

Series 400/450/600 Sprayers



LMC-Ag

1715 S. Slappey Blvd

Albany, Ga. 31701

229-639-1775

LMCAG.COM

LMC-Ag Warranty Policy

- One year (12 months) warranty from the date the implement is sold by the dealer for the implement to be put into service.
 - Aged Inventory Policy on Dealer Lot
 - 2 - 3 Years from Invoice to Dealer – 50% Coverage by LMC-Ag
 - 3 - 4 Years from Invoice to Dealer – 25% Coverage by LMC-Ag
 - 4+ Years from Invoice to Dealer – 0% Coverage by LMC-Ag
- Warranty will only be approved on LMC-Ag products that have a manufacturer's defect or parts defect.
 - The warranty does not cover normal wear items, including but not limited to, bearings, slip clutches, hoses, parts making contact with ground such as teeth, blades, cutting edges, tires.
 - The warranty does not cover adjustments or standard maintenance.
 - Liquid application pumps will be inspected by a certified LMC-AG employee for potential improper use before the warranty is approved.
 - Pumps can also be sent back to the manufacturer for inspection or repair at the customer's expense.
 - Warranty will be voided if the implement has been modified in any way.
- The warranty claim is to be completed entirely by dealer on LMC-Ag's Website.
 - The web address for warranty claim is as follows.
 - <https://www.lmcag.com/warranty-claim>
 - Warranty issue photos are required to complete the claim.
- Warranty labor performed by the dealership will only be paid the set LMC-Ag labor rate of \$94.00 per hour. LMC-Ag will only approve labor time within reason of what LMC-Ag deems necessary.
 - Warranty work performed prior to approval will not be paid. A decal is placed on the equipment stating this policy.
 - Prior approval by LMC-AG will be paid via invoice from the dealer service department.
 - Labor claims need to be sent to lmcag.warranty@lmcarter.com
- Parts will only be replaced with OEM LMC-Ag parts unless approved otherwise from territory rep from LMC-Ag.
- If parts are ordered from LMC-Ag for a repair, there must be a purchase order number on the invoice before the parts ship. The invoice will be credited back if and when the warranty claim has been submitted and approved.

START-UP

- Unit inspection
 - Ensure the equipment is secure to the tractor at all its lifting points and that lifting pins and clip rings are all installed properly.
 - Ensure all your equipment hydraulic lines are hooked to the tractor properly and that all case drain lines are properly run to the case drain and not to the remote ports (check with manufacturer if you have questions).
 - Ensure all the control boxes are properly installed in the cab of the tractor and that they have power to each one (if you are not receiving proper power voltage you may have to hook the controls directly to the battery).
 - Ensure that all your bolts and fittings are tight and adjusted before running a cycle of the hydraulic system.
 - Make sure that your hydraulic flow to the remotes that are connected to the sprayer are turned down all the way to the lowest setting. HYDRAULIC REQUIREMENTS ARE NO MORE THAN 7GPM, WITH A MINIMUM PRESSURE OF 2300PSI FOR THE BOOMS TO OPERATE PROPERLY.
 - Engage your hydraulics that control the boom function and SLOWLY increase the flow until you can achieve proper function of the boom. Make sure that hydraulic flow does not exceed 3 gpm to the controls. Failure to check the flow could cause you to push o rings out of their seats and cause leaking on the valves or damage to the plungers in the hydraulics.
 - Then once the hydraulic functions are confirmed then check all of the plumbing and make sure everything is properly secure and tight.
 - Once the plumbing has been inspected, fill the tank up to 25% and run the pump and control valves to make sure everything is working properly and there are no leaks. If you are running a hydraulic drive pump, make sure to turn your flow down all the way on the remote it is connected to before starting the pump. Slowly bring the hydraulics up to speed making sure NOT TO EXCEED 7 GPM. Failure to do this could result in pump failure immediately or within the first use.
 - Once you have ensured that all hydraulic and spraying functions are working, mix chemical and start application.

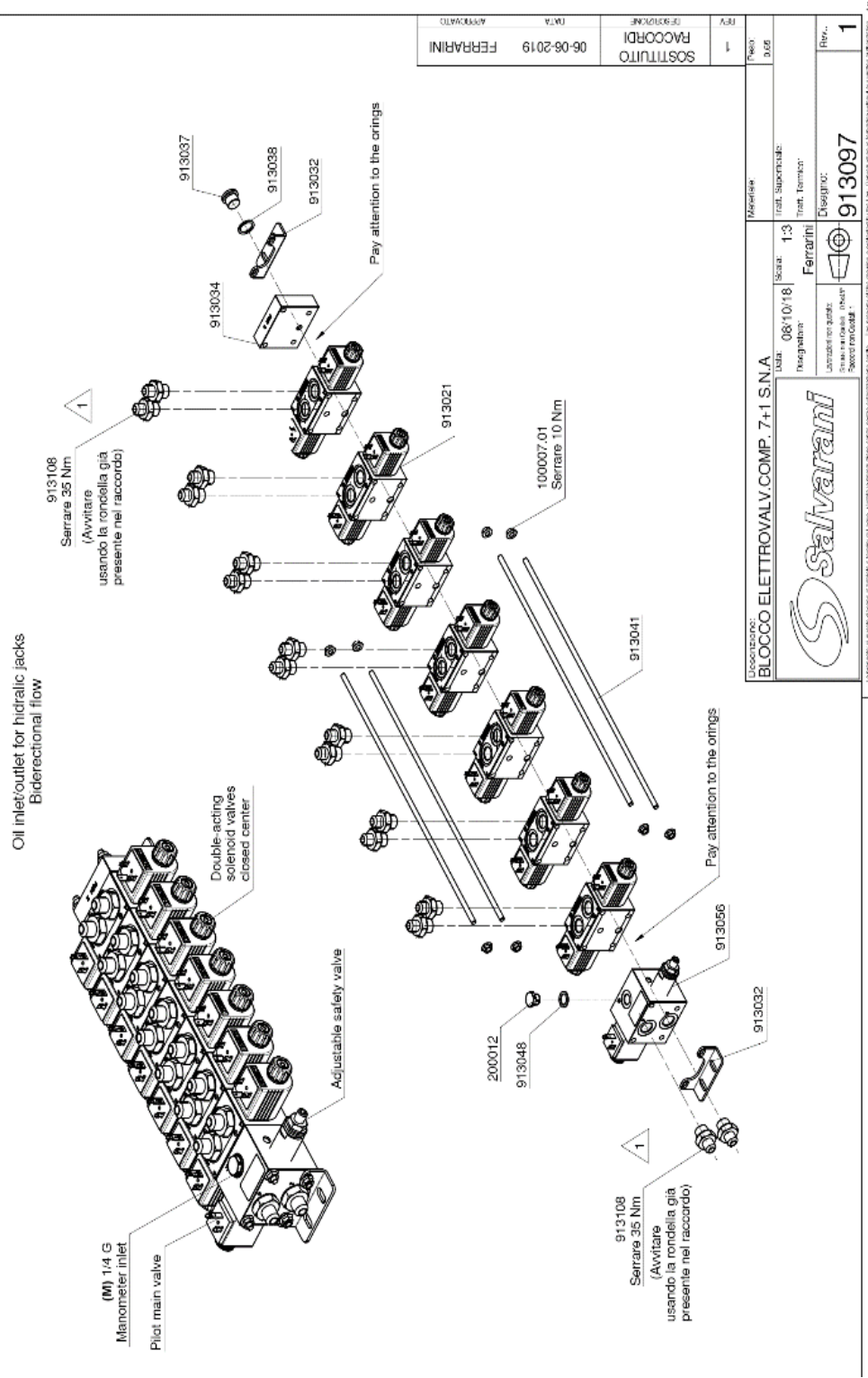
*Due to various options sold on our machines there may be other steps that need to be taken during startup to ensure safe and proper usage of the equipment. If you have questions during these startups, please contact us at 229-639-1775.

WINTERIZING

- When winterizing the entire unit, fill the tank to 3-4" over the bottom suction line fitting in the bottom of the tank with water. Then add ½ gallon of RV antifreeze to the water and run it through the system. Run the unit as you would be applying chemical but stationary. Run the unit until the system starts a pressure drop from cavitation. Once the pressure drop starts, immediately turn the pump off and shut down the control valves. Your system should now be winterized. Some units may take more or less antifreeze than others depending on the size of the system.

PARTS BREAKDOWN

- HYDRAULICS

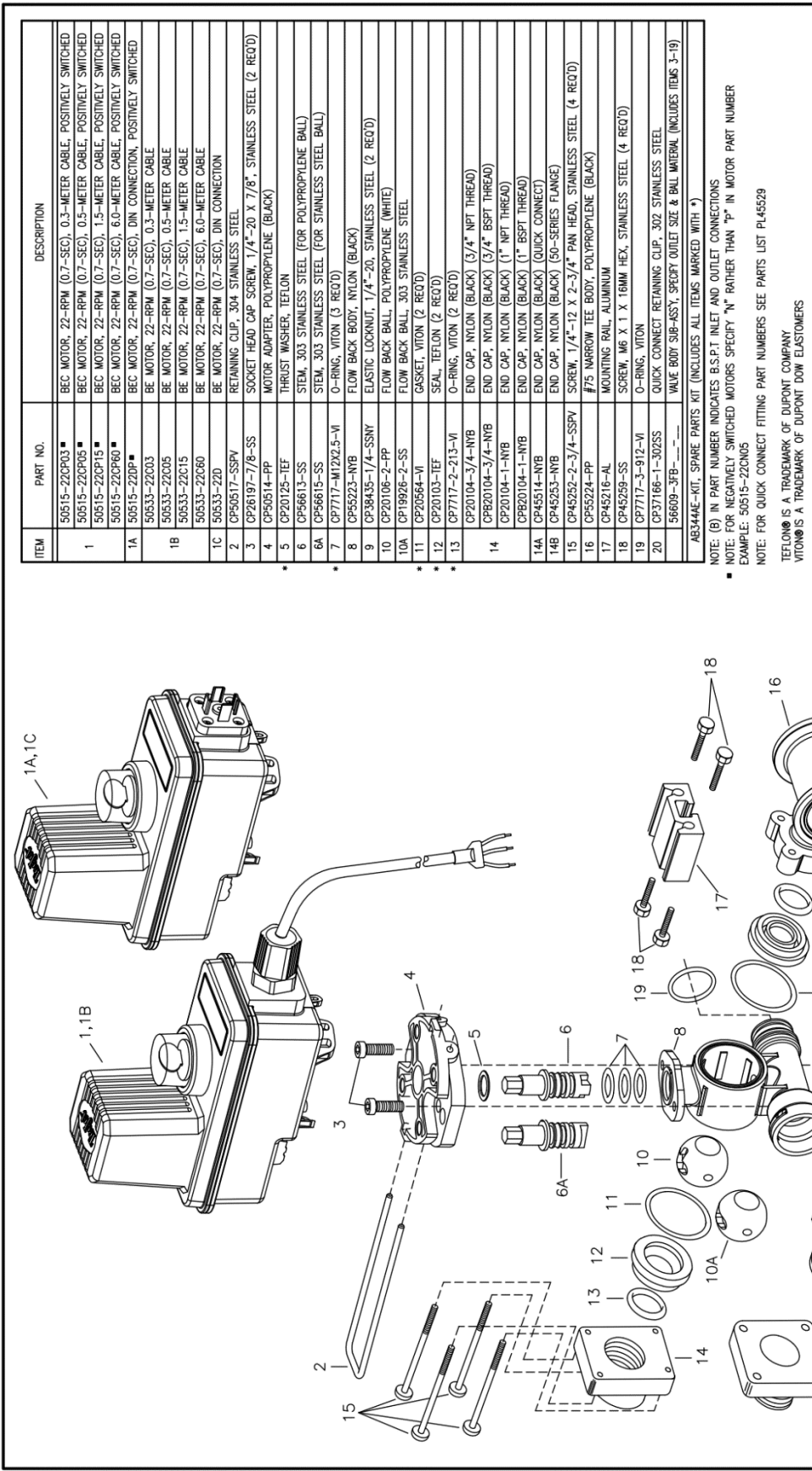


| | | | |
|----------|------------|------------|------------|
| REV | 1 | REVISIONE | SOSTITUITO |
| Drawn | 3/06 | Disegnato | FACCORDI |
| Checked | | Verificato | FERRARINI |
| Approved | | Approvato | |
| Date | 06-08-2019 | DATA | |

| | | | |
|-------------|-------------------------------------|---------|---------|
| DESCRIPTION | BLOCCO ELETTROVALV. COMP. 7+1 S.N.A | | |
| Material | Scale | Scale | Scale |
| | 06/10/18 | 1:3 | 1:3 |
| Design | Ferrari | Ferrari | Ferrari |
| Part No. | 913097 | 913097 | 913097 |
| Rev. | 1 | 1 | 1 |



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| ITEM | PART NO. | DESCRIPTION |
|------|--------------------|--|
| | 50615-22CP03 ■ | BEC MOTOR, 22-RPM (0.7-SEC), 0.3-METER CABLE, POSITIVELY SWITCHED |
| | 50615-22CP05 ■ | BEC MOTOR, 22-RPM (0.7-SEC), 0.5-METER CABLE, POSITIVELY SWITCHED |
| 1 | 50615-22CP15 ■ | BEC MOTOR, 22-RPM (0.7-SEC), 1.5-METER CABLE, POSITIVELY SWITCHED |
| | 50615-22CP60 ■ | BEC MOTOR, 22-RPM (0.7-SEC), 6.0-METER CABLE, POSITIVELY SWITCHED |
| 1A | 50615-22DP ■ | BEC MOTOR, 22-RPM (0.7-SEC), DIN CONNECTION, POSITIVELY SWITCHED |
| | 50633-22C03 | BE MOTOR, 22-RPM (0.7-SEC), 0.3-METER CABLE |
| | 50633-22C05 | BE MOTOR, 22-RPM (0.7-SEC), 0.5-METER CABLE |
| 1B | 50633-22C15 | BE MOTOR, 22-RPM (0.7-SEC), 1.5-METER CABLE |
| | 50633-22C60 | BE MOTOR, 22-RPM (0.7-SEC), 6.0-METER CABLE |
| 1C | 50633-22D | BE MOTOR, 22-RPM (0.7-SEC), DIN CONNECTION |
| 2 | CP0517-SSPV | RETAINING CLIP, 304 STAINLESS STEEL |
| 3 | CP26197-7/8-SS | SOCKET HEAD CAP SCREW, 1/4"-20 X 7/8", STAINLESS STEEL (2 REQ'D) |
| 4 | CP50514-PP | MOTOR ADAPTER, POLYPROPYLENE (BLACK) |
| 5 | CP20125-TEF | THRUST WASHER, TEFLON |
| 6 | CP56613-SS | STEM, 303 STAINLESS STEEL (FOR POLYPROPYLENE BALL) |
| 6A | CP56615-SS | STEM, 303 STAINLESS STEEL (FOR STAINLESS STEEL BALL) |
| 7 | CP7717-M12X2.5-VI | O-RING, VITON (3 REQ'D) |
| 8 | CP55223-NYB | FLOW BACK BODY, NYLON (BLACK) |
| 9 | CP38435-1/4-SSNY | ELASTIC LOCKNUT, 1/4"-20, STAINLESS STEEL (2 REQ'D) |
| 10 | CP20106-2-PP | FLOW BACK BALL, POLYPROPYLENE (WHITE) |
| 10A | CP19926-2-SS | FLOW BACK BALL, 303 STAINLESS STEEL |
| 11 | CP20564-VI | GASKET, VITON (2 REQ'D) |
| 12 | CP20103-TEF | SEAL, TEFLON (2 REQ'D) |
| 13 | CP7717-2-213-VI | O-RING, VITON (2 REQ'D) |
| 14 | CP20104-3/4-NYB | END CAP, NYLON (BLACK) (3/4" NPT THREAD) |
| | CPB20104-3/4-NYB | END CAP, NYLON (BLACK) (3/4" BSPT THREAD) |
| | CP20104-1-NYB | END CAP, NYLON (BLACK) (1" NPT THREAD) |
| 14A | CPB20104-1-NYB | END CAP, NYLON (BLACK) (1" BSPT THREAD) |
| 14B | CP45253-NYB | END CAP, NYLON (BLACK) (QUICK CONNECT) |
| 15 | CP45252-2-3/4-SSPV | END CAP, NYLON (BLACK) (50-SERIES FLANGE) |
| 16 | CP55224-PP | SCREW, 1/4"-12 X 2-3/4" PAN HEAD, STAINLESS STEEL (4 REQ'D) |
| 17 | CP45216-AL | #75 NARROW TEE BODY, POLYPROPYLENE (BLACK) |
| 18 | CP45259-SS | SCREW, M6 X 1 X 16MM HEX, STAINLESS STEEL (4 REQ'D) |
| 19 | CP7717-3-912-VI | O-RING, VITON |
| 20 | CP37166-1-302SS | QUICK CONNECT RETAINING CLIP, 302 STAINLESS STEEL |
| | 50609-3FB---- | VALVE BODY SUB-ASSY, SPECIFY OUTLET SIZE & BALL MATERIAL (INCLUDES ITEMS 3-19) |
| | AB344E-KIT | SPARE PARTS KIT (INCLUDES ALL ITEMS MARKED WITH *) |

NOTE: (B) IN PART NUMBER INDICATES B.S.P.T INLET AND OUTLET CONNECTIONS
 ■ NOTE: FOR NEGATIVELY SWITCHED MOTORS SPECIFY "N" RATHER THAN "P" IN MOTOR PART NUMBER
 EXAMPLE: 50615-22CN05
 NOTE: FOR QUICK CONNECT FITTING PART NUMBERS SEE PARTS LIST PL45529
 TEFLON® IS A TRADEMARK OF DUPONT COMPANY
 VITON® IS A TRADEMARK OF DUPONT DOW ELASTOMERS

Description:
 450BEC-FB DIRECTVALVE®
 ELECTRIC INLET-OFF
 FLOW BACK BALL VALVE
 MANIFOLD

PRODUCT COVERED BY
 US PATENT #6189807

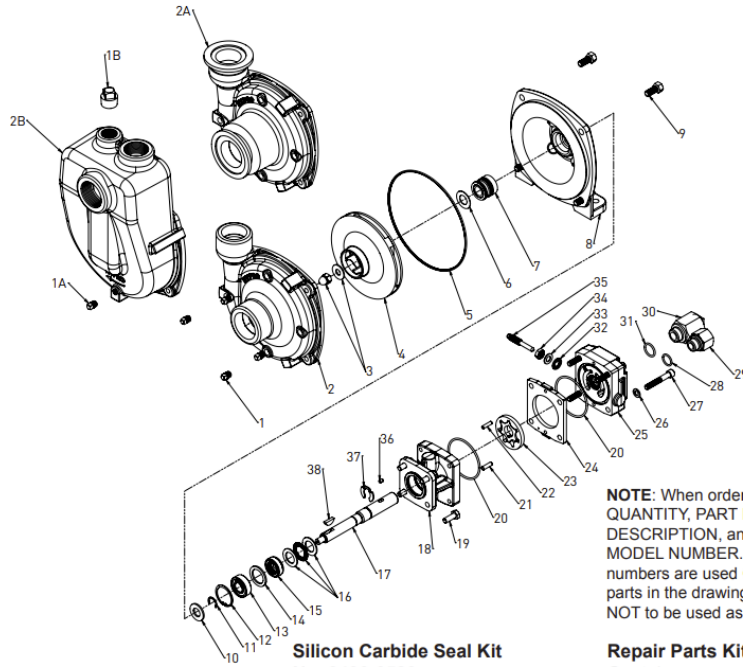
Spraying Systems Co.
 Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, IL 60187-7901

Rev. No. ###
 Ref. ####

PARTS LIST
PL45529-1-FB
 Sheet ### of ###

Replacement Parts

The following drawings show the pumps and their replacement parts. **Only genuine replacement parts should be used. Failure to follow this warning can result in damage to property, serious injury or death.** If the pump malfunctions or is defective, it should be sent back to Hypro for service.



Silicon Carbide Seal Kit No. 3430-0589

Contains:
Mechanical seal (Ref. 7) and o-ring (Ref. 5).

NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Repair Parts Kit No. 3430-0332

Contains:
One mechanical seal (Ref. 7), one o-ring (Ref. 5) and one rubber gasket (Ref. 6).

9303C(S)-HM1C, 2, 3, 4, 5 & -U and 9303C(S)-SP-HM1, 2, 3, 4, 5

Adapter Kit No. 3430-0187 (HM2 and HM4 Modes Only) Contains one each:
No. 3360-0021 Pressure Port Adapter
No. 3373-0020 (Size #1)
No. 3373-0021 (Size #2)
No. 3373-0022 (Size #3)
No. 1720-0108 Adapter O-ring and No. 1720-0105 Orifice O-ring

SP Chamber Kit No. 3430-0480SP
Contains: One chamber with wear ring. (Ref. 2B) one o-ring (Ref. 5), one drain vent plug (Ref. 1A) and one vent plug (Ref. 1B).

Parts Kit No. 3430-0881

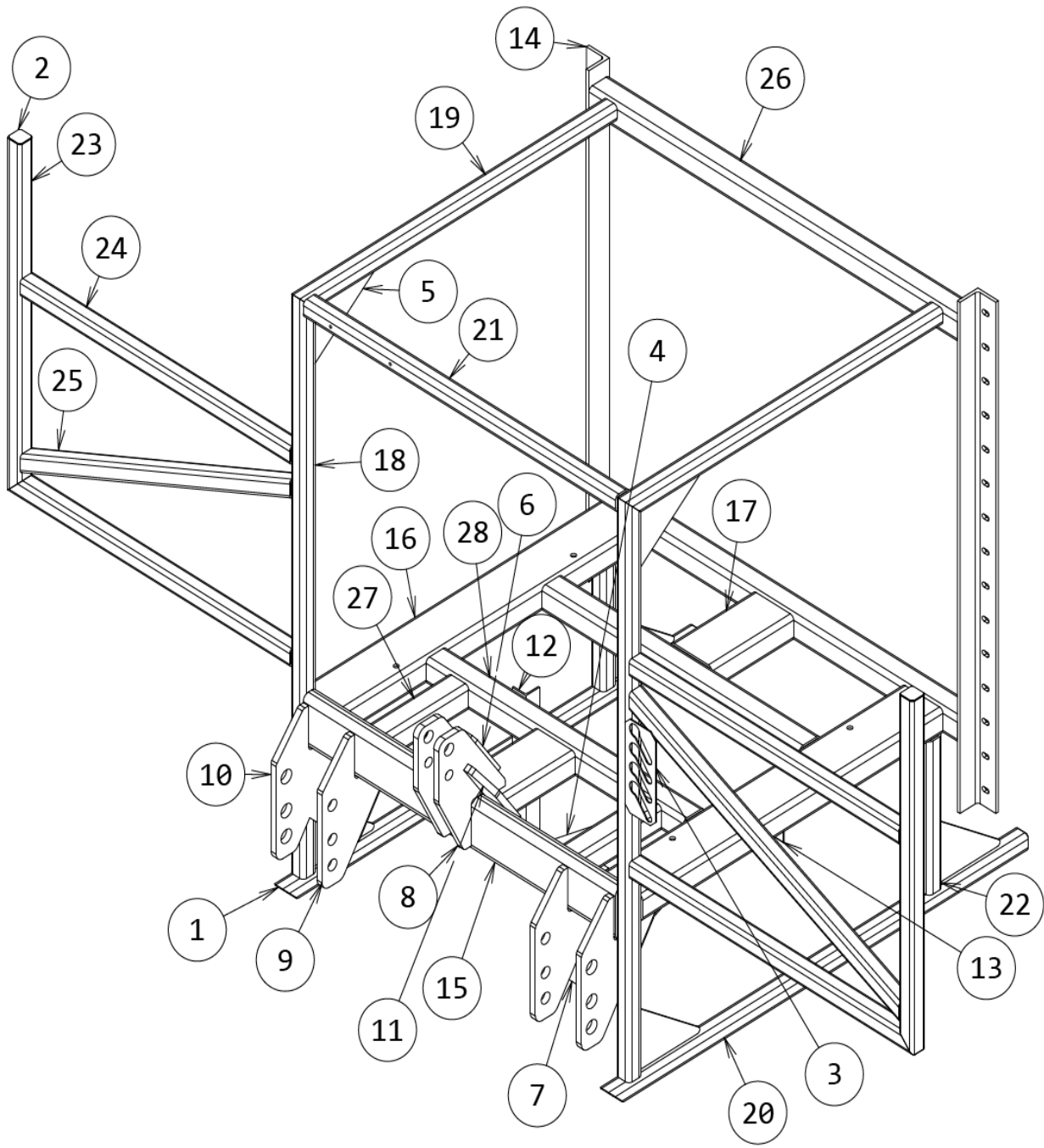
Contains: One each ball bearing (Ref. 13), motor shaft seal (Ref. 15), thread seal gasket (Ref. 32), and washer (Ref. 33); two each motor housing o-rings (Ref. 20), and port adapter o-rings (Ref. 28 & 31).

Hydraulic Motor Part Nos.

2540-0806C (HM1C Models)
2540-0401C (HM2C Models)
2540-1606C (HM3C Models)
2540-0503C (HM4C Models)
2540-1006C (HM5C Models)

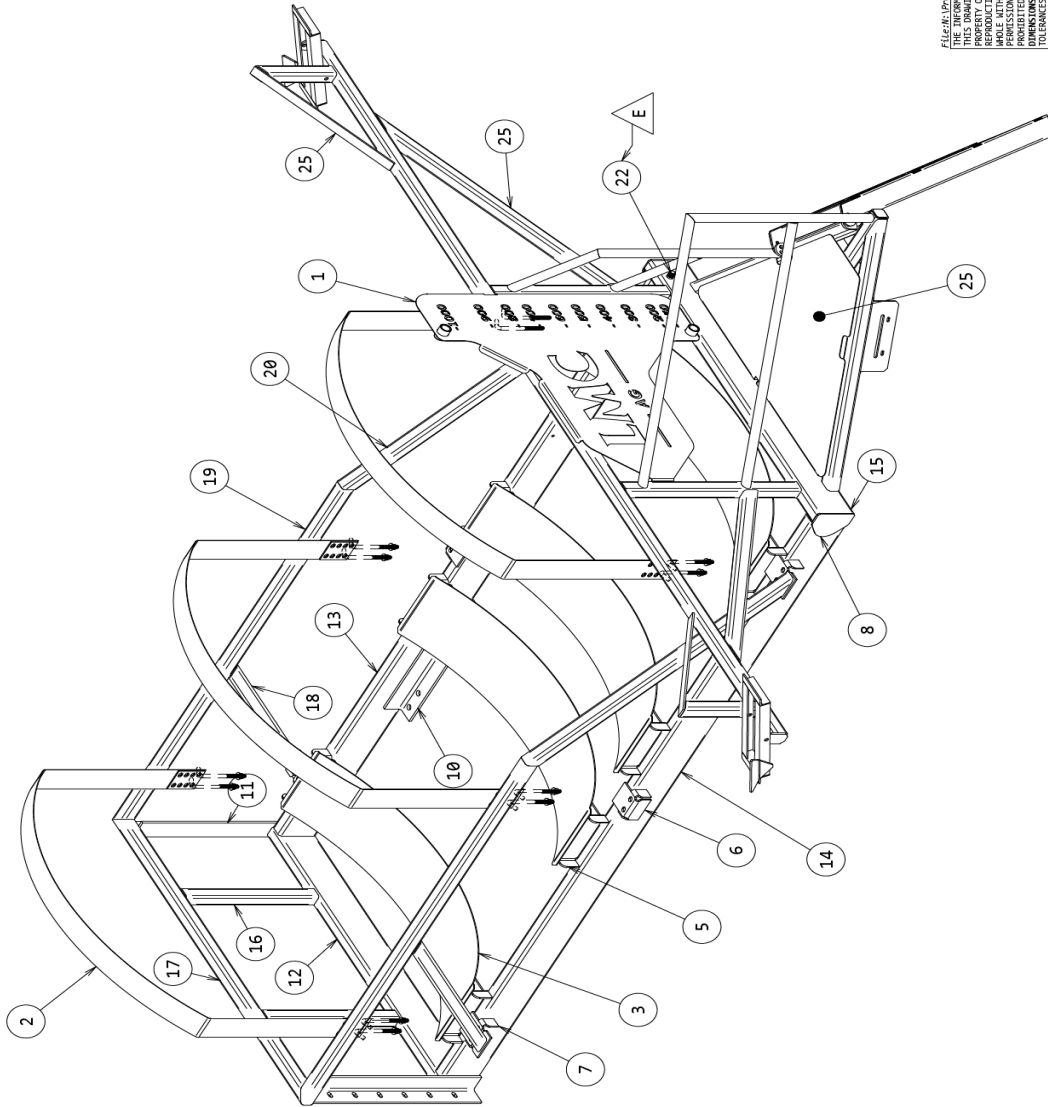
| Ref. No. | Qty. Req'd. | Part No. | Description |
|----------|-------------|-------------|--|
| 1 | 4 | 2406-0016 | Drain/Vent plug |
| 1A | 1 | 2406-0016 | Drain/Vent plug |
| 1B | 1 | 2406-0001 | Vent Plug |
| 2 | 1 | 0150-9000C | Pump Casing (9303C) |
| 2 | 1 | 0150-9000S | Pump Casing (9303S) |
| 2A | 1 | 0153-9000C | Pump Casing (Universal Flange Model C-U) |
| 2A | 1 | 0153-9000S | Pump Casing (Universal Flange Model S-U) |
| 2B | 1 | 3430-0480SP | Pump Casing Self Priming Cast Iron |
| 2B | 1 | 0150-9070S | Pump Casing Self Priming Stainless |
| 3 | 1 | 3430-0825 | Impeller Nut and Washer (Stainless and Cast Iron) |
| 4 | 1 | 0401-9100P | Impeller (Nylon std. 9303C) |
| 4 | 1 | 0402-9100P | Impeller (Polypropylene Optional) (Std. 9303S) |
| 5 | 1 | 3430-0332 | O-ring |
| 6 | 1 | 3430-0332 | Gasket |
| 7 | 1 | 3430-0332 | Mechanical Seal (Viton/Ceramic) (Std. 9303C) |
| 7 | 1 | 3430-0589 | Mechanical Seal (Viton/Silicon Carbide) (Std. 9303S) |
| 8 | 1 | 0750-9300C | Mounting Flange (9303 C) |
| 8 | 1 | 0756-9300S | Mounting Flange (9303 S) |
| 9 | 4 | 2210-0020 | Hex Head Cap Screw (9303C) |
| 9 | 4 | 2210-0125 | Hex Head Cap Screw (9303S) |
| 10 | 1 | 1410-0056 | Slinger Ring |
| 11 | 1 | 1810-0014 | Snap ring |
| 12 | 1 | 1820-0013 | Retaining Ring |
| 13 | 1 | 3430-0881 | Ball Bearing |
| 14 | 1 | 1410-0154 | Seal Spacer |
| 15 | 1 | 3430-0881 | Lip Seal |
| 16 | 1 | 2029-0014 | Thrust Bearing Assembly |
| 17 | 1 | 3430-0850 | Shaft (HM2/HM4) |
| 17 | 1 | 3430-0852 | Shaft (HM1/HM5) |
| 17 | 1 | 3430-0855 | Shaft (HM3) |
| 18 | 1 | 0150-2540C | Motor Body Non-Case Drain (Includes needle bearing) |
| 18 | 1 | 0150-2542C | Motor Body Case Drain SAE -4 (Includes needle bearing) |
| 19 | 4 | 2210-0005 | Hex Head Cap Screw |
| 20 | 1 | 3430-0881 | O-ring |
| 21 | 1 | 1600-0097 | Dowel Pin (HM2/HM4) |
| 21 | 1 | 1600-0095 | Dowel Pin (HM1) |

| | | | |
|----|---|-------------|---|
| 21 | 1 | 1600-0098 | Dowel Pin (HM5) |
| 21 | 1 | 1600-0096 | Dowel Pin (HM3) |
| 22 | 1 | 1600-0086 | Dowel Pin (HM2/HM4) |
| 22 | 1 | 1600-0084 | Dowel Pin (HM1) |
| 22 | 1 | 1600-0099 | Dowel Pin (HM5) |
| 22 | 1 | 1600-0085 | Dowel Pin (HM3) |
| 23 | 1 | 3900-0022 | Gerotor (HM1) |
| 23 | 1 | 3900-0023 | Gerotor (HM2) |
| 23 | 1 | 3900-0024 | Gerotor (HM3) |
| 23 | 1 | 3900-0025 | Gerotor (HM4) |
| 23 | 1 | 3900-0048 | Gerotor (HM5) |
| 24 | 1 | 0720-2601 | Gerotor Housing (HM2) |
| 24 | 1 | 0720-2602 | Gerotor Housing (HM4) |
| 24 | 1 | 0720-2603 | Gerotor Housing (HM1) |
| 24 | 1 | 0720-2604 | Gerotor Housing (HM5) |
| 24 | 1 | 0720-2606 | Gerotor Housing (HM3) |
| 25 | 1 | 0254-2500C2 | Motor End Plate -8,-10 SAE, Bypass (Includes needle bearing) |
| 25 | 1 | 0254-2500C3 | Motor End Plate -8,-10 SAE, No Bypass (Includes needle bearing) |
| 26 | 4 | 2270-0039 | Washer |
| 27 | 4 | 2220-0045 | Cap Screw (HM2, HM4) |
| 27 | 4 | 2220-0021 | Cap Screw (HM1) |
| 27 | 4 | 2220-0032 | Cap Screw (HM5) |
| 27 | 4 | 2220-0044 | Cap Screw (HM3) |
| 28 | 1 | 3430-0881 | O-ring |
| 29 | 1 | 3360-0021A | Pressure Port Adapter (Includes o-ring) |
| 30 | 1 | 3320-0051A | Tank Port Adapter (Includes o-ring) |
| 31 | 1 | 3430-0881 | O-ring |
| 32 | 1 | 3430-0881 | Gasket |
| 33 | 1 | 3430-0881 | Washer |
| 34 | 1 | 2250-0038 | Lock Nut |
| 35 | 1 | 3220-0029 | Bypass Screw |
| 36 | 1 | 1610-0032 | Roll Pin (HM2/HM4) |
| 36 | 1 | 1610-0031 | Roll Pin (HM1/HM5) |
| 36 | 1 | 1610-0055 | Roll Pin (HM3) |
| 37 | 1 | 1810-0026 | Snap ring |
| 38 | 1 | 1610-0012 | Woodruff Key (9303C) |
| 38 | 1 | 04432-SH1W | Woodruff Key (9303S) |



| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length |
|------|-------------|----------|--------------------|---------|
| 1 | EC212x134 | 2 | 0.075 Sheetmetal | 2 1/2 |
| 2 | EC2x2 | 4 | 0.075 Sheetmetal | 1 7/8 |
| 3 | BULK-005 | 1 | 0.12 Sheetmetal | 11 |
| 4 | 2005-01 | 1 | 0.25 Sheetmetal | 18 1/2 |
| 5 | 2005-02 | 6 | 0.25 Sheetmetal | 9 1/4 |
| 6 | 2021-W18 | 1 | 0.5 Sheetmetal | 7 |
| 7 | 2021-W19 | 2 | 0.5 Sheetmetal | 10 |
| 8 | 2005-03 | 2 | 0.75 Sheetmetal | 14 1/8 |
| 9 | 2005-04 | 2 | 0.75 Sheetmetal | 16 7/16 |
| 10 | 2005-05 | 2 | 0.75 Sheetmetal | 16 7/16 |
| 11 | 2005-06 | 2 | 0.75 Sheetmetal | 9 |
| 12 | 2021-20 | 2 | AngleIron 2x2x3/16 | 19 1/2 |
| 13 | 2021-W13 | 1 | AngleIron 2x2x3/16 | 4 |
| 14 | 2021-W12 | 2 | AngleIron 2x2x3/16 | 60 |
| 15 | 2021-W1 | 1 | RecTube 6x2x3/8 | 45 3/4 |
| 16 | 2021-W07 | 2 | RecTube 6x3x1/4 | 44 |
| 17 | 2021-W08 | 2 | RecTube 6x3x1/4 | 12 |
| 18 | 2021-W02 | 2 | SqTube 2x1/4 | 68 |
| 19 | 2021-W03 | 2 | SqTube 2x1/4 | 46 |
| 20 | 2021-W04 | 2 | SqTube 2x1/4 | 61 |
| 21 | 2021-W05 | 1 | SqTube 2x1/4 | 45 3/4 |
| 22 | 2021-W06 | 2 | SqTube 2x1/4 | 18 |
| 23 | S400-03 | 4 | SqTube 2x1/4 | 41 1/2 |
| 24 | S400-04 | 2 | SqTube 2x1/4 | 39 1/2 |
| 25 | S400-06 | 2 | SqTube 2x1/4 | 43 3/4 |
| 26 | 2021-W09 | 2 | SqTube 3x1/4 | 54 |
| 27 | 2021-W10 | 2 | SqTube 3x1/4 | 12 |
| 28 | 2021-W11 | 2 | SqTube 3x1/4 | 37 3/4 |

| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length | DWG |
|------|-------------|----------|------------------------------|----------|------------|
| 1 | 0502-08 | 1 | 0.075 Sheetmetal | 43 1/16 | |
| 2 | 0502-66 | 3 | 0.075 Sheetmetal | 110 5/16 | |
| 3 | 0502-37 | 4 | 0.12 Sheetmetal | 54 5/8 | |
| 4 | 0502-43 | 6 | 0.188 Sheetmetal | 4 1/4 | 81-HDPT |
| 5 | 0502-38 | 8 | 0.25 Sheetmetal | 12 7/16 | |
| 6 | 0502-50 | 2 | 0.25 Sheetmetal | 5 13/16 | |
| 7 | 0502-51 | 4 | 0.25 Sheetmetal | 5 13/16 | |
| 8 | BULK-14 | 2 | 0.25 Sheetmetal | 4 3/4 | BULK-14 |
| 9 | S600-45 | 2 | 0.375 Sheetmetal | 8 | |
| 10 | 0500-23 | 2 | Angle Iron 3x3x3/8" | 23 | Detail |
| 11 | S600-14 | 2 | Angle Iron:3x3x3/8 | 27 1/4 | Detail |
| 12 | 0502-34 | 1 | RecTube-6x2x3/16 | 54 | |
| 13 | 0502-35 | 1 | RecTube-6x2x3/16 | 119 | Detail |
| 14 | 0502-59 | 1 | RecTube-6x2x3/16 | 119 | |
| 15 | S600-62 | 1 | RecTube-6x2x3/16 | 54 | Detail |
| 16 | 0502-40 | 2 | SqTube-2x2x3/16 | 21 1/4 | |
| 17 | 0502-41 | 1 | SqTube-2x2x3/16 | 61 | Detail |
| 18 | 0502-42 | 2 | SqTube-2x2x3/16 | 31 5/8 | Detail |
| 19 | 0502-44 | 2 | SqTube-2x2x3/16 | 72 1/2 | Detail |
| 20 | 0502-52 | 2 | SqTube-2x2x3/16 | 46 | Detail |
| 21 | HM12C-NVL | 12 | x-Lock Nut 1/2" | 7/8 | |
| 22 | 79-2217-40 | 1 | x-M12x4 BI | | |
| 23 | 79-020-45 | 2 | xPurchase | | |
| 24 | FW12-SAE | 12 | xPurchase | | |
| 25 | 81-S600-01 | 1 | 81-Platform and Boom Craddle | 1 1/16 | 81-S600-01 |



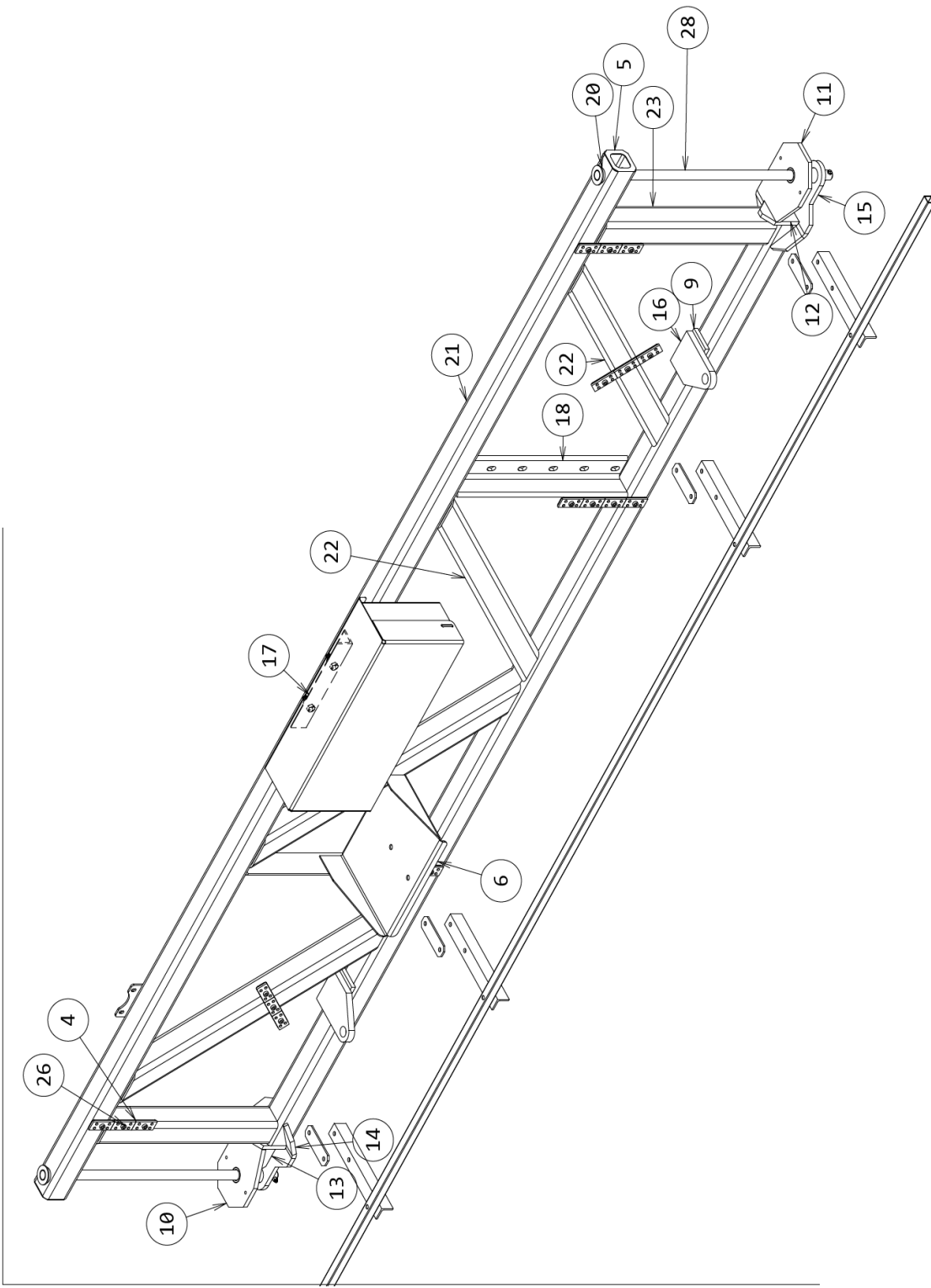
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 CREATED BY: jaryj
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1715 S. SLAPPEY
 ALBANY, GA. 31701
 PH: 229.639.1775

Product Line: 600 Series

CHECKED BY: JMW/2019
 CHECKED BY: JMW/2023
 FIG APPROVED BY:
 PART NUMBER: 82-9562 : HDPT 1000G Carriage
 REVISION:



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 DIMENSIONS ARE IN INCHES
 TOLERANCES (unless noted):
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 ANGULAR: +/- 1/2

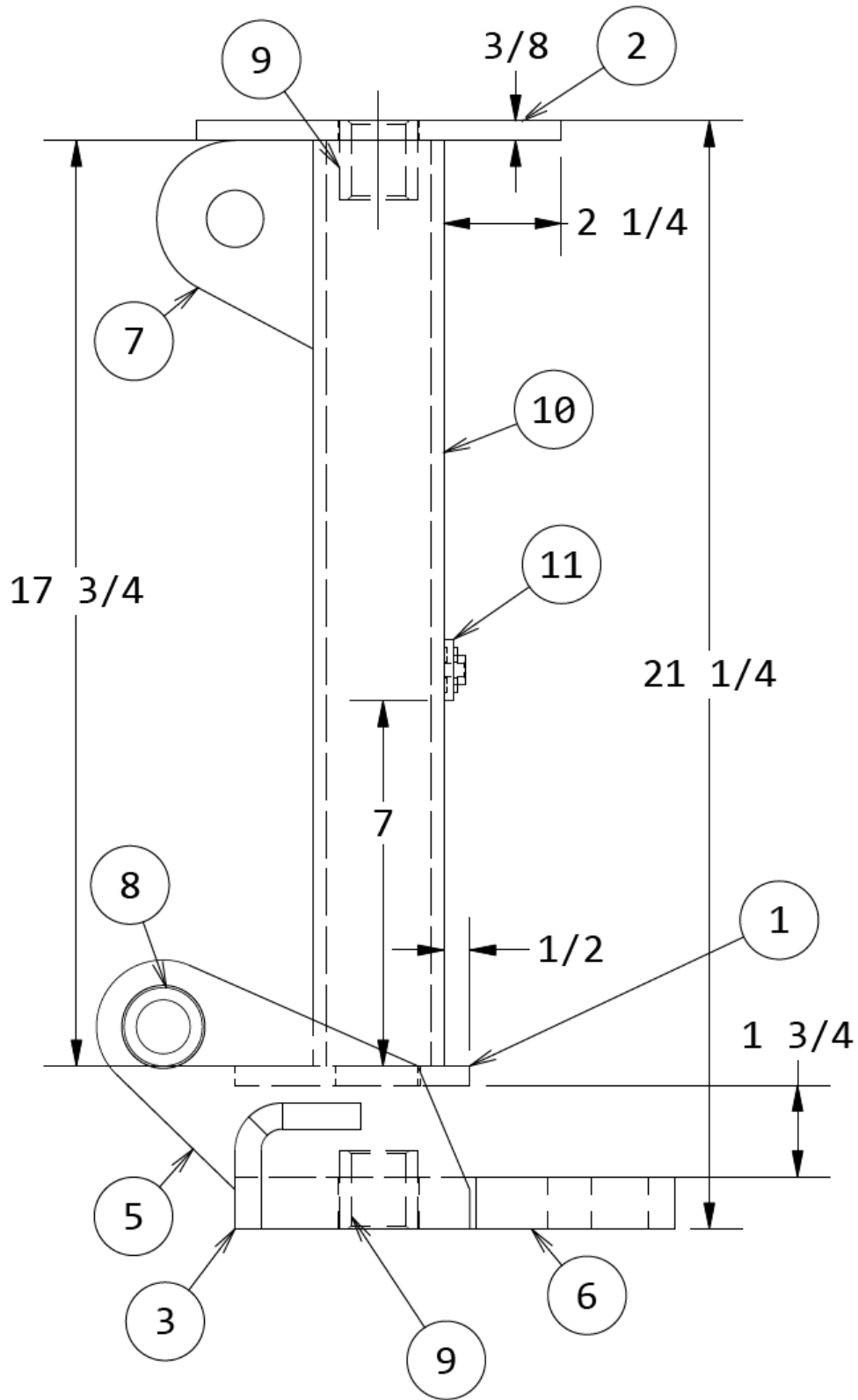
CREATED BY : aray
 CREATED : 08/09/19
 CHECKED BY : aray
 CHECKED : 02/01/23
 MFG APPROVED BY :
 MFG APPROVED :
 PART NUMBER : 85-9500-35 : HD 12' Center Section
 REVISION : M

1715 S. SLAPPEY
 ALBANY, GA. 31701
 PH: 229.639.1775

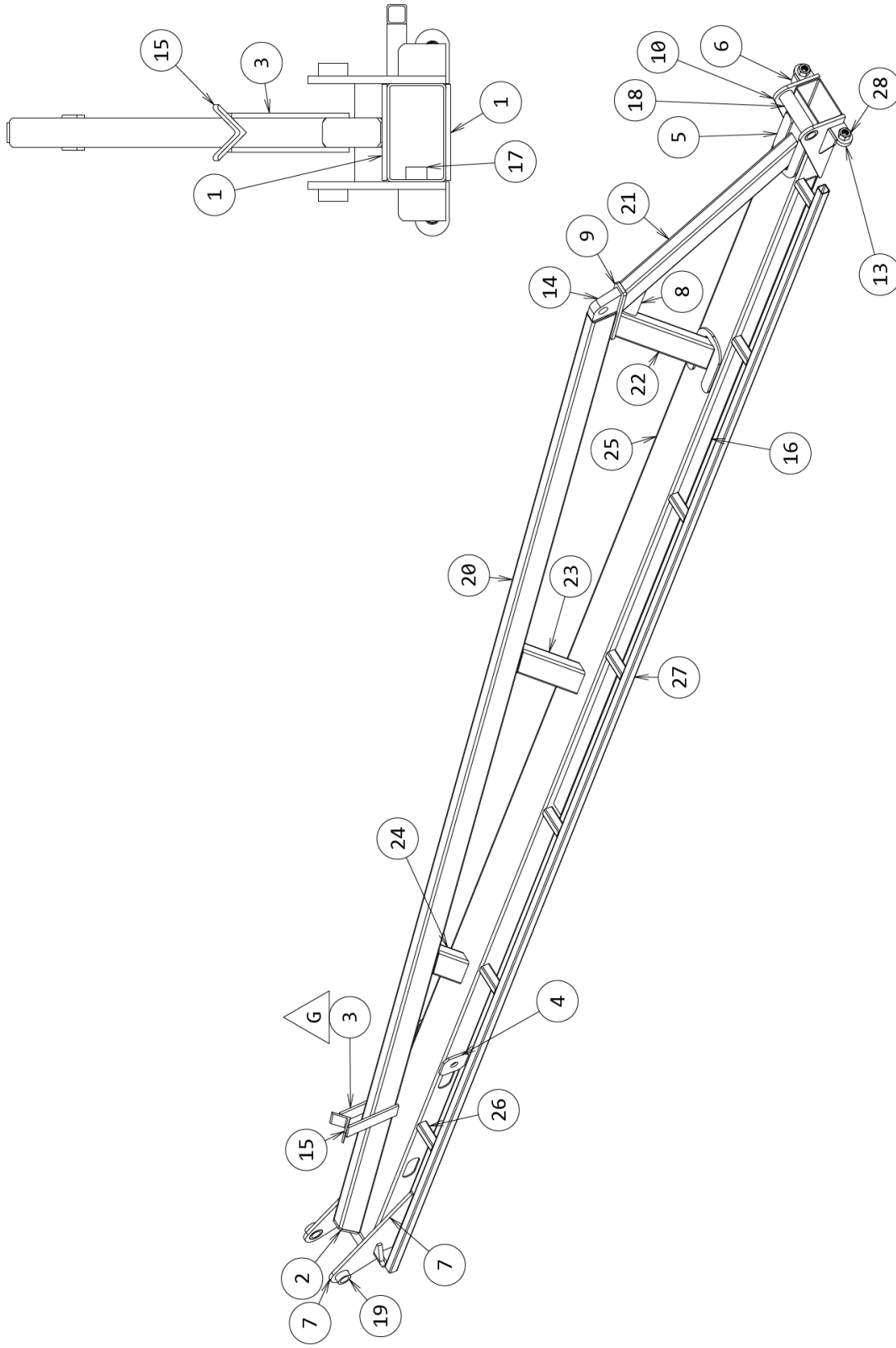


TITLE: Series 400

| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length |
|------|---------------|----------|-------------------------|----------|
| 1 | 9500-17 | 1 | 0.075 Sheetmetal | 30 5/16 |
| 2 | 9500-18 | 1 | 0.075 Sheetmetal | 10 1/8 |
| 3 | 9500-24 | 2 | 0.075 Sheetmetal | 11 |
| 4 | 9500-25 | 4 | 0.075 Sheetmetal | 8 1/4 |
| 5 | 9500-27 | 2 | 0.075 Sheetmetal | 3 |
| 6 | 9500-26 | 1 | 0.135 Tread Plate | 19 11/16 |
| 7 | 5019-21 | 1 | 0.188 Sheetmetal | 4 1/2 |
| 9 | 9500-12 | 2 | 0.5 Sheetmetal | 5 |
| 10 | 9500-29 | 1 | 0.5 Sheetmetal | 6 1/2 |
| 11 | 9500-29R | 1 | 0.5 Sheetmetal | 0 |
| 12 | 9500-32 | 2 | 0.5 Sheetmetal | 4 11/16 |
| 13 | 9500-33 | 2 | 0.5 Sheetmetal | 4 7/16 |
| 14 | 9500-34 | 1 | 0.5 Sheetmetal | 10 7/8 |
| 15 | 9500-34R | 1 | 0.5 Sheetmetal | 10 7/8 |
| 16 | 9500-05 | 2 | 0.75 Sheetmetal | 6 7/8 |
| 17 | 9500-07 | 1 | AI 2x2x3/16 | 12 |
| 18 | 9500-08 | 2 | AI 3x3x3/8 | 22 |
| 20 | 9500-10 | 4 | DOM TUBING 1-1/2 X 1 ID | 3 1/2 |
| 21 | 9500-13 | 1 | SQ. TUBING 3" x 1/4" | 147 3/8 |
| 22 | 9500-15 | 4 | SQ. TUBING 3" x 1/4" | 34 1/8 |
| 23 | 9500-16 | 2 | SQ. TUBING 3" x 1/4" | 22 |
| 25 | 9500-31 | 1 | SQtube:3x0.25 | 132 |
| 26 | 3252T6 Hose C | 20 | x-Twin 1" hose clamp | 2 3/4 |
| 27 | FW1-SAE | 2 | xPurchase | 0 |
| 28 | 82-9500-01 | 2 | xa-S400 Pivot Pin | |



| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length | Width |
|------|---------------|----------|--------------------------|--------|--------|
| 1 | 9501-01 | 1 | 0.375 Sheetmetal | 5 7/8 | 4 1/2 |
| 2 | 9501-03 | 1 | 0.375 Sheetmetal | 7 | 3 1/4 |
| 3 | 9501-02L | 1 | 0.5 Sheetmetal | 4 | 1 3/4 |
| 4 | 9501-02R | 1 | 0.5 Sheetmetal | 4 | 1 3/4 |
| 5 | 9501-04 | 2 | 0.5 Sheetmetal | 8 1/4 | 4 1/4 |
| 6 | 9501-05 | 1 | 1 Sheetmetal | 7 1/8 | 8 7/16 |
| 7 | 9501-06 | 1 | 1.000 in Sheetmetal | 3 | 4 |
| 8 | 9501-09 | 2 | DOM Tubing 1-1/2" x 1 ID | 1 | 1 1/2 |
| 9 | 9501-11 | 2 | DOM Tubing 1-1/2" x 1 ID | 1 1/2 | 1 1/2 |
| 10 | 9501-10 | 1 | SQ. TUBING 2-1/2"x1/4" | 17 3/4 | 2 1/2 |
| 11 | 3252T6 Hose C | 1 | x-Twin 1" hose clamp | 2 3/4 | 1 3/16 |



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 CREATED : 03/21/19
 CHECKED BY : aray
 CHECKED : 12/15/22
 MFG APPROVED BY :
 MFG APPROVED :
 DRAWING #: 85-9503 EH BOOM Sec A Long.idw
 REVISION: J

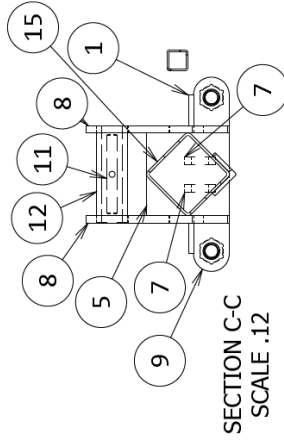
1715 S. SLAPPEY
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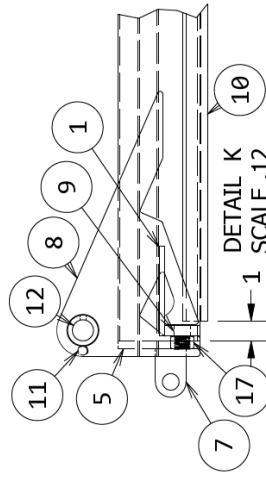
TITLE: Series 400 Boom

| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length |
|------|-------------|----------|------------------------------|---------|
| 1 | 9503-01 | 3 | 0.25 Sheetmetal | 4 7/8 |
| 2 | 9503-02 | 1 | 0.25 Sheetmetal | 3 7/8 |
| 3 | 9503-03 | 2 | 0.25 Sheetmetal | 6 |
| 4 | 9503-05 | 2 | 0.25 Sheetmetal | 3 |
| 5 | 9503-14 | 2 | 0.25 Sheetmetal | 8 |
| 6 | 9504-17 | 2 | 0.25 Sheetmetal | 4 7/16 |
| 7 | 9503-06 | 2 | 0.375 Sheetmetal | 13 7/16 |
| 8 | 9503-07 | 1 | 0.375 Sheetmetal | 6 3/16 |
| 9 | 9503-08 | 1 | 0.375 Sheetmetal | 9 |
| 10 | 9503-17 | 2 | 0.375 Sheetmetal | 11 9/16 |
| 11 | 9503-10 | 1 | 0.5 Sheetmetal | 4 |
| 12 | 9503-10R | 1 | 0.5 Sheetmetal | 4 |
| 13 | 9503-11 | 2 | 0.5 Sheetmetal | 1 3/4 |
| 14 | 9503-12 | 1 | 1 Sheetmetal | 3 3/8 |
| 15 | 9503-31 | 1 | ANGLE IRON 2""x 2"" x 3/16"" | 2 |
| 16 | 9503-26 | 1 | Angle Iron:1.5x1/8 | 119 |
| 17 | 9503-012 | 1 | Black Pipe 3/4" Sch40 | 1 1/16 |
| 18 | 9503-30 | 1 | DOM Tubing 1-1/2" x 1 ID | 5 3/4 |
| 19 | 9503-27 | 2 | DOM Tubing 1-1/2" x 1 ID | 1 1/2 |
| 20 | 9503-28 | 1 | RecTube 3"x1-1/2"-11GA | 185 3/4 |
| 21 | 9503-19 | 1 | RecTube 3"x1-1/2"-11GA | 28 1/8 |
| 22 | 9503-20 | 1 | RecTube 3"x1-1/2"-11GA | 25 1/8 |
| 23 | 9503-21 | 1 | RecTube 3"x1-1/2"-11GA | 17 1/2 |
| 24 | 9503-22 | 1 | RecTube 3"x1-1/2"-11GA | 10 |
| 25 | 9503-23 | 1 | RecTube 5"x3"x1/8" | 215 1/2 |
| 26 | 9503-32 | 7 | SQ. Tubing 1" 14GA | 3 |
| 27 | 9503-25 | 1 | SQ. Tubing 1" 14GA | 206 |
| 28 | HN34CG5 | 2 | xPurchase | 1 5/16 |

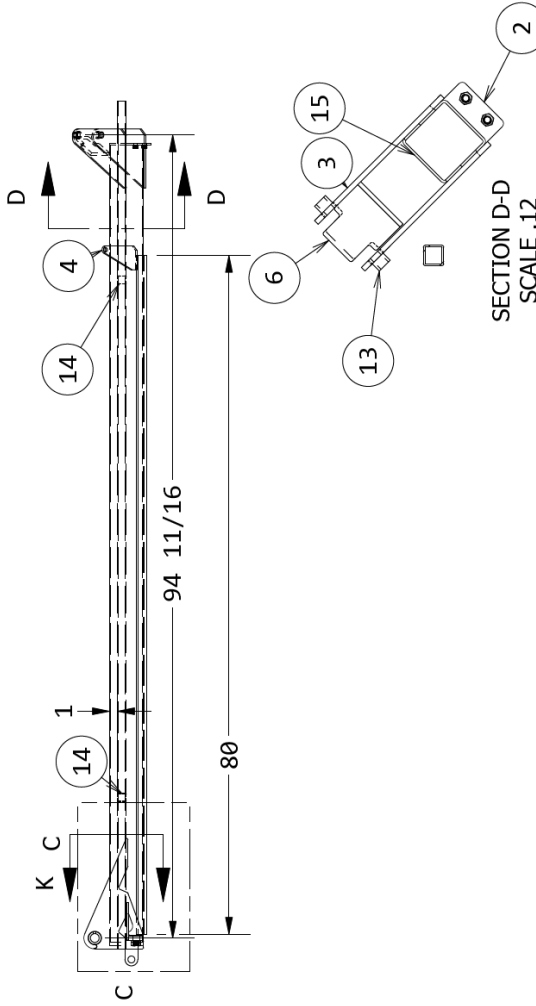
| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length | DWG | REV |
|------|-------------|----------|--------------------------------|---------|--------|-----|
| 1 | 9504-17 | 2 | 0.25 Sheetmetal | 4 7/16 | | G |
| 2 | 9504-18 | 1 | 0.25 Sheetmetal | 3 | | |
| 3 | 9504-19 | 2 | 0.25 Sheetmetal | 7 | | |
| 4 | BULK-016 | 1 | 0.25 Sheetmetal | 2 13/16 | | |
| 5 | 9504-20 | 1 | 0.375 Sheetmetal | 4 1/16 | | |
| 6 | 9504-21 | 1 | 0.375 Sheetmetal | 2 15/16 | | |
| 7 | 9504-22 | 2 | 0.375 Sheetmetal | 1 1/2 | | |
| 8 | 9504-25 | 2 | 0.375 Sheetmetal | 13 | | |
| 9 | 9503-11 | 2 | 0.5 Sheetmetal | 1 3/4 | | |
| 10 | 9504-16 | 1 | Angle Iron:1.5x3/16 | 80 | | |
| 11 | 9504-01 | 1 | COLD ROLL 1/2" | 3 7/8 | | |
| 12 | 9504-09 | 1 | DOM TUBING 1-1/2 X 1 ID | 4 3/4 | Detail | |
| 13 | 9504-02 | 2 | DOM TUBING 3/4" OD X .51" I.D. | 3/4 | | |
| 14 | 9504-13 | 2 | SQ.Tube:lin-14Ga. | 4 | Detail | |
| 15 | 9504-05 | 1 | SQ. Tubing 3"11GA | 94 | | |
| 16 | 9504-04 | 1 | SQ.Tube:lin-14Ga. | 100 | | L |
| 18 | HN38CG5 | 2 | xPurchase | 0 | | |



SECTION C-C
SCALE .12



DETAIL K
SCALE .12



SECTION D-D
SCALE .12

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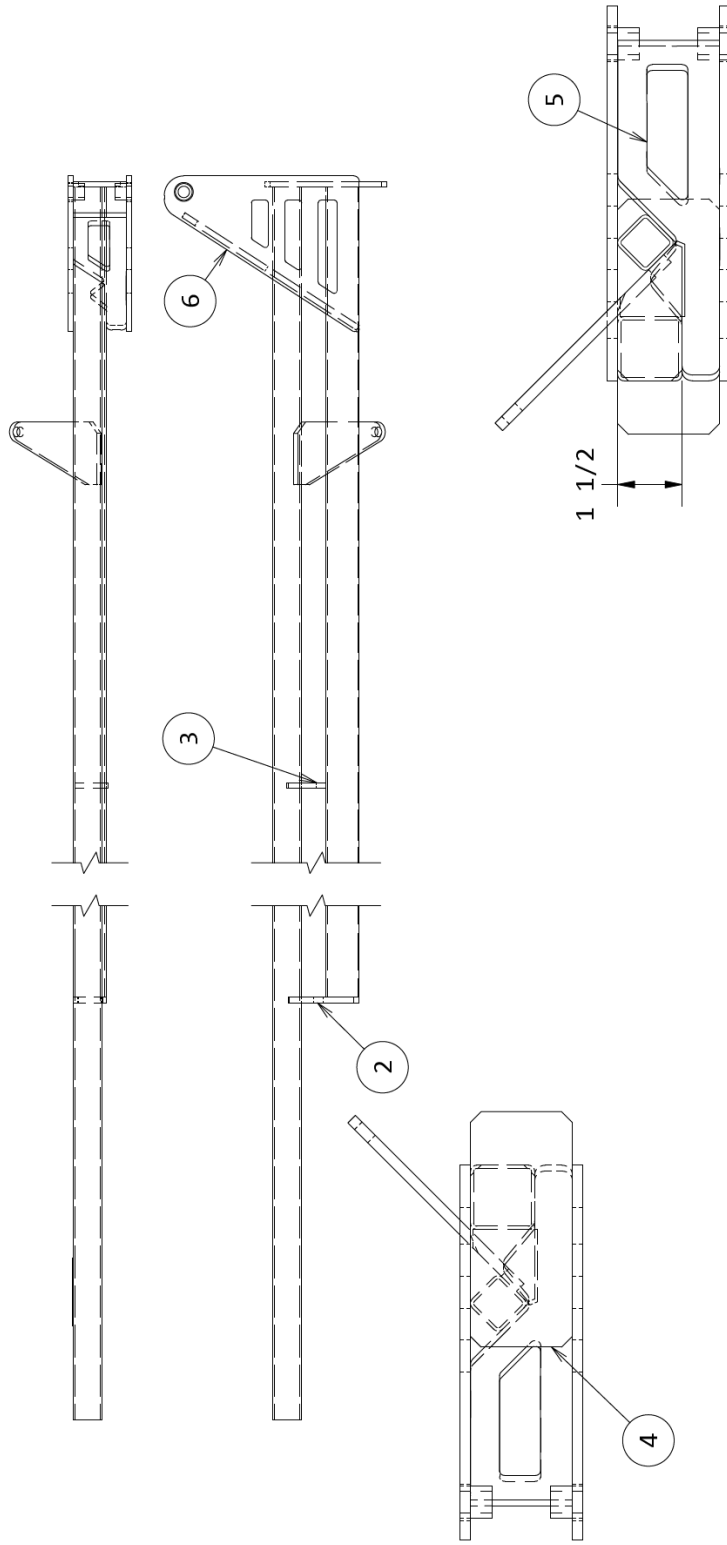
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 :04/02/19
 CHECKED BY :aray
 :12/08/22
 MFG APPROVED BY:
 MFG APPROVED :
 PART NUMBER :85-9504-35 S400 Boom SecB Long
 REVISION :L

1715 S. SLAPPEY
 ALBANY, GA, 31701
 PH: 229.639.1775



TITLE: Series 400 Boom

| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length | DWG |
|------|-------------|----------|--------------------------------|---------|-----|
| 1 | BULK-016 | 1 | 0.25 Sheetmetal | 2 13/16 | |
| 2 | 9505-09 | 1 | 0.25 Sheetmetal | 3 3/16 | |
| 3 | 9505-08 | 1 | 0.25 Sheetmetal | 1 3/4 | |
| 4 | 9505-07 | 1 | 0.25 Sheetmetal | 2 3/8 | |
| 5 | 9505-06 | 1 | 0.25 Sheetmetal | 6 3/4 | |
| 6 | 9505-02 | 2 | 0.25 Sheetmetal | 8 3/4 | |
| 7 | 9505-04 | 2 | DOM TUBING 3/4" OD X .51" I.D. | 3/4 | |
| 8 | 9505-01 | 1 | SQ. Tubing 1"14GA | 76 | |
| 9 | 9505-03 | 1 | SQ. Tubing 1-1/2"14GA | 57 | |



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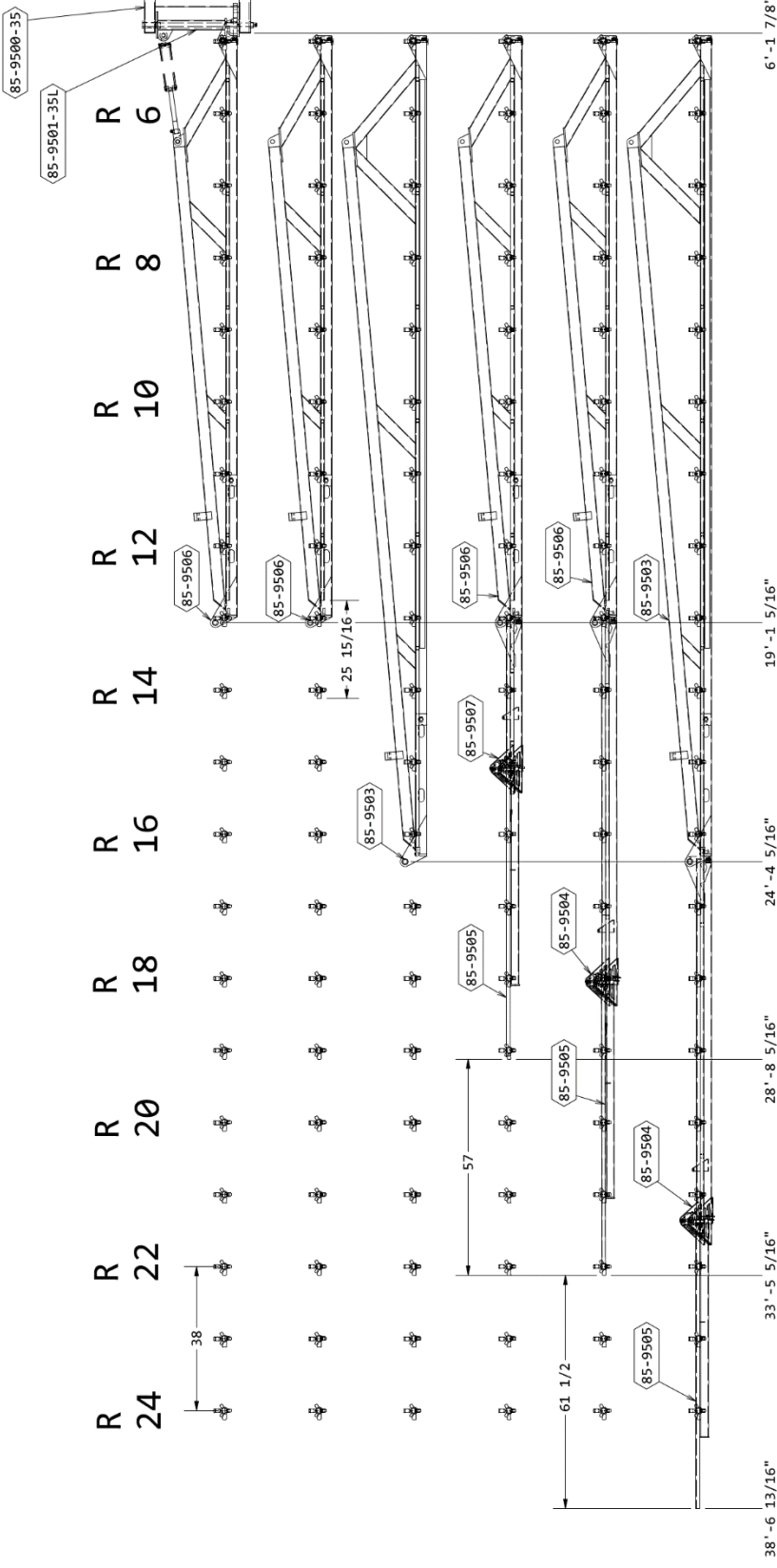
CREATED BY : aray
 CREATED : 04/03/19
 CHECKED BY : aray
 CHECKED : 12/12/22

MFG APPROVED BY :
 MFG APPROVED :
 PART NUMBER : 85-9505-35L : S400 Boom Sec. C
 REVISION : E

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 PH: 229.639.1775



Product Line: Series 400 Boom



| ITEM | PART NUMBER | ITEM QTY | COMMENTS | Length |
|------|---------------|----------|-------------------------|---------|
| 1 | 2002-01 | 8 | 0.12 Sheetmetal | 2 7/8 |
| 2 | 2002-29 | 2 | 0.375 Sheetmetal | 8 3/8 |
| 3 | 2002-03 | 4 | 0.375 Sheetmetal | 5 1/8 |
| 4 | 2002-06 | 2 | 0.375 Sheetmetal | 6 |
| 5 | 2002-07 | 8 | 0.375 Sheetmetal | 10 |
| 6 | 2002-12 | 2 | 0.375 Sheetmetal | 4 3/4 |
| 7 | 2002-25 | 2 | 0.375 Sheetmetal | 15 |
| 8 | 2002-14 | 2 | Angle Iron 3" x 3/8" | 22 |
| 9 | 2002-14v | 2 | Angle Iron 3" x 3/8" | 22 |
| 10 | 2002-21 | 1 | Black Pipe 1/2" Sch40 | 1 1/4 |
| 11 | 2002-22 | 8 | Black Pipe 1/2" Sch40 | 3 |
| 12 | 2002-05 | 2 | CRS-ROD:1 1/4 | 8 3/4 |
| 13 | 2002-24 | 2 | CRS-ROD:1 1/4 | 4 3/4 |
| 14 | 2002-17 | 2 | DOM:1 3/4 OD x 1 1/4 ID | 1 |
| 15 | 2002-19 | 2 | DOM:1 3/4 OD x 1 1/4 ID | 4 1/2 |
| 16 | 2002-20 | 2 | DOM:1 3/4 OD x 1 1/4 ID | 2 7/8 |
| 17 | 2002-28 | 4 | DOM:1 3/4 OD x 1 1/4 ID | 1/2 |
| 18 | 2002-04 | 4 | Flat Iron 1/4"x2" | 2 3/4 |
| 19 | 2002-23 | 1 | HOT ROLL 1 | 33 1/2 |
| 20 | 2002-16 | 2 | RecTube 3"x2"x1/4" | 22 |
| 21 | 2002-08 | 4 | RecTube:3x2x0.25 | 60 |
| 22 | 2002-10 | 2 | RecTube:3x2x0.25 | 22 |
| 23 | 2002-11 | 2 | RecTube:3x2x0.25 | 4 3/4 |
| 24 | 2002-27 | 2 | RecTube:3x2x0.25 | 19 3/8 |
| 25 | 2002-26 | 8 | UHMW 2"x1/4" Strip | 10 |
| 26 | HB123CG5 | 1 | x-1/2"x3" Bolt | |
| 27 | FW1-SAE | 4 | xPurchase | 0 |
| 28 | HN14CG5-NYL | 2 | xPurchase | 0 |
| 29 | 79-452-33 Coi | 2 | xPurchase | 7 1/2 |
| 30 | 77-004-85 | 4 | xPurchase | 2 3/8 |
| 31 | FW12-SAE | 16 | xPurchase | 1 1/16 |
| 32 | HB12112CG5 | 4 | xPurchase | 1 13/16 |
| 33 | HB12512CG5 | 8 | xPurchase | 5 13/16 |
| 34 | HB14212CG5 | 2 | xPurchase | 0 |
| 35 | HN12C-NYL | 13 | x-Lock Nut 1/2" | 7/8 |
| 36 | HN1CG5- HALF | 7 | xPurchase | 1 3/4 |

TROUBLESHOOTING

- SPRAYING
 - Unit not wanting to prime up.
 - Check the strainers to ensure they are free from debris.
 - Check all suction lines to ensure clamps and hoses are tight and not pulling air around the ends.
 - Ensure the tank has enough water in it. (Too little water in the tank will cause the pump to pull air from the suction fitting as you are driving through the field and the water is moving away from the fitting in the bottom of the tank).
 - Ensure the hydraulic lines to the pump are attached correctly and the flow from the tractor is going the right direction.
 - Ensure the valve from the tank is in the open position.
 - Spray valves do not open and close properly.
 - Ensure you have correct voltage running to the valve. (Power strips may not give you correct voltage and so you may have to run the power wire to the battery).
 - Make sure there is no trash or debris in the valves. This may require disassembling some parts to get a visual on the valves.
 - Hydraulic booms are not operating properly.
 - Make sure there are no hydraulic leaks on any of the hoses, cylinders, or valves.
 - Make sure that the hydraulic flow to the valves is not more than 3-5 gpm. High flow rates can cause the o rings to unseat causing improper function and leaking.
 - Make sure that there are orifice elbow fittings in the hydraulic cylinders to keep the hydraulics from over speeding boom functions.
 - Make sure that the pressure relief on the valve bank is adjusted properly.
 - Make sure that the electric connectors that are plugged to the solenoids are secured and not lose.
 -

USEFUL FORMULAS

$$\text{GPM (per nozzle)} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5,940}$$

$$\text{GPM (per nozzle)} = \frac{\text{GAL}/1000 \text{ ft}^2 \times \text{MPH} \times \text{W}}{136}$$

$$\text{GPA} = \frac{5,940 \times \text{GPM (per nozzle)}}{\text{MPH} \times \text{W}}$$

$$\text{GAL}/1000 \text{ ft}^2 = \frac{136 \times \text{GPM (per nozzle)}}{\text{MPH} \times \text{W}}$$

GPM – Gallons per minute

GPA – Gallons per acre

GAL/1000 ft² – Gallons per 1000 square feet

MPH – Miles per hour

W – Nozzle spacing (in inches) for broadcast spraying

– Spray width (in inches) for single nozzle, band spraying or boomless spraying

– Row spacing (in inches) divided by the number of nozzles per row for directed spraying



USEFUL FORMULAS FOR ROADWAY APPLICATIONS

$$\text{GPLM} = \frac{60 \times \text{GPM}}{\text{MPH}} \quad \text{GPM} = \frac{\text{GPLM} \times \text{MPH}}{60}$$

GPLM = Gallons per lane mile

Note: GPLM is not a normal volume per unit area measurement. It is a volume per distance measurement. Increases or decreases in lane width (swath width) are not accommodated by these formulas.

MEASURING TRAVEL SPEED

Measure a test course in the area to be sprayed or in an area with similar surface conditions. Minimum lengths of 100 and 200 feet are recommended for measuring speeds up to 5 and 10 MPH, respectively. Determine the time required to travel the test course. To help ensure accuracy, conduct the speed check with a partially loaded (about half full) sprayer and select the engine throttle setting and gear that will be used when spraying. Repeat the above process and average the times that were measured. Use the following equation or the table at right to determine ground speed.

$$\text{Speed (MPH)} = \frac{\text{Distance (FT)} \times 60}{\text{Time (seconds)} \times 88}$$

SPEEDS

| SPEED IN MPH | TIME REQUIRED IN SECONDS TO TRAVEL A DISTANCE OF: | | |
|--------------|---|--------|--------|
| | 100 FT | 200 FT | 300 FT |
| 1.0 | 68 | 136 | 205 |
| 1.5 | 45 | 91 | 136 |
| 2.0 | 34 | 68 | 102 |
| 2.5 | 27 | 55 | 82 |
| 3.0 | 23 | 45 | 68 |
| 3.5 | 19 | 39 | 58 |
| 4.0 | 17 | 34 | 51 |
| 4.5 | 15 | 30 | 45 |
| 5.0 | 14 | 27 | 41 |
| 5.5 | — | 25 | 37 |
| 6.0 | — | 23 | 34 |
| 6.5 | — | 21 | 31 |
| 7.0 | — | 19 | 29 |
| 7.5 | — | 18 | 27 |
| 8.0 | — | 17 | 26 |
| 8.5 | — | 16 | 24 |
| 9.0 | — | 15 | 23 |

NOZZLE SPACING

If the nozzle spacing on your boom is different than those tabulated, multiply the tabulated GPA coverages by one of the following factors. Different application rate charts for different spacing can be found on pages 179–182.

| 20° SPACING | |
|--------------------|-------------------|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 8 | 2.5 |
| 10 | 2 |
| 12 | 1.67 |
| 14 | 1.43 |
| 16 | 1.25 |
| 18 | 1.11 |
| 22 | 0.83 |
| 24 | 0.71 |
| 30 | 0.66 |

| 30° SPACING | |
|--------------------|-------------------|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 26 | 1.88 |
| 28 | 1.67 |
| 32 | 1.5 |
| 34 | 1.25 |
| 36 | 1.07 |
| 38 | 0.94 |
| 40 | 0.83 |
| 42 | 0.68 |
| 44 | 0.63 |

| 40° SPACING | |
|--------------------|-------------------|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 28 | 1.43 |
| 30 | 1.33 |
| 32 | 1.25 |
| 34 | 1.18 |
| 36 | 1.11 |
| 38 | 1.05 |
| 42 | 0.95 |
| 44 | 0.91 |
| 48 | 0.83 |

MISCELLANEOUS CONVERSION FACTORS

| | |
|--------------------------------|--------------------------------------|
| 1 Acre | = 43,560 square feet |
| | = 43.56 1000 ft ² Blocks |
| | = 0.405 Hectare |
| 1 Hectare | = 2.471 Acres |
| 1 GPA | = 2.9 fl oz per 1000 ft ² |
| | = 9.35 L/ha |
| 1 GAL per 1000 ft ² | = 43.56 GPA |
| 1 Mile | = 5,280 ft; 1,610 m |
| | = 1.61 Kilometers |
| 1 Gallon | = 128 fl oz; 8 Pints |
| | = 4 Quarts; 3.79 Liters |
| | = 0.83 Imperial Gallon |
| 1 PSI | = 0.069 bar |
| | = 6.896 kilopascals |
| 1 MPH | = 1.609 KPH |

SUGGESTED MINIMUM SPRAY HEIGHTS

The nozzle height suggestions in the table below are based on the minimum overlap required to obtain uniform distribution. However, in many cases, typical height adjustments are based on a 1:1 nozzle spacing to height ratio. For example, 110° flat spray tips spaced 20" apart are commonly set 20" above the target.

| TIP MODEL | ANGLE | HEIGHT (INCHES) | | |
|--|-------|-----------------|-------------|-------------|
| | | 20° SPACING | 30° SPACING | 40° SPACING |
| TP, TJ | 65° | 22–24 | 33–35 | NR* |
| TP, XR, TX, DG, TJ, AI, XRC | 80° | 17–19 | 26–28 | NR* |
| TP, XR, DG, TT, TTI, TJ, DGTJ, AI, AIXR, AIG, XRC, TTJ, AITTJ, TT160, APTJ | 110° | 16–18 | 20–22 | NR* |
| FullJet® | 120° | 10–18** | 14–18** | 14–18** |
| FloodJet® TK, TF, K, QK, QCTF, 1/4TTJ | 120° | 14–16*** | 15–17*** | 18–20*** |

* Not recommended.

** Nozzle height based on 30°–45° angle of orientation.

*** Wide angle spray tip height is influenced by nozzle orientation. The critical factor is to achieve a double spray pattern overlap.

SPRAYING LIQUIDS WITH A DENSITY OTHER THAN WATER

Since all the tabulations in this catalog are based on spraying water, which weighs 8.34 lbs per USA gallon, conversion factors must be used when spraying liquids that are heavier or lighter than water. To determine the proper size nozzle for the liquid to be sprayed, first multiply the desired GPM or GPA of liquid by the water rate conversion factor. Then use the new converted GPM or GPA rate to select the proper size nozzle.



Example:

Desired application rate is 20 GPA of 28% N. Determine the correct nozzle size as follows:

$$\text{GPA (liquid other than water)} \times \text{Conversion factor} = \text{GPA (from table in catalog)}$$

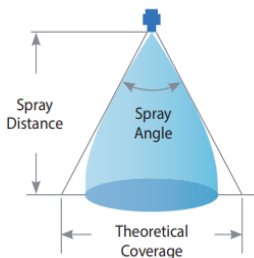
$$20 \text{ GPA (28\%)} \times 1.13 = 22.6 \text{ GPA (Water)}$$

The applicator should choose a nozzle size that will supply 22.6 GPA of water at the desired pressure.

| WEIGHT OF SOLUTION | SPECIFIC GRAVITY | CONVERSION FACTOR |
|--------------------|-------------------|-------------------|
| 7.0 lbs/gal | 0.84 | 0.92 |
| 8.0 lbs/gal | 0.96 | 0.98 |
| 8.34 lbs/gal | 1.00–Water | 1.00 |
| 9.0 lbs/gal | 1.08 | 1.04 |
| 10.0 lbs/gal | 1.20 | 1.10 |
| 10.65 lbs/gal | 1.28–28% Nitrogen | 1.13 |
| 11.0 lbs/gal | 1.32 | 1.15 |
| 12.0 lbs/gal | 1.44 | 1.20 |
| 14.0 lbs/gal | 1.68 | 1.30 |

SPRAY COVERAGE INFORMATION

This table lists the theoretical coverage of spray patterns as calculated from the included spray angle of the spray and the distance from the nozzle orifice. These values are based on the assumption that the spray angle remains the same throughout the entire spray distance. In actual practice, the tabulated spray angle does not hold for long spray distances.

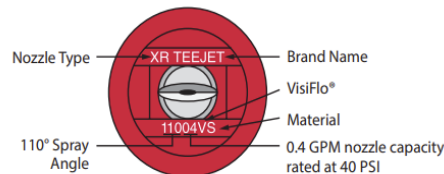


| INCLUDED SPRAY ANGLE | THEORETICAL COVERAGE AT VARIOUS SPRAY HEIGHTS | | | | | | | |
|----------------------|---|------|------|------|------|------|------|------|
| | 8" | 10" | 12" | 15" | 18" | 24" | 30" | 36" |
| 15° | 2.1 | 2.6 | 3.2 | 3.9 | 4.7 | 6.3 | 7.9 | 9.5 |
| 20° | 2.8 | 3.5 | 4.2 | 5.3 | 6.4 | 8.5 | 10.6 | 12.7 |
| 25° | 3.5 | 4.4 | 5.3 | 6.6 | 8.0 | 10.6 | 13.3 | 15.9 |
| 30° | 4.3 | 5.4 | 6.4 | 8.1 | 9.7 | 12.8 | 16.1 | 19.3 |
| 35° | 5.0 | 6.3 | 7.6 | 9.5 | 11.3 | 15.5 | 18.9 | 22.7 |
| 40° | 5.8 | 7.3 | 8.7 | 10.9 | 13.1 | 17.5 | 21.8 | 26.2 |
| 45° | 6.6 | 8.3 | 9.9 | 12.4 | 14.9 | 19.9 | 24.8 | 29.8 |
| 50° | 7.5 | 9.3 | 11.2 | 14.0 | 16.8 | 22.4 | 28.0 | 33.6 |
| 55° | 8.3 | 10.3 | 12.5 | 15.6 | 18.7 | 25.0 | 31.2 | 37.5 |
| 60° | 9.2 | 11.5 | 13.8 | 17.3 | 20.6 | 27.7 | 34.6 | 41.6 |
| 65° | 10.2 | 12.7 | 15.3 | 19.2 | 22.9 | 30.5 | 38.2 | 45.8 |
| 73° | 11.8 | 14.8 | 17.8 | 22.0 | 27.0 | 36.0 | 44.0 | 53.0 |
| 80° | 13.4 | 16.8 | 20.2 | 25.2 | 30.3 | 40.3 | 50.4 | 60.4 |
| 85° | 14.7 | 18.3 | 22.0 | 27.5 | 33.0 | 44.0 | 55.4 | 66.4 |
| 90° | 16.0 | 20.0 | 24.0 | 30.0 | 36.0 | 48.0 | 60.0 | 72.0 |
| 95° | 17.5 | 21.8 | 26.2 | 32.8 | 40.3 | 52.4 | 65.5 | 78.6 |
| 100° | 19.1 | 23.8 | 28.6 | 35.8 | 43.0 | 57.2 | 71.6 | 85.9 |
| 110° | 22.8 | 28.5 | 34.3 | 42.8 | 51.4 | 68.5 | 85.6 | 103 |
| 120° | 27.7 | 34.6 | 41.6 | 52.0 | 62.4 | 83.2 | 104 | |
| 130° | 34.3 | 42.9 | 51.5 | 64.4 | 77.3 | 103 | | |
| 140° | 43.8 | 54.8 | 65.7 | 82.2 | 98.6 | | | |
| 150° | 59.6 | 74.5 | 89.5 | | | | | |

NOZZLE NOMENCLATURE

There are many types of nozzles available, with each providing different flow rates, spray angles, droplet sizes and patterns. Some of these spray tip characteristics are indicated by the tip number.

Remember, when replacing tips, be sure to purchase the same tip type, angle, and capacity, thereby ensuring your sprayer remains properly calibrated.



FLOW RATE

Nozzle flow rate varies with spraying pressure. In general, the relationship between GPM and pressure is as follows:

$$\frac{GPM_1}{GPM_2} = \frac{\sqrt{PSI_1}}{\sqrt{PSI_2}}$$

This equation is explained by the illustration to the right. Simply stated, in order to double the flow through a nozzle, the pressure must be increased four times.

Higher pressure not only increases the flow rate through a nozzle, but it also influences the droplet size, spray angle, and the rate of orifice wear. As pressure is increased, the droplet size decreases and the rate of orifice wear increases.

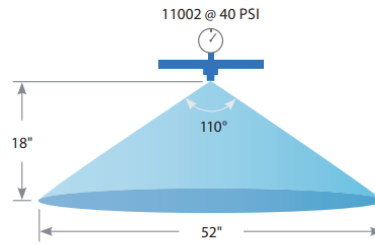
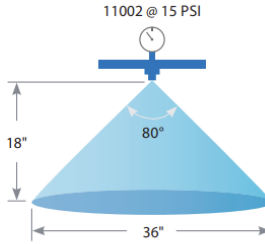
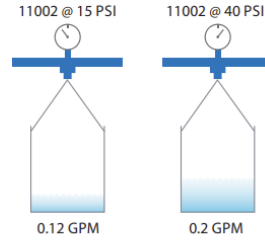
The values given in the tabulation sections of this catalog indicate the most commonly used pressure ranges for the associated spray tips. When information on the performance of spray tips outside of the pressure range given in this catalog is required, contact TeeJet Technologies or your local rep.

SPRAY ANGLE & COVERAGE

Depending on the nozzle type and size, the operating pressure can have a significant effect on spray angle and quality of spray distribution. As shown here for an 11002 flat spray tip, lowering the pressure results in a smaller spray angle and a significant reduction in spray coverage.

Tabulations for spray tips in this catalog are based on spraying water. Generally, liquids more viscous than water produce relatively smaller spray angles, while liquids with surface tensions lower than water will produce wider spray angles. In situations where the uniformity of spray distribution is important, be careful to operate your spray tips within the proper pressure range.

Note: Suggested minimum spray heights for broadcast spraying are based upon nozzles spraying water at the rated spray angle.



PRESSURE DROP THROUGH VARIOUS HOSE SIZES

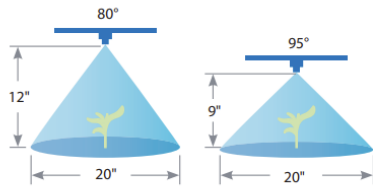
| FLOW IN GPM | PRESSURE DROP IN PSI (10' LENGTH WITHOUT COUPLINGS) | | | | |
|-------------|---|-----------|---------|---------|---------|
| | ¼" I.D. | 3/8" I.D. | ½" I.D. | ¾" I.D. | 1" I.D. |
| 0.5 | 1.4 | .2 | | | |
| 1.0 | | .7 | | | |
| 1.5 | | 1.4 | .4 | | |
| 2.0 | | 2.4 | .6 | | |
| 2.5 | | 3.4 | .9 | | |
| 3.0 | | | 1.2 | | |
| 4.0 | | | 2.0 | | |
| 5.0 | | | 2.9 | .4 | |
| 6.0 | | | 4.0 | .6 | |
| 8.0 | | | | .9 | .3 |
| 10.0 | | | | 1.4 | .4 |

HELPFUL REMINDERS FOR BAND SPRAYING

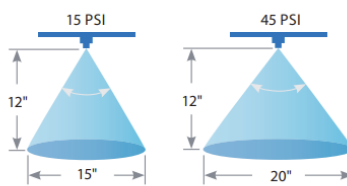
Wider angle spray tips allow the spray height to be lowered to minimize drift.

The spray angle of the nozzle and the resulting band width are directly influenced by the spraying pressure.

Example: Even Flat Spray



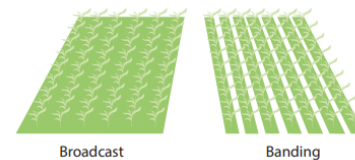
Example: 8002E Even Flat Spray



Use Care When Calculating:
Field Acres/Hectares vs.
Treated Acres/Hectares

$$\text{Field Acres/Hectares} = \frac{\text{Total Acres/Hectares of Planted Cropland}}{\text{Band Width}} \times \text{Row Spacing}$$

$$\text{Treated Acres/Hectares} = \frac{\text{Field Acres/Hectares}}{\text{Band Width}} \times \text{Row Spacing}$$





BROADCAST APPLICATION

Sprayer calibration (1) readies your sprayer for operation and (2) diagnoses tip wear. This will give you optimum performance of your TeeJet tips.

Equipment Needed:

- TeeJet Calibration Container
- Calculator
- TeeJet Cleaning Brush
- One new TeeJet Spray Tip matched to the tips on your sprayer
- Stopwatch or wristwatch with second hand

STEP NUMBER 1



Check Your Tractor/Sprayer Speed!

Knowing your real sprayer speed is an essential part of accurate spraying. Speedometer readings and some electronic measurement devices can be inaccurate because of wheel slippage. Check the time required to move over a 100- or 200-foot strip on your field. Fence posts can serve as permanent markers. The starting post should be far enough away to permit your tractor/sprayer to reach desired spraying speed. Hold that speed as you travel between the “start” and “end” markers. Most accurate measurement will be obtained with the spray tank half full. Refer to the table on page 184 to calculate your real speed. When the correct throttle and gear settings are identified, mark your tachometer or speedometer to help you control this vital part of accurate chemical application.

STEP NUMBER 2

$$A = \frac{B+C}{D} \quad \text{The Inputs}$$

Before spraying, record the following: **EXAMPLE:**

Spray tip type on your sprayer..... TT11004 Flat Spray Tip
(All tips must be identical)

Recommended application volume..... 20 GPA
(From manufacturer’s label)

Measured sprayer speed 6 MPH

Tip spacing 20 inches



STEP NUMBER 3



Calculating Required Nozzle Output



Determine GPM tip output from formula.

$$\text{FORMULA: } \text{GPM} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5,940 \text{ (constant)}}$$

$$\text{EXAMPLE: } \text{GPM} = \frac{20 \times 6 \times 20}{5,940} = \frac{2,400}{5,940}$$

ANSWER: 0.404 GPM

STEP NUMBER 4



Setting the Correct Pressure

Turn on your sprayer and check for leaks or blockage. Inspect and clean, if necessary, all tips and strainers with TeeJet brush. Replace one tip and strainer with an identical new tip and strainer on sprayer boom.

Check appropriate tip selection table and determine the pressure required to deliver the tip output calculated from the formula in Step 3 for your new tip. Since all of the tabulations are based on spraying water, conversion factors must be used when spraying solutions that are heavier or lighter than water (see page 185).

EXAMPLE: (Using above inputs) refer to TeeJet table on page 17 for TT11004 flat spray tip. The table shows that this spray tip delivers 0.40 GPM at 40 PSI.

Turn on your sprayer and adjust pressure. Collect and measure the volume of the spray from the new tip for one minute in the collection jar. Fine tune the pressure until you collect 0.40 GPM.

You have now adjusted your sprayer to the proper pressure. It will properly deliver the application rate specified by the chemical manufacturer at your measured sprayer speed.

STEP NUMBER 5



Checking Your System

PROBLEM DIAGNOSIS: Now, check the flow rate of a few tips on each boom section. If the flow rate of any tip is 10% greater or less than that of the newly installed spray tip, recheck the output of that tip. If only one tip is faulty, replace with new tip and strainer and your system is ready for spraying. However, if a second tip is defective, replace all tips on the entire boom. This may sound unrealistic, but two worn tips on a boom are ample indication of tip wear problems. Replacing only a couple of worn tips invites potentially serious application problems.



Banding and Directed Applications

The only difference between the above procedure and calibrating for banding or directed applications is the input value used for “W” in the formula in Step 3.

For single tip banding or boomless applications:

$$W = \text{Sprayed band width or swath width (in inches).}$$

For multiple nozzle directed applications:

$$W = \text{Row spacing (in inches) divided by the number of tips per row.}$$

