3000TM
Fold Assist Kit

General Information

These Instructions explain how to install the fold assist kit update. This update only applies to the 3000 Turbo Max.

These instructions apply to kit number: 589-472A, 3000TM FOLD ASSIST KIT

Tools Required

- Basic Hand Tools
- Torque Wrench
- Drill & 3/8” Drill Bit

Manual Update
Refer to the Turbo Max operator’s manual for detailed safety and maintaining of machine and to parts manual for part identification.

586-288M Operator Manual
586-288P Parts Manual

589-472A 3000TM FOLD ASSIST KIT

Part Number	Description	Qty.
586-543M	MANUAL 3000 TMAX FOLD ASSIST	1
589-216D	EATON SENSOR MOUNT	2
810-300C	PRESSURE GAUGE 3000 PSI	1
810-849C	FIXED BYPASS DOWN PRESS VALVE	1
811-063C	EL 3/4MJIC 3/4MORB	2
811-677C	AD 9/16MORB 1/4FNPT	1
833-623C	PROXIMITY SENSOR	2
848-972C	DECAL OPERATOR INSTRUCT TM	1
848-995C	PRESSURE GAUGE DECAL	1
891-327C	FOLD ASSIST HARNESS	1
891-387C	LIGHT HARNESS - EXT LEAD/VALVE	1

Assembly Instructions

Proximity Sensor

Refer to Figure 1

Note: Move machine to level ground. Wings need to be folded up when installing the proximity sensor assembly ③ to prevent damage to sensor and brackets. Be sure wing safety lock pins are installed.

1. Remove 1 lock nut ① from hinge pin ② (2nd hinge from front).
2. Slide proximity mount bracket assembly ③ over hinge pin ② in orientation shown.
3. Re-install the 1 lock nut ① to secure.
4. Tighten lock nut ① snug but do not torque.
5. Repeat same procedure for right side.

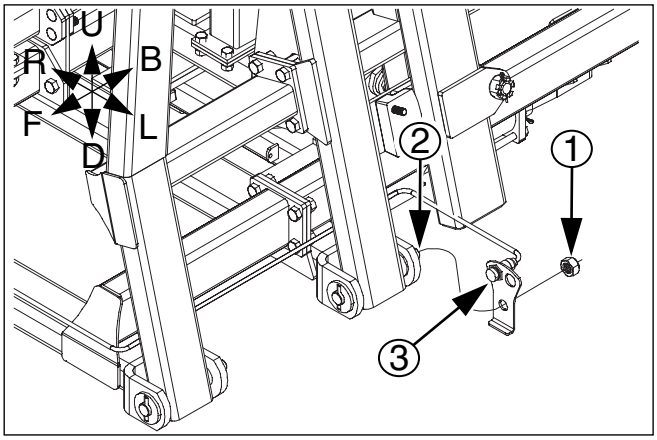

Figure 1
Proximity Sensor
43014

Proximity Sensor Adjustment

Refer to Figure 2

Note: Wings need to be folded up when adjusting the proximity sensor ① to prevent damage to sensor and bracket. Be sure and adjust proximity sensors before unfolding. Be sure wing safety lock pins are installed

6. Loosen nuts ② (one on front and one on back side of sensor bracket, adjust the proximity sensor ① to 1/8" to 1/4", from front of proximity sensor ③ to rear of wing tube ④ as shown.
7. Re-tighten nuts ② to secure proximity sensor ①.

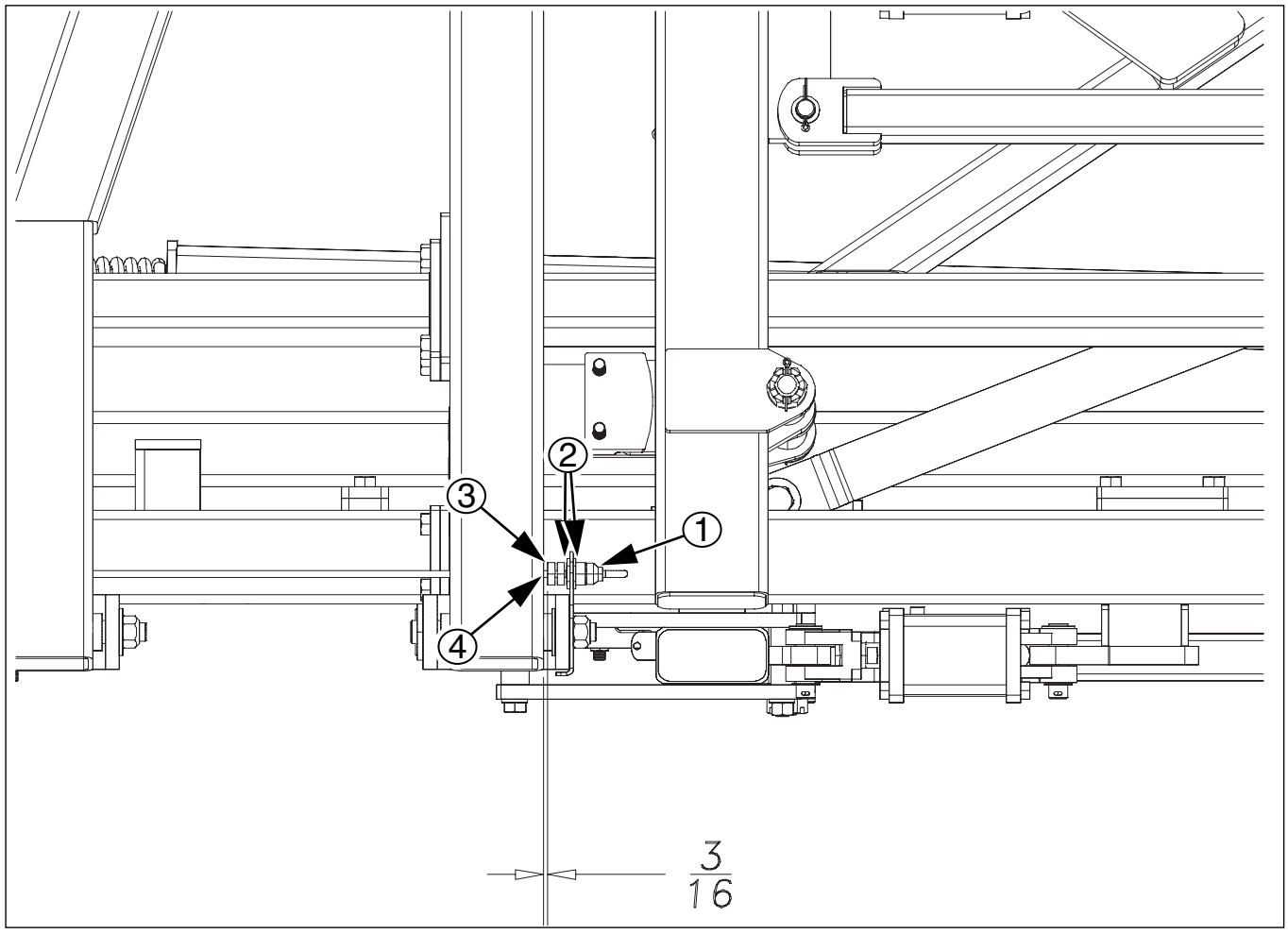

Figure 2
Priority Sensor Adjustment

43015

Valve Bracket

Refer to Figure 3

Note: Wings may be un-folded to finish installation. Be sure pressure is off fold cylinders as hoses will need removed from valve. You may want to get a bucket to catch some of the oil when hoses are unhooked.

8. Two new 3/8" diameter holes will need drilled in locations shown.

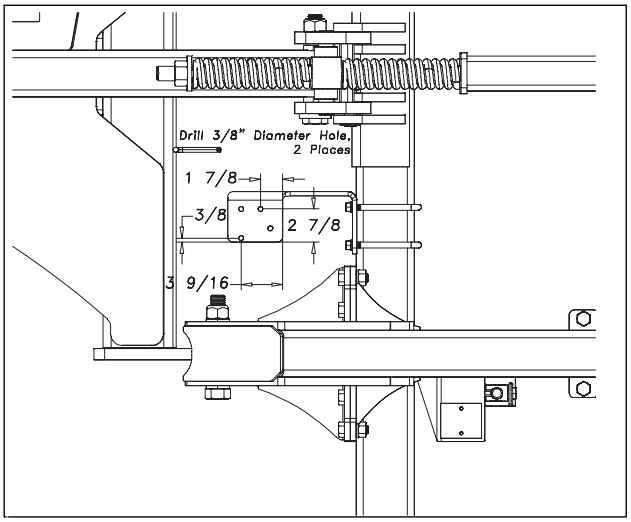

Figure 3 43017
Valve Bracket

Valve Mounting, Hose & Wiring Harnesses

Valve & Hose Assembly

Refer to Figure 4

9. Attach the new fixed bypass valve ① in orientation shown to the valve bracket plate ② with the 5/16 x 3 hex bolts ③, 5/16 lock washers and 5/16 nuts.

10. Tighten bolts to specs, See "**Torque Values Chart**" on page 8.

Note: See "**Hydraulic Connector ID**" on page 7 for proper fittings installation and torque. Be sure fittings, valve and hose ends are clean before installing fittings and hoses. Do not tighten fittings until the hoses are installed so you can rotate fittings to clear other fittings and hoses.

11. Attach a 3/4mjic 3/4morb elbow and inline filter ④ from old bypass valve to the IN port of fixed bypass valve ①.

12. Attach the 3/4mjic 3/4morb elbow ⑤ to the other three ports on the fixed bypass valve ①.

13. Re-attach the green extend hose ⑦ from tractor to the IN port (with inline filter). Re-attach the green retract hose ⑥ from tractor T port, left side of fixed bypass valve ①. Re-attach hose ⑨ running from tee, of fold cylinder base end to R port of fixed bypass valve ①. Re-attach hose ⑧ running from tee, of fold cylinder rod end to T port (right side) of fixed bypass valve ①.

14. Attach 9/16morb 1/4fnpt fittings ⑩ to top ports of fixed bypass valve ①. Attach 3000psi pressure gauge with pressure gauge decal ⑪ to left, rear port of fixed bypass valve ① and other 3000psi pressure gauge without pressure gauge decal ⑫ to right, front port of fixed bypass valve ①. Have both pressure gauges facing towards front of machine.

15. Tighten all fittings and hoses to specs, See "**Hydraulic Connector ID**" on page 7.

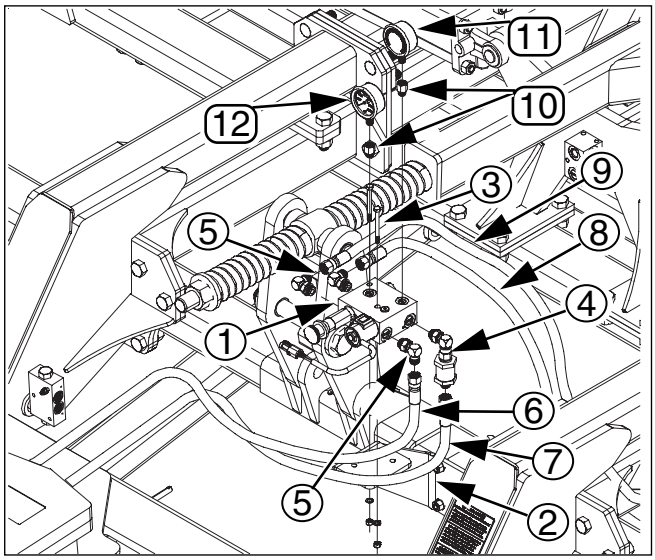

Figure 4 43016
Valve & Hoses

Light Harness Front

Note: The 890-923C 30' light harnesses will need removed and the new 891-327C fold assist harness ② and 891-387C light harness-ext lead/valve ① will need installed, routing the same way as the old ones were, with same hose clamps.

Refer to Figure 5

16. Route the light harness-ext lead/valve ① along same path as old 30' light harness. Leave about 3' in front of hitch on tractor plug end. Fasten light harness back to hose clamps like it was and use some plastic ties as needed.
17. Fasten 2 conductor male weatherpack end of light harness-ext lead/valve ① to 2 conductor female weatherpack end (6" lead) of fold assist harness ②. Attach other 2 conductor male weatherpack (6" lead) to 2 conductor female weatherpack end of solenoid valve on fixed bypass valve ③.
18. Route 120" leads of fold assist harness ② from center of machine under front trusses along front center brace bar to proximity sensor lead ④. Plug end of 120" fold assist harness ② into proximity sensor lead ④. Fasten harnesses up to center brace bar with plastic ties to keep harnesses from getting pinched when folding.
19. Remove the 848-829C operating instruction decal ⑤, clean area on which decal is placed, peel backing from the new 848-972C decal ⑤. Press firmly on surface, being careful not to cause air bubbles under decal.

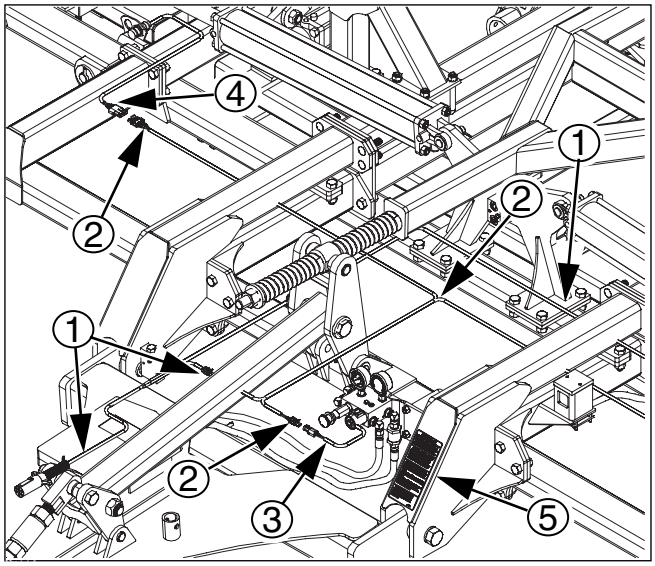

Figure 5 43033
Light Harness Front

Light Harness Rear

Refer to Figure 6

20. Route rest of light harness-ext lead/valve ① along same path as old 30' light harness was, back to enhanced module light harness ⑥ and plug together. Fasten light harness back to hose clamps like it was and use plastic ties as needed.

Note: In order for the fold assist to work, the electrical connector must be hooked to the tractor. The fold assist will allow the operator to run very low, down pressure to the wings and still have ample pressure to the wings to unfold the unit after transporting to the field. If the system should fail for any reason, the unit may still be unfolded but the operator may need to close the down pressure valve, thereby increasing the unfold pressure to the wings. The operator may need to reset the pressure for field use.

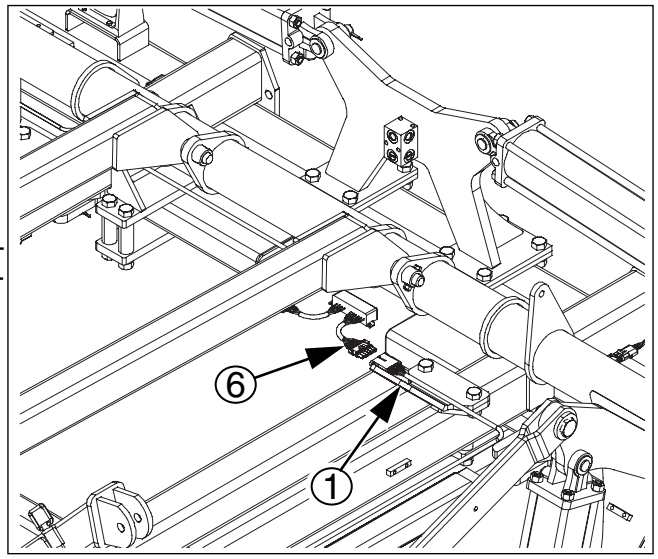

Figure 6 43034
Light Harness Rear

Purging Fold Hydraulic System

Note: When the fold hoses are hooked up and tighten the fold system will be purged of air.

Refer to Figure 7

21. Before charging the fold cylinders ①, un-pin ② the rod end of all cylinders and block ③ up cylinders as shown, so that when the rod is extended, it will clear the wing fold brackets. Extend the fold cylinders ① (green ends) completely and then close them. Extend and retract the cylinders several times to purge air from the system.
22. Watch for leaks and retighten fittings if necessary.
23. Now the rod end of fold cylinders ① may be hooked up to wing with the 1 x 3 1/8 usable pin ②, 1.5 x 1.0 x.075 machine washer and 3/16 x 2 cotter pin. Bend cotter pin over to secure.
24. Make sure all bolts, See "**Torque Values Chart**" on page 8 and fittings, See "**Hydraulic Connector ID**" on page 7 are tight.

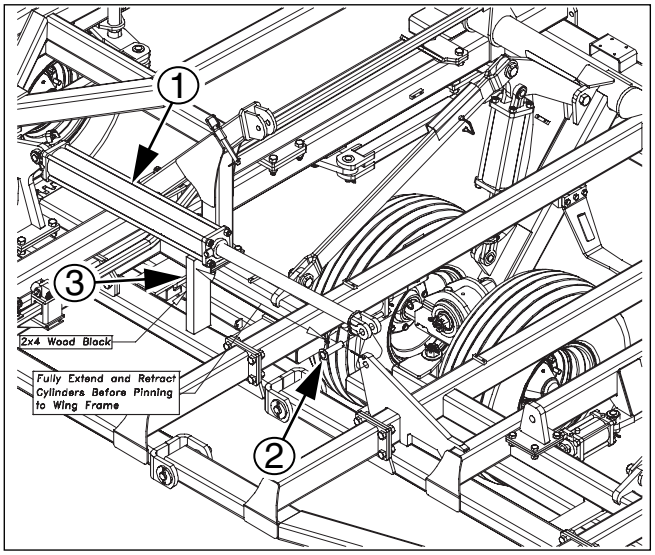

Figure 7 43018
Purging Fold System

Hydraulic Down Pressure

Refer to Figure 8

Note: This setup procedure is for tractors with closed-center or pressure compensated flow hydraulic systems. Open center hydraulics not supported. Adjust down pressure valve as shown on decal ① (located on front of left truss).

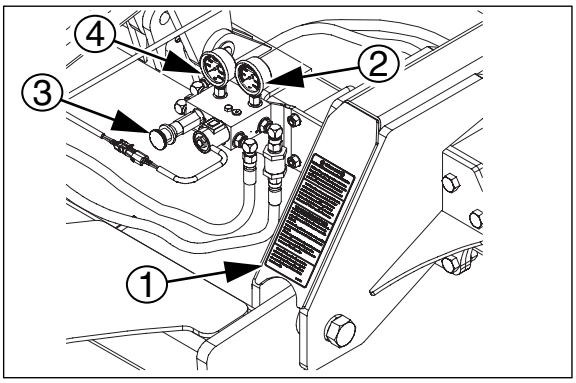

Figure 8
Down Pressure

43035

Refer to Figure 9

25. Engage the hydraulics (continuous flow) down.
26. From the cab, adjust the flow so the needle on the bypass gauge ② is in the green zone 1000-1500PSI.
27. At the valve, adjust the valve ③ to set your initial down pressure ④ (usually 300-400). Do not exceed 800 PSI.
28. If the wings run high during operation, increase pressure. If the center runs high, decrease pressure. If no pressure is needed, move valve in tractor to “FLOAT” position.

Notice: When operating machine with the blades in angled position it is generally unnecessary to apply wing down pressure. Only in very hard ground will wing down pressure be necessary.

Caution: When not operating with live down pressure the fold system must be in “FLOAT” position. Failure to operate in either float or active down pressure will damage the fold system. see your tractor operator’s manual to set system to “FLOAT” position if necessary.

Caution: This machine is designed for continuous hydraulic flow to the wing fold cylinders during field operations. It is for use on tractors having CLOSED CENTER hydraulics only.

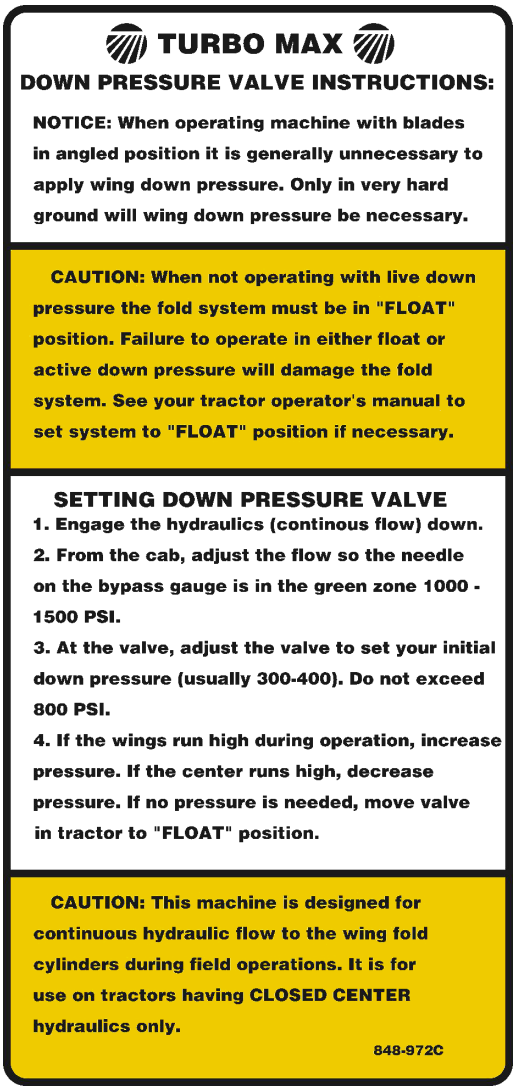

Figure 9
Down Pressure Decal

848-972C

Hydraulic Connectors and Torque

Refer to Figure 10 (a hypothetical fitting)
Leave any protective caps in place until immediately prior to making a connection.

① **NPT** - National Pipe Thread
Note tapered threads, no cone/flare, and no O-ring.

Apply liquid pipe sealant for hydraulic applications. Do not use tape sealant, which can clog a filter and/or plug an orifice.

② **JIC** - Joint Industry Conference (SAE J514)
Note straight threads ④ and the 37° cone ⑤ on "M" fittings (or 37° flare on "F" fittings).

Use no sealants (tape or liquid) on JIC fittings.

③ **ORB** - O-Ring Boss (SAE J514)
Note straight threads ⑤ and elastomer O-Ring ⑦.

Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid. Use no sealants (tape or liquid) on ORB fittings.

ORB fittings that need orientation, such as the ell depicted, also have a washer ⑧ and jam nut ⑨ ("adjustable thread port stud"). Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.

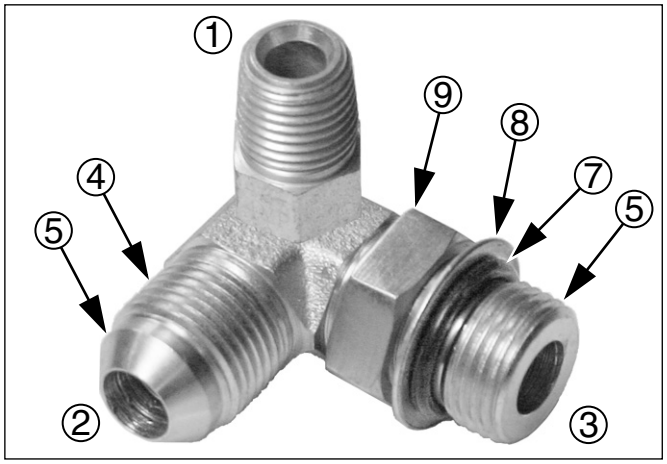

Figure 10
Hydraulic Connector ID
31282

Fittings Torque Values

Dash Size	Fitting	N-m	Ft-Lbs
-4	1/4-18 NPT	1.5-3.0 turns past finger tight	
-5	1/2-20 JIC	19-20	14-15
-5	1/2-20 ORB w/jam nut	12-16	9-12
-5	1/2 -20 ORB straight	19-26	14-19
-6	9/16-18 JIC	24-27	18-20
-6	9/16-18 ORB w/jam nut	16-22	12-16
-6	9/16-18 ORB straight	24-33	18-24
-8	3/4 -16 JIC	37-53	27-39
-8	3/4 -16 ORB w/jam nut	27-41	20-30
-8	3/4-16 ORB straight	37-58	27-43

Torque Values Chart

Bolt Size	Bolt Head Identification					
	 Grade 2		 Grade 5		 Grade 8	
in-tpi[a]	N-m[b]	ft-lb[d]	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12
1/4-28	8.5	6	13	10	18	14
5/16-18	15	11	24	17	33	25
5/16-24	17	13	26	19	37	27
3/8-16	27	20	42	31	59	44
3/8-24	31	22	47	35	67	49
7/16-14	43	32	67	49	95	70
7/16-20	49	36	75	55	105	78
1/2-13	66	49	105	76	145	105
1/2-20	75	55	115	85	165	120
9/16-12	95	70	150	110	210	155
9/16-18	105	79	165	120	235	170
5/8-11	130	97	205	150	285	210
5/8-18	150	110	230	170	325	240
3/4-10	235	170	360	265	510	375
3/4-16	260	190	405	295	570	420
7/8-9	225	165	585	430	820	605
7/8-14	250	185	640	475	905	670
1-8	340	250	875	645	1230	910
1-12	370	275	955	705	1350	995
1 1/8-7	480	355	1080	795	1750	1290
1 1/8-12	540	395	1210	890	1960	1440
1 1/4-7	680	500	1520	1120	2460	1820
1 1/4-12	750	555	1680	1240	2730	2010
1 3/8-6	890	655	1990	1470	3230	2380
1 3/8-12	1010	745	2270	1670	3680	2710
1 1/2-6	1180	870	2640	1950	4290	3160
1 1/2-12	1330	980	2970	2190	4820	3560

Bolt Size	Bolt Head Identification					
	 Class 5.8		 Class 8.8		 Class 10.9	
mm x pitch[c]	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	39	72	53
M10 X 0.75	39	29	61	45	85	62
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

a. in-tpi = nominal thread diameter in inches-threads per inch
b. N· m = newton-meters
c. mm x pitch = nominal thread diameter in mm x thread pitch
d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above. 25199

Gang Bolt Torque 1 3/4”-5 **850 Foot-pounds (165 lbs on 5’ cheater).**

Rolling Harrow Spike Bolt 1 1/2”-6 **650-750 Foot-pounds (175 lbs on 4’ cheater).**

Wheel Bolt Torque Values **1/2”-20 (75-85 ft-lbs) 9/16”-18 (80-90 ft-lbs) 5/8”-18 (85-100 ft-lbs).**