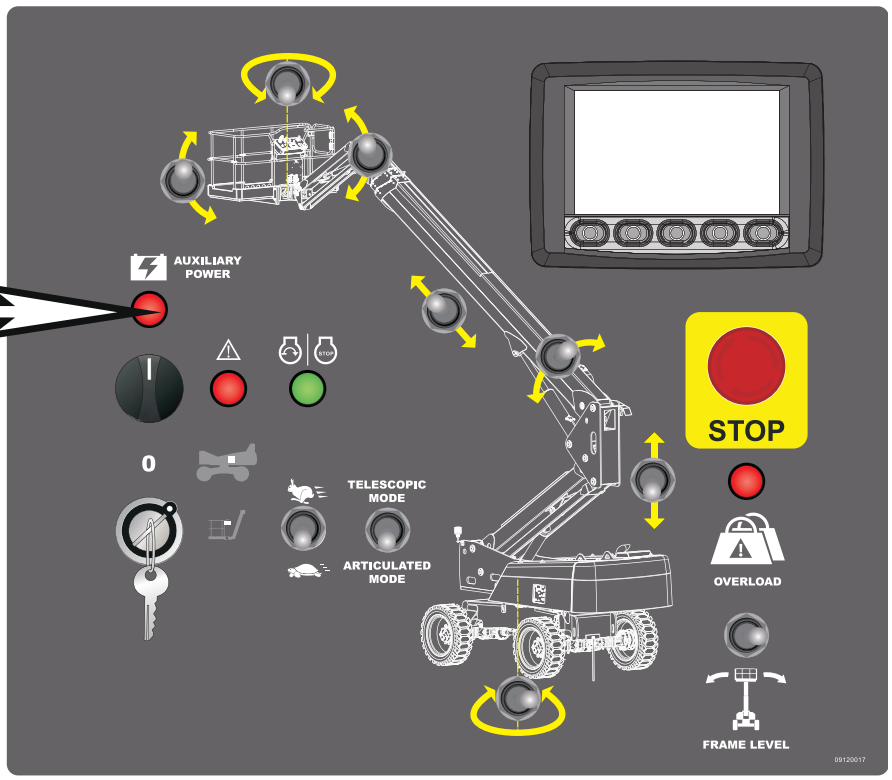


Auxiliary Power Switch



Auxiliary Power Button

Base Controls



Lower Auxiliary Power Button

ILLUSTRATION No.
ART_5793

The Auxiliary Power System is used to lower the platform in case of primary power failure. To lower the platform, activate the Auxiliary Power Switch to run the auxiliary hydraulic pump.

This function uses battery power from the auxiliary battery to lower the platform.

- Push and hold the Auxiliary Power Switch, then use the Boom Extend/Retract function to retract the boom.
- Continue to hold the Auxiliary Power Switch, then use the Boom Lift/Lower function to lower the boom.

Note: The Auxiliary Power System is disabled when the engine is running.

Note: The Auxiliary Power Switch serves as an enable switch. It is not necessary to use the primary function enable switch.

Transport and Lifting Instructions

Safety Information

This section is provided for reference and does not supersede any government or company policy regarding the loading, transport or lifting of MEC machinery.

WARNING

Truck drivers are responsible for loading and securing machines, and should be properly trained and authorized to operate MEC machinery. Drivers are also responsible for selecting the correct and appropriate trailer according to government regulations and company policy. Drivers must ensure that the machine and chains are strong enough to hold the weight of the machine (see the serial number plate for machine weight).

While loading and unloading, the transport machine must be parked on a level surface and secured to prevent rolling.

Free-wheel configuration for Winching or Towing

RUNAWAY HAZARD!

DANGER

After releasing the brakes there is nothing to stop machine travel. Machine will roll freely on slopes.

ALWAYS chock the wheels before manually releasing the brakes.

The machine can be winched or towed short distances at speeds not to exceed 5mph (8km/h). If necessary, to transport the machine over longer distances and at greater speeds, use a suitable machine for transport.

Before towing the machine, retract and lower the telescopic boom completely and remove the load from the platform.

Do not use chains for towing the machine. Use steel cables with rings at the ends, or a special rigid tow bar. Make sure the cable is in good condition. Make sure the cable has a nominal carrying capacity 1.5 times the weight of the machine to be towed. See serial number plate for machine weight.

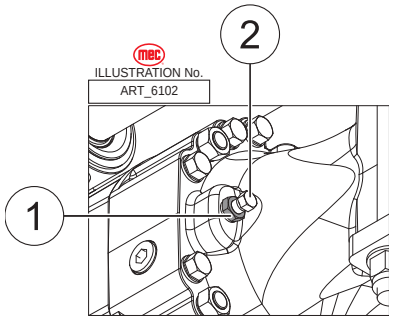
Connect one end of the cable to the two front eyelets on the towing machine. Connect the other end of the cable to the two front eyelets of the 85-J. **DO NOT ATTACH ANYTHING TO THE PLATFORM!**

Remove any slack from the cables to prevent movement once the brakes are released. See page 15 for instructions on how to release the brakes.

Before towing or winching the machine, it is necessary to release the brakes. Reset the brakes after towing or winching.

Brake Release Procedure

Unscrew lock nut 1 of power screw 2. Tighten the power screw to fit flush to disengage the brake. Repeat the operation for the other three screws on the same axle, two screws are on the front and back of the axle. And then repeat the operation for front axle.



Remove the hoses from the port A and B of the driven pump and then connect two ends of the hoses removed together after completing the brake release procedure.

Make sure to reapply the brakes before performing any operation! To reapply the brakes, follow the instructions in reverse!

WARNING

MAKE SURE THE CABLE HAS A NOMINAL CARRYING CAPACITY 1.5 TIMES THE WEIGHT OF THE Machine TO BE TOWED! SEE SERIAL NUMBER PLATE FOR MACHINE WEIGHT!

Have an operator operate on the machine to be towed to control the moving and steering. An observer must stand in a safe position to monitor operations. The observer must not stand on the machine being towed.

Tighten the tow cable slowly. Avoid sudden movements to avoid overload on the cable. Keep the angle between the machine and the towing cable minimum. **It must not exceed 30°!**.

Driving or Winching onto or off of a Transport Machine

Before loading the machine, orient the turntable so that the platform is over the non-steering wheels so that the Rotation Lock may be engaged later in the loading process.

WARNING

ONLY properly trained and qualified operators shall load and unload this machine.

Read and understand all safety, control, and operating information found on the machine and in this manual before operating the machine.

Whether winching or driving the machine on to a truck or trailer, always check the area for dangerous situations before moving the machine.

If driving the machine, always use a second person acting as a spotter to make sure the person loading the machine avoids dangerous situations.

Driving

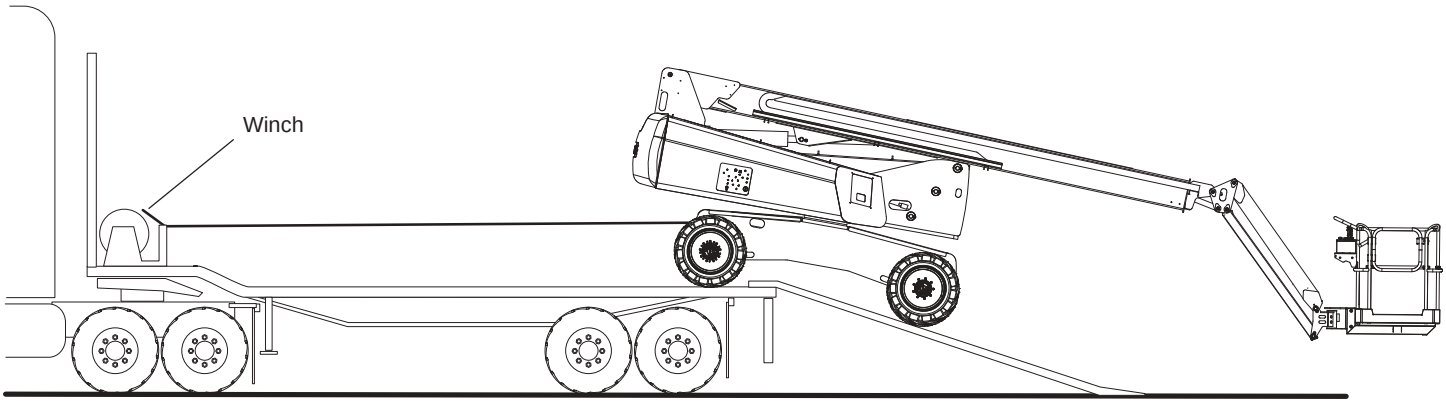
- Turn the Base Key Switch to PLATFORM. Check that the Emergency Stop Switch is reset by pulling it.
- Enter the platform and reset the Platform Emergency Stop Switch.
- Test platform control functions.

- Raise the jib slightly for platform ground clearance.
- Carefully drive the machine off or on to the transport machine.
- Make sure you can see the second person giving guidance.

Note: The brakes are automatically released for driving and will automatically apply when the control handle is returned to neutral which causes the machine to stop.

Winching

- Chock the wheels, then disengage brakes (see Brake Release Procedure on page 15).
- Carefully operate the winch to lower the machine down the ramp or pull the machine up the ramp.
- Chock the wheels and engage the brakes before disengaging the winch.



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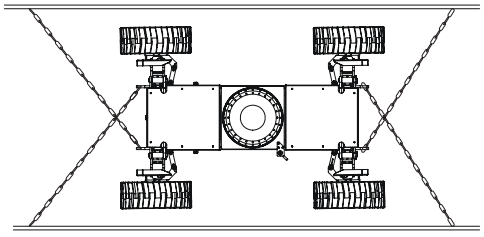
Securing to Truck or Trailer for Transport

- Turn the key Selector Key Switch to OFF and remove the key before transport.
- Turn the Battery Disconnect Switch to OFF before transport.
- Inspect the entire machine for loose or unsecured items.
- Secure the chassis.
- Engage the Rotation Lock.
- Secure the platform.

Securing the Chassis

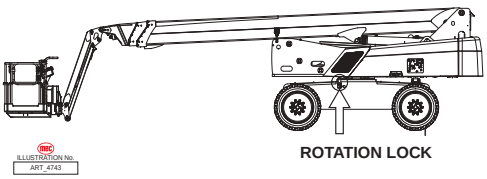
Make sure each of your chains is rated to hold the machine's weight (see serial number plate or Specifications). Use at least 4 chains.


ART_5799

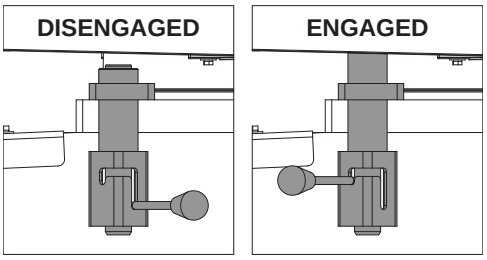
Do not attach chain hooks directly to the machine. Loop the chain through the tie-down point and connect the chain hook to the chain.

Be sure chains are arranged so that they do not damage the machine.

Engaging the Rotation Lock

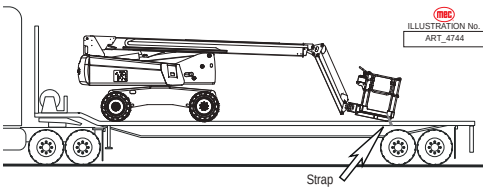


Before transport, rotate the turntable so that one of the three locking holes aligns with the Rotation Lock located on the chassis. The lock holes are located on the bottom of the Controls Module. The Rotation Lock is located on the chassis behind the left front wheel.

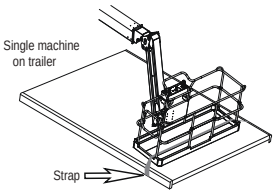


Lift the Rotation Lock using the attached pin, then rotate to the right and lower it into the shallow depression to engage. (See illustration.) Disengage the Rotation Lock before operation.

Securing the Platform



With the boom completely stowed, raise the jib slightly, then use the Platform Level function to lower the platform until the front of the platform touches the trailer surface.



Route the tie-down strap as shown through the width of the platform, over the toe boards of both side entry points. Tighten securely but do not over-tighten.

Lifting

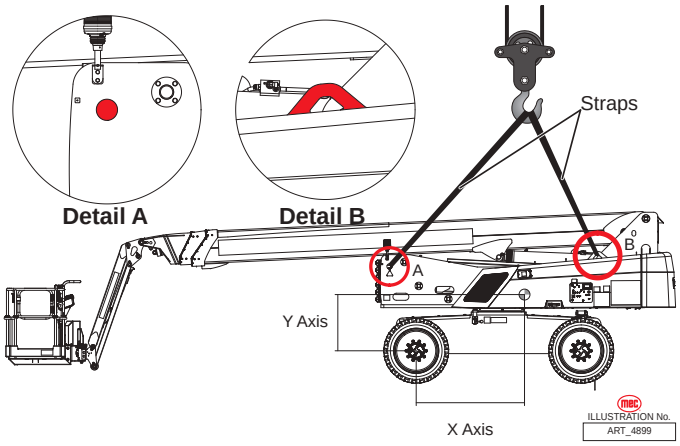
DANGER

Only qualified riggers should rig and lift this machine.

Ensure that the crane capacity, loading surfaces, chains, straps and slings are sufficient to withstand a machine weight of 40,000lbs (18,143kg).

Ensure that the platform is unloaded and that all material and tools have been removed.

Attach lifting hooks as shown in the diagram. 2 hooks towards the platform end of the turntable and 2 hooks above the hoods towards the counterweight end of the turntable.



Carefully move electrical harness away from lifting hardware to prevent damage to the electrical system.

Adjust the lifting devices in such a way as to keep the machine level and without causing damage to it.

X-Axis	Y-Axis
72.4in (1838.9m)	37.5in (952.5m)

Maintenance

Tag and remove a damaged, malfunctioning or modified machine from service. DO NOT use a damaged, malfunctioning or modified machine.

IMPORTANT: Scheduled maintenance inspection checklists are included in this manual for use only by qualified service technicians. Only qualified service technicians may perform repairs to the machine. After repairs are completed, the operator must perform a Pre-Start Inspection before proceeding to the Functions Test.

Hydraulic fluid under pressure can penetrate and burn skin, damage eyes, and may cause serious injury, blindness, and death. Repair leaks immediately. Fluid leaks under pressure may not always be visible. Check for pin hole leaks with a piece of cardboard, not your hand.

NEVER perform work under the boom assembly with the platform elevated without first supporting the boom assembly.

WARNING

Failure to perform scheduled maintenance at recommended intervals may result in injury or death. Keep maintenance records current and accurate.

Immediately report any damage, defect, unauthorized modification or malfunction to your supervisor. Any defect must be repaired prior to continued use. DO NOT use a damaged, modified or malfunctioning machine.

DO NOT hang anything over any control handle at any time.

Never leave hydraulic components or hoses open. Plug all hoses and fitting immediately after disassembly to protect the system from outside contamination (including rain).

Never open a hydraulic system when there are contaminants in the air.

Always clean the surrounding area before opening hydraulic systems.

CAUTION

Use only recommended lubricants. Improper lubricants or incompatible lubricants may cause as much damage as no lubrication.

Watch for makeshift “fixes” which can jeopardize safety as well as lead to more costly repair.

Inspection and maintenance should be performed by qualified personnel familiar with the equipment.

Daily Maintenance

The following maintenance should be done daily or every 10 hours of operation, whichever comes first.

1) Inspect the Machine

To ensure the maximum operating life of the machine, thoroughly inspect the machine before starting the machine.

1. Look around and under the machine, checking to make sure that there are none of the following:
   - Loose, rusty, missing or damaged hardware
   - No accumulated dirt or debris
   - Leaking oil, fuel, and other liquids
   - Broken or worn parts
2. Check the state of the machine and hydraulic components.
3. Check the condition of the tires and replace them if necessary.
4. Check the oil, coolant, and other fluid levels and refill if necessary.
5. Remove all accumulated dirt and debris. Carry out all the repairs needed before starting up the machine.
6. Check the state of the battery for corrosion and cleaning, and the current charge capacity is shown on the diagnostic panel.

2) Check the Engine oil level

WARNING

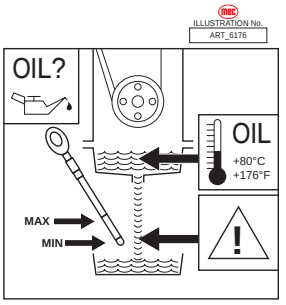
Do not check with the engine running!
Do not smoke or have open flames nearby!
Danger of burns!

When working on the oil system, make sure to keep the oil system and nearby areas clean and to keep them thoroughly clean from time to time. Dry any damp areas with air jets. When handling engine oil, make sure to follow all rules and regulations.

Make sure to properly dispose of any used engine oil and filter elements. Do not let the used engine oil spread on the ground. Run a test cycle after replacing. Also make sure that the sealing and pressure of the engine oil is correct and at the correct level.

An insufficient or excessive amount of engine oil level can damage the engine. Make sure that the machine is parked on a flat, level surface and is turned off before checking the engine oil level. Check the engine oil level only while it is warm, 5 minutes after the engine is turned off.

Do not remove the engine oil level rod with the engine running! Danger of burns!

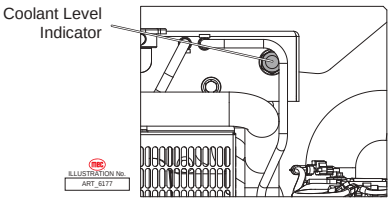


1. Remove the level rod and wipe it clean with a cloth, do not leave fibers. Insert the oil rod up to the stop, remove it and read the engine oil level.
2. The oil level must be between the MIN and MAX level. If necessary, add additional engine oil to reach the MAX level.

3) Check the Coolant level

WARNING

The coolant is pressurized and at a high temperature when the engine is turned on. When the tank cap is removed, the coolant liquid may flow out violently and cause serious burns.
Make sure the engine is cold before working on the cooling system.



1. Make sure that the machine is parked on a flat, level surface.
2. Check the level on the coolant tank placed above the radiator. The fluid level is correct when it is half-way on the inspection window.
3. Open the tank and check the coolant additive concentration ratio using the necessary instrument (e.g. hydrometer, refractometer).
4. If necessary, add more coolant of the correct type until the level indicator shows that the fluid level is in the middle.
5. Put the cap back on and make sure it is tightened properly. Run the engine to bring the coolant up to the required temperature. Switch off the engine and check for any leaks in the hoses. Repair any leaks found.

4) Check the Telescopic Boom sliding blocks

1. Extend the telescopic boom completely.
2. Check to make sure that the boom movement is smooth and that there are no abnormal vibrations, unusual noises, and no part of the boom gets heated due to friction during the movement.
3. Remove the dust guard gaskets located at the head of the extensions and make sure that there is a sufficient layer of grease on the sliding surfaces and on the sliding blocks. For instructions on lubricating the Telescopic Boom sliding blocks, see page 22.

5) Auxiliary Power Test

If the machine engine is running, press the red Emergency Stop Switch to stop the engine, and then pull the red Emergency Stop Switch out to reset it.

Press up and hold the Auxiliary Power Switch while testing the controls of the boom and platform. After making sure that all the functions work properly, release the switch to stop using auxiliary power.

Note: To avoid draining the batteries, limit the test duration time.

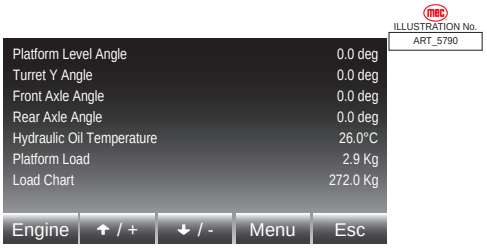
6) Check the Overload Sensor

It’s important to make sure that the overload sensor is in good condition before using the machine. The overload sensor in the platform will show how much weight is in the platform on the diagnostic panel. If the weight in the platform does not exceed the rated load, the machine is safe to operate and will function properly.

If the weight exceeds the rated load, the machine will stop operating and the alarm will beep. The diagnostic panel will state that the weight in the platform is over the rated amount and to remove excess weight. Once the excess weight has been removed, the machine will operate normally.

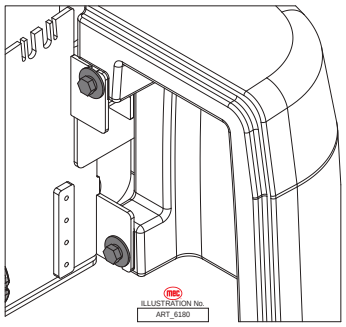
Check to make sure that none of the bolts are missing, rusty, damaged, or loose and that the overload sensor is undamaged.

If the platform is damaged in any way, stop working and make sure to check that the overload sensor is undamaged using the following procedure:



1. Information on the machine's current operating status can be found by pressing down the black button under the Data icon shown on the diagnostic panel.
2. The Load Chart parameter shows the current load in the platform.
3. The Load Chart parameter will show 0lbs (0kg) when the load in the platform is removed completely.
4. The Load Chart parameter will show 600lbs (272kg) at the moment of 600lbs (272kg) being added in the platform.
5. Continue to add weight in the platform, and then the alarm will be activated when the weight is up to 750lbs (340kg). If the alarm does not activate, the machine must be repaired.
6. The accuracy of weighting is ±10%. If the data exceeds it, stop to calibrate it, referring to the page 34.

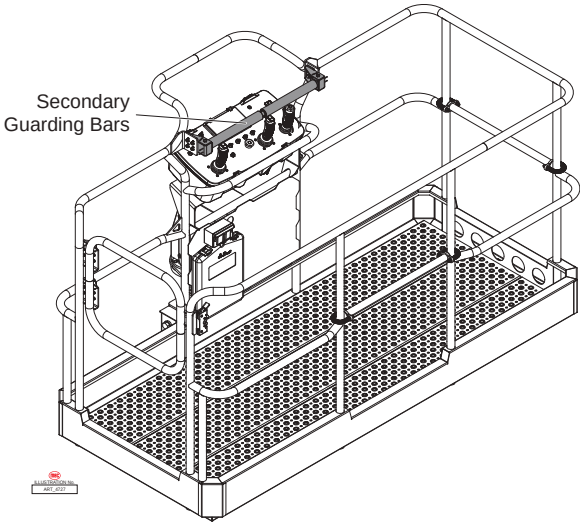
7) Check the Counterweight bolts



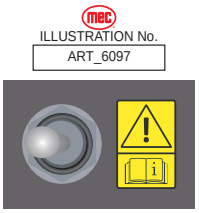
The counterweight bolts holding the counterweight to the boom turret are vital to balancing the machine.

Check to make sure that the hardware is not missing, damaged, rusty or loose. Replace any defective hardware.

8) Check the Secondary Guarding



1. As a safety feature, there are 2 yellow colored swinging bars positioned above the Platform controls. If one or both bars are pushed forward, all machine functions will stop immediately sounding an alarm.
2. If at any time one or both bars are depressed, evaluate the instance that caused the actuation and proceed accordingly with choice 3 or 4.
3. To reset the system, allow the bars to return to the natural centered position, return all control handles to neutral position and release all enable trigger switches. Normal operation may be resumed.
4. To enable limited operation while one or both bars are depressed, push up and hold the Emergency Platform Bypass switch (see illustration to right). While holding the Bypass switch, select the desired function and operate it in the normal procedure. Certain lift functions such as Riser Boom Up, Main Boom Up, and Telescope out are not available in this bypass mode.
5. If normal operation doesn't resume, please contact Product Support for assistance.

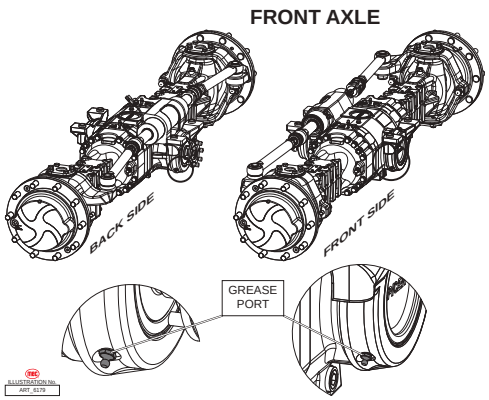


Emergency Platform Bypass Switch

Biweekly Maintenance

The following maintenance should be done every 2 weeks or every 50 hours of operation, whichever comes first.

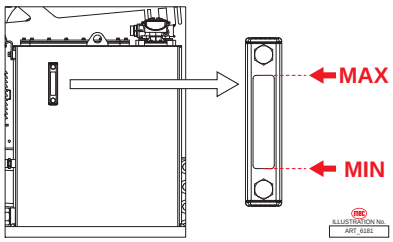
1) Lubricate the Axles



1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Stand near the front axle oscillation bushes. Inject grease in the grease nipples present on both sides of the axle (front and back sides).
3. Repeat the lubrication for the rear axle.

Note: Lubricate during service cycles.

2) Check the Hydraulic oil level



To make sure that the machine works properly, make sure that the level of hydraulic oil in the hydraulic tank is sufficient. An incorrect level of oil in the hydraulic system can damage the components.

Daily inspections will make it possible to detect any changes in the oil level which could indicate the presence of faults in the hydraulic system.

1. Make sure that the machine is parked on a flat, level surface.
2. Make sure the main boom is fully retracted and stowed.
3. Check the oil level indicator on the side of the hydraulic tank.
4. If necessary, add additional hydraulic oil but do not exceed the maximum level!

Note: The hydraulic oil should be filtered with a 20-micron filter.

Result: The hydraulic oil level in the hydraulic system must be between the maximum level and minimum level.

3) Lubricate the Telescopic Boom sliding blocks

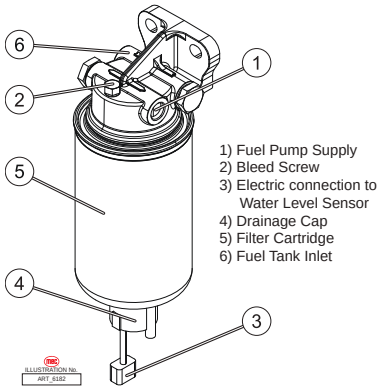
1. Make sure that the machine is parked on a flat, level surface with an area with sufficient clearance around it for boom functions.
   - Center the turret and fully lower the main boom, then fully extend the telescopic boom completely.
2. Remove the dust guard gaskets at the head of the boom extensions and clean all the sliding surfaces thoroughly.
3. Using a brush, apply a thin layer of grease on the sliding surfaces on all four sides of the boom. Repeat the operation for each stage of the extension.
4. Retract and extend the telescopic boom a number of times to distribute the grease uniformly.
5. Remove any excess grease to prevent dirt build-up and put the dust guard gaskets back on.

4) Drain water from Water-Fuel Separator

WARNING

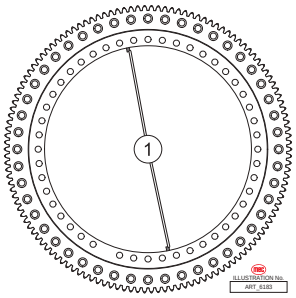
Fuel is flammable and can cause severe burns and death.
Do not smoke or have open flames nearby while working on the fuel line.
Clean the engine parts and engine compartment to remove all traces of fuel to prevent risk of fire.

1. Make sure that the machine is parked on a flat, level surface.
2. Turn the engine off.
3. Place a suitable container underneath the Water-Fuel separator.
4. Disconnect the cables.
5. Loosen the drainage screw.
6. Drain the liquid until the pure diesel fuel starts flowing out.
7. Put the drainage cap back on and apply a tightening torque of 1.18±0.22ft-lb (1.6±0.3Nm).
8. Reconnect the cables.



5) Lubricate the Turret Rotation Slewing Ring Gear

1. Apply grease manually to the outer teeth with a brush symmetrically and any remove excess grease.
2. After elevating the booms and removing the hoods, keeping turning the turret and apply a moderate amount of grease into the raceway through the fittings (1) with a greasing gun.



Grease Brand	For Raceway	For Gear Teeth
Shell	Gadus S2 V220 2	MALLEUS OGH
Mobil	Mobilux EP 2S	MOBILTAC 81
Castrol	SPHEEROL EPL 2	MOLLUB-ALLOY 970/2500-1
TotalEnergies	MULTIS EP 2	CERAN AD PLUS
FUCHS	LAGERMEISTER EP 2	CEPLATTYN KG 10 HMF

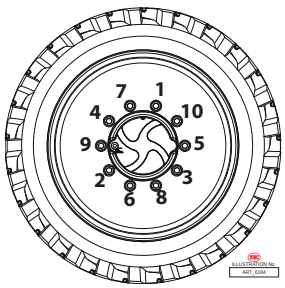
6) Check the Wheels nut torque

It is extremely important to apply and keep proper torque on the lug nuts. Ensuring that the lug nuts are properly torqued will prevent the lug nuts from coming loose.

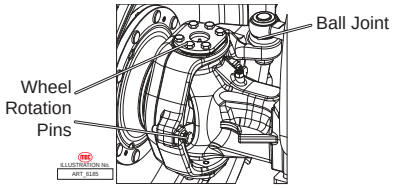
Wheel nuts should be torqued after the first 50 hours of operation and after each wheel removal. Use a torque wrench to tighten the nuts. If you do not have a torque wrench, tighten the fasteners with a lug wrench, then immediately have a service garage tighten the lug nuts to the proper torque.

Over-tightening result in breaking the studs or permanently deforming mounting stud holes in the wheels. The proper procedure attaching wheels is as follows:

1. Set the torque wrench to 331.9ft-lb (450Nm).
2. Tighten nuts in the correct sequence as the image shows.



7) Lubricate the Steering elements



1. Lubricate the wheels rotation pins by injecting grease in the grease nipples provided for the purpose. Remove the excess grease.
2. Lubricate the ball joint by injecting grease in the grease nipples provided for the purpose. Remove the excess grease.

Note: Lubricate during service cycles.

8) Check the Chains tightness

1. Make sure that the machine is parked on a flat, level surface.
2. The platform must be empty of all personnel and equipment.
3. Extend the telescopic boom until the inspection window is 19.6 inches (50 centimeters) out of the main boom.
4. Retract the telescopic boom 3.9 inches (100 millimeters) to then check the upper chain tensioning.
5. Remove the window cover to see through inside the telescopic boom.
6. Press the chains down with your fingers to feel the chain tension and then measure the distance between the bottom of chains and the top of the cylinder. The distance should not be less than 0.7 inches (20 millimeters).
7. Refer to page 36 for adjusting the tightness of chains when the distance is less than 0.7 inches (20 millimeters).

Quarterly Maintenance

The following maintenance should be done every 3 months or every 250 hours of operation, whichever comes first.

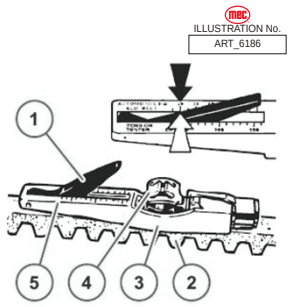
1) Check the Transmission Belt

WARNING

Work on the transmission belt only when the engine has been turned off! After repairs, make sure all the protection devices have been fitted on and that no tool has been left on the engine.

Checking the Transmission Belt tension

1. To check the tension of the belts, lower the arm of indicator (1) in the tester.
2. Place the guide (3) between two pulleys on the V-belt (2). At this point, the stop must be on the side.
3. Press button (4) in the right hand corner with respect to V-belt (2) uniformly until the spring clicks audibly.
4. Lift the tester gently, without modifying the position of the indicator arm (1).
5. Read the value measured on the intersection point (arrow), scale (5) and indicator arm (1).

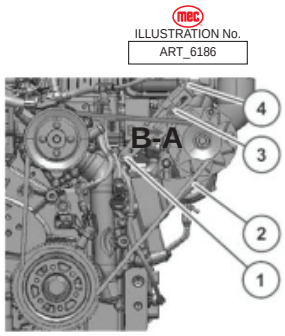


Correct the tension if necessary and repeat the measurement.

Replacing the Transmission Belt

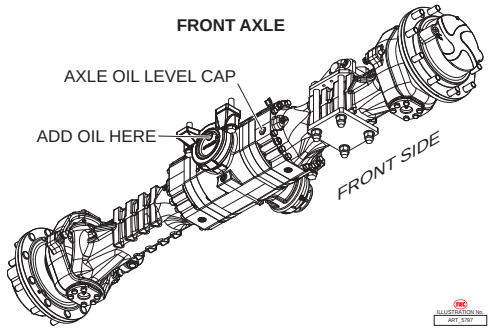
To replace the transmission belt:

1. Loosen the screw and lock nut.
2. Move the generator above the adjuster wrench in direction (B) until the belt slackens.
3. Remove the belts and fit the new ones.
4. Reposition the generator above the adjuster wrench in direction (A) until the belt tension is correct.
5. Check the belt tension:
   - Before tensioning: 479.4±36.8ft-lb (650±50 Nm)
   - Correct tension: 295±36.8ft-lb (400 ± 50 Nm)
6. Tighten the screw and lock nut using the following torque:
   - Screw (1): 22.1ft-lb (30 Nm)
   - Screw (2): 30.9ft-lb (42 Nm)
   - Screw (3): 22.1ft-lb (30 Nm)



(1) Screw
(2) Screw
(3) Screw
(4) Adjuster Wrench

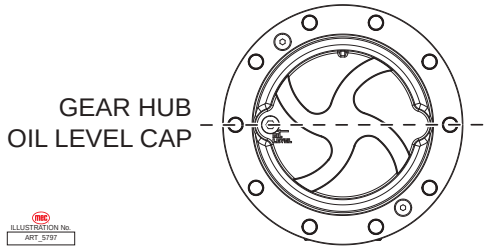
2) Check the Axle Differential oil



1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Remove the axle oil level cap. The oil must flow out through the opening.
3. If necessary to speed up the process, remove the cap used to add oil. Once the oil has finished draining, tightly plug back in the oil drainage cap. Add oil to the correct level and then plug in the oil level cap. Clean the axle surfaces.
4. Repeat the operation for the front and rear axles.

Note: Lubricate during service cycles.

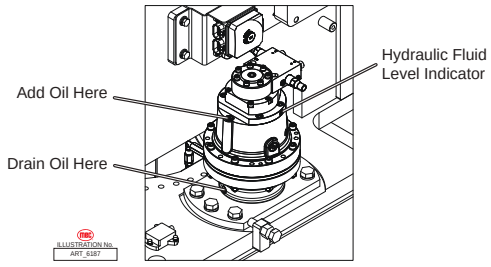
3) Check the Wheel Reduction Gears oil



1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Make sure that the gear hub is turned horizontally as the illustration to the right shows.
3. Remove the gear hub oil level cap. The oil level is correct when the oil flows out through the filler hole.
4. If necessary, add additional oil until it reaches the correct level.
5. Put the cap back on and ensure it fits snugly.
6. Repeat this operation for each wheel.

Note: Lubricate during service cycles.

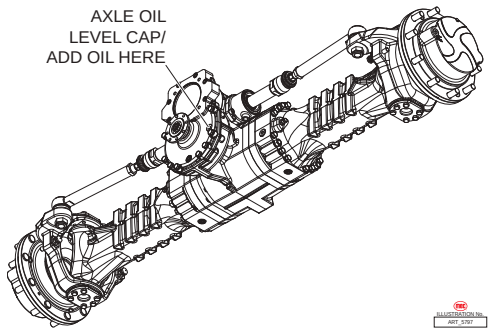
4) Check the Turret Rotation Slewing Ring Gear Oil level



1. Open the control hood and if needed, rotate the turret for better access to the reduction gear.
2. Check the hydraulic fluid level through the inspection window. The level is correct when it overflows.
3. If necessary, add additional oil of the correct type up through the port used to add oil.

When checking the oil level, also check the hardware holding the reduction gear to the chassis for any signs of slack, rust, damaged or missing hardware.

5) Check the Gearbox oil



1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Remove the axle oil level cap. The oil must flow out through the opening.
3. If necessary, add additional oil until it reaches the correct level. Plug the opening with the axle oil level cap. Clean the axle surfaces.

Note: Lubricate during service cycles.

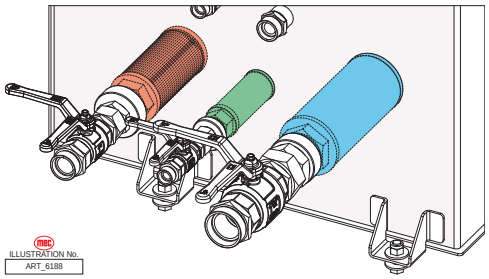
Semi-annual Maintenance

The following maintenance should be done every 6 months or every 500 hours of operation, whichever comes first.

1) Replace the Hydraulic Oil filter

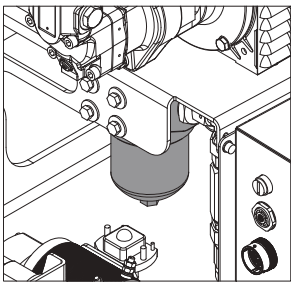
The machines use five filters for hydraulic fluid: Three WU filters for suction circuit are installed in the hydraulic tank, for driven pump, function pump and emergency pump. The others are PLFA series filters used in the pressure line of hydraulic system. One is placed behind the ground console, and the other is placed on the end of the third boom.

Wu Filters - Hydraulic Tank



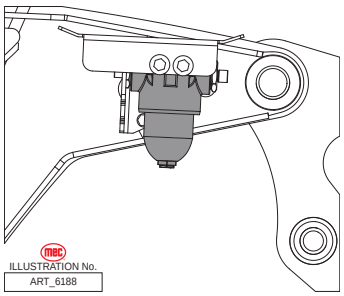
1. Open the control hood covering the hydraulic tank.
2. Clean the area around the cover of the hydraulic oil reservoir.
3. Remove the cover from the hydraulic tank and remove the WU filters one by one.
4. Screw in the new corresponding filters.
5. Reapply the filter cover.
6. Check for a drop in the oil level by looking at the indicator gauge present on the tank. If required, add additional hydraulic oil of the necessary type to reach the correct level. See page 22 for more details about checking the hydraulic oil level.

PLFA Filter (Outlet of Function Pump)



1. Clean the area around the oil filter.
2. Remove the filter housing.
3. Pull out the filter element from the filter assembly chamber.
4. Install a new filter element to the filter assembly chamber.
5. Refit the filter housing and tighten it. Clean up any oil that may have spilled during the replacement procedure.

PLFA Filter (Inlet of Upper Control Valve)



1. Clean the area around the oil filter, and then remove the cap components.
2. Pull out the filter element from the filter assembly chamber.
3. Install the new filter element to the filter assembly chamber.
4. Reapply the cap components and tighten it. Clean up any oil that may have spilled during the replacement procedure.

2) Replace the Engine Oil and Engine Oil filter

WARNING

Do not operate with the engine running!
Do not smoke or have open flames nearby!
Danger of burns!

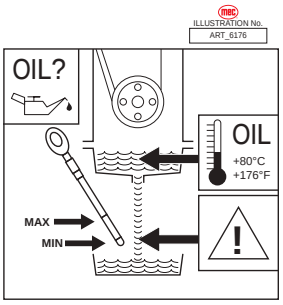
When working on the oil system, make sure to keep the oil system and nearby areas clean and to keep them thoroughly clean from time to time. Dry any damp areas with air jets. When handling engine oil, make sure to follow all rules and regulations.

Make sure to properly dispose of any used engine oil and filter elements. Do not let the used engine oil spread on the ground. Run a test cycle after replacing. Also make sure that the sealing and pressure of the engine oil is correct and at the correct level.

An insufficient or excessive amount of engine oil level can damage the engine. Make sure that the machine is parked on a flat, level surface and is turned off before checking the engine oil level. Check the engine oil level only while it is warm, 5 minutes after the engine is turned off.

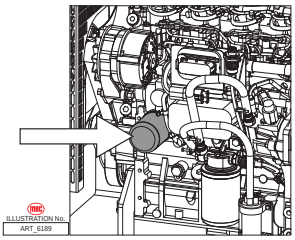
Do not remove the engine oil level rod with the engine running! Danger of burns!

Changing the engine oil



1. Run the engine until the oil temperature reaches more than 176°F (80°C).
2. Make sure that the machine is parked on a flat, level surface and turn the machine off. Keep the work area clear of any debris and unauthorized personnel.
3. Place a suitable container under the drain screw, unscrew the latter and drain out the lubricant oil.
4. After draining, reposition the screw with a new sealing ring and tighten by applying a torque of 40.5ft-lbs (55Nm).
5. Fill with engine oil then operate the engine until the oil temperature reaches more than 176°F (80°C) and check the engine oil level.
6. If necessary, add additional engine oil of the correct type.

Replacing the engine oil cartridge



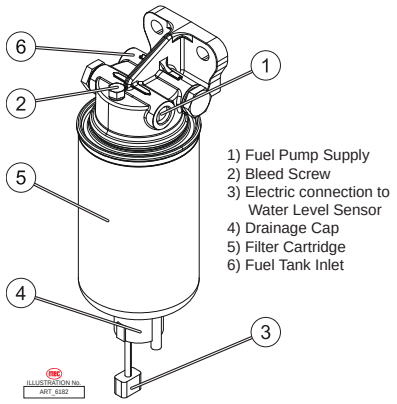
1. Make sure that the machine is parked on a flat, level surface and turn the machine off. Keep the work area clear of any debris and unauthorized personnel.
2. Place a suitable container underneath to catch any liquid that flows out.
3. Loosen the filter by hand, or if necessary then use a tool, and unscrew it.
4. Wipe the surface of the filter-holder with a clean cloth that does not leave any lint or fibers.
5. Oil the original DEUTZ filter cartridge seal slightly.
6. Screw the engine oil filter by hand until it is tight.

3) Replace Water-Fuel Separator Filter Element

WARNING

Fuel is flammable and can cause severe burns and/or death.
Do not smoke or have open flames while working on the fuel line.
Clean the engine parts and engine compartment to remove all traces of fuel to prevent risk of fire.

1. Make sure that the machine is parked on a flat, level surface and turn the machine off. Keep the work area clear of any debris and unauthorized personnel.
2. Block the fuel intake to the engine (if the tank is positioned at the top).
3. Place a suitable container underneath the cartridge to catch any liquid that flows out.
4. Disconnect the cables connected to the Water-Fuel Separator.
5. Loosen the drainage screw and drain out the liquid.
6. Remove the filter element inside.



7. Wipe the surface of the new filter element and the opposite side of the filter head to remove dirt.
8. Slightly dampen the surfaces of the filter cartridge with fuel and screw back on the filter head clockwise with a torque of 12.5-13.2ft-lbs (17-18Nm).
9. Screw the drainage cap back on by applying torque of 1.18±0.2 ft-lbs (1.6±0.3Nm).
10. Reconnect the cables.
11. Open the fuel line and bleed the system.

4) Clean the Engine Radiator

To remove dust and debris from the engine radiator, use either compressed air, pressurized water or steam. However, it is recommended to use compressed air.

When using pressurized water, keep the high pressure jet cleaning nozzles at a distance of at least 19.6in (50cm) from the engine radiator. Bringing the nozzle too close to the radiator can lead to risk of damaging the radiator.

5) Check the Turret Rotation Slewing Ring Gear Oil bolt torque

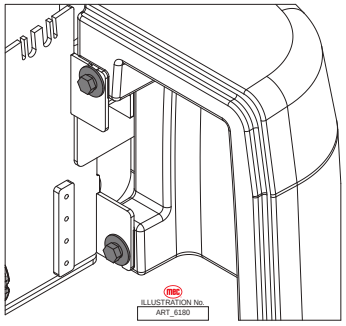
Check the bolts on the turret holding the slewing ring gear to see if any are damaged, missing, loose or rusty.

Before checking the torque of the bolts, lift up the main boom. To check the torque for the bolts, use a wrench and apply a torque of 442.5ft-lbs (600Nm).

6) Check the Counterweight bolts

The counterweight bolts holding the counterweight to the boom turret are vital to balancing the machine. It is vital to check the torque of the bolts holding the counterweight.

Tighten one by one of the bolts fixing the balance weight with the torsion wrench, set point of 442.5ft-lbs (600Nm).



Yearly Maintenance

The following maintenance should be done every year or every 1,000 hours of operation, whichever comes first.

1) Replace the Fuel Filter

1. Make sure that the machine is parked on a flat, level surface and turn the machine off. Keep the work area clear of any debris and unauthorized personnel.
2. Place a suitable container underneath the cartridge to catch any liquid that flows out.
3. Loosen the filter by hand, or if necessary then use a tool, and unscrew it.
4. Collect the fuel that flows out.
5. Wipe the surface of the filter-holder with a clean cloth that does not leave lint.
6. Oil the original DEUTZ filter cartridge seal slightly.
7. Screw the filter by hand until it is tight.
8. Bleed the fuel supply system.

2) Replace the Air Filter element

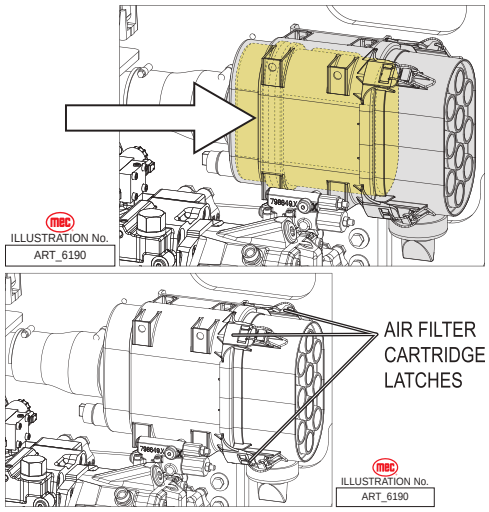
The efficiency and life of the engine depend greatly on the quality of air taken in. A dirty or damaged air filter can seriously affect the correct working of the engine and increase the possibility of a fault.

Replace the air filter element strictly according to the stated schedule. Do not try to wash dirty filters!

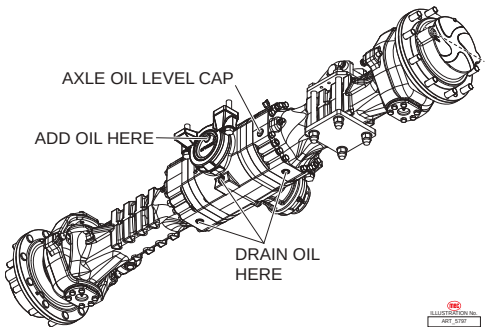
If the machine is expected to be used in environments with a lot of dust or high concentrations of contaminating or polluting agents in the air, halve the time interval between one filter replacement and the next.

Replacing the Air Filter element

1. To access the Air Filter, open the engine hood.
2. Release the latches and remove the cover on the front of the filter.
3. Grip the air filter element and remove it from its housing.
4. Thoroughly wipe inside the filter housing with a damp cloth that doesn't leave any fibers. Avoid the use of aggressive solvents or products as these can damage the safety filter or the filter housing.
5. Install a new air filter element. Make sure the filter element is inserted properly in its seat. If installation is difficult, grease the rubber gasket slightly with silicone grease.



3) Change the Axle Differentials oil

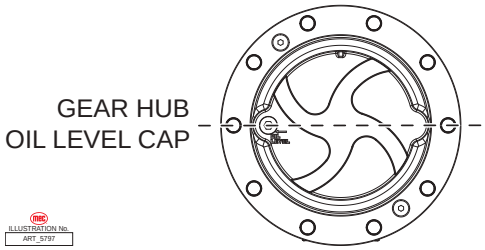


1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Place suitable sized containers under the axle. Remove the three drainage caps located near the bottom the axle and wait for the oil to drain out completely. If you want to speed up the operation, remove the cap used to add oil.
3. Plug back in the oil drainage caps and make sure they fit tightly. Remove the oil level cap.
4. If you haven't, remove the cap used to add oil and pour fresh oil of the correct type through the opening. Slowly pour in the oil while checking the flow of the oil through the oil level opening.
5. When the correct level has been reached, plug the oil level cap back in place tightly as well as the port used to add oil.

Note: Change the axle differential oil every 100-250 hours.

4) Change the Wheel Reduction Gears oil

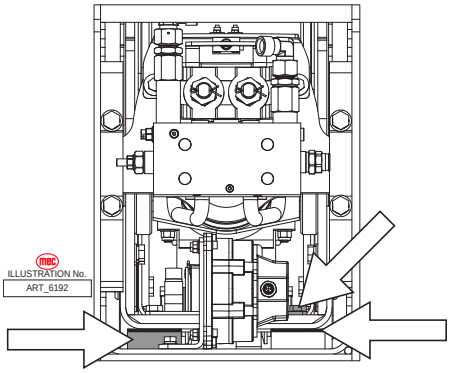
1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel.
2. Place a suitable sized container under the reduction gear. Rotate the reduction gear cap so that the oil level cap is at the very bottom.
3. Remove the cap and wait for the oil to drain out completely.
4. Make sure that the gear hub is turned horizontally as the illustration to the right shows. Pour oil through the opening to the correct level.
5. Plug the cap back in place tightly. Repeat this operation for each wheel.



Note: Change the wheel reduction gears oil every 100-250 hours.

5) Adjust the Telescopic Boom sliding blocks

Make sure that the machine is parked on a flat, level surface with an area with sufficient clearance around it for boom functions. Keep the work area clear of any debris and unauthorized personnel.



1. Remove the accessory from the quick-fit coupling. Center the turret and have the booms fully stowed and lowered.
2. Remove the cover on the rear part of the boom.
3. Loosen all the bolts on the upper and lower sliding blocks of the first extension stage. If the space between the sliding surface of the block and the sliding surface of the first boom exceeds 0.5mm, some pads will need to be added. Tightens the bolts about with a torque of 73.7ft-lbs (100Nm).
4. Repeat the adjustment operations for the lateral sliding blocks.
5. Move to the front of the boom, and identify the sliding blocks of the first extension stage.
6. Loosen all the bolt of the upper and lower sliding blocks of the first extension stage. If the

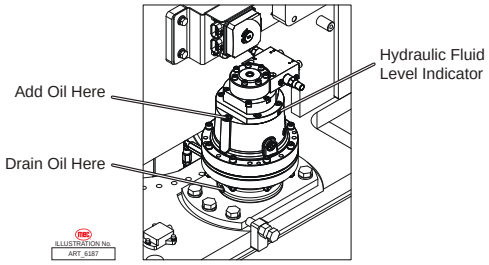
space between the sliding surface of the block and the sliding surface of the first boom exceeds 0.5mm, some pads will be need to be added. Tightens the bolts about with a torque of 73.7ft-lbs (100Nm).

7. Repeat the adjustment operations for the lateral sliding blocks.
8. Repeat the operations described above for the sliding blocks of all the extension stages, proceeding in order towards the front part of the boom.
9. Always try to adjust the sliding blocks symmetrically, so that each stage is centered with respect to the adjacent ones.
10. After completing the operations try to extend and retract the boom to check the boom movement is smooth. If the movement of the boom is not smooth, repeat the adjustments.

6) Change the Turret Rotation Slewing Ring Gear Oil level

Changing the rotation reduction gear oil

1. Open the control hood and if needed, rotate the turret for better access to the reduction gear.
2. Place a suitable sized container under the drain cap. Remove the cap and wait for the oil to drain.
3. Plug the drainage opening and make sure the cap fits tightly. Add oil through the opening for adding oil until it reaches the level through the indicator.
4. Lubricate the reduction gear shaft bushes.



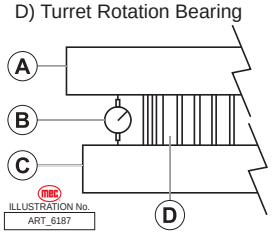
Check the slewing ring gear bearings for wear

The factory setting of the play of the bearings is between 0.05 and 0.25 millimeters.

The slewing ring gear must be replaced if the wear limit value exceeds 2.2 millimeters; to check the bearings for wear, proceed as described below.

1. Make sure that the machine is parked on a flat, level surface. Keep the work area clear of any debris and unauthorized personnel. Make sure that the platform is empty of both personnel and equipment and align the turret to the chassis axis.
2. Lubricate both the turret axial bearing tracks by means of the two grease nipples provided inside, and apply grease manually to the outer teeth of the slewing ring gear using a brush. Refer to page 23 for the grease brands.
3. Check the tightening of the bolts holding the turret rotation slewing ring gear, referring to page 30.
4. Start the machine from the ground controls and fully elevate, but do not extend, the primary boom and jib. The riser should remain in its stowed position.
5. Place a dial indicator with accuracy of 0.01, between the drive chassis and the turntable at a point that is directly under, or in line with, the boom and no more than 1 inch (2.5 centimeters) from the bearing.
6. Adjust the dial indicator need to the “zero” position.
7. Elevate the riser, but do not extend it. Move the primary boom and jib to horizontal and fully extend.
8. Note the reading on the dial indicator. If the measurement is less than 2.2 millimeters, the bearing is good. Otherwise, the bearing is worn and needs to be replaced.
9. Remove the dial indicator and rotate the turntable 90°.

A) Turret
B) Dial Indicator
C) Drive Chassis
D) Turret Rotation Bearing



10. Repeat steps 5 through 9 until the rotation bearing has been checked in at least four equally spaced areas 90°apart.
11. Lower the boom to the stowed position and turn the machine off.
12. Remove the dial indicator from the machine.

7) Calibrate the Overload sensor

The overload sensor in the platform will show how much weight is in the platform on the diagnostic panel. If the weight in the platform does not exceed the rated load, the machine is safe to operate and will function properly.

If the weight exceeds the rated load, the machine will stop operating and the alarm will beep. The diagnostic panel will state that the weight in the platform is over the rated amount and to remove excess weight. Once the excess weight has been removed, the machine will operate normally.

The weighting system must be calibrated termly. The interval is 1,000 hours for running or every year. If the weight shown on the diagnostic panel is incorrect, then the sensor must be recalibrated.

1,500 Hour Maintenance

The following maintenance should be done every 1,500 hours of operation.

1) Clean the Fuel Filter mesh element

It is important for operating life of the machine to have a clean fuel suction mesh element. The pressure of fuel suction will be higher when the mesh element is dirty, which will damage the engine and shorten the operating life of the vehicle.

The procedures of cleaning the mesh element as follows:

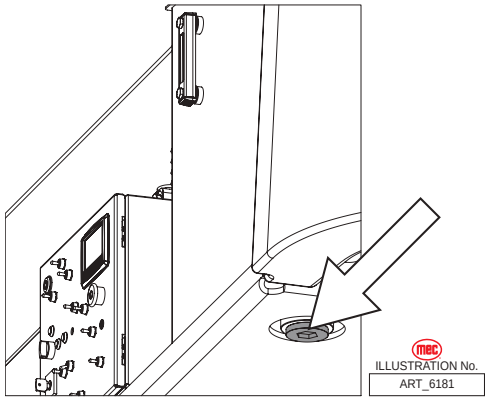
1. Open the engine hood covering the fuel tank.
2. Slacken the bolts of fastening the fuel sucking pipe and pull out the fuel sucking pipe.
3. Remove the mesh element.
4. Clean the mesh slightly. Corrosive chemical solvent are forbidden to use!
5. Refit the mesh after completely cleaning and blowing the mesh with pressured air.

Replacing the mesh should be performed when the mesh is too dirty to clean or damaged.

Two Year Maintenance

The following maintenance should be done every 2 years or every 2,000 hours of operation, whichever comes first.

1) Change the Hydraulic fluid



1. Go under the machine to access the hydraulic tank's drainage caps.
2. Place a suitable sized container under the drainage cap. Unscrew the cap and drain out the oil. To speed up the operation, also unscrew the filler cap.
3. Install the plug on the drain port. Fill the tank with hydraulic oil filtered with a 20-micron filter. Do not overfill.
4. Look around for enough space for extending and lifting completely.
5. Place a suitable sized container under the function manifold.
6. Disconnect the lifting down hose from B port of function manifold and block the B port with plug.
7. Start the engine, and lift up the main boom completely to move the oil from the cylinder rod chamber into the container.
8. Reconnect the hose.
9. Repeat the step 4-8 for moving the hydraulic oil out from the other cylinder rod chamber.

Park the machine and check the hydraulic oil level. If the oil level is low, add additional hydraulic fluid. Refer to page 22 for details on checking the hydraulic oil level.

2) Replace the Air Filter element

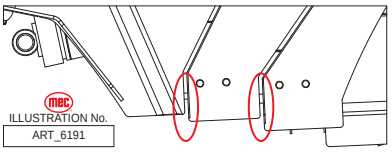
1. Follow the procedure for removing the air filter element as described on page 31.
2. Hold the air filter element by means of two fingers in the grips and pull to separate it from its seat.
3. Thoroughly wipe the inside the filter housing with a damp cloth. Avoid using aggressive solvents or chemical products as these can damage the filter casing.
4. Install a new filter element. Grease the outer gasket of the new filter element slightly with silicone grease.

3) Adjust the Chain tightness

1. Fully close extension in and release both chains, front and rear.
2. Tighten the lower chains with a torque of 14.7ft-lbs (20Nm) minimum, still keep the boom fully retracted.
3. Tighten the upper chains with a torque of 29.5ft-lbs (40Nm) minimum, still keep the boom fully retracted.
4. Extend the boom until the inspection window is 19.6 inches (50 centimeters) out of the main element.
5. Retract the boom 3.9 inches (100 millimeters) before to check the upper chain tensioning.
6. Equally tighten the upper chain nuts, until their tension will let the chain be suspended at least

0.78 inches (20 millimeters) above the cylinder profile.

7. Fully close extension to check if lower chains are properly tensioned.
8. Check if the gap between inner and middle boom is 0.39-0.59 inches (10-15 millimeters)



Twelve Year Maintenance

The following maintenance should be done every 12 years or every 7,000 hours of operation, whichever comes first.

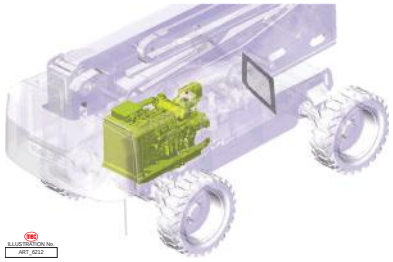
1) Replace the Chains

Mandatory chain and pulley replacement intervals can be extended from 8 to 12 years, if the total number of machine hours does not exceed 7,000 hours.

The new chains and pulley replacement interval is 12 years, or, 7000 machine hours.

Power Supply System

All the following components displayed in this section can be found on the engine side of the boom machine. The image to the right show the location of the engine for a quick visual reference.



Batteries

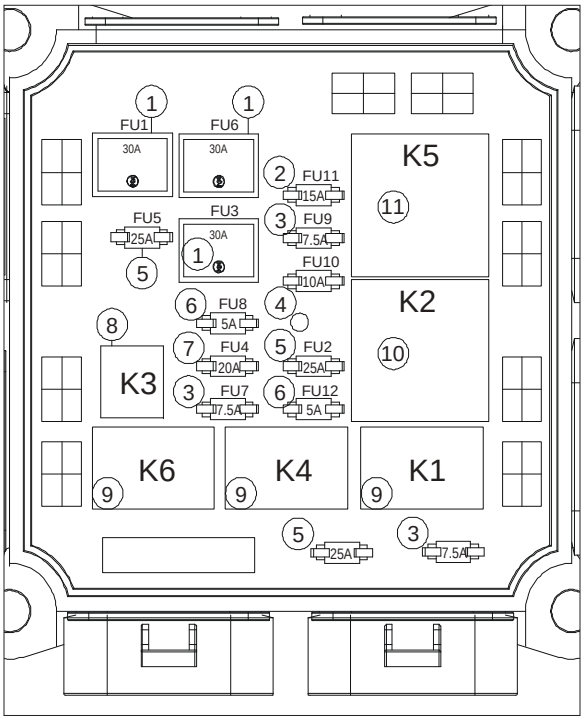
The boom machine is equipped with 2 12-Volt 110ah batteries. These batteries are used to power the control system and in the event of power failure, they can be used to activate emergency operations.

Fuse Box

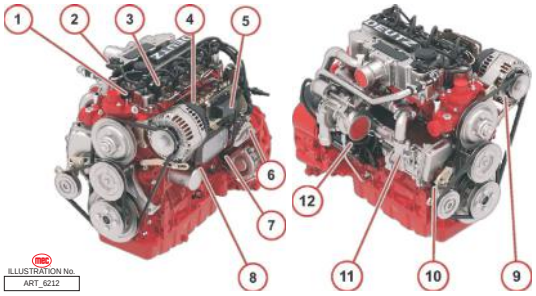
- Fuse 13: 80amps, connect to “Relay & Fuse Box”.
- Fuse 14: 200amps, connect to Emergency Pump-Motor.
- Fuse 15: 150amps, connect to Engine Preheating Device.
- Fuse 16: 125amps, connect to Engine Generator.

Relay Description	
K1	Beacon & Buzzer
K2	Power supply to Main Controller, Display & Chassis Device
K3	Diesel Pump Relay
K4	Horn Relay
K5	Total Power Relay
K6	Spare

No.	Fuse Description	
FU1	30 A	Engine ECU
FU2	25A	Beacon & Buzzer
FU3	30A	Power supply to Main Controller, Display & Chassis Device
FU4	20A	Diesel Pump
FU5	25A	FU7+FU8
FU6	30A	FU9+FU10+FU11
FU7	7.5A	Horn
FU8	5A	Key Switch, Bypass Switch, K2 & K5
FU9	7.5A	Sensor Power, Engine ECU Logic Supply + FU12
FU10	10A	PVG Valve
FU11	15A	Power supply for electrical equipment on boom and platform
FU12	5A	Engine Generator Magnetization

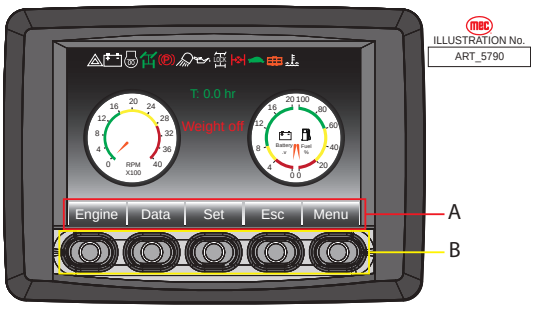


Engine



1. Coolant temperature sensor
2. Intake pressure & temperature sensor
3. Fuel injector
4. Fuel rail pressure sensor
5. Electrical plug (connect to engine ECU)
6. High Pressure Pump FCU (Fuel Control Unit)
7. Crankshaft speed sensor
8. Engine-oil pressure sensor
9. Generator
10. Camshaft speed sensor
11. Exhaust gas recirculation regulator
12. Start-motor

Diagnose Menu Interface



The Diagnostic panel contains the basic information for monitoring operation of the machine.

Row “A” displays the pages and options available in the lower part of the screen and is controlled by the corresponding buttons on row “B”.

The upper band shows:

- Alarm indicator light
- Steering mode selection indicator light
- Parking brake active indicator light
- Differential lock active indicator light
- Front axle lock active indicator light
- Movement speed selection indicator light: slow/fast
- Controls position indicator light: ground/platform

The central band shows:

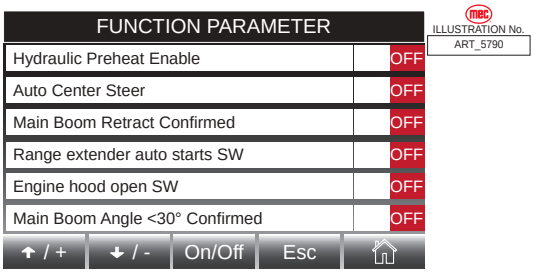
- The engine rev counter to the left hand side
- The number of working hours in the center, the batteries voltage, the fuel level and the engine fault code
- The engine oil pressure indicator and the engine water temperature indicator on the right hand side.

The bottom band shows the information shown on the pages that can be accessed:

- Engine data (RPM, drive torque percentage measured, coolant temperature, oil pressure, fuel consumption, operating hours, quantity of fuel used)
- Operational data (angular inclination of main boom, angular inclination of riser boom, inclination of the platform, inclination of the chassis on the horizontal plane, load measured on platform);
- Options settings (hydraulic preheat enable; Auto center steer; main boom retract confirmed; range extender auto start sw; engine hood open sw; main boom angle<30°confirmed)

The setting interface could be entered by pressing the setting button and holding for one second. The optional function can be turned on or off without a password, after entering the setting interface. The procedures are as follows:

1. Pressing “ / ” or “ / ” is used to choose the item separately. The chosen item would be shown in yellow background.
2. Pressing “On/Off” and holding on is used to turn on or off the corresponding function.
3. It returns back to main interface, when the button “Esc” is pressed.



Diagnose Menu Interface Symbols

After entering boot interface, the display will automatically switch to the main interface after a few seconds.

The top row of icons are listed in the chart below.

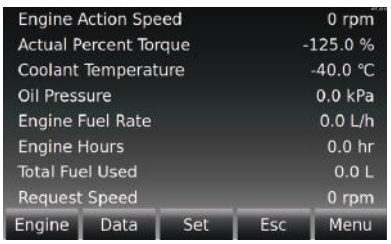
	System no alarm		System alarm
	Power supply: Engine generator		Power supply: 12V-battery
	Engine preheat: Off		Engine preheat: On
	Mode Selected: 4-Wheel		Mode Selected: Crab
	Work-light: Off		Work-light: On
	Engine oil pressure: Normal		Engine oil pressure: Low
	Differential-lock: Off		Differential-lock: On
	Oscillating system: Off		Oscillating system: On
	Engine fan reversing system: Off		Engine fan reversing system: On
	Slow Speed		High Torque Mode
	Platform control		Ground control

	Mode Selected: 2-Wheel	
	Fast Speed	

Engine Status Menu

Display read signals from the engine ECU through the CAN bus.

1. At the Main Menu, press the Engine button to enter the Engine Status Menu.

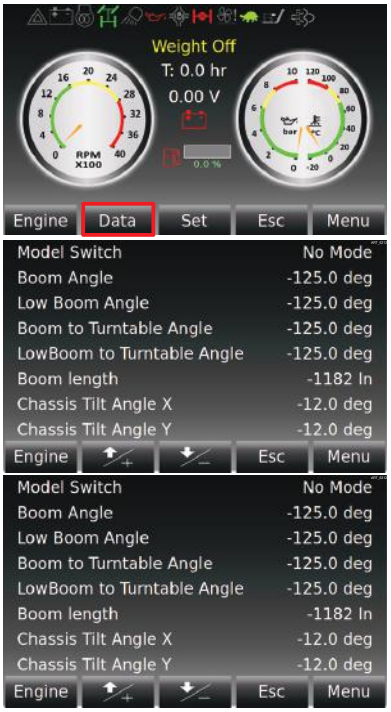


2. In the Engine Status Menu, information for the engine will be displayed.
3. Press the "**Esc**" button to go back.

Vehicle Data Menu

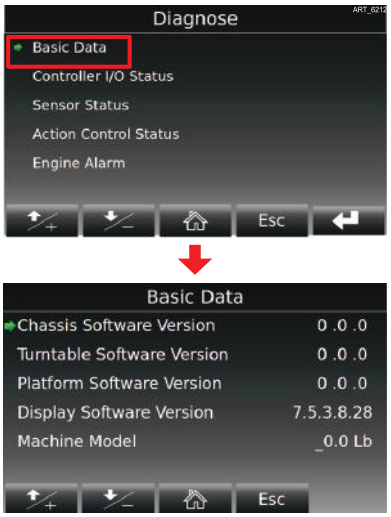
Displays read CAN bus signals from master controller on turntable. The values are calibrated on the machine, not sensor raw data.

1. To be see information detected by the machine sensors, please press the Data button.
2. Press the up button "▲ / ✚" or down button "▼ / ▬" to switch between the two pages of machine information.
3. Press the "**Esc**" button to go back.



Diagnose Menu

1. To diagnose the machine, press the Menu button.
2. Once you are in the Menu interface, press the Enter button (↵) to enter the Diagnose Menu.
3. When you are in the Diagnose Menu, you can view the following information:
   - Machine software version
   - Input/Output signals
   - Sensors information
   - Parameters of each action
   - Engine information

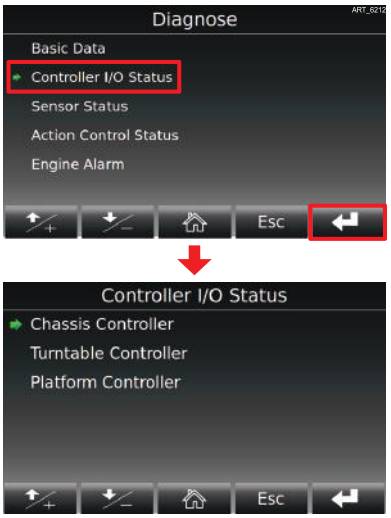


Basic Data Menu

1. Once you are in the Diagnose Menu, press the Enter button ( ) to enter the Basic Data Menu to view the machine software version and the machine model.
2. In the Basic Data Menu, both the machine software version and the machine model are now displayed.
3. Press the "**Esc**" button to go back.

Controller I/O Status Menu

Displays read CAN signals from the controller to get I/O status.



1. Once you are in the Diagnose Menu, to view Input/Output signals, press the down button "**/ -**" to select "Controller I/O Status" then press the Enter button ( ).
2. Once you are in the Controller I/O Status Menu, press the up button "**/ +**" or down button "**/ -**" to select the chassis controller, turntable controller, and platform controller.
3. Press the Enter button ( ) to enter the menu of the selected controller and view the Input/Output signal data.
   - The tables below contain the values for the relevant controllers are as follows
     - Chassis Controller table values start on page 44.
     - Turntable Controller table values start on page 45
     - Platform Controller table values start on page 46
4. Press the "**Esc**" button to go back.

True or False in this interface is only a signal received or sent in the controller, it does not mean that the actuator has received the relevant signal!

When necessary, it is still necessary to measure the signal at the corresponding component.

Chassis Controller		
Pin Definition		**Value**
C1: 14, 39, 55	Frame Leveling Left (39) / Right (55)	0 mA
C1: 15, 40	Park Brake Release Valve	0 mA
C1: 16, 41	Oscillating Rear-Axle: Left Valve A	0 mA
C1: 30, 42	Oscillating Rear-Axle: Left Valve B	0 mA
C1: 31, 43	Oscillating Rear-Axle:Right Valve A	0 mA
C1: 32, 44	Oscillating Rear-Axle:Right Valve B	0 mA
C2: 13, 29, 47	Steer Valve: 4-Wheel Mode (13) / Crab Mode (29)	0 mA
C2: 14, 48	Differential Lock Valve	0 mA
C2: 15, 67	Frame Leveling Proportional Valve	0 mA

Chassis Controller		
Pin Definition		**Value**
C2: 16, 32, 68	Steer Valve: Left (16) / Right(32)	0 mA
C2: 34	Left Oscillating Cylinder: Signal 3 NO	True: Oscillate False: Lock
C2: 35	Left Oscillating Cylinder: Signal 1 NC	True: Lock False: Oscillate
C2: 36	Right Oscillating Cylinder: Signal 4 NO	True: Oscillate False: Lock
C2: 37	Right Oscillating Cylinder: Signal 2 NC	True: Lock False: Oscillate
C2: 42	Turntable Proximity Switch: Left	True: At middle position False: Out of middle position
C2: 55	Turntable Proximity Switch: Right	
C2: 56	Turntable Proximity Switch: Middle	
C2: 57	Steer Angle: Front-Axle	2500mV
C2: 58	Steer Angle: Rear-Axle	2500mV

Turntable Controller		
Pin Definition		**Value**
C1: 8	Main boom lower-down switch	True: Lower Down False: Standby
C2: 62	Main boom lift-up switch	True: Lift Up False: Standby
C1: 9	Main boom extend-out switch	True: Extend Out False: Standby
C1: 10	Main boom retract-in switch	True: Retract In False: Standby
C1: 11	Engine: Air filter	False
C1: 14, 39, 55	Drive forward(39) / backward(55)	0 mA
C1: 24	Main boom down limit switch	True: Stowed False: Raised
C1: 25	Lower boom down limit switch	True: Stowed False: Raised
C1: 26	Main boom: Chain limit switch	True: Normal False: Alarm
C1: 27	GPS: Machine lock low	False
C1: 28	Emergency pump switch	True: Input Signal False: Standby
C1: 29	Key switch signal	True: Ground Control False: Platform Control
C1: 30, 42	Hydraulic generator proportional valve	0 mA
C1: 47		
C1: 36	Jib lift-up switch	True: Lift Up False: Standby
C1: 52	Jib lower-down switch	True: Lower Down False: Standby
C1: 37	Hydraulic oil temperature sensor	False
C1: 38	Engine: Alternator signal	True: Standby False: Alternator Running
C1: 45	GPS: Hour meter (running signal)	False
C1: 46	To Motion beacon relay	Machine Running → True Standby → False
C1: 53	Fuel level	19.2%

Turntable Controller		
Pin Definition		**Value**
C1: 54	Engine start / stop button	True: Signal Input False: Standby
C2: 3	Low speed switch	True: Signal Input False: Standby
C2: 4	High speed switch	True: Signal Input False: Standby
C2: 5	Platform level-up switch	True: Level Up False: Standby
C2: 6	Platform level-down switch	True: Level Down False: Standby
C2: 9	Lower-boom lift-up switch	True: Lift Up False: Standby
C2: 10	Lower-boom lower-down switch	True: Lower Down False: Standby
C2: 19	Frame level-left switch	True: Level Left False: Standby
C2: 20	Frame level-right switch	True: Level Right False: Standby
C2: 21	Platform swing: right switch	True: Rotate Right False: Standby
C2: 22	Platform swing: left switch	True: Rotate Left False: Standby
C2: 26	Turntable rotation: right switch	True: Rotate Right False: Standby
C2: 41	Turntable rotation: left switch	True: Rotate Left False: Standby
C2: 38	Chassis by-pass switch	True: Standby False: By-Pass Input
C2: 46	Overload indicator	Overload → True → Light Up
C2: 49	Engine start signal (output to engine ECU)	True: Engine Start False: Standby
C2: 50	Hydraulic-oil radiator (output to KA8)	True: Radiator Running False: Standby
C2: 51	Emergency pump (output to KM2)	True: Emergency Pump Running False: Standby
C2: 52	Horn (output to KA4)	True: Horn Sound False: Standby
C2: 54	GPS: Machine lock high	False
C2: 61	BA/BT mode switch	True: Modified False: Standby
C2: 64	Alarm buzzer (chassis)	False

Platform Controller		
Pin Definition		**Value**
C1: 8	Drive-joystick analog 1	0.00%
C1: 9	Drive-joystick analog 2	0.00%
C1: 10	Turntable-joystick analog (1, X)	0.00%
C1: 11	Hydraulic generator: start/stop	False
C1: 13	Force-drive switch	False
C1: 14, 39, 55	Jib up/down current	0 mA
C1: 24	Jib amplitude joystick analog (1, Y)	0.00%
C1: 25	Platform swing joystick analog (2, X)	0.00%

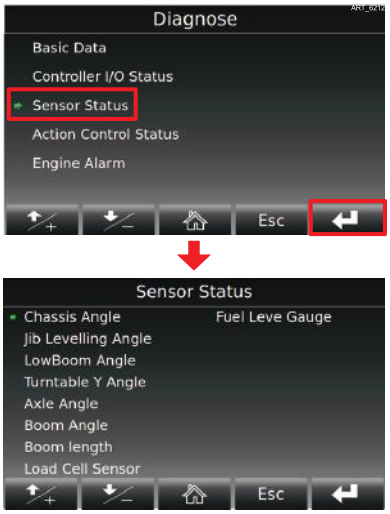
Platform Controller		
Pin Definition		**Value**
C1: 26	Main boom amplitude joystick analog (2, Y)	0.00%
C1: 31, 43, 59	Platform swing current	0 mA
C1: 36	Load analog signal A	1368mV
C1: 52	Load analog signal B	1455mV
C1: 38	Ultrasonic top crash prevention, Left	50mV
C1: 54	Ultrasonic top crash prevention, Right	0mV
C2: 3	Driving speed mode: Slow	False
C2: 4	Driving speed mode: Fast	True
C2: 6	Jib low proximity switch	True
C2: 9	Platform level-up switch	True: Level up False: Standby
C2: 10	Platform level-down switch	True: Level down False: Standby
C2: 11	Main boom retract-in switch	True: Retract in False: Standby
C2: 12	Main boom extend-out switch	True: Extend out False: Standby
C2: 19	Frame level-left switch	True: Level left False: Standby
C2: 20	Frame level-right switch	True: Level right False: Standby
C2: 21	Lower-boom lift-up switch	True: Lift up False: Standby
C2: 22	Lower-boom lower-down switch	True: Lower down False: Standby
C2: 27	Dead-man switch of middle joystick	True: Activated False: Standby
C2: 28	Crab Mode switch	True: Crab Mode False: Standby
C2: 41	4-Wheel Mode switch	True: 4-Wheel Mode False: Standby
C2: 34	Dead-man switch of left joystick	True: Activated False: Standby
C2: 35	RPM + switch	True: RPM + False: Standby
C2: 36	RPM - switch	True: RPM - False: Standby
C2: 37	Axle differential-lock switch	True: Differential-lock False: Standby
C2: 42	Right turn switch	True: Turn right False: Standby
C2: 61	Left turn switch	True: Turn left False: Standby
C2: 43	Alarm buzzer (platform)	True: Alarm False: Standby
C2: 46	Overload indicator	Overload → True → Light up
C2: 54	Emergency pump switch	True: Signal input False: Standby
C2: 55	Horn switch	True: Signal input False: Standby
C2: 56	Anti-pinch	True

Platform Controller		
Pin Definition		Value
C2: 57	BA/BT mode switch	True: Modified False: Standby
C2: 58	Bypass switch	True: Signal input False: Standby
C2: 62	Dead-man switch of drive joystick	True: Signal input False: Standby

Sensor Status Menu

Displays read original raw data from the sensors through the CAN bus.

For instructions on how to enter the Diagnose Menu, refer to page 43.



1. Once you are in the Diagnose Menu, press the down button "🡻 / ▬" to select "Sensor Status" then press the Enter button (↵).
2. Once you are in the Sensor Status Menu, press the up button "🡹 / ✚" or down button "🡻 / ▬" to select the sensor you want to select.
3. Press the Enter button (↵) to enter the menu of the selected sensor and display the related data.
4. Press the "**Esc**" button to go back.

The values shown in the charts below for each angle are for reference of how the information will be displayed when viewed.

Chassis Angle	
Chassis Angle X1	-1.4 deg
Chassis Angle X2	1.4 deg
Chassis Angle Y1	-0.1 deg
Chassis Angle Y2	0.1 deg

Jib Leveling Angle	
Jib Angle 1	224.2 deg
Jib Angle 2	135.8 deg

Low Boom Angle	
Low Boom Angle	-4.0 deg

Turntable Y Angle	
Turntable Y Angle 1	-0.5 deg
Turntable Y Angle 2	0.5 deg

Axle Angle	
Front Axle Angle 1	0.0 deg
Front Axle Angle 2	0.0 deg
Rear Axle Angle 1	0.0 deg
Rear Axle Angle 2	0.0 deg

Boom Angle	
Main Boom Angle 1	-65.0 deg
Main Boom Angle 2	65.0 deg

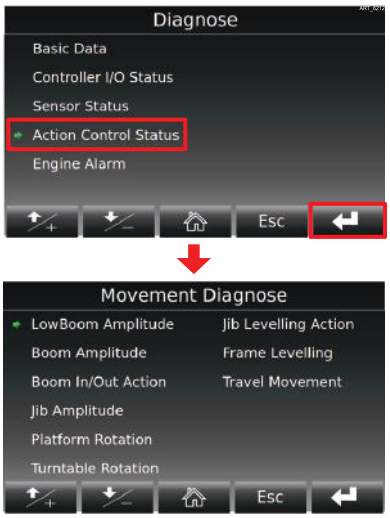
Boom Length	
Main Boom Length 1	0 In
Main Boom Length 2	-0 In

Load Cell Sensor	
Load Cell Analog 1	1368 mV/V
Load Cell Analog 2	1457 mV/V

Fuel Level Gauge	
Fuel Sensor Analog	19.2%

Action Control Status Menu

Action control status shows machine movement command request and output percentage by movement groups.



1. Once you are in the Diagnose Menu, press the down button "**/**" to select "Action Control Status" then press the Enter button ( ).
2. Once you are in the Action Control Status Menu, press the up button "**/**" or down button "**/**" to select the sensor you want to select.
3. Press the Enter button ( ) to enter the menu of the selected function and display the related data.
4. Press the "**Esc**" button to go back.

The values shown in the charts below for each angle are for reference of how the information will be displayed when viewed.

Low Boom Amplitude	
Platform Joystick Analog	False
Ground Control Switch	False
PWM Output A	0.0%
PWM Output B	0.0%
PWM Output Percent A	0.0%
PWM Output Percent B	0.0%

Boom Amplitude	
Platform Joystick Analog	-0.4%
Ground Control Switch	False
PWM Output A	0.0%
PWM Output B	0.0%
PWM Output Percent A	0.0%
PWM Output Percent B	0.0%

Boom In/Out Action	
Platform Joystick Analog	False
Ground Control Switch	False
PWM Output A	0.0%
PWM Output B	0.0%
PWM Output Percent A	0.0%
PWM Output Percent B	0.0%

Jib Amplitude	
Platform Joystick Analog	-0.2%
Ground Control Switch	False
PWM Output A	0 mA
PWM Output B	0 mA
PWM Output Percent	0.0%

Platform Rotation	
Platform Joystick Analog	-0.4%
Ground Control Switch	False
PWM Output A	0 mA
PWM Output B	0 mA
PWM Output Percent	0.0%

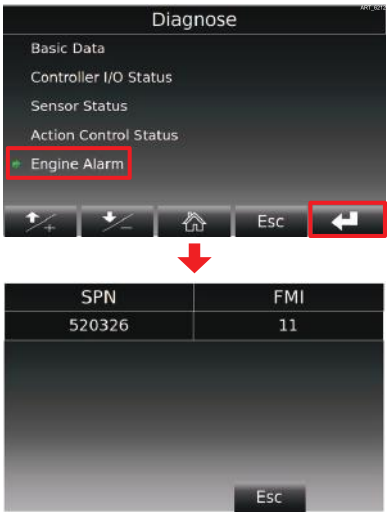
Turntable Rotation	
Platform Joystick Analog	-0.4%
Ground Control Switch	False
PWM Output A	0.0%
PWM Output B	0.0%
PWM Output Percent A	0.0%
PWM Output Percent B	0.0%

Jib Leveling Action	
Platform Joystick Analog	False
Ground Control Switch	False
PWM Output A	0.0%
PWM Output B	0.0%
PWM Output Percent A	0.0%
PWM Output Percent B	0.0%

Frame Leveling	
Platform Control Signal	False
Ground Control Signal	False
PWM Output A	0 mA
PWM Output B	0 mA
Percent Output Signal	0 mA
Percent Output	0.0%

Travel Movement	
Travel Speed PWM Output A	0 mA
Machine Travel_PWM B	0 mA
Travel Speed Percent	0.0%

Engine Alarm



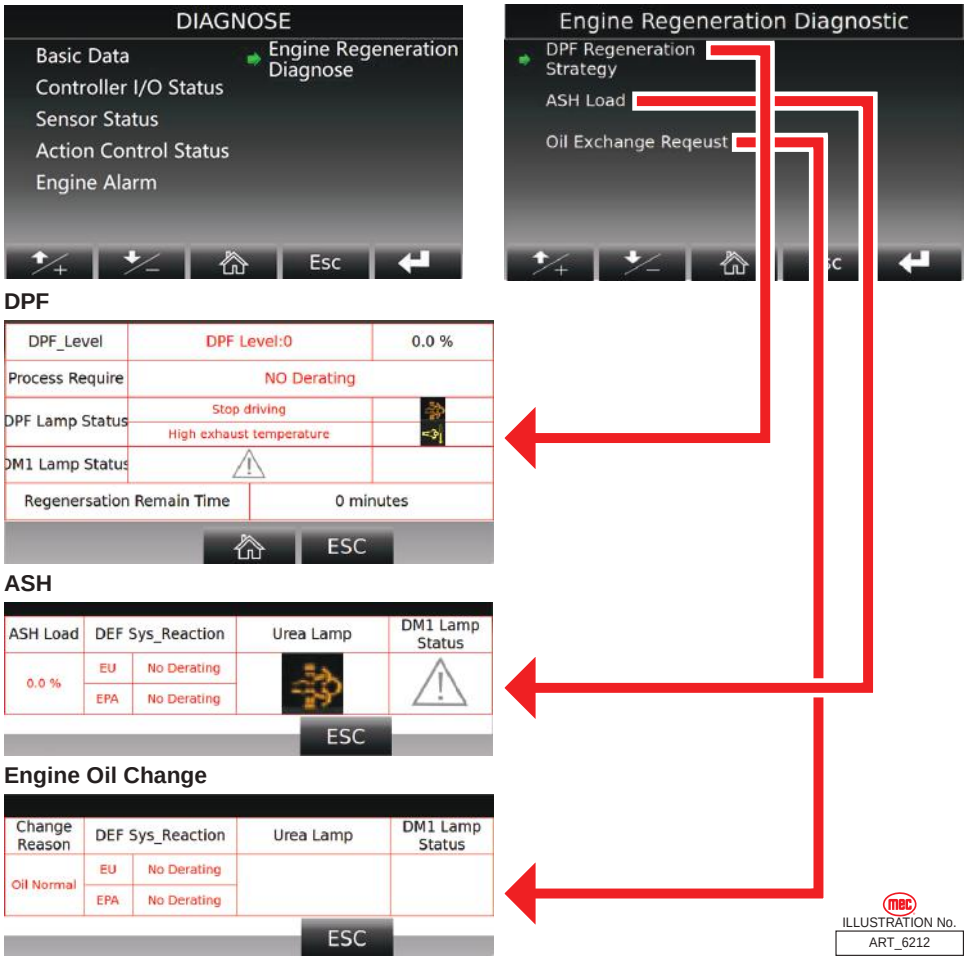
Displays the engine ECU's broadcasting DM1 message.

1. Once you are in the Diagnose Menu, press the down button "🡻 / ▬" to select the "Engine Alarm" then press the Enter button (↵).
2. Once you are in the Engine Alarm menu, you can view SPN (Suspect Parameter Number) and the FMI (Failure Mode Identifier).
3. Press the "**Esc**" button to go back.

The values shown in the chart are for reference of how the information will be displayed when viewed.

Engine Regeneration Diagnose

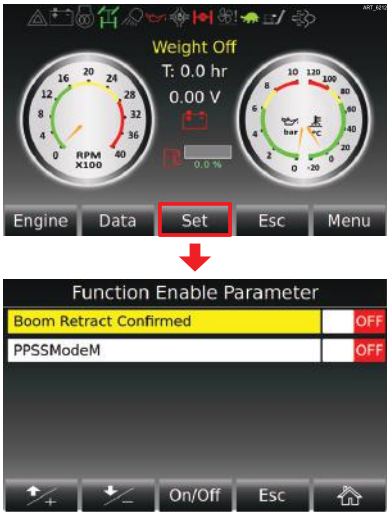
1. Once you are in the Diagnose Menu, press the down button "🡻 / ▬" to select "Engine Regeneration Diagnose" then press the Enter button (↵).
2. Once you are in the Engine Regeneration Diagnose Menu, press the up button "🡹 / ✚" or down button "🡻 / ▬" to select the function you want to select.
3. Press the Enter button (↵) to enter the selected function and display the related data.
4. Press the "**Esc**" button to go back.



Settings Interface

Quick Setup

1. Press and hold the “Set” button for several seconds then release to enter the “Quick Setup” interface.
2. Press the “**Esc**” button to go back when you are done.



Boom Retract Confirmed

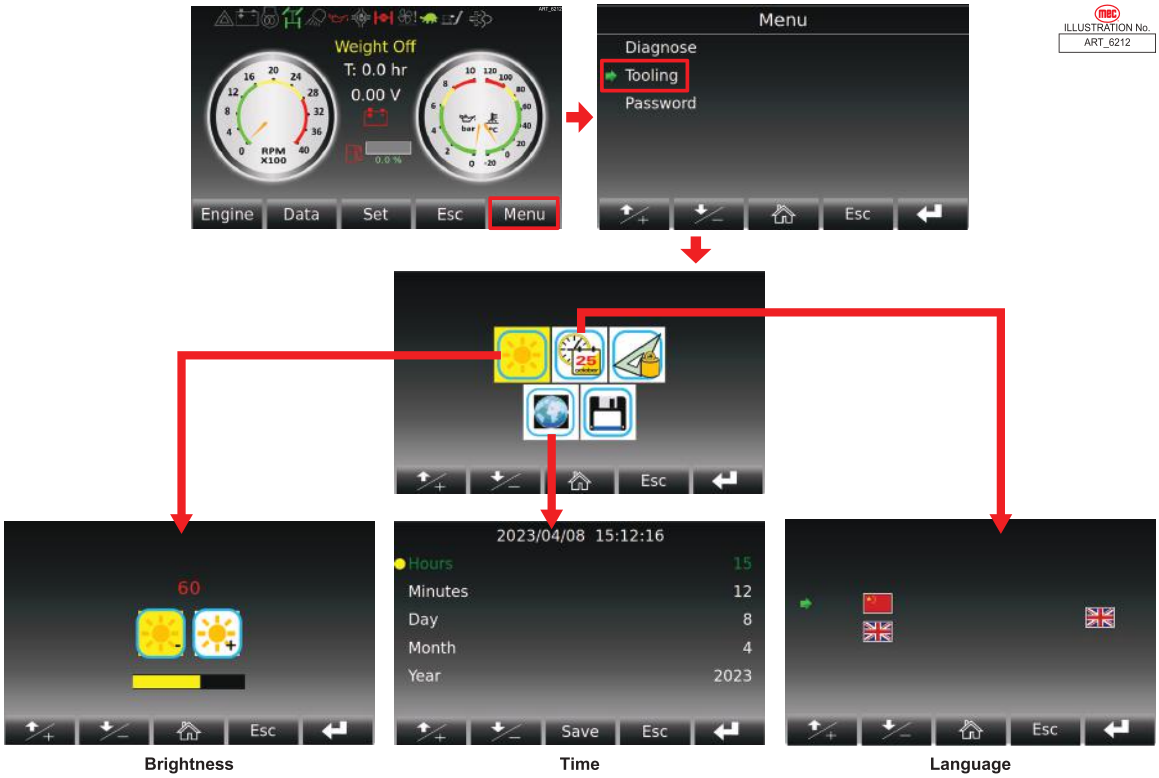
- The sensor is faulty and the controller does not know the status of the boom.
- Retract boom in emergency way, then turn on this function. In this method, machine can be driven to warehouse for repairing.

PPSS Mode

- This function can be switched on when ultrasonic sensors are installed on the platform frame to prevent the platform frame from colliding with obstacles above it.

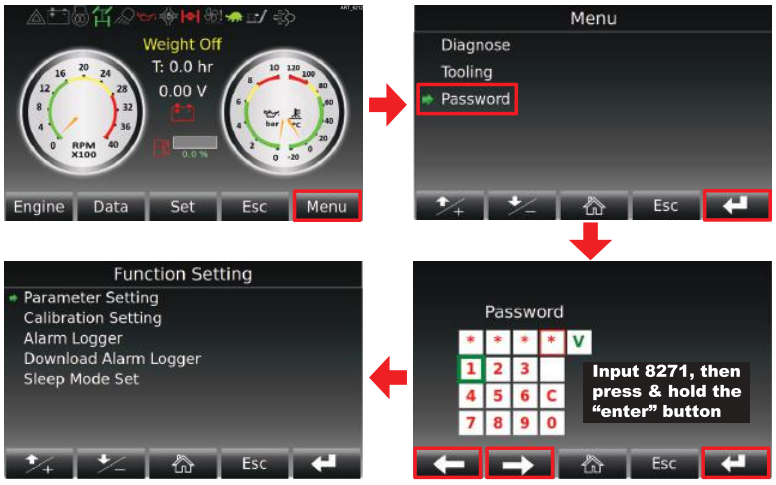
Tool Interface Adjustments

1. If the screen brightness, year/time, and or the language needs to be adjusted then follow these steps.
2. Press the Menu button then press the down button “🡻 / 🡿” to select the “Tooling” menu and press the Enter button (↵).
3. Use the respective buttons to make the changes need to the selected function.
4. Press the “**Esc**” button to go back when you are done.



Function Setting Menu

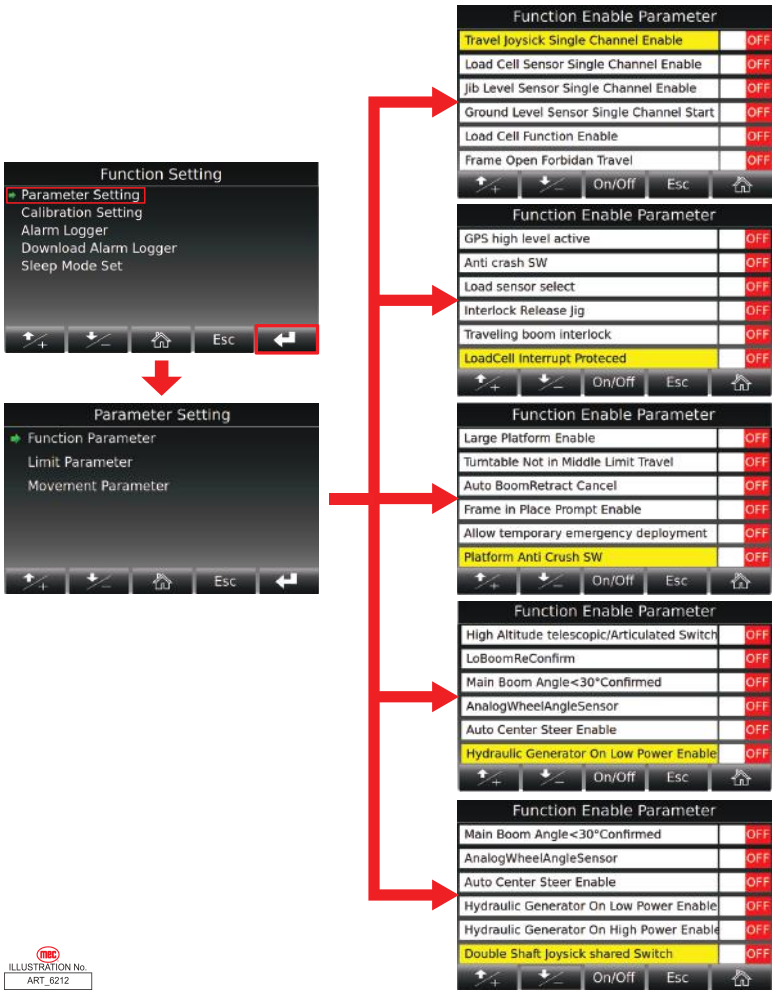
1. From the Main Menu, press the Menu button to enter the Menu interface.
2. In the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. In the Password Menu, press the left arrow button "🡐" and the right arrow button "🡒" to select the individual characters and press the Enter button (↵)to enter the select character.
4. Enter the password "8271" then press and hold the Enter button (↵) to enter the Function Setting Menu.



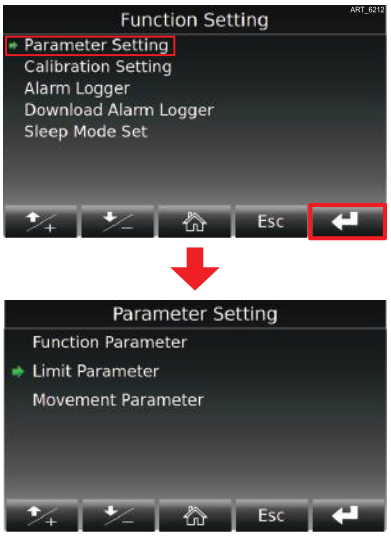
Function Parameter Menu

Function parameters set functions on/ off. The display sends button action to the controller, then reads controller feedback status for each function on or off.

1. After following the instructions to enter the Function Setting Menu on page 52, press the Enter button (↵) on "Parameter Setting".
2. In the Parameter Setting Menu, select the Function Parameter and press the Enter button (↵).
3. In the Function Parameter menu, you can enable or disable certain machine functions.



Limit Parameter

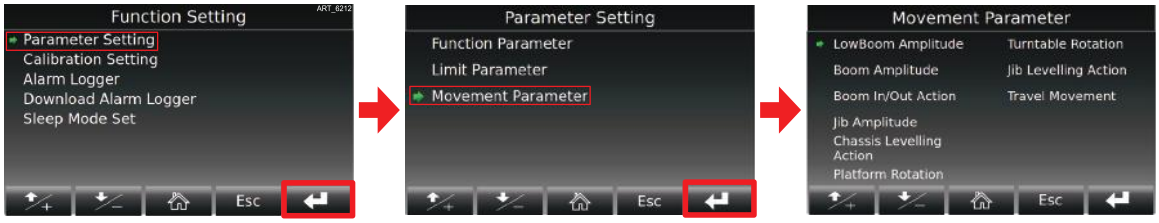


1. After following the instructions to enter the Function Setting Menu on page 52, press the Enter button ( ) on “Parameter Setting”.
2. In the Parameter Setting Menu, press the down button “ / ” to select the Limit Parameter and press the Enter button ( ).
3. Limit parameters sets the engine rpm and output limitation for machine movements.

The values shown in the chart are for reference of how the information will be displayed when viewed.

LowBoom Up Speed	1600rpm	4-Wheel Mode Traction Speed	1800rpm
LowBoom Down Speed	1600rpm	Steering Speed	1200rpm
Boom Up Speed	2000rpm	Boom Out Max Reduction Percent	35.2%
Boom Down Speed	1800rpm	Boom In Min Reduction Percent	47.2%
Boom Out Speed	1600rpm	Boom up/down follows out reduction ratio	85.2%
Boom In Speed	1600rpm	Boom Up Max Open Follows LowBoom	50.0%
Jib Up Speed	1200rpm	Boom Max Angle Reduction Percent	75.2%
Jib Down Speed	1200rpm	Jib Open Follow Platform Right Rotation	32.0%
Platform CW Rotation Speed	1000rpm	Jib Open Follow Platform Left Rotation	32.0%
Platform CCW Rotation Speed	1000rpm	MC43 one key leveling Output Ratio	100.0%
Turntable CW Rotation Speed	1000rpm	Turntable Follow Out Reduction Ratio	83.2%
Turntable CCW Rotation Speed	1000rpm	Jib Up PVG Open Speed	50.0%
Multi Action Speed	2300rpm	Jib Down PVG Open Speed	43.2%
Jib Up Leveling Engine Speed	1400rpm	Boom down max open follow lowboom	68.8%
Jib Down Leveling Engine Speed	1400rpm	Boom down min angle reduction percent	50.0%
High Speed Driving Speed	2400rpm	Generator High Power Speed	2000rpm
Climbing Speed Driving Speed	1800rpm	Generator Low Power Speed	1800rpm
Low Speed Driving Speed	1500rpm	Generator High Power Current	1050mA
High Altitude Driving Speed	1200rpm	Generator Low Power Current	850mA

Movement Parameter



1. After following the instructions to enter the Function Setting Menu on page 52, press the Enter button ( ) on “Parameter Setting”.
2. In the Parameter Setting Menu, press the down button “ / ” to select the Movement Parameter and press the Enter button ( ).
3. In the Movement Parameter Menu, you can see the parameters of the machine during an action.
4. Press the up button “ / ” or down button “ / ” to select the function you want to select then

press the Enter button (↵) on the selected function.

The values shown in the chart are for reference of how the information will be displayed when viewed.

Low Boom Amplitude	
P508 Up start slope	5000ms
P509 Up stop slope	3000ms
P510 Down start slope	4000ms
P511 Down stop slope	2000ms
P801 Up speed percent	91.2%
P802 Down speed percent	80.0%
P803 Up multi speed percent	66.0%
P804 Down multi speed percent	64.8%

Boom Amplitude	
P548 Up start slope	2000ms
P549 Up stop slope	4000ms
P550 Down start slope	5000ms
P551 Down stop slope	1500ms
P811 Up speed percent	80.0%
P812 Down speed percent	90.0%
P813 Up multi speed percent	82.0%
P814 Down multi speed percent	90.0%

Boom In/Out Action	
P568 Out start slope	5000ms
P569 Out stop slope	2000ms
P570 In start slope	3000ms
P571 In stop slope	2000ms
P816 Out speed percent	96.0%
P817 In speed percent	74.0%
P818 Out multi speed percent	73.2%
P819 In multi speed percent	66.0%

Jib Amplitude	
P588 Up start slope	1000ms
P591 Down stop slope	1140ms
P589 Up stop slope	2000ms
P590 Down start slope	2000ms
P821 Up speed percent	95.2%
P822 Down speed percent	96.0%
P823 Up multi speed percent	80.0%
P824 Down multi speed percent	75.2%

Chassis Leveling	
Left start slope	2500ms
Left stop slope	1000ms
Right start slope	2500ms
Right stop slope	1000ms
Left multi speed percent	78.0%
Right multi speed percent	88.0%
Left speed percent	64.8%
Right speed percent	64.8%

Platform Rotation	
P628 CW start slope	1000ms
P629 CW stop slope	1500ms
P630 CCW start slope	1000ms
P631 CCW stop slope	1500ms
P931 CW speed percent	80.0%
P832 CCW speed percent	80.0%
P833 CW multi speed percent	44.8%
P834 CCW multi speed percent	44.8%

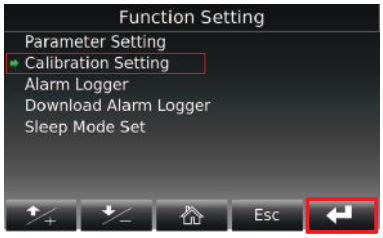
Turntable Rotation	
P648 CCW start slope	3500ms
P649 CCW stop slope	3500ms
P650 CW start slope	3500ms
P651 CW stop slope	3500ms
P836 CCW speed percent	50.0%
P837 CW speed percent	50.0%
P838 CCW multi speed percent	44.8%
P839 CW multi speed percent	44.8%

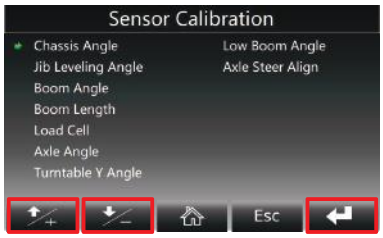
Jib Leveling	
P707 Up start slope	2000ms
P708 Up stop slope	2000ms
P709 Down start slope	2000ms
P710 Down stop slope	2000ms
P811 Up percent	64.8%
P812 Down percent	64.8%
P813 Up multi speed percent	44.8%
P814 Down multi speed percent	50.0%

Travel Movement	
P668 Forward start slope	2500ms
P669 Forward stop slope	1500ms
P670 Backward start slope	2500ms
P671 Backward stop slope	1500ms
P861 Forward safety slow	22.0%
P862 Backward safety slow	16.0%
P863 Forward fast percent	96.0%
P864 Backward fast percent	88.0%

Travel Movement	
P865 Forward climbing percent	36.0%
P866 Backward climbing percent	32.0%
P867 Forward big steer/manual slow	40.0%
P868 Backward big steer/manual slow	40.0%
P869 Forward big steer percent	30.0%
P870 Backward big steer percent	32.0%
P415 Steer speed	100.0%

Calibration Setting





If the sensor or MC43FS (controller) fails, the corresponding sensor needs to be re-calibrated.

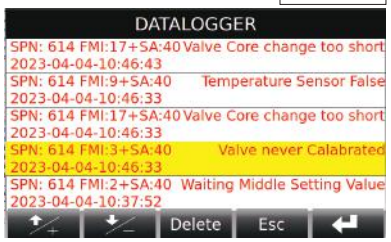
1. After following the instructions to enter the Function Setting Menu on page 52, press the down button "🡻 / 🡺" to select the "Calibration Setting" menu and press the Enter button (↵).
2. In the Sensor Calibration menu, using the up button "🡹 / 🡸" and/or down arrow "🡻 / 🡺" to select the function you want to calibrate and then press the Enter button (↵).

The following example is used an example to demonstrate how to recalibrate a sensor.

1. Take "chassis angle" as an example: If operator replaces a new tilt sensor, the user needs to drive the machine to a level ground first, and then enter the calibration interface, as shown in the following figure.
2. Press & hold "XZero" button for several seconds to calibrate the X-axis, press & hold "YZero" button for several seconds to calibrate the Y-axis.

ART_6212

ILLUSTRATION No.
ART_6212



Alarm Logger

1. After following the instructions to enter the Function Setting Menu on page 52, press the down button "🡻 / 🡺" to select the "Alarm Logger" menu and press the Enter button (↵).
2. In the Alarm Logger menu, you can browse the machine's historical fault codes.

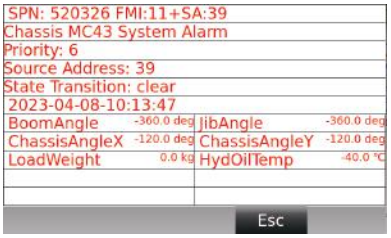
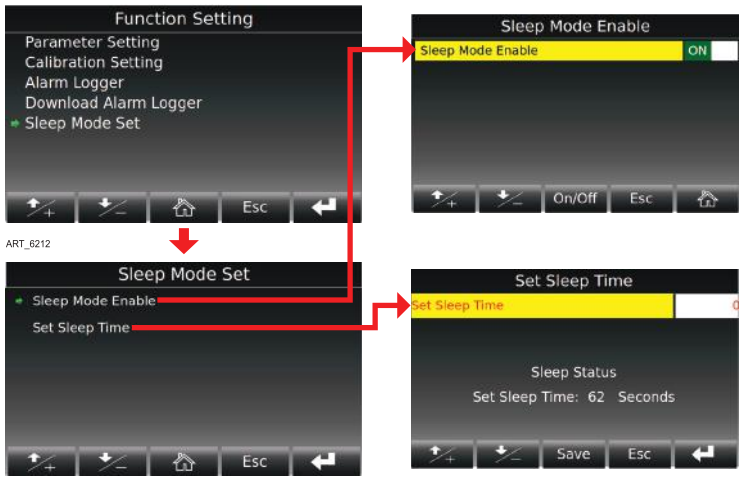


ILLUSTRATION No.
ART_6212

3. To download the Alarm Logger data, make sure that the machine is parked on a flat, level and firm surface.
4. Turn the machine off and plug in a USB into the USB port.
5. Turn the machine on with the USB still in the USB port and the image to the right will appear on the interface.

Sleep Mode Set Menu

1. After following the instructions to enter the Function Setting Menu on page 52, press the down button "🡻 / ▬" to select the "Sleep Mode Set" menu and press the Enter button (↵).
2. In the Sleep Mode Set, you can choose to enable or disable the Diagnostic Panel auto-dimness, or change the length before the screen dims.
   - The default dormancy time of the display is 5 minutes (300 seconds).
   - The minimum settable dormancy time is 1 minute (60 seconds).

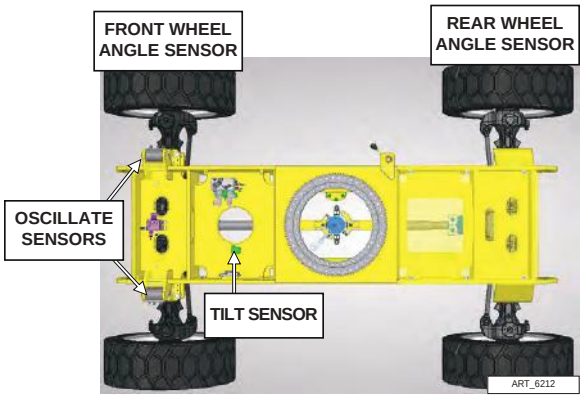


Sensors and Calibration

Tilt Sensor

When the machine is raised, the maximum tilt angle allowed by the machine is 3°.

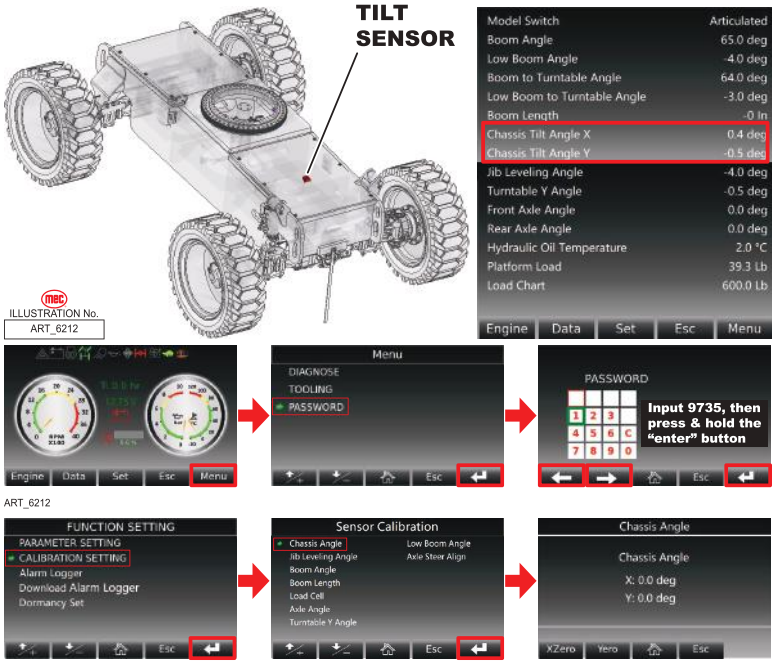
The tilt sensor will monitor the horizontal angle value of the chassis in real time. If the tilt angle of the chassis is too large, the system will give an alarm and prohibit continued work.



If you want to see detailed information detected by the machine sensors, refer to page 42 for Machine details.

Tilt Sensor Calibration

1. Make sure that the machine is parked on a flat, level and firm ground. Make sure that the tilt value of the machine for both the X-axis and Y-axis is 0°.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / ▬" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Chassis Angle" and press the Enter button (↵).
6. Press & hold "XZero" button for several seconds to calibrate the X-axis.
7. Press & hold "YZero" button for several seconds to calibrate the Y-axis.

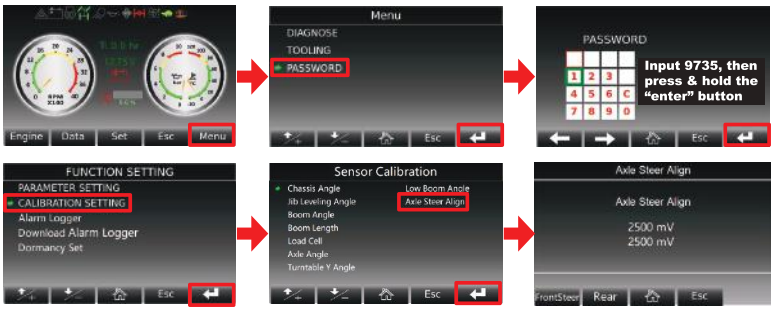


Axle Angle Sensor

The analogue voltage value is about 2500mV when the wheel is in the neutral position.

Chassis Controller		
C2: 57	Steer angle: Front-axle	2500mV
C2: 58	Steer angle: Rear-axle	2500mV

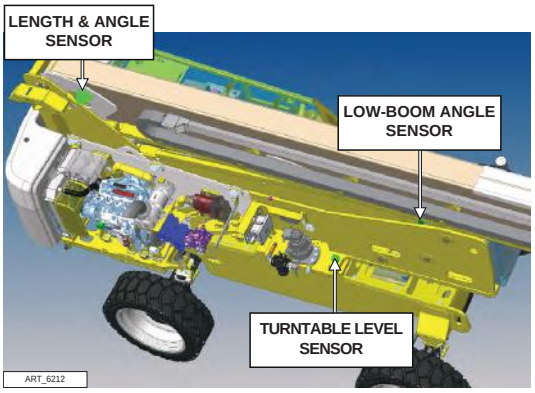
Axle Angle Sensor Calibration



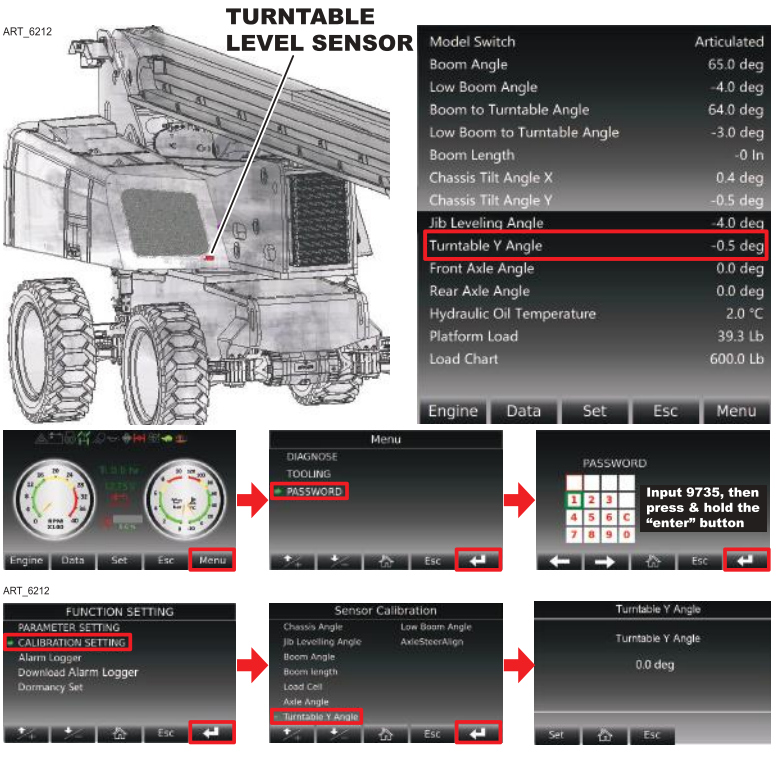
1. Make sure that the machine is parked on a flat, level and firm ground. Make sure that the front and rear wheels are in the neutral position.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / ▬" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Axle Steer Align" and press the Enter button (↵).
6. Press & hold "Front Steer Align" button for several seconds to calibrate the front axle
7. Press & hold "Rear" button for several seconds to calibrate the rear axle.

Turntable Level Sensor

Detects the Y-angle of the turntable and compensates for the following angle of the main boom in articulating mode.



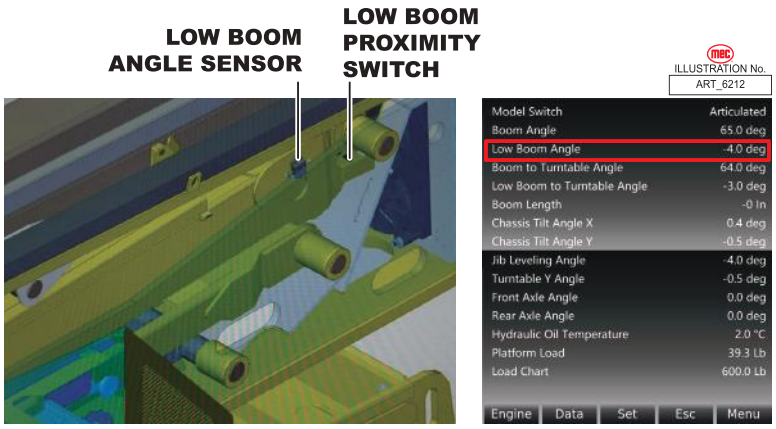
Turntable Level Sensor Calibration



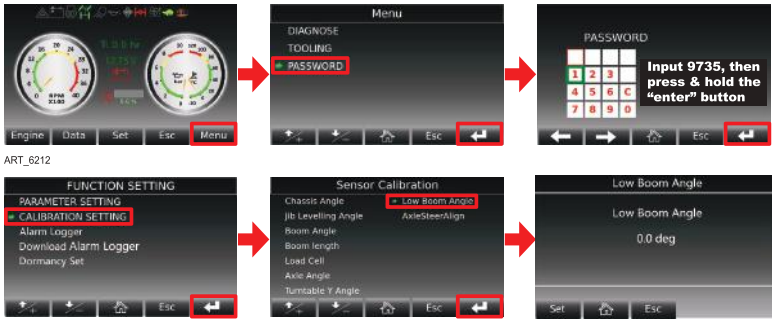
1. Make sure that the machine is parked on a flat, level and firm ground.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / ▬" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Turntable Y Angle" and press the Enter button (↵).
6. Press & hold "Set" button for several seconds to calibrate the sensor.

Low Boom Angle Sensor

Chassis Controller		
C1: 25	Lower Boom Down Limit Switch	True: Stowed False: Raised



Low Boom Angle Sensor Calibration



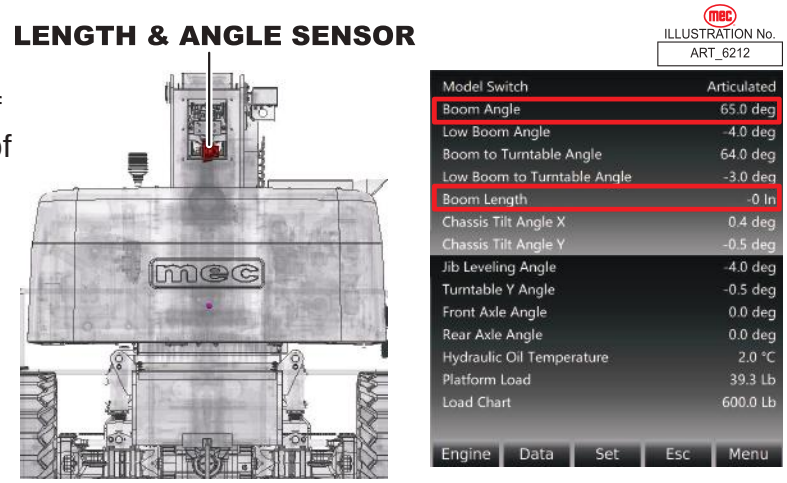
1. Make sure that the machine is parked on a flat, level and firm ground. Raise the riser boom so that the angle is 0°.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / ▬" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Low Boom Angle" and press the Enter button (↵).
6. Press & hold "Set" button for several seconds to calibrate the sensor.

Main Boom Length & Angle Sensor

The sensor can monitor the length and angle of the main-boom in real time. There are 2 kinds of switches that can detect the state of the main-boom.

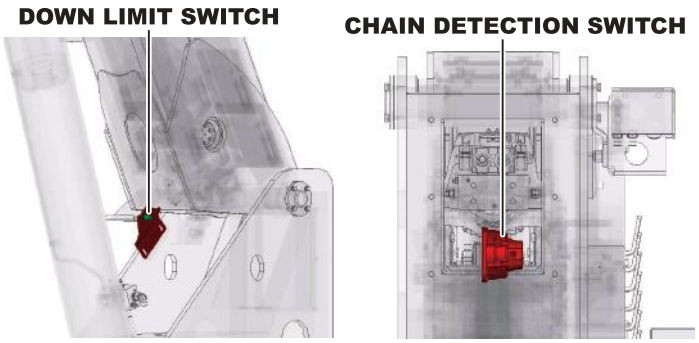
- Down limit switch
- Chain detection switch.

Operators can check whether the switches are faulty in the parameters interface of main controller.



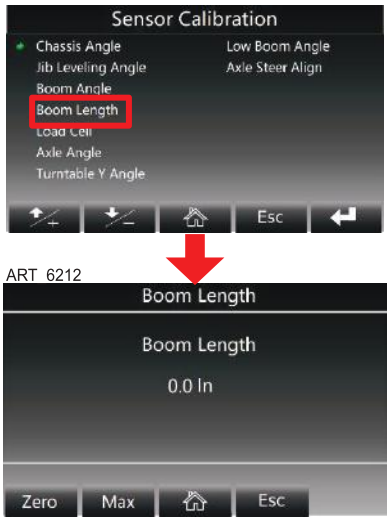
Turntable Controller		
C1: 24	Main Boom Down Limit Switch	True: Stowed False: Raised
C1: 26	Main Boom: Chain Detection Switch	True: Normal False: Alarm

ILLUSTRATION No.
ART_6212



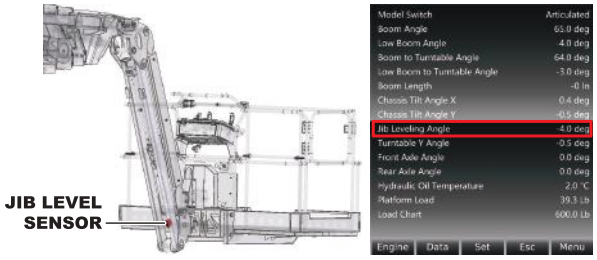
Boom Angle Sensor Calibration

1. Make sure that the machine is parked on a flat, level and firm ground. Make sure that the main boom is fully retracted and the boom angle is 0°.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).
3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / ▬" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Boom Angle" and press the Enter button (↵).
6. Press & hold "Set" button for several seconds to calibrate the sensor.
7. Press "Esc" button to escape from above interface, then select "Boom Length".
8. Under the premise that the main-boom is fully retracted, press the "Zero" button to calibrate the retracted length;
9. Extend the main-boom completely, and press the "Max" button to calibrate the extended length.



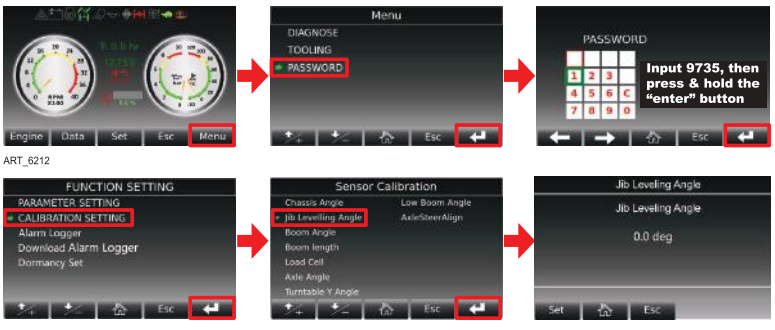
Jib Level Sensor

The sensor can monitor the angle of the jib in real time to ensure the safety of the operator.



Jib Level Sensor Calibration

1. Make sure that the machine is parked on a flat, level and firm ground and that the platform is level.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / ▬" to select the "Password" menu and press the Enter button (↵).

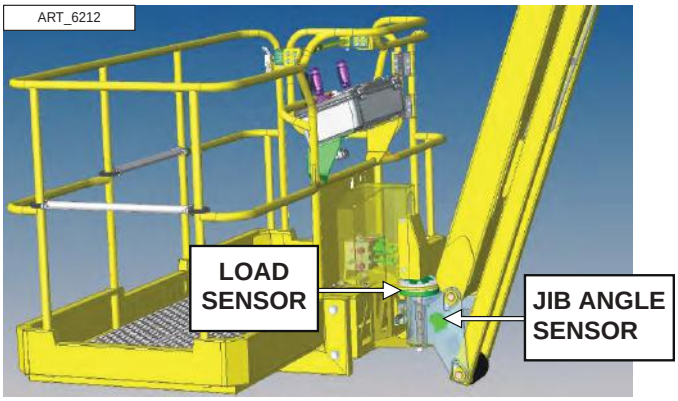


3. Enter the password “9735,” then press and hold the Enter button ( ) to enter the Function Setting Menu.
4. Press the down button “ / ” to select the “Calibration Setting” menu and press the Enter button ( ).
5. Inside the Sensor Calibration menu, select “Jib Leveling Angle” and press the Enter button ( ).
6. Press & hold “Set” button for several seconds to calibrate the sensor.

Load Sensor & Signal Amplifier

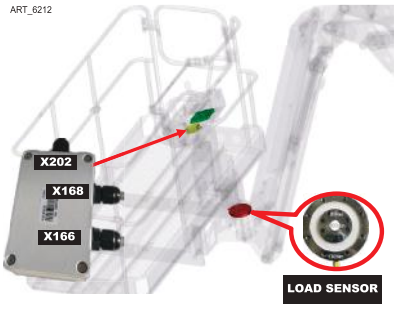
Load sensor

- It can accurately measure the load change on the platform and can intuitively display the current load on the display.



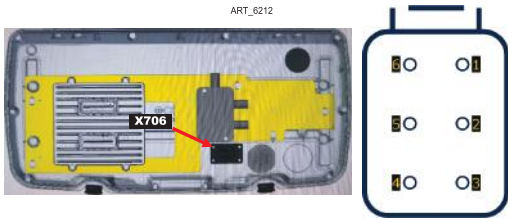
Signal amplifier

- The output signal of the load sensor is very weak (mV level), and the controller cannot directly process the signal. Therefore, a signal amplifier is required to amplify the weakly changed differential signal output by the sensor for the controller to process.



The method to confirm whether the load sensor is normal:

1. In platform box, find the connector “X706”
2. Turn on the machine, measure the input voltage to load sensor (Between pin 2 & 5: 8V);
3. No load on platform, measure the output voltage of signal 1 and signal 2 respectively (about 1.9mV);
4. Rated load on platform (900lb), measure the output voltage of signal 1 and signal 2 in the same way (about 3.9mV).



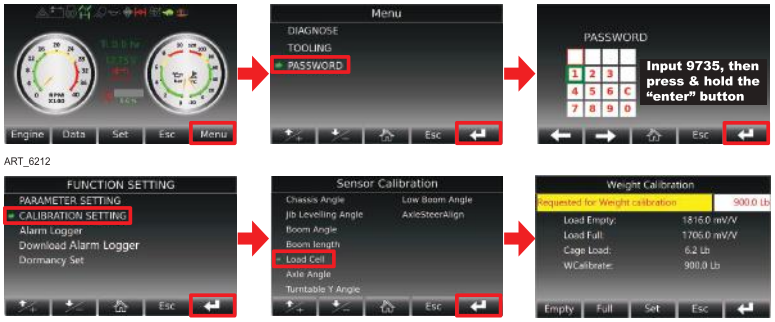
	Signal 1, Signal 2 (Pin 1 & 3; pin 4 & 6)	Amplified signals (Menu, diagnose, sensor status)
No load	1.9mV	1300mV
Rated load	3.9mV	2200mV

Note: The values measured above are for reference only.

Note: When it is difficult to judge, disconnect load sensor from amplifier to eliminate interference of the amplifier with the signal (see picture).

Load Sensor Calibration

1. Make sure that the machine is parked on a flat, level and firm ground and that the platform is level.
2. From the Main Menu, press the Menu button and from the Menu interface, press the down button "🡻 / 🡺" to select the "Password" menu and press the Enter button (↵).

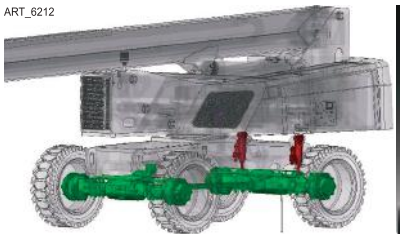


3. Enter the password "9735," then press and hold the Enter button (↵) to enter the Function Setting Menu.
4. Press the down button "🡻 / 🡺" to select the "Calibration Setting" menu and press the Enter button (↵).
5. Inside the Sensor Calibration menu, select "Load Cell" and press the Enter button (↵).
6. With the platform completely empty of tools and personnel, press & hold the "Empty" button for several seconds to calibrate the "empty-load".
7. Put the maximum rated load on platform, then press "Full" button for several seconds to calibrate the "full-load".

Oscillating Axle

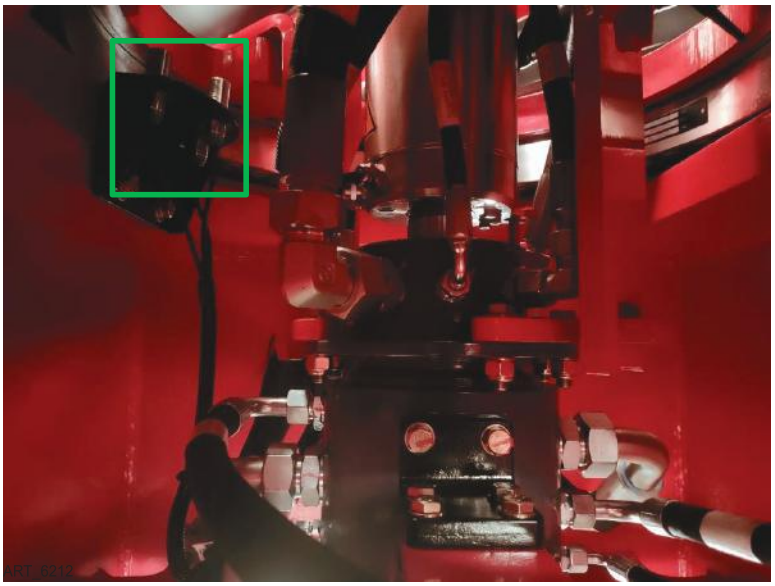
At the front axle, there are 2 oscillating cylinders:

- When the machine is driving at stowed state, the spools on these 2 cylinders open the oil circuit, allowing the front axle to oscillate freely according to the terrain. And the corresponding icon will light up.
- In other cases, the oscillating axle of the machine is in a lock state, and the axle cannot oscillate to ensure the safety of the machine.



Input Pin	Lock State	Oscillate State
C2: 34 Left Oscillating Cylinder: Signal 3 NO	False	True
C2: 35 Left Oscillating Cylinder: Signal 1 NC	True	False
C2: 36 Right Oscillating Cylinder: Signal 4 NO	False	True
C2: 37 Right Oscillating Cylinder: Signal 2 NC	True	False

Turntable Proximity Switches (NO)



These 3 switches are used to detect what state the turntable is currently in.

If the turntable deviates from the middle position within 15° to the left or right, and two or more limit switches are triggered, the control system will determine that the turntable is currently in the middle position.

If the turntable is not in the middle position, the system will limit some of the machine's functions to ensure the safety of operators.

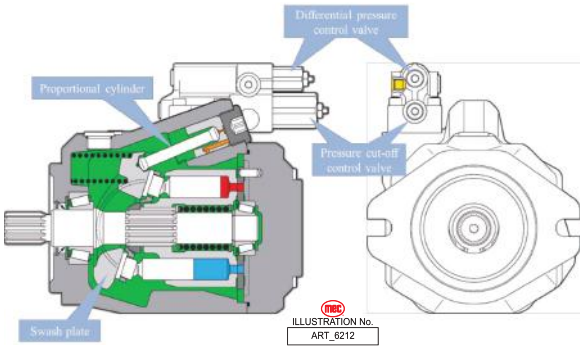
I/O status of main controller

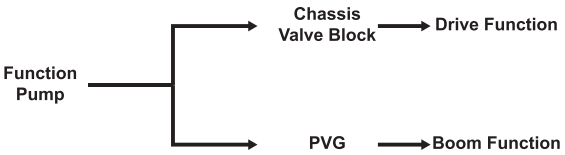
Input pin	Description
C2: 42 Turntable Proximity Switch: Left	True: At Middle Position False: Out Of Middle Position
C2: 55 Turntable Proximity Switch: Right	
C2: 56 Turntable Proximity Switch: Middle	

Function System

Function Pump

Function Pump	
Displacement	45cc
Rated Working Pressure	265bar

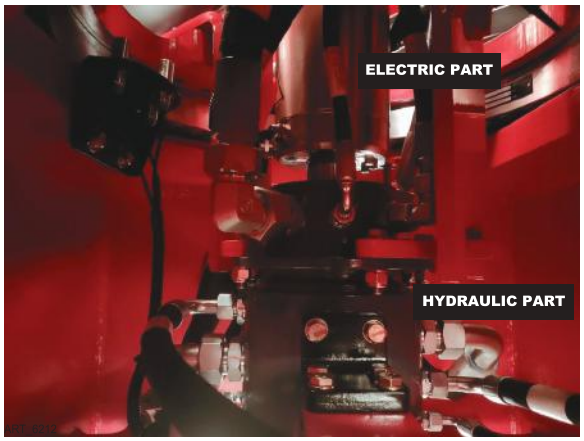




Rotary Coupling

The rotating joint can be divided into two parts: Electrical part & Hydraulic part.

It can connect the wires and oil pipes between chassis and turntable, so that the turntable can rotate 360° without interruption.

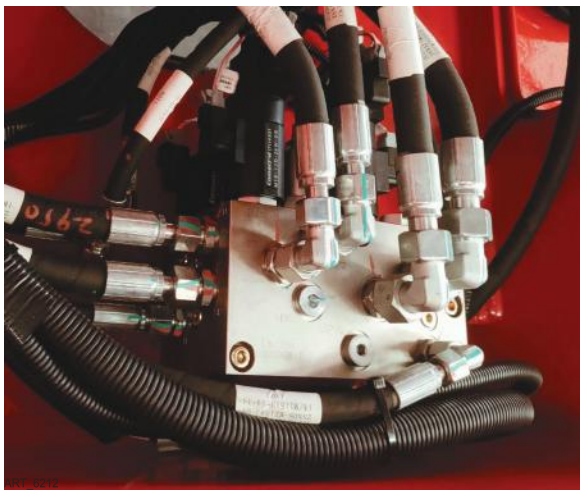


Chassis Valve Block

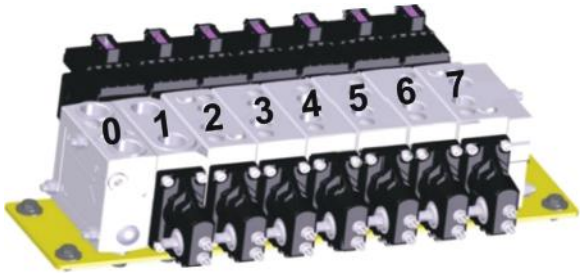
The Chassis valve block location at the chassis front side.

It can realize the function of chassis movement, for example release the wheel brake, differential lock, four wheels steering, frame leveling (Option).

Refer to page 72 for the schematic.



PVG



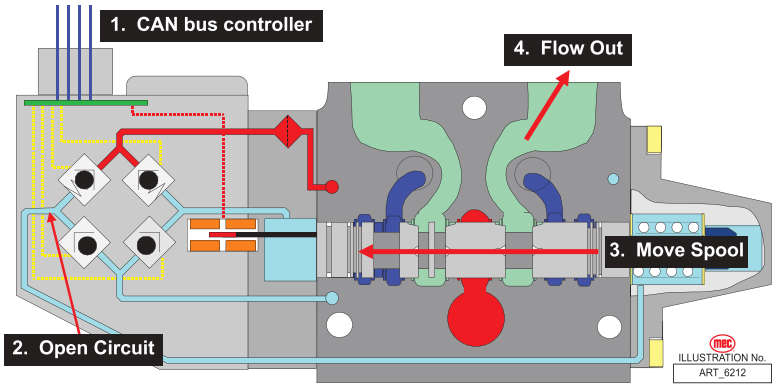
The PVG is located at right side of the machine. By controlling the opening and closing of the oil circuit, many functions of boom movement can be realized.

Through the “M port”, the oil pressure inside the valve block can be measured to check whether the oil system is normal.

Function Enable

No matter what you want to do (main-boom amplitude, turntable rotation…), first of all, the piece 1 will be energized.

Under the premise that piece 1 is energized, if piece 2 is energized, the main-boom can be extended or retracted; if piece 3 is energized, the main-boom can be lifted or lowered, etc.

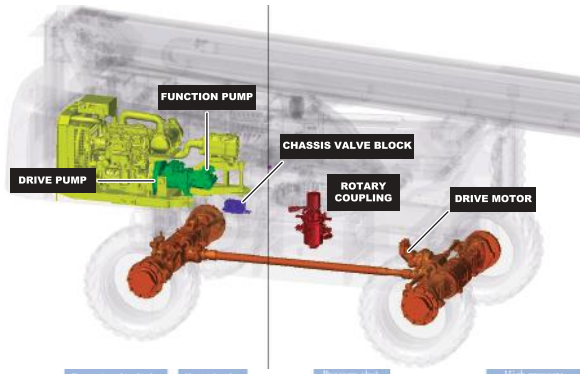


Platform Valve Block

When the piece 1 & piece 6 of PVG are energized, then the oil will flow into the platform valve block. Various functions are realized by controlling the valves on the platform valve block.

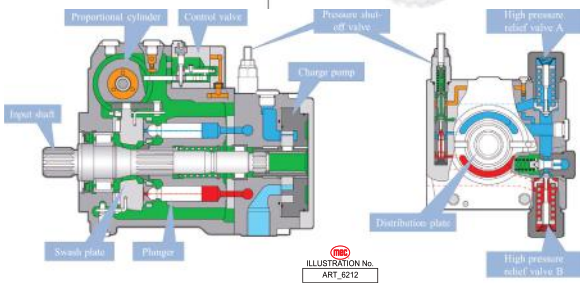
For this valve block, it has 2 functions: platform swing, and jib amplitude.

Drive System



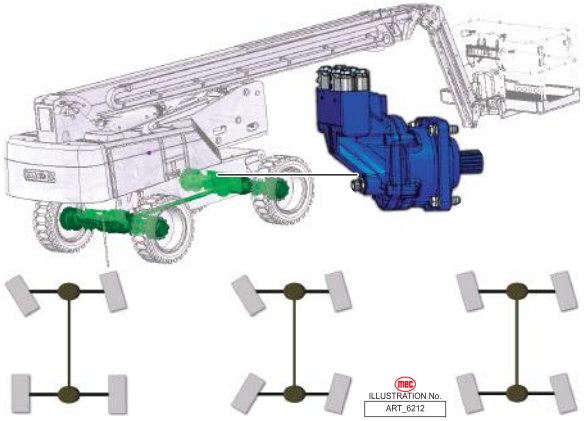
Drive-Pump

The engine can drive the drive-pump (Drive-pump, 90cc) to run, so that hydraulic oil flows into the drive-motor (via rotary-coupling).



Drive-motor

Drive-motor	
Displacement	90cc
Rated Working Pressure	400bar



Drive-axle

The drive motor can provide power to the drive-axle, thereby realizing the function of four-wheel drive. At the same time, the front and rear axles are each equipped with a steering cylinder, so this model also has the function of four-wheel steering: 2-wheel mode, 4-wheel mode, and crab mode.

Wheel Reducer Gear

For detailed information on checking the gear oil level, refer to page 26.

For detailed information on changing the gear oil level, refer to page 32.

For detailed information on the wheel nut torque, refer to page 23.

Gear Oil	
Sae Viscosity Grade	80W-90
Industry Specification	API GL-5
Recommended Oil	Mobil Delvac™ Gear Oil 80W-90

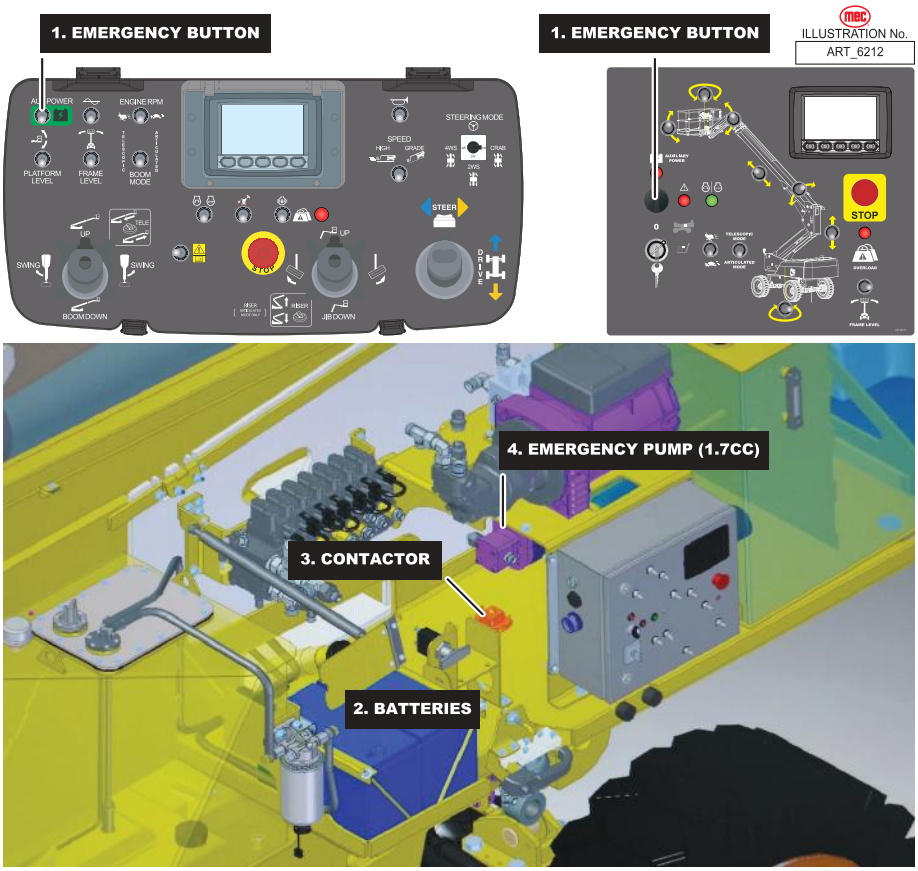
Auxiliary Power System

If primary power fails while the platform is elevated, use the Auxiliary Power System to safely lower the platform.

WARNING

Do not climb down the boom assembly or exit the platform while elevated.

ALWAYS check over, under and around the machine for personnel, structures and obstructions before activating any control function and continue to watch for hazards while operating the machine.



This function uses battery power from the auxiliary battery to lower the platform.

- Push and hold the Auxiliary Power Switch, then use the Boom Extend/Retract function to retract the boom.
- Continue to hold the Auxiliary Power Switch, then use the Boom Lift/Lower function to lower the boom.

The Auxiliary Power System is used to lower the platform in case of primary power failure. To lower the platform, activate the Auxiliary Power Switch to run the auxiliary hydraulic pump. Pushing the Auxiliary Power Switch will energize the emergency-pump contactor. Afterwards, the batteries can provided power to the emergency-pump. The emergency pump can then supply hydraulic oil to the machine and be used to lower the boom and or the platform.

Electrical Schematic, Lower Controls

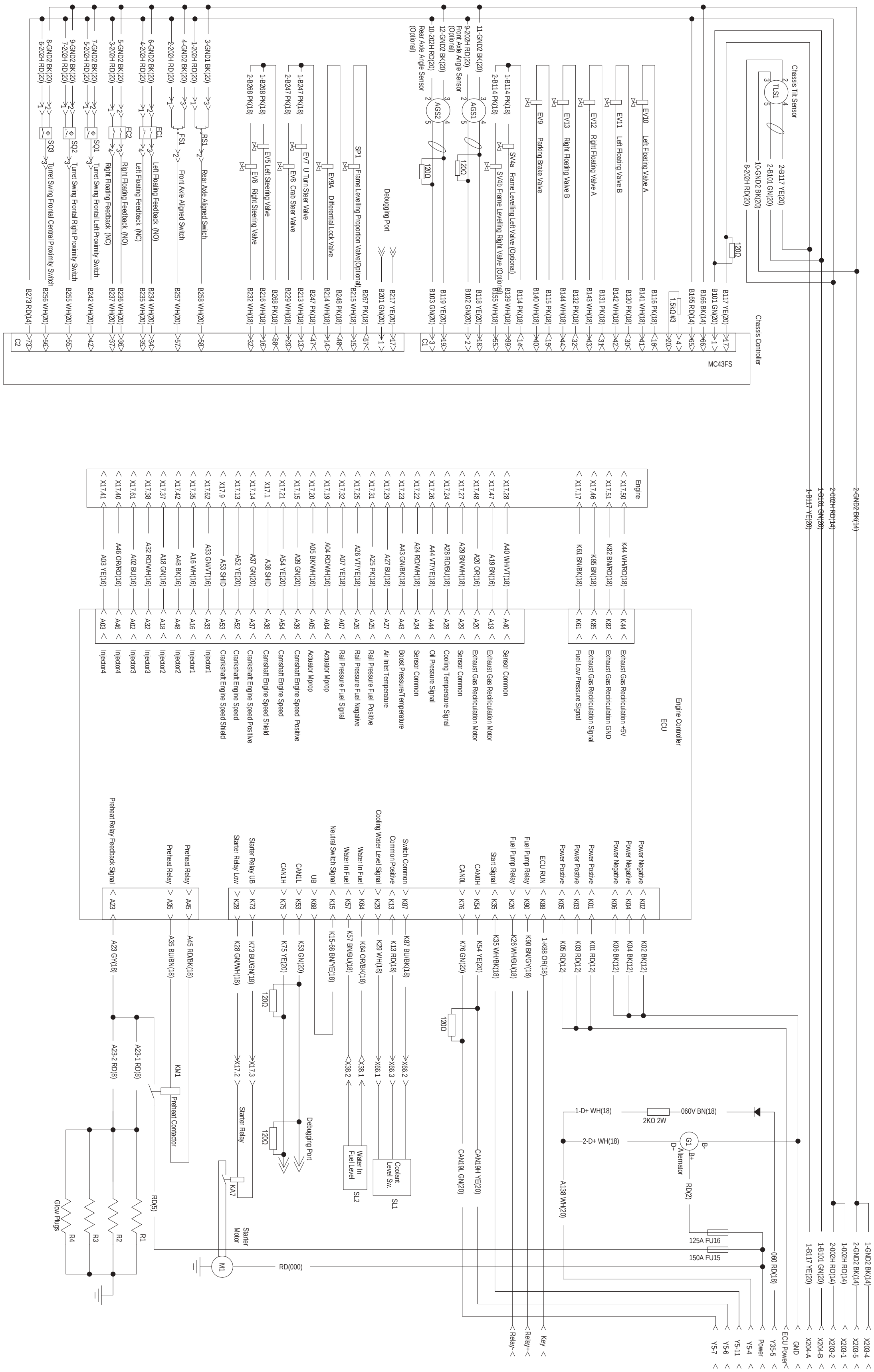


ILLUSTRATION No. ART_6193

85-J

Lower Control, Electrical Schematic

Electrical Schematic, Chassis

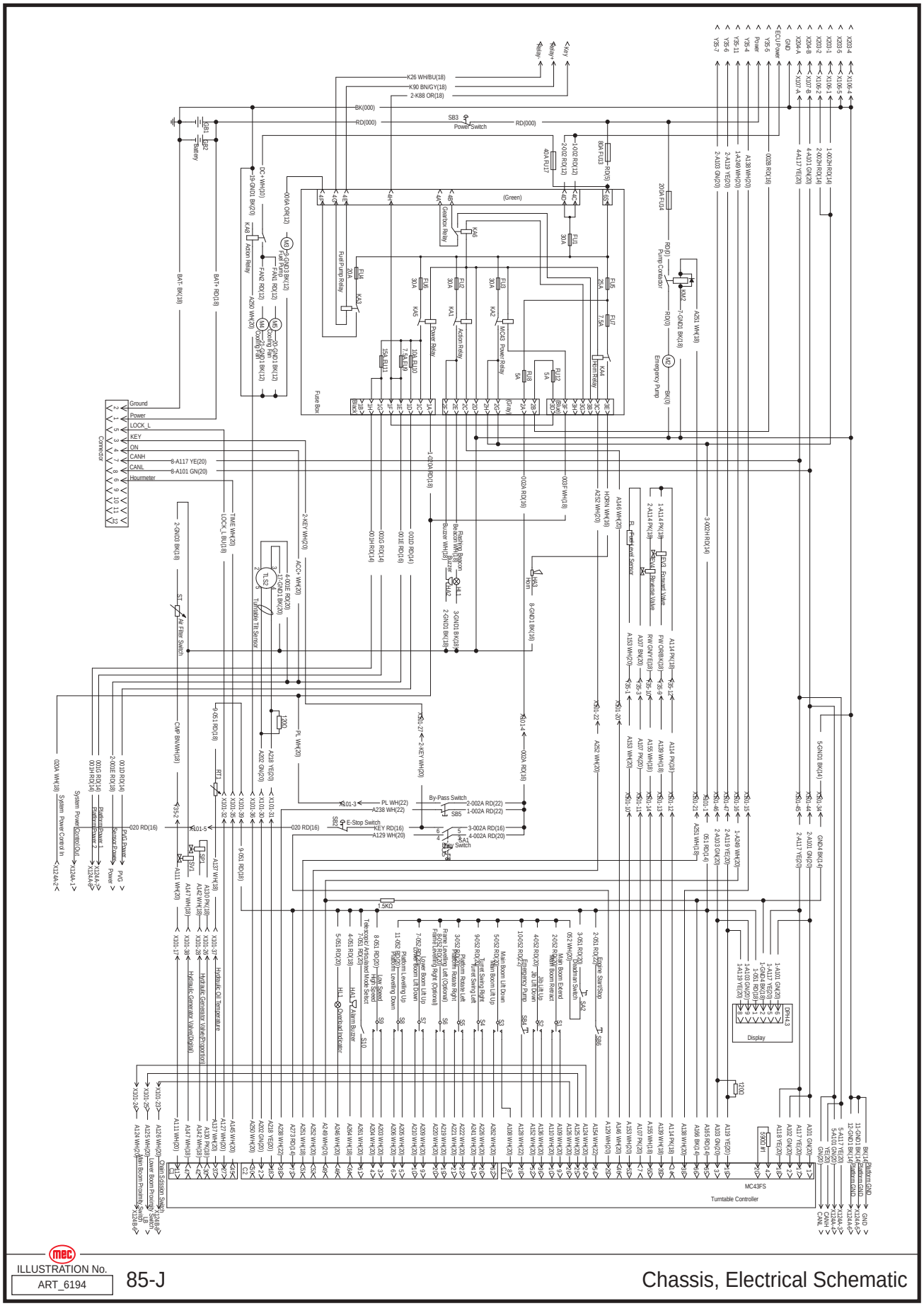


ILLUSTRATION No. ART_6194

85-J

Chassis, Electrical Schematic

Electrical Schematic, Upper Controls

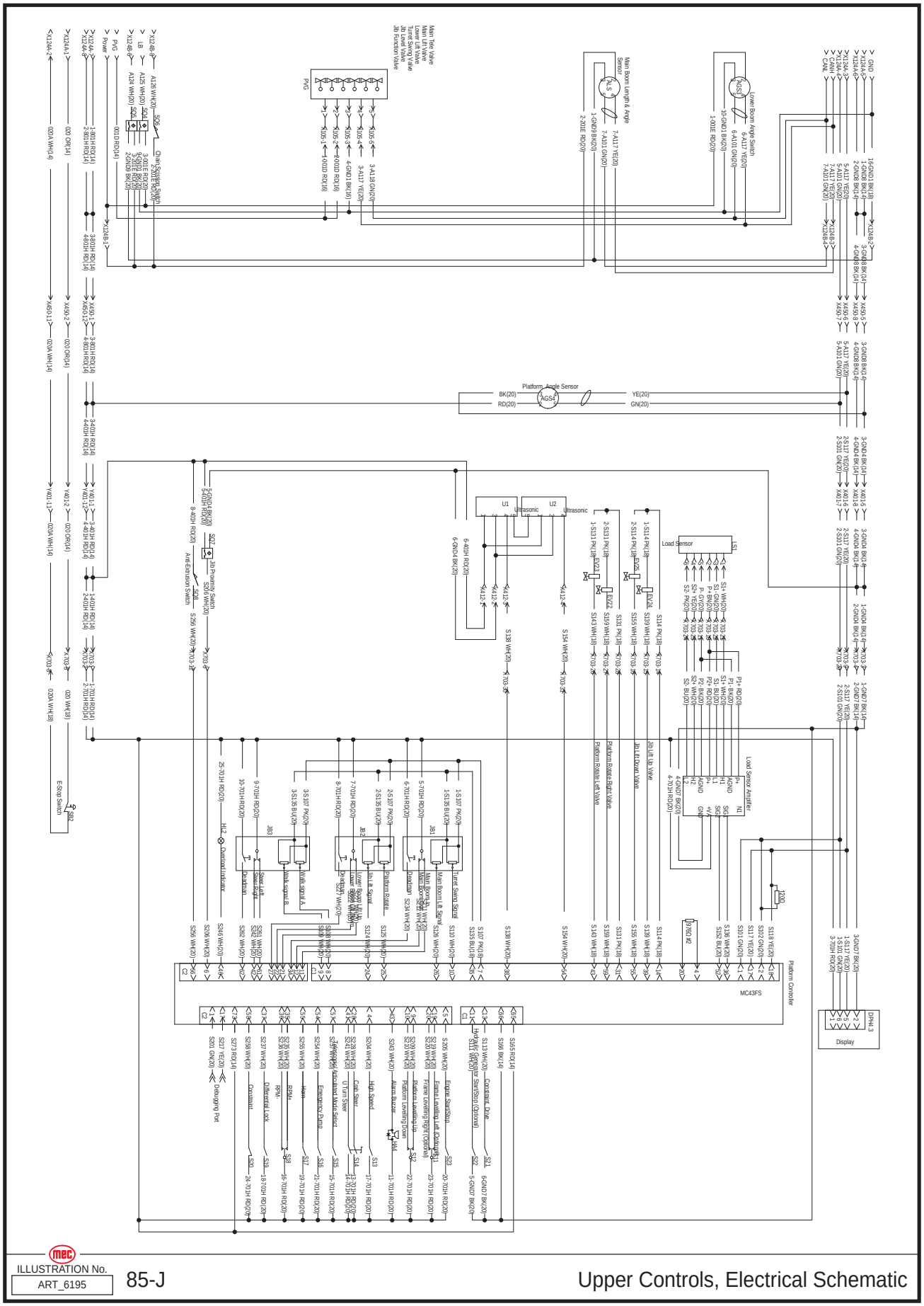
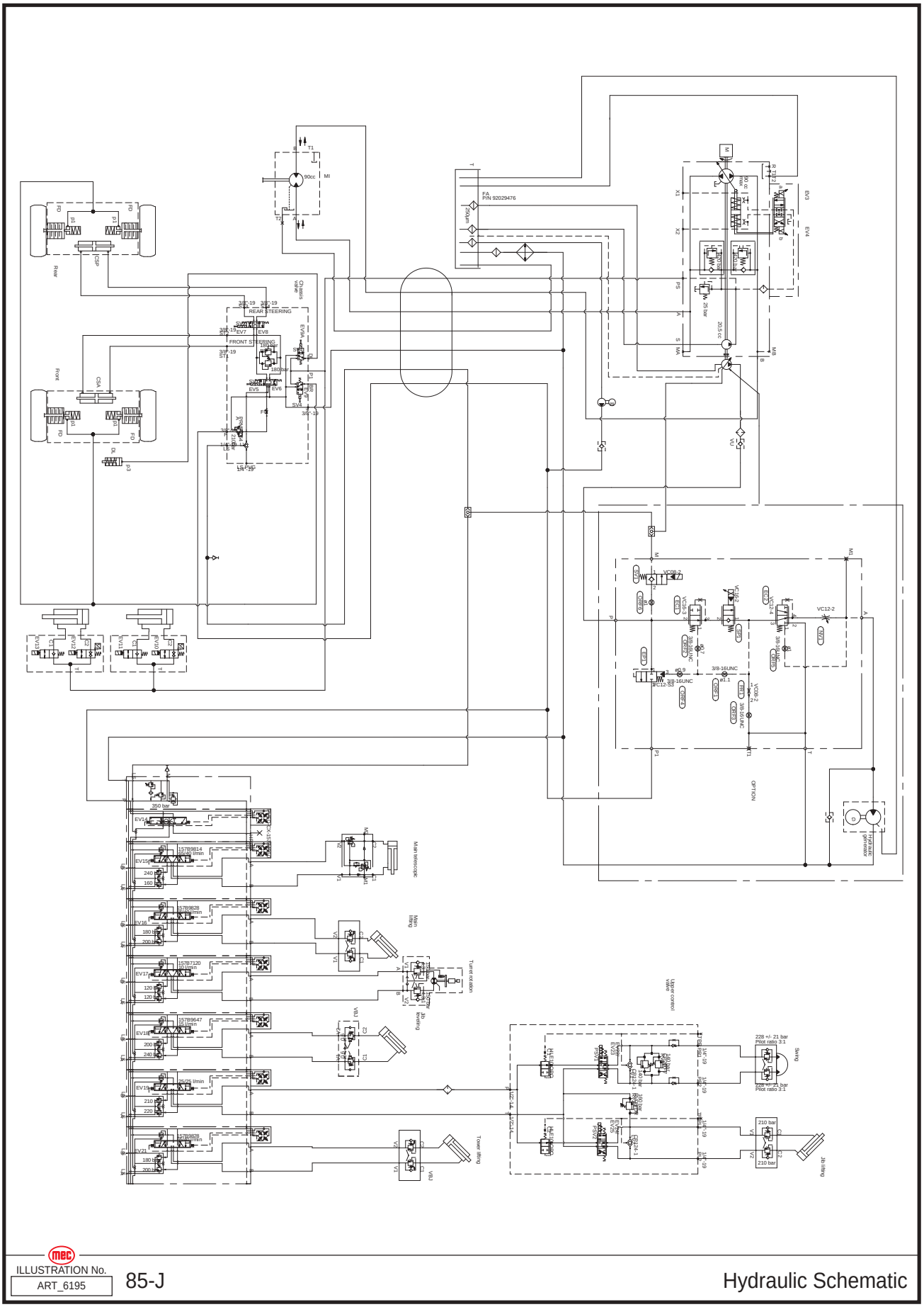


ILLUSTRATION No. ART_6195

85-J

Upper Controls, Electrical Schematic

Hydraulic Schematic



Chassis Valve Block Schematic

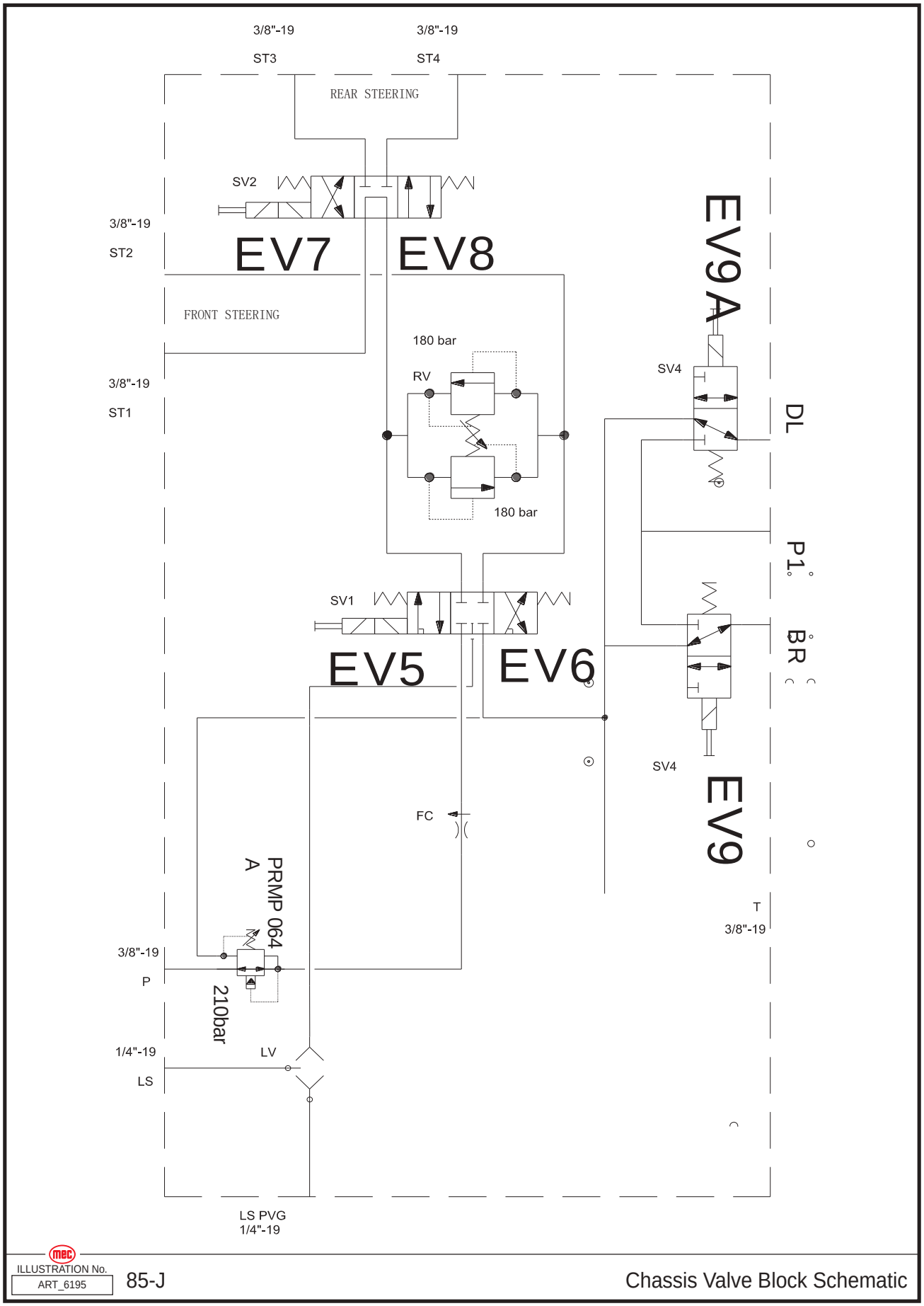
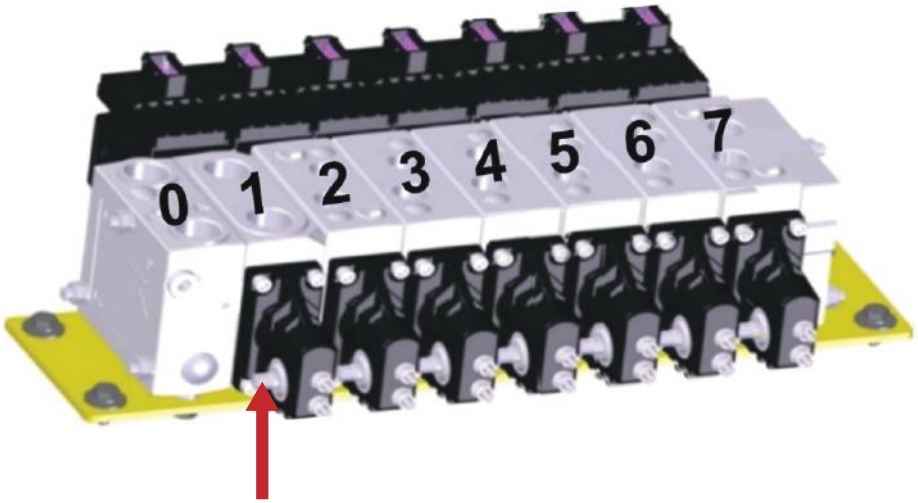


ILLUSTRATION No. ART_6195 85-J Chassis Valve Block Schematic

PVG Ports



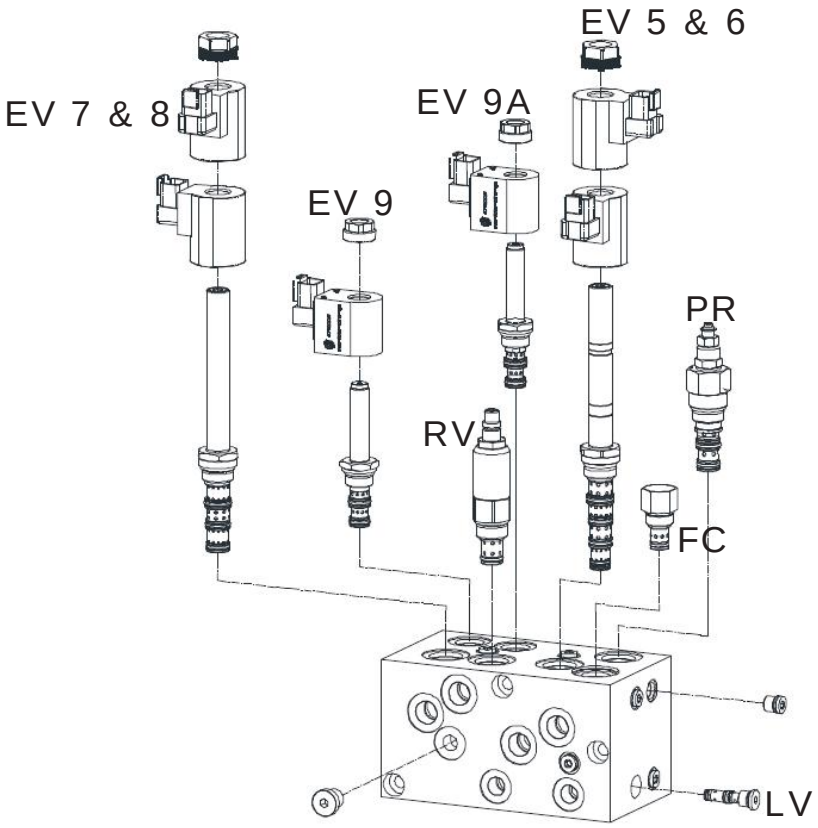
USE 9MM-WRENCH

When the control system is faulty, you can use 9mm-wrench to move the valve spool. In this way, some oil circuits are manually opened to achieve specific functions.

NO.	Function
Piece 1	Function Enable
Piece 2	Main Boom Telescopic
Piece 3	Main Boom Amplitude
Piece 4	Turntable Rotation
Piece 5	Jib Leveling
Piece 6	To Platform Valve Block
Piece 7	Low Boom Amplitude

ILLUSTRATION No. ART_6214 85-J PVG Ports

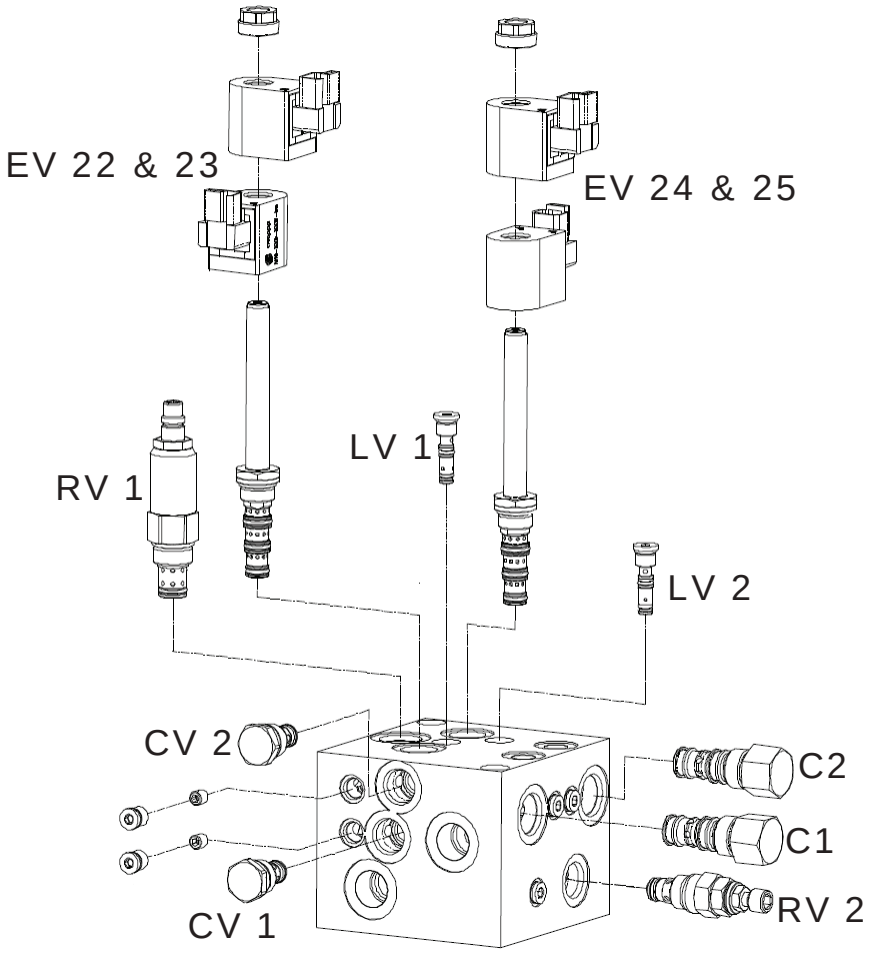
Chassis Valve Block Ports



NO.	Function
EV 5 & 6	Left / Right Steering
EV 7 & 8	4-Wheel Mode / Crab Mode
EV 9	Brake Release
EV 9A	Differential Lock
PR	Pressure Reducing Valve
FC	Flow Control Valve
RV	Relief Valve, 180bar
LV	Shuttle Valve

ILLUSTRATION No. ART_6215 85-J Chasis Valve Block Ports

Platform Valve Block Ports



NO.	Function
EV 22 & 23	Platform Swing Valve
EV 24 & 25	Jib Amplitude Valve
RV 1	140 Bar (Swing)
RV 2	160 Bar (Amplitude)
LV 1	Shuttle Valve (Swing)
LV 2	Shuttle Valve (Amplitude)
CV 1 & 2	Check Valve
C 1 & 2	Logic Element

ILLUSTRATION No. ART_6216 85-J Platform Valve Block Ports

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Parts Introduction

This Parts sections consists of illustrated parts sections and is designed to provide you, the customer, with illustrations and the list of associated parts needed to properly maintain the MEC self-propelled aerial work platform. When used in conjunction with the Service section in this manual and the Operator's Manual (provided separately), this manual will assist you in making necessary adjustments and repairs, and identifying and ordering the correct replacement parts.

All parts represented here are manufactured and supplied in accordance with MEC quality standards.

We recommend that you use genuine MEC parts to ensure proper operation and reliable performance.

To obtain maximum benefits from your MEC Aerial Work Platforms, always follow the proper operating and maintenance procedures. Only trained authorized personnel should be allowed to operate or service this machine. Service personnel should read and study the Operator's, and the Service and Parts Manuals in order to gain a thorough understanding of the unit prior to making any repairs.

Axle Installation

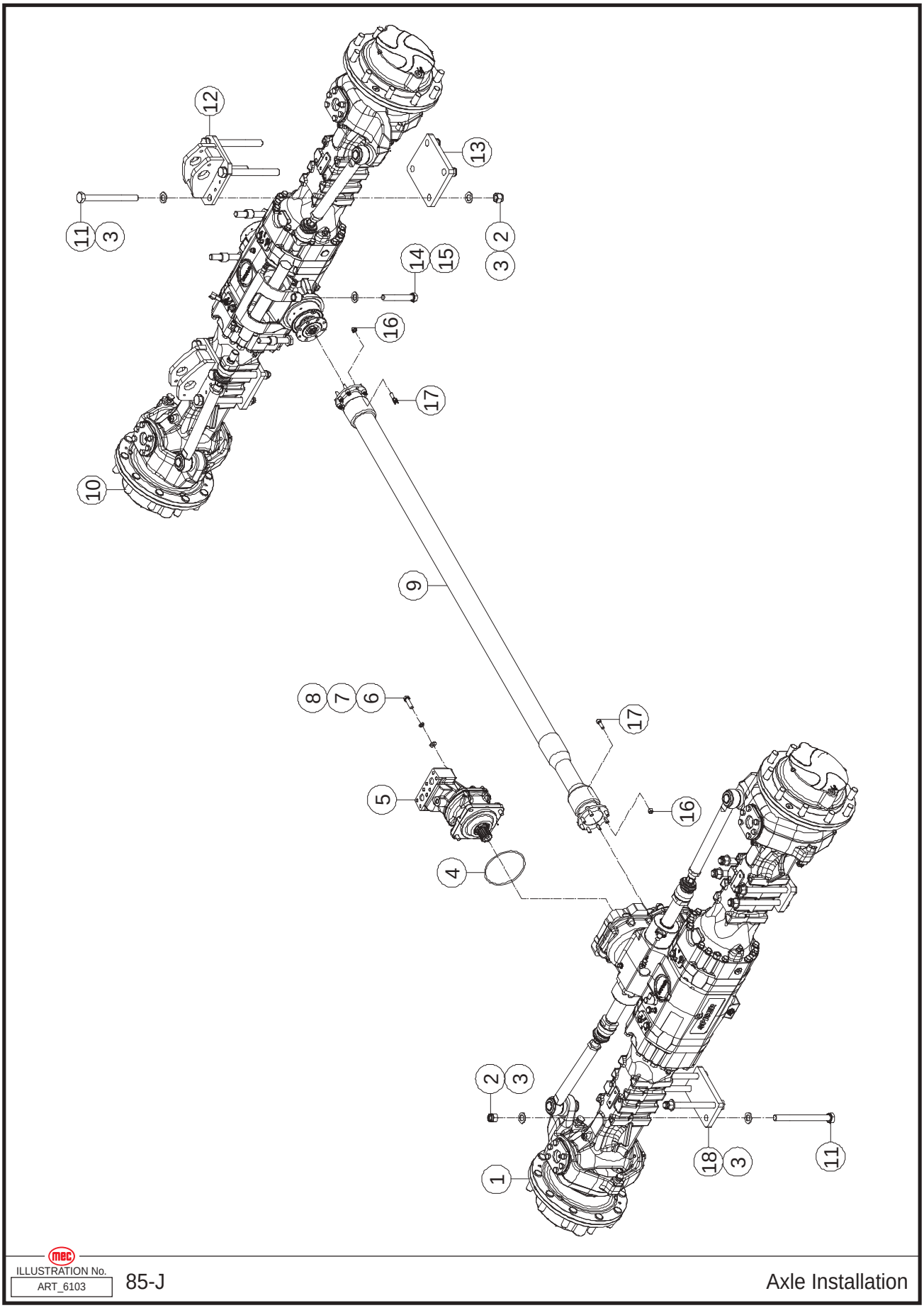


ILLUSTRATION No.
ART_6103

85-J

Axle Installation

Item	Part Number	Description	Qty.
1	47560	Rear Axle Assembly	1
2	53554	Nut NNYL M22-2.50	16
3	53258	WSHR M22 Standard Flat Washer	32
4	47561	O-Ring	1
5	47562	Drive Motor Assembly	1
6	53103	Screw HHCS M12-1.75 × 45	4
7	53148	WSHR M12 Spring Washer	4
8	50003	WSHR M12 Standard Flat Washer	4
9	47563	Propeller Shaft	1
10	47564	Front Axle Assembly	1
11	53555	Screw HHCS M22-2.50 × 240	16
12	47565	Seat, Axle Lockout Cylinder Assembly	2
13	47566	Bracket, Link	2
14	53075	Screw HHCS M20-2.50 × 130	4
15	50005	WSHR M20 Standard Flat Washer	4
16	53373	Nut NHEX M10-1.50	16
17	50127	Screw SHCS M10-1.50 × 30	16
18	47567	Bracket, Link	2

Axle Lockout Cylinder Installation

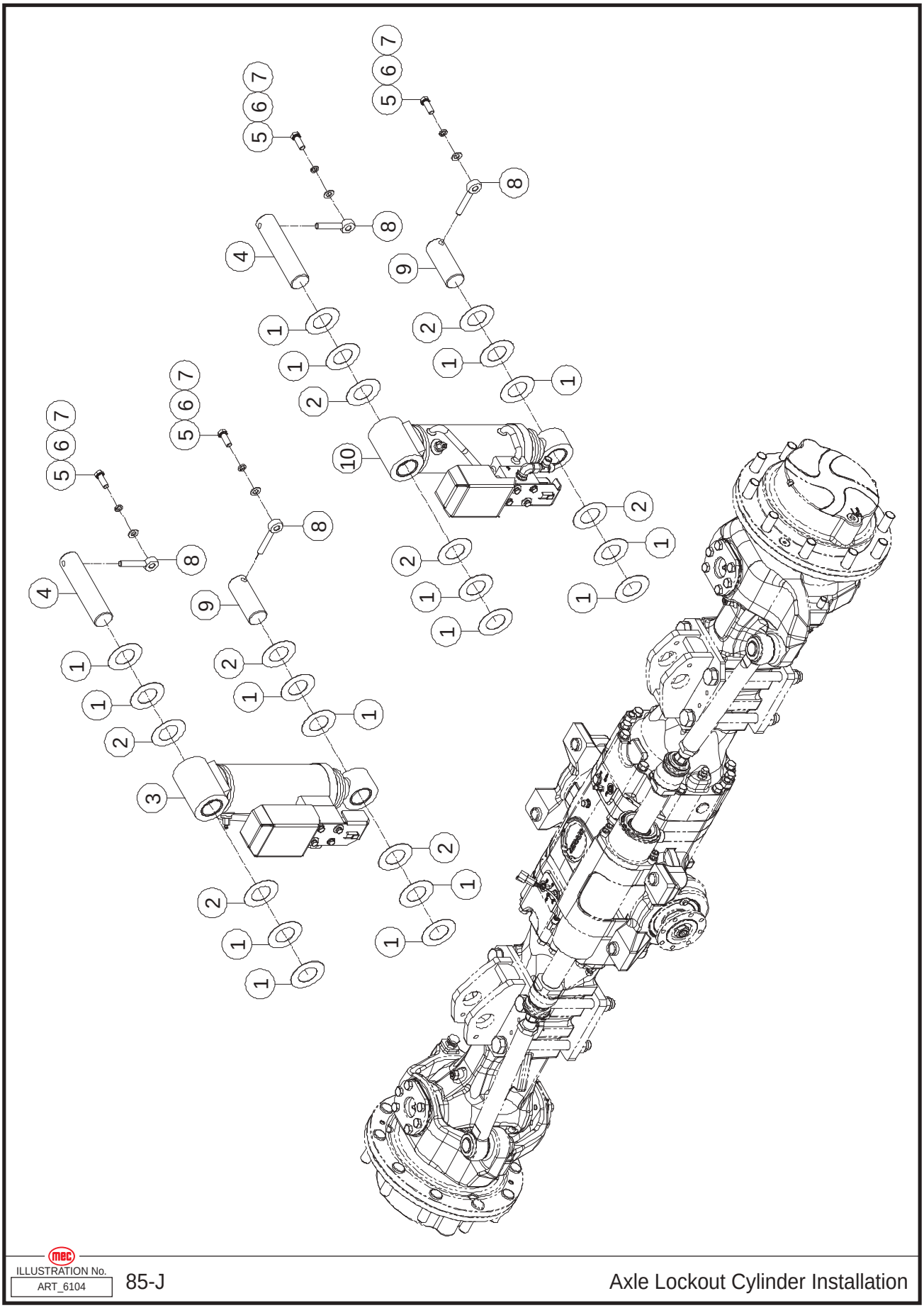


ILLUSTRATION No. ART_6104

85-J

Axle Lockout Cylinder Installation

Item	Part Number	Description	Qty.
1	47568	Shim	16
2	47569	Shim	8
3	REF	Left Axle Lockout Cylinder Assembly (Refer to page 194)	1
4	47570	Pin, Pivot	2
5	50040	Screw HHCS M12-1.75 × 35	4
6	53148	WSHR M12 Spring Washer	4
7	50003	WSHR M12 Standard Flat Washer	4
8	47571	Pin, Lock	4
9	47572	Pin, Pivot	2
10	REF	Right Axle Lockout Cylinder Assembly (Refer to page 196)	1

REF - Reference

Tire and Wheel Installation

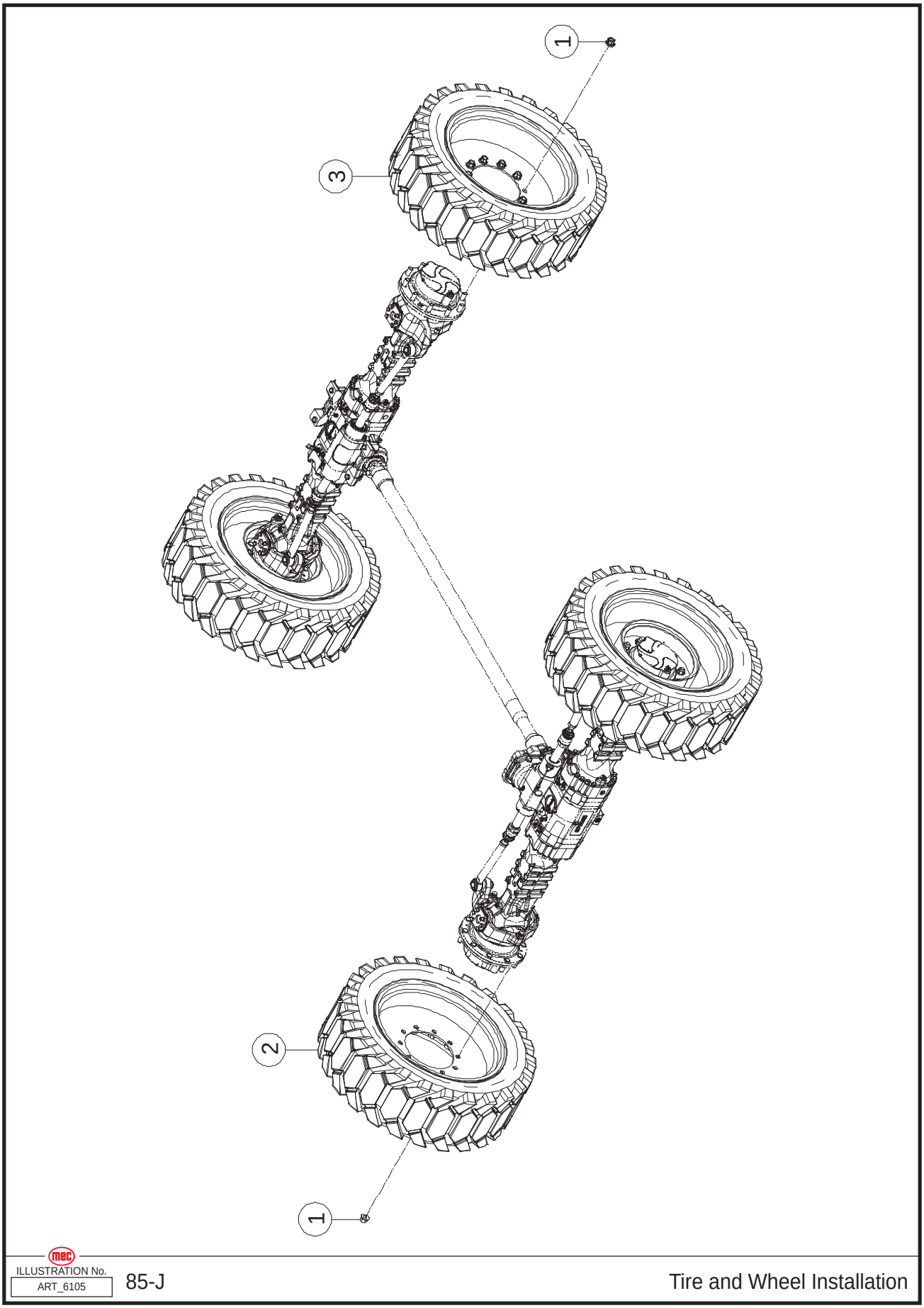


ILLUSTRATION No.
ART_6105

85-J

Tire and Wheel Installation

Item	Part Number	Description	Qty.
1	53556	Nut NNYL M22-1.50 Flange	40
2	47573	Tire and Wheel Assembly (Left Side)	2
3	47574	Tire and Wheel Assembly (Right Side)	2

Slewing Ring Installation

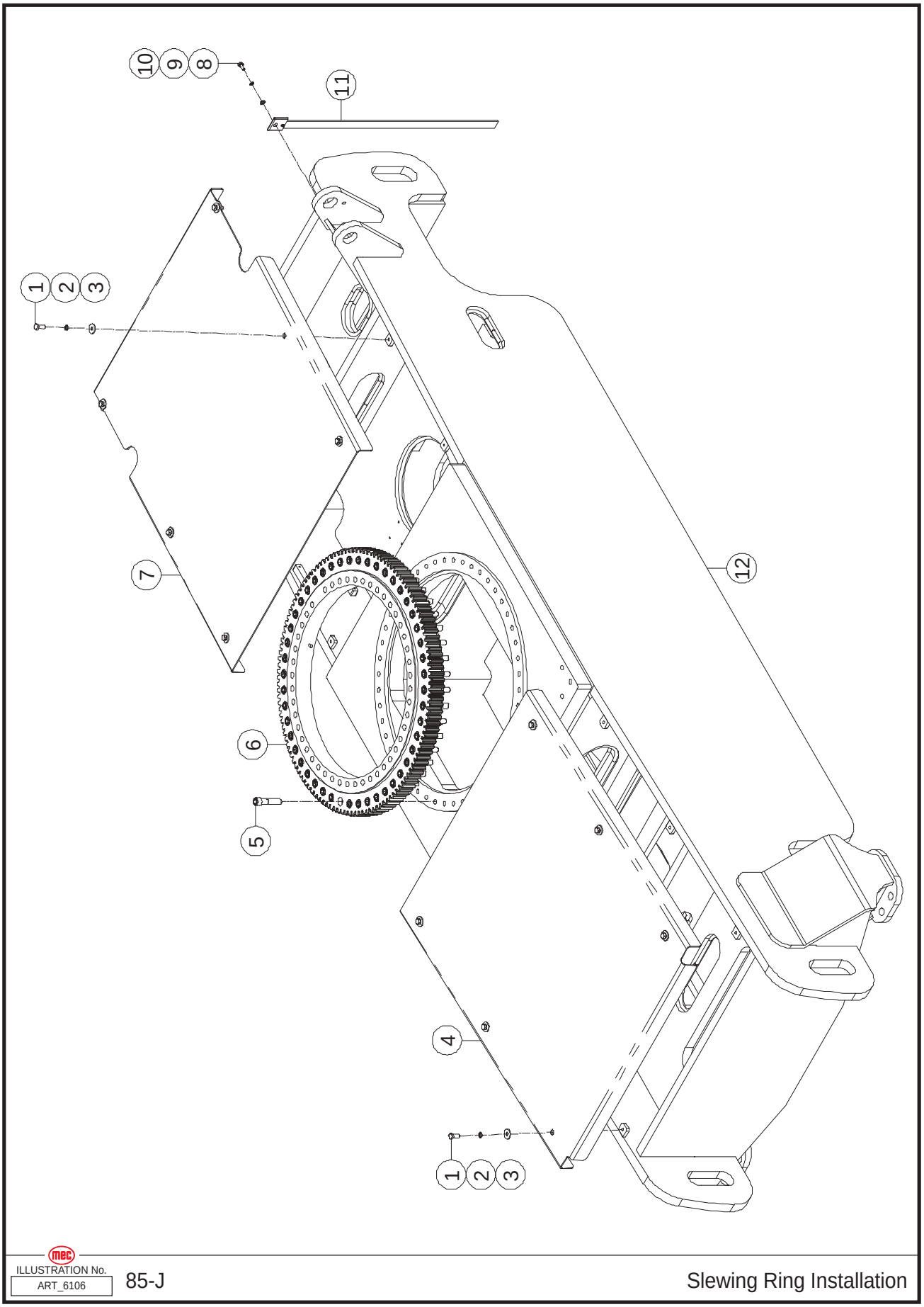


ILLUSTRATION No. ART_6106 85-J Slewing Ring Installation

Item	Part Number	Description	Qty.
1	50033	Screw HHCS M10-1.50 × 25	12
2	53054	WSHR M10 Spring Washer	12
3	53375	WSHR M10 Flat Fender Washer	12
4	47575	Cover	1
5	50503	Screw SHCS M16-2.00 × 75	48
6	47576	Slewing Ring	1
7	47577	Cover	1
8	50030	Screw HHCS M08-1.25 × 20	1
9	53055	WSHR M08 Spring Washer	1
10	50001	WSHR M08 Standard Flat Washer	1
11	47578	Ground Strap	1
12	47579	Chassis	1

Rotary Coupling Installation

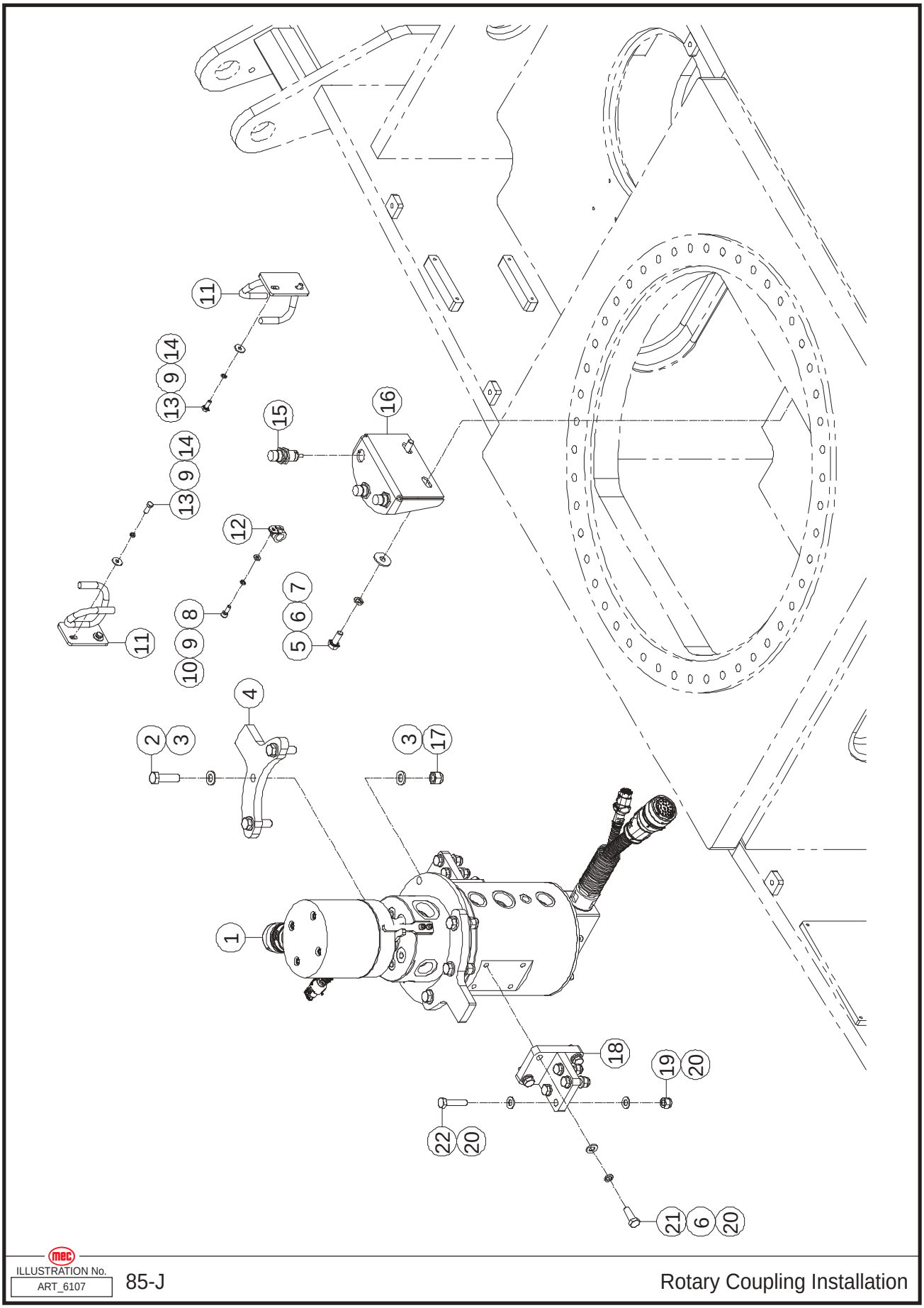


ILLUSTRATION No. ART_6107 85-J Rotary Coupling Installation

Item	Part Number	Description	Qty.
1	47580	Rotary Coupling Assembly	1
2	53103	Screw HHCS M12-1.75 × 45	6
3	50003	WSHR M12 Standard Flat Washer	12
4	47581	Plate	2
5	50033	Screw HHCS M10-1.50 × 25	2
6	53054	WSHR M10 Spring Washer	10
7	53375	WSHR M10 Flat Fender Washer	2
8	53138	Screw SHCS M06-1.00 × 16	1
9	53046	WSHR M06 Spring Washer	5
10	50000	WSHR M06 Standard Flat Washer	1
11	47582	Support Tubes	2
12	47583	Clamp	1
13	50445	Screw HHCS M06-1.00 × 16	4
14	50068	WSHR M06 Flat Fender Washer	4
15	47584	Proximity Switch	3
16	47585	Bracket, Switch	1
17	50050	Nut NNYL M12-1.75	6
18	47586	Support	2
19	50049	Nut NNYL M10-1.50	8
20	50002	WSHR M10 Standard Flat Washer	24
21	50034	Screw HHCS M10-1.50 × 30	8
22	50430	Screw HHCS M10-1.50 × 45	8

Front Axle Accessory

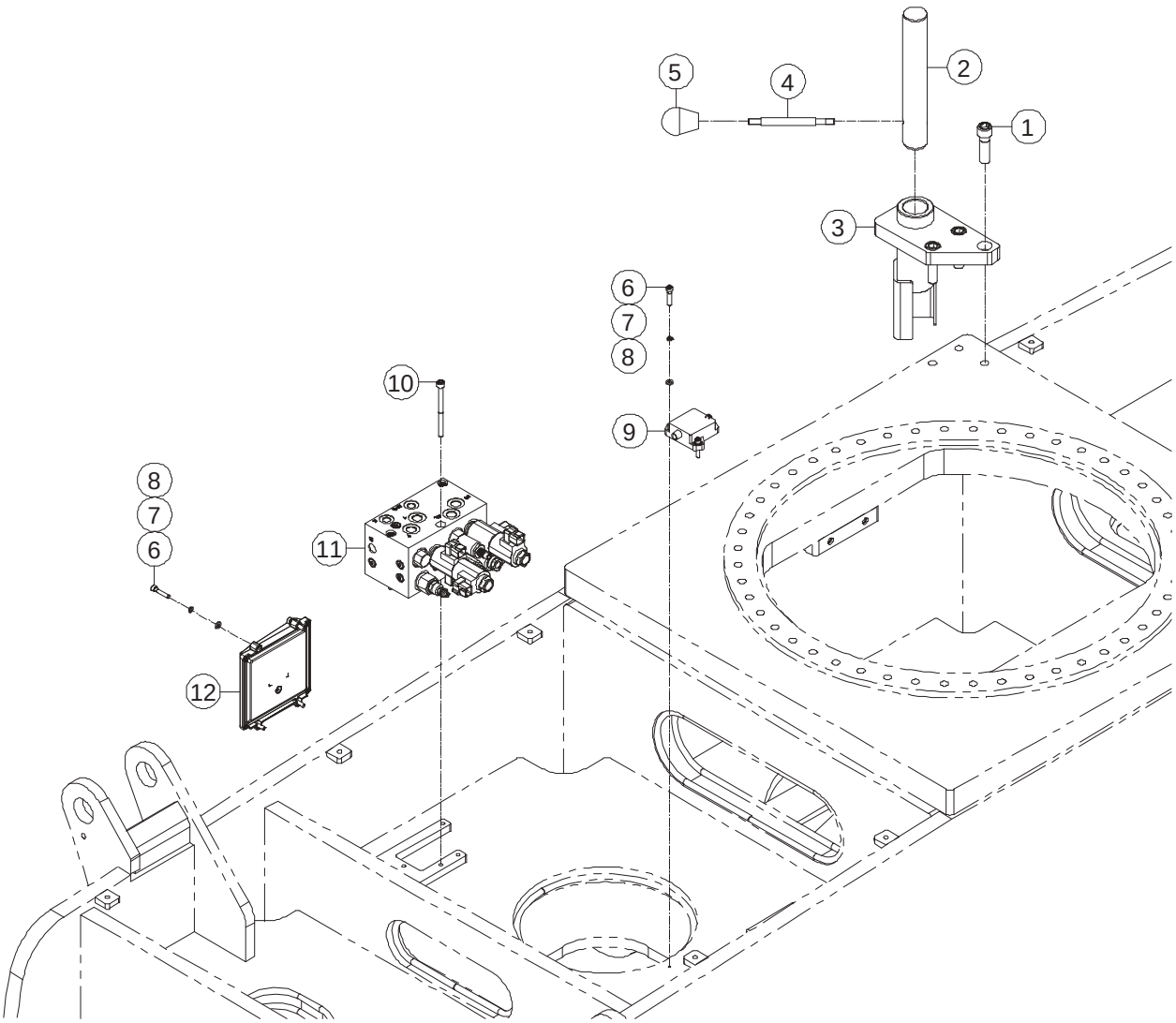


ILLUSTRATION No. ART_6108 85-J Front Axle Accessory

Item	Part Number	Description	Qty.
1	50492	Screw SHCS M16-2.00 × 55	3
2	47587	Pin, Pivot	1
3	47588	Bracket	1
4	47589	Rod	1
5	47590	Handle	1
6	53207	Screw SHCS M06-1.00 × 30	7
7	53046	WSHR M06 Spring Washer	7
8	50000	WSHR M06 Standard Flat Washer	7
9	47591	Tilt Sensor	1
10	50270	Screw SHCS M08-1.25 × 100	3
11	47592	Chassis Manifold (Refer to page 90)	1
12	48422	Chassis Controller	1

Chassis Manifold

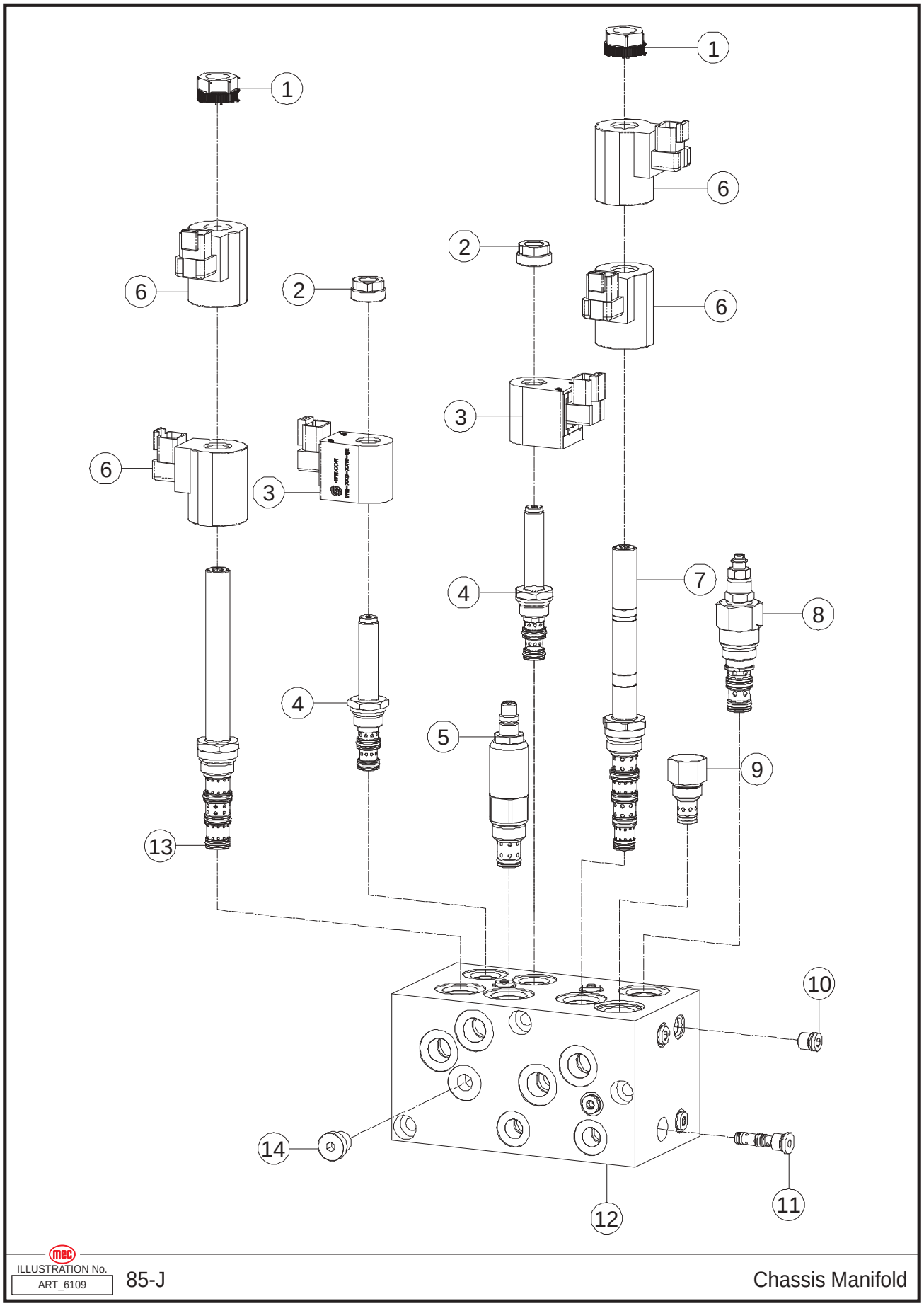


ILLUSTRATION No.
ART_6109

85-J

Chassis Manifold

Item	Part Number	Description	Qty.
1	43414	Nut	2
2	43405	Nut	2
3	43406	Coil	2
4	43407	Cartridge, Solenoid Valve	2
5	47593	Cartridge, Relief Valve	1
6	43413	Coil	4
7	47594	Cartridge, Solenoid Valve	1
8	47595	Cartridge, Pressure Reducing Valve	1
9	47596	Cartridge, Flow Control Valve	1
10	47597	Plug	10
11	43419	Cartridge, Shuttle Valve	1
12	47598	Body	1
13	47599	Cartridge, Solenoid Valve	1
14	46869	Plug	1

Gearmotor Installation

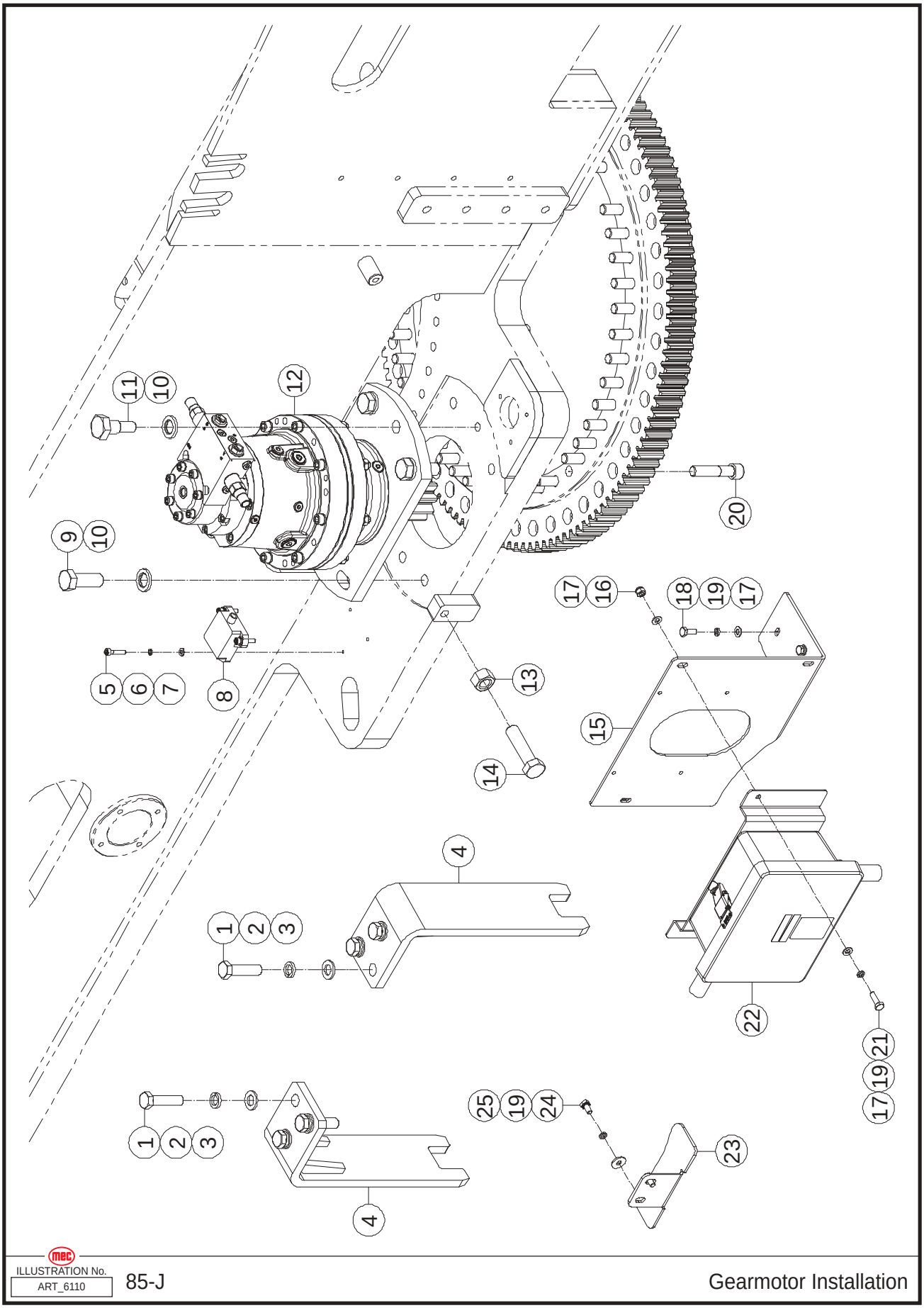


ILLUSTRATION No. ART_6110 85-J Gearmotor Installation

Item	Part Number	Description	Qty.
1	50044	Screw HHCS M16-2.00 × 60	6
2	53149	WSHR M16 Spring Washer	6
3	50004	WSHR M16 Standard Flat Washer	6
4	47600	Stirrup	2
5	53207	Screw SHCS M06-1.00 × 30	3
6	53046	WSHR M06 Spring Washer	3
7	50000	WSHR M06 Standard Flat Washer	3
8	47591	Tilt Sensor	1
9	53557	Screw HHCS M20-2.50 × 55	5
10	47601	Flat Washer	6
11	47602	Bolt	1
12	47603	Gearmotor	1
--	47604	Motor Assembly	1
--	47605	Valve Block	1
13	53526	Nut NHEX M20-2.50	1
14	53518	Screw HHCS M20-2.50 × 80	1
15	47606	Bracket	1
16	50048	Nut NNYL M08-1.25	2
17	50001	WSHR M08 Standard Flat Washer	7
18	50030	Screw HHCS M08-1.25 × 20	3
19	53055	WSHR M08 Spring Washer	7
20	50503	Screw SHCS M16-2.00 × 75	47
21	50031	Screw HHCS M08-1.25 × 25	2
22	47607	Breaker Box	1
23	47608	Bracket	1
24	53154	Screw HHCS M08-1.25 × 16	2
25	50218	WSHR M08 Flat Fender Washer	2

Engine Tray Brackets

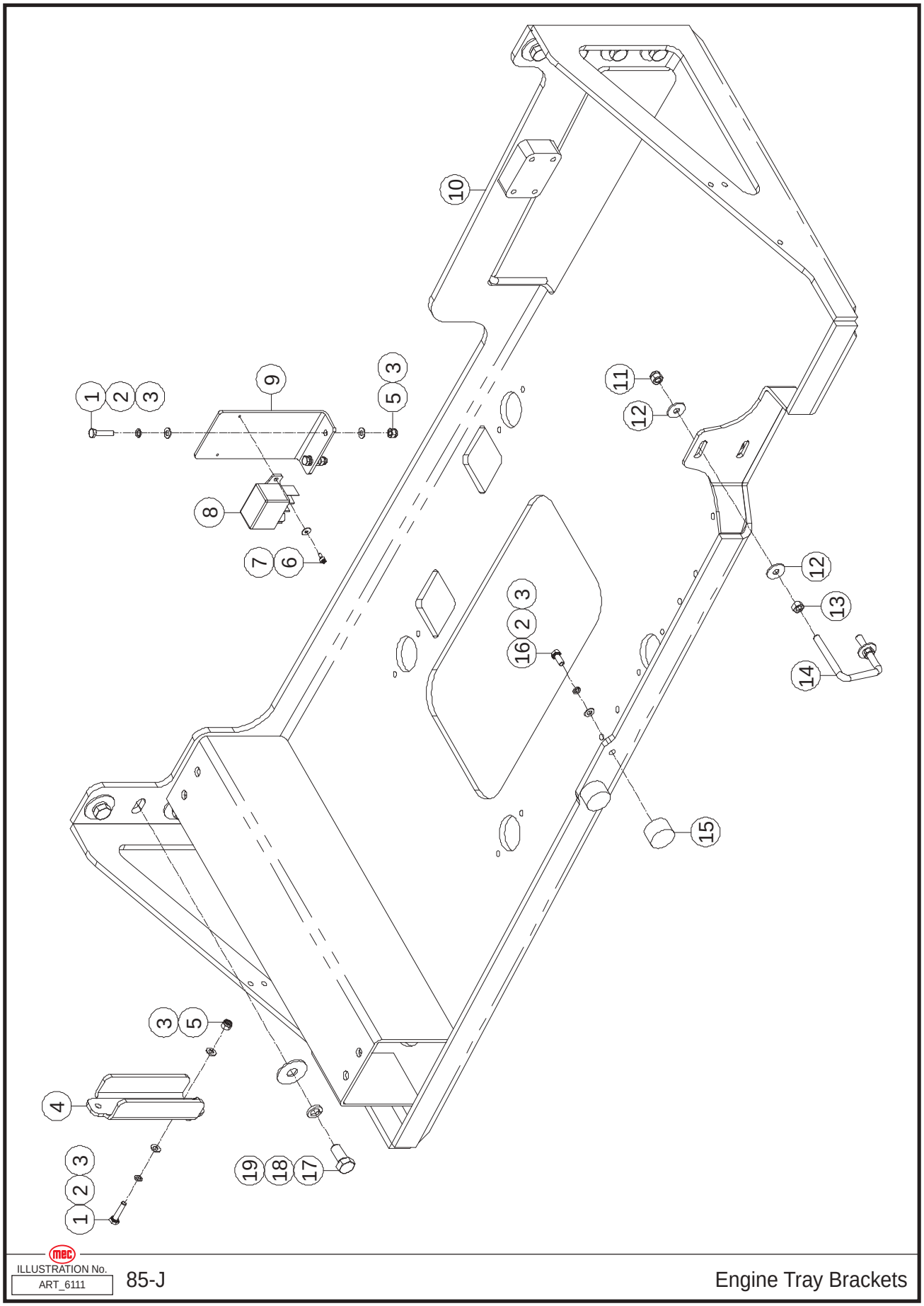


ILLUSTRATION No. ART_6111 85-J Engine Tray Brackets

Item	Part Number	Description	Qty.
1	50282	Screw HHCS M08-1.25 × 35	4
2	53055	WSHR M08 Spring Washer	6
3	50001	WSHR M08 Standard Flat Washer	10
4	47609	Bracket	1
5	50048	Nut NNYL M08-1.25	4
6	53173	Screw SHCS M05-0.80 × 10	2
7	50525	WSHR M05 Flat Fender Washer	2
8	47610	Contactor, Preheat	1
9	47611	Bracket	1
10	47612	Support	1
11	50049	Nut NNYL M10-1.50	2
12	53375	WSHR M10 Flat Fender Washer	4
13	53373	Nut NHEX M10-1.50	2
14	47613	U-Bolt	1
15	47614	Rubber Mounting	2
16	50030	Screw HHCS M08-1.25 × 20	2
17	50374	Screw HHCS M16-2.00 × 35	8
18	53149	WSHR M16 Spring Washer	8
19	53314	WSHR M16 Flat Fender Washer	8

Engine Assembly

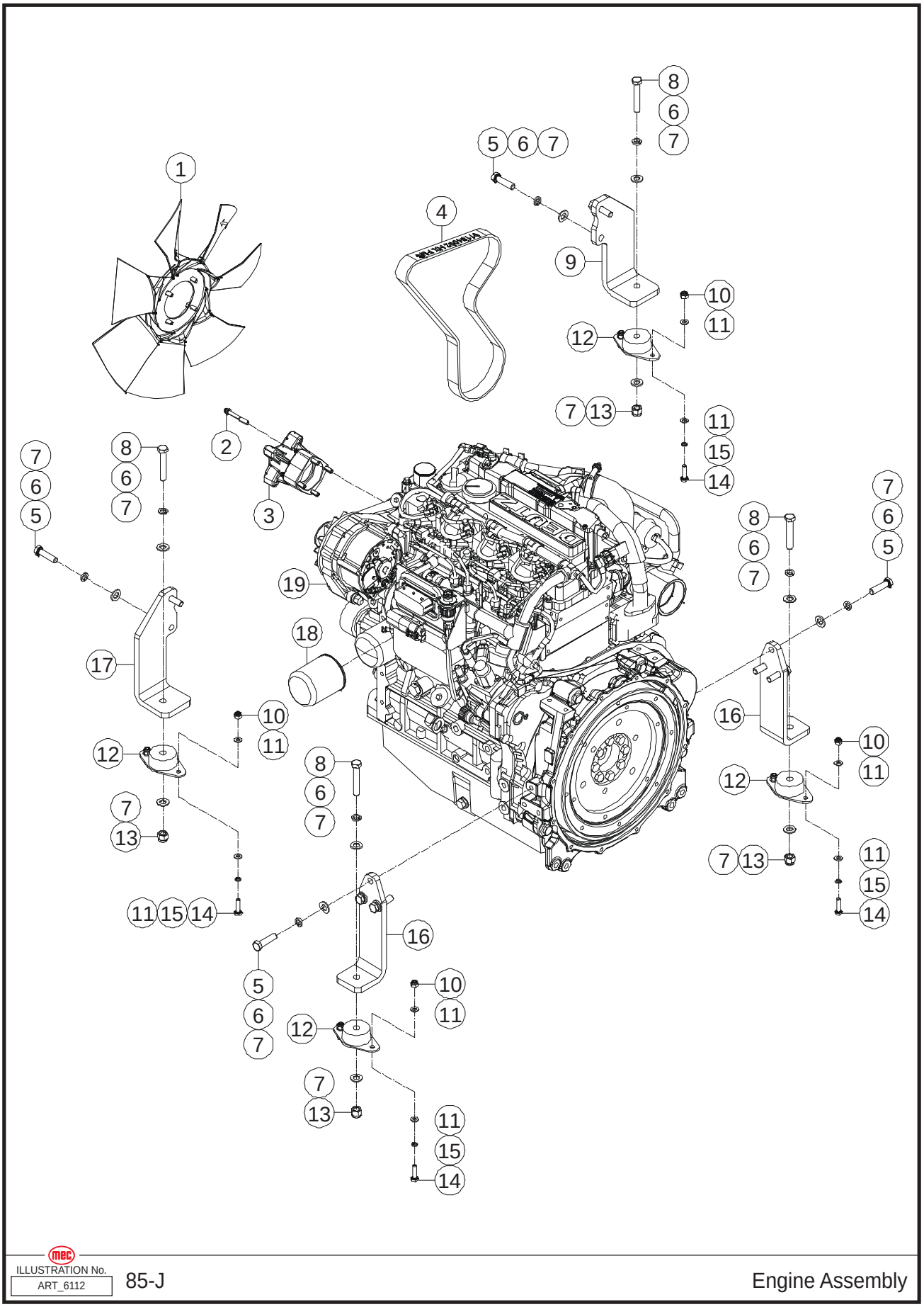


ILLUSTRATION No. ART_6112 85-J Engine Assembly

Item	Part Number	Description	Qty.
1	47615	Fan	1
2	47616	Screw	4
3	47617	Adapter	1
4	47618	V-Belt	1
5	53103	Screw HHCS M12-1.75 × 45	10
6	53148	WSHR M12 Spring Washer	14
7	50003	WSHR M12 Standard Flat Washer	18
8	53196	Screw HHCS M12-1.75 × 70	4
9	47619	Support	1
10	50048	Nut NNYL M08-1.25	8
11	50001	WSHR M08 Standard Flat Washer	16
12	47620	Rubber Mounting	4
13	50050	Nut NNYL M12-1.75	4
14	50032	Screw HHCS M08-1.25 × 30	8
15	53055	WSHR M08 Spring Washer	8
16	47621	Support	2
17	47622	Support	1
18	47623	Filter Cartridge	1
19	47624	Engine	1

Engine Radiator, Part 1

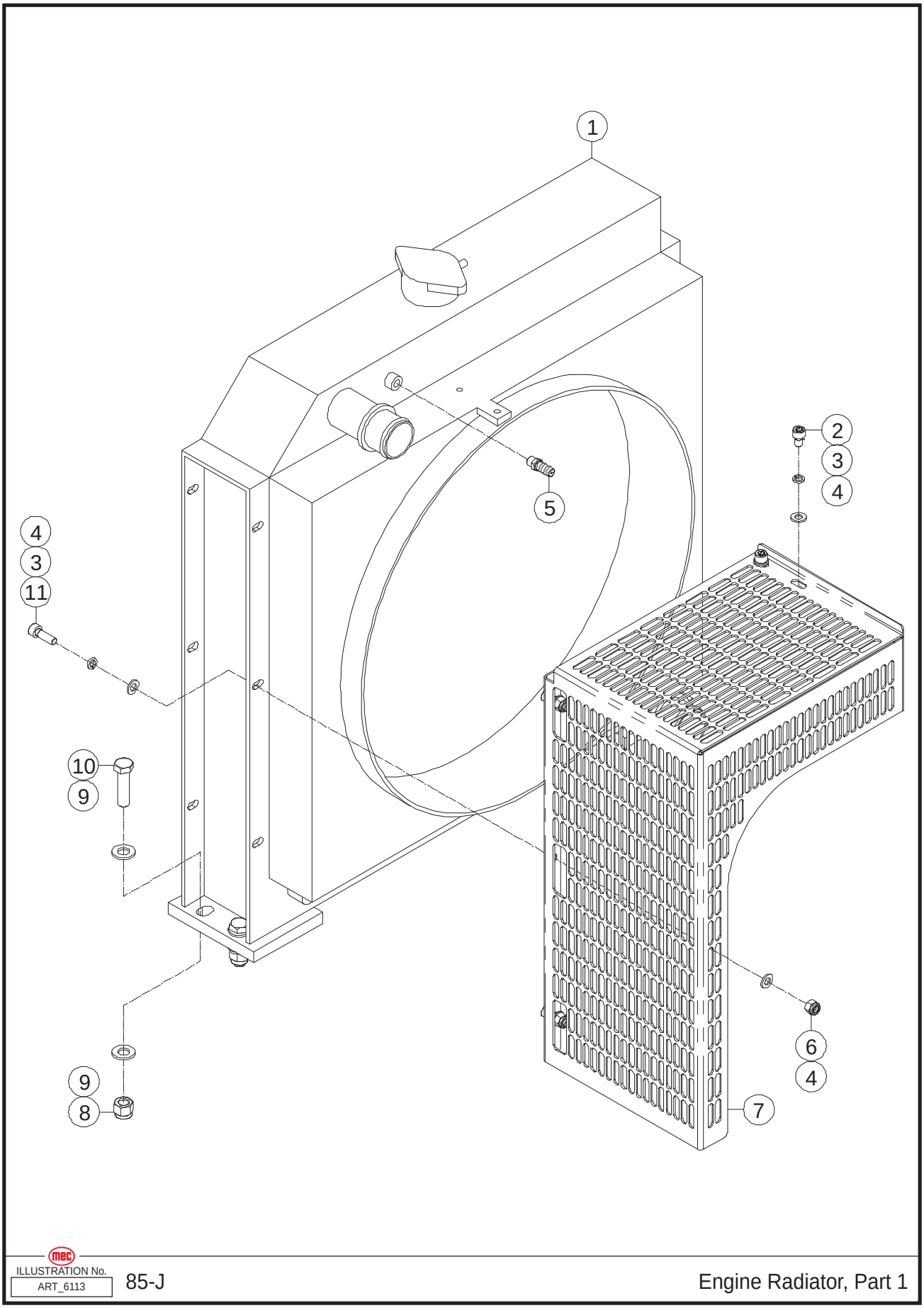


ILLUSTRATION No.
ART_6113

85-J

Engine Radiator, Part 1

Item	Part Number	Description	Qty.
1	47625	Radiator	1
--	49013	Radiator Cap	1
2	53387	Screw SHCS M08-1.25 × 12	2
3	53055	WSHR M08 Spring Washer	5
4	50001	WSHR M08 Standard Flat Washer	8
5	47626	Pipe Fitting	1
6	50048	Nut NNYL M08-1.25	3
7	47627	Housing	1
8	50050	Nut NNYL M12-1.75	4
9	50003	WSHR M12 Standard Flat Washer	8
10	53103	Screw HHCS M12-1.75 × 45	4
11	53210	Screw SHCS M08-1.25 × 25	3

Engine Radiator, Part 2

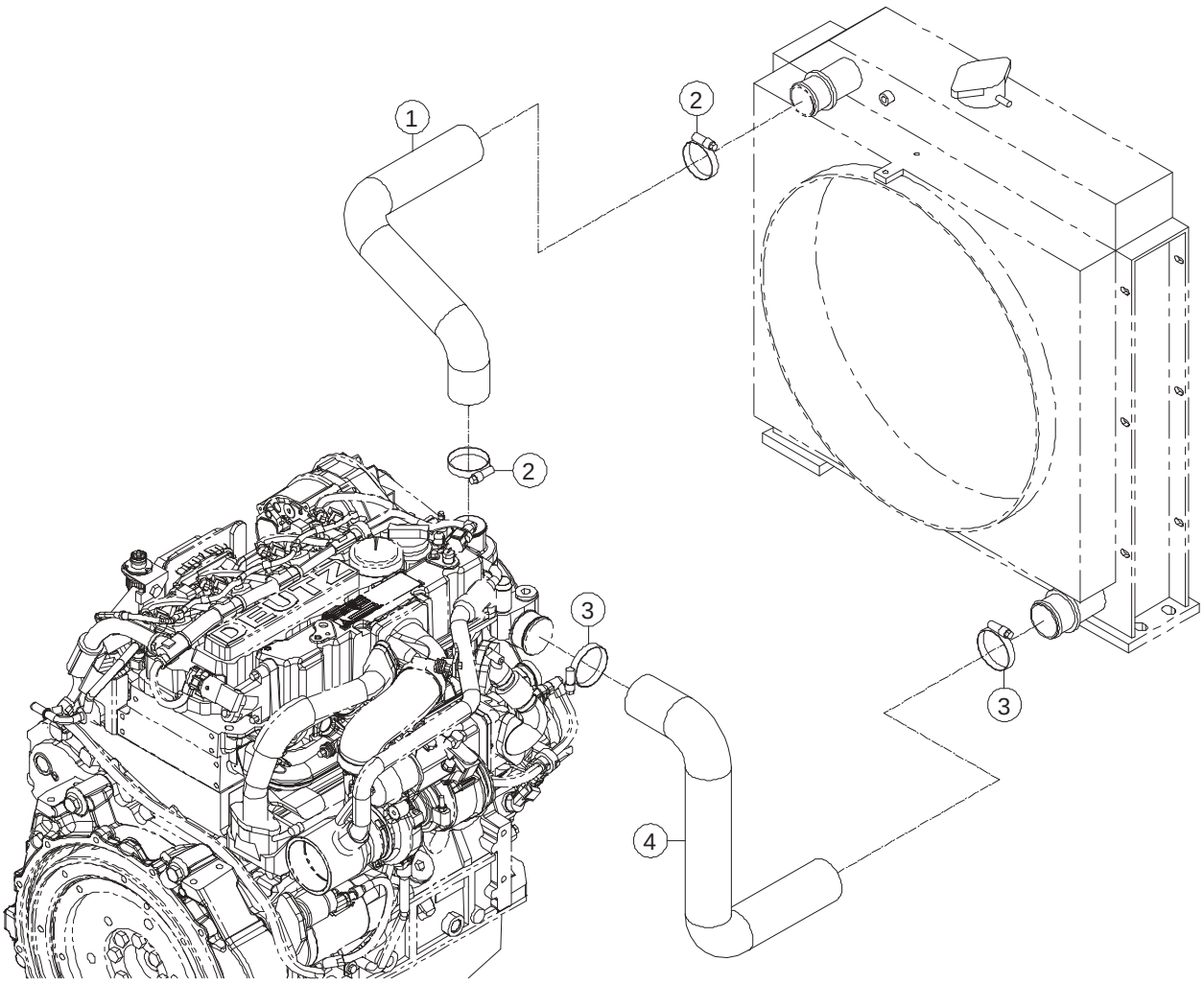


ILLUSTRATION No. ART_6114 85-J Engine Radiator, Part 2

Item	Part Number	Description	Qty.
1	47628	Hose	1
2	47629	Clamp	2
3	47630	Clamp	2
4	47631	Hose	1

Engine Radiator, Part 3

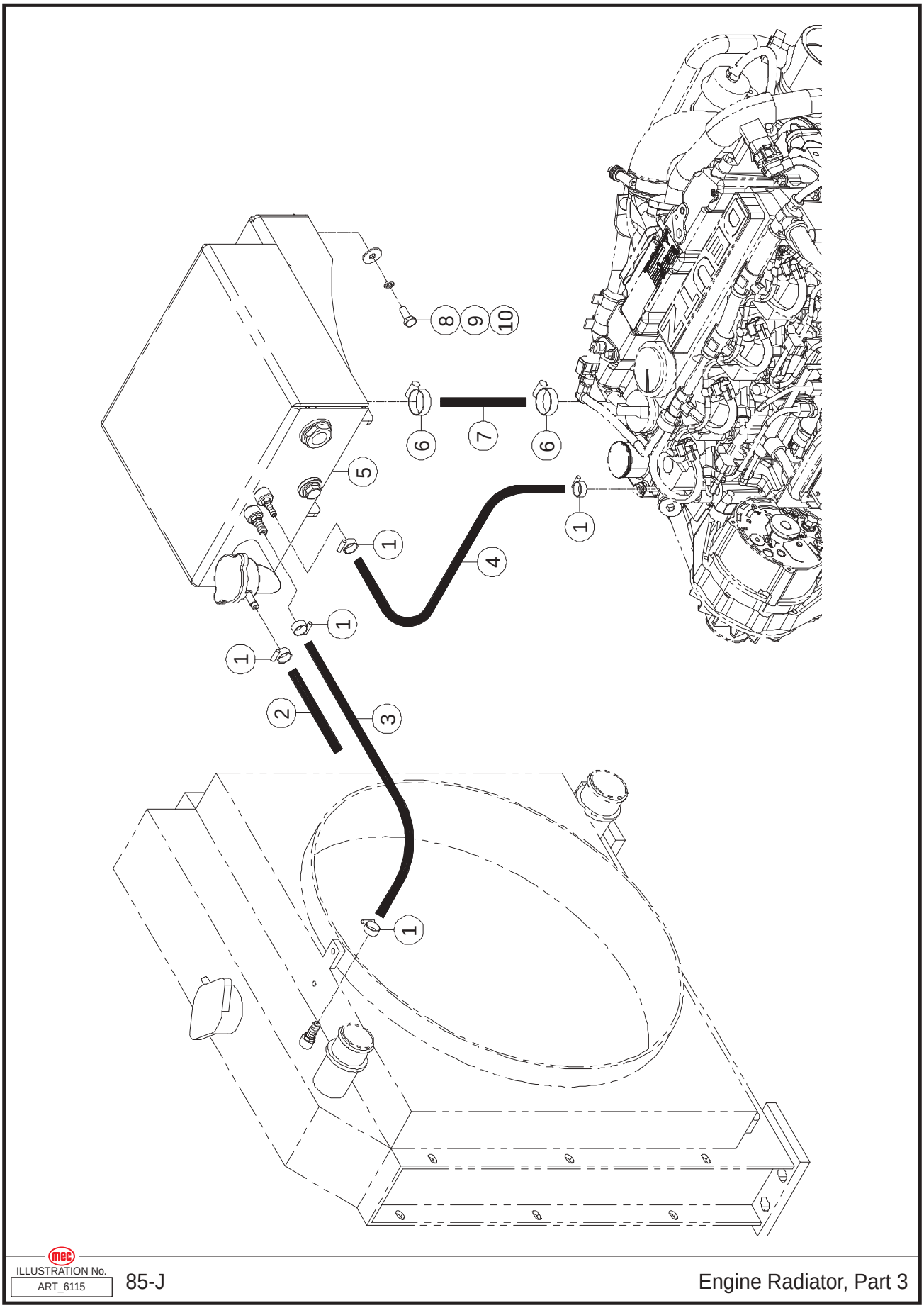


ILLUSTRATION No. ART_6115

85-J

Engine Radiator, Part 3

Item	Part Number	Description	Qty.
1	47632	Clamp	5
2	47633	Hose	1
3	47634	Hose	1
4	47635	Hose	1
5	47636	Container-Coolant Overflow	1
6	47637	Clamp	2
7	47638	Hose	1
8	50030	Screw HHCS M08-1.25 × 20	4
9	53055	WSHR M08 Spring Washer	4
10	50218	WSHR M08 Flat Fender Washer	4

Engine and Pump Installation

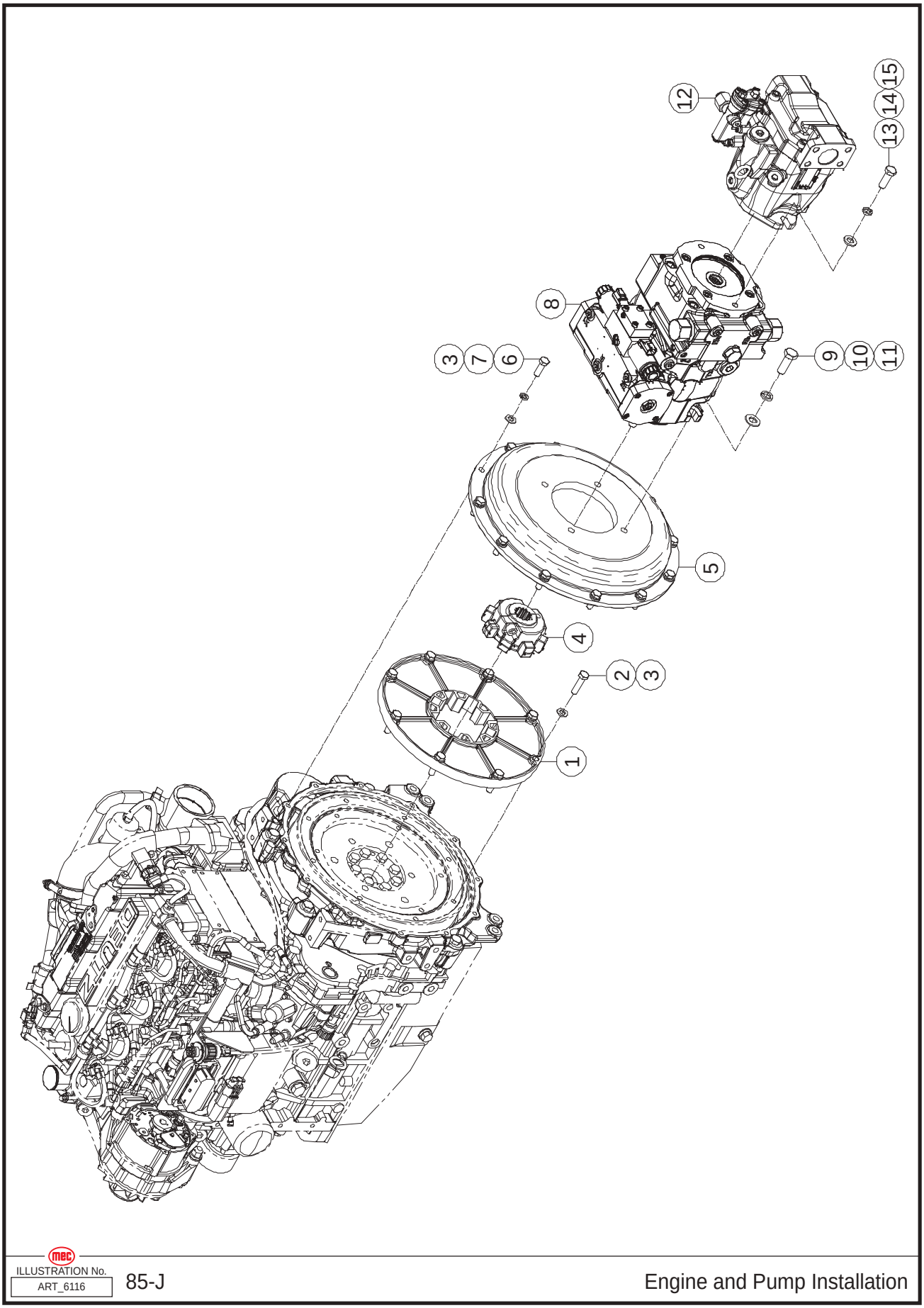


ILLUSTRATION No. ART_6116 85-J Engine and Pump Installation

Item	Part Number	Description	Qty.
1	47639	Flange	1
2	50237	Screw HHCS M10-1.50 × 40	8
3	50002	WSHR M10 Standard Flat Washer	20
4	47640	Spline	1
5	47641	Protection	1
6	50034	Screw HHCS M10-1.50 × 30	12
7	53054	WSHR M10 Spring Washer	12
8	47642	Drive Pump Assembly	1
9	50333	Screw HHCS M14-2.00 × 40	4
10	53048	WSHR M14 Spring Washer	4
11	53049	WSHR M14 Standard Flat Washer	4
12	47643	Function Pump Assembly	1
13	50040	Screw HHCS M12-1.75 × 35	2
14	53148	WSHR M12 Spring Washer	2
15	50003	WSHR M12 Standard Flat Washer	2

Engine Fuel System Installation 1

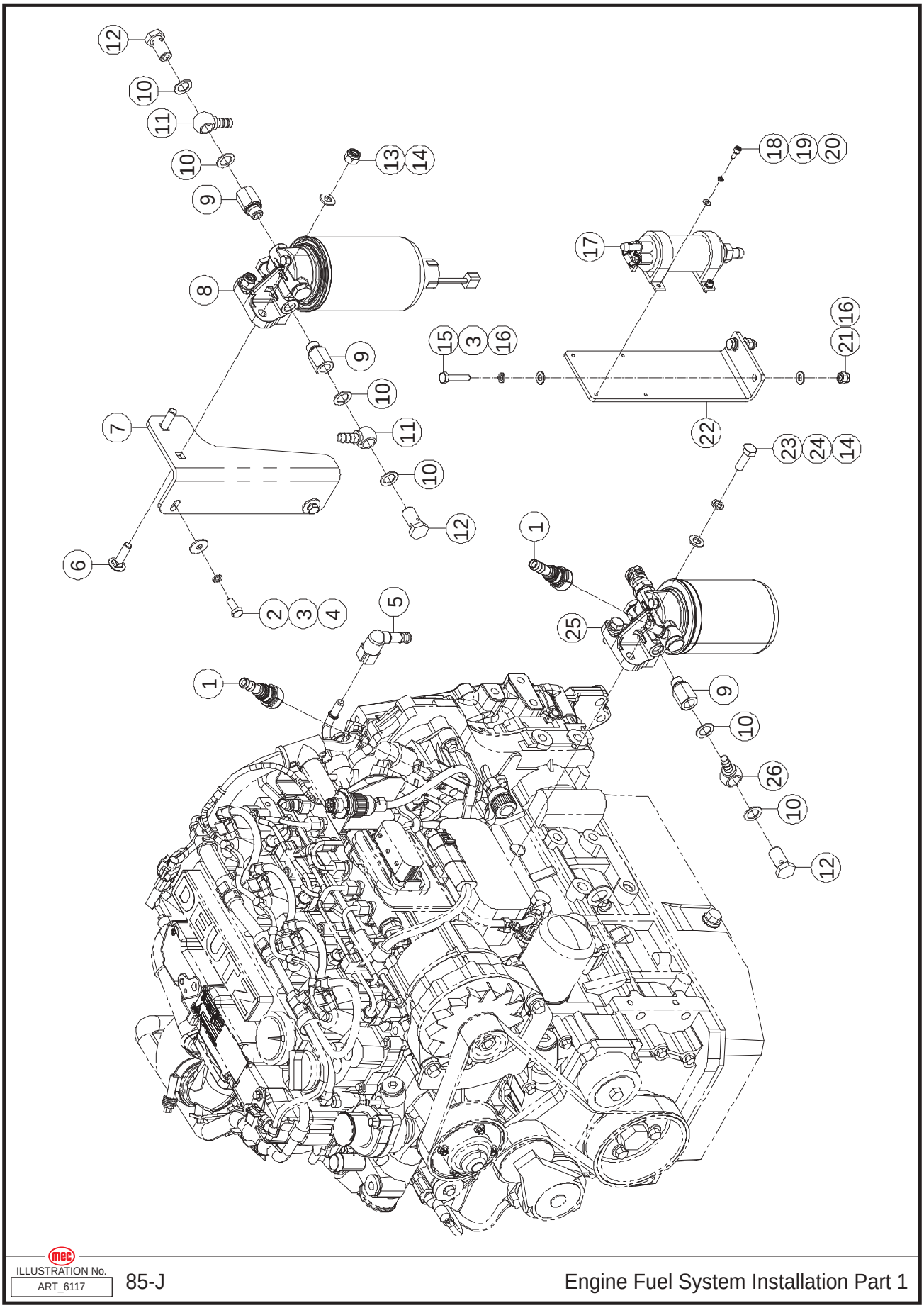


ILLUSTRATION No. ART_6117 85-J Engine Fuel System Installation Part 1

Item	Part Number	Description	Qty.
1	47644	Pipe Fitting	2
2	50030	Screw HHCS M08-1.25 × 20	2
3	53055	WSHR M08 Spring Washer	4
4	50218	WSHR M08 Flat Fender Washer	2
5	47645	Pipe Fitting	1
6	53558	Square Neck Carriage Bolt M10-1.50 × 35	2
7	47646	Bracket	1
8	47647	Fuel-Water Filter	1
--	47648	Fuel-Water Filter Cartridge	1
--	47649	Fuel Sensor	1
9	47650	Fitting	3
10	47651	Washer	6
11	47652	Pipe Fitting	2
12	47653	Drilled Screw	3
13	50049	Nut NNYL M10-1.50	2
14	50002	WSHR M10 Standard Flat Washer	4
15	50282	Screw HHCS M08-1.25 × 35	2
16	50001	WSHR M08 Standard Flat Washer	4
17	47654	Fuel Pump	1
18	53116	Screw SHCS M05-0.80 × 12	4
19	53043	WSHR M05 Spring Washer	4
20	53038	WSHR M05 Standard Flat Washer	4
21	50048	Nut NNYL M08-1.25	2
22	47655	Bracket	1
23	50034	Screw HHCS M10-1.50 × 30	2
24	53054	WSHR M10 Spring Washer	2
25	47656	Fuel Filter	1
--	47657	Filter Cartridge	1
26	47658	Pipe Fitting	1

Engine Fuel System Installation 2

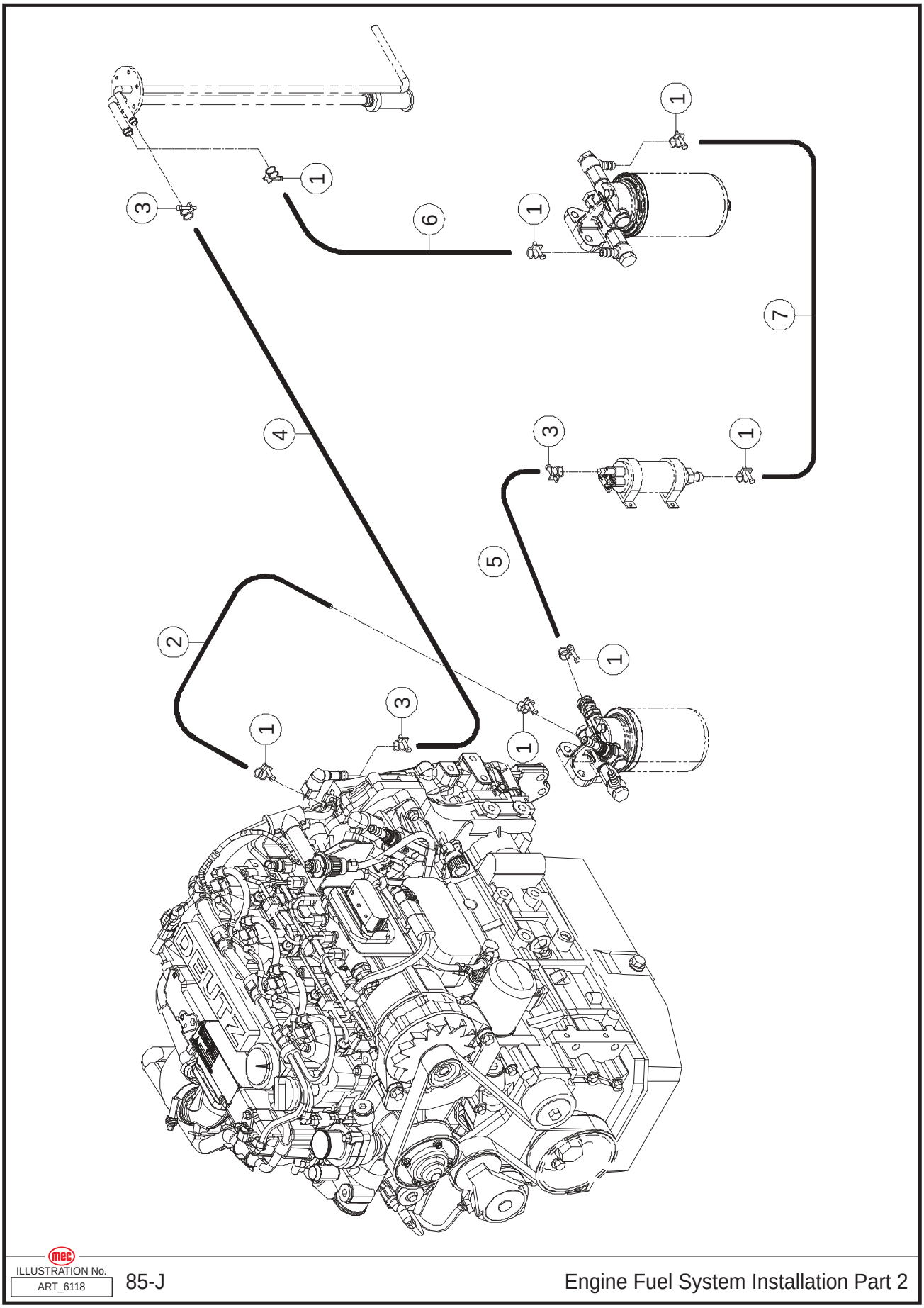


ILLUSTRATION No. ART_6118 85-J Engine Fuel System Installation Part 2

Item	Part Number	Description	Qty.
1	47659	Clamp	7
2	47660	Hose	1
3	47661	Clamp	3
4	47662	Hose	1
5	47663	Hose	1
6	47664	Hose	1
7	47665	Hose	1

Engine Air Filter

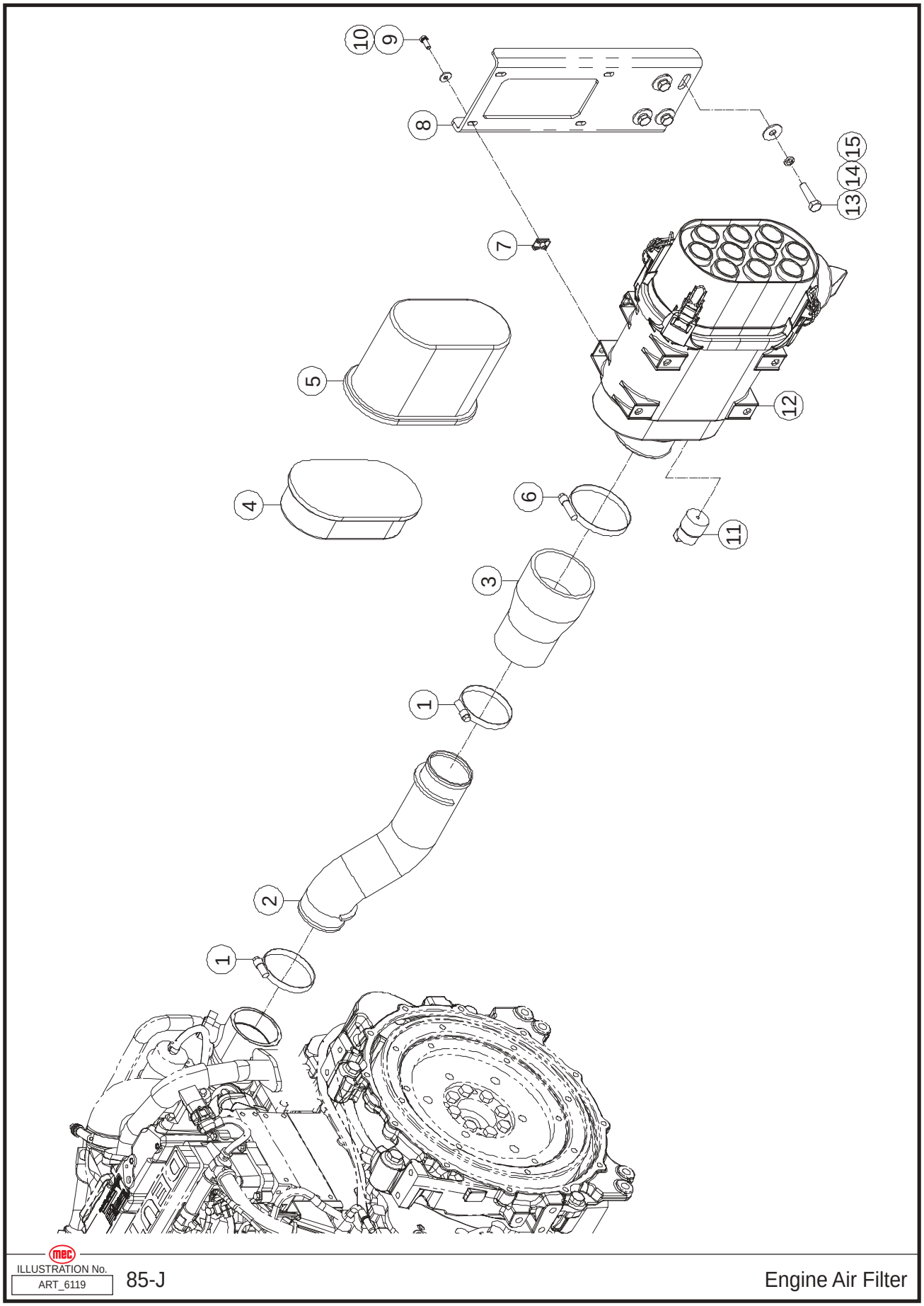


ILLUSTRATION No. ART_6119 85-J Engine Air Filter

Item	Part Number	Description	Qty.
1	47666	Clamp	2
2	47667	Connecting Pipe	1
3	47668	Hose	1
4	47669	Safety Cartridge	1
5	47670	Filter Cartridge	1
6	47671	Clamp	1
7	53481	No-Slip Clip-On Barrel Nut M06-1.00	4
8	47672	Bracket	1
9	50445	Screw HHCS M06-1.00 × 16	4
10	50068	WSHR M06 Flat Fender Washer	4
11	47673	Air Filter Sensor	1
12	47674	Complete Air Filter	1
13	50237	Screw HHCS M10-1.50 × 40	4
14	53054	WSHR M10 Spring Washer	4
15	53375	WSHR M10 Flat Fender Washer	4

Engine Exhaust System Installation

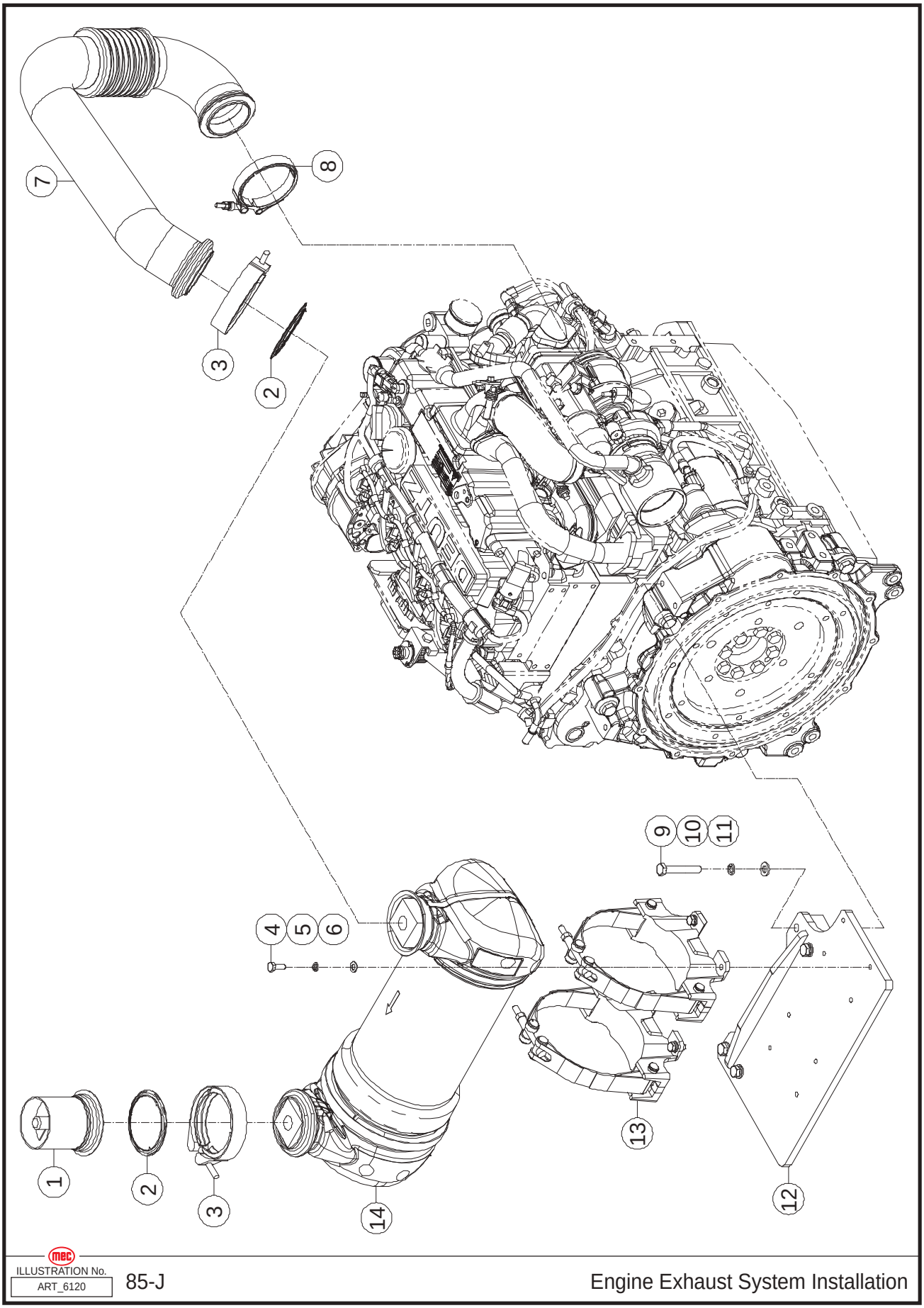


ILLUSTRATION No. ART_6120 85-J Engine Exhaust System Installation

Item	Part Number	Description	Qty.
1	47675	Connecting Pipe	1
2	47676	Seal	2
3	47677	Collar	2
4	50030	Screw HHCS M08-1.25 × 20	8
5	53055	WSHR M08 Spring Washer	8
6	50001	WSHR M08 Standard Flat Washer	8
7	47678	Connecting Pipe	1
8	47679	Collar	1
9	50468	Screw HHCS M10-1.50 × 65	4
10	53054	WSHR M10 Spring Washer	4
11	50002	WSHR M10 Standard Flat Washer	4
12	47680	Support	1
13	47681	Support	1
14	47682	Catalyst	1

Fuel Tank Installation

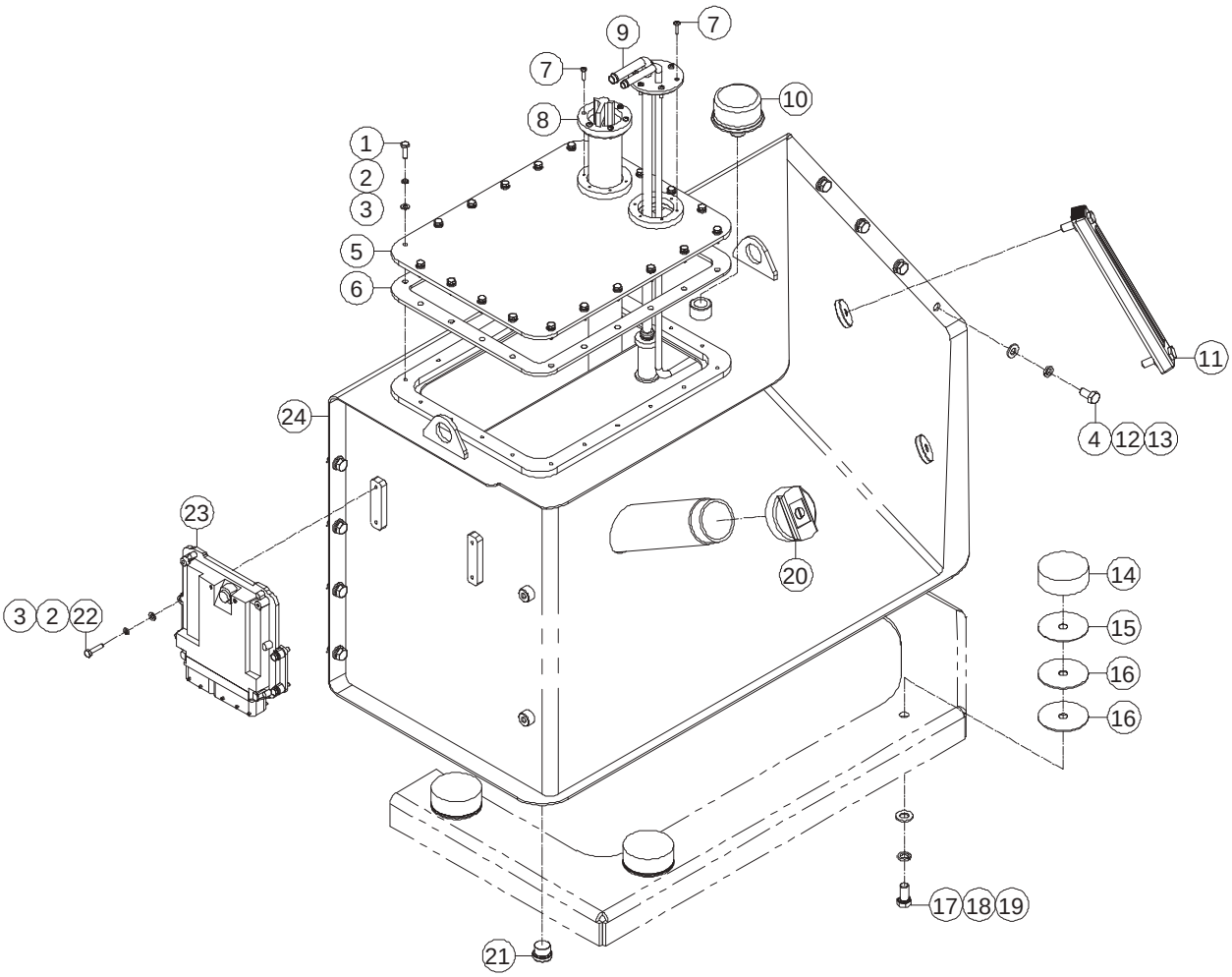


ILLUSTRATION No. ART_6121 85-J Fuel Tank Installation

Item	Part Number	Description	Qty.
1	50028	Screw HHCS M06-1.00 × 20	20
2	53046	WSHR M06 Spring Washer	24
3	50000	WSHR M06 Standard Flat Washer	24
4	50215	Screw HHCS M10-1.50 × 20	8
5	47683	Cover	1
6	47684	Seal	1
7	53520	Screw PHMS M04-0.70 × 16	12
8	47685	Fuel Level Sensor	1
9	47686	Suction Pipe	1
10	47687	Filter	1
11	47688	Level Indicator	1
12	53054	WSHR M10 Spring Washer	8
13	50002	WSHR M10 Standard Flat Washer	8
14	47689	Seal	4
15	47690	Shim	4
16	47691	Shim	8
17	50038	Screw HHCS M12-1.75 × 25	4
18	53148	WSHR M12 Spring Washer	4
19	50003	WSHR M12 Standard Flat Washer	4
20	47692	Plug	1
21	47693	Plug	1
22	50117	Screw HHCS M06-1.00 × 25	4
23	47694	Engine ECU	1
24	47695	Fuel Tank	1

PVG Valve Block Installations

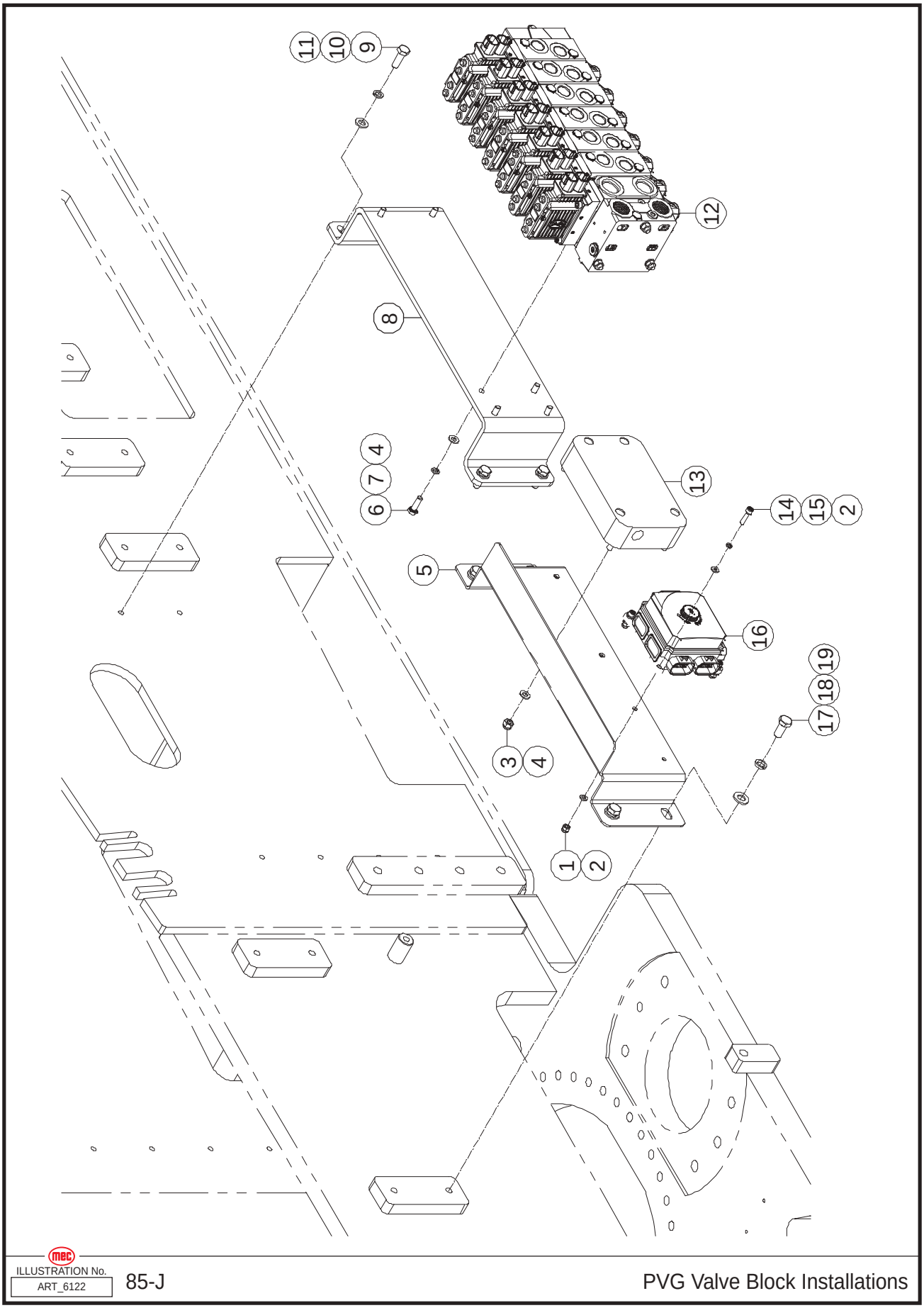


ILLUSTRATION No. ART_6122 85-J PVG Valve Block Installations

Item	Part Number	Description	Qty.
1	50047	Nut NNYL M06-1.00	4
2	50000	WSHR M06 Standard Flat Washer	8
3	50048	Nut NNYL M08-1.25	4
4	50001	WSHR M08 Standard Flat Washer	10
5	47696	Bracket	1
6	50031	Screw HHCS M08-1.25 × 25	6
7	53055	WSHR M08 Spring Washer	6
8	47697	Bracket	1
9	50034	Screw HHCS M10-1.50 × 30	4
10	53054	WSHR M10 Spring Washer	4
11	50002	WSHR M10 Standard Flat Washer	4
12	47698	PVG Valve Block (Refer to page 118)	1
13	47699	Fuse Box	1
--	47700	Fuse Kit	1
14	53123	Screw SHCS M06-1.00 × 25	4
15	53046	WSHR M06 Spring Washer	4
16	47701	Power Distribution Module (Refer to page 224)	1
17	50038	Screw HHCS M12-1.75 × 25	4
18	53148	WSHR M12 Spring Washer	4
19	50003	WSHR M12 Standard Flat Washer	4

PVG Valve Block

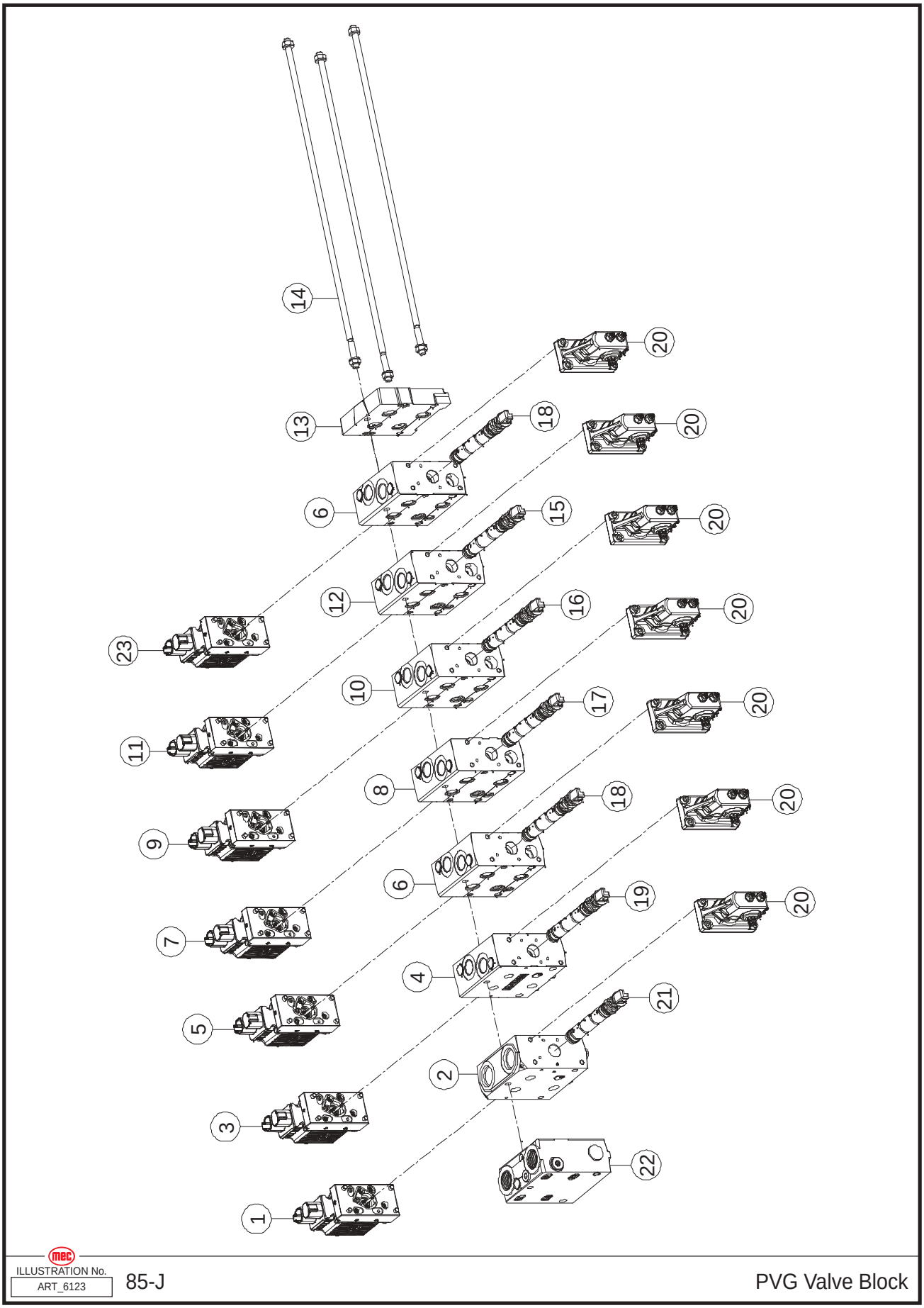


ILLUSTRATION No. ART_6123 85-J PVG Valve Block

Item	Part Number	Description	Qty.
1	47702	PVED, Electric Control Unit, Function Enable	1
--	47703	Seal Kit	1
2	47704	PVSKM, Enable Unit	1
--	47705	Seal Kit	1
3	47706	PVED, Electric Control Unit, Telescope	1
--	47703	Seal Kit	1
4	47707	PVB, Work Unit	1
--	47705	Seal Kit	1
5	47708	PVED, Electric Control Unit, Upper Boom Lift/Lower	1
--	47703	Seal Kit	1
6	47709	PVB, Work Unit	2
--	47705	Seal Kit	1
7	47710	PVED, Electric Control Unit, Turntable Rotation	1
--	47703	Seal Kit	1
8	47711	PVB, Work Unit	1
--	47705	Seal Kit	1
9	47712	PVED, Electric Control Unit, Platform Level	1
--	47703	Seal Kit	1
10	47713	PVB, Work Unit	1
--	47705	Seal Kit	1
11	47714	PVED, Electric Control Unit, Platform Manifold Flow	1
--	47703	Seal Kit	1
12	47715	PVB, Work Unit	1
--	47705	Seal Kit	1
13	47716	PVSI, Cover	1
14	47717	PVAS, Bolt	1
15	47718	PVBS, Directional Cartridge	1
16	47719	PVBS, Directional Cartridge	1
17	47720	PVBS, Directional Cartridge	1
18	47721	PVBS, Directional Cartridge	2
19	47722	PVBS, Directional Cartridge	1
20	47723	PVM, Manual Unit	7
--	47724	Seal Kit	7
21	47725	PVSKS, Cartridge, Enable	1
22	47726	PVP, Inlet Unit	1
--	47727	Seal Kit	1
23	47728	PVED, Electric Control Unit, Riser Lift/Lower	1
--	47703	Seal Kit	1

Hydraulic Generator Assembly

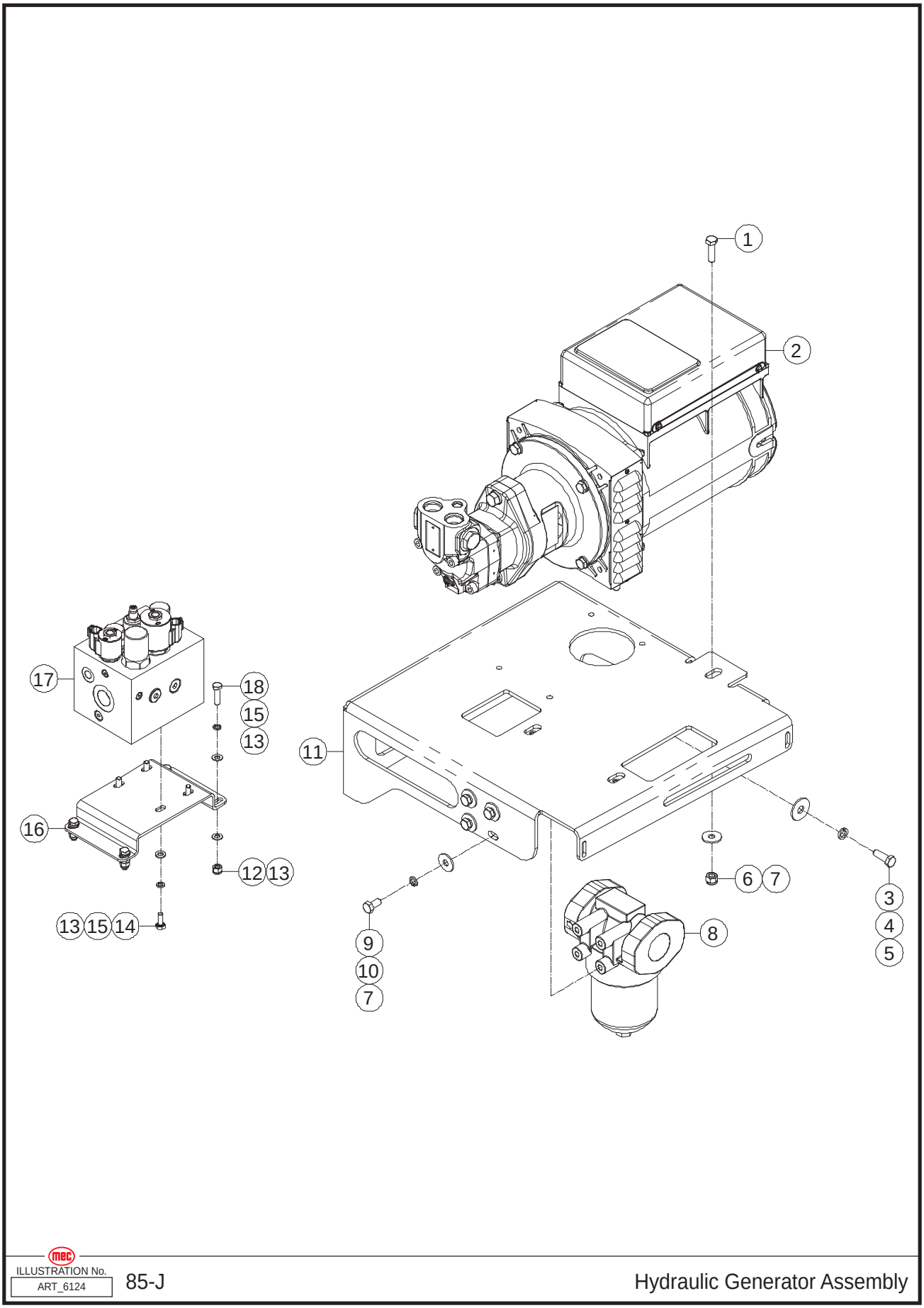


ILLUSTRATION No. ART_6124 85-J Hydraulic Generator Assembly

Item	Part Number	Description	Qty.
1	50332	Screw HHCS M10-1.50 × 35	3
2	47729	Hydraulic Generator	1
3	50034	Screw HHCS M10-1.50 × 30	6
4	53148	WSHR M12 Spring Washer	6
5	53478	WSHR M12 Flat Fender Washer	6
6	50049	Nut NNYL M10-1.50	3
7	53375	WSHR M10 Flat Fender Washer	7
8	47730	Pressure Filter	1
--	47731	Element, Filter	1
9	50215	Screw HHCS M10-1.50 × 20	4
10	53054	WSHR M10 Spring Washer	4
11	47732	Bracket	1
12	50048	Nut NNYL M08-1.25	4
13	50001	WSHR M08 Standard Flat Washer	12
14	50030	Screw HHCS M08-1.25 × 20	4
15	53055	WSHR M08 Spring Washer	8
16	47733	Bracket	1
17	47734	Generator Manifold (Refer to page 122)	1
18	50032	Screw HHCS M08-1.25 × 30	4

Generator Manifold

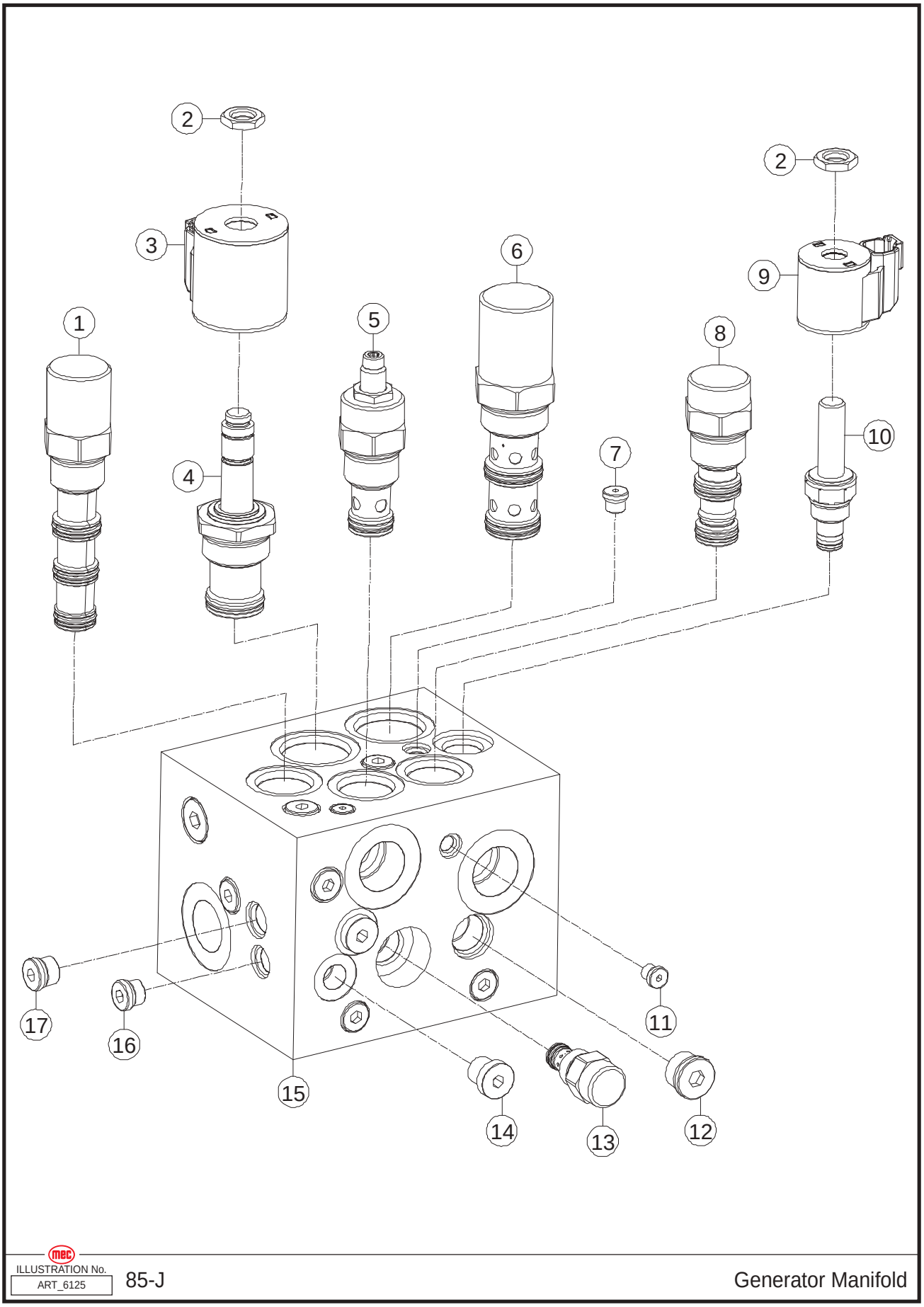


ILLUSTRATION No. ART_6125 85-J Generator Manifold

Item	Part Number	Description	Qty.
1	47735	Cartridge, Flow Control Valve	1
2	42795	Nut	2
3	47736	Coil	1
4	47737	Cartridge, Proportional Solenoid Valve	1
5	47738	Cartridge, Flow Control Valve	1
6	47739	Cartridge, Flow Control Valve	1
7	43643	Plug	1
8	47740	Cartridge, Logic Valve	1
9	47741	Coil	1
10	43372	Cartridge, Solenoid Valve	1
11	43465	Plug	5
12	43417	Plug	4
13	47742	Cartridge, Flow Control Valve	1
14	46869	Plug	2
15	47743	Body	1
16	42802	Plug	5
17	43434	Plug	4

Hydraulic Tray Brackets, Part 1

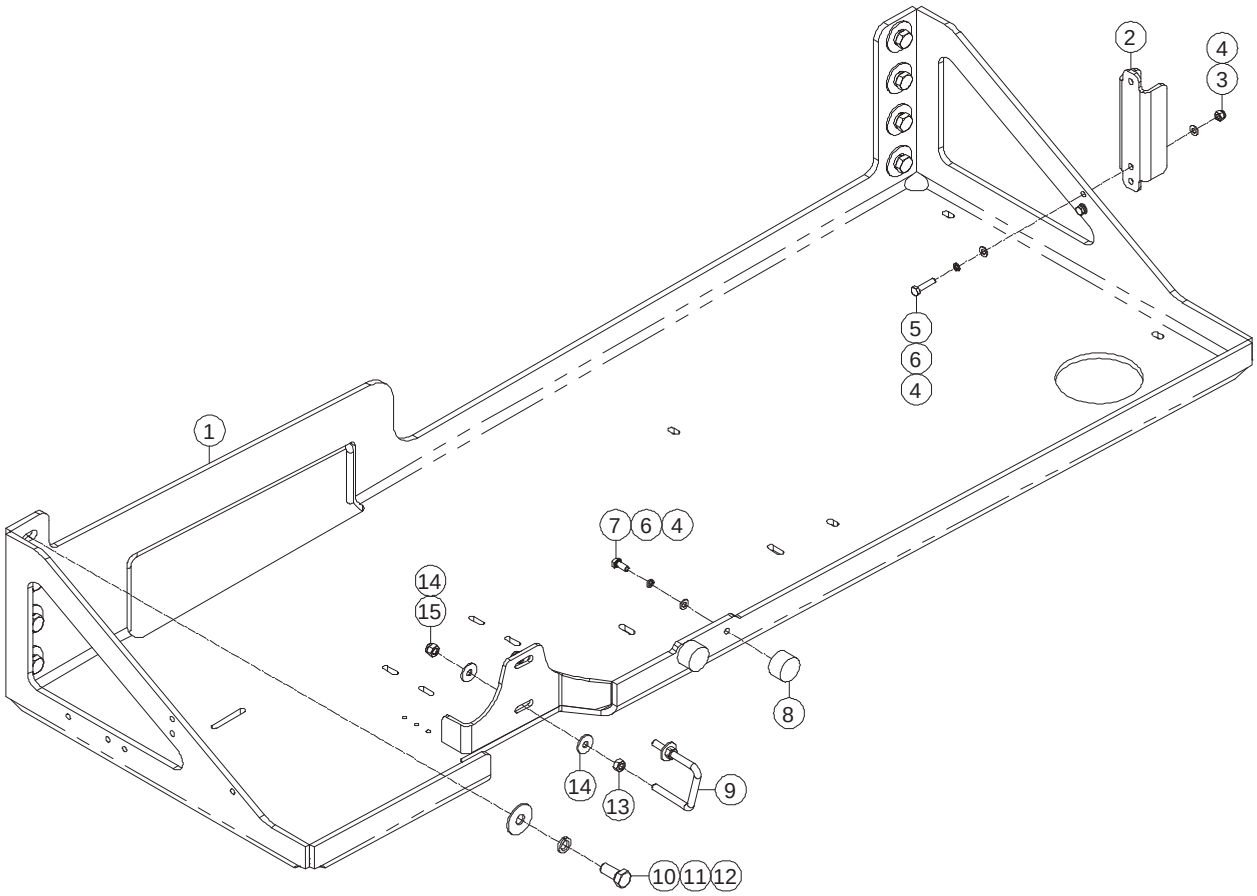


ILLUSTRATION No. ART_6126 85-J Hydraulic Tray Brackets, Part 1

Item	Part Number	Description	Qty.
1	47744	Support	1
2	47609	Bracket	1
3	50048	Nut NNYL M08-1.25	2
4	50001	WSHR M08 Standard Flat Washer	6
5	50282	Screw HHCS M08-1.25 × 35	2
6	53055	WSHR M08 Spring Washer	4
7	50030	Screw HHCS M08-1.25 × 20	2
8	47614	Seal	2
9	47613	U-Bolt	1
10	50374	Screw HHCS M16-2.00 × 35	8
11	53149	WSHR M16 Spring Washer	8
12	53314	WSHR M16 Flat Fender Washer	8
13	53373	Nut NHEX M10-1.50	2
14	53375	WSHR M10 Flat Fender Washer	4
15	50049	Nut NNYL M10-1.50	2

Hydraulic Tray Brackets, Part 2

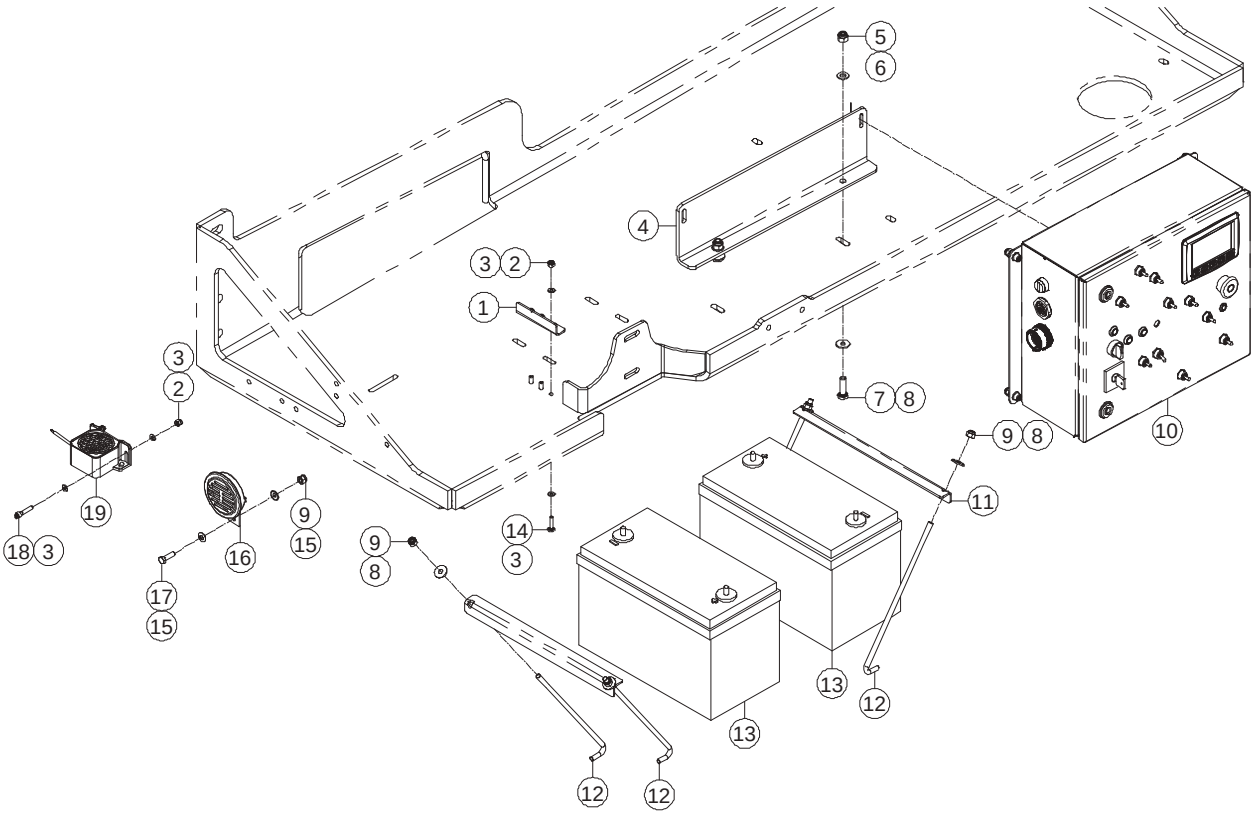


ILLUSTRATION No. ART_6127 85-J Hydraulic Tray Brackets, Part 2

Item	Part Number	Description	Qty.
1	47745	Plate	1
2	50047	Nut NNYL M06-1.00	5
3	50000	WSHR M06 Standard Flat Washer	10
4	47746	Bracket	1
5	50049	Nut NNYL M10-1.50	2
6	50002	WSHR M10 Standard Flat Washer	2
7	50332	Screw HHCS M10-1.50 × 35	2
8	50218	WSHR M08 Flat Fender Washer	6
9	50048	Nut NNYL M08-1.25	5
10	REF	Lower Control Box Assembly (Refer to page 226)	1
11	47747	Retainer	2
12	47748	Hook, Battery Hold Down	4
13	43144	Battery	2
14	50117	Screw HHCS M06-1.00 × 25	3
15	47750	Spring Washer	2
16	43243	Horn	1
17	50031	Screw HHCS M08-1.25 × 25	1
18	53207	Screw SHCS M06-1.00 × 30	2
19	47752	Alarm	1

REF - Reference

Emergency Pump Installation

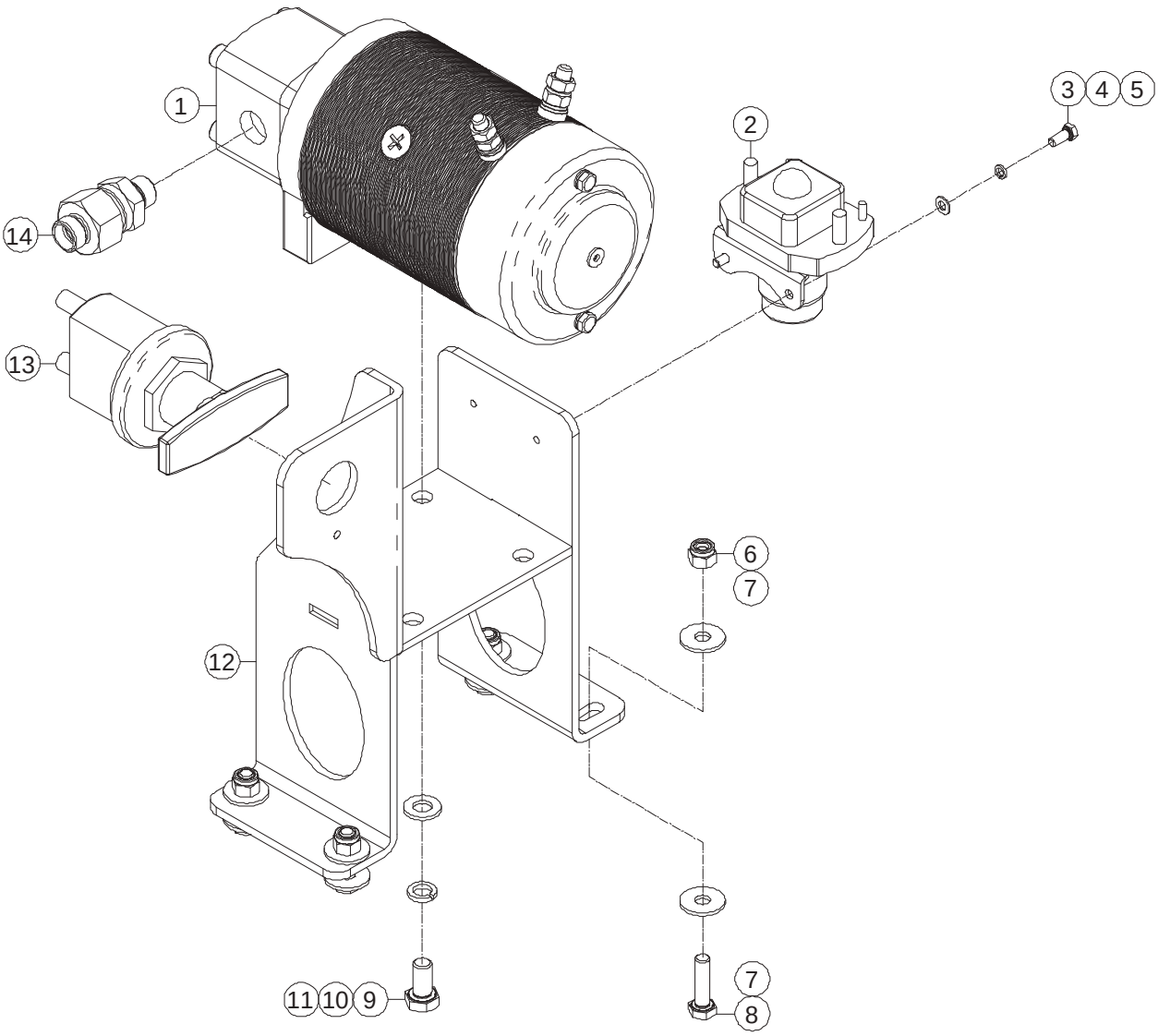


ILLUSTRATION No. ART_6128 85-J Emergency Pump Installation

Item	Part Number	Description	Qty.
1	47753	Emergency Pump Assembly	2
--	47754	Motor	1
--	47755	Pump	1
2	43800	DC Contactor	1
3	53081	Screw HHCS M05-0.80 × 12	2
4	53043	WSHR M05 Spring Washer	2
5	53038	WSHR M05 Standard Flat Washer	2
6	50048	Nut NNYL M08-1.25	4
7	50218	WSHR M08 Flat Fender Washer	8
8	50032	Screw HHCS M08-1.25 × 30	4
9	50215	Screw HHCS M10-1.50 × 20	2
10	53054	WSHR M10 Spring Washer	2
11	50002	WSHR M10 Standard Flat Washer	2
12	47757	Bracket	1
13	47758	Power Switch	1
14	47759	Check Valve	1

Hydraulic Tank Installation

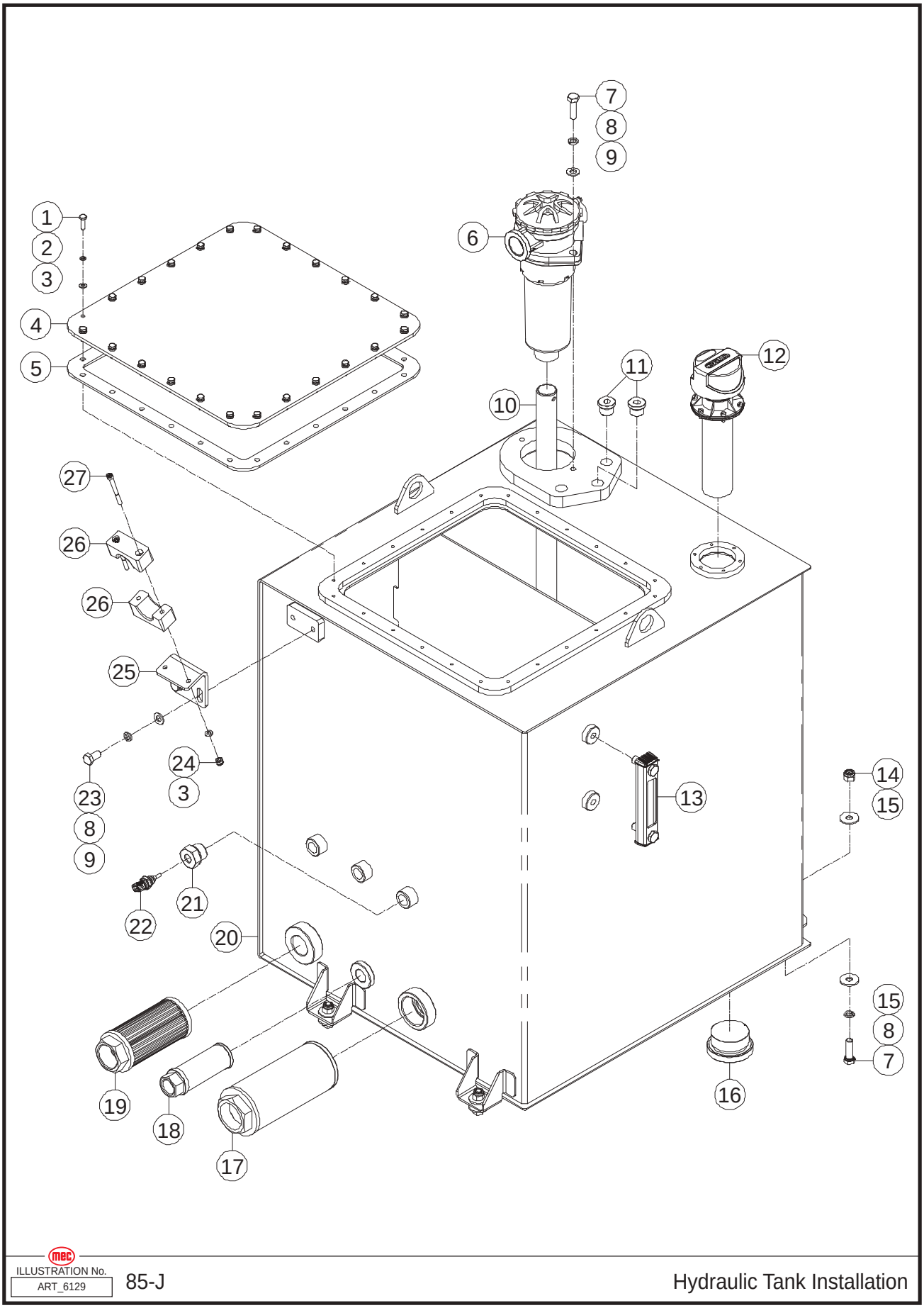


ILLUSTRATION No. ART_6129 85-J Hydraulic Tank Installation

Item	Part Number	Description	Qty.
1	50028	Screw HHCS M06-1.00 × 20	24
2	53046	WSHR M06 Spring Washer	24
3	50000	WSHR M06 Standard Flat Washer	26
4	47760	Cover	1
5	47761	Seal	1
6	47762	Filter, Return Oil	1
--	48180	Filter Element	1
7	50332	Screw HHCS M10-1.50 × 35	6
8	53054	WSHR M10 Spring Washer	8
9	50002	WSHR M10 Standard Flat Washer	4
10	47763	Pipe	1
11	47693	Plug	2
12	47764	Vent Plug	1
13	47765	Level Indicator	1
14	50049	Nut NNYL M10-1.50	4
15	53375	WSHR M10 Flat Fender Washer	8
16	47766	Plug	1
17	47767	Filter Cartridge	1
18	47768	Filter Cartridge	1
19	43123	Filter Cartridge	1
20	47770	Hydraulic Tank	1
21	47771	Fitting, Straight	1
22	47772	Temperature Sensor	1
23	50215	Screw HHCS M10-1.50 × 20	2
24	50047	Nut NNYL M06-1.00	2
25	47773	Bracket	1
26	47774	Clamp	2
27	53142	Screw SHCS M06-1.00 × 65	2

Turret Radiator, Part 1

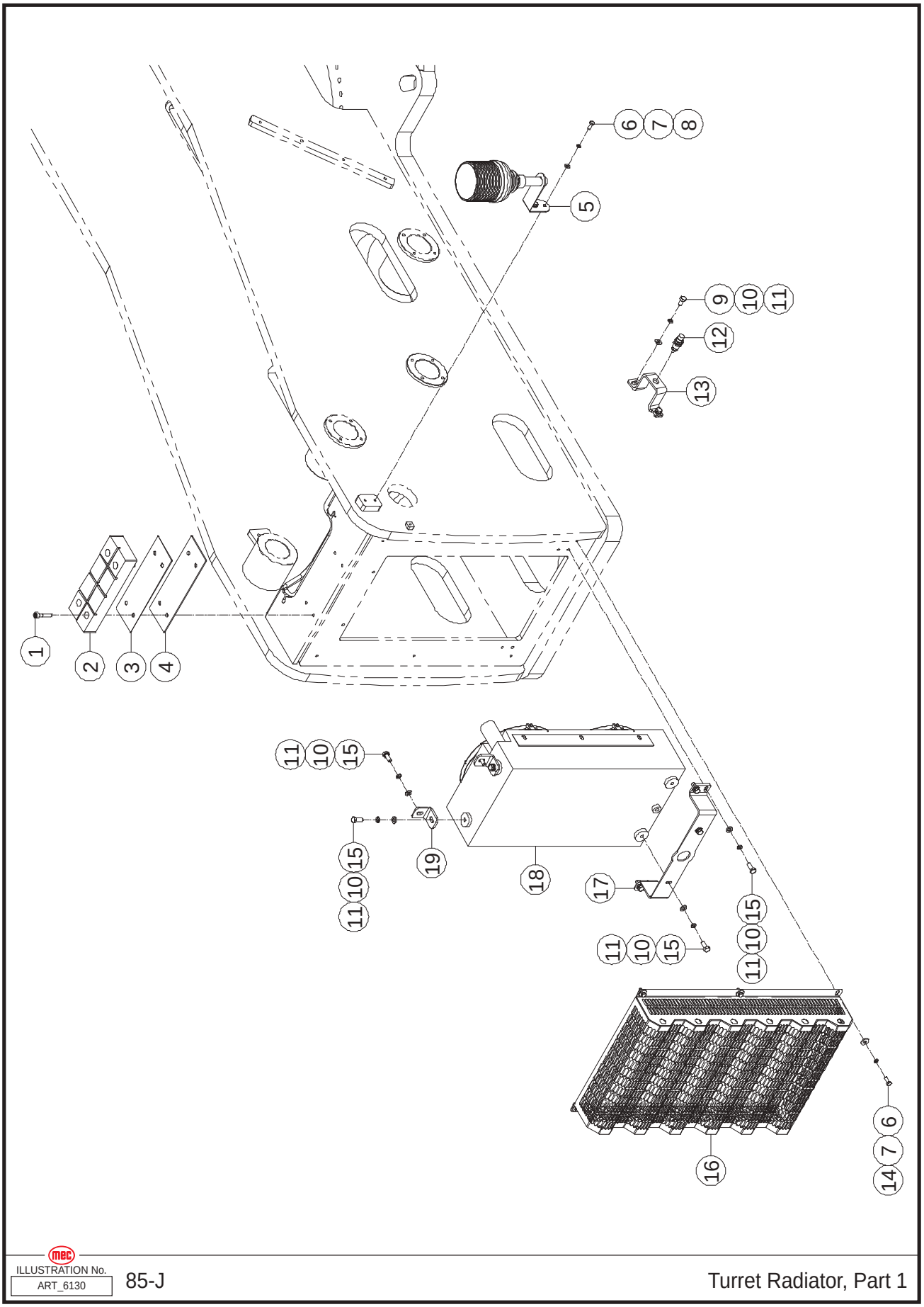


ILLUSTRATION No. ART_6130 85-J Turret Radiator, Part 1

Item	Part Number	Description	Qty.
1	50515	Screw SHCS M10-1.50 × 45	4
2	47775	Boom Pad	1
3	47865	Shim	1
4	47866	Shim	1
5	47867	Beacon	1
6	50030	Screw HHCS M08-1.25 × 20	8
7	53055	WSHR M08 Spring Washer	8
8	50001	WSHR M08 Standard Flat Washer	2
9	50215	Screw HHCS M10-1.50 × 20	2
10	53054	WSHR M10 Spring Washer	12
11	50002	WSHR M10 Standard Flat Washer	16
12	47868	Proximity Switch	1
13	47869	Bracket	1
14	50218	WSHR M08 Flat Fender Washer	6
15	50033	Screw HHCS M10-1.50 × 25	10
16	47870	Housing	1
17	47871	Bracket	1
18	47872	Radiator	1
19	47873	Plate	2

Turret Radiator, Part 2

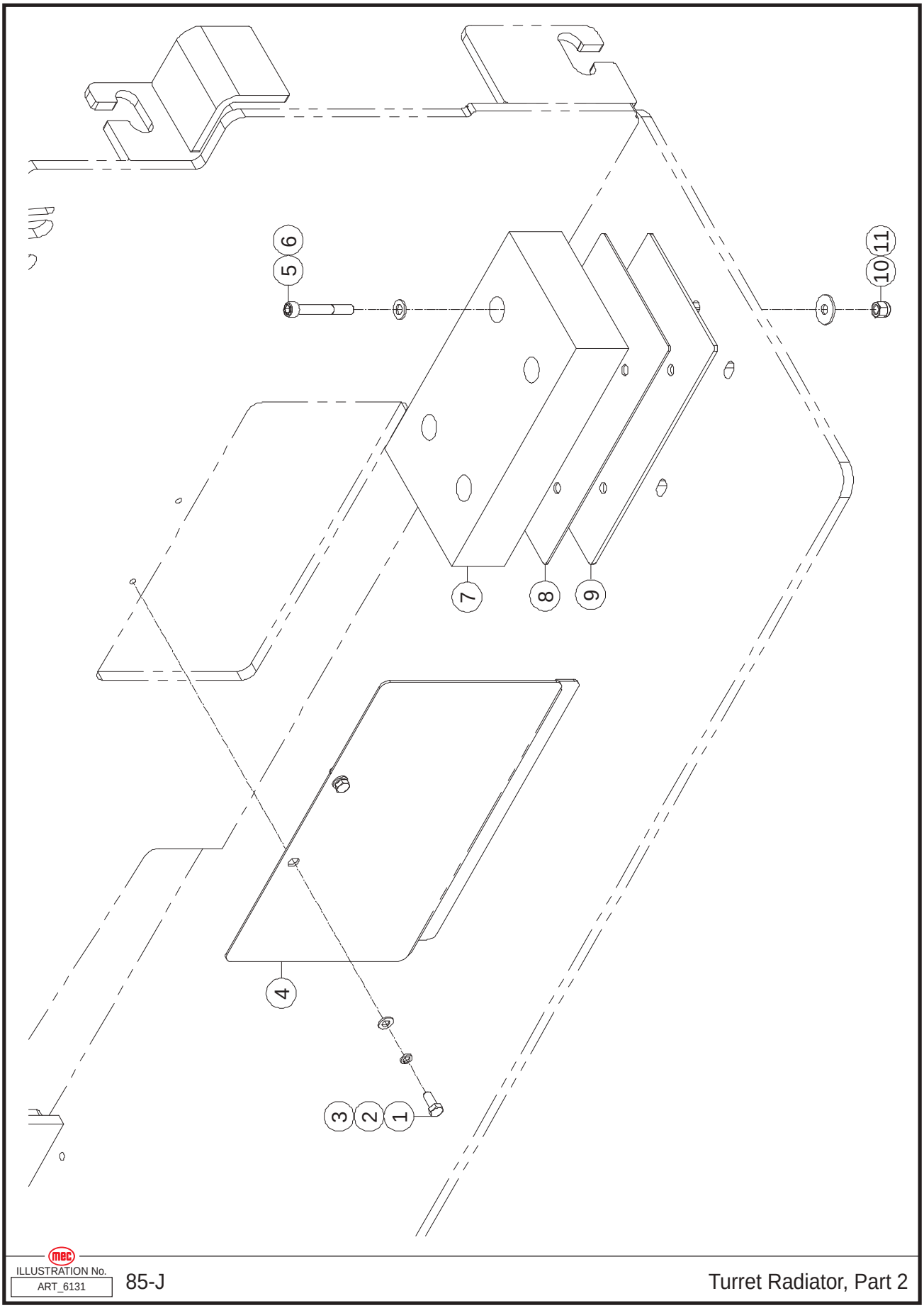


ILLUSTRATION No. ART_6131 85-J Turret Radiator, Part 2

Item	Part Number	Description	Qty.
1	50033	Screw HHCS M10-1.50 × 25	2
2	53054	WSHR M10 Spring Washer	2
3	50002	WSHR M10 Standard Flat Washer	2
4	47874	Cover	1
5	53559	Screw SHCS M12-1.75 × 85	4
6	50003	WSHR M12 Standard Flat Washer	4
7	47875	Boom Pad	1
8	47876	Shim	1
9	47877	Shim	1
10	50050	Nut NNYL M12-1.75	4
11	53478	WSHR M12 Flat Fender Washer	4

Counterweight Installation

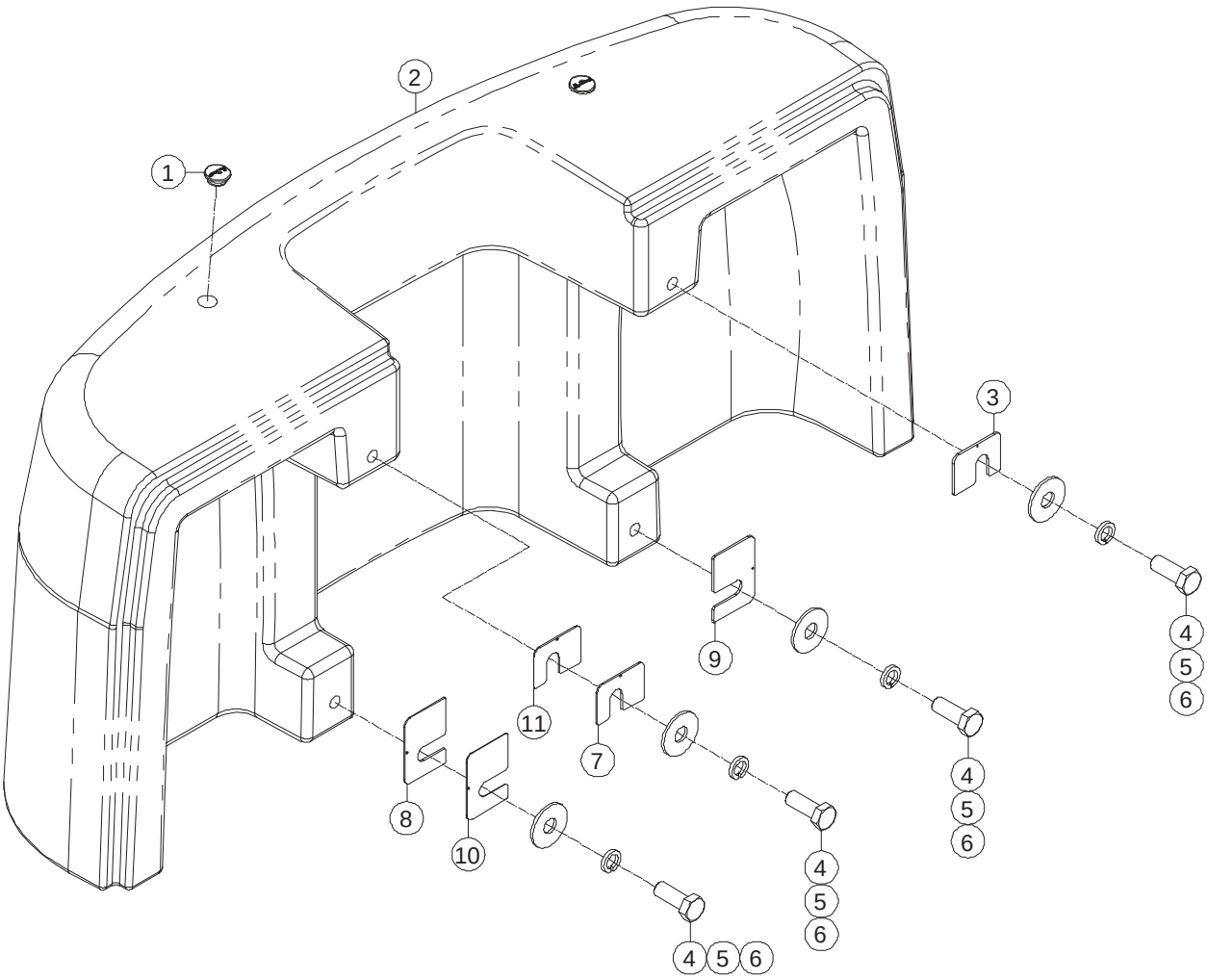


ILLUSTRATION No. ART_6132 85-J Counterweight Installation

Item	Part Number	Description	Qty.
1	46735	Plug	2
2	47879	Counterweight	1
3	47880	Shim	1
4	53395	Screw HHCS M30-3.50 × 80	4
5	53560	WSHR M30 Spring Washer	4
6	53561	WSHR M30 Standard Flat Washer	4
7	47881	Shim	1
8	47882	Shim	1
9	47883	Shim	1
10	47884	Shim	1
11	47885	Shim	1

Housing Installation

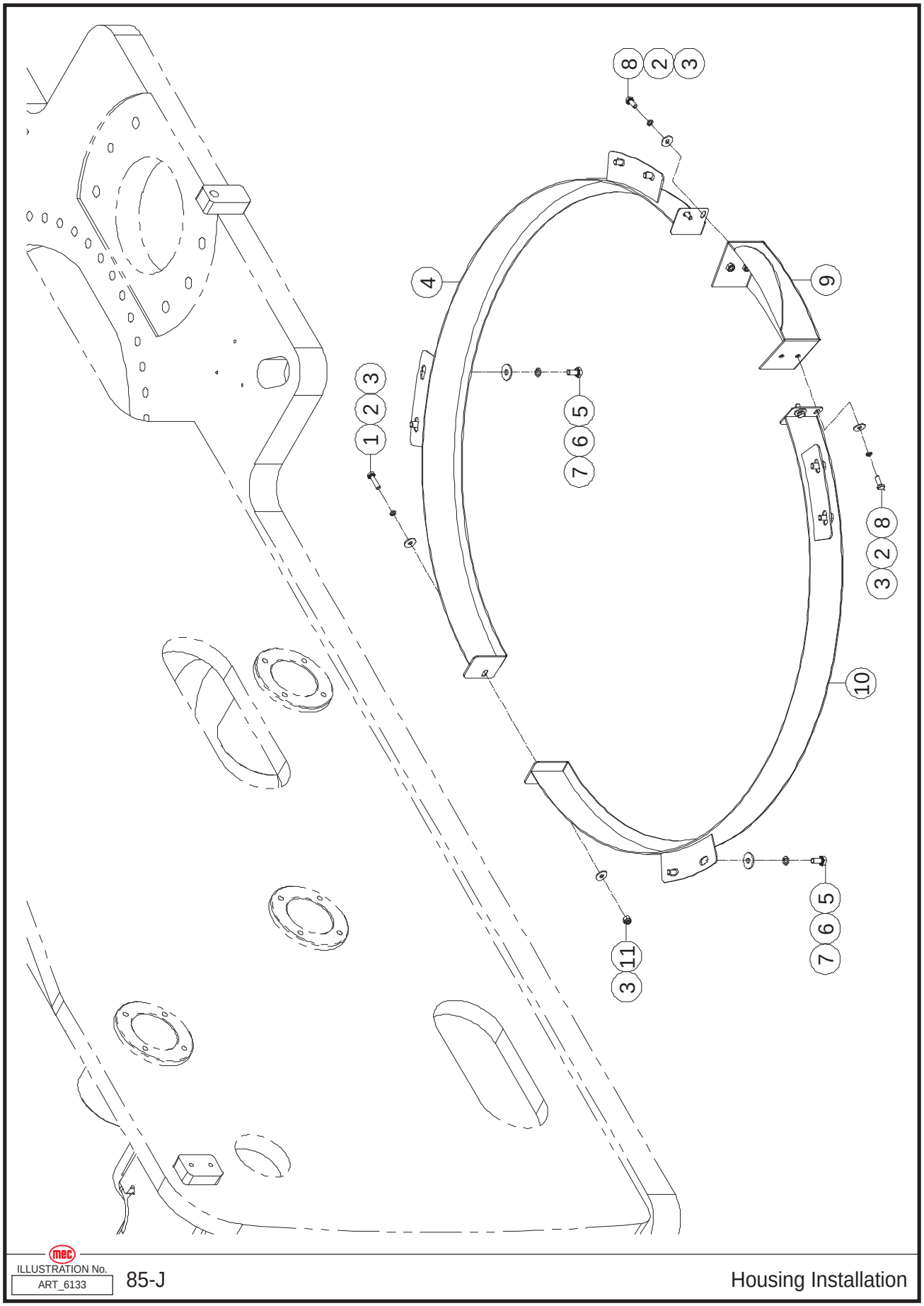


ILLUSTRATION No.
ART_6133

85-J

Housing Installation

Item	Part Number	Description	Qty.
1	50117	Screw HHCS M06-1.00 × 25	1
2	53046	WSHR M06 Spring Washer	5
3	50068	WSHR M06 Flat Fender Washer	6
4	47886	Housing	1
5	53154	Screw HHCS M08-1.25 × 16	8
6	53055	WSHR M08 Spring Washer	8
7	50218	WSHR M08 Flat Fender Washer	8
8	50445	Screw HHCS M06-1.00 × 16	4
9	47887	Housing	1
10	47888	Housing	1
11	50047	Nut NNYL M06-1.00	1

Turntable Hood Installation

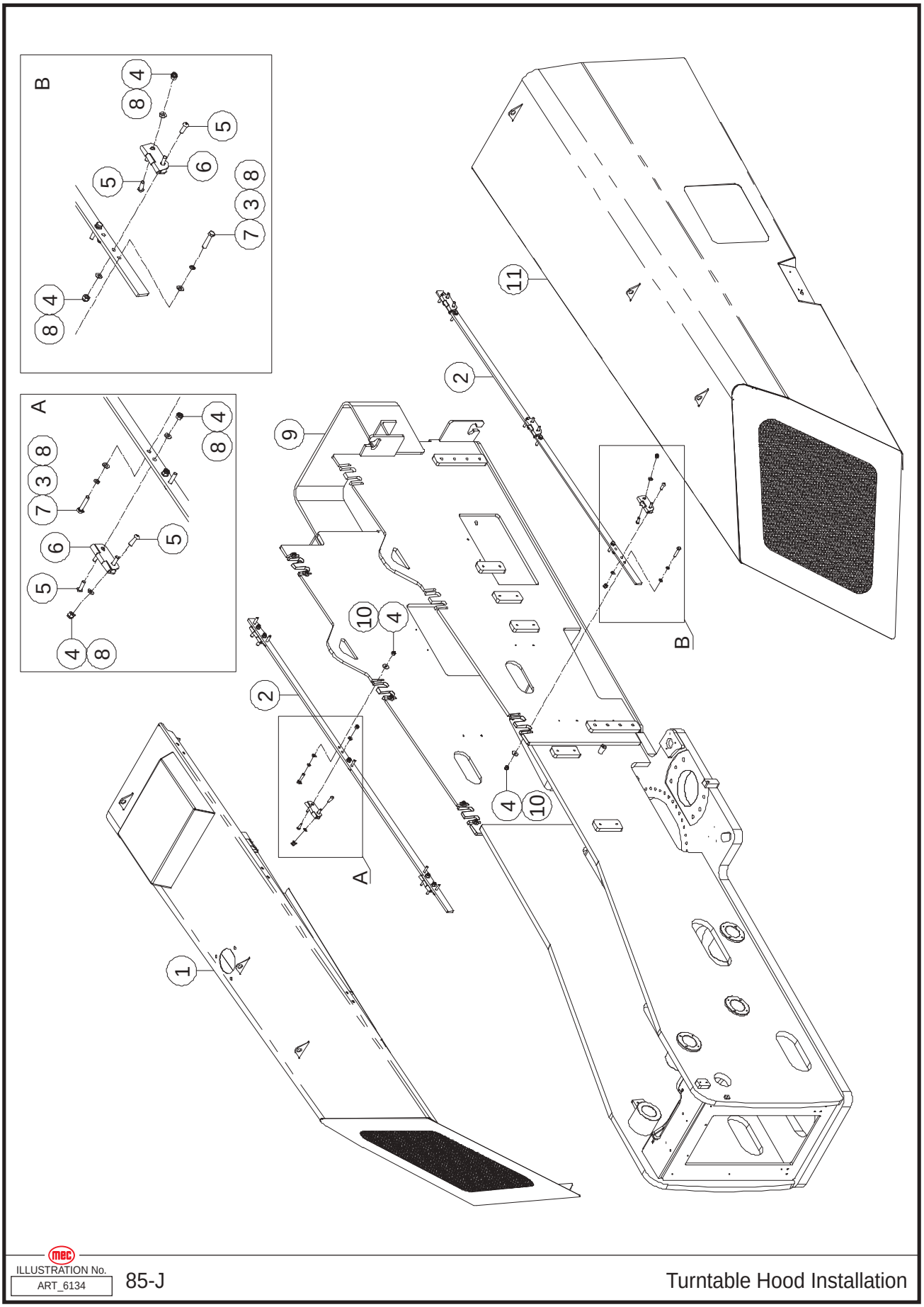


ILLUSTRATION No. ART_6134 85-J Turntable Hood Installation

Item	Part Number	Description	Qty.
1	47889	Turntable Hood (Left Side)	1
2	47890	Plate	2
3	53054	WSHR M10 Spring Washer	12
4	50049	Nut NNYL M10-1.50	36
5	50370	Screw BHCS M10-1.50 × 30	24
6	47891	Hinge	6
7	50020	Screw HHCS M10-1.50 × 50	12
8	50002	WSHR M10 Standard Flat Washer	36
9	47892	Turntable	1
10	53375	WSHR M10 Flat Fender Washer	12
11	47893	Turntable Hood (Right Side)	1

Engine Hood Installation

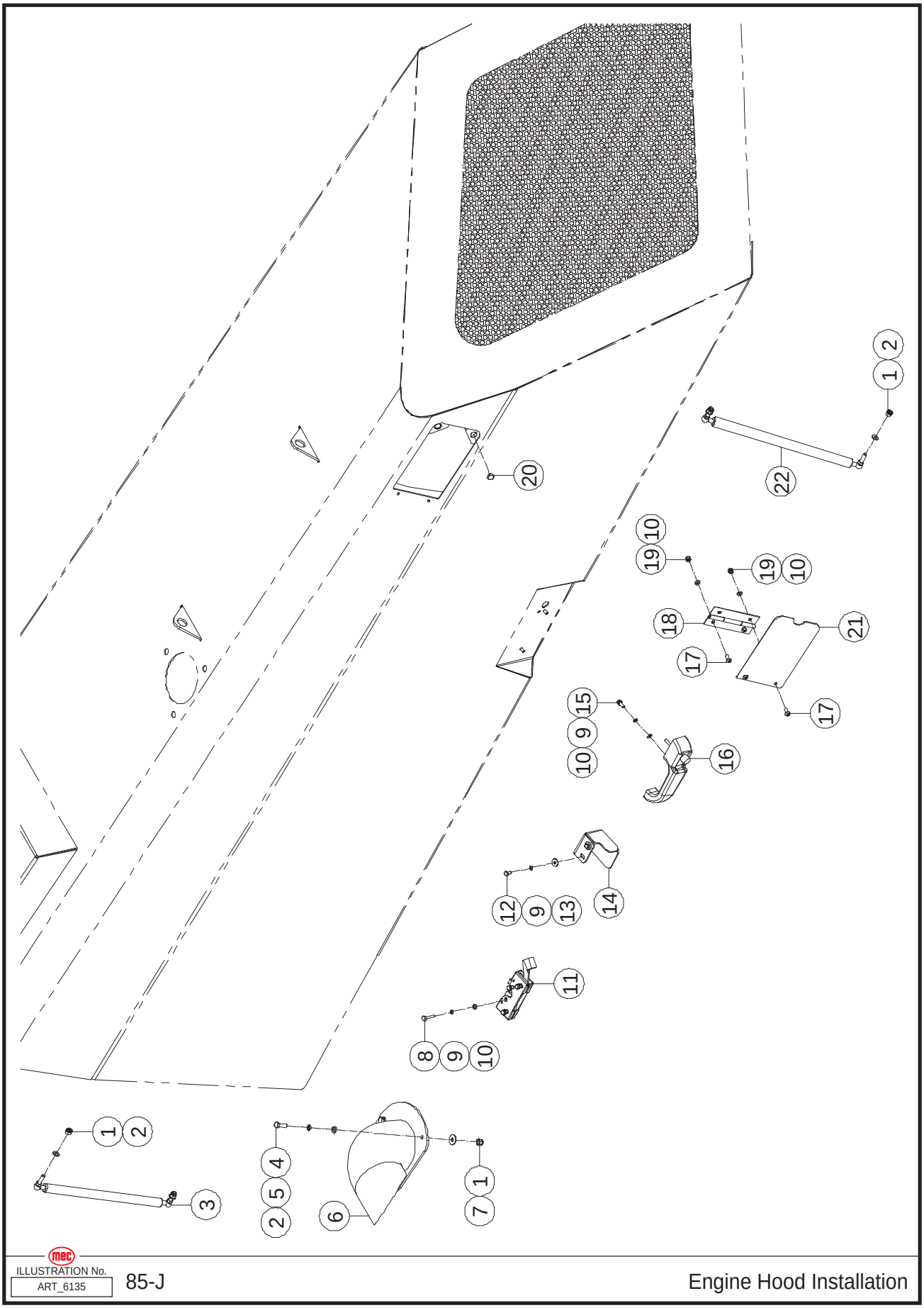


ILLUSTRATION No.
ART_6135

85-J

Engine Hood Installation

Item	Part Number	Description	Qty.
1	50048	Nut NNYL M08-1.25	7
2	50001	WSHR M08 Standard Flat Washer	7
3	47894	Spring, Gas	1
4	50031	Screw HHCS M08-1.25 × 25	3
5	53055	WSHR M08 Spring Washer	3
6	47895	Exhaust Tube	1
7	50218	WSHR M08 Flat Fender Washer	3
8	50214	Screw HHCS M06-1.00 × 30	4
9	53046	WSHR M06 Spring Washer	9
10	50000	WSHR M06 Standard Flat Washer	11
11	41067	Lock	1
12	53104	Screw HHCS M06-1.00 × 12	2
13	50068	WSHR M06 Flat Fender Washer	2
14	47897	Housing	1
15	50445	Screw HHCS M06-1.00 × 16	3
16	42353	Doorknob	1
17	53231	Screw PHMS M06-1.00 × 16	4
18	47899	Hinge	1
19	50047	Nut NNYL M06-1.00	4
20	43053	Magnet	2
21	47901	Door	1
22	47902	Spring, Gas	1

Control Hood Installation

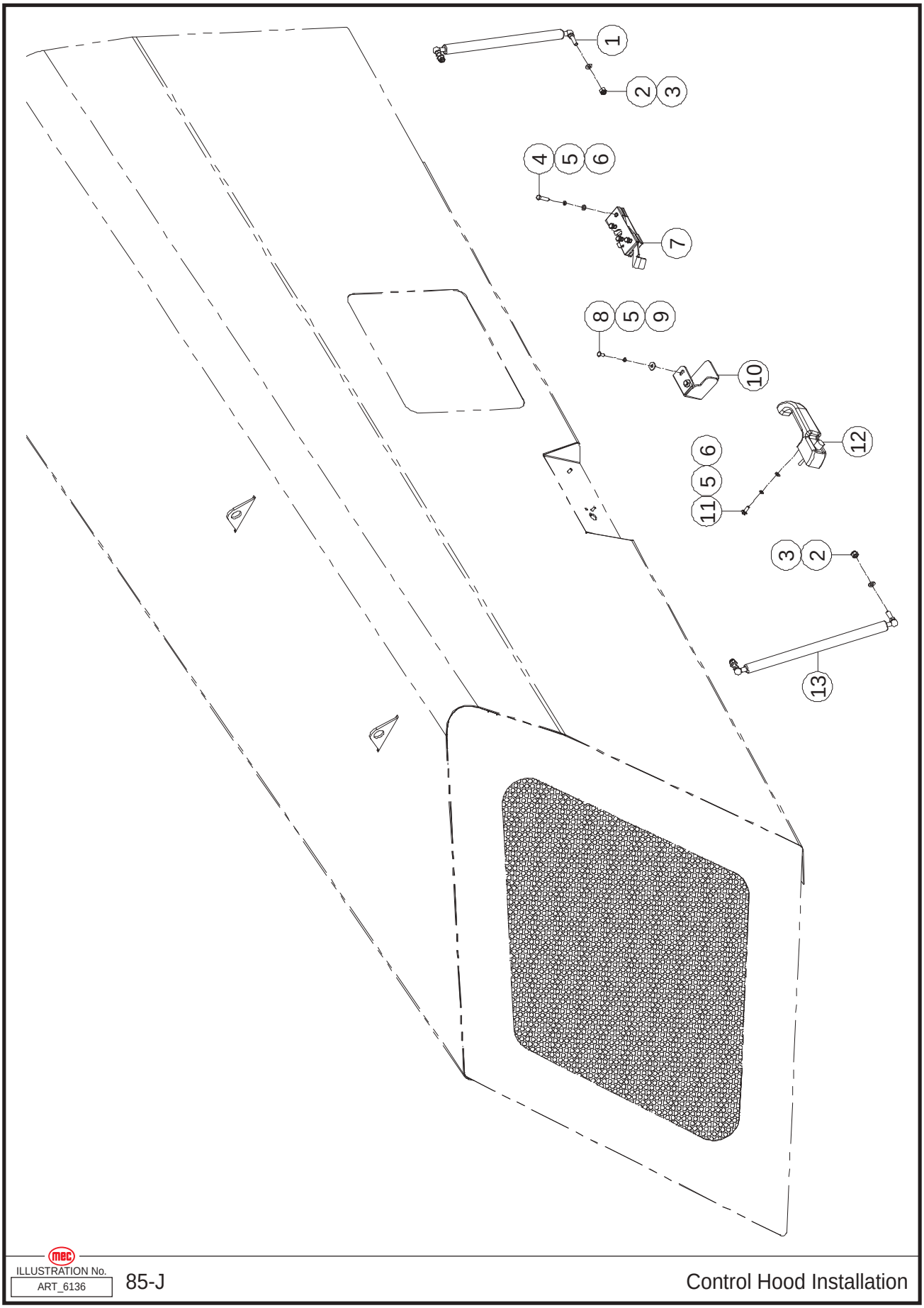


ILLUSTRATION No. ART_6136 85-J Control Hood Installation

Item	Part Number	Description	Qty.
1	47894	Spring, Gas	1
2	50048	Nut NNYL M08-1.25	4
3	50001	WSHR M08 Standard Flat Washer	4
4	50214	Screw HHCS M06-1.00 × 30	4
5	53046	WSHR M06 Spring Washer	9
6	50000	WSHR M06 Standard Flat Washer	7
7	42896	Lock	1
8	53104	Screw HHCS M06-1.00 × 12	2
9	50068	WSHR M06 Flat Fender Washer	2
10	47904	Housing	1
11	50445	Screw HHCS M06-1.00 × 16	3
12	42353	Doorknob	1
13	47902	Spring, Gas	1

Linkage Installation 1

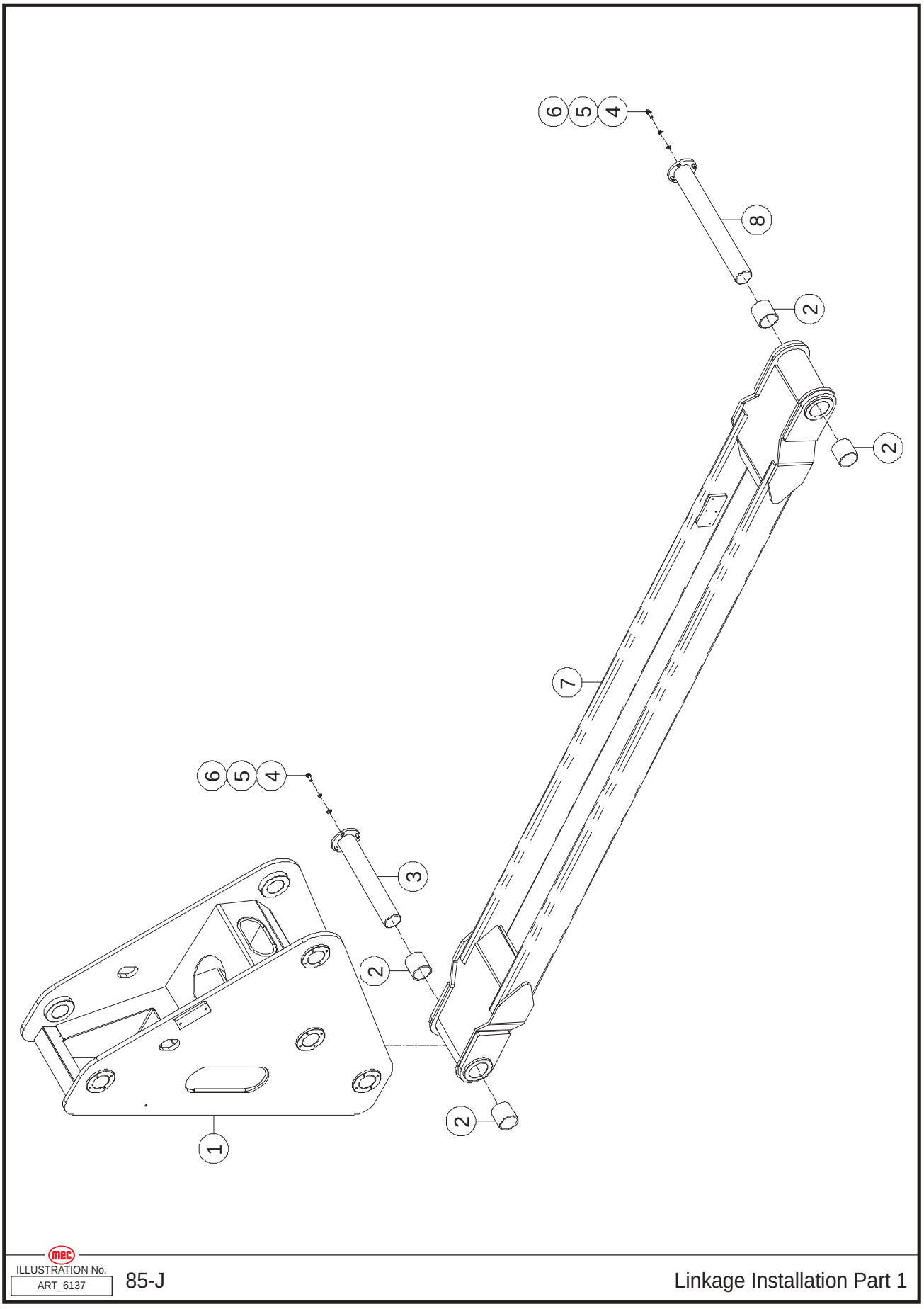


ILLUSTRATION No. ART_6137 85-J

Linkage Installation Part 1

Item	Part Number	Description	Qty.
1	47905	Linkage	1
2	47906	Sleeve Bearing	4
3	47907	Pin, Pivot	1
4	50034	Screw HHCS M10-1.50 × 30	8
5	53054	WSHR M10 Spring Washer	8
6	50002	WSHR M10 Standard Flat Washer	8
7	47908	Linkage	1
8	47909	Pin, Pivot	1

Linkage Accessory Installation 1

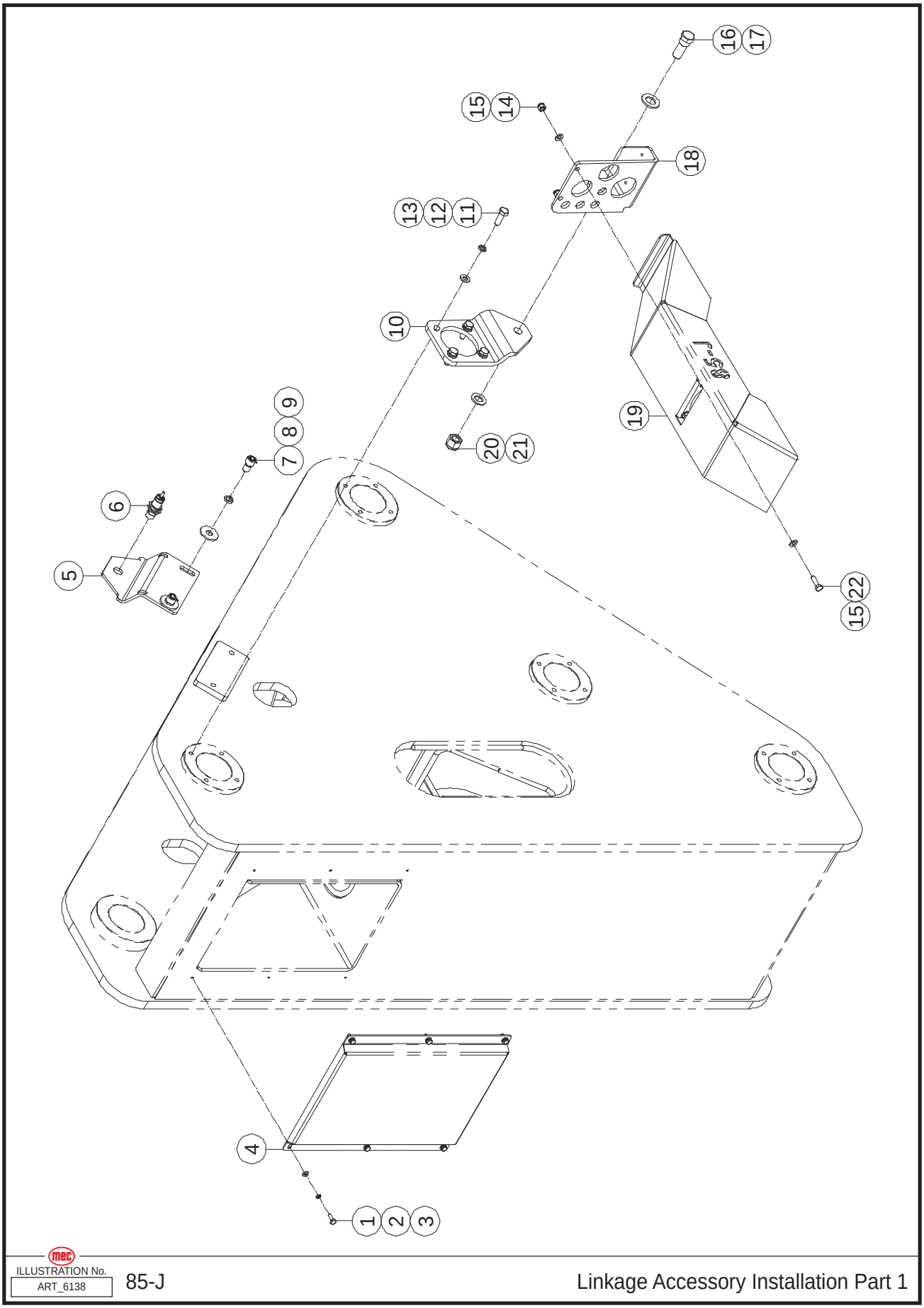


ILLUSTRATION No. ART_6138

85-J

Linkage Accessory Installation Part 1

Item	Part Number	Description	Qty.
1	50445	Screw HHCS M06-1.00 × 16	6
2	53046	WSHR M06 Spring Washer	6
3	50000	WSHR M06 Standard Flat Washer	6
4	47910	Cover	1
5	47911	Bracket	1
6	47868	Limit Switch	1
7	53562	Screw SHCS M12-1.75 × 20	2
8	53148	WSHR M12 Spring Washer	2
9	53478	WSHR M12 Flat Fender Washer	2
10	47912	Bracket	1
11	50034	Screw HHCS M10-1.50 × 30	4
12	53054	WSHR M10 Spring Washer	4
13	50002	WSHR M10 Standard Flat Washer	4
14	50048	Nut NNYL M08-1.25	2
15	50001	WSHR M08 Standard Flat Washer	4
16	47913	Bolt	1
17	50005	WSHR M20 Standard Flat Washer	1
18	47914	Bracket	1
19	47915	Housing	1
20	50051	Nut NNYL M16-2.00	1
21	50004	WSHR M16 Standard Flat Washer	1
22	50031	Screw HHCS M08-1.25 × 25	2

Linkage Installation 2

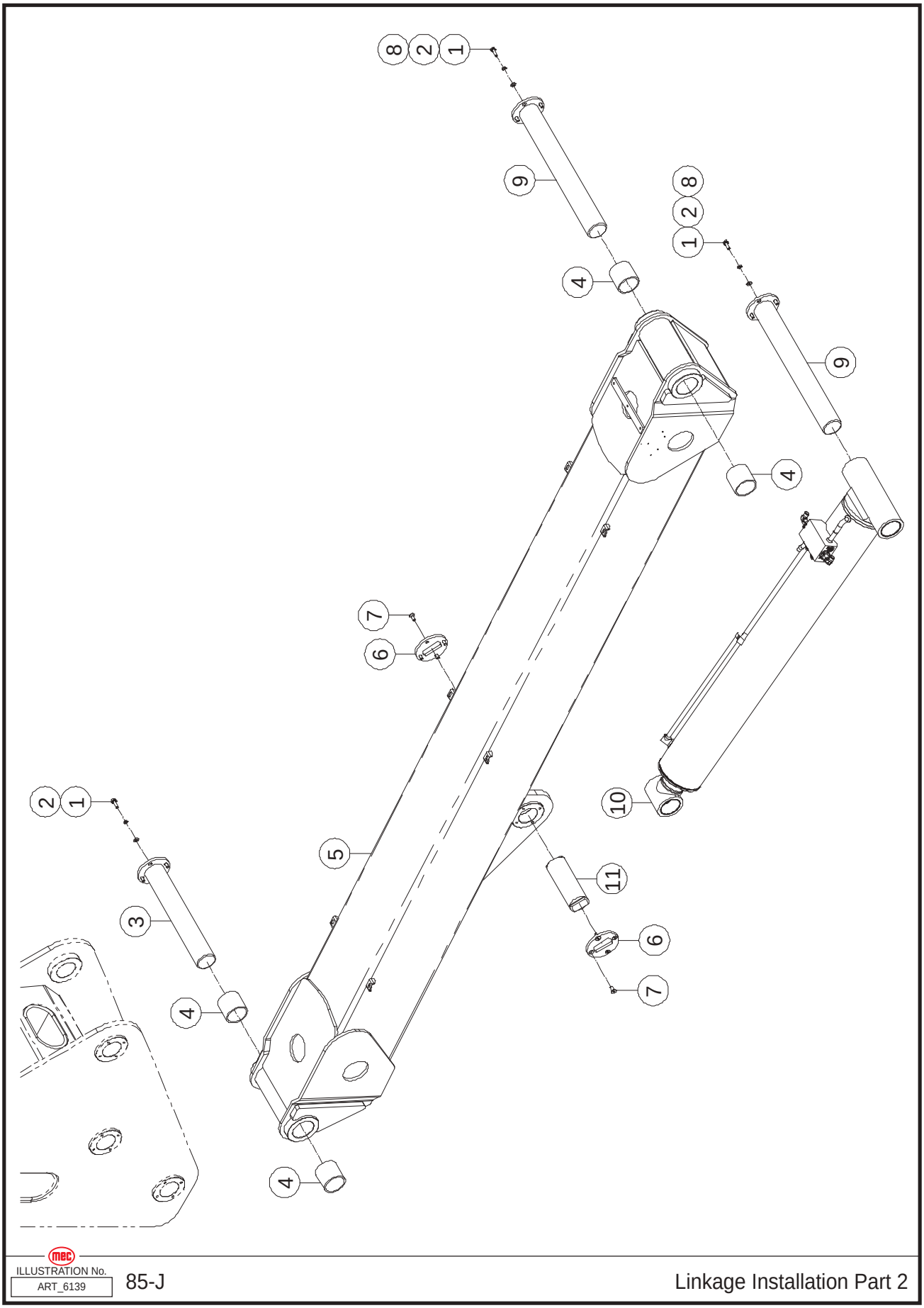


ILLUSTRATION No. ART_6139

85-J

Linkage Installation Part 2

Item	Part Number	Description	Qty.
1	50034	Screw HHCS M10-1.50 × 30	12
2	53054	WSHR M10 Spring Washer	12
3	47907	Pin, Pivot	1
4	47906	Sleeve Bearing	4
5	47916	Linkage	1
6	47917	Cover	2
7	53483	Screw CSCS M10-1.50 × 25	8
8	50002	WSHR M10 Standard Flat Washer	12
9	47909	Pin, Pivot	2
10	REF	Lower Lifting Cylinder Assembly (Refer to page 200)	1
11	47918	Pin, Pivot	1

REF - Reference

Linkage Accessory Installation 2

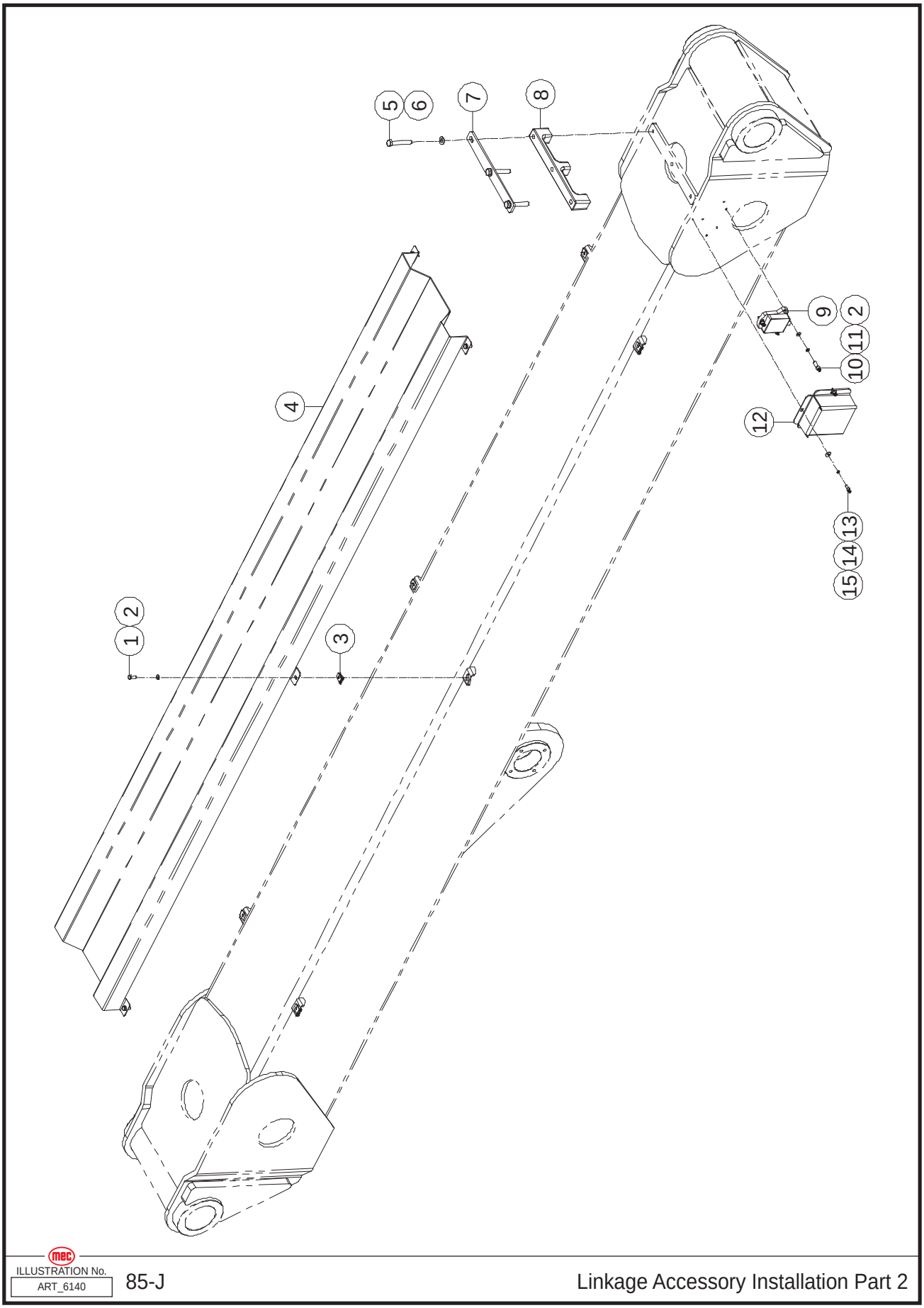


ILLUSTRATION No. ART_6140

85-J

Linkage Accessory Installation Part 2

Item	Part Number	Description	Qty.
1	50445	Screw HHCS M06-1.00 × 16	6
2	50000	WSHR M06 Standard Flat Washer	9
3	53481	No-Slip Clip-On Barrel Nut M06-1.00	6
4	47919	Housing	1
5	50421	Screw HHCS M10-1.50 × 60	3
6	50002	WSHR M10 Standard Flat Washer	3
7	47920	Plate	1
8	47921	Clamp	1
9	47922	Sensor, Angle	1
10	53124	Screw SHCS M06-1.00 × 20	3
11	53046	WSHR M06 Spring Washer	3
12	47923	Cover, Sensor	1
13	53116	Screw SHCS M05-0.80 × 12	3
14	53043	WSHR M05 Spring Washer	3
15	50525	WSHR M05 Flat Fender Washer	3

Lifting Cylinder Assembly Installation

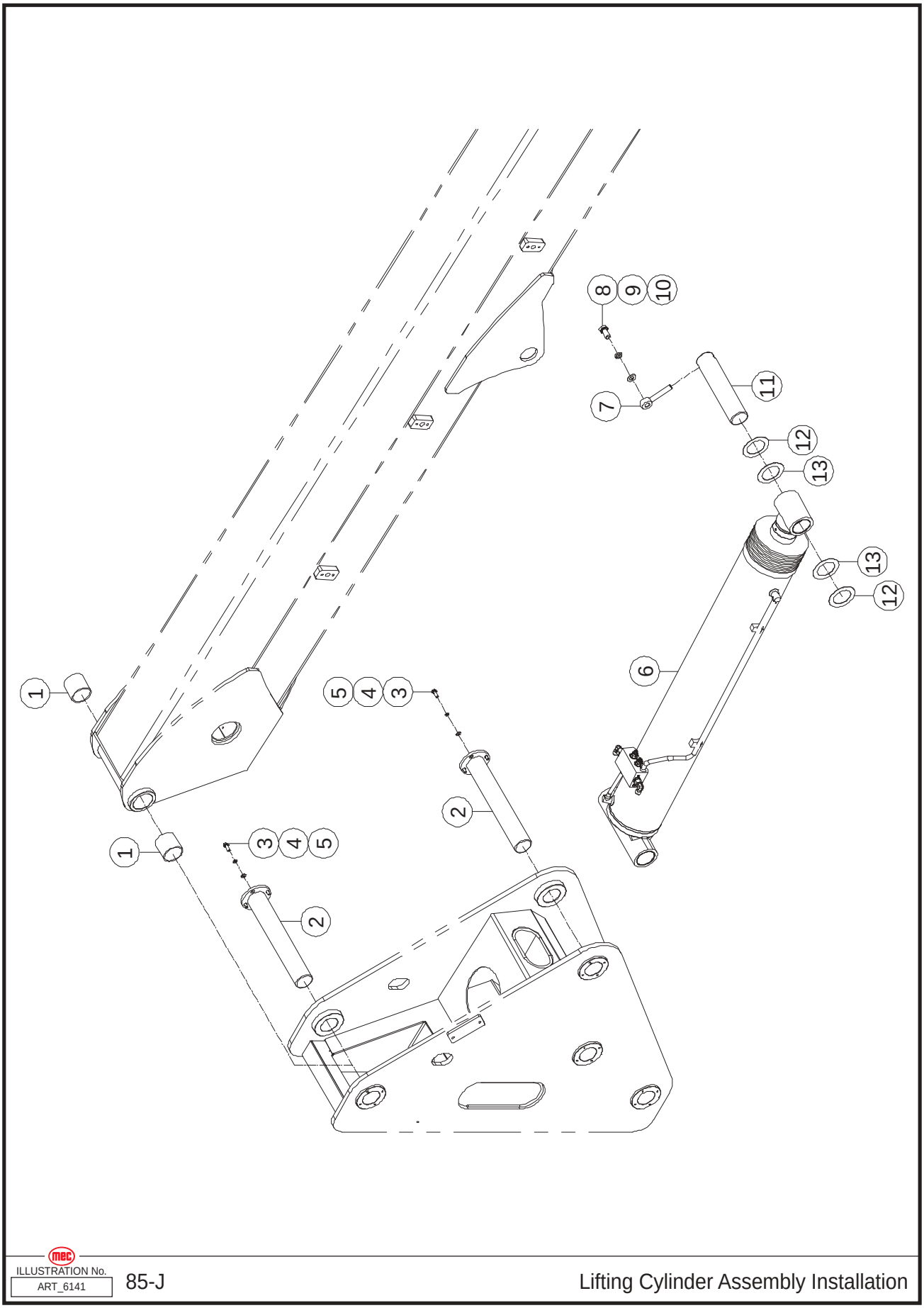


ILLUSTRATION No. ART_6141 85-J Lifting Cylinder Assembly Installation

Item	Part Number	Description	Qty.
1	47906	Sleeve Bearing	2
2	47907	Pin, Pivot	2
3	50034	Screw HHCS M10-1.50 × 30	8
4	53054	WSHR M10 Spring Washer	8
5	50002	WSHR M10 Standard Flat Washer	8
6	REF	Lifting Cylinder Assembly (Refer to page 154)	1
7	47924	Pin, Lock	1
8	53563	Screw HHCS M20-2.50 × 40	1
9	53517	WSHR M20 Spring Washer	1
10	50005	WSHR M20 Standard Flat Washer	1
11	47925	Pin, Pivot	1
12	47926	Shim	2
13	47927	Shim	2

REF - Reference

Telescopic Booms

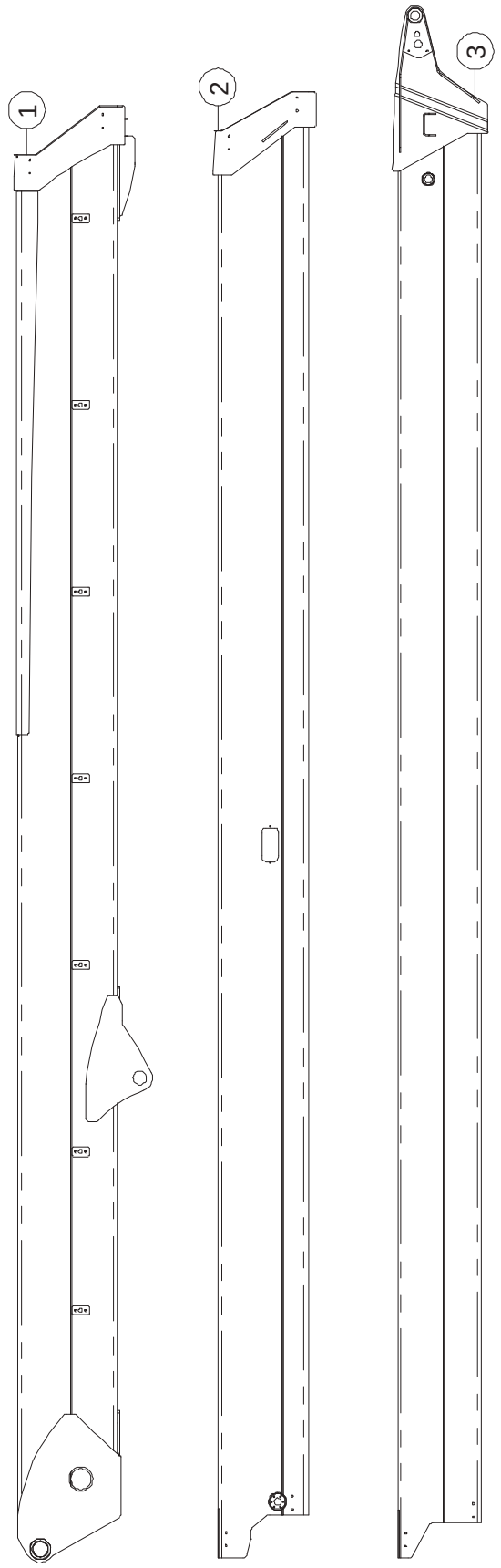


ILLUSTRATION No.
ART_6142

85-J

Telescopic Booms

Item	Part Number	Description	Qty.
1	47928	Base Boom	1
2	47929	Second Boom	1
3	47930	Third Boom	1

Base Boom Sliding Block Installation

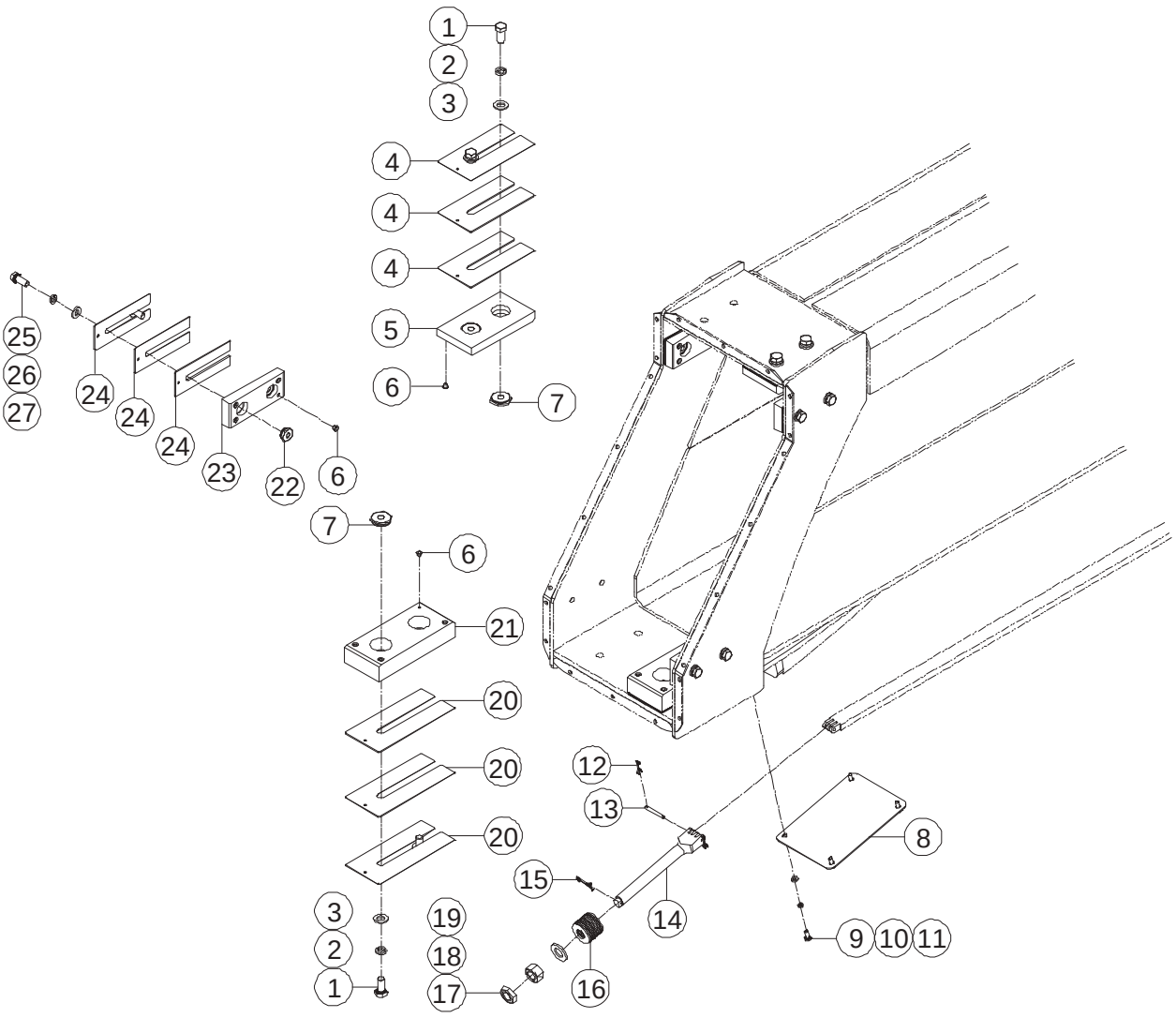


ILLUSTRATION No. ART_6143 85-J Base Boom Sliding Block Installation

Item	Part Number	Description	Qty.
1	53564	Screw HHCS M12-1.25 × 25	8
2	53148	WSHR M12 Spring Washer	8
3	50003	WSHR M12 Standard Flat Washer	8
4	47931	Shim	6
5	47932	Sliding Block	2
6	47933	Plug	32
7	47934	Insert	8
8	47935	Cover	1
9	50445	Screw HHCS M06-1.00 × 16	4
10	53046	WSHR M06 Spring Washer	4
11	50000	WSHR M06 Standard Flat Washer	4
12	44311	Cotter Pin	4
13	47937	Pin	2
14	47938	Pull Chain	2
15	44493	Cotter Pin	2
16	47940	Disc Spring	2
17	53565	Nut NHEX M18-2.50, Thin Nut Chamfered	2
18	53566	Nut NHEX M18-2.50	2
19	53514	WSHR M18 Standard Flat Washer	2
20	47941	Shim	6
21	47942	Sliding Block	2
22	47943	Insert	8
23	47944	Sliding Block	4
24	47945	Shim	12
25	50033	Screw HHCS M10-1.50 × 25	8
26	53054	WSHR M10 Spring Washer	8
27	50002	WSHR M10 Standard Flat Washer	8

Second Boom Sliding Block Installation 1

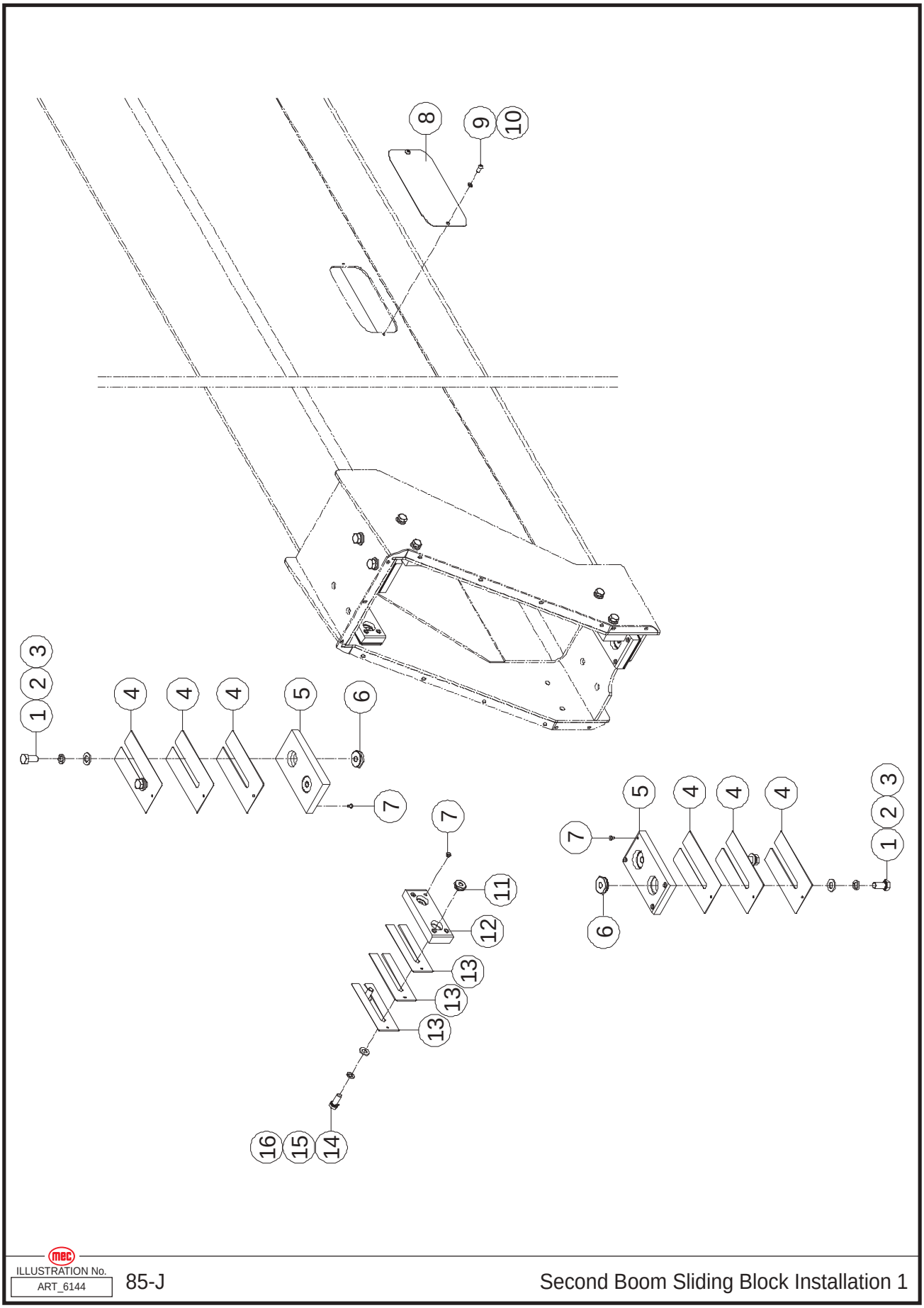


ILLUSTRATION No. ART_6144 85-J Second Boom Sliding Block Installation 1

Item	Part Number	Description	Qty.
1	53564	Screw HHCS M12-1.25 × 25	8
2	53148	WSHR M12 Spring Washer	8
3	50003	WSHR M12 Standard Flat Washer	8
4	47931	Shim	12
5	47932	Sliding Block	4
6	47934	Insert	8
7	47933	Plug	32
8	47946	Cover	1
9	53026	Screw BHCS M06-1.00 × 12	2
10	53046	WSHR M06 Spring Washer	2
11	47943	Insert	8
12	47944	Sliding Block	4
13	47945	Shim	12
14	50033	Screw HHCS M10-1.50 × 25	8
15	53054	WSHR M10 Spring Washer	8
16	50002	WSHR M10 Standard Flat Washer	8

REF - Reference

Second Boom Sliding Block Installation 2

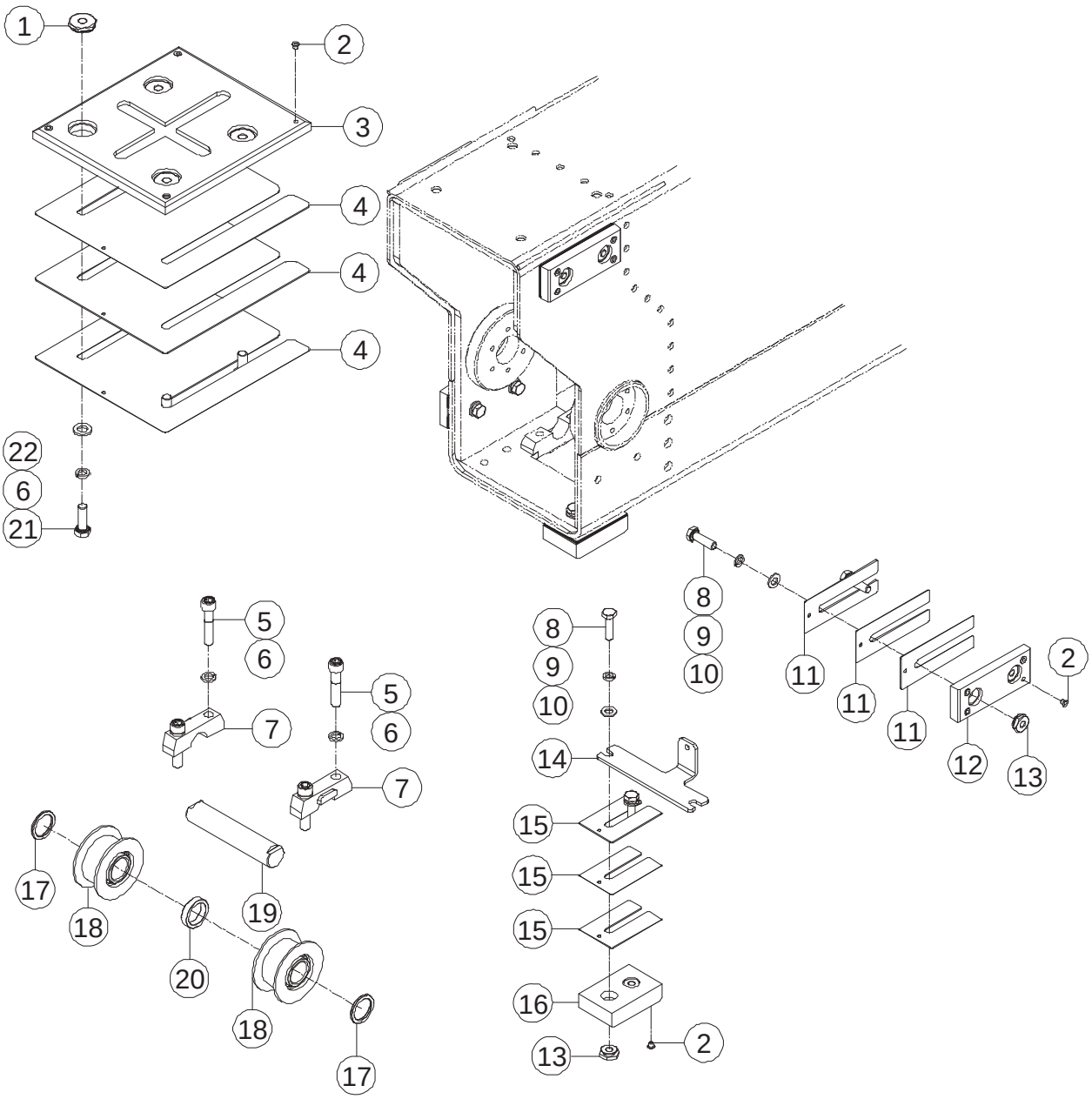


ILLUSTRATION No. ART_6145 85-J Second Boom Sliding Block Installation 2

Item	Part Number	Description	Qty.
1	47934	Insert	4
2	47933	Plug	28
3	47947	Sliding Block	1
4	47948	Shim	3
5	53176	Screw SHCS M12-1.75 × 55	4
6	53148	WSHR M12 Spring Washer	8
7	47949	Lock	2
8	50332	Screw HHCS M10-1.50 × 35	12
9	53054	WSHR M10 Spring Washer	12
10	50002	WSHR M10 Standard Flat Washer	12
11	47945	Shim	12
12	47950	Sliding Block	4
13	47943	Insert	12
14	47951	Plate	1
15	47952	Shim	6
16	47953	Sliding Block	2
17	47954	Spacer	2
18	47955	Pulley Bearing	2
19	47956	Pin, Pivot	1
20	47957	Spacer	1
21	50133	Screw HHCS M12-1.25 × 35	4
22	50003	WSHR M12 Standard Flat Washer	4

REF - Reference

Third Boom Sliding Block Installation

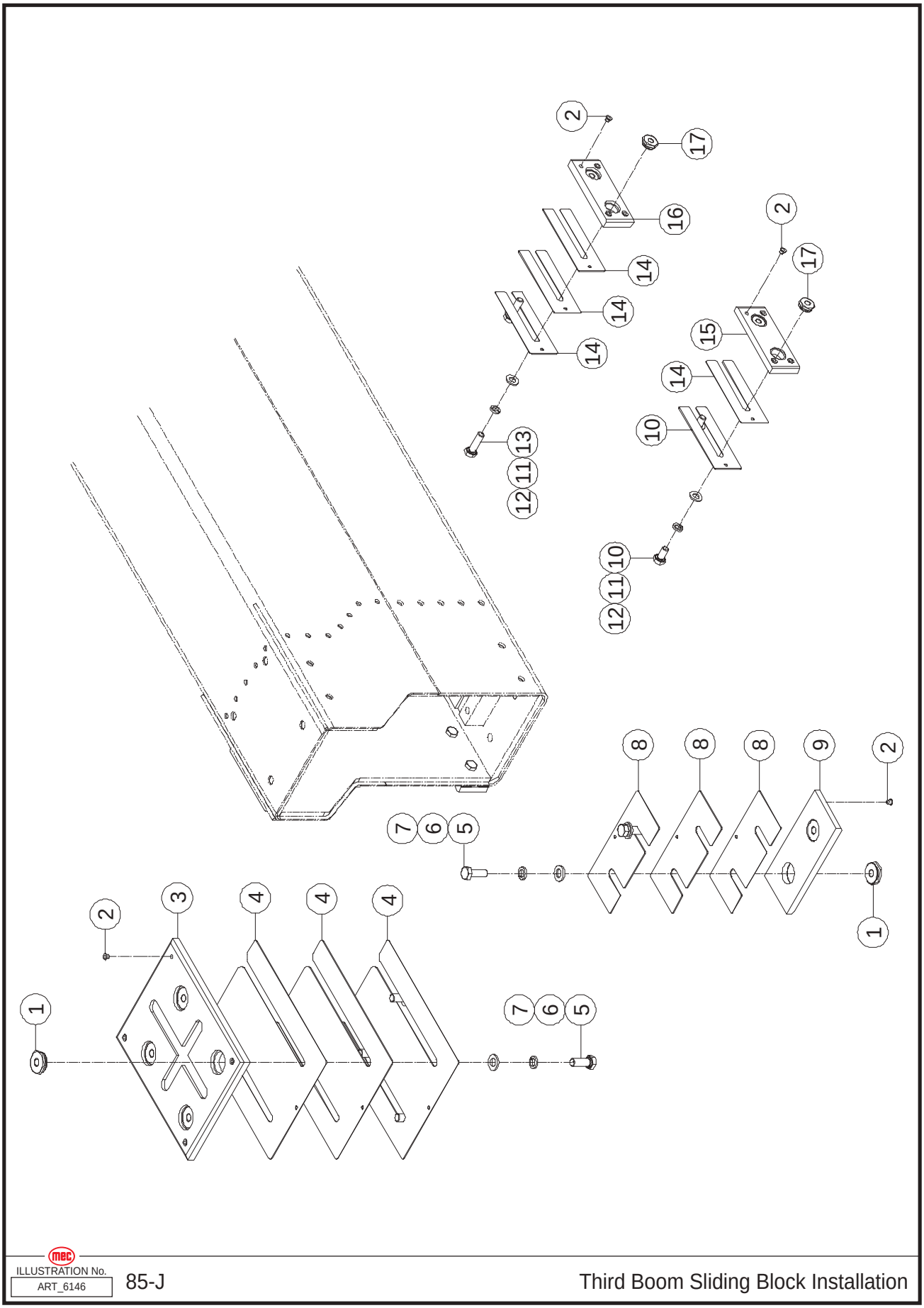


ILLUSTRATION No. ART_6146 85-J Third Boom Sliding Block Installation

Item	Part Number	Description	Qty.
1	47934	Insert	6
2	47933	Plug	24
3	47958	Sliding Block	1
4	47959	Shim	3
5	53567	Screw HHCS M12-1.25 × 30	6
6	53148	WSHR M12 Spring Washer	6
7	50003	WSHR M12 Standard Flat Washer	6
8	47960	Shim	3
9	47961	Sliding Block	1
10	50215	Screw HHCS M10-1.50 × 20	4
11	53054	WSHR M10 Spring Washer	8
12	50002	WSHR M10 Standard Flat Washer	8
13	50332	Screw HHCS M10-1.50 × 35	4
14	47945	Shim	10
15	47962	Sliding Block	2
16	47950	Sliding Block	2
17	47943	Insert	8

Boom Shield Installation

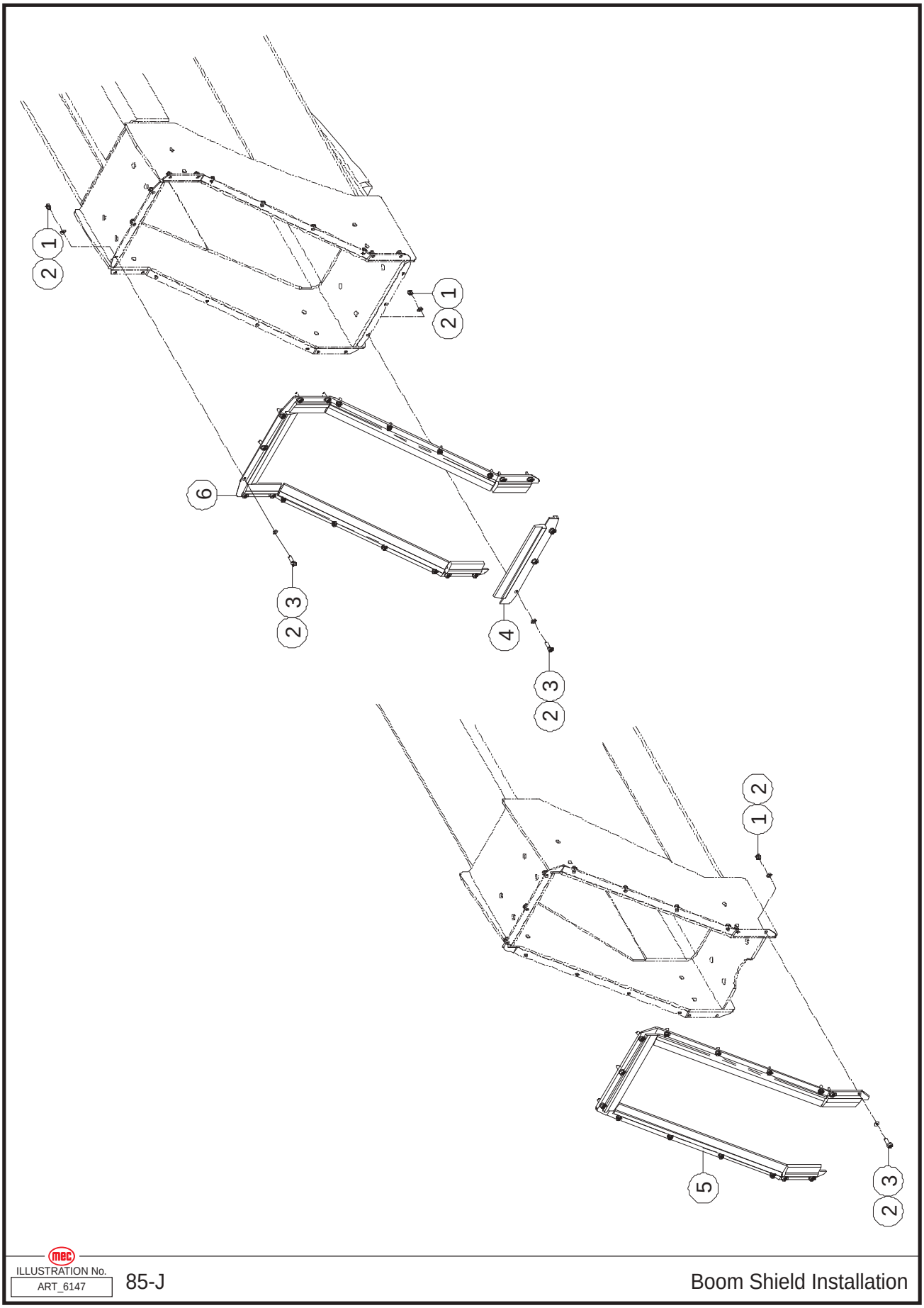


ILLUSTRATION No. ART_6147 85-J Boom Shield Installation

Item	Part Number	Description	Qty.
1	50047	Nut NNYL M06-1.00	37
2	50000	WSHR M06 Standard Flat Washer	74
3	53124	Screw SHCS M06-1.00 × 20	37
4	47963	Guard	1
5	47964	Guard	1
6	47965	Guard	1

REF - Reference

Telescopic Cylinder Installation

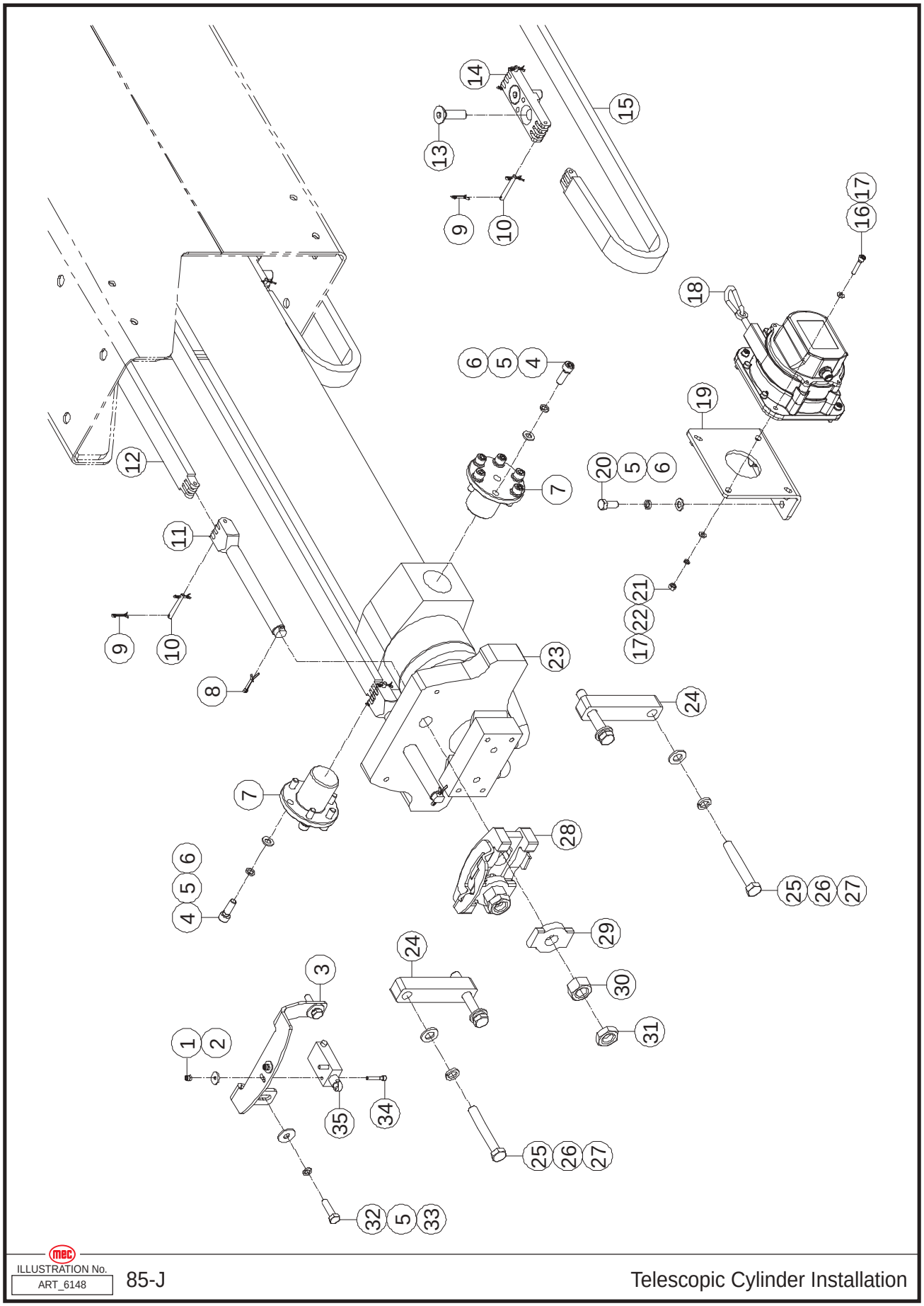


ILLUSTRATION No. ART_6148 85-J Telescopic Cylinder Installation

Item	Part Number	Description	Qty.
1	50285	Nut NNYL M04-0.70	2
2	47966	Washer	2
3	47967	Support	1
4	53210	Screw SHCS M08-1.25 × 25	12
5	53055	WSHR M08 Spring Washer	16
6	50001	WSHR M08 Standard Flat Washer	14
7	47968	Pin	2
8	44493	Cotter Pin	2
9	44311	Cotter Pin	12
10	47937	Pin	6
11	47938	Pull Chain	2
12	47969	Chain	2
13	53568	Screw CSCS M12-1.75 × 40	4
14	47970	Pull Chain	2
15	47971	Chain	2
16	53356	Screw SHCS M05-0.80 × 25	4
17	53038	WSHR M05 Standard Flat Washer	8
18	47972	Length Angle Sensor	1
19	47973	Support	1
20	50030	Screw HHCS M08-1.25 × 20	2
21	53367	Nut NHEX M05-0.80	4
22	53043	WSHR M05 Spring Washer	4
23	REF	Telescopic Cylinder Assembly (Refer to page 204)	1
24	47974	Block	2
25	50362	Screw HHCS M12-1.75 × 80	4
26	53148	WSHR M12 Spring Washer	4
27	50003	WSHR M12 Standard Flat Washer	4
28	47975	Support	1
29	47976	Spacer	2
30	53566	Nut NHEX M18-2.50	2
31	53565	Nut NHEX M18-2.50, Thin Nut Chamfered	2
32	50032	Screw HHCS M08-1.25 × 30	2
33	50218	WSHR M08 Flat Fender Washer	2
34	53115	Screw SHCS M04-0.70 × 25	2
35	44736	Limit Switch	1

REF - Reference

Carrier System Installation 1

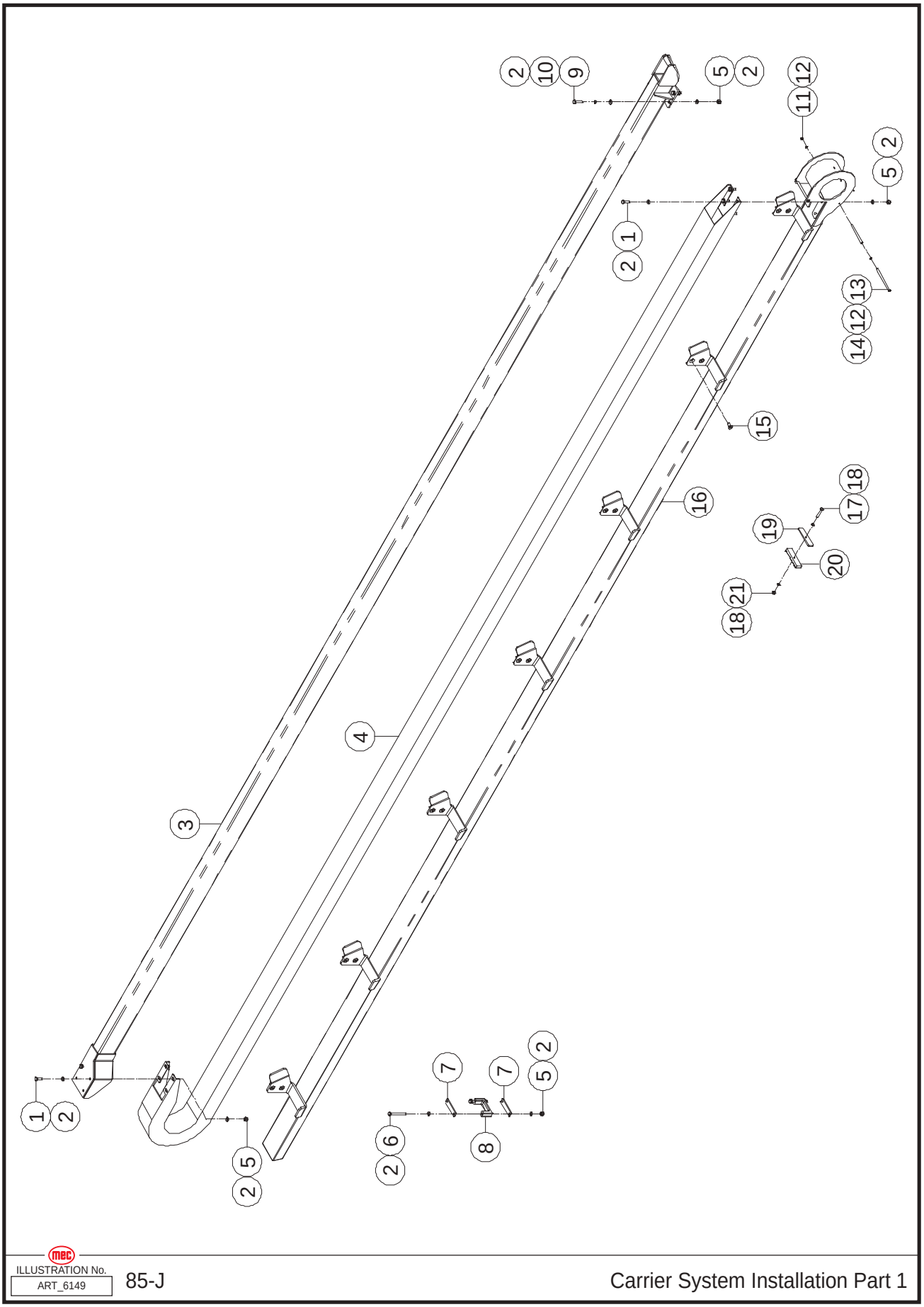


ILLUSTRATION No. ART_6149 85-J Carrier System Installation Part 1

Item	Part Number	Description	Qty.
1	50034	Screw HHCS M10-1.50 × 30	6
2	50002	WSHR M10 Standard Flat Washer	24
3	47978	Support	1
4	47979	Chain	1
5	50049	Nut NNYL M10-1.50	12
6	50243	Screw HHCS M10-1.50 × 100	2
7	47980	Plate	2
8	47981	Clamp	1
9	50237	Screw HHCS M10-1.50 × 40	4
10	53054	WSHR M10 Spring Washer	4
11	50047	Nut NNYL M06-1.00	2
12	50000	WSHR M06 Standard Flat Washer	4
13	53569	Screw HHCS M06-1.00 × 145	2
14	47982	Roller	2
15	53570	Screw CSCS M12-1.75 × 25	14
16	47983	Support	1
17	50017	Screw HHCS M08-1.25 × 60	1
18	50001	WSHR M08 Standard Flat Washer	2
19	47984	Plate	1
20	47985	Clamp	1
21	50048	Nut NNYL M08-1.25	1

Carrier System Installation 2

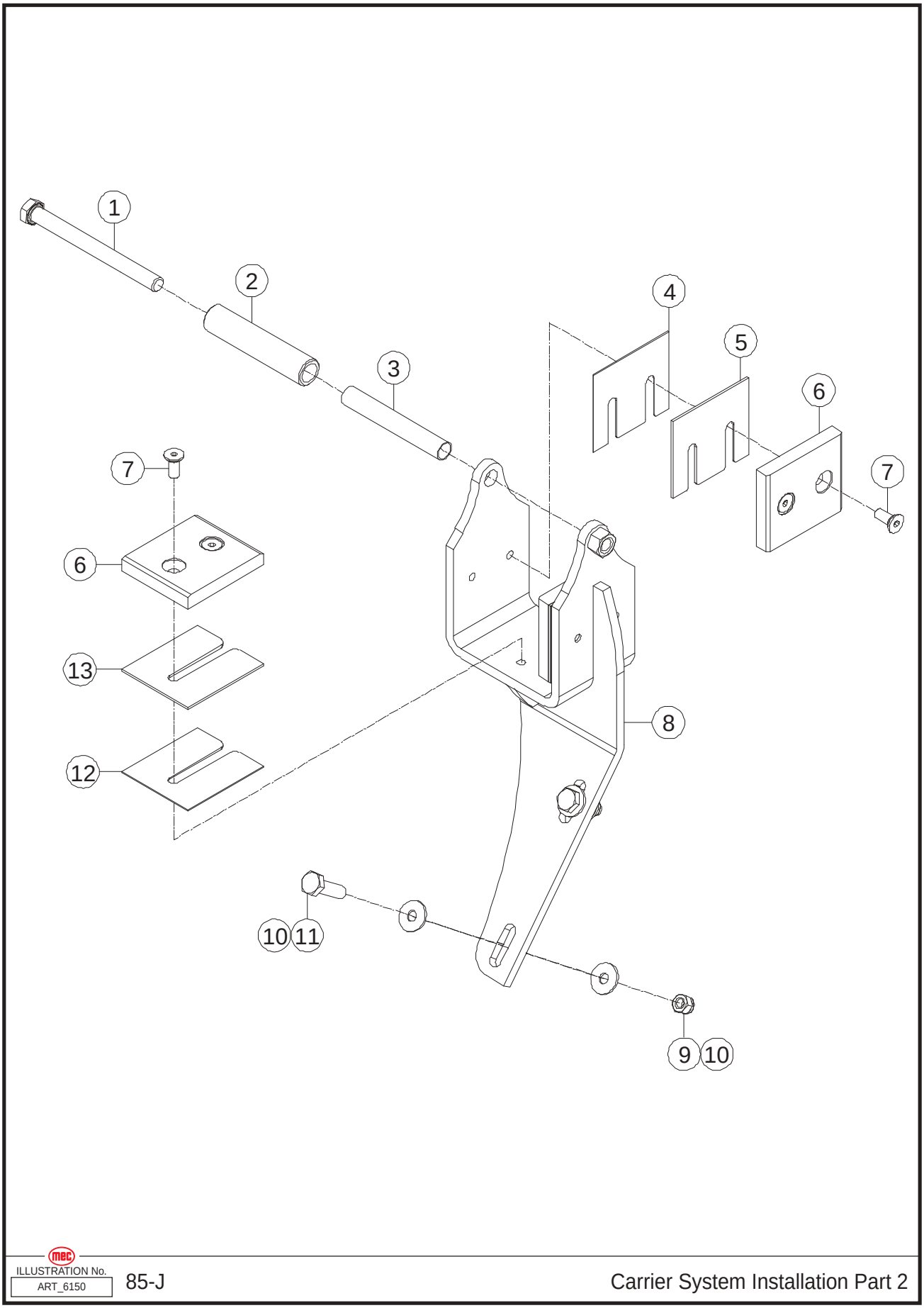


ILLUSTRATION No. ART_6150 85-J Carrier System Installation Part 2

Item	Part Number	Description	Qty.
1	53320	Screw HHCS M12-1.75 × 130	1
2	47986	Roller	1
3	47987	Roller	1
4	47988	Shim	2
5	47989	Shim	2
6	47990	Sliding Block	3
7	53282	Screw CSCS M08-1.25 × 20	6
8	47991	Support	1
9	50048	Nut NNYL M08-1.25	2
10	50218	WSHR M08 Flat Fender Washer	4
11	50332	Screw HHCS M10-1.50 × 35	2
12	47992	Shim	1
13	47993	Shim	1

Jib Leveling Cylinder Assembly Installation

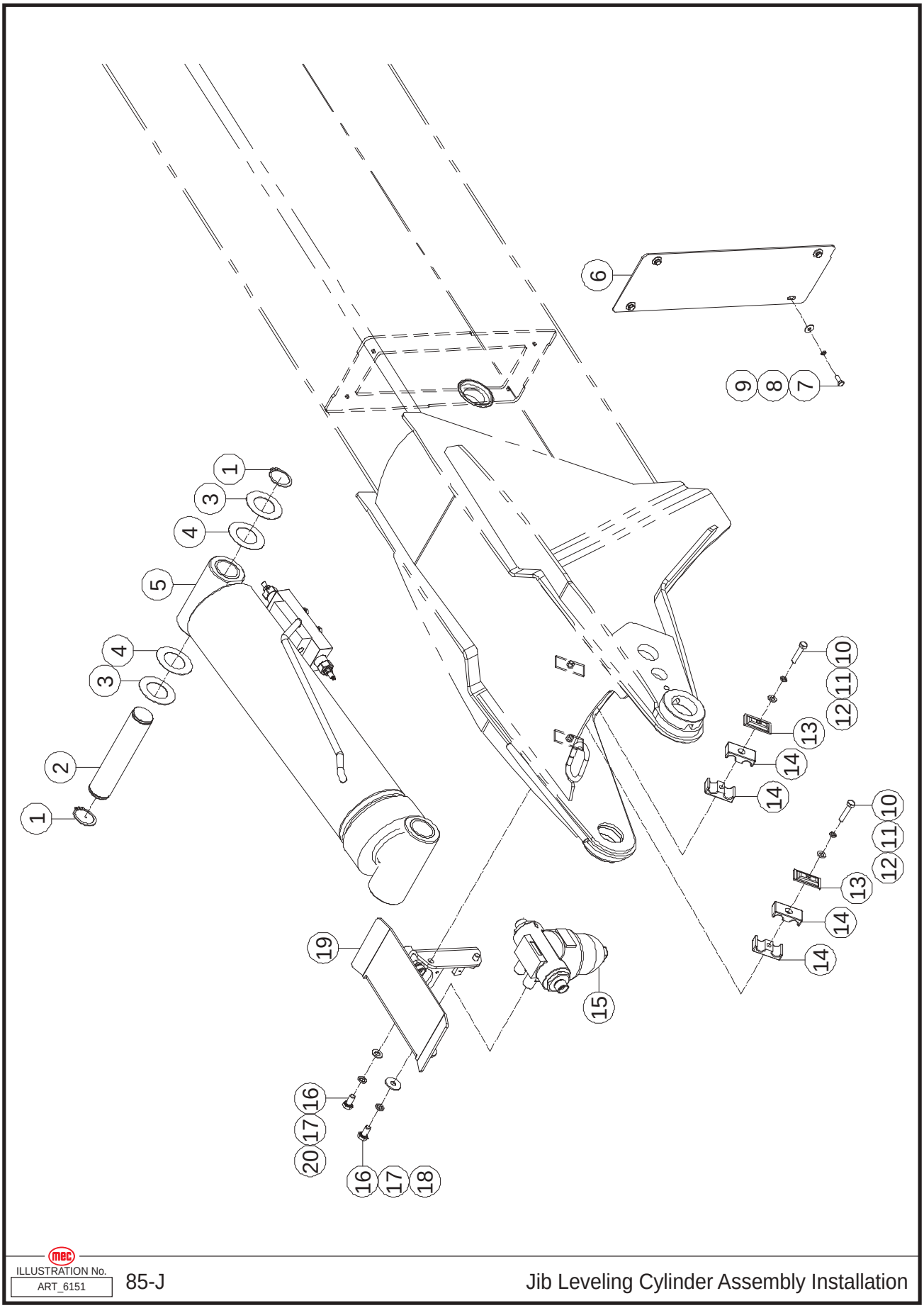


ILLUSTRATION No. ART_6151 85-J Jib Leveling Cylinder Assembly Installation

Item	Part Number	Description	Qty.
1	47994	Washer	2
2	47995	Pin, Pivot	1
3	47996	Shim	2
4	47997	Shim	2
5	REF	Jib Leveling Cylinder Assembly (Refer to page 206)	1
6	47998	Cover	1
7	50445	Screw HHCS M06-1.00 × 16	4
8	53046	WSHR M06 Spring Washer	4
9	50068	WSHR M06 Flat Fender Washer	4
10	50014	Screw HHCS M08-1.25 × 40	2
11	53055	WSHR M08 Spring Washer	2
12	50001	WSHR M08 Standard Flat Washer	2
13	47999	Plate	2
14	47864	Clamp	4
15	47863	Pressure Filter	1
16	50215	Screw HHCS M10-1.50 × 20	4
17	53054	WSHR M10 Spring Washer	4
18	53375	WSHR M10 Flat Fender Washer	2
19	47862	Support	1
20	50002	WSHR M10 Standard Flat Washer	2

REF - Reference

Telescopic Boom and Jib Installation

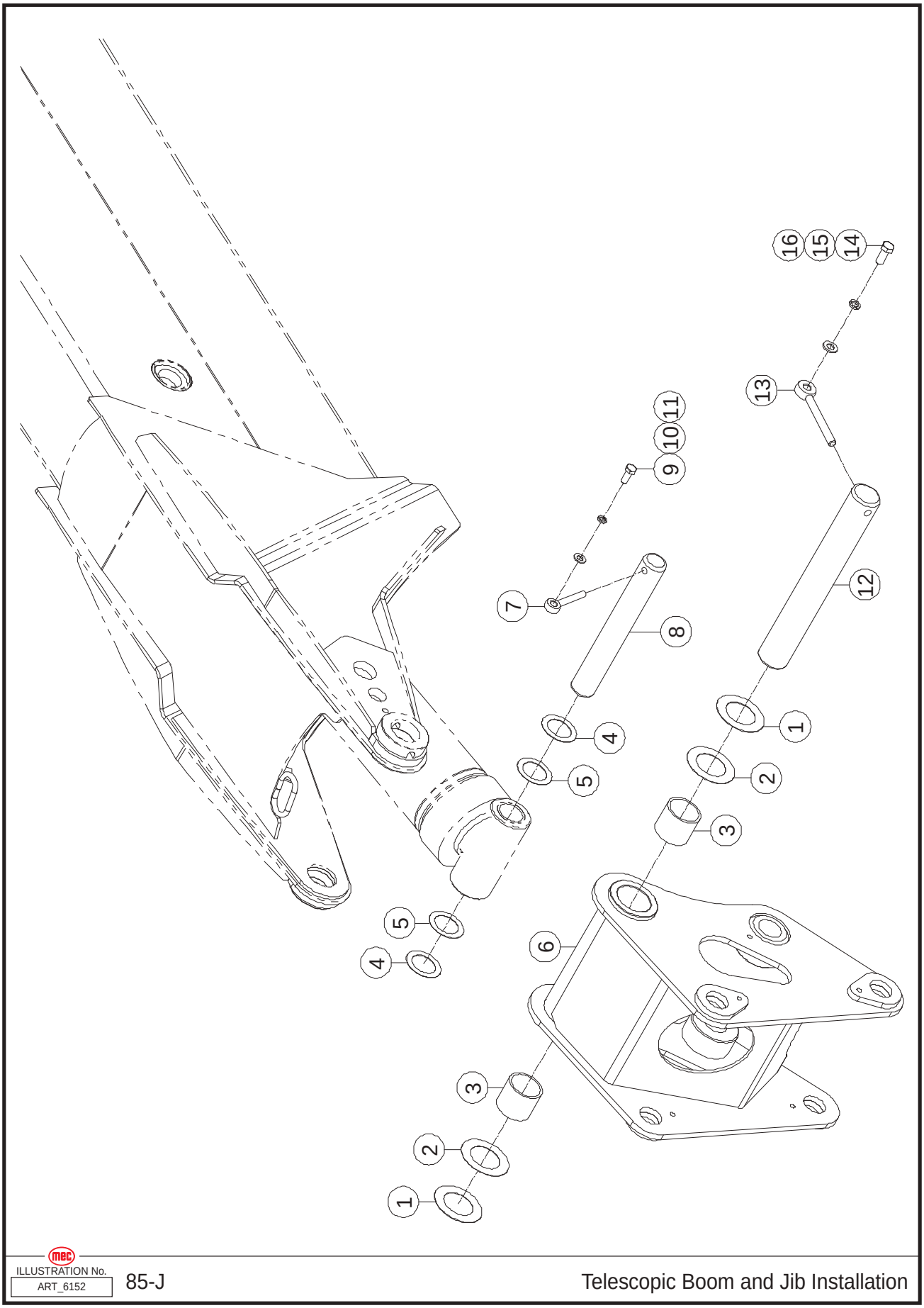


ILLUSTRATION No. ART_6152 85-J Telescopic Boom and Jib Installation

Item	Part Number	Description	Qty.
1	47861	Shim	2
2	47860	Shim	2
3	47554	Sleeve Bearing	2
4	47555	Shim	2
5	47556	Shim	2
6	47557	Junction	1
7	41431	Pin, Lock	1
8	47558	Pin, Pivot	1
9	50033	Screw HHCS M10-1.50 × 25	1
10	53054	WSHR M10 Spring Washer	1
11	50002	WSHR M10 Standard Flat Washer	1
12	47559	Pin, Pivot	1
13	45441	Pin, Lock	1
14	50039	Screw HHCS M12-1.75 × 30	1
15	53148	WSHR M12 Spring Washer	1
16	50003	WSHR M12 Standard Flat Washer	1

Jib Installation

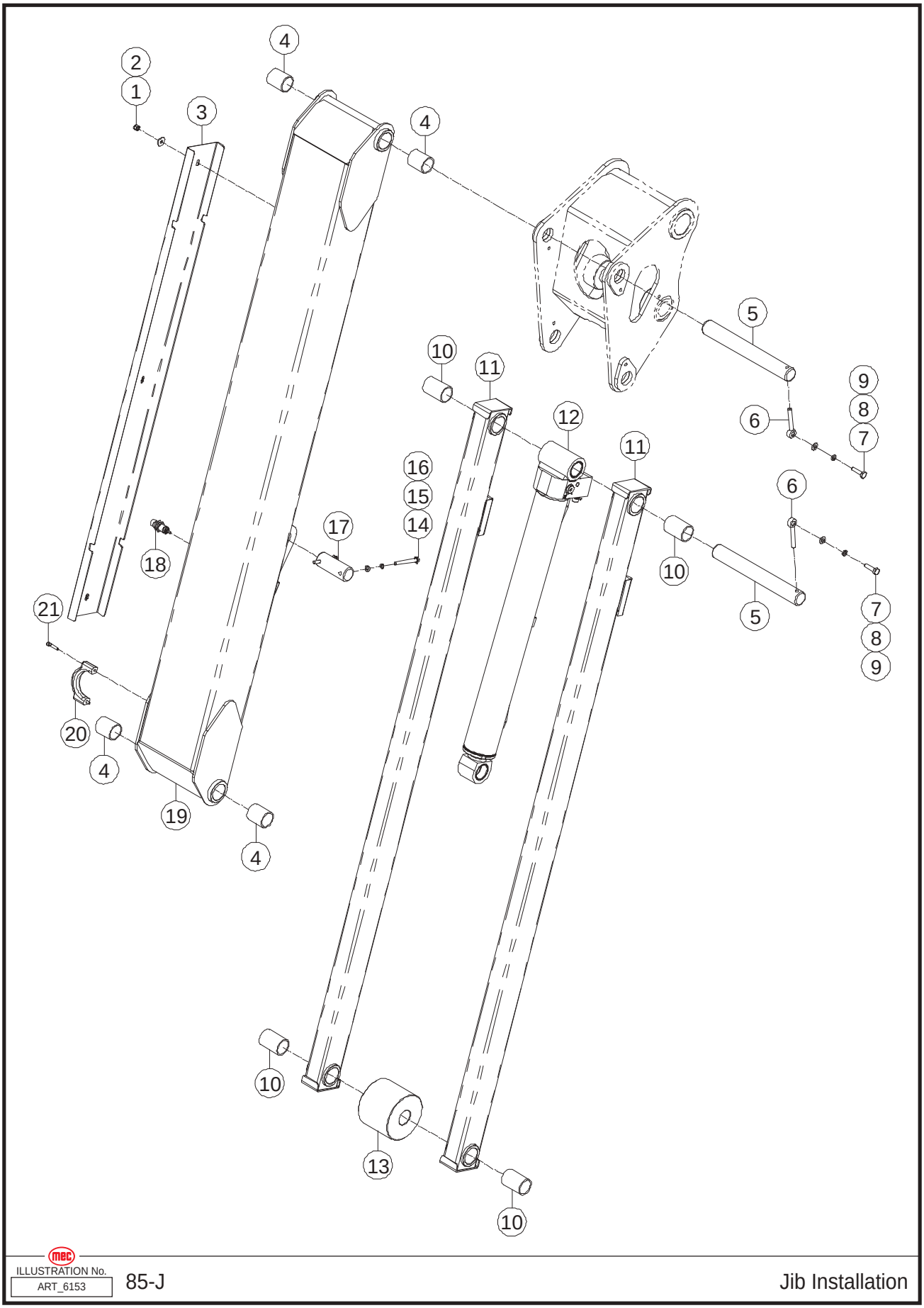


ILLUSTRATION No. ART_6153 85-J Jib Installation

Item	Part Number	Description	Qty.
1	50048	Nut NNYL M08-1.25	3
2	50218	WSHR M08 Flat Fender Washer	3
3	45442	Channel	1
4	41103	Sleeve Bearing	4
5	45443	Pin, Pivot	2
6	41431	Pin, Lock	2
7	50332	Screw HHCS M10-1.50 × 35	2
8	53054	WSHR M10 Spring Washer	2
9	50002	WSHR M10 Standard Flat Washer	2
10	45444	Sleeve Bearing	4
11	45445	Linker, Lower	2
12	REF	Jib Lifting Cylinder Assembly (Refer to page 208)	1
13	45446	Roller	1
14	50018	Screw HHCS M08-1.25 × 80	2
15	53055	WSHR M08 Spring Washer	2
16	50001	WSHR M08 Standard Flat Washer	2
17	45447	Pin, Pivot	1
18	47868	Proximity Switch	1
19	45448	Linker, Upper	1
20	45449	Clamp	1
21	53207	Screw SHCS M06-1.00 × 30	2

REF - Reference

Platform Rotator Assembly Installation

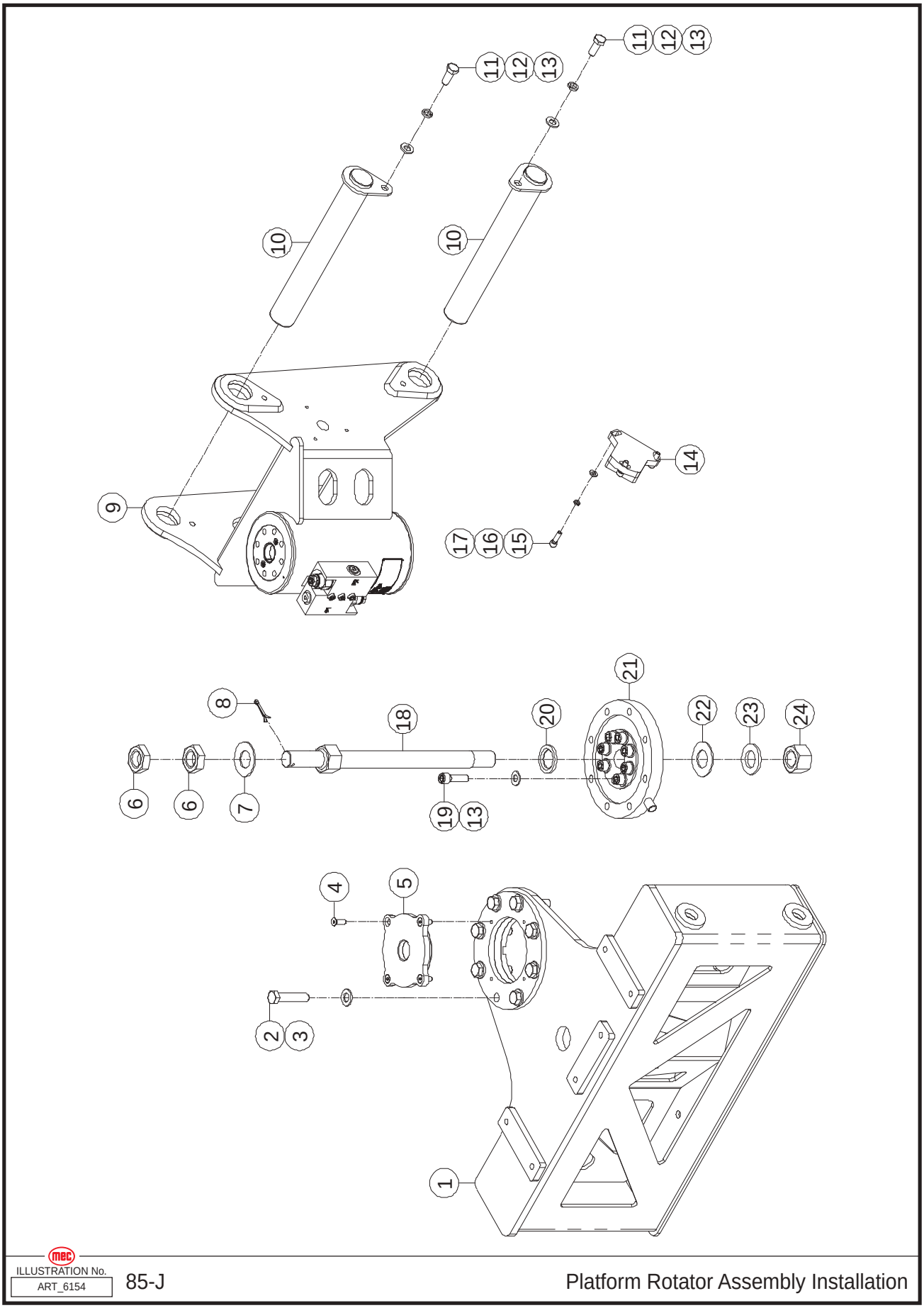


ILLUSTRATION No. ART_6154 85-J Platform Rotator Assembly Installation

Item	Part Number	Description	Qty.
1	45491	Support	1
2	50301	Screw HHCS M12-1.75 × 55	8
3	50003	WSHR M12 Standard Flat Washer	8
4	50561	Screw CSCS M06-1.00 × 20	4
5	45450	Cover	1
6	53571	Nut NHEX M24-2.00, Thin Nut Chamfered	2
7	45451	Disc Spring	1
8	41322	Cotter Pin	1
9	45453	Rotate Cylinder Assembly	1
10	45454	Pin, Pivot	2
11	50033	Screw HHCS M10-1.50 × 25	2
12	53054	WSHR M10 Spring Washer	2
13	50002	WSHR M10 Standard Flat Washer	10
14	45455	Angle Sensor	1
15	53124	Screw SHCS M06-1.00 × 20	3
16	53046	WSHR M06 Spring Washer	3
17	50000	WSHR M06 Standard Flat Washer	3
18	45456	Pin, Pivot	1
19	50378	Screw SHCS M10-1.50 × 35	8
20	45457	Washer	1
21	45458	Load Sensor	1
22	45459	Shim	1
23	53158	WSHR M24 Standard Flat Washer	1
24	53572	Nut NHEX M24-2.00	1

Jib Valve Block Installation

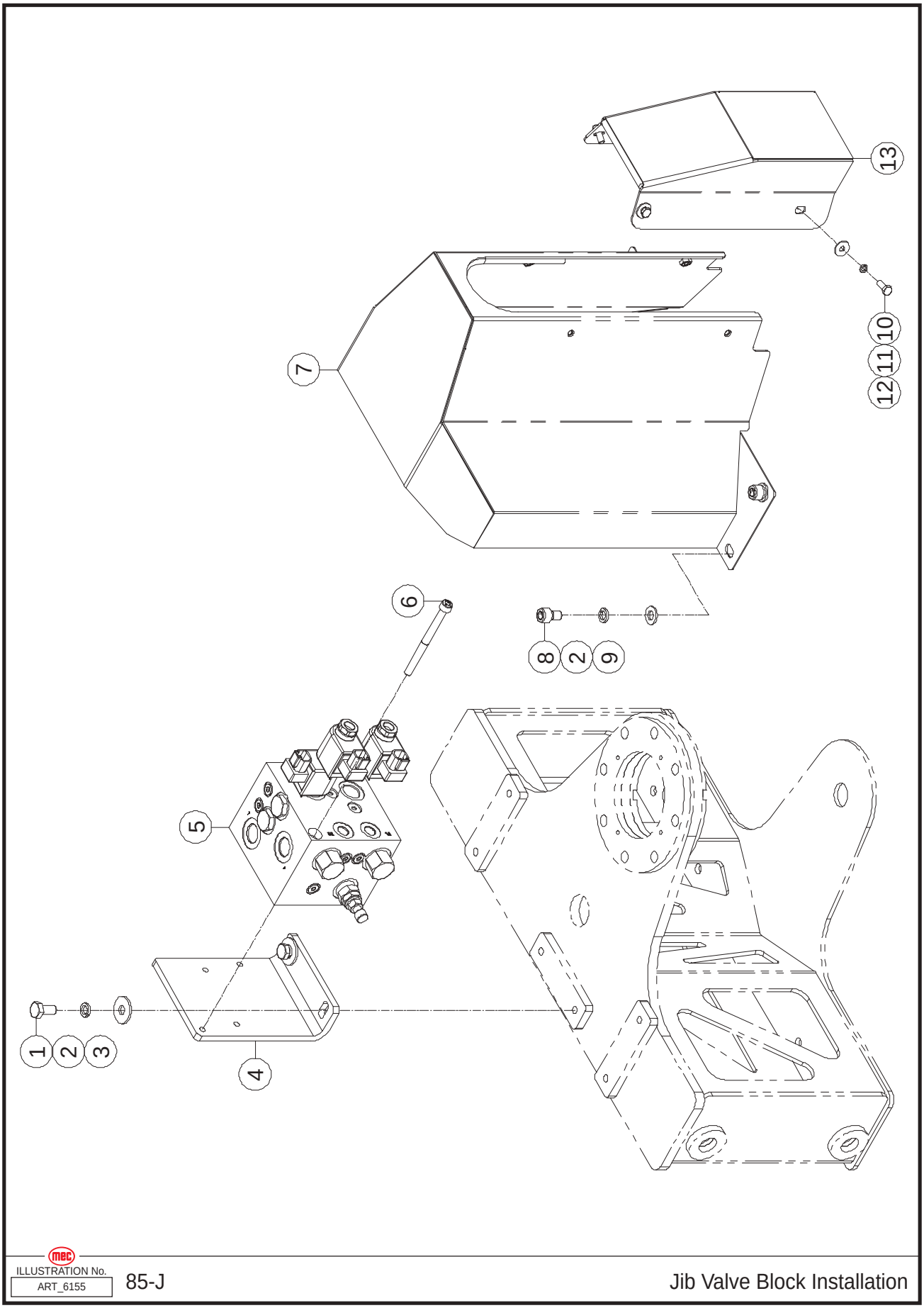


ILLUSTRATION No. ART_6155 85-J Jib Valve Block Installation

Item	Part Number	Description	Qty.
1	50215	Screw HHCS M10-1.50 × 20	2
2	53054	WSHR M10 Spring Washer	6
3	53375	WSHR M10 Flat Fender Washer	2
4	45460	Bracket	1
5	45461	Valve Block (Refer to page 184)	1
6	50270	Screw SHCS M08-1.25 × 100	2
7	45462	Housing	1
8	53573	Screw SHCS M10-1.50 × 16	4
9	50002	WSHR M10 Standard Flat Washer	4
10	50445	Screw HHCS M06-1.00 × 16	4
11	53046	WSHR M06 Spring Washer	4
12	50068	WSHR M06 Flat Fender Washer	4
13	45463	Housing	1

Valve Block

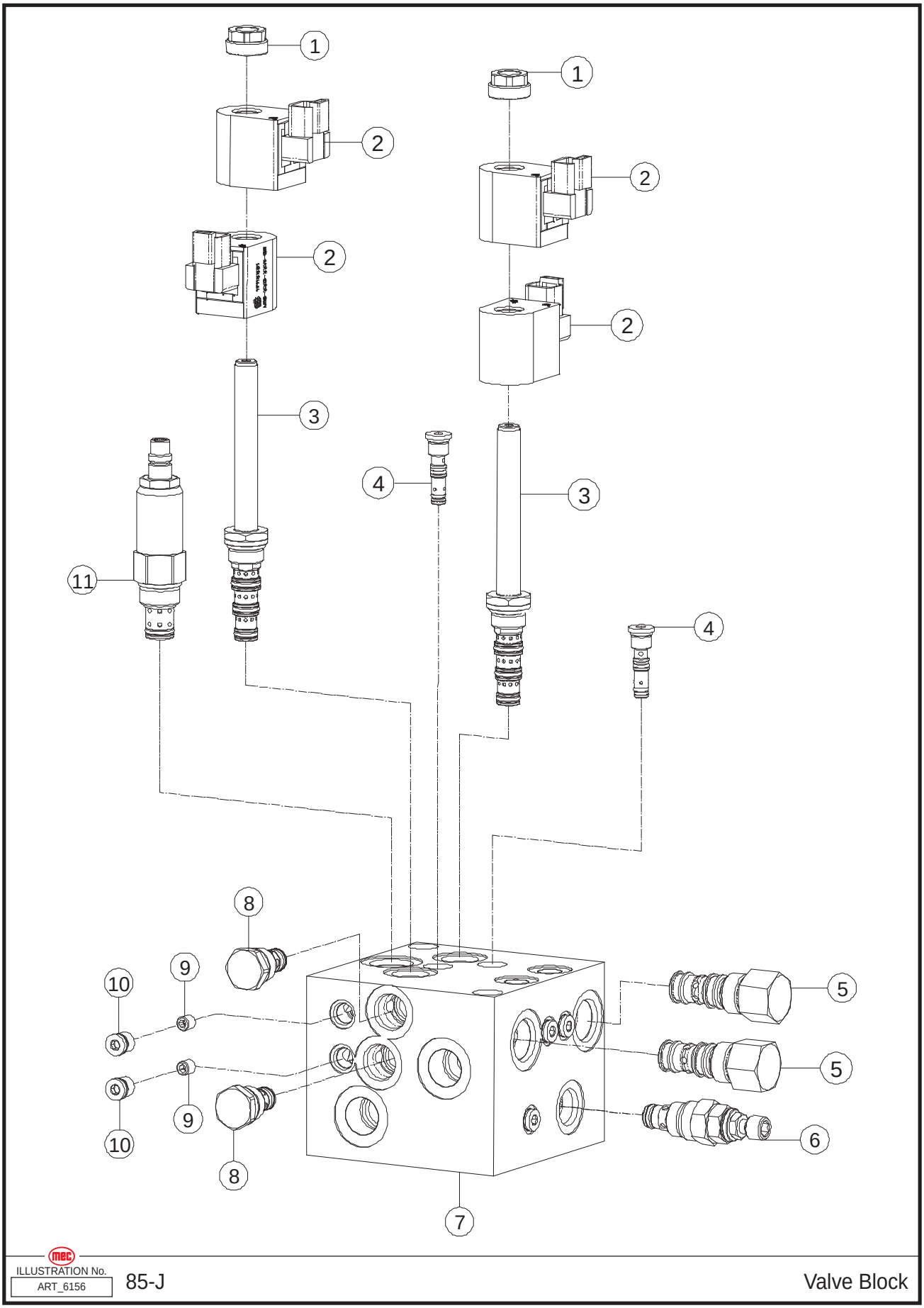


ILLUSTRATION No. ART_6156 85-J Valve Block

Item	Part Number	Description	Qty.
1	43405	Nut	2
2	43406	Coil	4
3	45464	Cartridge, Proportional Valve	2
4	43419	Cartridge, Shuttle Valve	2
5	43400	Logic Element	2
6	45466	Cartridge, Relief Valve	1
7	45467	Body	1
8	43439	Cartridge, Check Valve	2
9	45469	Orifice	2
10	47597	Plug	8
11	47593	Cartridge, Relief Valve	1

Platform Installation

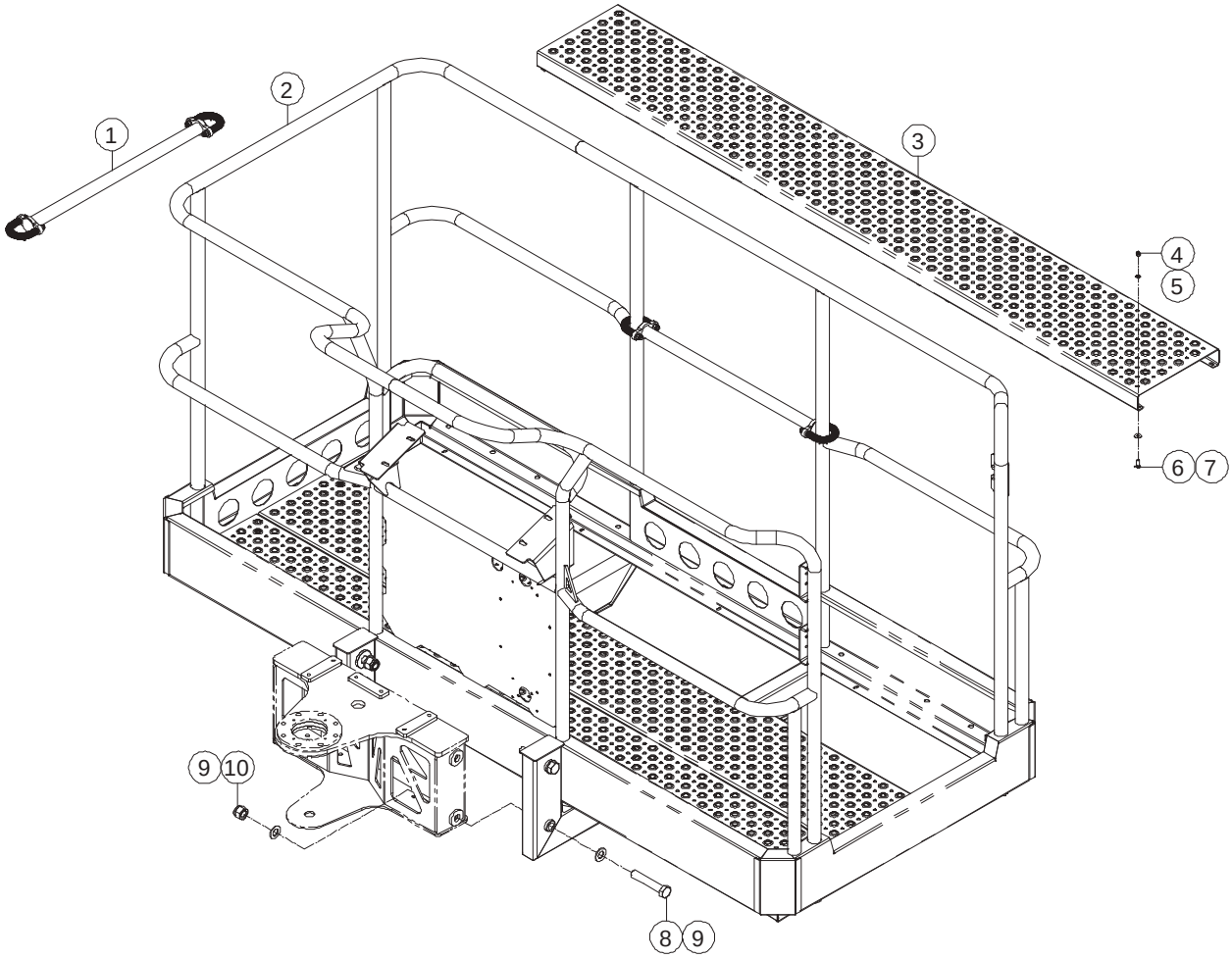


ILLUSTRATION No. ART_6157 85-J Platform Installation

Item	Part Number	Description	Qty.
1	REF	Gate Assembly (Refer to page 190)	2
2	45470	Platform	1
3	45471	Deck Plate	3
4	50047	Nut NNYL M06-1.00	34
5	50000	WSHR M06 Standard Flat Washer	34
6	50028	Screw HHCS M06-1.00 × 20	34
7	50068	WSHR M06 Flat Fender Washer	34
8	53002	Screw HHCS M20-2.50 × 110	4
9	50005	WSHR M20 Standard Flat Washer	8
10	53542	Nut NNYL M20-2.50	4

REF - Reference

Platform Accessory Installation

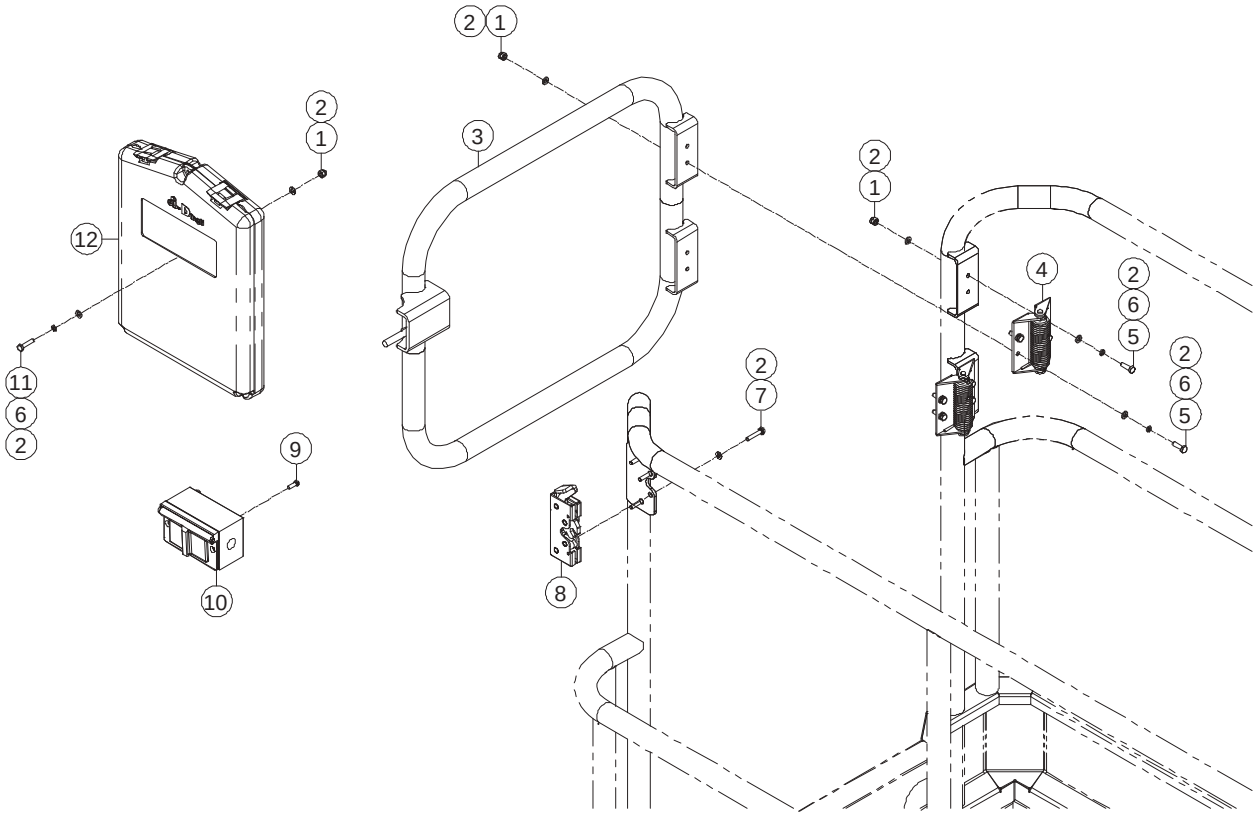


ILLUSTRATION No. ART_6158 85-J Platform Accessory Installation

Item	Part Number	Description	Qty.
1	50047	Nut NNYL M06-1.00	12
2	50000	WSHR M06 Standard Flat Washer	28
3	45472	Side Swing Gate Assembly	1
4	44764	Hinge	2
5	50028	Screw HHCS M06-1.00 × 20	8
6	53046	WSHR M06 Spring Washer	12
7	50214	Screw HHCS M06-1.00 × 30	4
8	41067	Lock	1
9	53351	Screw PHMS M05-0.80 × 16	4
10	42613	Electrical Outlet	1
11	50117	Screw HHCS M06-1.00 × 25	4
12	43319	Manual Box	1

Lift Gate Assembly

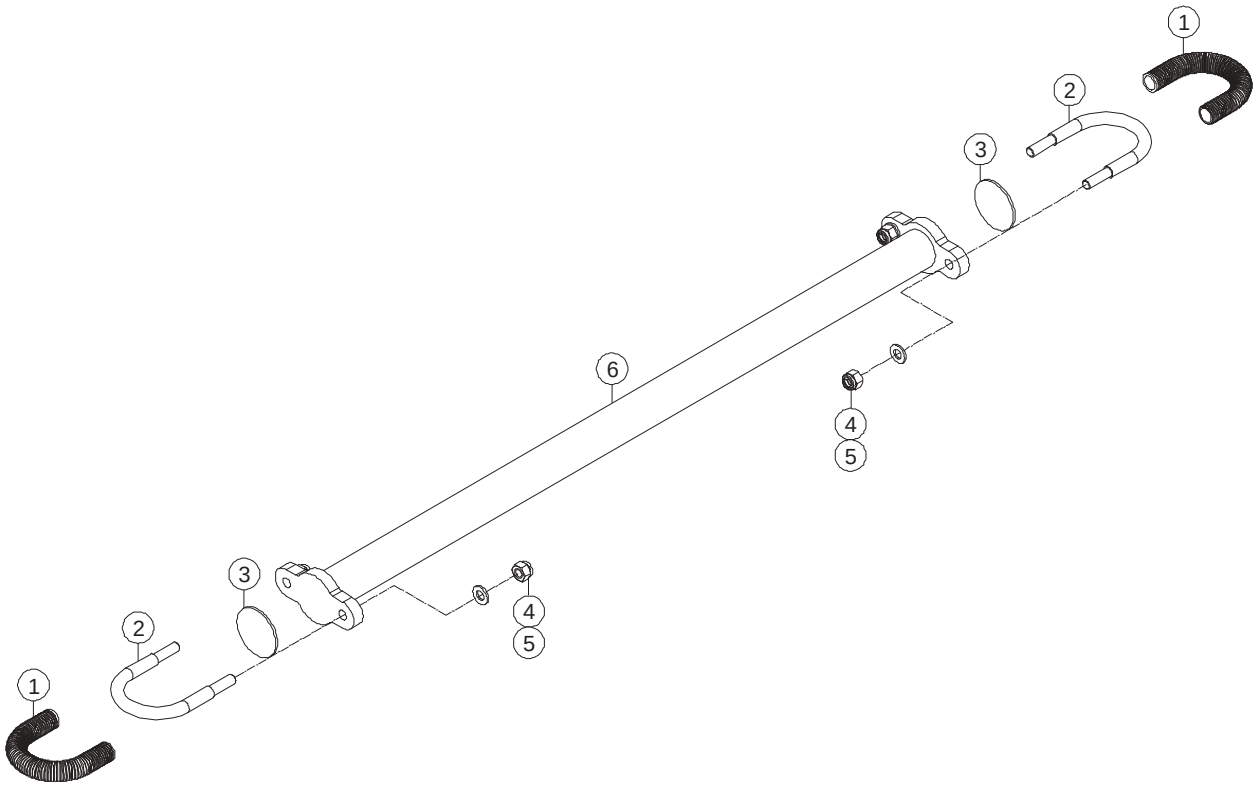


ILLUSTRATION No. ART_6159 85-J Lift Gate Assembly

Item	Part Number	Description	Qty.
1	45476	Jacket	2
2	45477	Clamp	2
3	45478	Anti-Scratch	2
4	50048	Nut NNYL M08-1.25	4
5	50001	WSHR M08 Standard Flat Washer	4
6	45479	Gate, Lift	1

Secondary Guarding Bar Assembly

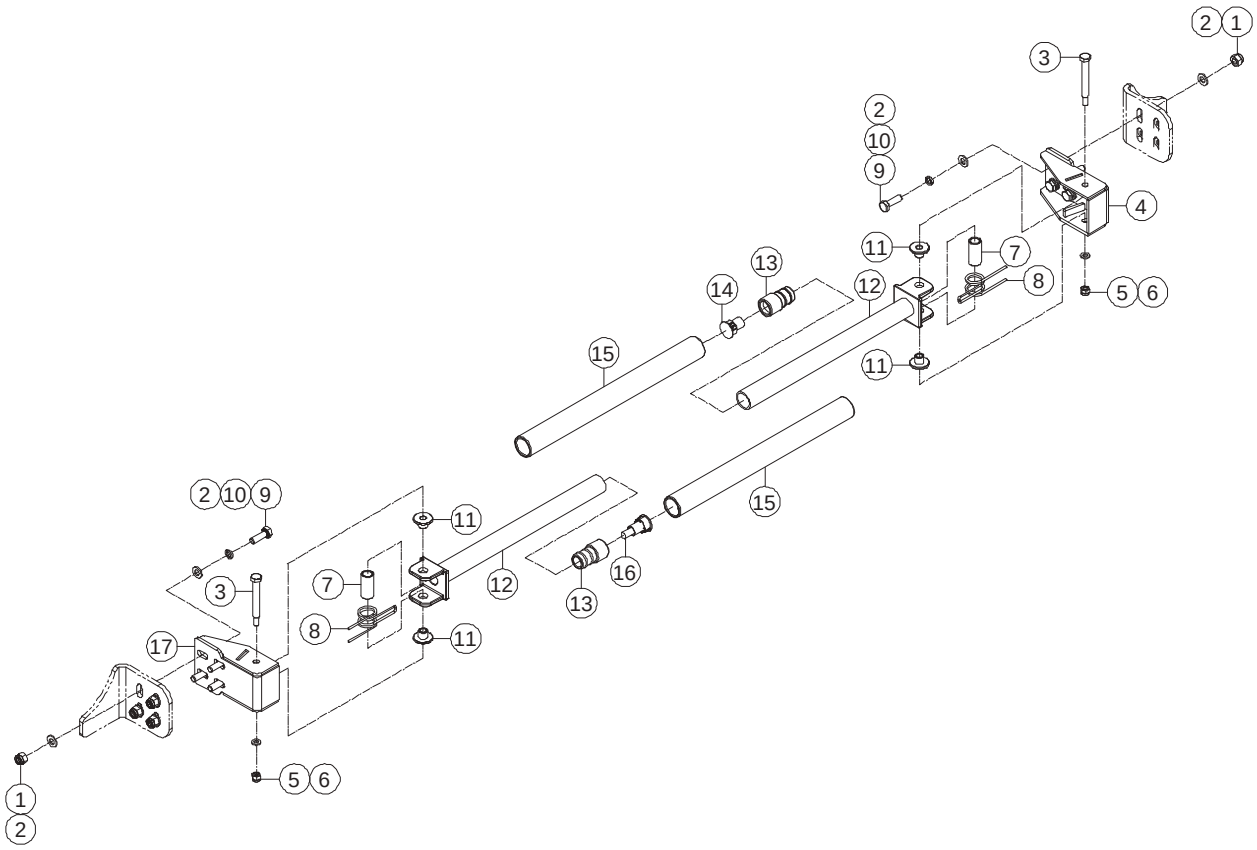


ILLUSTRATION No. ART_6160 85-J Secondary Guarding Bar Assembly

Item	Part Number	Description	Qty.
1	50048	Nut NNYL M08-1.25	8
2	50001	WSHR M08 Standard Flat Washer	16
3	45480	Pin	2
4	45481	Bracket, Contact Alarm	1
5	50047	Nut NNYL M06-1.00	2
6	50000	WSHR M06 Standard Flat Washer	2
7	45482	Tube	2
8	45483	Spring	2
9	50031	Screw HHCS M08-1.25 × 25	8
10	53055	WSHR M08 Spring Washer	8
11	45484	Bearing	4
12	45485	Tube, Contact Alarm	2
13	45486	Plug, Nylon	2
14	45487	Magnet	1
15	45488	Jacket, Foam	2
16	45489	Door Magnetic Switch	1
17	45490	Bracket, Contact Alarm	1

Left Axle Lockout Cylinder Assembly

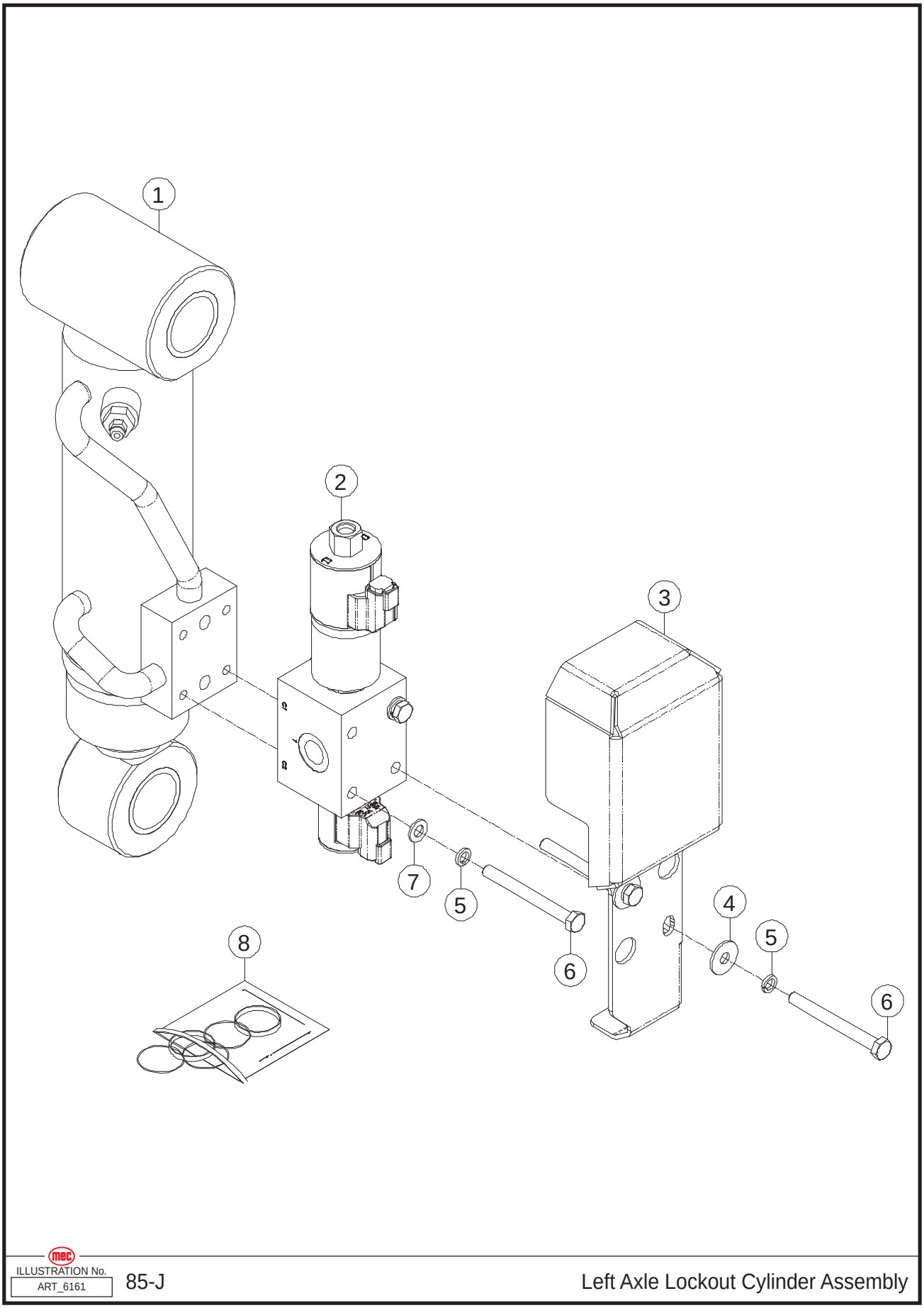


ILLUSTRATION No. ART_6161 85-J Left Axle Lockout Cylinder Assembly

Item	Part Number	Description	Qty.
1	45492	Left Axle Lockout Cylinder Assembly	1
2	48446	Valve (Refer to page 198)	1
3	45494	Protective Guard	1
4	50218	WSHR M08 Flat Fender Washer	2
5	53055	WSHR M08 Spring Washer	4
6	50019	Screw HHCS M08-1.25 × 85	4
7	50001	WSHR M08 Standard Flat Washer	2
8	45495	Seal Kit	1

Right Axle Lockout Cylinder Assembly

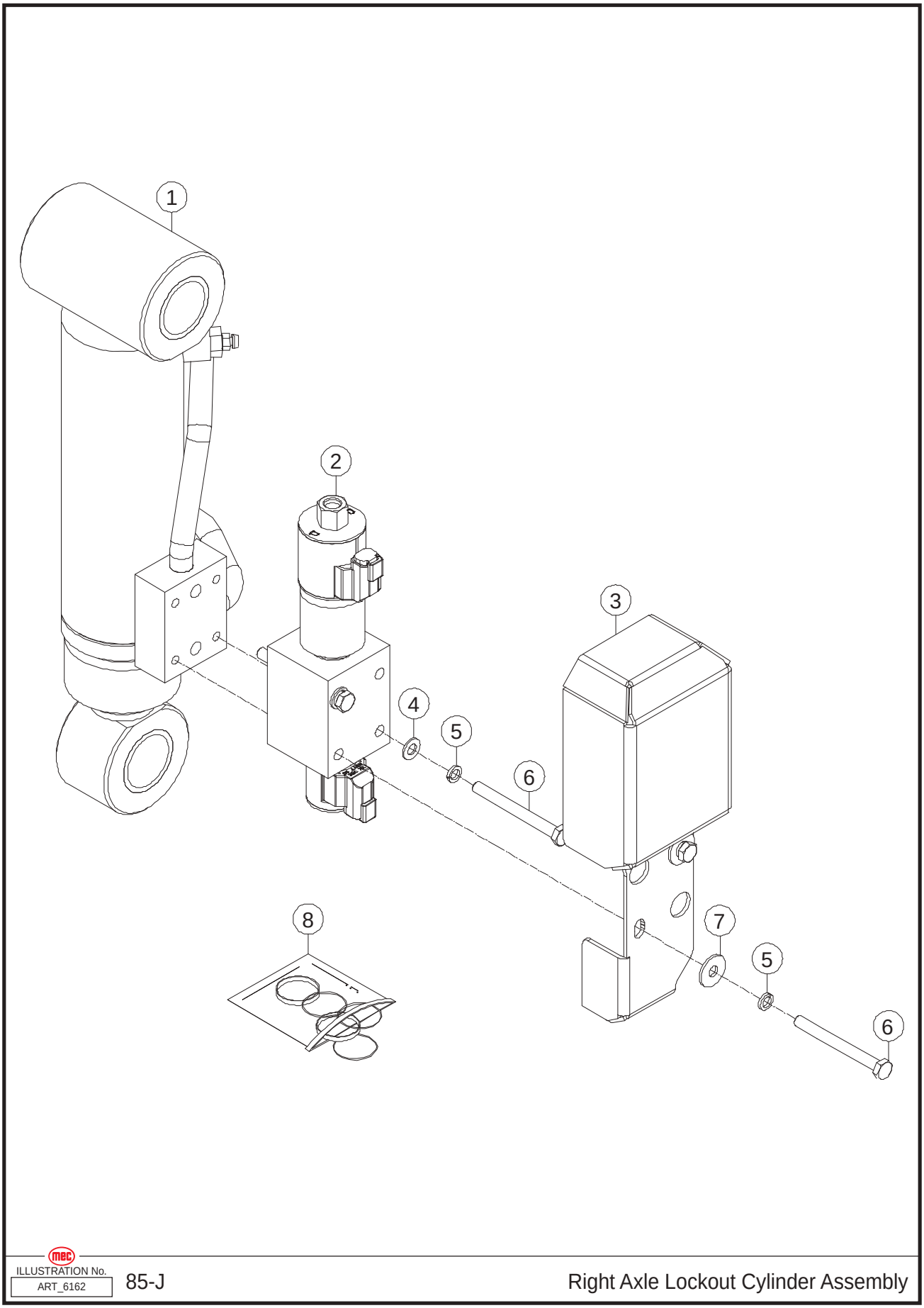


ILLUSTRATION No. ART_6162 85-J Right Axle Lockout Cylinder Assembly

Item	Part Number	Description	Qty.
1	45496	Right Axle Lockout Cylinder Assembly	1
2	48447	Valve (Refer to page 198)	1
3	45498	Protective Guard	1
4	50001	WSHR M08 Standard Flat Washer	2
5	53055	WSHR M08 Spring Washer	4
6	50019	Screw HHCS M08-1.25 × 85	4
7	50218	WSHR M08 Flat Fender Washer	2
8	45495	Seal Kit	1

Lockout Cylinder Valve Assembly

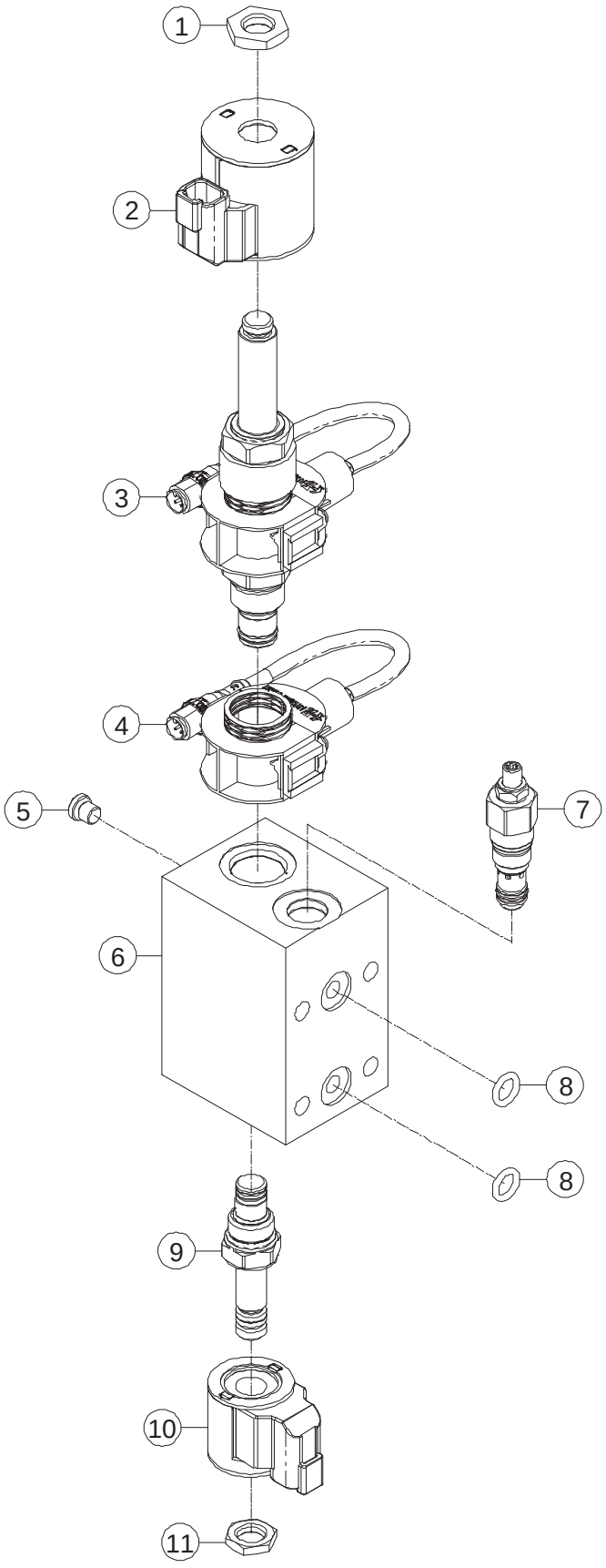


ILLUSTRATION No. ART_6324 85-J Lockout Cylinder Valve Assembly

Item	Part Number	Description	Qty.
1	48560	Nut	1
2	48561	Coil	1
3	48562	Cartridge, Solenoid Valve	1
4	48563	Sensor	1
5	43465	Plug	1
6	48564	Body, Left Valve	1
	48600	Body, Right Valve	1
7	48565	Cartridge, Flow Control Valve	1
8	48566	O Ring	2
9	48567	Cartridge, Solenoid Valve	1
10	48568	Coil	1
11	42795	Nut	1

Lower Lifting Cylinder Assembly

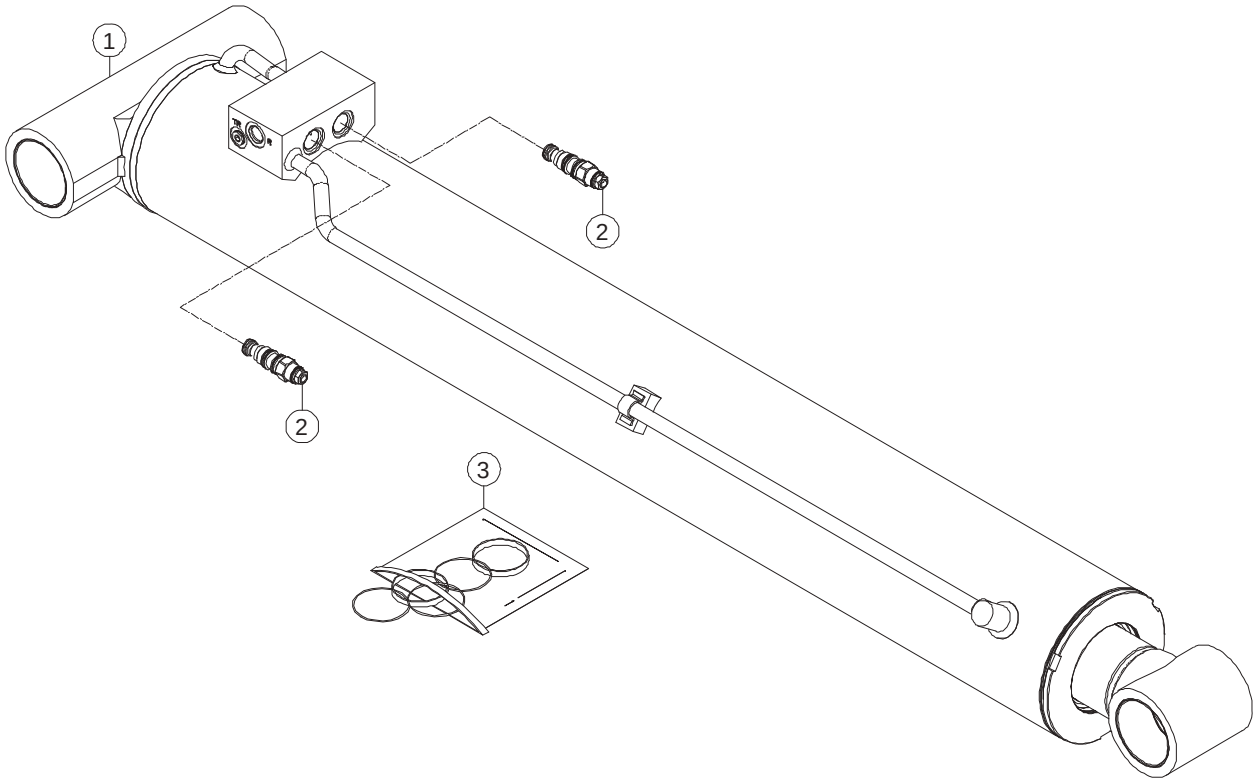


ILLUSTRATION No. ART_6163 85-J Lower Lifting Cylinder Assembly

Item	Part Number	Description	Qty.
1	45499	Lower Lifting Cylinder Assembly	1
2	45501	Cartridge, Counterbalance	2
3	45502	Seal Kit	1

Lifting Cylinder Assembly

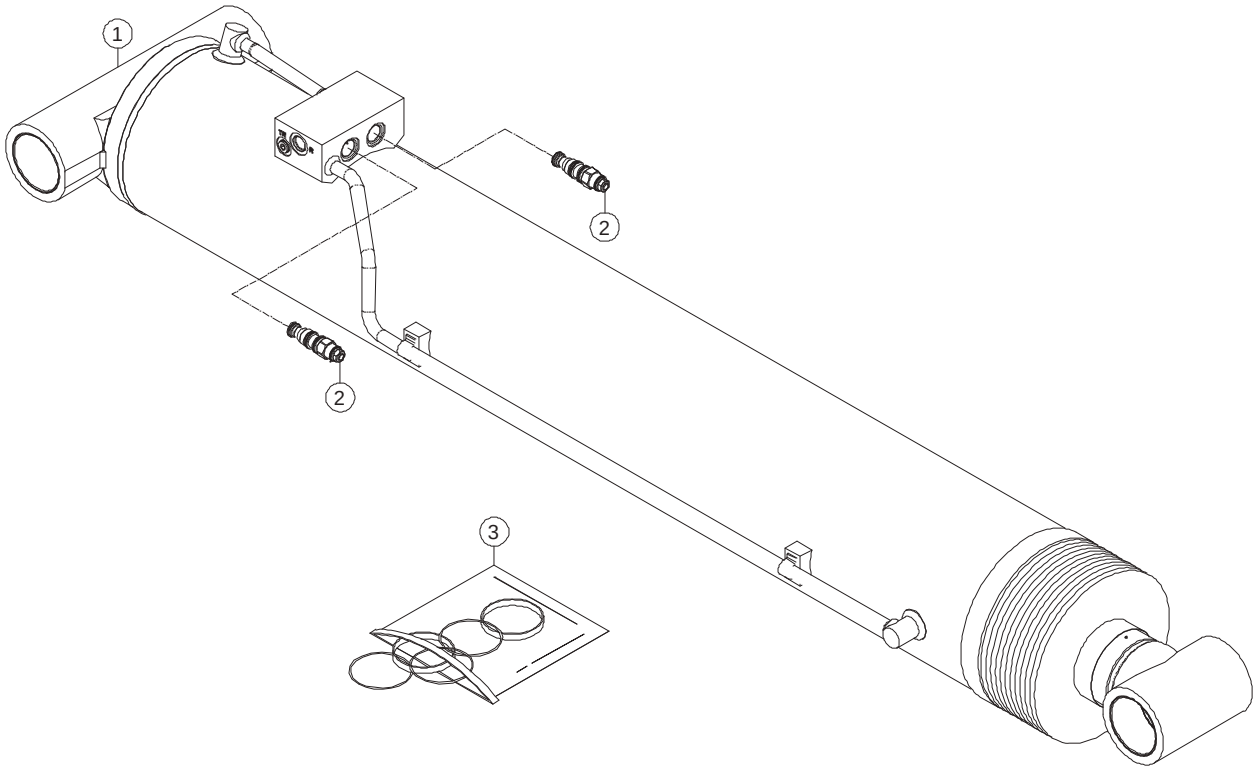


ILLUSTRATION No.
ART_6164

85-J

Lifting Cylinder Assembly

Item	Part Number	Description	Qty.
1	45503	Lifting Cylinder Assembly	1
2	45501	Cartridge, Counterbalance	2
3	45504	Seal Kit	1

Telescopic Cylinder Assembly

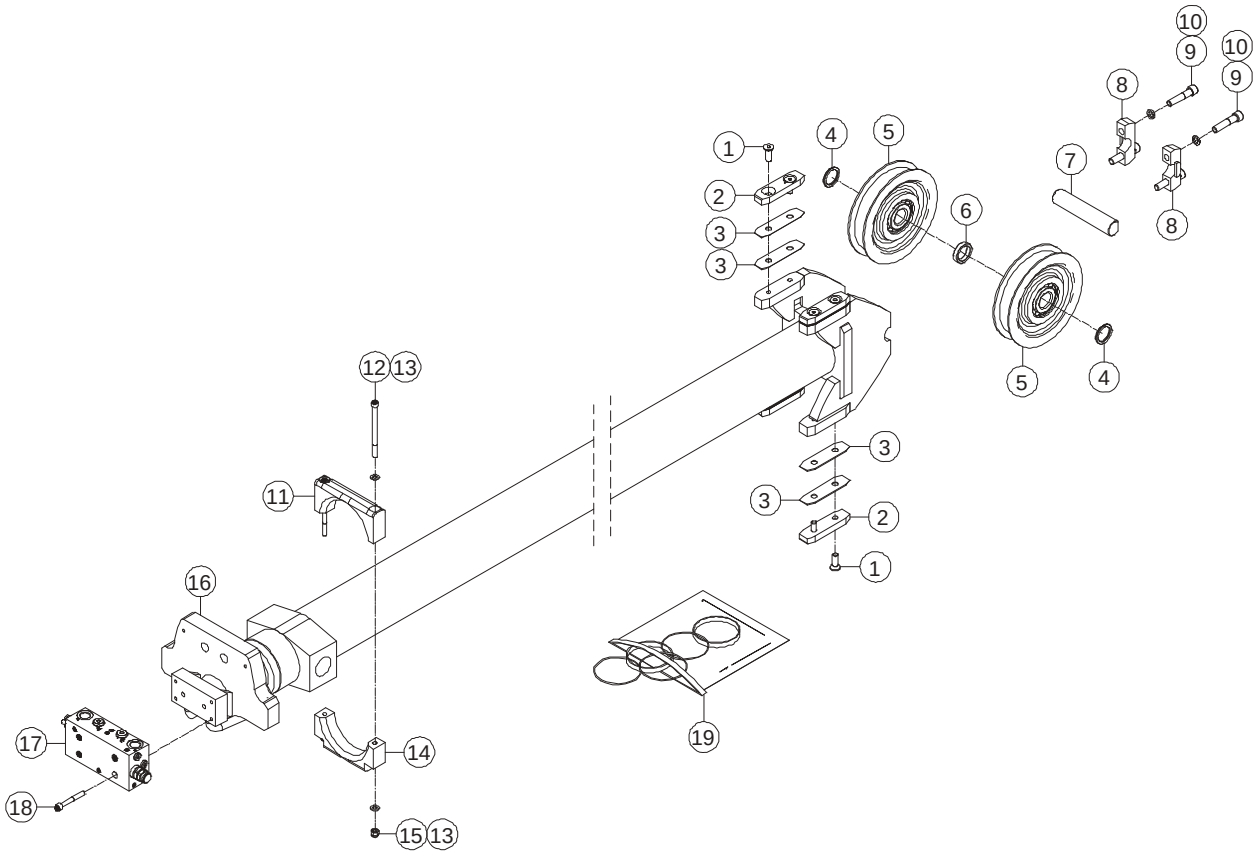


ILLUSTRATION No. ART_6165 85-J Telescopic Cylinder Assembly

Item	Part Number	Description	Qty.
1	53225	Screw CSCS M10-1.50 × 30	8
2	45505	Sliding Block	4
3	45506	Shim	8
4	47954	Spacer	2
5	45507	Pulley Bearing	2
6	47957	Spacer	1
7	47956	Pin	1
8	47949	Lock	2
9	53176	Screw SHCS M12-1.75 × 55	4
10	53148	WSHR M12 Spring Washer	4
11	45508	Bracket, Nylon	1
12	53574	Screw SHCS M08-1.25 × 115	2
13	50001	WSHR M08 Standard Flat Washer	4
14	45509	Bracket, Nylon	1
15	50048	Nut NNYL M08-1.25	2
16	45510	Telescopic Cylinder Assembly	1
17	45511	Valve	1
18	53129	Screw SHCS M08-1.25 × 60	4
19	45512	Seal Kit	1

Jib Leveling Cylinder Assembly

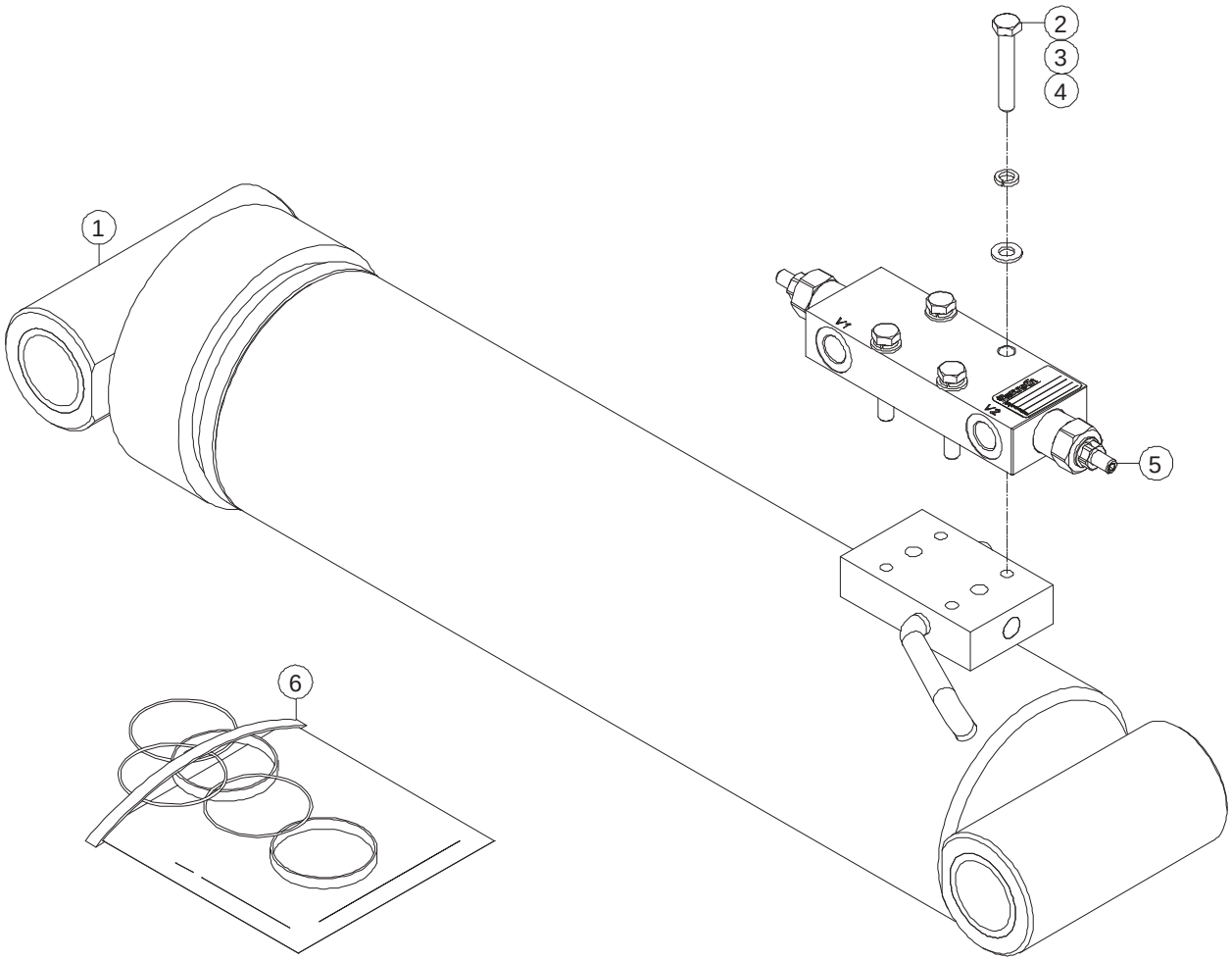


ILLUSTRATION No. ART_6166 85-J Jib Leveling Cylinder Assembly

Item	Part Number	Description	Qty.
1	45513	Jib Leveling Cylinder Assembly	1
2	50015	Screw HHCS M08-1.25 × 50	4
3	53055	WSHR M08 Spring Washer	4
4	50001	WSHR M08 Standard Flat Washer	4
5	45514	Valve	1
6	45515	Seal Kit	1

Jib Lifting Cylinder Assembly

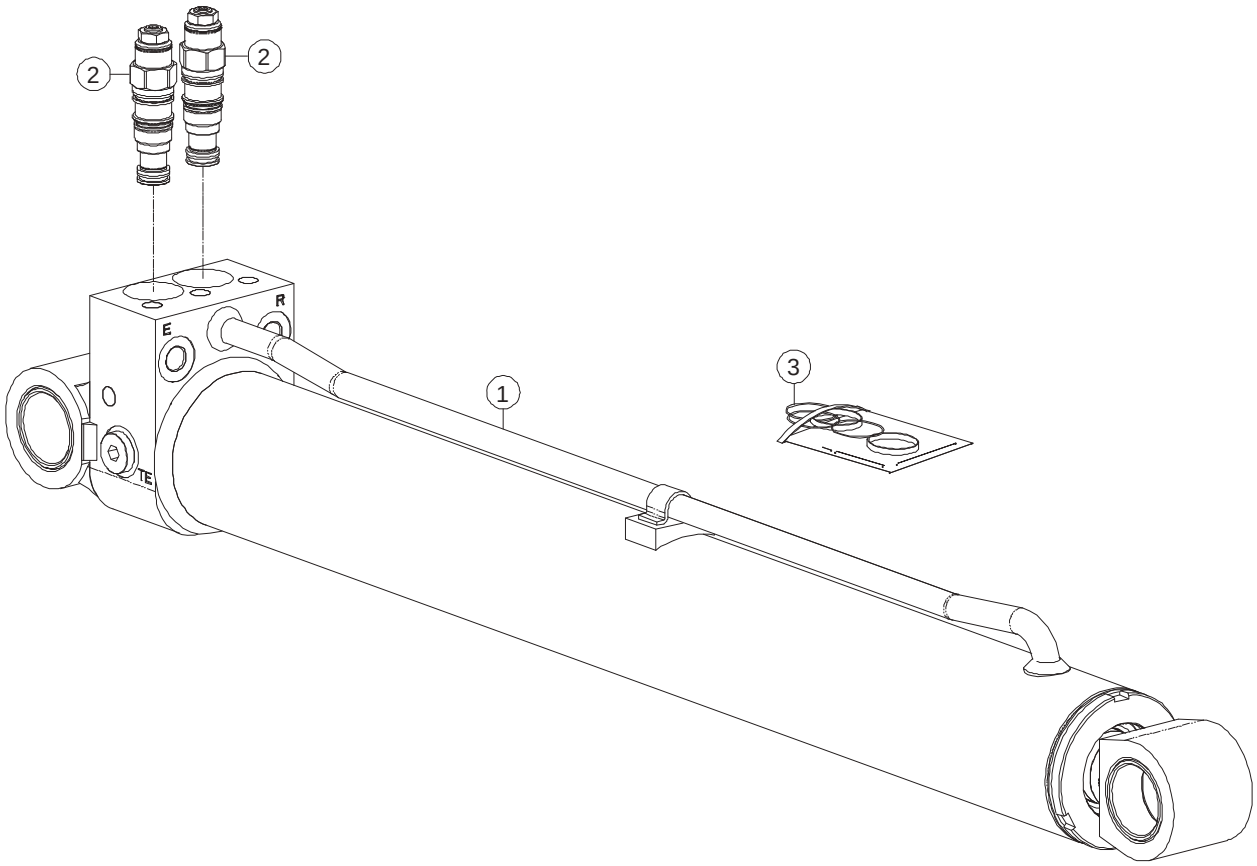
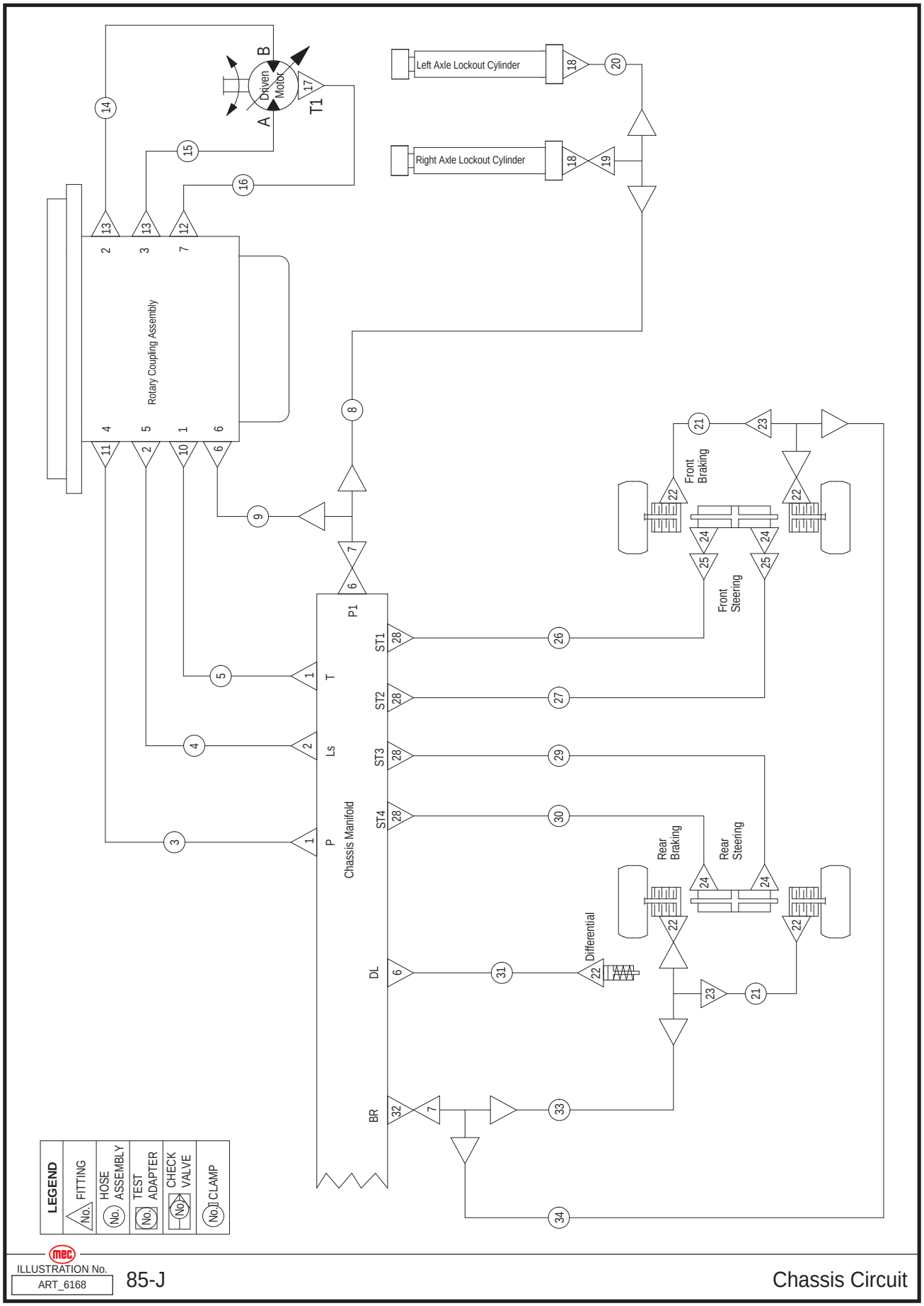


ILLUSTRATION No. ART_6167 85-J Jib Lifting Cylinder Assembly

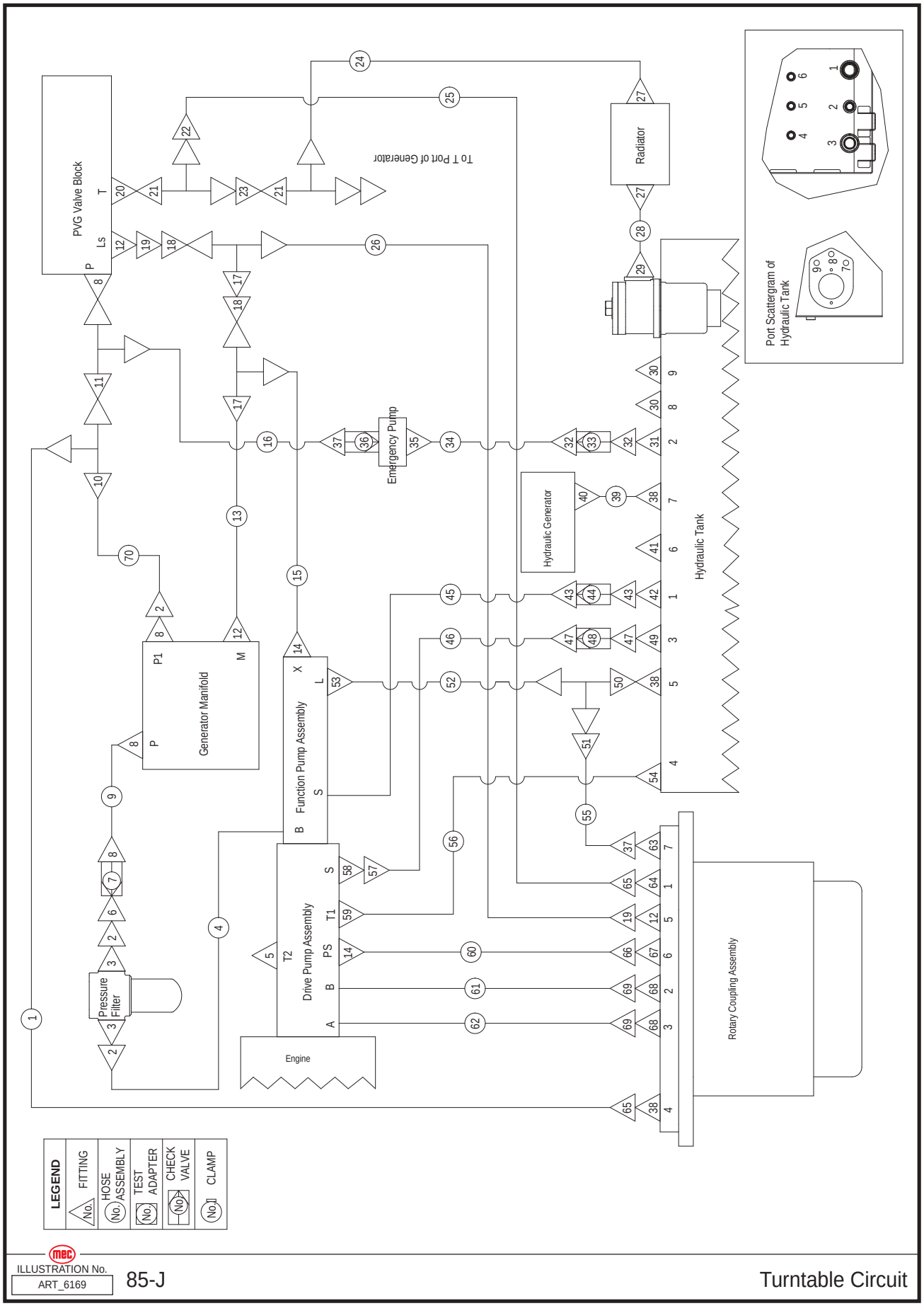
Item	Part Number	Description	Qty.
1	45516	Jib Lifting Cylinder Assembly	1
2	42121	Cartridge, Counterbalance	2
3	45518	Seal Kit	1

Chassis Circuit



Item	Part Number	Description	Qty.
1	45519	Fitting, Straight	2
2	46792	Fitting, Straight	2
3	45521	Hose Assembly	1
4	45522	Hose Assembly	1
5	45523	Hose Assembly	1
6	41296	Fitting, Straight	3
7	43640	Fitting, Tee	2
8	45526	Hose Assembly	1
9	45527	Hose Assembly	1
10	43576	Fitting, Straight	1
11	45529	Fitting, Straight	1
12	45530	Fitting, Straight	1
13	45531	Fitting, Straight	2
14	45532	Hose Assembly	1
--	45533	Flange Fitting	1
--	45534	O-Ring	1
--	50003	WSHR M12 Standard Flat Washer	4
--	53148	WSHR M12 Spring Washer	4
--	53247	Screw HHCS M12-1.75 × 40	4
15	45535	Hose Assembly	1
--	45533	Flange Fitting	1
--	45534	O-Ring	1
--	50003	WSHR M12 Standard Flat Washer	4
--	53148	WSHR M12 Spring Washer	4
--	53247	Screw HHCS M12-1.75 × 40	4
16	45536	Hose Assembly	1
17	43083	Fitting, Straight	1
18	45538	Fitting, 90°	2
19	43081	Fitting, Tee	1
20	45540	Hose Assembly	1
21	45541	Hose Assembly	2
22	45542	Fitting, Straight	5
23	45543	Fitting, Tee	2
24	43083	Fitting, Straight	4
25	43082	Fitting, 90°	2
26	45545	Hose Assembly	1
27	45546	Hose Assembly	1
28	45547	Fitting, Straight	4
29	45548	Hose Assembly	1
30	45549	Hose Assembly	1
31	45550	Hose Assembly	1
32	45551	Customized Fitting	1
33	45552	Hose Assembly	1
34	45553	Hose Assembly	1

Turntable Circuit



Item	Part Number	Description	Qty.
1	45554	Hose Assembly	1
2	45555	Fitting, 90°	3
3	45556	Fitting, Straight	2
4	45557	Hose Assembly	1
--	45558	Flange Fitting	1
--	45559	O-Ring	1
--	50002	WSHR M10 Standard Flat Washer	4
--	53054	WSHR M10 Spring Washer	4
--	50034	Screw HHCS M10-1.50×30	4
5	45560	Plug	1
6	45561	Fitting, Straight	1
7	45562	Check Valve	1
8	45563	Fitting, Straight	4
9	45564	Hose Assembly	2
10	45565	Fitting, Tee	1
11	45566	Fitting, Tee	1
12	46792	Fitting, Straight	3
13	45567	HoseAssembly	1
14	41298	Fitting, Straight	2
15	45452	Hose Assembly	1
16	45465	Hose Assembly	1
17	45468	Fitting, Shuttle Valve	2
18	45473	Fitting, Straight	2
19	43077	Fitting, 90°	2
20	45474	Fitting, Straight	1
21	43115	Fitting, Tee	2
22	43116	Fitting, Straight	1
23	43112	Fitting, 90°	1
24	45475	Hose Assembly	1
25	45517	Hose Assembly	1
26	45520	Hose Assembly	1
27	43085	Fitting,Straight	2
28	45524	Hose Assembly	1
29	45525	Fitting, Straight	1
30	47693	Plug	2
31	45528	Fitting, Straight	1
32	45537	Customized Fitting	2
33	45539	Valve, Ball	1
34	45544	Hose Assembly	1
35	45519	Fitting, Straight	1
36	47759	Check Valve	1
37	43082	Fitting, 90°	2
38	45529	Fitting, Straight	3
39	45555	Hose Assembly	1
40	45567	Fitting, Straight	1

41	47771	Fitting, Straight	1
42	45568	Fitting, Straight	1
43	45569	Customized Fitting	2
44	45570	Valve, Ball	1
45	45571	Hose Assembly	1
46	45572	Hose Assembly	1
47	45573	Customized Fitting	2
48	45574	Valve, Ball	1
49	45575	Fitting, Straight	1
50	43117	Fitting, Tee	1
51	43118	Fitting, Straight	1
52	45576	Hose Assembly	1
53	45577	Fitting, Straight	1
54	45578	Fitting, Straight	1
	45579	Hose Assembly	1
56	45580	Hose Assembly	1
57	45581	Fitting, 90°	1
58	45582	Fitting, Straight	1
59	45583	Fitting, Straight	1
60	45584	Hose Assembly	1
61	45585	Hose Assembly	1
--	45533	Flange Fitting	1
--	45534	O-Ring	1
--	50003	WSHR M12 Standard Flat Washer	4
--	53148	WSHR M12 Spring Washer	4
--	53247	Screw HHCS M12-1.75×40	4
62	45586	Hose Assembly	1
--	45533	Flange Fitting	1
--	45534	O-Ring	1
--	50003	WSHR M12 Standard Flat Washer	4
--	53148	WSHR M12 Spring Washer	4
--	53247	Screw HHCS M12-1.75×40	4
63	45530	Fitting, Straight	1
64	43576	Fitting, Straight	1
65	43206	Fitting, 90°	2
66	43639	Fitting, 90°	1
67	41296	Fitting, Straight	1
68	45531	Fitting, Straight	2
69	45587	Fitting, 90°	2
70	45588	Fitting, 90°, Flange	1
--	50002	WSHR M10 Standard Flat Washer	4
--	53054	WSHR M10 Spring Washer	4
--	50034	Screw HHCS M10-1.50×30	4

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Telescopic Boom Circuit

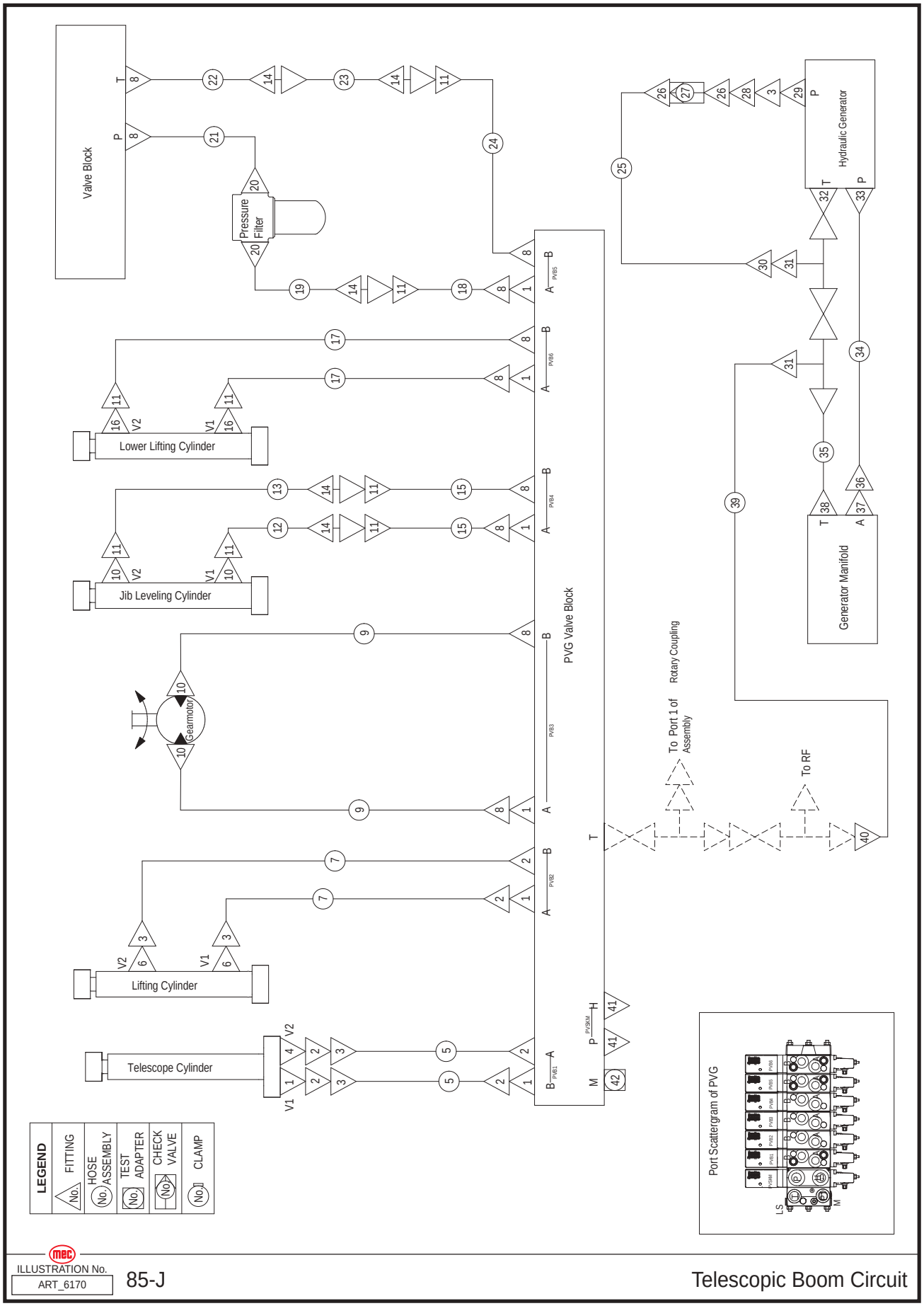


ILLUSTRATION No. ART_6170

85-J

Telescopic Boom Circuit

Item	Part Number	Description	Qty.
1	45589	Customized Fitting	7
2	45529	Fitting, Straight	6
3	43206	Fitting, 90°	5
4	45590	Customized Fitting	1
5	45591	Hose Assembly	2
6	43046	Fitting, Straight	2
7	45592	Hose Assembly	2
8	45593	Fitting, Straight	10
9	45594	Hose Assembly	2
10	45547	Fitting, Straight	4
11	43082	Fitting, 90°	8
12	45595	Hose Assembly	1
13	45596	Hose Assembly	1
14	43680	Fitting, Bulkhead, Straight	5
15	45597	Hose Assembly	2
16	45530	Fitting, Straight	2
17	45598	Hose Assembly	2
18	45599	Hose Assembly	1
19	45600	Hose Assembly	1
20	45601	Fitting, Straight	2
21	45602	Hose Assembly	1
22	45603	Hose Assembly	1
23	45604	Hose Assembly	1
24	45605	Hose Assembly	1
25	42708	Hose Assembly	1
26	45519	Fitting, Straight	2
27	45606	Check Valve	1
28	45607	Fitting, Straight	1
29	43205	Fitting, Straight	1
30	45608	Fitting, Straight	1
31	45609	Fitting, Tee	2
32	45610	Fitting, Straight	1
33	43451	Fitting, Straight	1
34	45611	Hose Assembly	1
35	45612	Hose Assembly	1
36	43459	Fitting, 90°	1
37	45563	Fitting, Straight	1
38	45613	Fitting, Straight	1
39	45612	Hose Assembly	1
40	45614	Fitting, Straight	1
41	45615	Plug	2
42	45616	Test Adapter	1

Jib Circuit

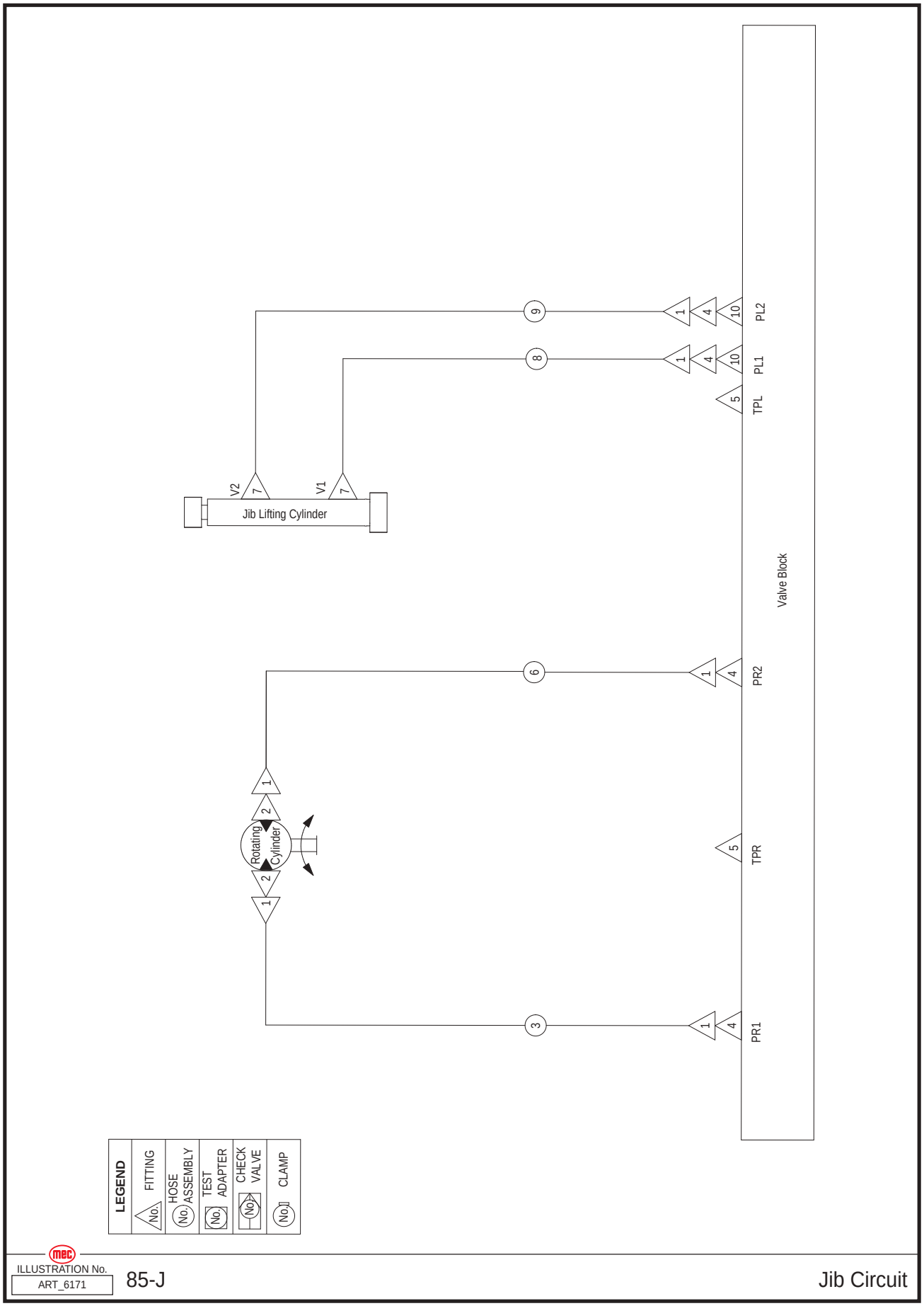


ILLUSTRATION No. ART_6171

85-J

Jib Circuit

Item	Part Number	Description	Qty.
1	43639	Fitting, 90°	6
2	47749	Fitting, Straight	2
3	47751	Hose Assembly	1
4	41296	Fitting, Straight	4
5	46869	Plug	2
6	47756	Hose Assembly	1
7	41298	Fitting, Straight	2
8	47769	Hose Assembly	1
9	47878	Hose Assembly	1
10	47896	Customized Fitting	2

Electrical Harness Part 1

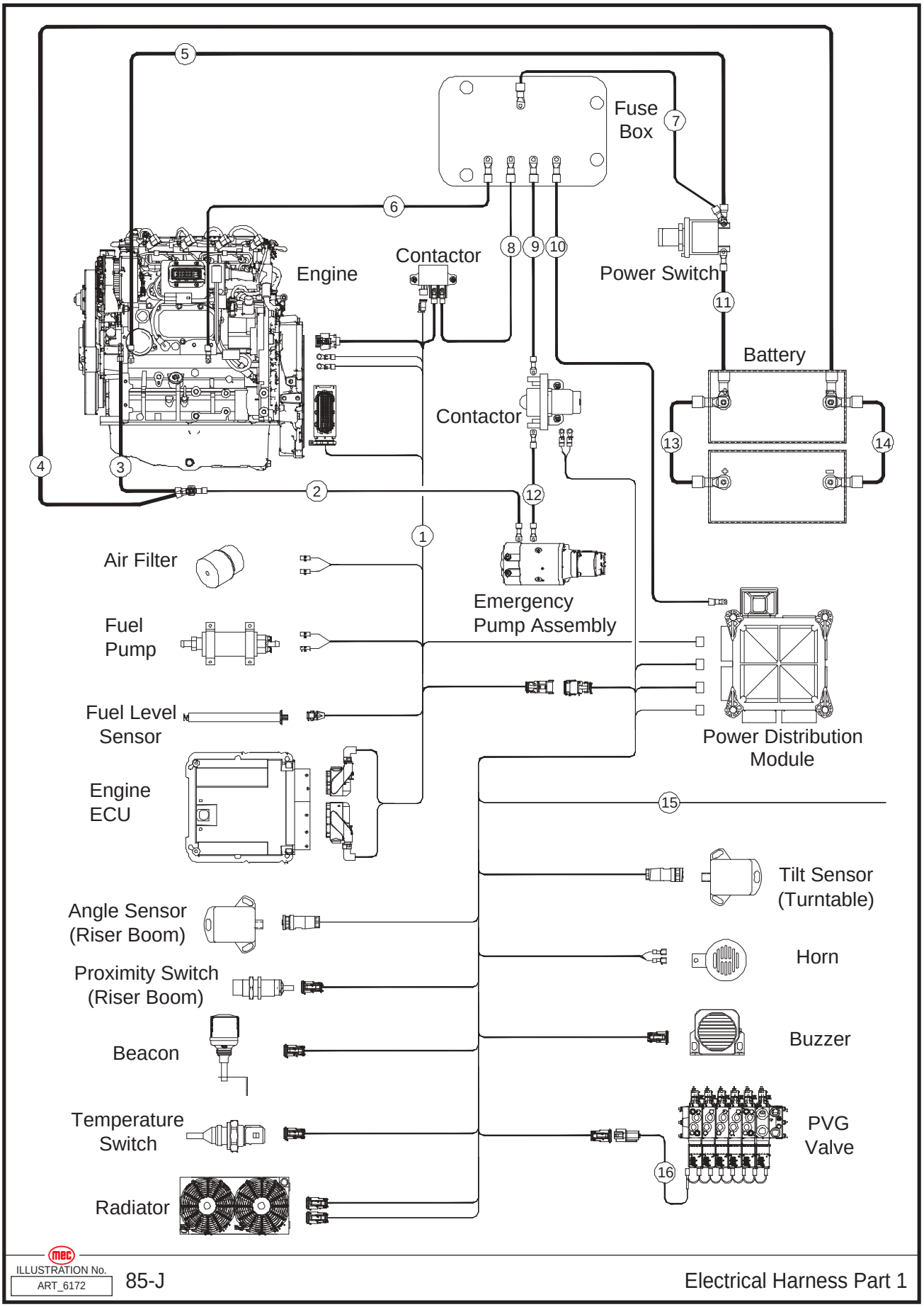


ILLUSTRATION No. ART_6172 85-J Electrical Harness Part 1

Item	Part Number	Description	Qty.
1	47898	Engine Harness	1
2	47900	Emergency Pump Negative Harness	1
3	47903	Engine Negative Harness	1
4	47936	12V Battery Negative Harness	1
5	47939	Start Motor Harness	1
6	47977	Alternator Harness	1
7	48136	Fuse Box Power Harness	1
8	48117	Preheat Contactor Harness	1
9	48118	Emergency Pump Contactor Harness	1
10	48119	Fuse Relay Box Power Harness	1
11	48120	12V Battery Positive Harness	1
12	48121	Emergency Power Positive Harness	1
13	48122	12V Battery Positive Parallel Harness	1
14	48123	12V Battery Negative Parallel Harness	1
15	48124	Control Cabin Harness	1
16	48125	CAN-Bus Resistance	1
	48126	Harness	6
	48127	Power Harness	1
17	48128	Ground Control Box Harness	1
18	48129	Chassis Harness	1
19	48130	Sensor Harness	1
20	48131	Main Boom Harness	1
21	48132	Jib Harness	1
22	48133	Platform Harness	1
23	48134	Platform Control Box Harness	1
24	48135	Welding Harness	1

Electrical Harness Part 2

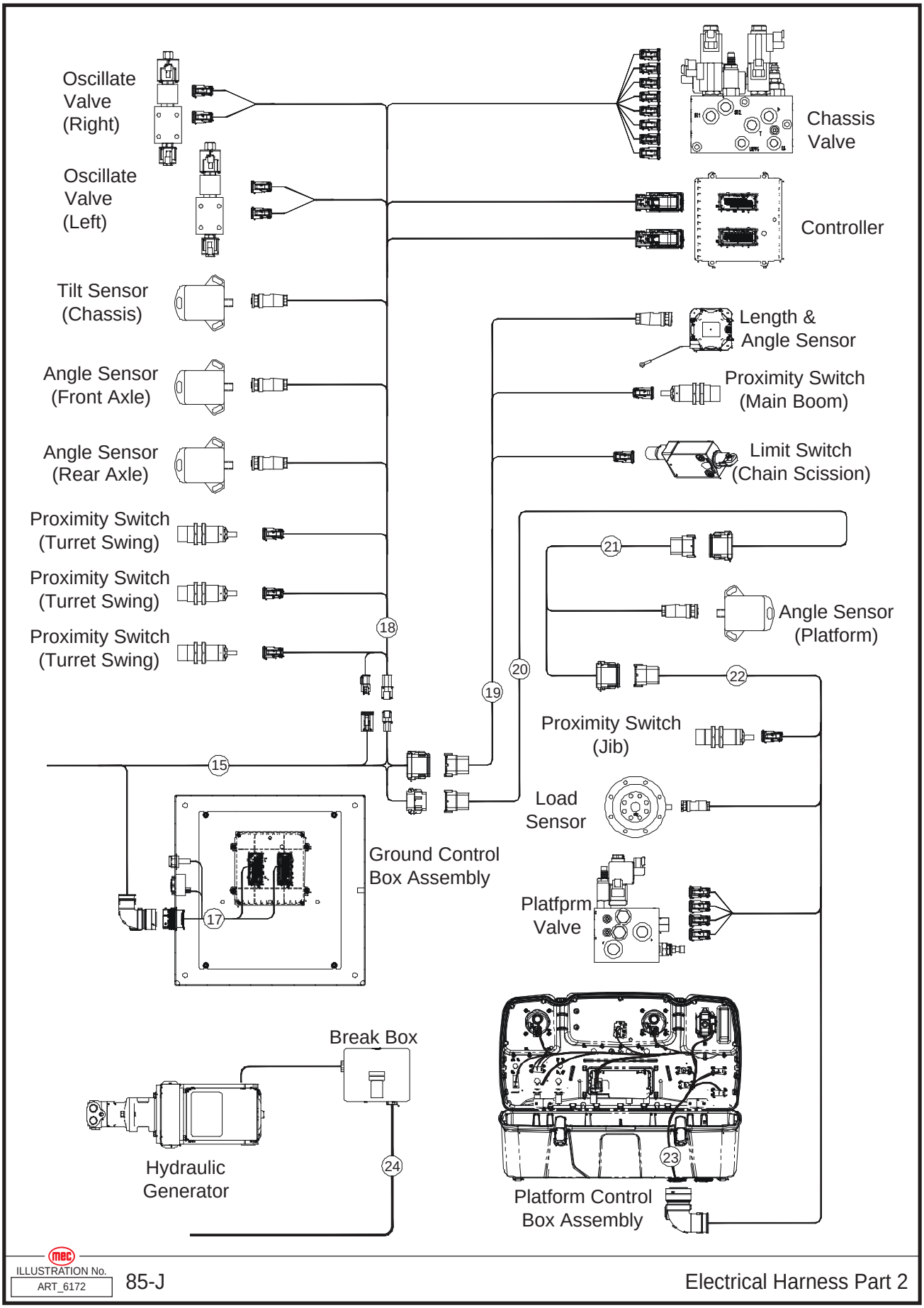


ILLUSTRATION No. ART_6172 85-J Electrical Harness Part 2

Item	Part Number	Description	Qty.
1	47898	Engine Harness	1
2	47900	Emergency Pump Negative Harness	1
3	47903	Engine Negative Harness	1
4	47936	12V Battery Negative Harness	1
5	47939	Start Motor Harness	1
6	47977	Alternator Harness	1
7	48136	Fuse Box Power Harness	1
8	48117	Preheat Contactor Harness	1
9	48118	Emergency Pump Contactor Harness	1
10	48119	Fuse Relay Box Power Harness	1
11	48120	12V Battery Positive Harness	1
12	48121	Emergency Power Positive Harness	1
13	48122	12V Battery Positive Parallel Harness	1
14	48123	12V Battery Negative Parallel Harness	1
15	48124	Control Cabin Harness	1
16	48125	CAN-Bus Resistance	1
	48126	Harness	6
	48127	Power Harness	1
17	48128	Ground Control Box Harness	1
18	48129	Chassis Harness	1
19	48130	Sensor Harness	1
20	48131	Main Boom Harness	1
21	48132	Jib Harness	1
22	48133	Platform Harness	1
23	48134	Platform Control Box Harness	1
24	48135	Welding Harness	1

Power Distribution Module

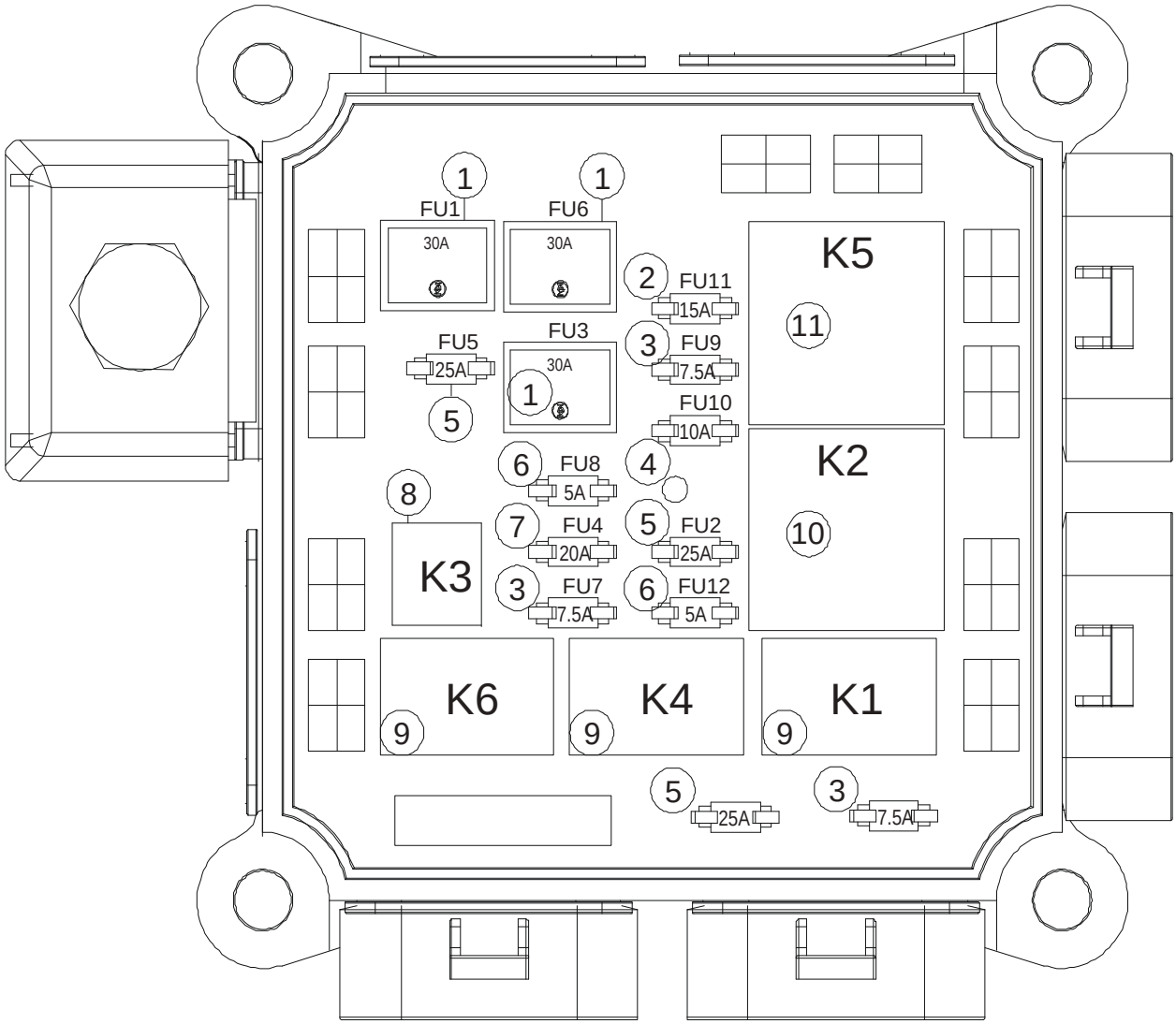


ILLUSTRATION No. ART_6173 85-J Power Distribution Module

Item	Part Number	Description	Qty.
1	48137	Fuse 30 Amp	3
2	48138	Fuse 15 Amp	1
3	48139	Fuse 7.5 Amp	3
4	48140	Fuse 10 Amp	1
5	48141	Fuse 25 Amp	2
6	48142	Fuse 5 Amp	2
7	48143	Fuse 20 Amp	1
8	48144	Relay	1
9	48145	Relay	3
10	48146	Relay	1
11	48147	Relay	1

Lower Control Box Assembly

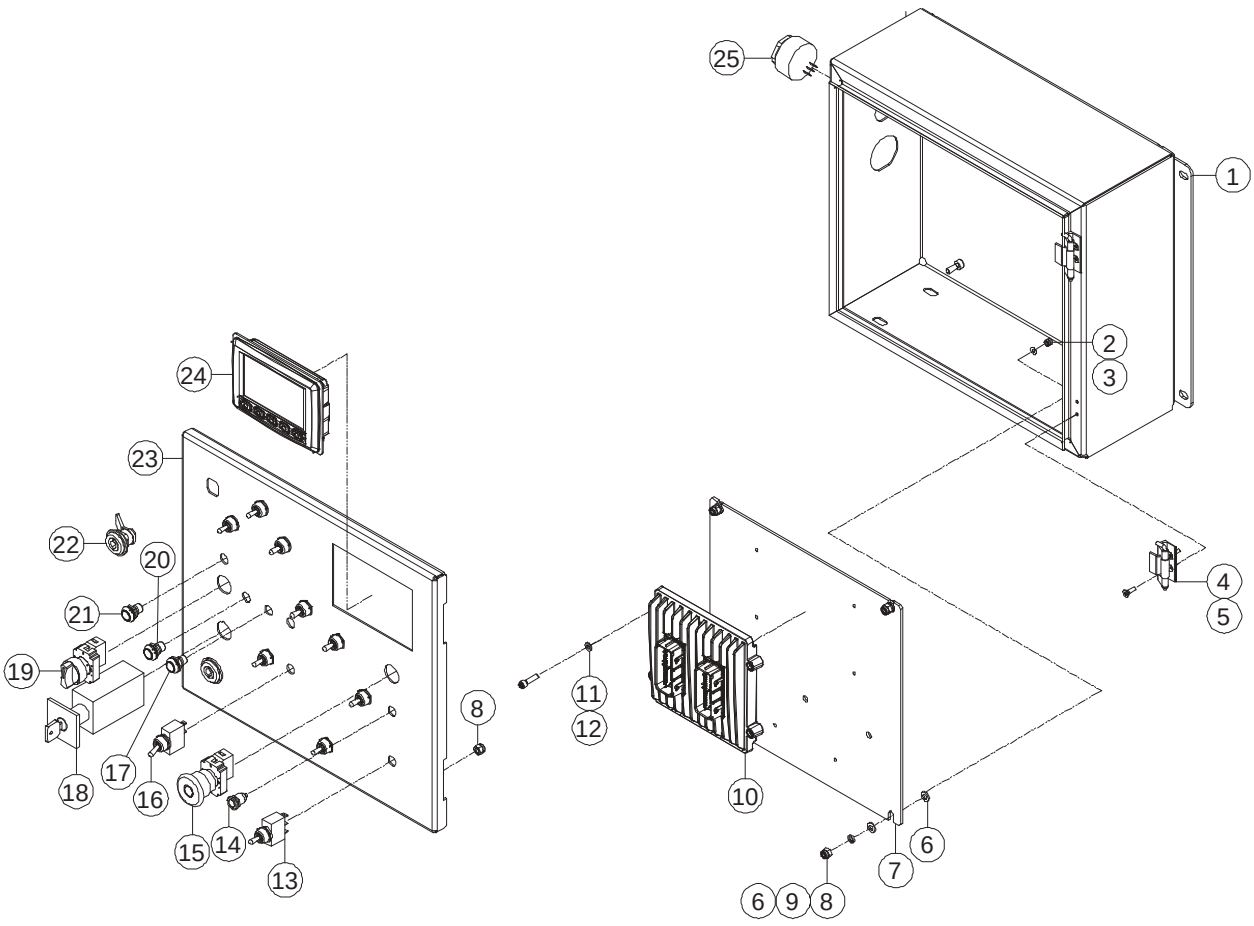


ILLUSTRATION No. ART_6174 85-J Lower Control Box Assembly

Item	Part Number	Description	Qty.
1	48148	Box	1
2	50285	Nut NNYL M04-0.70	4
3	50284	WSHR M04 Standard Flat Washer	4
4	46916	Rack, Gemel	2
5	53575	Screw CSCS M04-0.70 × 14	4
6	50000	WSHR M06 Standard Flat Washer	8
7	48149	Bracket	1
8	50047	Nut NNYL M06-1.00	6
9	53046	WSHR M06 Spring Washer	4
10	48150	Turret Controller	1
11	53038	WSHR M05 Standard Flat Washer	1
12	53150	Screw SHCS M05-0.80 × 20	1
13	48151	Switch, Toggle	9
14	48152	Indicator	1
15	41422	Emergency stop switch	1
--	43097	Base With 1 NC Contact	1
--	43098	Red Mushroom Head	1
16	48153	Switch, Toggle	1
17	48154	Pushbutton, Green	1
18	48155	Key Switch	1
19	46582	Select Switch	1
--	43994	Base With 1 NO Contact	1
--	48156	Select Switch Head	1
20	48157	Pushbutton, Red	1
21	44678	Pushbutton, Red	1
22	42352	Lock, Column	2
23	48158	Electric Control Box Cover	1
24	48159	Display	1
25	48160	Alarm	1

Upper Control Box Assembly

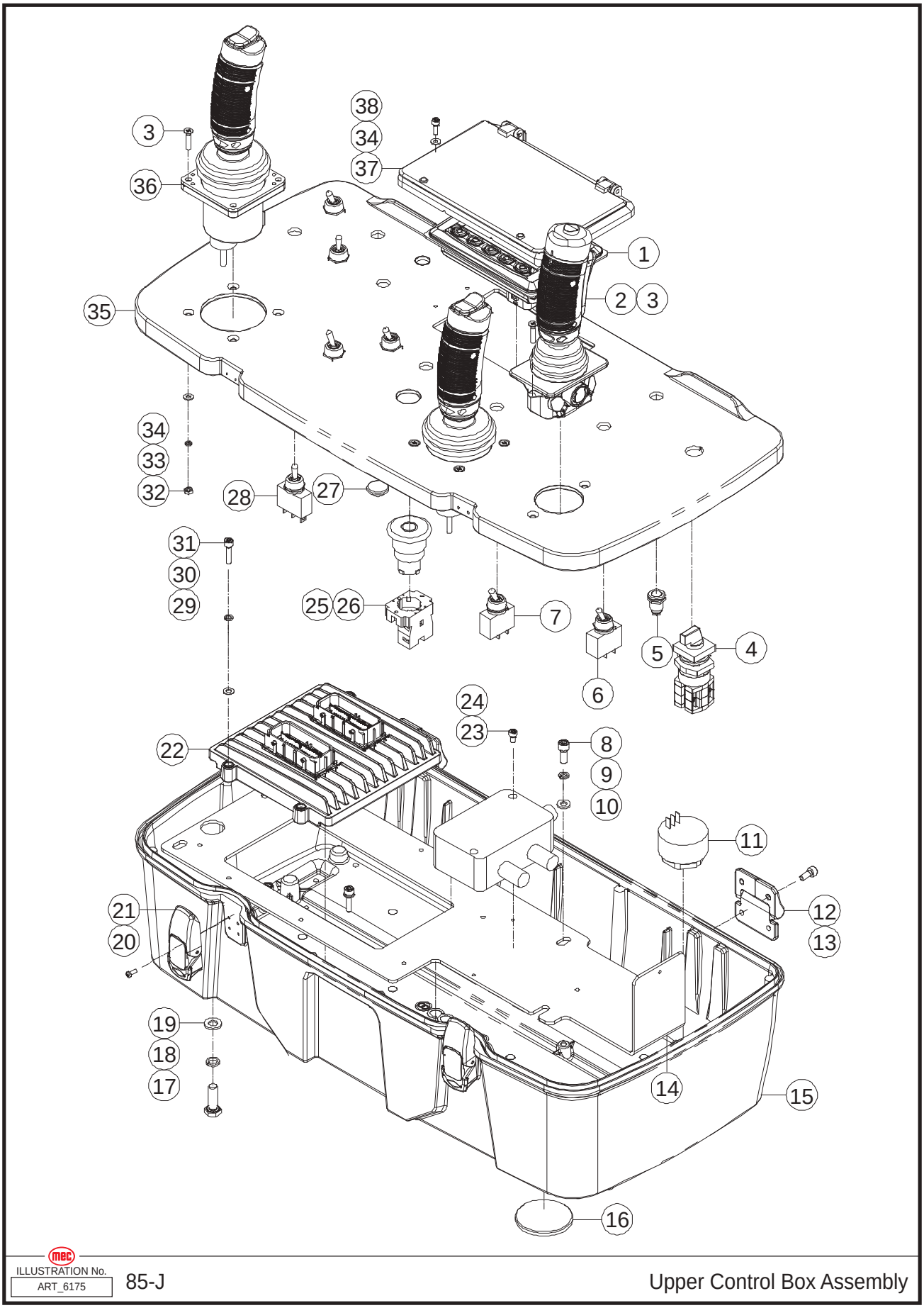
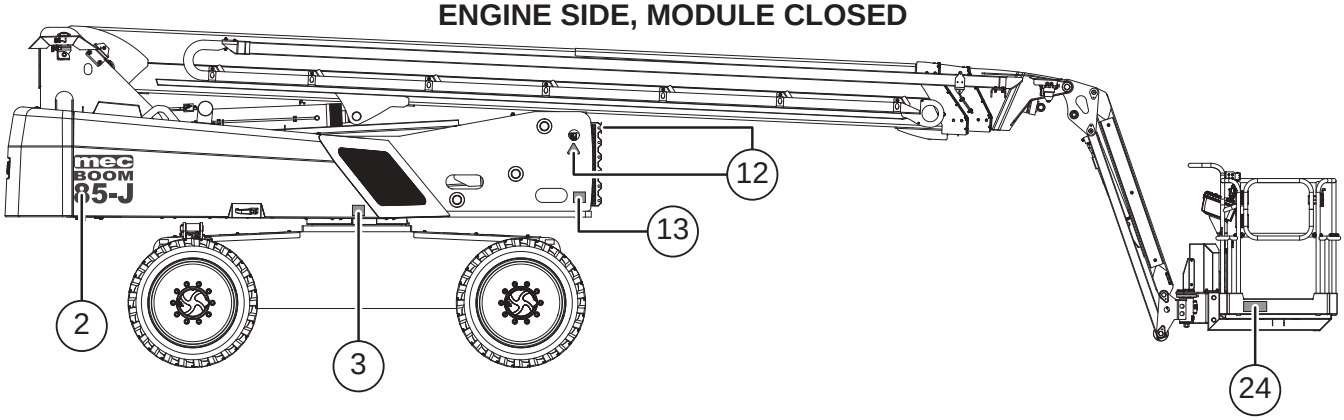


ILLUSTRATION No. ART_6175 85-J Upper Control Box Assembly

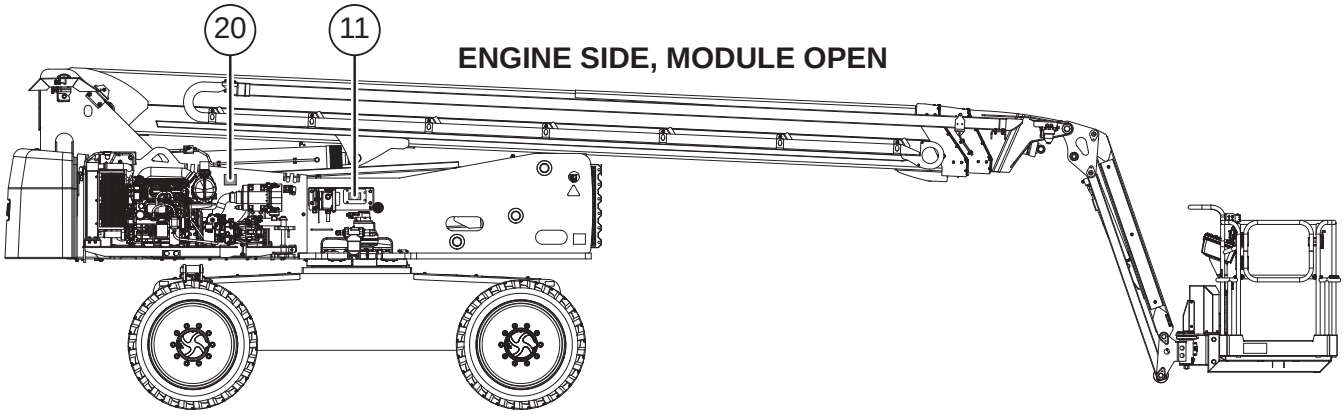
Item	Part Number	Description	Qty.
1	48159	Display	1
2	48161	Joystick (Steer & Drive)	1
3	53489	Screw CSCS M04-0.70 × 20	10
4	48162	Select Switch	1
5	48152	Indicator	1
6	48153	Switch, Toggle	2
7	48163	Switch, Toggle	7
8	53138	Screw SHCS M06-1.00 × 16	5
9	53046	WSHR M06 Spring Washer	5
10	50000	WSHR M06 Standard Flat Washer	5
11	48160	Alarm	1
12	48164	Hinge	2
13	53116	Screw SHCS M05-0.80 × 12	8
14	48165	Bracket	1
15	48168	Platform Control Box	1
16	48169	Plug, Connector	1
17	50031	Screw HHCS M08-1.25 × 25	4
18	53055	WSHR M08 Spring Washer	4
19	50001	WSHR M08 Standard Flat Washer	4
20	53093	Screw PHMS M03-0.50 × 8	12
21	48170	Latch	2
22	48171	Platform Controller	1
23	53389	Screw SHCS M04-0.70 × 8	2
24	48172	Load Sensor Amplifier	1
25	43098	Red Mushroom Head	1
26	43097	Base With 1 NC Contact	1
27	48173	Plug, Toggle Switch	1
28	48151	Switch, Toggle	2
29	53038	WSHR M05 Standard Flat Washer	4
30	53043	WSHR M05 Spring Washer	4
31	53150	Screw SHCS M05-0.80 × 20	4
32	53157	Nut NHEX M04-0.70	10
33	53062	WSHR M04 Spring Washer	10
34	50284	WSHR M04 Standard Flat Washer	14
35	48174	Cover, Platform Control Box	1
36	48175	Joystick (Dual Axle)	2
37	48176	Cover, Display	1
38	50423	Screw SHCS M04-0.70 × 12	4

Decals

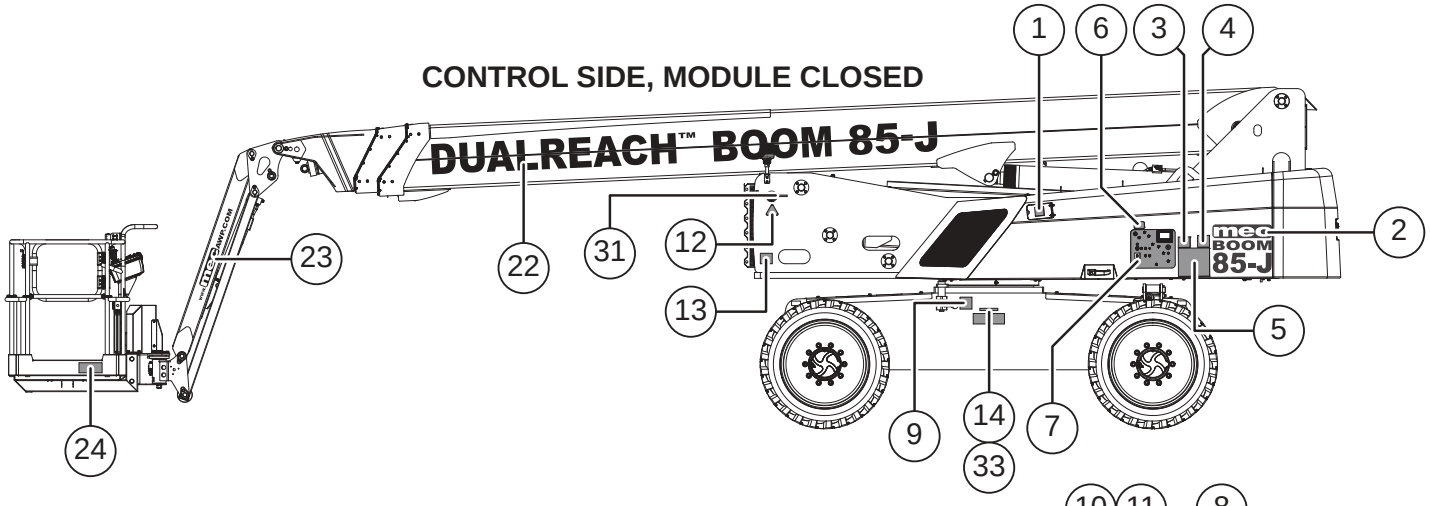
ENGINE SIDE, MODULE CLOSED



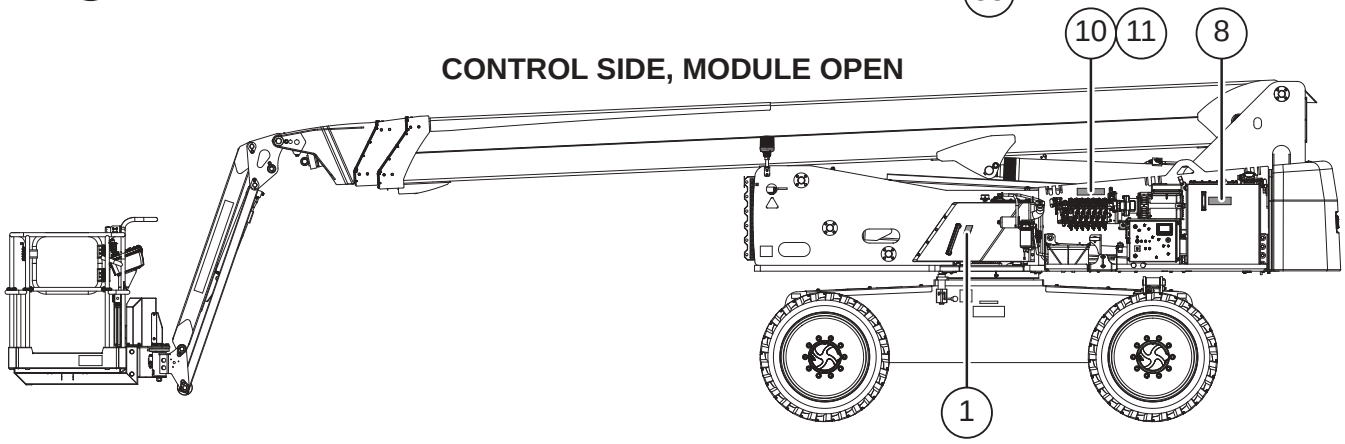
ENGINE SIDE, MODULE OPEN

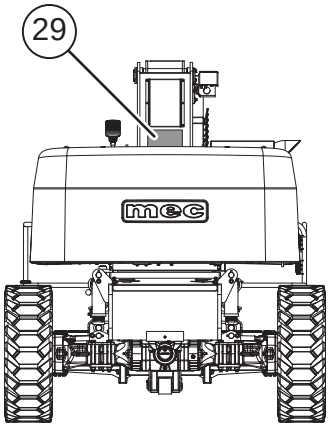


CONTROL SIDE, MODULE CLOSED

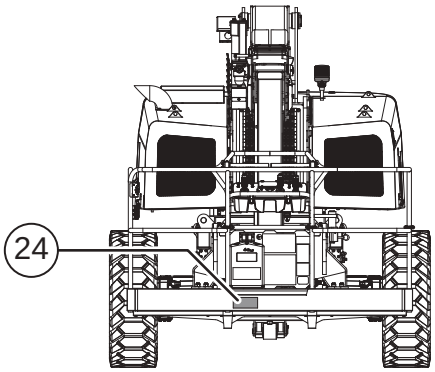


CONTROL SIDE, MODULE OPEN

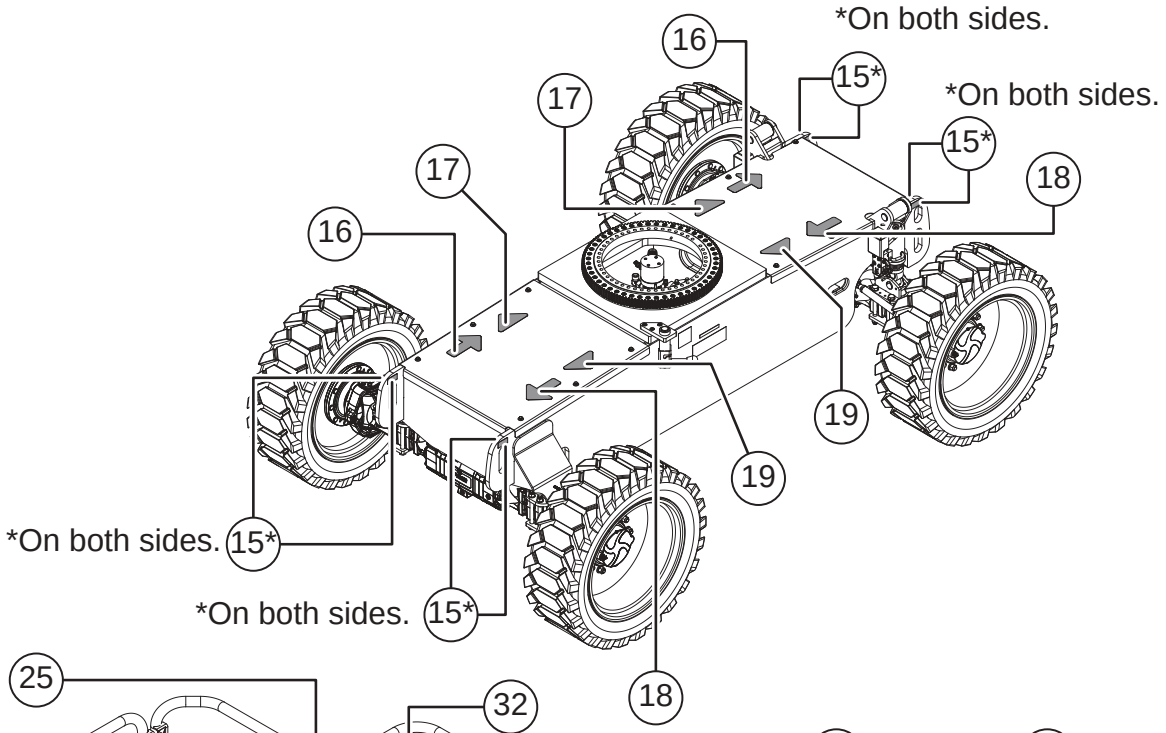


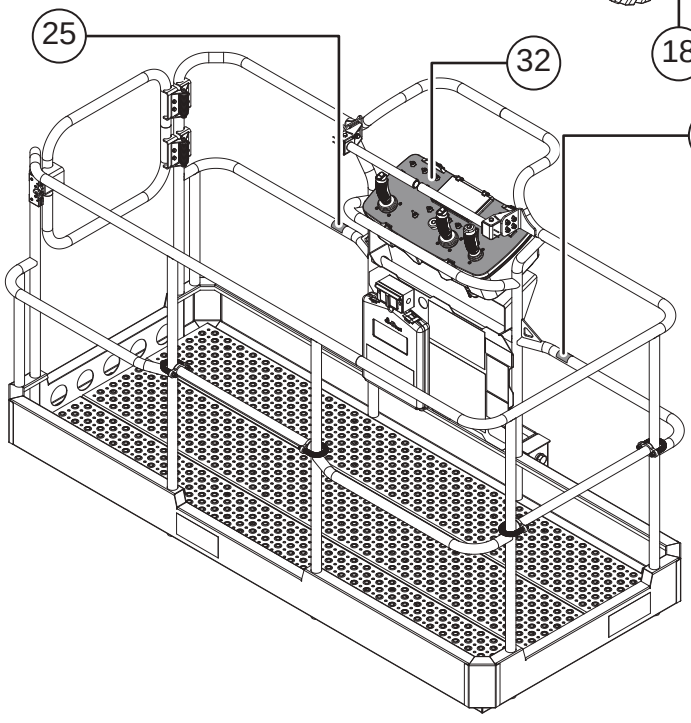


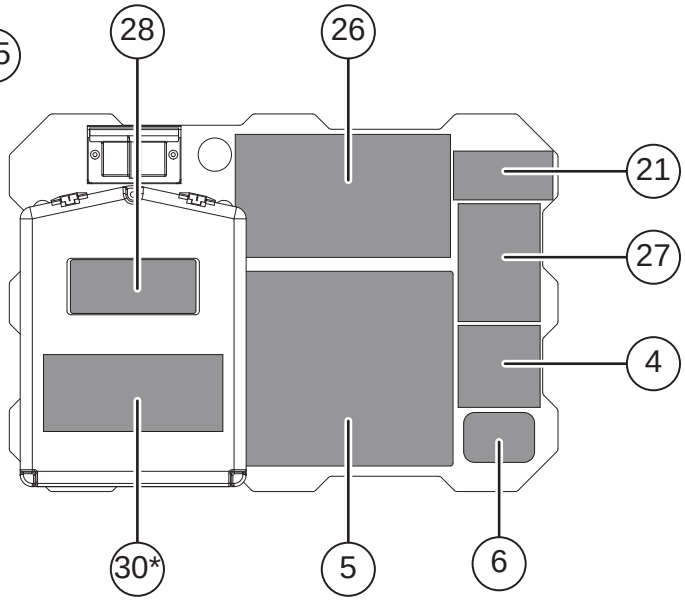
REAR VIEW



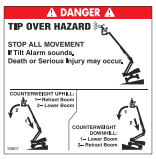
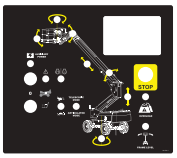
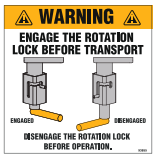
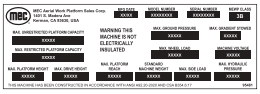
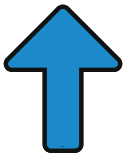
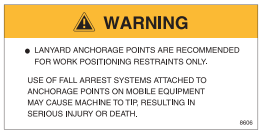
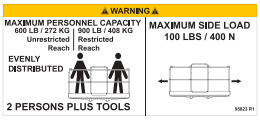
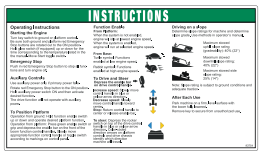
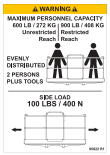
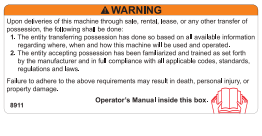
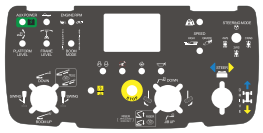
FRONT VIEW







*INSIDE THE MANUAL CASE

1  93182 Qty. - 2	**2**  95802 Qty. - 2	**3**  93801 Qty. - 2	**4**  93807 Qty. - 2	**5**  93755 Qty. - 2
6  95609 Qty. - 2	**7**  95508 Qty. - 1	**8**  92117 Qty. - 1	**9**  93855 Qty. - 1	**10**  90732 Qty. - 1
11  93805 Qty. - 2	**12**  91850 Qty. - 3	**13**  93804 Qty. - 2	**14**  95481 Qty. - 1	**15**  91973 Qty. - 8
16  91971 Qty. - 2	**17**  91981 Qty. - 2	**18**  91972 Qty. - 2	**19**  91982 Qty. - 2	**20**  93806 Qty. - 1
21  8606 Qty. - 1	**22**  96664 Qty. - 1	**23**  92416 Qty. - 1	**24**  95823 Qty. - 3	**25**  91970 Qty. - 2
26  93754 Qty. - 1	**27**  95822 Qty. - 1	**28**  8911 Qty. - 1	**29**  90719 Qty. - 1	**30**  90718 Qty. - 1
31  90751 Qty. - 1	**32**  95512 Qty. - 1	**33**  94865 Qty. - 1		

Notes

Notes

Notes

MEC Parts Order Form

Phone: 559-842-1523
Fax: 559-400-6723
Email: Parts@mecawp.com

Please Fill Out Completely:

Date: _____ **Ordered By:** _____
Account: _____ **Your Fax No.:** _____
Bill to: _____ **Ship to:** _____
_____ _____
_____ _____

Purchase Order Number _____ **Ship VIA** _____

*** All orders MUST have a Purchase Order Number*

*****Fed Ex shipments require Fed Ex account number*

Part Number	Description	Quantity	Price

All back-ordered parts will be shipped when available via the same ship method as original order unless noted below:

_____ Ship complete order only - No Backorders
_____ Ship all available parts and contact customer on disposition of back-ordered parts
_____ Other (Please specify)

Signature _____

Limited Owner Warranty

MEC Aerial Platform Sales Corp. warrants its equipment to the original purchaser against defects in material and/or workmanship under normal use and service for one (1) year from date of registered sale or date the unit left the factory if not registered. MEC Aerial Platform Sales Corp. further warrants the structural weldments of the main frame and scissor arms to be free from defects in material or workmanship for five (5) years from date of registered sale or date unit left the factory if not registered. Excluded from such warranty is the battery(s) which carries a ninety (90) day warranty from described purchase date. Warranty claims within such warranty period shall be limited to repair or replacement, MEC Aerial Platform Sales Corp's option, of the defective part in question and labor to perform the necessary repair or replacement based on MEC Aerial Platform Sales Corp's then current flat rate, provided the defective part in question is shipped prepaid to MEC Aerial Platform Sales Corp. and is found upon inspection by MEC Aerial Platform Sales Corp. to be defective in material and/or workmanship. MEC Aerial Platform Sales Corp. shall not be liable for any consequential, incidental or contingent damages whatsoever. Use of other than factory authorized parts; misuse, improper maintenance, or modification of the equipment voids this warranty. The foregoing warranty is exclusive and in lieu of all other warranties, express or implied. All such other warranties, including implied warranties of merchantability and of fitness for a particular purpose, are hereby excluded. No Dealer, Sales Representative, or other person purporting to act on behalf of MEC Aerial Platform Sales Corp. is authorized to alter the terms of this warranty, or in any manner assume on behalf of MEC Aerial Platform Sales Corp. any liability or obligation which exceeds MEC Aerial Platform Sales Corp's obligations under this warranty.

MEC Aerial Work Platforms

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