Installation Instructions for Fold Proximity Sensor Kit

Before Getting Started

Before you begin installation of the Fold Proximity Sensor Kit, read these instructions carefully and check that all parts and tools in kit are accounted for. All hand and specialty tools for installation are provided at owner's expense. Please retain these installation instructions for future reference and parts ordering information.

These installation instructions contain information for assembling the proximity sensor to the fertilizer applicator. Please read all instructions in your NP4000, NP4000A, or NP2540 Manual thoroughly before proceeding. Your NP4000, NP4000A, or NP2540 Manual includes information on operation, adjustment, troubleshooting, and maintenance for this attachment (some manual sections do not apply to all accessories).

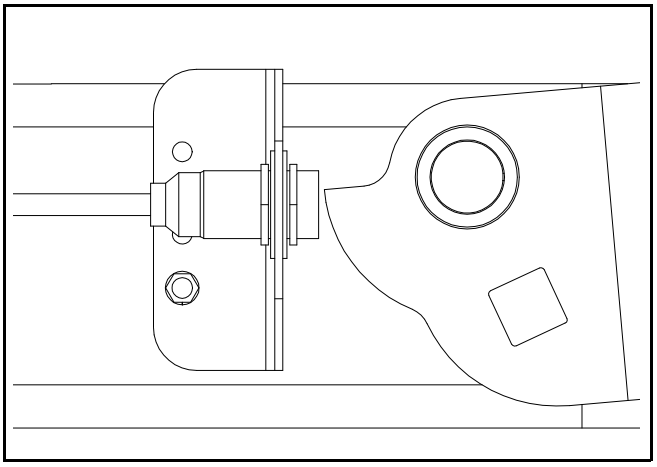


Figure 1 36951
Proximity Sensor

General Information

This kit is used to install new fold proximity sensors on specific serial number ranges of the NP4000, NP4000A, and NP2540.

Null4:

Fold Proximity Sensor Kit	Reference Number
Fold Proximity Sensor Kit	417-719A

Refer to page 3 for a detailed list of the parts included in these kits. Use these lists to inventory parts received.

Tools Required

The following tools are required for installation:

- General hand tools
- Welding equipment

Refer to page 10 for torque values chart.

Document Family

All manuals related to this kit are available free of charge by visiting www.greatplainsag.com. Have machine model and serial numbers available when looking for the manual you need.

NP4000, NP4000A, and NP2540

417-199M	NP4000 & NP4000A Operator Manual
417-199P	NP4000 & NP4000A Parts Book
417-459M	NP2540 Operator Manual
417-459P	NP2540 Parts Book

Using This Manual

This manual was written to help you install and prepare your new kit. The manual includes instructions for installation and setup. Read this manual and follow the recommendations for safe, efficient, and proper assembly and setup.

Read and understand “Important Safety Information” and “Operating Instructions” in the operator’s manual before installing your new kit. As a reference, keep the operator’s manual on hand while installing.

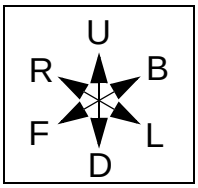
The information in this manual is current at printing. Some parts may change to assure top performance.

Use this kit only in conjunction with a Great Plains implements NP4000, NP4000A s/n C1072J- and NP2540 s/n B1142BU-.

Safety & Symbol Information

When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.



NOTICE

A crucial point of information related to the current topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.

Call-Outs

① to ⑨ Single-digit callouts identify components in the currently referenced Figure.

⑪ and up Two-digit callouts in the range 11 and up reference new parts from the list on page 3.

Be Aware of Signal Words

The following signal words designate a degree or level of hazard seriousness. Take the necessary precautions and exercise sound judgment.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new <kit name>. If for any reason you do not understand any part of this manual or are otherwise dissatisfied with the product please contact:

Great Plains Service Department
1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.

Kit Contents

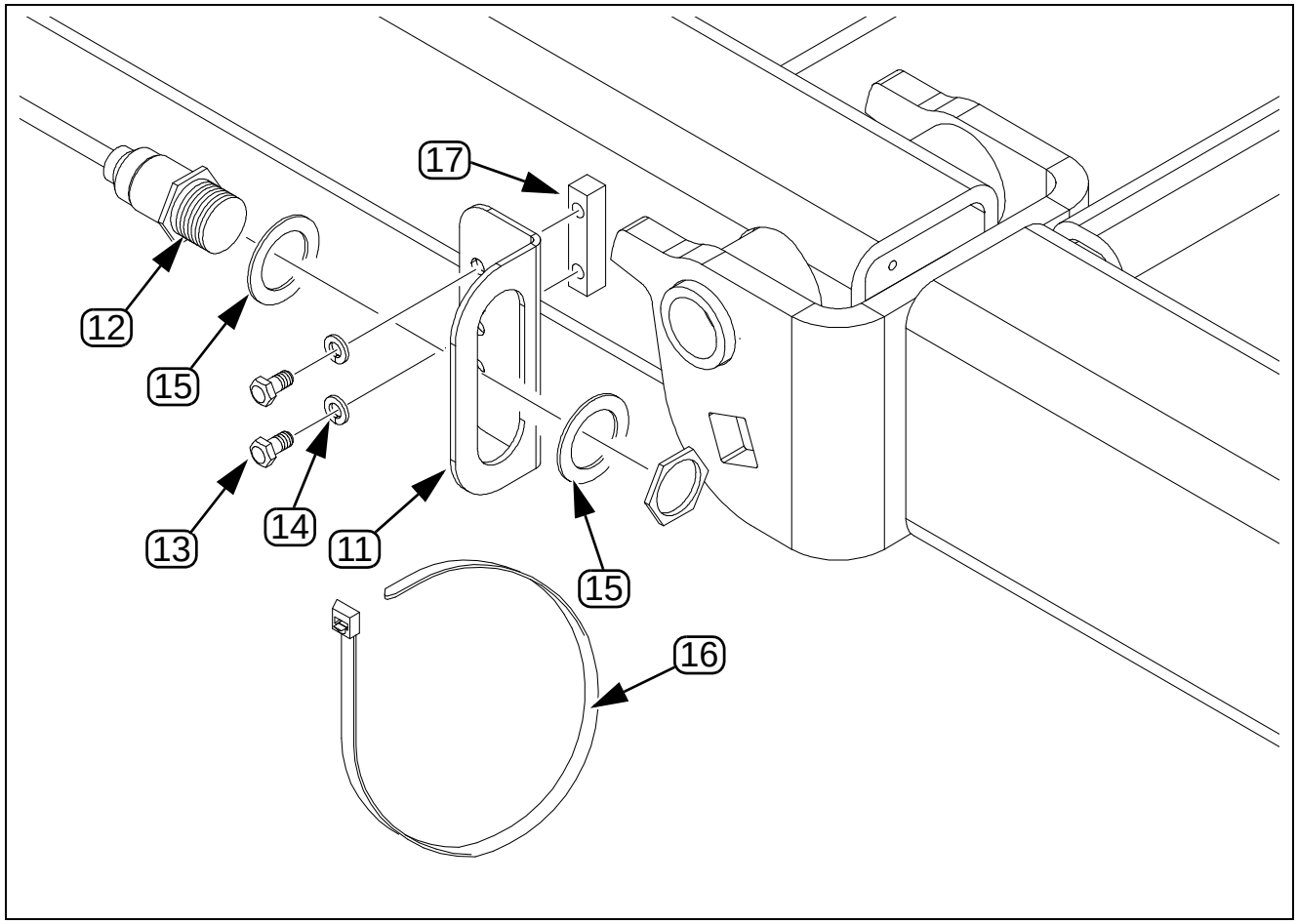


Figure 1 36969
Fold Proximity Sensor Installation

Item	Qty.	Part No.	Part Description
11	4	417-586D	PROXIMITY SWITCH MOUNT
12	4	833-821C	PROXIMITY SWITCH 24”
13	8	802-705C	HHCS 5/16-18X5/8 GRD5
14	8	804-009C	WASHER LOCK SPRING 5/16 PLT
15	8	904-165C	WASHER MACH 1 7/8X1 1/4X 14GA
16	8	800-035C	CABLE TIE .31X28 8DIA 120LB
17	4	196-332D	HOSE CLAMP MOUNT
18	1	417-720M	NP4000/2540 ELECT. FOLD MANUAL

Installation Instructions

Removing Fold Proximity Sensors

NP4000 and NP4000A s/n C1045J -

1. Park the machine on a solid level surface. Make sure there is enough working area to unfold the machine.
2. Unfold the wings.
3. Put the tractor in park, stop the engine, and take the key with you.

Refer to Figure 1.

4. Disconnect the wiring harnesses ① for the fold proximity sensors from the machine harness.
5. Remove and discard the mounting bolts ②, lock washers ③, and flat washers ④.
6. Remove and discard the fold proximity sensor assemblies ⑤.

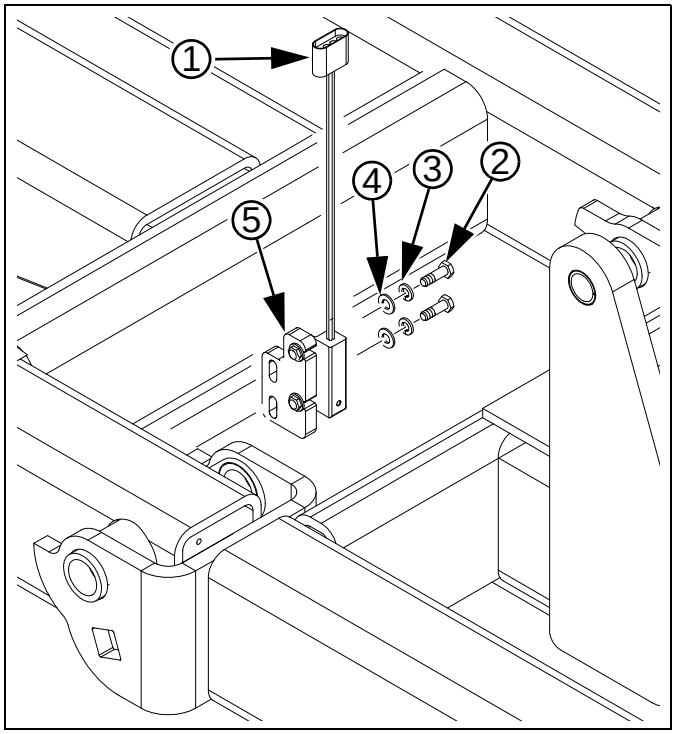


Figure 2 36967
Removing Old Proximity Sensor

Removing Fold Proximity Sensors

NP4000 and NP4000A s/n C1046J thru C1072J

NP2540 s/n B1142BU-

1. Park the machine on a solid level surface. Make sure there is enough working area to unfold the machine.
2. Unfold the wings.
3. Put the tractor in park, stop the engine, and take the key with you.

Refer to Figure 1.

4. Disconnect the wiring harnesses ① for the fold proximity sensors from the machine harness.

   Remove the nuts ②, lock washers ③, and U-bolts ④ and the sensor mounting assemblies ⑤. Discard the parts.

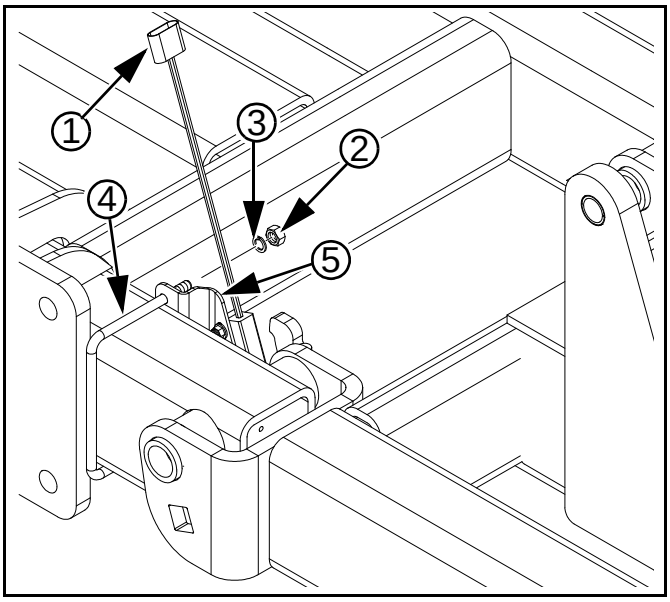


Figure 3 36968
Removing Old Proximity Sensor

5. The mainframe must be equipped with hose clamp mounts ⑰ to install the new proximity sensors. Some older machines do not have hose clamp mounts installed. If necessary, continue this procedure to install the hose clamp mounts.

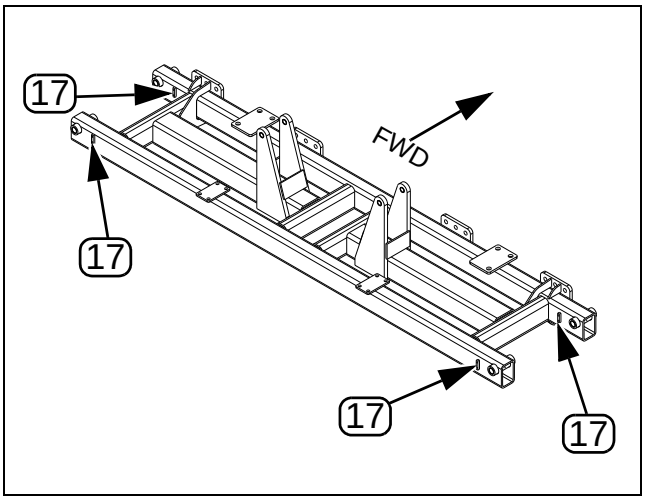


Figure 4 636970
Hose Clamp Mount Locations

6. Make the following marks on the rear of the rear tube ① at the right-hand end
7. Make a vertical mark ② 5 in (127 mm) Ⓐ from the center of the bushing spindle ③.
8. Make a horizontal mark ④ across the first mark 2.4 in (61 mm) Ⓑ above the bottom surface of the rear tube.
9. Align the holes in the hose clamp mount (17) with the vertical mark. Align the bottom hole with the with the intersection of the two marks. Clamp the hose clamp mount to the rear tube.
10. Weld the hose clamp mount to the rear tube with a1/4 in (6.4 mm) fillet all the way around.

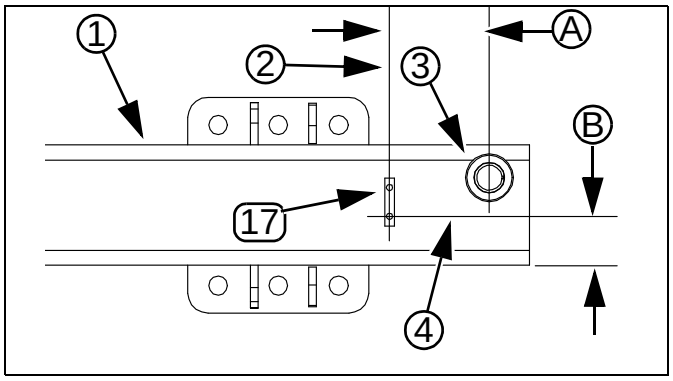


Figure 5 36971
Hose clamp Mount Location, R-H

11. At the left-hand end of the rear tube, make the following marks on the rear of the rear tube ①.
12. Make a vertical mark ② 5 in (127 mm) Ⓐ from the center of the bushing spindle ③.
13. Make a horizontal mark ④ across the first mark 3.4 in (86 mm) Ⓑ above the bottom surface of the rear tube.
14. Align the holes in the hose clamp mount (17) with the vertical mark. Align the bottom hole with the with the intersection of the two marks. Clamp the hose clamp mount to the rear tube.
15. Weld the hose clamp mount to the rear tube with a $^1/_4$ in (6.4 mm) fillet all the way around.
16. Repeat the previous two steps to install the hose clamp mounts on the front tube of the mainframe.

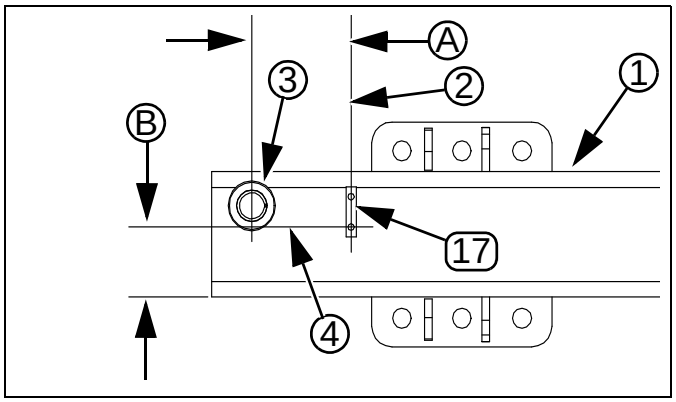


Figure 6 36971

Hose clamp Mount Location, L-H
Figure 7

Installing the Fold Proximity Sensors, All

1. Install the sensor bracket ⑪ on the hose clamp mount ⑰ using the 5/16-18 x 5/8 cap screws ⑬ and 5⁄16 lock washers ⑭.The outer flange of the sensor mount must be toward the wing as shown.
2. Remove the outer adjusting nut ① from a fold proximity sensor ⑫.
3. Install a machine washer ⑮ on the fold proximity sensor. Install the fold proximity sensor in the sensor mount.
4. Install a machine washer ⑮ and then the outer adjusting nut ① on the fold proximity sensor.
5. Connect the harness ② for the fold proximity sensor to the machine harness.
6. Fasten the harness to the mainframe with cable ties ⑯.
7. Repeat the procedure to install the remainder of the fold proximity sensors.

8. For a beginning adjustment, center the fold proximity sensor ⑫ in the slot in the sensor bracket ⑪. Use the adjusting nuts to adjust the gap Ⓐ between the faces of the fold proximity sensor and the actuator ①. The gap must be 1/8 to 1/4 in (3.2 to 6.3 mm). Tighten the adjusting nuts.

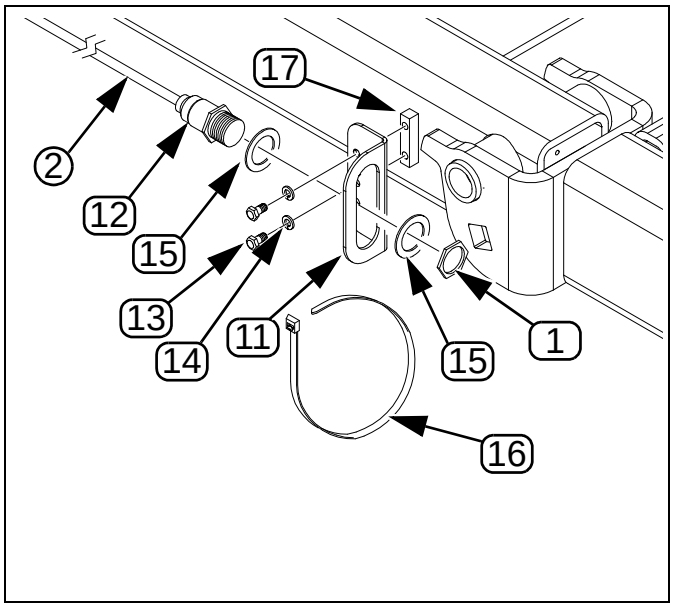


Figure 8 36969
Fold Proximity Sensor Installation

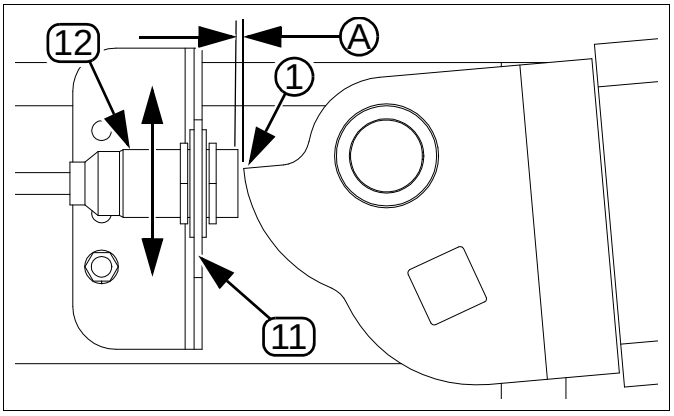


Figure 9 34991
Unfold Stop Proximity Sensor

Unfold Stop Adjustment

Refer to Figure 10

During unfold (FOLD / FIELD sensor in FOLD), the inner wing sections ① are intended to stop 0 to 5° above wings-level relative to the center section ②. The stopping point is controlled by a proximity sensor ⑫ at each center/wing hinge. If a wing does not stop in this range, adjust the proximity sensor.

1. Verify that the misalignment is not caused by air in the hydraulic system. Do not use the proximity adjustment to compensate for hydraulic problems.
2. Move the applicator to a solid, level surface. Raise and fold. See the instructions in the Operator Manual. Install lift-assist lock channels and parking stands. See the instructions in the Operator Manual.
3. Set the FOLD / FIELD sensor to FOLD. Extend the fold/lift circuit to unfold until the inner wings stop. Set the circuit to Neutral. Shut off the tractor.
4. Turn the tractor key sensor to ON so there is electrical current to the fold proximity sensors. There is a red and a green LED in each of the fold proximity sensors.

   • If no LED is illuminated at any of the fold proximity sensors, check the power source for the tractor.

   • If neither LED is illuminated at a fold proximity sensor, check the electrical circuit for that fold proximity sensor.

   • If the green LED is illuminated, the fold proximity sensor is adjusted correctly.

   • If the red LED is illuminated, the gap between the fold proximity sensor and the actuator is not correct.

5. To adjust the gap, loosen the front adjusting nut at the sensing end of the fold proximity sensor. Adjust the rear adjusting nut until the red LED illuminates.

Note: If the actuator is bolted to the wing, do not adjust the position of the actuator.

•To lower the angle at which the wing stops, raise the fold proximity sensor in the sensor mount. Make sure the green LED is still illuminated and tighten the nuts.

•To raise the angle at which the wing stops, lower the fold proximity sensor in the sensor mount. Make sure the green LED is still illuminated and tighten the nuts.

6. Fold and unfold the wings to check the adjustment.

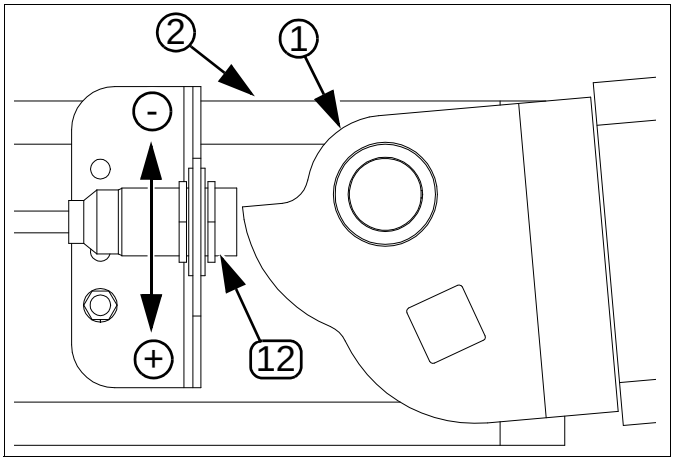


Figure 10 36951
Unfold Stop Proximity Sensor

Field Fold Stop Adjustment

Refer to Figure 11

During field fold (FOLD / FIELD sensor in FIELD), the inner wing sections ① are intended to stop 5 to 10° above wings-level relative to the center section ②. The stopping point is controlled by an angled proximity sensor ⑫ at each center/wing hinge. If a wing does not stop in this range, adjust the proximity sensor.

1. Verify that the misalignment is not caused by air in the hydraulic system. Do not use the proximity adjustment to compensate for hydraulic problems.
2. Move the applicator to a solid, level surface. Raise and fold. See the instructions in the Operator Manual. Install lift-assist lock channels and the parking stands. See the instructions in the Operator Manual.
3. Set the FOLD / FIELD sensor to FOLD. Extend the fold/lift circuit to unfold until the inner wings stop.
4. Set the FOLD / FIELD sensor to FIELD. Retract the fold/lift circuit until the wings stop at “gull wing” (field lift, page 53). Set the circuit to Neutral. Shut off the tractor.
5. Turn the tractor key sensor to ON so there is electrical current to the fold proximity sensors. There is a red and a green LED in each of the fold proximity sensors.

   • If no LED is illuminated at any of the fold proximity sensors, check the power source for the tractor.

   • If neither LED is illuminated at a fold proximity sensor, check the electrical circuit for that fold proximity sensor.

   • If the green LED is illuminated, the fold proximity sensor is adjusted correctly.

   • If the red LED is illuminated, the gap between the fold proximity sensor and the actuator is not correct.

6. To adjust the gap, loosen the front adjusting nut at the sensing end of the fold proximity sensor. Adjust the rear adjusting nut until the red LED illuminates.

Note: If the actuator is bolted to the wing, do not adjust the position of the actuator.

•To lower the angle at which the wing stops, raise the fold proximity sensor in the sensor mount. Make sure the green LED is still illuminated and tighten the nuts.

•To raise the angle at which the wing stops, lower the fold proximity sensor in the sensor mount. Make sure the green LED is still illuminated and tighten the nuts.

7. Fold and unfold the wings to check the adjustment.

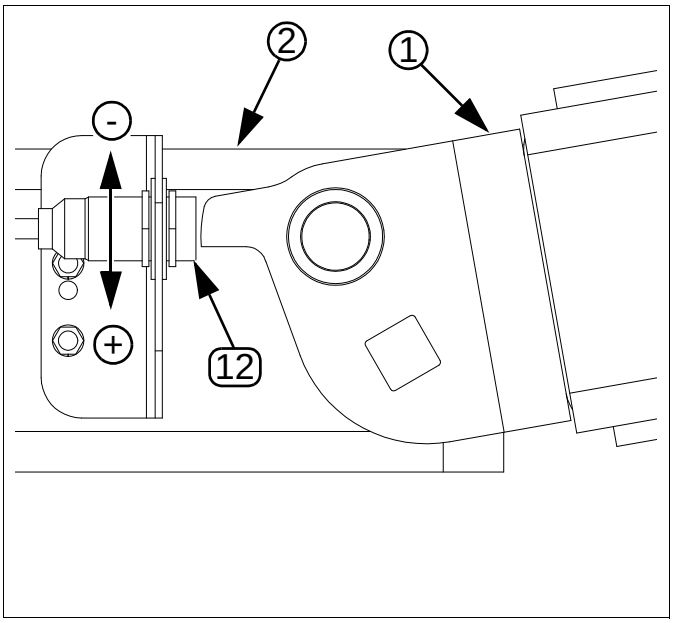


Figure 11 36950
Field Fold Stop Proximity Sensor

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

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