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(J&M)

Decals

#	Description: Decals	Part. No.
1	Grease Decal	JM0015104
2	Warning - Pinch Point	JM0014994
3	Down Pressure Decal	JM0035892
4	Warning - Insert Pin Before Road Transport	JM0038103
5	Danger - Electrocution Hazard	JM0035887
6	Caution - Observe Instructions	JM0035881
7	Danger - Crushing Hazard	JM0035883
8	J&M Oval	JM0038110
9	Warning - Towing Stability	JM0035882
10	Warning - High Pressure Fluid	JM0035880
11	NitroGro with J&M Decal	JM0039474
12	Open Tank Maintenance Valve	JM0039478
13	Close Tank Fill Valve	JM0035891
14	Open Agitation Valve	JM0039479
15	Check Filter Daily	JM0035884
16	Ground Drive Adjustment	JM0038102
17	Ground Drive Tire Pressure	JM0038101
18	2.0 x 9.0 Red Reflective Strip	JM0009945
19	2.0 x 9.0 Fluorescent Orange Strip	JM0009944
20	Nitrogro Logo5010L	JM0038114
20	Nitrogro Logo5010R	JM0038116
20	Nitrogro Logo5016L	JM0038117
20	Nitrogro Logo5016R	JM0038118
21	NitroGro Decal	JM0039473
22	J&M Website	JM0038108
23	2.0 x 9.0 Reflective Amber Strip	JM0009946
24	Jack Handle Storage	JM0038105
25	Warning - Cylinder Stops	JM0035890
26	Check Tire Pressure	JM0038097
27	Tighten Lug Nuts	JM0035885



Hydraulic Schematic





Hydraulic Schematic

	Description	Part No.
1	3/8" Male JIC x 1/2" Male ORB; 90 Degree Elbow	JM0037159
2	3-1/2" x 14" Welded Non-Cushion JD Cylinder	JM0055022
2	Seal Kit for 3-1/2" x 14" Hydraulic Cylinder (JD-629)	JM0074483
3	3/8" x 108" Hydraulic Hose 108inch6M3K-6G-6FJX-6G-6FJX	JM0041615
4	3/8" Male JIC x 3/8" Female JIC Swivel x 3/8" Male JIC; Tee	JM0037163
5	4" Bore, 24" Stroke Welded Hydraulic Cylinder - Heavier Clevises	JM0030730
5	Seal Kit for 4" x 24" Hydraulic Cylinder (JD-609)	JM0039242
6	3/8″ x 84″ Hydraulic Hose 84inch6M3K-6G-6FJX-6G-6FJX	JM0041613
7	4" Bore, 8" Stroke Welded Hydraulic Cylinder - Heavier Clevises	JM0030757
7	Seal Kit for 4" x 8" Hydraulic Cylinder (JD-608)	JM0039241
8	3/8"Male JIC x 3/8" Male NPT; Straight	JM0037167
9	Parker Flow Control Valve (NitroGro)	JM0041626
10	3/8" Male NPT x 3/8" Female JIC Swivel	JM0073350
11	Shaft for Down Pressure Cylinder (NitroGro)	JM0032428
12	1/2" Male JIC x 5/8" Male O-Ring; Straight	JM0010294
13	FMCSC-155F-HYD-206 - Ace Pump	JM0061538
13	Ace 155 Pump Hydraulic Side Replacement Seal Kit - RK-BAC-75-HYD-L	JM0061310
14	3/8" x 165" Hydraulic Hose 165inch6M3K-6G-6FJX-6G-8MP	JM0041612
15	Pressure Gauge 0-1500psi (NitroGro)	JM0037152
16	1/4" Male NPT x 1/4" Female NPT Rigid; 45 Degree Elbow	JM0037156
17	1/4" Female NPT x 3/8" Male JIC Compression Bulk Head Fitting	JM0037155
18	3/8" x 29-1/2" Hydraulic Hose 29.5inch6M3K-6G-6FJX-6G-6FJX90S	JM0041687
19	3/8" Male JIC x 1/2" Male ORB; Straight	JM0010302
20	3/8" Male JIC x 3/8" Female JIC Swivel; 90 Degree Elbow	JM0010295
21	3/8" Male JIC x 3/8" Male ORB; 90 Degree Elbow	JM0026121
22	Down Pressure Relief Valve	JM0034806
23	1/2" x 180" Hydraulic Hose 180inch8M3K-8G-8FJX-8G-8FJX	JM0073123
24	1/2" x 168" Hydraulic Hose 168inch8M3K-8G-8MP-8G-8FJX	JM0073122
25	3/8" x 84" Hydraulic Hose 84inch6M3K-6G-6FJX-6G-8MP	JM0054708
26	1/2" Female NPT x Male Pioneer - Low Flow, Ball Style	JM0039220
27	5000 Applicator Manifold Block ASM	JM0073299
28	3/8" Male JIC x 3/8" Female JIC with .062 Orifice	JM0047738
29	3/8" Male JIC x 1/2" Male NPT; Straight	JM0037172
30	Hydraulic PWM Control Valve for Nitrogen Fertilizer Pump (F14264A1)	JM0059223
31	1/2" Male JIC x 1/2" Male O-ring; Straight	JM0010293
32	1/2" Male JIC x 1/2" Male JIC; Straight	JM0041452
33	3/8" Male JIC x 3/8" Female JIC with .094 Orifice	JM0047735
34	1/2" Female NPT x Male Pioneer - High Flow, Cone Style	JM0018254
35	Main Manifold Block (NitroGro)	JM0028902



- 1. Bolt on the back frame to the right leg (JM0058704) and left leg (JM0058706) of the frame with (14) 3/4" x 2-1/2" bolts and (14) 3/4" centerlock hex nuts.
- 2. Bolt on axle (JM0058314) with (8) 1" x 3" bolts and (8) 1" centerlock hex nuts.
- 3. Set the frame up on blocks. Use a tape measure to ensure the back corner of the applicator frame is approximately 30" off the ground.





7. Connect the corresponding hoses to the fittings as shown in the previous steps and drape them as shown in the images below.



8. Mount the tank saddles (JM0036718) 3 for 5010 models and 5 for the 5016 models. On the rear of the saddles there are two sets of holes. One set of holes has two holes and one has three holes. Place the saddle on the frame so the set with two holes is towards the passenger side of the applicator. Mount the rear tank saddle first. The rear and middle tank saddles are fastened using the back set of holes for 5010, and front set of holes for a 5016. Fasten with (4) 3/8"-16 x 1" Gr5 Z SF Hex Bolt and (4) 3/8"-16 Gr5 Z SF Hex Nut on each tank saddle.





- 9. Bolt on light bars (JM0036071) using (2) 1/2" x 2-1/4" bolts and (2) 1/2" centerlock hex nut. Use the outside holes in the frame when mounting the light bars.
- 10. Secure rear lights onto the light bars (JM0036071) with (4) 1/4" x 1" bolts and (4) 1/4" serrated flange nuts for each light. Red lights face out from the applicator and are located closer to the inside of the applicator while yellow lights are located closer to the outside.



11. Guide the rear light harness through the conduit on the inside of the rear applicator frame. Guide the end of wire harness that is labeled "Left" through the conduit towards the left (driver's side) light bar. Push the end of the harness that is labeled "Right" through the light bar on the right (passenger's) side.



12. Prep the front hydraulic hose guard (JM0034836) by attaching the pressure gauge (JM0037152) with 1/4" Male NPT x 1/4" Female NPT Rigid; 45 Degree Elbow (JM0037156) and 1/4" Female NPT x 3/8" Male JIC Compression Bulk Head Fitting (JM0037155).



13. Use (2) 3/8" x 4" bolts, (2) 2" plastic spacers (JM0002444), and (2) 3/8" serrated flange nuts to fasten down pressure relief valve bank (JM0034806) to the front hydraulic hose guard. Connect hose (JM0041687) from pressure gauge to down pressure relief valve bank.



14. Run the (2) 1/2" x 168" hoses (JM0073122) up the tongue and connect one to the PWM control valve (JM0059223) and one to a 1/2" Male JIC x 1/2" Male JIC; Straight fitting (JM0041452). On the other side of the fitting and the PWM valve connect (2) 1/2" x 180" hoses (JM0073123) and run it from the top of the tongue along the frame of the applicator all the way to the hydraulic pump on the right/passenger side. Later in this process, these hoses will connect to the pump. Mount the front hose guard using (4) 3/8" x 1" serrated flange bolts and (4) 3/8" serrated flange nuts. Mount the PWM valve to the top and inside of the tongue shroud using (2) 5/16"-18 x 2-1/2" Gr5 Z Hex Bolts and (2) 5/16"-18 Gr5 Z SF Hex Nuts as shown in the image below.



15. Connect the hoses from the valve bank on top of the frame to the down pressure relief valve bank on the middle of the tongue. Connect (2) 3/8" x 84" hoses from the down pressure relief valve bank and drape the hose past the front of the tongue. Attach the high flow poineer coupler (JM0018254) to the hose that goes to the hydraulic motor but not to the PWM valve, then attach (5) low flow pioneer couplers (JM0039220) to the rest of the hoses draped in front of the tongue. Please look to the beginning of this manual to reference where hydraulic hoses should connect.



Tank

 Holes are predrilled in the tank for the fittings. Add fittings in the two holes in the back of the tank, one 3/4" NPT Bulkhead Tank Flange Assembly (JM0035222) and one 1-1/2" Poly Bulkhead Tank Fitting with EPDM Gasket (JM0061522). Then one 3/4" NPT Bulkhead Tank Flange Assembly (JM0035222) for the hole in the front. The rubber o-ring on the fitting goes inside the tank and the nut will screw on from the outside. These are left-handed thread fittings. Then use a 1-1/2" Male Thread x 1-1/2" 90 deg Hose Barb (JM0061527) and (2) 3/4" Hose Barb x 3/4" Male NPT; 90 Deg (JM0035226) respectively.



2. Place the tank on the saddles by using an overhead hoist. The lid should be positioned to the back of the applicator.



3. Measure the back of the tank from the frame to the seam at the center of the tank. Center the tank so the distance measures about 25" on each side (as shown below).



4. Fasten the tank to the saddles using the (3) or (5) tank straps (JM0030208) depending on whether you have a 5010 or 5016. The tank straps use (4) 1/2" x 4-1/2" fully threaded bolts and (4) centerlock nuts per strap.



5. Zip tie each circut of hoses together. Attach hydraulic hose holder to frame. Hook all hydraulic hoses through the hydraulic hose holder on the tongue shroud.



- 6. Attach jack mounting bracket (JM0031545) to the mounting plate which is welded on the underside of the frame using a 1" x 6" bolt and 1" centerlock hex nut.
- 7. Using a fork lift or overhead hoist, lift the front end of the applicator off the ground enough to align the four holes on the jack (JM0030054) with the four holes on the mounting bracket. Secure the jack to the mounting bracket with (4) 5/8" x 2" Gr8 hex bolts and (4) 5/8" centerlock hex nuts. Tighten the bolts and keep the jack in place using the 3/4" L-pin for mounting plate centerlock pin for top of the jack.



8. Run the 1-1/2" x 180" (JM0040330) hose for 5010 applicator or 1-1/2" x 228" (JM0040211) for the 5016 applicator from the back to the front of the applicator. Let it sit loose for the next couple of steps on the passenger side.



9. Attach pump mounting bracket (JM0034960) using (2) 3/8" x 1" serrated flange bolts and (2) 3/8" serrated flange nuts. Attach pump using (2) 3/8" x 1-1/2" bolts and (2) 3/8" serrated flange nuts on rear tank saddle front plate.



10. Add the manifold fittings as shown in the image below.





	Description	Part No.
1	3/4" Hose Clamp SS	JM0039205
2	M100 Manifold Flange x 3/4" Hose Barb; Straight	JM0021401
3	Manifold Flange Clamp for M100 Fittings	JM0032496
4	Manifold Gasket for M100 Fittings with Rib	JM0035239
5	Ball Valve with M100 Manifold Flange	JM0033824
6	Hose Clamp - 1-13/16" Min, 2-1/16" Max	JM0021189
7	2" Manifold Flange x 90 Deg 1-1/2" Hose Barb	JM0034352
8	M200 Manifold Flange x M200 Manifold Flange x M100 Manifold Flange; Tee	JM0035116
9	Manifold Gasket for M200 Fittings	JM0021145
10	Manifold Flange Clamp for M200 Fittings	JM0035251
11	90° Coupling - 2" Manifold Flange	JM0033991
12	Manifold Y Strainer - M200 Manifold Flange, 30 Mesh	JM0033803
13	FMCSC-155F-HYD-206 - Ace Pump	JM0061538
14	Manifold Gasket for M220 Fittings	JM0035278
15	Manifold Flange Clamp for M220	JM0035238
16	2" Hose Barb x M220 Manifold Flange; Straight	JM0033796
17	T-Bolt Hose Clamp 2" Hose, 2-5/16" Min OD	JM0035247
18	3/8"-16 Gr5 Z SF Hex Nut	JM0002152
19	3/8"-16 x 1" Gr5 Z SF Hex Bolt	JM0002092
20	Plate - Hydraulic Fertilizer Pump Mounting (5000)	JM0034960
21	3/8"-16 x 1-1/2" Gr5 Z SF Hex Bolt	JM0001633
22	Ace 155 Pump Hydraulic Side Replacement Seal Kit - RK-BAC-75-HYD-L	JM0061310
23	Ace 155 Pump Water Side Replacement Seal Kit - RK-FMCSC-150	JM0061308

11. Connect hydraulic hoses to the small pump. The hose that is coming from the PWM vlave will plug into the inlet opening of the motor, while the other hose connects to another hose that goes to the high flow pioneer These hoses will connect to the outlet fitting on the motor. There will be markings (arrows and I for inlet and O for outlet) as to which one is inlet vs outlet on the hydraulic motor itself. This step is **CRITICAL**, please reference the hydraulic schematic.



12. Attach 1-1/2" pressure hose and tighten clamp (JM0021189) (use lubricant to slip hose on fitting). Pull hose tight through D-rings to the front of the applicator.



13. Attach the hitch as well as the safety chain and hose holder bracket using the hardware shown in the images below.



	Description	Part No.
1	30k LB Safety Chain Set (2 Chains)	JM0027440
2	NitroGro Applicator Safety Chain Spacer	JM0059128
3	3/4"-10 x 6" Gr8 Z Hex Bolt	JM0037185
4	3/8"-16 x 3/4" Gr5 Z Hex Bolt	JM0001663
5	1/2" Hose Holder Rod (12HHR)	JM0027120
6	CTD Perfect Hitch Base PP23XLR	JM0037174
7	CTD Perfect Hitch Clevis 1-1/4" x 1-3/4" Slot	JM0037173
8	3/4"-10 Gr2 Z Centerlock Hex Nut	JM0002147
9	3/4" USS Z Flat Washer	JM0010006
10	CTD Perfect Hitch Assembly (NitroGro) (Includes Bolt & Nut)	JM0037177

14. Assemble the flow control monitor and manifold parts. Be sure to install a gasket between each connection point of the manifold. Then attach flow control mount using (4) 3/8" x 1" serrated flange bolts and (4) 3/8" serrated flange nuts.



	Description	Part No.
1	M100 Manifold Flange x 3/4" Hose Barb; 90 Degree	JM0032501
2	3/4" Hose Clamp SS	JM0039205
3	Mount For Control Valves and Flow Monitors - 5000 Universal	JM0077615
4	Raven Flow Meter RFM60P	JM0032488
5	Manifold Flange Clamp for M100 Fittings	JM0032496
6	Manifold Gasket for M100 Fittings with Rib	JM0035239
7	Manifold Flange Clamp for M200 Fittings	JM0035251
8	Manifold Plug for M200 Fittings with 1/4" NPT for Gauge	JM0021147
9	Pressure Gauge Stainless Steel 0-100psi, 1/4" NPT	JM0036636
10	1/4" Male NPT x 1/4" Female NPT; 90 Degree Elbow	JM0020115
11	5000 Series Sun Shield	JM0077626
12	5000 Series Lower Sun Shield	JM0077633
13	Raven Boom Valve	JM0032478
14	M200 Manifold Flange x M200 Manifold Flange x M100 Manifold Flange; Tee	JM0035116
15	3/8"-16 x 2-1/2" x 5-1/4" Round U-Bolt	JM0018627
16	3/8"-16 Gr5 Z SF Hex Nut	JM0002152
17	3/8"-16 x 1" Gr5 Z SF Hex Bolt	JM0002092
18	Manifold Gasket for M200 Fittings	JM0021145
19	2" Manifold Flange x 90 Deg 1-1/2" Hose Barb	JM0034352
20	Hose Clamp - 1-13/16" Min, 2-1/16" Max	JM0021189
21	100psi Spike Valve with M100 Manifold Flanges	JM0032499
22	1/4"-20 x 1/2" Gr5 Z Hex Bolt	JM0001481

Shaded cells make up an assembly JM0032484 (3 of item 7, 3 of item 8, 1 of item 13, and 1of item 18)

15. Connect the 1-1/2" pressure hose to the Raven control valve as shown and tighten clamp (JM0021189). Connect wire harness that comes with Raven control (JM0055255).





16. Below are the parts for our flow monitors and the hardware used to connect them to the mount.



17. Assemble the fill and sump manifold fittings then attach them to the locations shown in the following steps. Assembly for a 2" fill setup.



	Description	Part No.
1	1/2"-13 Gr2 Z Centerlock Hex Nut	JM0001511
2	1/2"-13 x 1" Gr5 Z Hex Bolt	JM0010225
3	Mounting Plate - 2" Ball Valve (NitroGro)	JM0034889
4	Cable Lanyard	JM0039282
5	T-Bolt Hose Clamp 2" Hose, 2-5/16" Min OD	JM0035247
6	2" Hose Barb x M220 Manifold Flange; Straight	JM0033796
7	Manifold Flange Clamp for M220	JM0035238
8	2″ Full Port Flange Ball Valve	JM0031370
9	Manifold Gasket for M220 Fittings	JM0035278
10	2" Full Port Manifold x 2" Male QDC	JM0035249
11	2" QD Cap (NitroGro)	JM0035250
12	2" Male MPT X 2" Full Port Manifold Flange	JM0033793
13	90 Degree Coupling - 2" Full Port Manifold Flange	JM0033795
14	2" Full Port Manifold Tee - 220 Series	JM0033797



	Description	Part No.
1	1/2"-13 Gr2 Z Centerlock Hex Nut	JM0001511
2	1/2"-13 x 1" Gr5 Z Hex Bolt	JM0010225
3	Cable Lanyard (NitroGro)	JM0039282
4	T-Bolt Hose Clamp 3" Hose, 3-5/16" Min OD	JM0035248
5	3" Manifold Flange x 3" Hose Barb	JM0021244
6	Manifold Flange Clamp for M300 Fittings	JM0035237
7	Ball Valve Mount Plate 3" Banjo (NitroGro)	JM0034894
8	Ball Valve - 3" Full Port Flange Manifold	JM0021230
9	Manifold Gasket for M300 Fittings with Rib	JM0021239
10	3" Manifold Flange x 3" QDC Male	JM0035205
11	3" Poly Cam Lever Cap	JM0035206
12	3" MNF x 3" FNPT Tank Fitting BTM DRN	JM0035114
13	3" Manifold Tee	JM0021232
14	M300 Manifold Flange x M300 Manifold Flange; 90 Degree	JM0033979
15	3" Manifold Flange x 2" Hose Barb	JM0034333
16	T-Bolt Hose Clamp 2" Hose, 2-5/16" Min OD	JM0035247

18. Connect tank shut off value to the fitting at the bottom of the tank and tighten clamp. Ensure that the gasket is centered when connecting. Should be angled towards the fill value.



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Mount the ball valve to the mount plate to rear driver's side of applicator using (2)1/2" x 1-3/4" hex bolts and
(2) 1/2" centerlock hex nuts. A wire hangs on the cap of the valve. Before fastening the bolts with the nuts, loop one eyelet of the wires over the bolt between the plate and the frame (as shown below).





20. Connect tank shut off valve to fill valve with 2" x 36" hose (JM0040215) for 5010 applicators and 3" x 38" hose (JM0040216) for 5016 applicators. Connect tank shut off valve to the pump using 2" x 32" hose (JM0040224). Tighten all four clamps (JM0035247).



21. Attach 3/4" x 55" hose (JM0040332) from top front of tank to banjo relief valve on Raven control and tighten clamps (JM0039205).



22. Attach water tank (JM0030587) with (4) 5/16"-18 x 1/2" Gr5 Z Hex Bolts. Use plastic thread dope for spout attachment and plugs.



23. Attach manual canister (JM0010115) to rear driver's side of applicator using (3) 1/4" - 3/4" bolts, (3) 1/4" USS flat washers and (3) 1/4" serrated flange hex nuts.



	Description	Part No.
1	1/4"-20 Gr5 Z SF Hex Nut	JM0001630
2	1/4″ ID, 3/4″ OD Z Flat Washer	JM0003090
3	1/4"-20 x 3/4" Gr5 Z Hex Bolt	JM0001507
4	Operator's Manual Canister	JM0010115
5	Slow Moving Vehicle Sign	JM0001616



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Toolbar

1. Set up main toolbar (JM0039525) with the front section level and the back section elevated slightly.



2. Mount down pressure cylinder linkage plates(4) (JM0034014) and center down pressure cylinder (JM0030757) with shaft for down pressure cylinder (JM0032428) to the front section with (6) pins (JM0077071). The pins are secured using (6) 1"-8 centerlock hex nuts and adding a grease zerk (JM0009756) to the inside of the pin.



3. Mount the (2) 4" x 24" wing cylinders (JM0030730). Use a block to support the cylinders. When mounting the cylinders, ensure the bolt on the ram side of the cylinder is facing up and the hydraulic fittings face towards the rear of the toolbar. The ram side of this cylinder uses the same pin as on the inside (JM0077071).



Toolbar

4. Die grind the paint off the inside of the holes on the toolbar and the wing extensions that will have pins inserted into them (as shown below). Die grinding makes inserting the pins easier.



5. Mount wing extensions, right side wing is JM0036122 and left side wing is JM0036129. Start on the right side of the toolbar. Using a lift, align the holes of the wing extension with the holes in the toolbar. Use a 2-1/2" diameter pivot pin (JM0031502) with a 3/4" x 2-1/2" Gr8 YZ hex bolt and 3/4" centerlock nut as a keeper on each wing.



- 6. Insert the 2-1/2" diameter pivot pins (JM0031502). Set the bolt-mounted D-ring (JM0036703) over the pivot pin so that it covers the retainer and the hole on the D-ring lines up with the hole on the pivot pin. Fasten with the bolt 3/4" x 2-1/2" Gr8 YZ hex bolt facing upward so the 3/4" centerlock nut as a keeper is on top of the toolbar (as shown below).
- 7. Then add the 3-1/2" x 14" outside wing fold cylinder (JM0055022) with the fittings facing up and butt end of the cylinder towards the inside wing using 1" x 3-1/2" pins (JM0001817). Use the image and table below to assemble to linkage for this connection.



Toolbar

- 8. Repeat the wing extension mounting procedures for the left side.
- 9. Install transport latches (JM0034167) to each side of the toolbar as shown below and secure with a pin (JM0010201) as shown below. Also add the hitch pin (JM0003079) as a way to lock the transport latch if necessary.
- 10. Add hydraulic fittings to cylinders. Refer to Hydraulic Fittings (Schematic) at the front of this manual.





Coulter Placement

- 1. This section of the manual details the coulter mounting process. These instructions can be used for both the initial setup of your applicator and instructions to change the row spacing on your applicator. To change your row spacing, loosen the coulters and follow the directions for that respective row spacing:
 - •"Coulter Mounting 45cm Row Spacing" on page 26
 - •"Coulter Mounting 50cm Row Spacing" on page 28
 - •"Coulter Mounting 70cm Row Spacing" on page 30
- 2. The picture below is a helpful reference for identifying parts of the applicator when mounting the coulters.



Coulter Mounting - 45cm Row Spacing



1. Fasten the first coulter in the center of the main toolbar. Measure 45cm on each side to place the next coulter and repeat for all 23 coulters. Mount coulters on the main toolbar towards the front and mount coulters on the wings toward the back (as shown in the picture above).



7. Bottom parts for coulters will be added in later steps.



head bolt

Coulter Mounting - 45cm Row Spacing

 Mount coulter 2 from the opposite direction as coulter 1. Coulter 2 uses the wider channel bracket (JM0054464) plate to get around the weldments (shown below). Use (2) 5/8"-11 x 7-1/8" x 8-11/16" square U-bolts to mount the wider channel bracket plate, and (4) 5/8" x 3-1/2" bolt and 5/8" serrated flange hex nut to fasten the rod of the coulter.



9. Offset coulter mounts are used in areas or hinges that dont allow a direct mount. Offset coulter mounts are updated and look like the image below on the right. It can offset to the left or right and also mount a coulter at the base and on its extention if necessary. Mount coulter 5 to the front of the wing with an offset mount (shown in red below). Coulter 5 is the only coulter on the wings that is mounted on the front. Offset coulter mounts use (2) 5/8"-11 x 7-1/8" x 8-11/16" square U-bolts with (4) 5/8" Gr2 Z lock washers and (4) 5/8"-11 Gr2 Z hex nuts. If there is a coulter mounted in the center of the offset then you will use (2) 5/8"-11 x 7-1/8" x 10-1/4" square U-bolts. If you have something in the way using a U-bolt you will use 5/8" x 3-1/2" bolt and 5/8" serrated flange hex nut to fasten the coulter rod in those instances. Minimum of 3 U-bolts needed if the second coulter is in the center.



10. Mount coulter 10 to the back of the wing with an offset mount (shown in red below).



Coulter Mounting - 50cm Row Spacing



1. Fasten the first coulter in the center of the main toolbar. Measure 50cm on each side to place the next coulter and repeat for all 23 coulters. Mount coulters on the main toolbar towards the front and mount coulters on the wings toward the back (as shown in the picture above).



Coulter Mounting - 50cm Row Spacing

The U-bolts for coulter 2 go through the slots in the weldment shown below. Continue to measure 50cm across the tool bar to place coulters. Coulter 4 does not use a channel bracket plate. Instead, use (4) 5/8" x 3-1/2" hex bolts that go through holes in the toobar weldment to mount the channel bracket castings directly to the weldment. Secure using (4) 5/8" centerlock hex nuts.



Offset coulter mounts are used in areas or hinges that dont allow a direct mount. Offset coulter mounts are updated and look like the image below on the right. It can offset to the left or right and also mount a coulter at the base and on its extention if necessary. Mount coulter 5 to the front of the wing with an offset mount (shown in red below). Coulter 5 is the only coulter on the wings that is mounted on the front. Offset coulter mounts use (2) 5/8"-11 x 7-1/8" x 8-11/16" square U-bolts with (4) 5/8" Gr2 Z lock washers and (4) 5/8"-11 Gr2 Z hex nuts. If there is a coulter mounted in the center of the offset then you will use (2) 5/8"-11 x 7-1/8" x 10-1/4" square U-bolts. If you have something in the way using a U-bolt you will use 5/8" x 3-1/2" bolt and 5/8" serrated flange hex nut to fasten the coulter rod in those instances. Minimum of 3 U-bolts needed if the second coulter is in the center.



Coulter Mounting - 70cm Row Spacing



1. Fasten the first coulter in the center of the main toolbar. Measure 70cm on each side to place the next coulter and repeat for all 15 coulters. Mount coulters on the main toolbar towards the front and mount coulters on the wings toward the back (as shown in the picture above).



Coulter Mounting - 70cm Row Spacing

8. Continue to measure 70cm across the tool bar to place coulters.

Offset coulter mounts are used in areas or hinges that dont allow a direct mount. Offset coulter mounts are updated and look like the image below. It can offset to the left or right and also mount a coulter at the base and on its extention if necessary. Mount coulter 5 to the front of the wing with an offset mount (shown in red below). Coulter 5 is the only coulter on the wings that is mounted on the front. Offset coulter mounts use (2) $5/8"-11 \times 7-1/8" \times 8-11/16"$ square U-bolts with (4) 5/8" Gr2 Z lock washers and (4) $5/8"-11 \times 7-1/8" \times 10-1/4"$ square U-bolts. If you have something in the way using a U-bolt you will use $5/8" \times 3-1/2"$ bolt and 5/8" serrated flange hex nut to fasten the coulter rod in those instances. Minimum of 3 U-bolts needed if the second coulter is in the center.





Connecting Frame and Coulters to Toolbar

1. Hook chains on each side of axle through the provided hole. Wrap an 8,000 lb strap around the neck of the tongue. Find the right length to pick it up evenly so the load is balanced. Lift slowly over the toolbar and center into position while lowering slowly.

Use this hole in the axle to hook up chain for lifting.



2. Align the holes in the middle toolbar with holes in the axle. Use the 2-1/2" x 10-1/2" pivot pin (JM0031502) and secure with 3/4" x 2-1/2" bolt and 3/4" centerlock hex nut. Insert bolt from the inside out so that the nut is on the outside.



3. Add the mount (JM0077651) for the whisker switch (JM0050161) on the driver side pivot using a 3/4"-10 x 1-1/4" Gr2 Z hex bolt and 3/4" centerlock hex nut. Attach the whisker switch using (4) M5-0.8 x 12 Gr8.8 Z hex bolts.



4. Leave chains attached so it is easier to mount the wheels.

Connecting Frame and Coulters to Toolbar

5. Mount the gauge wheel mounts (JM0047347) to the toolbar. Place the mounts to the outside of the outer most coulter on the wings. The gauge wheel mounts face the front of the wing which is opposite of the coulters (as shown below). Slide the gauge wheel arm weldment (JM0077668) into place and secure with a hitch pin (JM0003079). Add the hub and spindle assembly (JM0026571) using a 1/2"-13 x 3" Gr5 Z hex bolt and 1/2"-13 Gr2 Z centerlock hex nut.



- 6. Mount the 4' x 8" hydraulic cylinders (JM0030757) under the toolbar frame as shown below. Secure the cylinders with 1" x 3-3/8" pins (JM0001817).
- 7. Connect the hoses from the top two ports of the valve bank on the main frame to the 4" x 8" hydraulic lift cylinders. Reference the hydraulic schematic at the beginning of this manual to be sure on hose locations.





- 8. Connect the hoses (JM0041613) from the bottom two ports of the valve bank on the main frame to the 4" x 24" hydraulic fold cylinders. These hoses will be labeled in red.
- 9. Set down pressure gauge at 650psi and test hydraulic functions.



Coulter and Wheel Finishing

1. Slide on main coulter body (JM0031265) with rotation lock collar inside. The square headed bolt in the rotation lock collar sits in the drilled depression (as shown below). Insert a roll pin into the bottom hole of the coulter rod to hold the coulter on the rod.



- 2. Mount coulter wheels using (4) 1/2"-13 x 2" studs, (4) 1/2" lock washers, (4) 1/2"-13 hex nuts, and dust cap keeper (JM0038391) on each coulter.
- 3. After mounting the coulters (JM0031269), install the knife mounts (JM0059364) onto the coulter arm. Secure each knife mount with (2) 1/2"-13 x 1-3/4" hex bolts, (2) 1/2" lock washers, (2) 1/2" flat washers, and (2) 1/2"-13 hex nuts.





Coulter and Wheel Finishing

4. Secure each knife to the knife mount using (2) 1/2" lock washers, a 1/2" flat washer, a 1/2"-13 hex nut, a 1/2"-13 x 1-3/4" hex bolt, and a 1/2"-13 x 1-1/4" hex bolt. The shorter bolt is used towards the top of the knife and is threaded into the mount. The longer bolt is used towards the bottom of the knife and is secured using the hex nut. Ensure to mount the knife in line with the coulter. Use a shim to adjust the knife out to keep it aligned with the coulter, if necessary.



5. Mount tire (JM0019536) onto studs of the gauge wheel mounts and secure with 1/2"-20 lug nuts.



6. Route fertilizer hoses around frame and connect to each coulter.



Mounting Hubs, Spindles, and Tires

1. Using a fork lift, carefully position the hub and spindle assembly in line with the axle and slide in the spindle. Take care not to mar the threads on the spindle when lifting. After lining up the hole in the spindle with the hole in the axle, insert the 1"-8 x 7" bolt and secure with 1" nylon locking hex nut.





2. Using the overhead hoist, lift the axles and mount the tires onto the studs. Secure with 3/4"-16 wheel nuts and tighten.





Diaphragm and Fertilizer Hose Placement

Start adding 3/4" tee (JM0041782) and single (JM0041783) diaphragm check valves, or 3/8" diaphragm check valve single (JM0037890) to each QJ mounting pad (JM0036048) on each coulter.



Below are the different diaphragm check valves and the parts that go with it.





Diaphragm and Fertilizer Hose Placement for No Flow Monitor

The green hose shown below will go to the start of boom 1. From the first coulter valve you will need 45, 50, or 70cm length hose to connect each coulter based upon which row spacing you are using. The blue hose will be the start of boom 2, and the yellow hose will be the start of boom 3.



Diaphragm and Fertilizer Hose Placement for No Flow Monitor



	· · · · · · · · · · · · · · · · · · ·	
1	1-1/2" x 228" TSD Fertilizer Suction Hose (5016)	JM0040211
1	1-1/2" x 180" TSD Fertilizer Suction Hose (5010)	JM0040330
2	2" x 32"TSD Fertilizer Suction Hose	JM0040224
3	2" x 36"TSD Fertilizer Suction Hose	JM0040215
3	3" x 38" TSD Fertilizer Suction Hose	JM0040216
4	3/4" x 210" EPDM Fertilizer Hose	JM0040217
5	3/4" x 55" EPDM Fertilizer Hose	JM0040332
6	3/4" Hose Clamp SS	JM0039205
7	3/4" Hose Barb x 3/4" Male NPT; 90 Deg	JM0035226
8	3/4" NPT Bulkhead Tank Flange Assembly	JM0035222
9	1-1/2" x 80" EPDM Fertilzer Hose	JM0078557
10	3/4" x 30" EPDM Fertilzer Hose	JM0040218
11	3/8" x 52" EPDM Fertilizer Hose	JM0040219
12	Hose Clamp - 1-13/16" Min, 2-1/16" Max	JM0021189
13	1-1/2" Male Thread x 1-1/2" 90° Hose Barb	JM0061527
14	1-1/2" Poly Bulkhead Tank Fitting with EPDM Gasket	JM0061522

Fertilizer Hose Routing - Hydraulic Pump with Flow Monitors



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Fertilizer Hose Routing - Hydraulic Pump with Flow Monitors

	Description	Part No.
1	1-1/2" x 228" TSD Fertilizer Suction Hose (5016)	JM0040211
1	1-1/2" x 180" TSD Fertilizer Suction Hose (5010)	JM0040330
2	2" x 32" TSD Fertilizer Suction Hose	JM0040224
3	2" x 36" TSD Fertilizer Suction Hose	JM0040215
3	3" x 38" TSD Fertilizer Suction Hose	JM0040216
4	3/4" x 30" EPDM Fertilizer Hose	JM0040218
5	3/4" x 55" EPDM Fertilizer Hose	JM0040332
6	3/4" Hose Clamp SS	JM0039205
7	3/4" Hose Barb x 3/4" Male NPT; 90 Deg	JM0035226
8	3/4" NPT Bulkhead Tank Flange Assembly	JM0035222
9	1-1/2" x 80" EPDM Fertilzer Hose	JM0078557
10	3/8" x 52" EPDM Fertilizer Hose	JM0040219
11	3/8"Hose Barb Tee	JM0073958
12	3/8" x 112" EPDM Fertilizer Hose	JM0041658
13	3/8" x 142" EPDM Fertilizer Hose	JM0041659
14	3/8" x 172" EPDM Fertilizer Hose	JM0041660
15	3/8" x 145" EPDM Fertilizer Hose	JM0041661
16	3/8" x 175" EPDM Fertilizer Hose	JM0041662
17	3/8" x 205" EPDM Fertilizer Hose	JM0041663
18	3/8" x 245" EPDM Fertilizer Hose	JM0041664
19	3/8" x 275" EPDM Fertilizer Hose	JM0041665
20	3/8" x 305" EPDM Fertilizer Hose	JM0041666
21	Hose Clamp - 1-13/16" Min, 2-1/16" Max	JM0021189
22	1-1/2" Male Thread x 1-1/2" 90° Hose Barb	JM0061527
23	1-1/2" Poly Bulkhead Tank Fitting with EPDM Gasket	JM0061522



SCS 450 Liquid Control System



	Description	Part No.
1	Raven SCS450 Control Console	JM0039335
2	NitroGro 5 Section - PWM 30' Extension	JM0055257
3	Mini Wisker Limit Switch (12T962)	JM0050161
4	Phoenix GPS Speed Sensor	JM0039338
5	NitroGro Break Out Harness 4' (5 Boom, Limit Switch, PWM, Flow Meter, Power)	JM0055255
6	Raven 3 Section Manifold	JM0032484
7	Raven Flow Meter RFM60P	JM0032488
8	Raven Boom Valve	JM0032478
9	Hydraulic PWM Control Valve for Nitrogen Fertilizer Pump (F14264A1)	JM0059223
10	M5-0.8 x 12 Gr8.8 Z Hex Bolt	JM0036046
11	5000 Series Whisker Switch Mount	JM0077651
12	3/4"-10 x 1.25" Gr2 Z Hex Bolt	JM0047207
13	3/4"-10 Gr2 Z Centerlock Hex Nut	JM0002147



Miscellaneous

Cylinder stroke control kit (JM0037182) for 1-1/2" diameter cylinder rod will get mounted as shown below.



