

STRAIGHT FROM THE **HEARTLAND**

2023 - 2024



DRILL UNIT CATALOG

800-798-1968
SHIELDAG.COM

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This catalog is representative of a few of the 70 unique styles we build.
 Call us or use the info request at shieldag.com and we will assist you
 in meeting the exact specifications for your needs.

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ADU OPERATORS MANUAL

SAFETY FIRST

1. Always secure equipment with jack stands or blocking when working underneath the equipment.
2. When setting up 3-point type equipment with ACRA Drill Units, check the rating of the tractor's 3-pt. hitch. ADU's weigh approximately 110 lbs ea. or more depending on the options. The additional weight of the ADU's may exceed the tractor's capacity causing either loss of steering or hydraulic system damage. In some cases, weight may have to be added to the front of the tractor.
3. When installing, removing or adjusting the row width, handle the parallel linkage with extreme caution to avoid injury. Pinch points exist between the parallel linkage and the brackets. CAUTION!!!! When flexing spring equipped linkage, block to prevent accidental spring back and finger injury.
4. The ADU disk blades are very sharp and create pinch points. Wear gloves and use extreme caution when rotating blades or adjusting. Keep hands and feet from under the blades. Wear gloves when making all adjustments near the disk blades, seed tube adjustments or spring tension adjustments. Accidental contact with the edge of the disk blade can cause severe lacerations.

SET UP AND INSTALLATION

1. To mount ACRA Drill Units on a drill, locate the center of each section. Mark the center and work towards both ends measuring and marking the space with each row. Each mark will be the center of a drill unit. NOTE: Minimum row spacing for ADU's with standard brackets is 7 ½ inches. By special request we can reduce the row-to-row measurement to about 6-1/2". Brackets are available to stagger the rows for more residue clearance and we recommend stagger mounts for most applications at 10" or less between rows. Position the row unit and tighten the U-Bolts.

2. After mounting row units to the bar, install the flexible O.E.M. tube from the feed cup to the drill unit. Secure to the ADU seed tube to insure they stay in place.
3. The ADU Notched disks are set at the factory. To check proper disk clearance, rotate one disk and it should rotate the other. You should be able to hold one disk and the other should slip against it as you rotate it. The disk should touch and make a scraping sound as they are rotated.
4. Blade gap should be checked after each season of usage. Adjusting the gap between the blades is done by adding or removing shims that are behind the blades. Note: the left hand blade is attached with a left hand thread 5/8 bolt and the right hand blade is attached with a right hand thread 5/8 bolt. Shims need to be added or removed to center the V-Slice insert between the blades. As blades wear you will remove a shim from each side and store it on the outside of the bearing, under the dust cap. You do not need to measure, just visually (eye-ball) it in the center. CAUTION!!!! Use extreme care when handling the blades. They are extremely sharp and have a pinch point.

OPERATING INSTRUCTIONS

ACRA Drill Units are designed and built to customer's mounting bar operation height. The standard single parallel spring unit is designed to attach to a mounting bar operating at 18-20 inches above the ground. Dual spring (parallel link) systems are set up for about 24" above the ground. This will flex the parallel linkage to a working attitude of approximately 45 degrees to the ground. This gives the best performance. There are several bar operation heights being used. Remember, for best performance the parallel link arm should be deflected to approximately 45 degrees. When toolbar height is properly adjusted, parallel linkage will operate between a 30 and a 60 degree angle.

To adjust your drill for best possible results, follow this sequence:

1. Level drill toolbar front to back and side to side.
2. Adjust spring down pressure for field conditions. Spring tension is set by adjusting the tension bolt. At the factory, it is set at a minimum. Adding two revolutions adjusts to approximately 150 lbs down pressure at the opener V-Slice insert. A total of 8 revolutions will increase it to approximately 230 lbs. Beyond 8 additional revolutions of the tension bolt can cause permanent spring damage by over stretching and permanently deforming the spring. Units with two springs are adjusted the same way, tightening each the same amount. ADUs can be built with two mainsprings to increase down pressure from 300 lbs to 425 lbs of down pressure. Since 2019, the auxiliary springs are standard equipment unless customers delete them from the order. This system of two horizontal springs allows for fine-tuning up to an additional 100lbs of downforce and it seems to assist in balancing the load from the press wheel to the center dual disc body of the ADU. PLEASE NOTE that for every pound of downforce applied with the ADU system, the toolbar must have ballast added to match the required downforce. In some cases, small utility tractors used to tow the ADU will require front weights to balance the tractor itself.

3. The ADU system is set up to yield (8) ¼" (6mm) adjustments of the dual pin system of the AP-305135 gage wheel depth system, with (4) more gross adjustments using the pin through the item (2) AP-505031 gross depth adjuster. This yields (32) usable press wheel settings. Our service drawing AP-305135 has been revised to show the basic adjustments.
 4. Raise the gage wheel and operate a short distance. Dig down to see where seed is being placed. Remember the seed trench is approximately 3/8 below the bottom of the disk blades. Adjust the gage wheel to maintain the depth that you want to place the seed. NOTE: First time users of these units will initially plant too deep. Make sure that all press wheels are turning as you plant. Work the depth adjusters as necessary to get all rows to plant at the same depth.
 5. Seed not in the bottom of the trench would indicate the seed tube is too high. Seed tube position is relative to ground speed and soil conditions. The seed tube can be adjusted higher for fast ground speed or wet conditions and lower for slower speeds and dry conditions. We do offer a seed tube rubber flap for difficult seeding conditions, AP-301103-F bulletin is attached.
- 6. WHEN MAKING SHARP TURNS, LIFT THE DRILL SO THE UNITS ARE OUT OF THE GROUND TO PREVENT DAMAGE TO THE DRILL UNIT.**
7. **NEVER BACK UP WITH THE ACRA DRILL UNIT IN THE GROUND.** This will cause the seed tube to plug with soil. NOTE: Periodically check bolts for tightness.
 8. **BE CAREFUL WHEN LOADING AND UNLOADING THE ADU DRILL** from transport trailers, or when raising or lowering at your shop or storage facility, as the Seed Firmer V-slice insert hangs below the blades, it is made of chrome carbide and can break if the unit is set down hard on trailers or the ground.

TROUBLE SHOOTING

- | | |
|------------------------|---|
| 1. Disk plugging | Adjust disk gap, soil too wet, disk blades worn |
| 2. Dirt build up | Adjust disk gap, soil too wet, disk blades worn |
| 3. Seed tube plugging | Lower drill on the move, seed tube too low |
| 4. Variable seed depth | Adjust seed tube height, try the seed tube flap AP-301103-F <ol style="list-style-type: none"> a. Check V-slice for sharpness or breakage b. Re-level all rows and check depth settings |
| 5. Planting too deep | Back off spring tension, toolbar too low |
| 6. Units riding out | Re-ballast toolbar and balance with front tractor weights |

SERVICE AND STORAGE

1. Do not let V-slice insert (seed firmer) get too short or rounded off. Insert must stick below the disk blades at least 1/8 inch. Inserts can be sharpened to a sharp V if rounded off. It is advisable to replace the V-slice insert (seed firmer) when the casting itself is less than 1-3/4" of "stickout" below the ADU center body.
2. The original 15" disk blade diameter should not be allowed to wear below 14-3/8 inches. If the notches in the discs get worn down to less than about 3/8" performance drops and cutting action is reduced. Residue management is severely reduced when the notch depth is shallow. Always maintain proper blade gap.
3. Each joint of the parallel linkage has a Nylatron bushing for a bearing surface that requires no greasing saving daily maintenance time. These should be checked for wear at the beginning of each season and should be replaced when showing excessive wear.
4. When storing for the off season, do not coat the insert with grease. Do not set the drill or planter down with the inserts supporting the weight of the equipment. Do not set equipment on concrete. The insert is a casting and breakage can occur.
5. It is best to reduce the spring tension when stored for more than three months.

NOTE: Attached to this manual are general arrangement drawings for several styles of ADUs and the primary subassemblies along with some information on setting press wheels. A couple of options are also shown. For your particular ADU unit we will have a specific ADU parts breakdown available on request. We make ADU mounts for any size of toolbar, square or rectangular, from 3 X 3 up to 7 X 7 and metric sizes upon request. This packet includes 4 X 4 toolbar mounts because we have built so many different styles.

PRIMARY SERVICE ITEMS, we recommend initial stock of those quantities in brackets

AP-300537	Nylatron Bushing	[stock 4ea]
AP-331100	V-Slice Insert	[stock 1ea]
AP-301103-S	Seed Tube	[stock 1ea]
AP-301151	11 Notch Disk Assembly	[stock 1ea]
AP-301152	15 Notch Disk Assembly	[stock 1ea]
AP-301155	Disk Bearing	[stock 1ea]

800-798-1968 620-662-7221 shieldag.com

ShieldAg purchased Acra-Plant in 1998 and moved it to Hutchinson, KS. To maintain continuity of this product line, Shield retained the lead researcher and head product engineer, Bruce Albright. Shield further invested in product and tooling upgrades to meet the needs of modern researchers and small land-holder sustainable agriculture farmers.

- Mounts from 7" to 2" toolbar sizes, all sizes of square and rectangular toolbars
- Standard spacing as low as 7"; 6-1/2" with some hardware changes
- Modern Nylatron bearings in every pivot position, requires no greasing
- Heavy-duty 4mm notched openers with extreme-condition bearings
- Single and double spring down pressure
- Auxiliary springs available for added balance and down pressure
- 3 Press wheel styles from 2 X 13 round crown to 4 X 12 double peak
- Extended mounts for staggering row units at tight spacings, stagger is 5" aft of standard
- Front-mounted adjustable but fixed-position cutting coulters for really tough conditions
- Swivel front coulters available, requires separate toolbar on drill
- Front-mounted inter-row dry or liquid (or both) fertilizer or cover crop seeder
- Low rate dry behind-the-seed application available

On the next page there is a basic specification guide, please have your lead researcher complete the questionnaire so that we can fine-tune ADU units for your needs. Attached are several of the 30+ general arrangement drawings popular with seed research drill builders, universities, independent research units and seed companies.

Acra Drill unit Planning Guide

Acra Plant offers several “off the shelf” versions of the ADU for standard toolbars. We have also engineered dozens of optional mounts and packing/closing wheels for just about any drill or planter application.

- OEM Drill conversions
- Air seeders
- Row crop planters
- Seed research plot drills/planters

If one of the Acra Plant standard solutions does not suit your need, “measure up” what you need and answer the following questions, then call 800-798-1968 and we’ll step you through a “customization process” to tailor the ADU to your application:

ATTACHING TOOLBAR SIZE Vertical (Height) and Horizontal (Width) of your toolbar _____

BAR OPERATING HEIGHT Measure from the bottom of the toolbar to the ground in the operating position

PRESS WHEEL DESIRED Narrow, wide, V-closer, and desired SIZE of your press wheel _____

STANDARD WHEELS 2 X 13” round crown, 4 X 12” double peak, 4 X 12” smooth crown

CIRCLE ONE SINGLE SPRING (Standard) WITH or without Auxilliary springs (adds about 80# of down pressure per row) DOUBLE SPRING (Optional) down pressure springs in the ADU linkage—REMEMBER, we can get to about 250 # of down pressure per row (plus unit weight), but your DRILL FRAME has to be able to handle the additional load and you MAY need to add ballast to the bar with double springs

ROW SPACING DESIRED Distance between rows _____

FORE-AFT STAGGERED ROWS DESIRED YES NO Important for NARROW row configuration or trash flow

DRY OR LIQUID FERTILIZER DESIRED YES NO Tell us HOW MUCH #/acre and WHERE you want it with respect to the seed placement and WHAT SIZE feed hose you are using

IF YOU THINK you would need very **special mountings** for an odd geometry or mounting, tell us a little about it (swivel mounts or vertical shank mounts) _____

YOUR NAME: _____ COMPANY NAME: _____

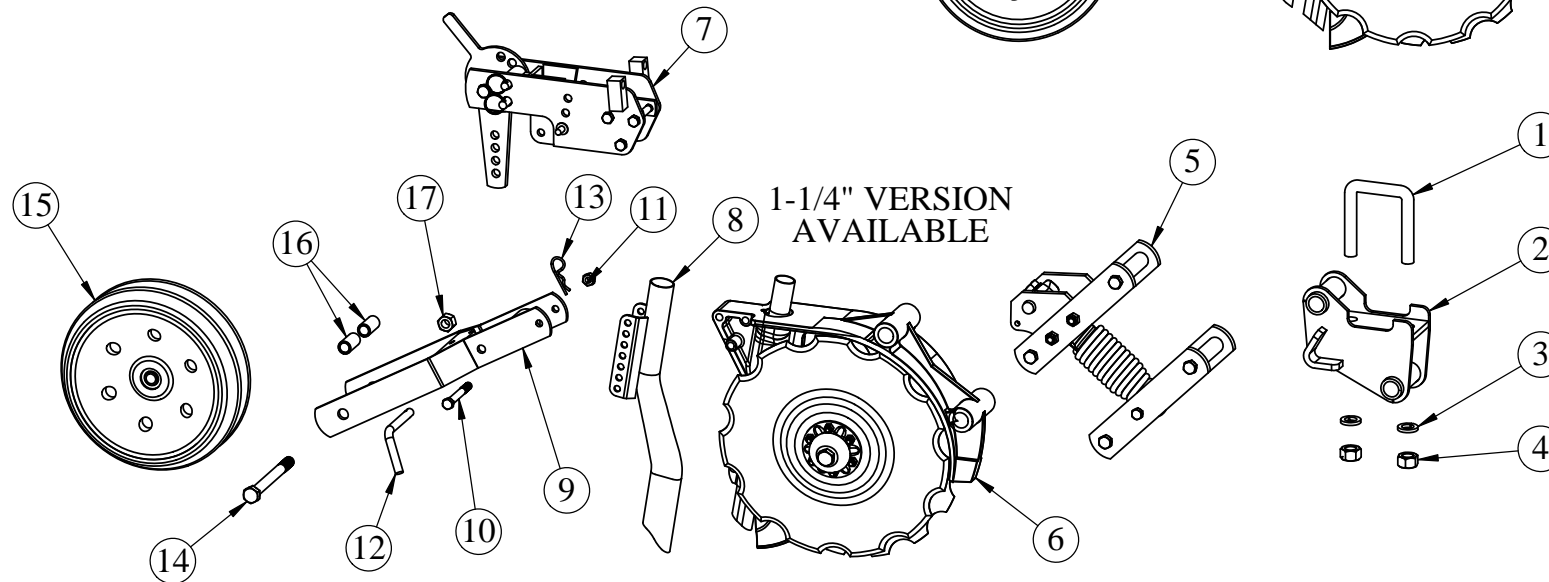
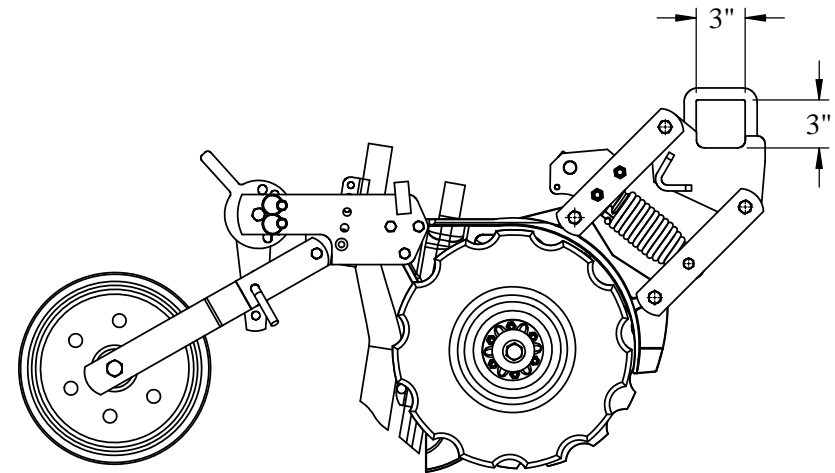
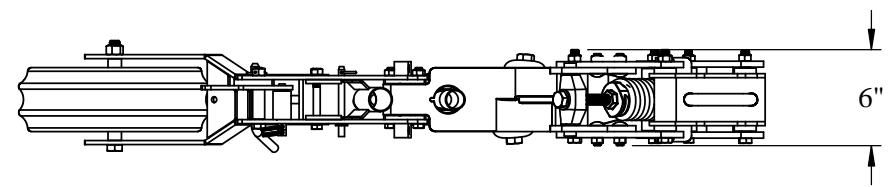
PHONE: _____ EMAIL ADDRESS : _____

ADDRESS: _____

You can COPY this page with the information filled out and FAX IT to 800-878-1849 or 620-662-7482 or EMAIL it to WEB REQUEST EMAIL ADDRESS HERE

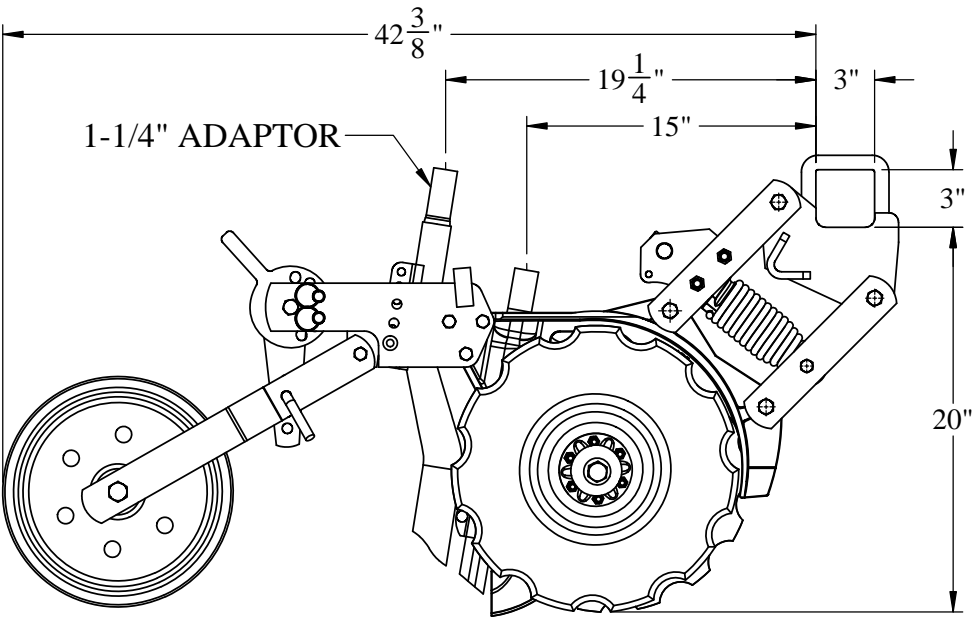
www.shieldag.com Phone: 800-798-1968

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	AP-500546	U-BOLT, 3 X 3 X 3/4-10	1
2	AP-305638	ADU 3" RIGID MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	ADU PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-305141	GAGE WHEEL DEPTH ADJUSTMENT, DRY FERTILIZER	1
8	AP-305140	ADU FERTILIZER TUBE WELDMENT, 1-1/2"	1
9	AP-300413	ADU PRESS WHEEL ARM	1
10	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
11	AP-500583	NUT, TOP LOCK 7/16	1
12	AP-500552	3" PULL PIN WITH CLIP	1
13	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
14	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
15	AP-510723	PRESS WHEEL, 4X12 V-Groove	1
16	AP-501540	ADU PRESS WHEEL SPACER, DUAL ARM	2
17	AP-510597	5/8-11 TOP LOCK NUT	1



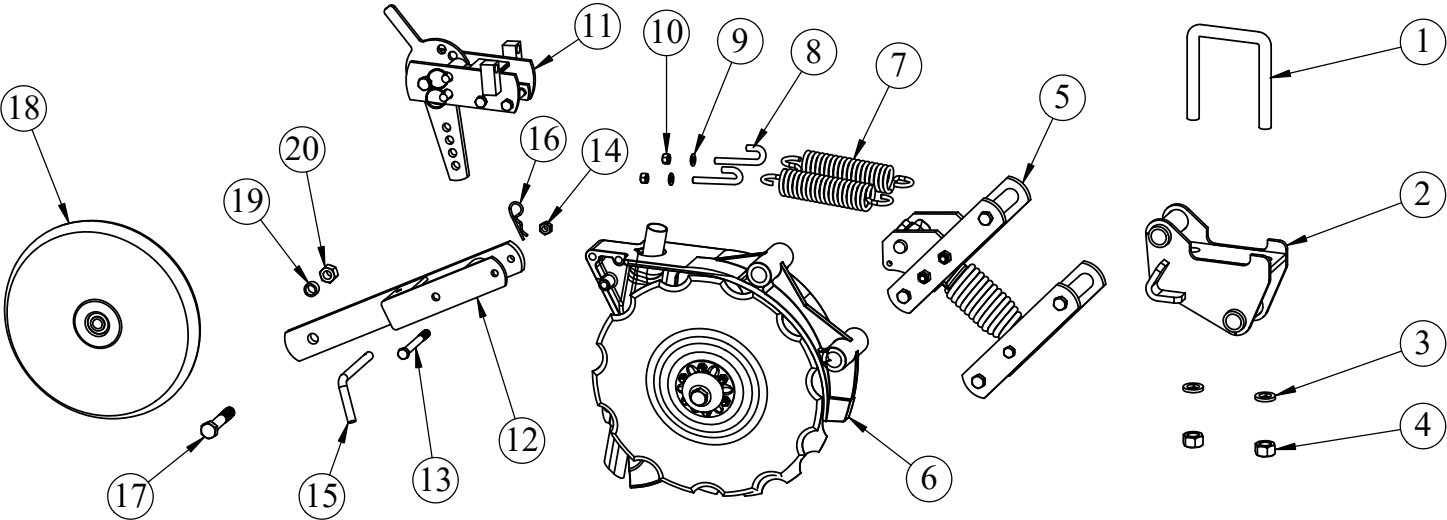
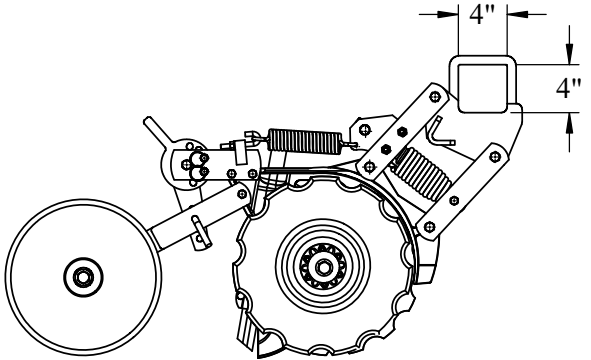
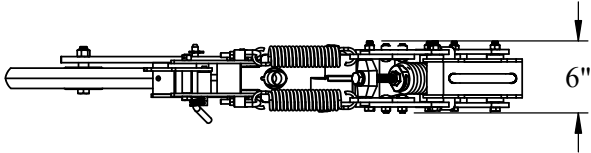
				AP-ADU3X3/DF/DP		NC	
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>		<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div> <div>DRAWN BY: HURLBUT</div> <div>DATE: 2/17/2022</div> <div>CHECKED BY:</div> <div>DATE:</div>	
REV.	BY	DATE	DESCRIPTION				
DESCRIPTION				MATERIAL		DO NOT SCALE DRAWING	
ADU, 3X3, 1-1/2" FERT AND 4X12" DOUBLE PEAK PRESS WHEEL				ASSEMBLY		Weight: 83.46 LBS	
						PART NO. AP-ADU3X3/DF/DP	
						REV. NC	

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17	AP-510597	5/8-11 TOP LOCK NUT	1



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629	ADU 4" RIGID MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300412	GAGE WHEEL BRACKET	1
13	AP-500482	7/16-14 X 4" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500557	4" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510503	5/8-11 X 3-1/2" HEX BOLT GR 5	1
18	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
19	AP-500328	ADU PRESS WHEEL SPACER	1
20	AP-510597	5/8-11 TOP LOCK NUT	1



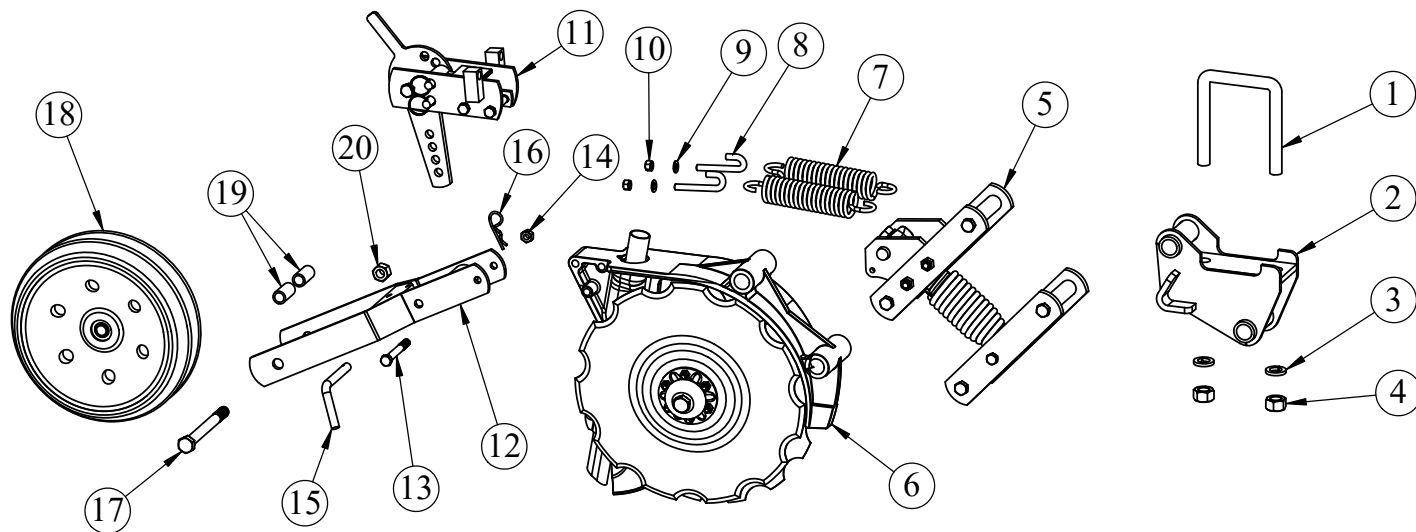
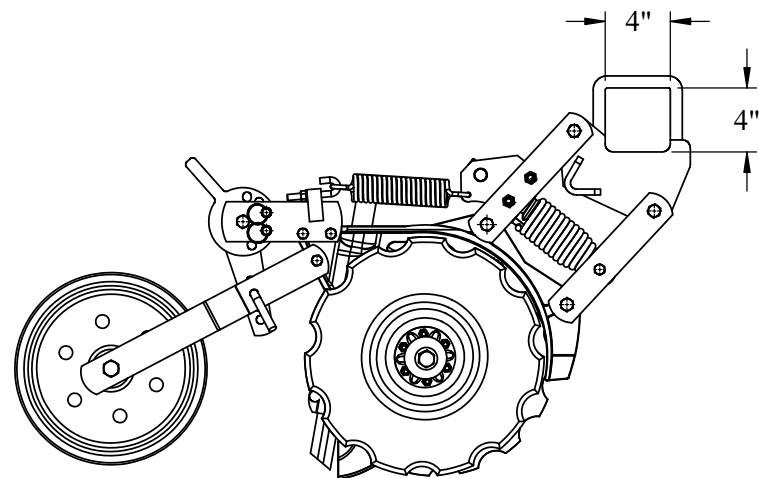
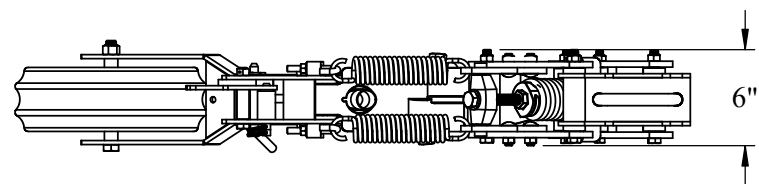
REV.	BY	DATE	DESCRIPTION

DESCRIPTION		MATERIAL	DO NOT SCALE DRAWING	PART NO.	REV.
ADU, 4X4 W/ AUX SPRINGS		ASSEMBLY	Weight: 105.99 LBS	AP-ADU4X4/AS	NC

TOLERANCE UNLESS OTHERWISE NOTED
0/0 +/- .06
0.00 +/- .020
0.000 +/- .005
0.0000 +/- .001
ANGLE +/- 1

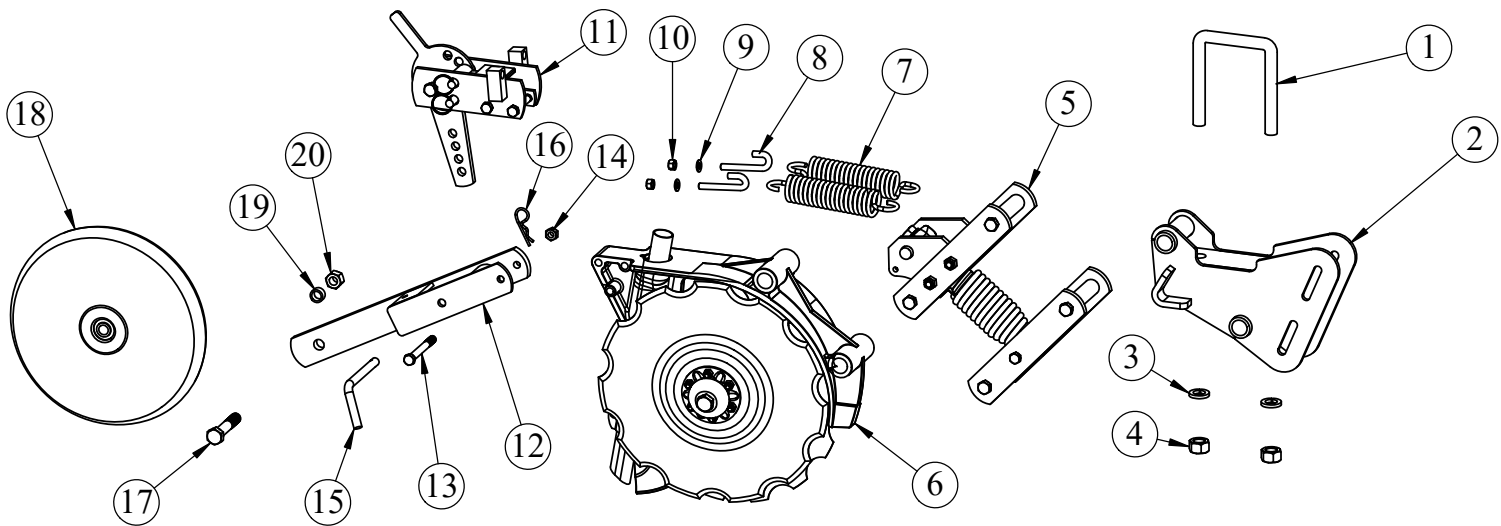
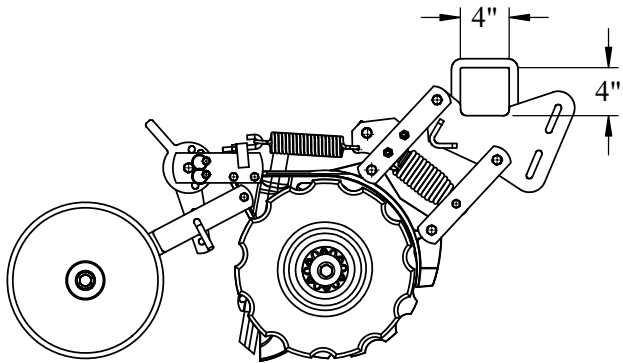
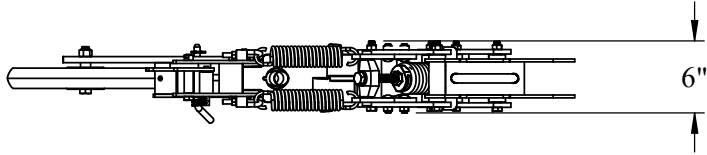
AP-ADU4X4/AS		NC
<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>		
DRAWN BY:	HURLBUT	DATE: 2/19/2018
CHECKED BY:		DATE:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629	ADU 4" RIGID MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300413	ADU PRESS WHEEL ARM	1
13	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500552	3" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
18	AP-510723	PRESS WHEEL, 4X12 V-Groove	1
19	AP-501540	ADU PRESS WHEEL SPACER	2
20	AP-510597	5/8-11 TOP LOCK NUT	1



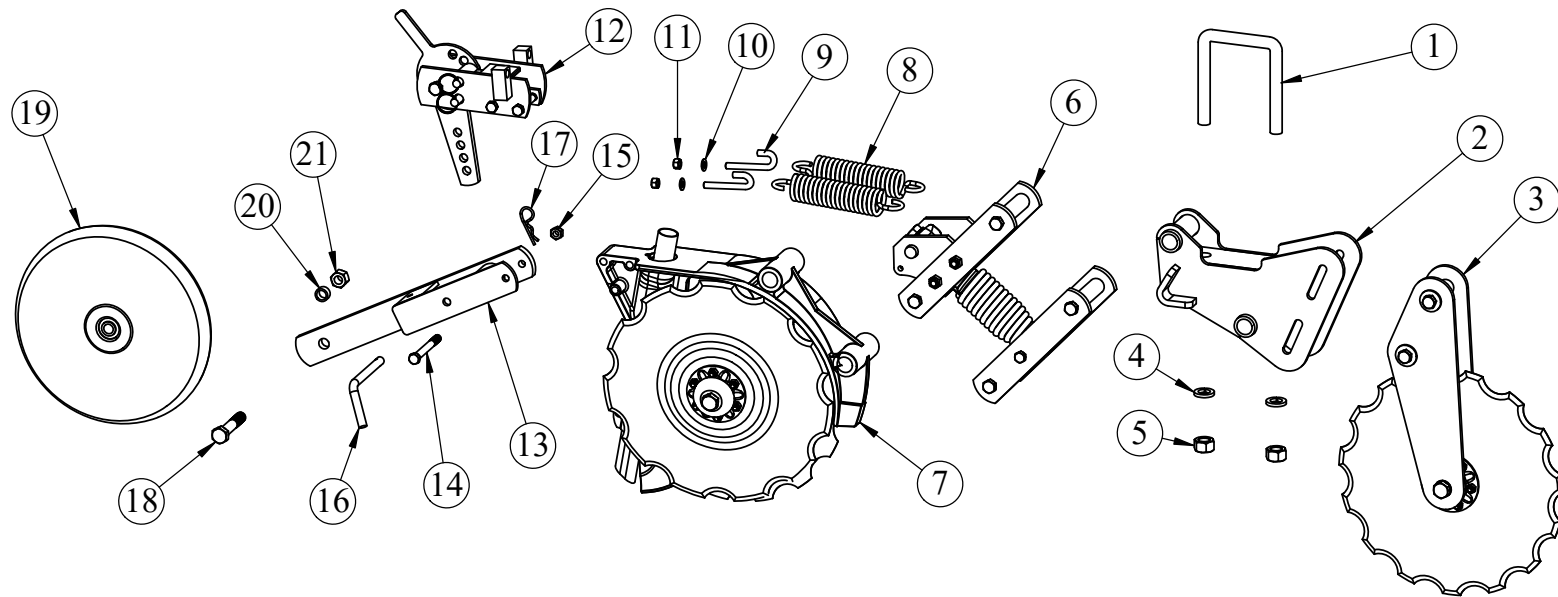
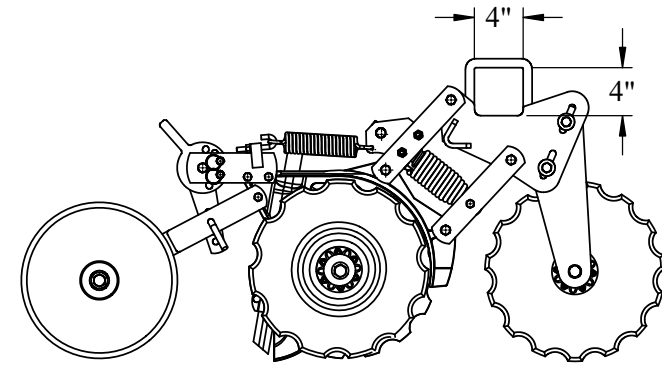
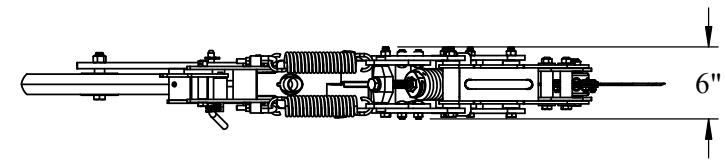
				AP-ADU4X4/AS/DP		NC	
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>		<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div> <div>DRAWN BY: HURLBUT</div> <div>DATE: 7/14/2020</div> <div>CHECKED BY:</div> <div>DATE:</div>	
REV.	BY	DATE	DESCRIPTION				
DESCRIPTION				MATERIAL		DO NOT SCALE DRAWING	
ADU 4X4, AUX SPRINGS, DUAL ARM WITH 4X12 PRESS WHEEL				ASSEMBLY		Weight: 108.19 LBS	
						PART NO.	
						AP-ADU4X4/AS/DP	
						REV.	
						NC	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629-CLT	4" ADU COULTER MOUNT	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300412	GAGE WHEEL BRACKET	1
13	AP-500482	7/16-14 X 4" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500557	4" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510503	5/8-11 X 3-1/2" HEX BOLT GR 5	1
18	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
19	AP-500328	ADU PRESS WHEEL SPACER	1
20	AP-510597	5/8-11 TOP LOCK NUT	1

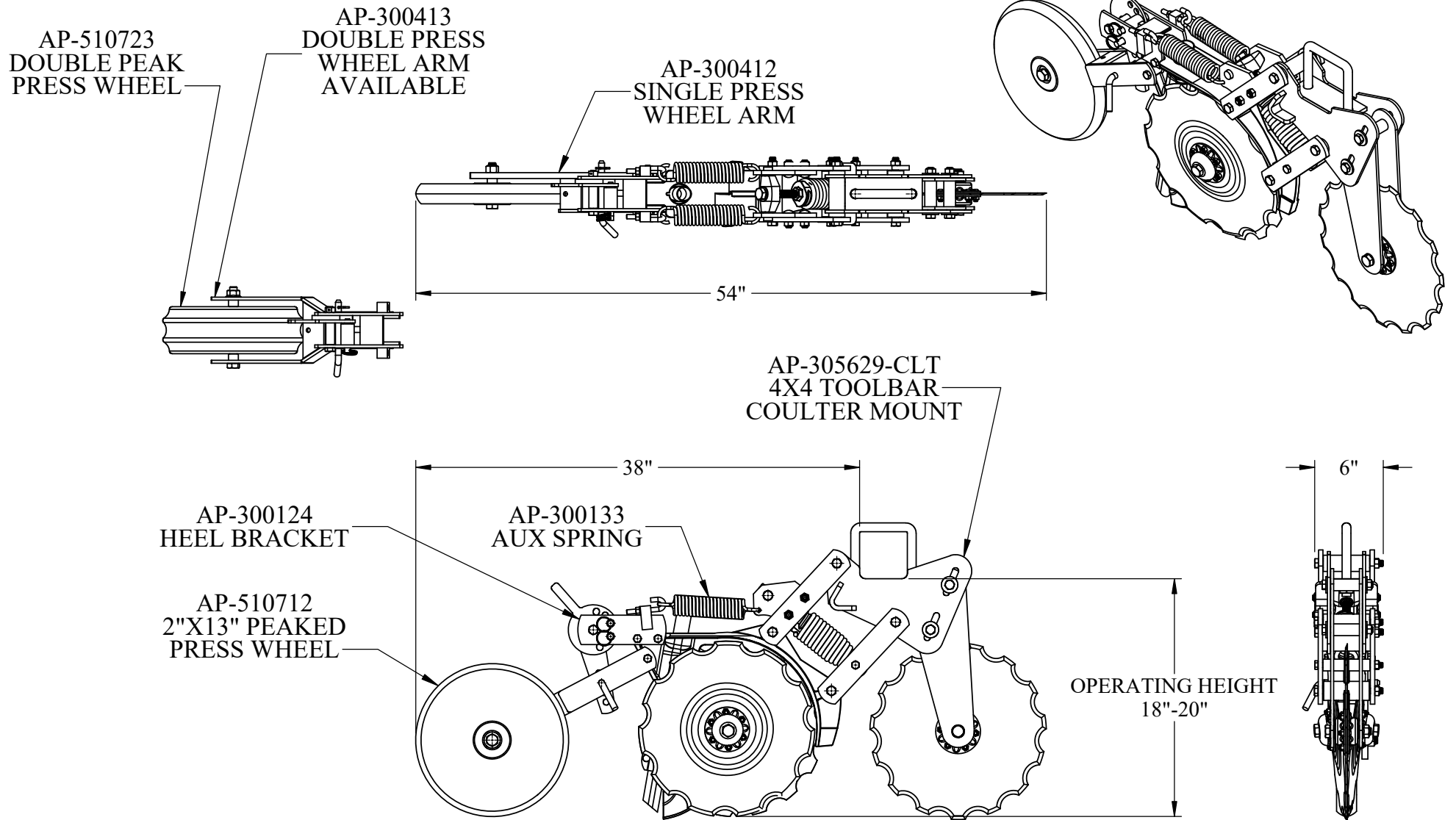


				AP-ADU4X4/CM/AS		NC					
			<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>			<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>					
						DRAWN BY: HURLBUT		DATE: 6/10/2019			
REV.	BY	DATE				DESCRIPTION			CHECKED BY:		DATE:
DESCRIPTION				MATERIAL		DO NOT SCALE DRAWING		PART NO.		REV.	
ADU, 4X4 COULTER MOUNT AND AUX SPRINGS				ASSEMBLY		Weight: 113.62 LBS		AP-ADU4X4/CM/AS		NC	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629-CLT	4" ADU COULTER MOUNT	1
3	AP-305645	15" ADU COULTER BLADE ASSEMBLY	1
4	LW6	3/4" SPLIT LOCK WASHER	2
5	N6	3/4-10 HEX NUT	2
6	AP-333999	AUD PARALLEL LINKS & SPRING	1
7	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
8	AP-300133	DOUBLE HOOK SPRING	2
9	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
10	AP-500613	3/8" FLAT WASHER, SAE	2
11	N2	3/8-16 HEX NUT	2
12	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
13	AP-300412	GAGE WHEEL BRACKET	1
14	AP-500482	7/16-14 X 4" HEX BOLT GR 5	1
15	AP-500583	NUT, TOP LOCK 7/16	1
16	AP-500557	4" PULL PIN WITH CLIP	1
17	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
18	AP-510503	5/8-11 X 3-1/2" HEX BOLT GR 5	1
19	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
20	AP-500328	ADU PRESS WHEEL SPACER	1
21	AP-510597	5/8-11 TOP LOCK NUT	1



				AP-ADU4X4/CT/AS		NC		
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>	<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>			
					DRAWN BY: HURLBUT	DATE: 2/19/2018		
					CHECKED BY:	DATE:		
REV.	BY	DATE	DESCRIPTION					
DESCRIPTION				MATERIAL	DO NOT SCALE DRAWING		PART NO.	REV.
ADU, 4X4 W/ AUX SPRINGS AND COULTER				ASSEMBLY	Weight: 126.50 LBS		AP-ADU4X4/CT/AS	NC



AP-ADU4X4/CT/AS NC

SHIELD

AGRICULTURAL EQUIPMENT

DRAWN BY: HURLBUT DATE: 2/19/2018

CHECKED BY: DATE:

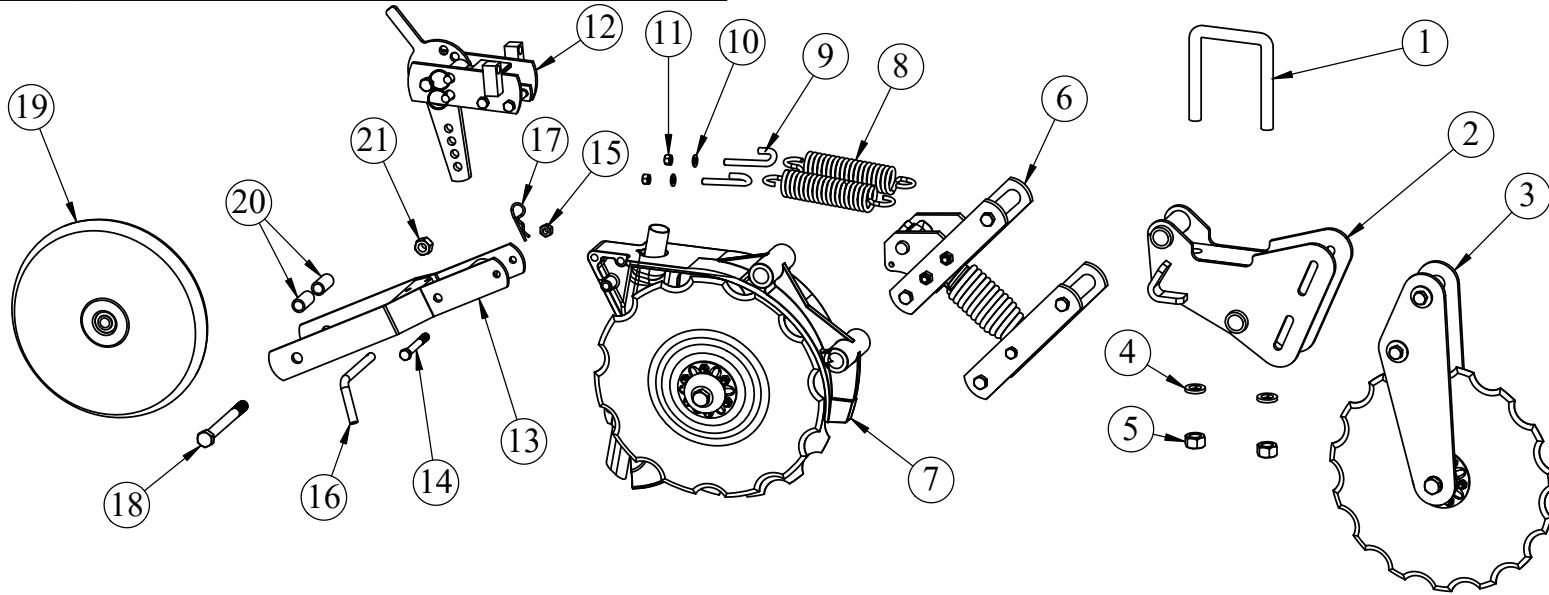
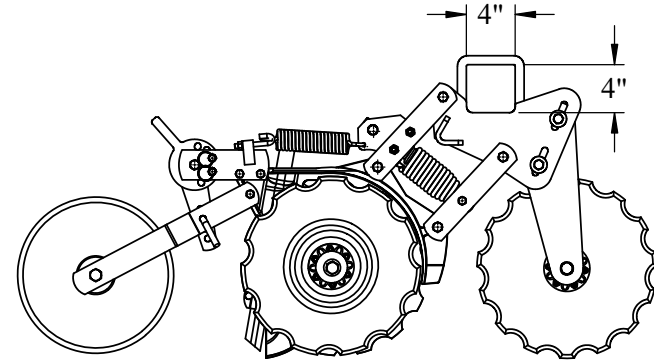
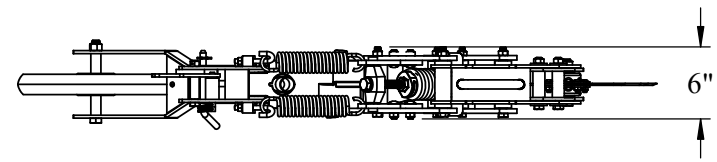
DESCRIPTION
ADU, 4X4 W/ AUX SPRINGS AND COULTER

MATERIAL
ASSEMBLY

DO NOT SCALE DRAWING
Weight: 126.50 LBS

PART NO.
AP-ADU4X4/CT/AS REV.
NC

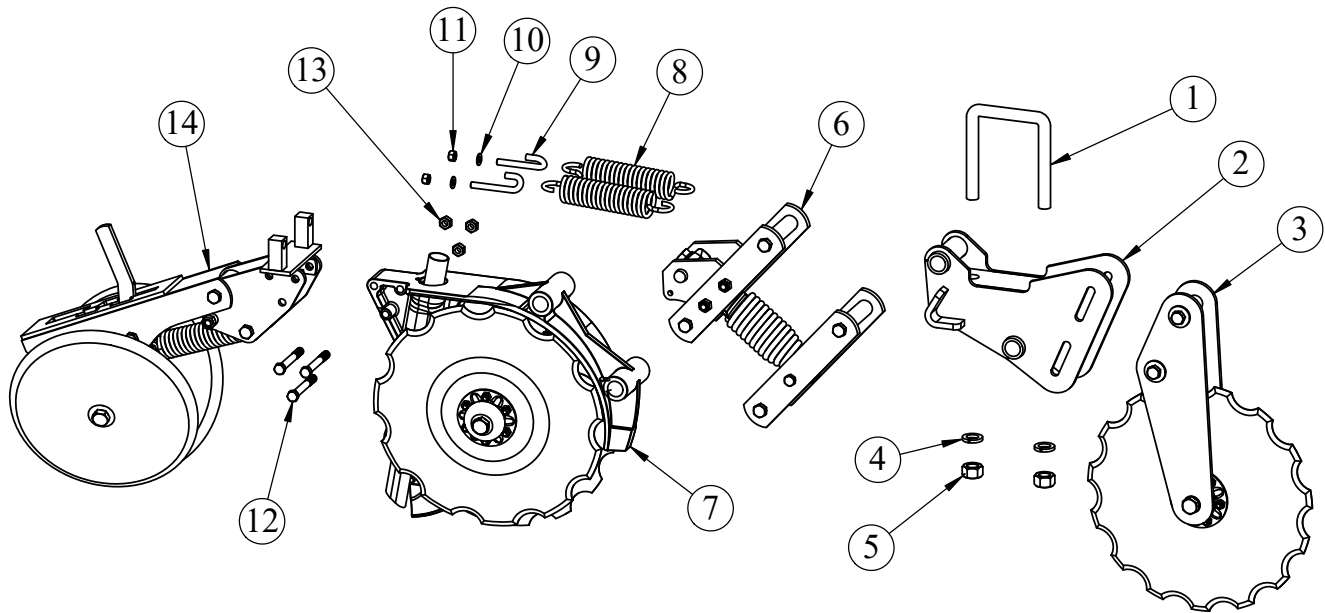
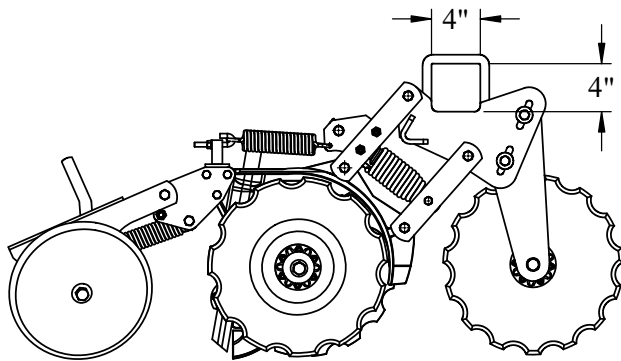
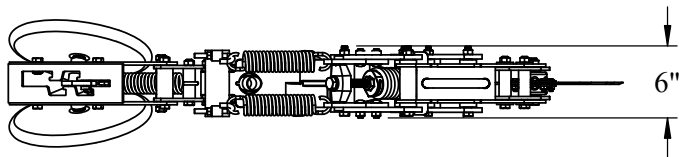
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629-CLT	4" ADU COULTER MOUNT	1
3	AP-305645	15" ADU COULTER BLADE ASSEMBLY	1
4	LW6	3/4" SPLIT LOCK WASHER	2
5	N6	3/4-10 HEX NUT	2
6	AP-333999	AUD PARALLEL LINKS & SPRING	1
7	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
8	AP-300133	DOUBLE HOOK SPRING	2
9	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
10	AP-500613	3/8" FLAT WASHER, SAE	2
11	N2	3/8-16 HEX NUT	2
12	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
13	AP-300413	ADU PRESS WHEEL ARM	1
14	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
15	AP-500583	NUT, TOP LOCK 7/16	1
16	AP-500557	4" PULL PIN WITH CLIP	1
17	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
18	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
19	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
20	AP-501540	ADU PRESS WHEEL SPACER	2
21	AP-510597	5/8-11 TOP LOCK NUT	1



AP-ADU4X4/CT/AS/DA/SC NC

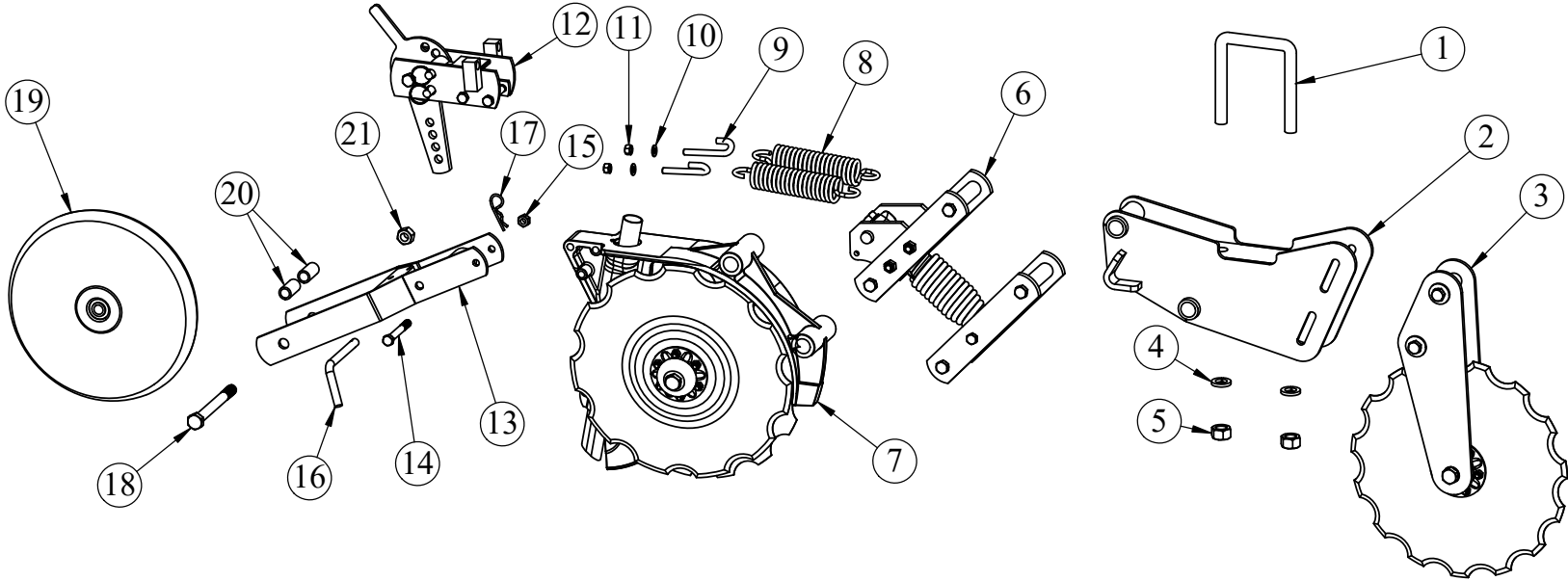
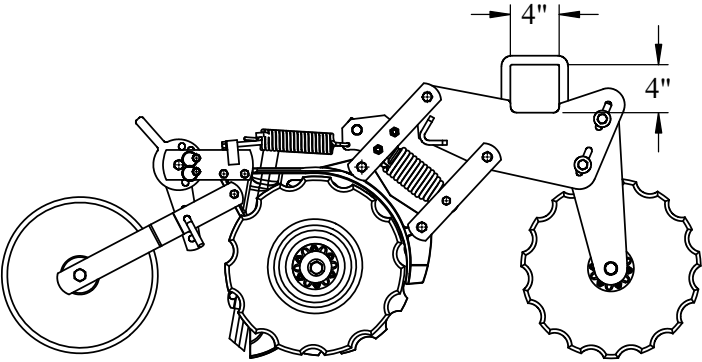
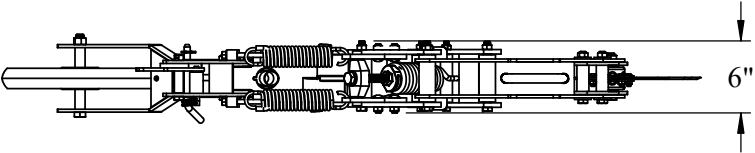
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629-CLT	4" ADU COULTER MOUNT	1
3	AP-305645	15" ADU COULTER BLADE ASSEMBLY	1
4	LW6	3/4" SPLIT LOCK WASHER	2
5	N6	3/4-10 HEX NUT	2
6	AP-333999	AUD PARALLEL LINKS & SPRING	1
7	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
8	AP-300133	DOUBLE HOOK SPRING	2
9	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
10	AP-500613	3/8" FLAT WASHER, SAE	2
11	N2	3/8-16 HEX NUT	2
12	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	3
13	AP-500583	NUT, TOP LOCK 7/16	3
14	AP-305650	CLOSING WHEEL-CIMMYT	1



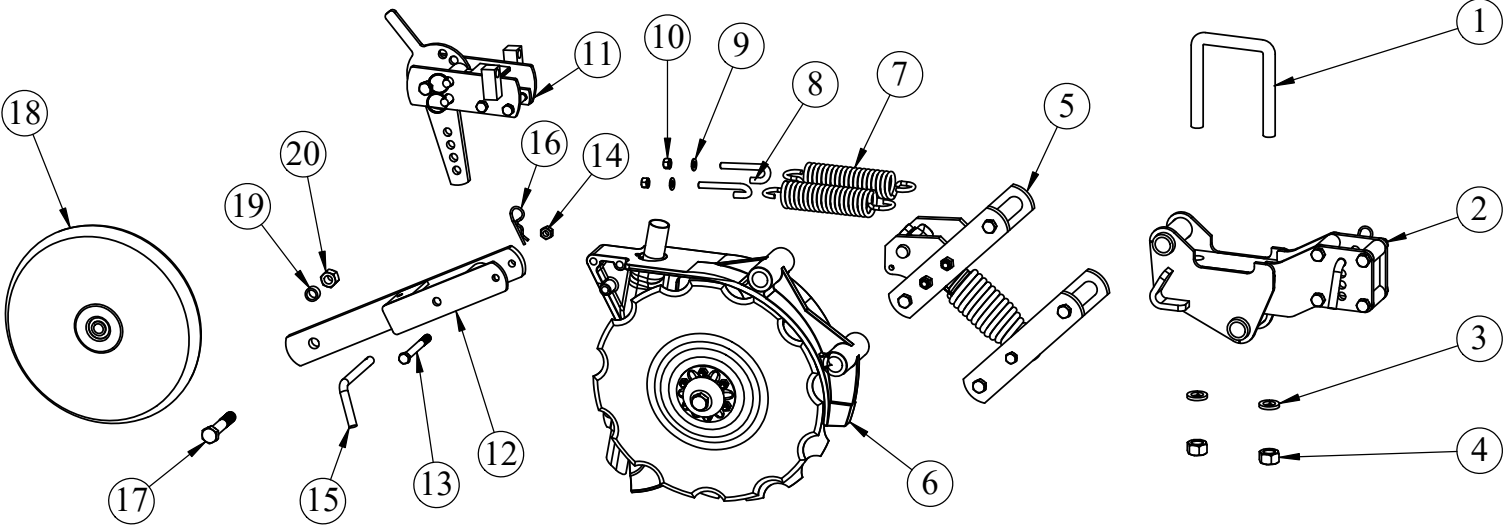
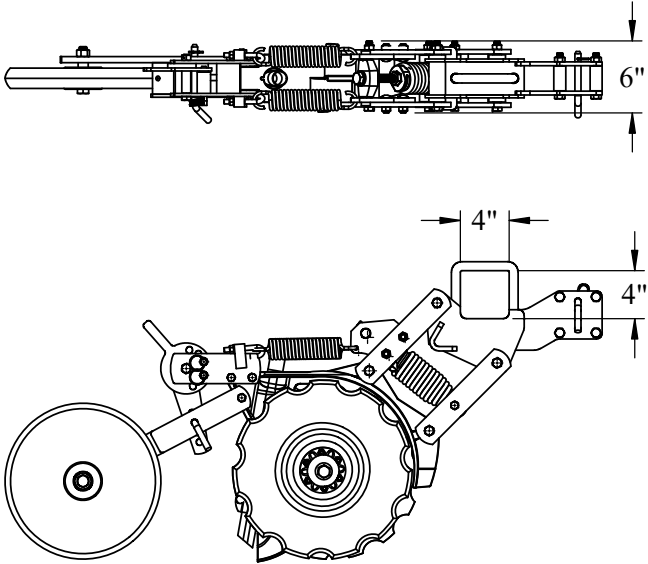
				AP-ADU4X4/CT/AS/VW		NC		
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>	<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>			
					DRAWN BY: HURLBUT		DATE: 6/28/2017	
					CHECKED BY:		DATE:	
REV.	BY	DATE	DESCRIPTION					
DESCRIPTION					MATERIAL		DO NOT SCALE DRAWING	PART NO.
ADU, 4X4 COULTER MOUNT W/ AUX SPRINGS & V-WHEEL				ASSEMBLY		Weight: 99.25 LBS	AP-ADU4X4/CT/AS/VW	NC

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	4X4 CLT EXT MOUNT	4" ADU COULTER MOUNT	1
3	AP-305645	15" ADU COULTER BLADE ASSEMBLY	1
4	LW6	3/4" SPLIT LOCK WASHER	2
5	N6	3/4-10 HEX NUT	2
6	AP-333999	AUD PARALLEL LINKS & SPRING	1
7	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
8	AP-300133	DOUBLE HOOK SPRING	2
9	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
10	AP-500613	3/8" FLAT WASHER, SAE	2
11	N2	3/8-16 HEX NUT	2
12	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
13	AP-300413	ADU PRESS WHEEL ARM	1
14	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
15	AP-500583	NUT, TOP LOCK 7/16	1
16	AP-500557	4" PULL PIN WITH CLIP	1
17	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
18	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
19	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
20	AP-501540	ADU PRESS WHEEL SPACER	2
21	AP-510597	5/8-11 TOP LOCK NUT	1

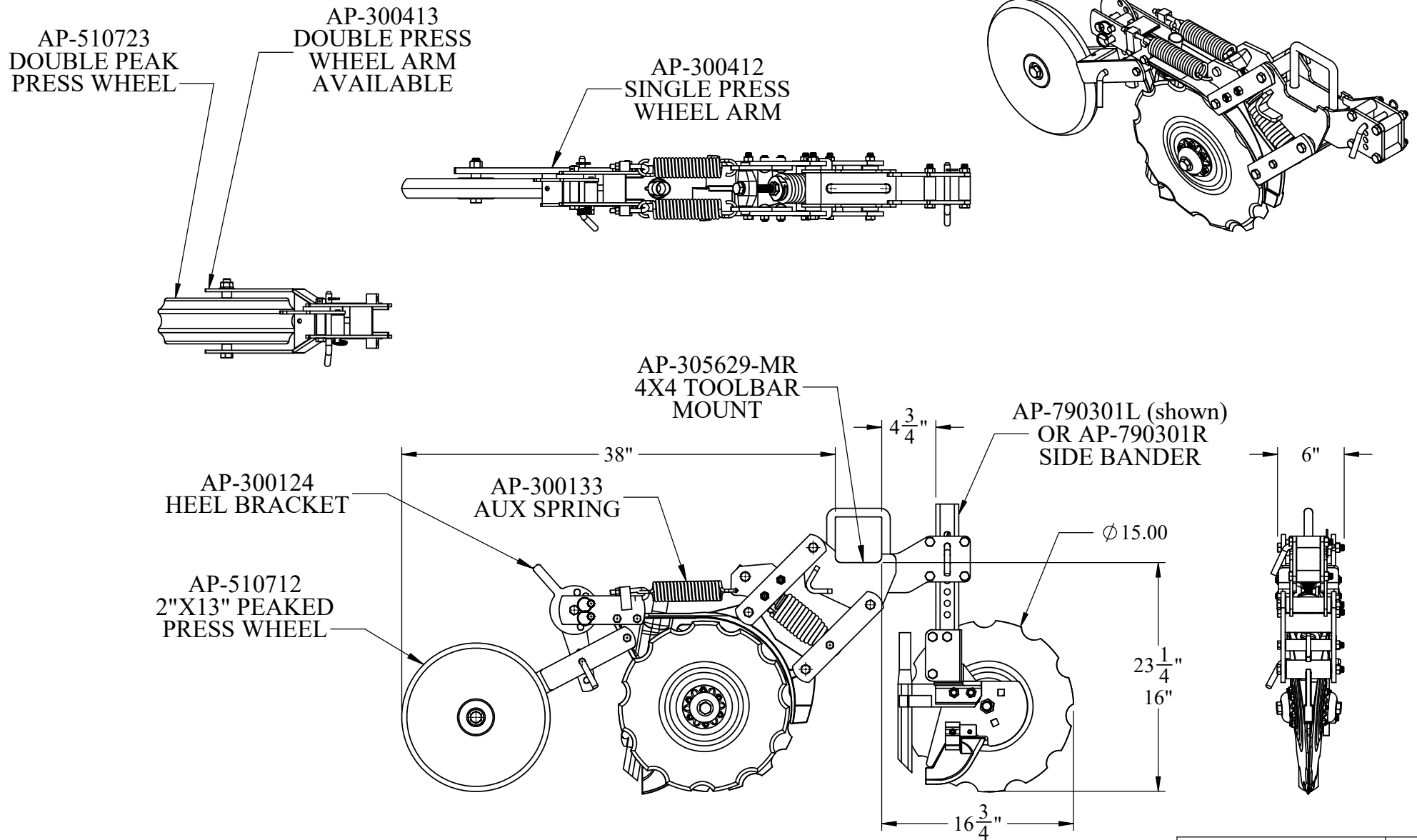


				AP-ADU4X4/EX/CT/AS/DA/SC		NC
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>		
				<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>		
				DRAWN BY: HURLBUT		DATE: 12/11/2018
				CHECKED BY:		DATE:
REV.	BY	DATE	DESCRIPTION	DO NOT SCALE DRAWING		PART NO.
ADU, 4X4, EXT. COULTER, AUX SPRINGS, DOUBLE ARM WITH SMOOTH CROWN				Weight: 130.80 LBS		AP-ADU4X4/EX/CT/AS/DA/SC
				MATERIAL		REV.
				ASSEMBLY		NC

ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305629-MR	ADU 4" MID ROW MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	ADU PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300412	GAGE WHEEL BRACKET	1
13	AP-500482	7/16-14 X 4" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500557	4" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510503	5/8-11 X 3-1/2" HEX BOLT GR 5	1
18	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
19	AP-500328	ADU PRESS WHEEL SPACER	1
20	AP-510597	5/8-11 TOP LOCK NUT	1



				AP-ADU4X4/MR/AS		NC
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>		
				<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div> <div>DRAWN BY: HURLBUT DATE: 1/14/2022</div> <div>CHECKED BY: DATE:</div>		
<div>DESCRIPTION</div> <div>ADU, 4X4, MID ROW W/ AUX SPRINGS</div>				<div>MATERIAL</div> <div>ASSEMBLY</div>		<div>DO NOT SCALE DRAWING</div> <div>Weight: 107.47 LBS</div>
<div>REV.</div> <div>BY</div> <div>DATE</div> <div>DESCRIPTION</div>				<div>PART NO.</div> <div>AP-ADU4X4/MR/AS</div>		<div>REV.</div> <div>NC</div>

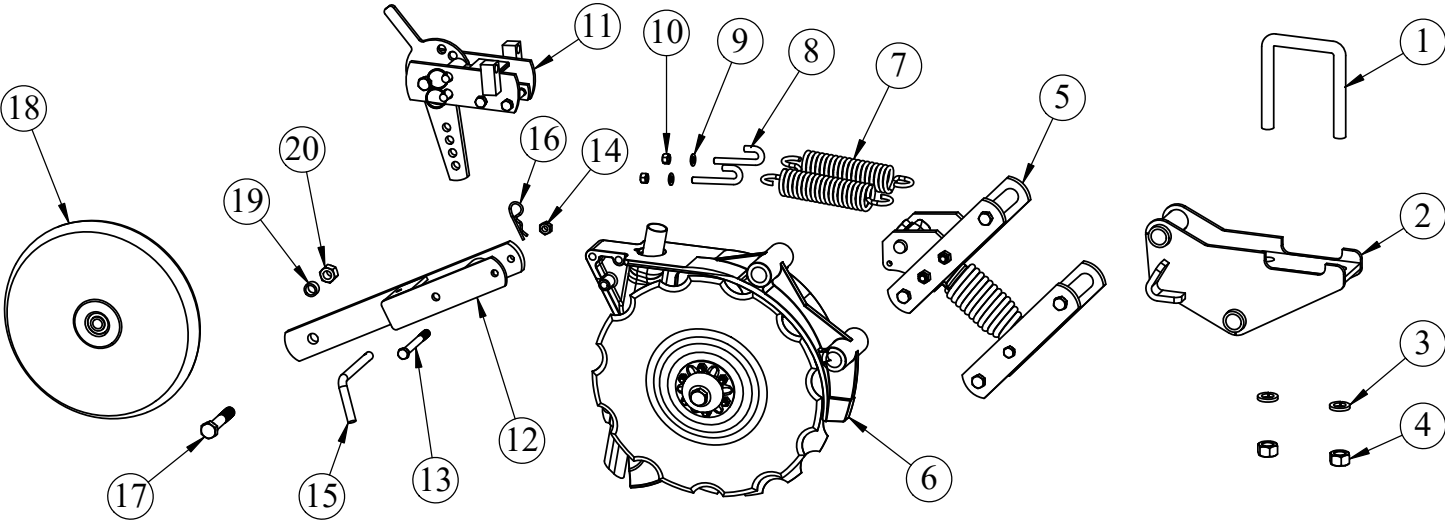
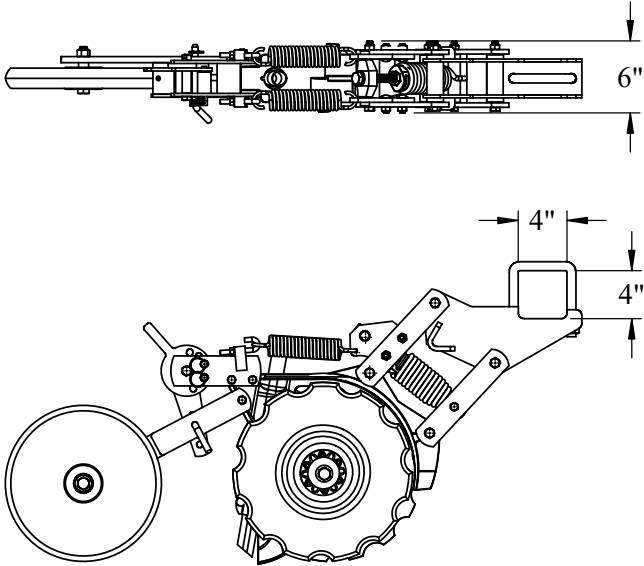


				AP-ADU4X4/MR/AS		NC
				SHIELD AGRICULTURAL EQUIPMENT		
				DRAWN BY:	HURLBUT	DATE: 1/14/2022
				CHECKED BY:		DATE:
DESCRIPTION				PART NO.		REV.
ADU, 4X4, MID ROW W/ AUX SPRINGS				AP-ADU4X4/MR/AS		NC
MATERIAL				DO NOT SCALE DRAWING		
ASSEMBLY				Weight: 107.47 LBS		

TOLERANCE UNLESS
OTHERWISE NOTED

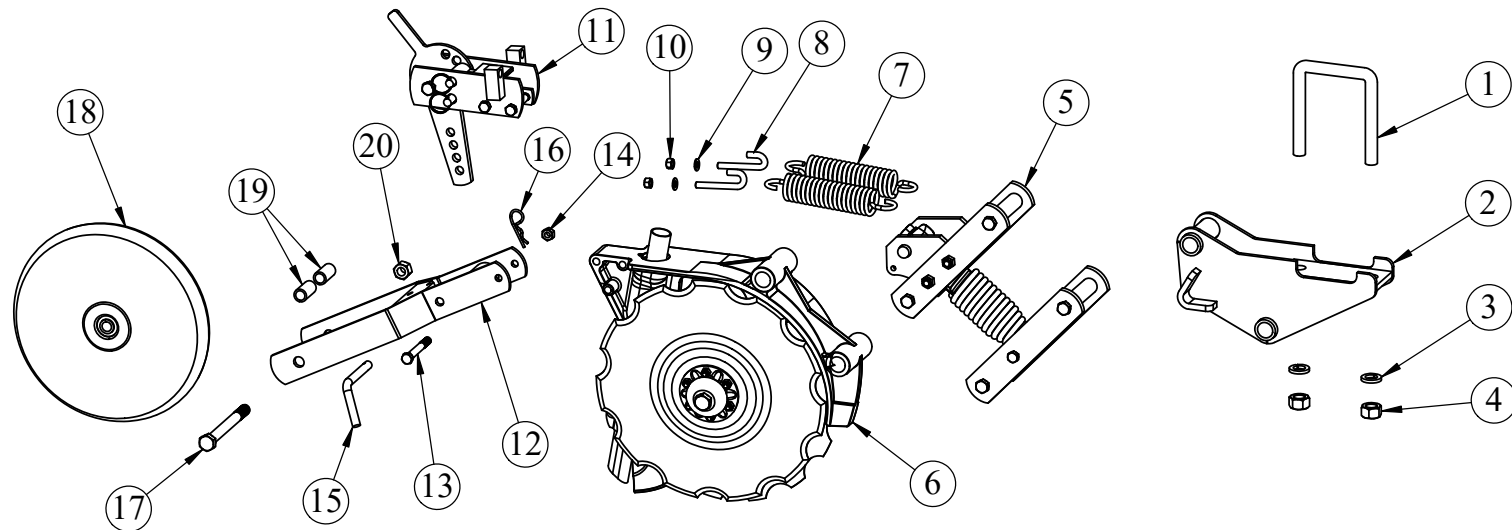
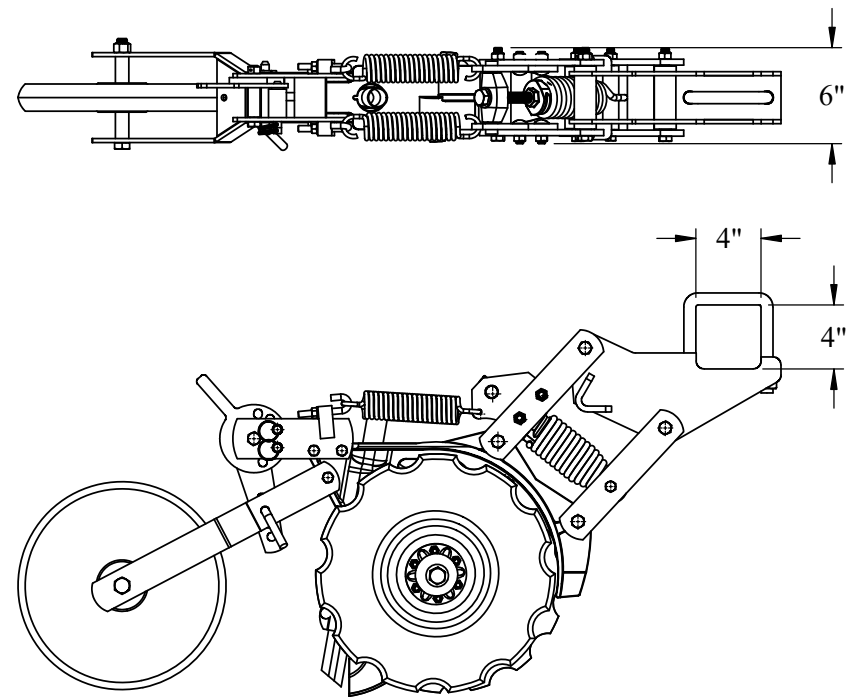
0/0 +/- .06
0.00 +/- .020
0.000 +/- .005
0.0000 +/- .001
ANGLE +/- 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305630	ADU 4" EXTENDED MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300412	GAGE WHEEL BRACKET	1
13	AP-500482	7/16-14 X 4" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500557	4" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510503	5/8-11 X 3-1/2" HEX BOLT GR 5	1
18	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
19	AP-500328	ADU PRESS WHEEL SPACER	1
20	AP-510597	5/8-11 TOP LOCK NUT	1



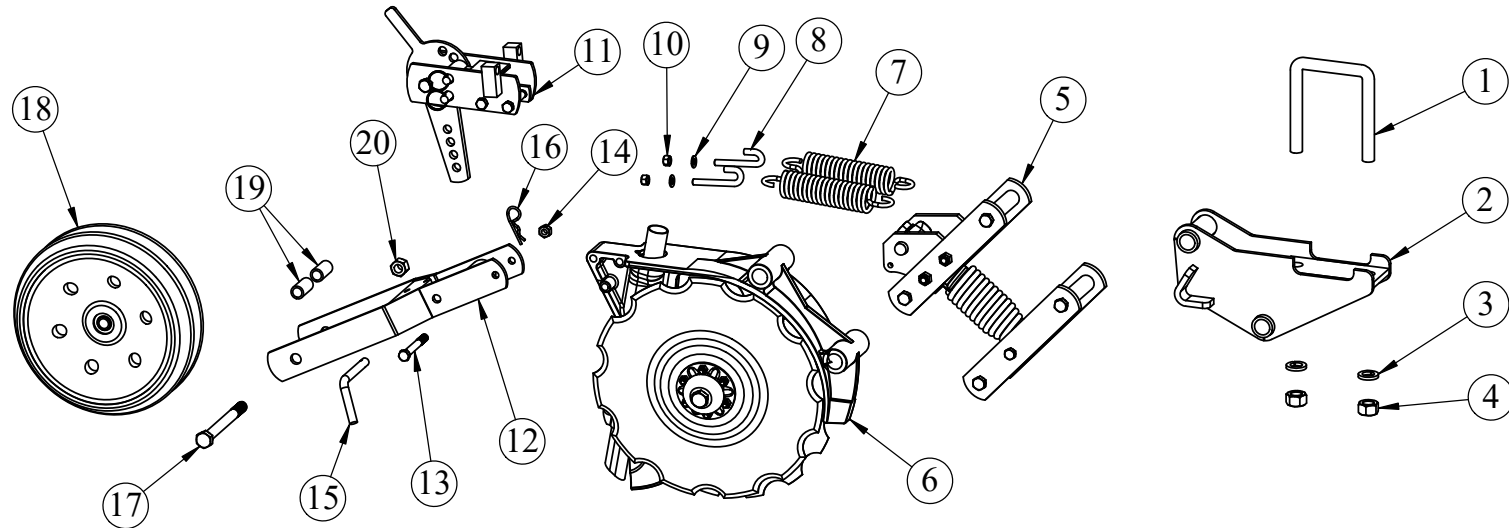
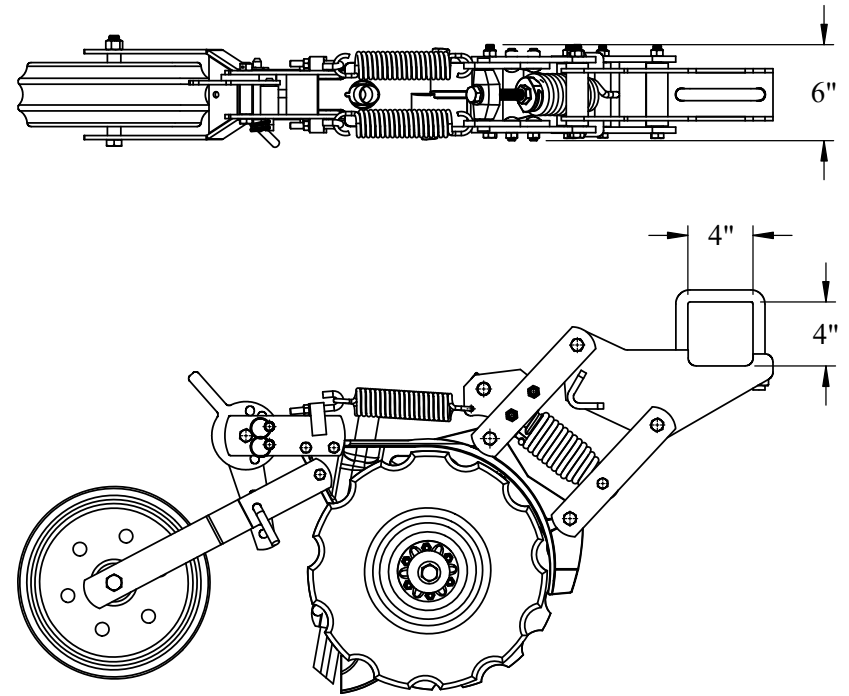
				AP-ADU4X4E/AS		NC					
			<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>			<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>					
REV.	BY	DATE	DESCRIPTION			DRAWN BY: HURLBUT		DATE: 2/19/2018			
							CHECKED BY:		DATE:		
DESCRIPTION				MATERIAL		DO NOT SCALE DRAWING		PART NO.		REV.	
ADU, 4X4 W/ AUX SPRINGS				ASSEMBLY		Weight: 112.36 LBS		AP-ADU4X4E/AS		NC	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305630	ADU 4" EXTENDED MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300413	ADU PRESS WHEEL ARM	1
13	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500552	3" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
18	AP-510712	PRESS WHEEL, 2" X 13", SEE CHART	1
19	AP-501540	ADU PRESS WHEEL SPACER	2
20	AP-510597	5/8-11 TOP LOCK NUT	1



				AP-ADU4X4E/AS/DA		NC
				SHIELD AGRICULTURAL EQUIPMENT		
				DRAWN BY: HURLBUT	DATE: 5/18/2020	
				CHECKED BY:	DATE:	
DESCRIPTION ADU 4X4 EXT. MOUNT, AUX SPRINGS, DUAL ARM WITH 2X13 PRESS WHEEL				MATERIAL ASSEMBLY	DO NOT SCALE DRAWING Weight: 111.58 LBS	PART NO. AP-ADU4X4E/AS/DA
REV. BY DATE DESCRIPTION				REV. NC		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	VERTICLE ADJUSTMENT MOUNT U-BOLT	1
2	AP-305630	ADU 4" EXTENDED MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-333999	AUD PARALLEL LINKS & SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300413	ADU PRESS WHEEL ARM	1
13	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500552	3" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
18	AP-510723	PRESS WHEEL, 4X12 V-Groove	1
19	AP-501540	ADU PRESS WHEEL SPACER	2
20	AP-510597	5/8-11 TOP LOCK NUT	1



				AP-ADU4X4E/AS/DP		NC		
				<div>TOLERANCE UNLESS OTHERWISE NOTED</div> <div>0/0 +/- .06</div> <div>0.00 +/- .020</div> <div>0.000 +/- .005</div> <div>0.0000 +/- .001</div> <div>ANGLE +/- 1</div>		<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>		
						DRAWN BY: HURLBUT		DATE: 1/19/2021
REV.	BY	DATE	DESCRIPTION			CHECKED BY:		DATE:
DESCRIPTION				MATERIAL		DO NOT SCALE DRAWING		
ADU, 4X4 EXT MOUNT, AUX SPRINGS AND 4X12 PRESS WHEEL				ASSEMBLY		PART NO. AP-ADU4X4E/AS/DP		
						REV. NC		
				Weight: 114.49 LBS				

TOLERANCE UNLESS
OTHERWISE NOTED

0/0 +/- .06

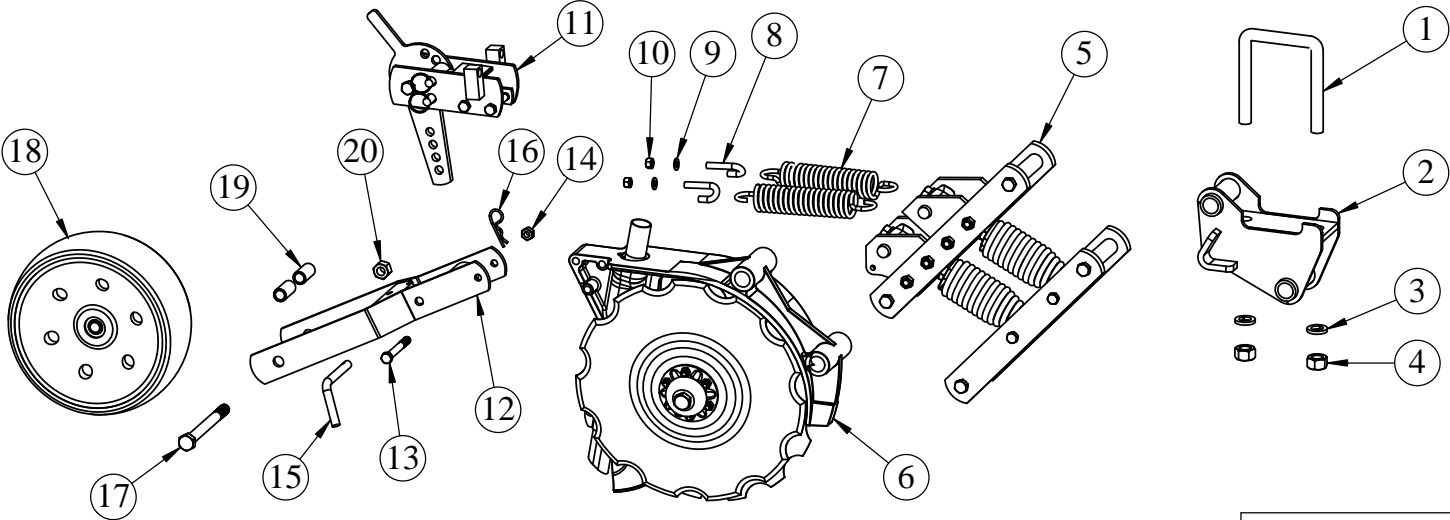
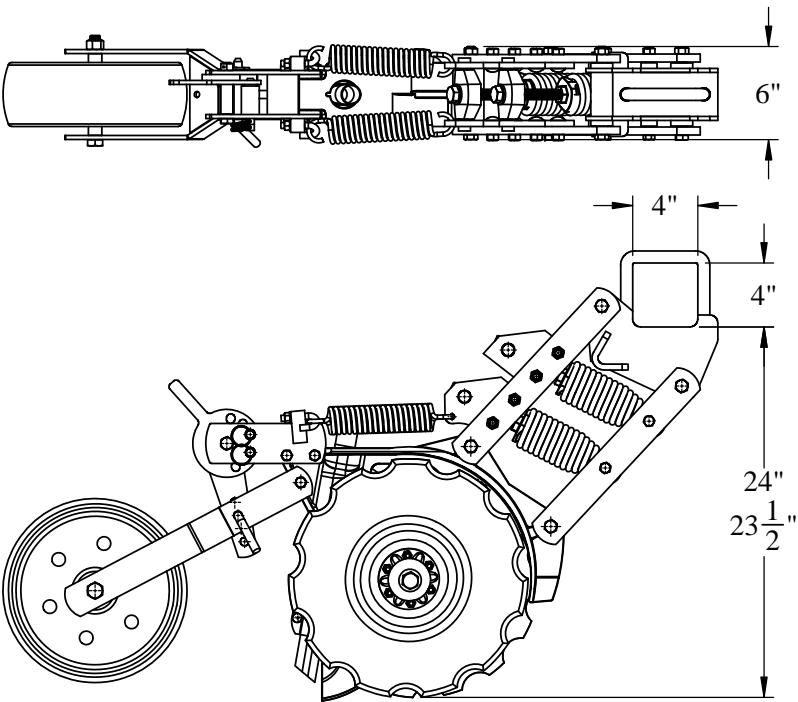
0.00 +/- .020

0.000 +/- .005

0.0000 +/- .001

ANGLE +/- 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	U-BOLT, 5.50" X 4" X 3/4-10	1
2	AP-305629	ADU 4" RIGID MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-334999	EXTENDED PARALLEL LINKS WITH DOUBLE SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300413	ADU PRESS WHEEL ARM	1
13	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500552	3" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
18	AP-510713	PRESS WHEEL, 4X12 WIDE CROWN	1
19	AP-501540	ADU PRESS WHEEL SPACER, DUAL ARM	2
20	AP-510597	5/8-11 TOP LOCK NUT	1



				AP-ADU4X4/DS/AS/WC		NC
				<div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div>		
				DRAWN BY: HURLBUT		DATE: 11/29/2021
				CHECKED BY:		DATE:
<div>REV.</div> <div>BY</div> <div>DATE</div> <div>DESCRIPTION</div>				<div>DO NOT SCALE DRAWING</div> <div>Weight: 114 LBS</div>		<div>PART NO.</div> <div>AP-ADU4X4/DS/AS/WC</div> <div>REV.</div> <div>NC</div>
ADU 4X4, DOUBLE SPRING, AUX SPRINGS, DUAL ARM WITH 4X12 PRESS WHEEL				MATERIAL		ASSEMBLY

TOLERANCE UNLESS OTHERWISE NOTED

0/0 +/- .06

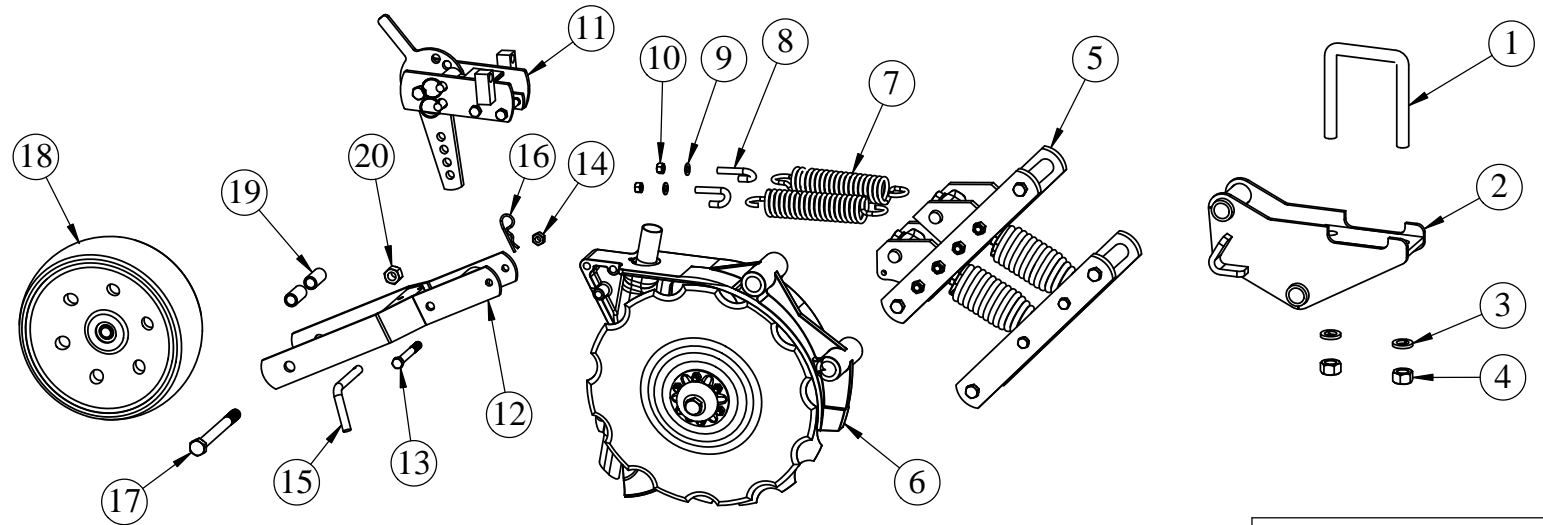
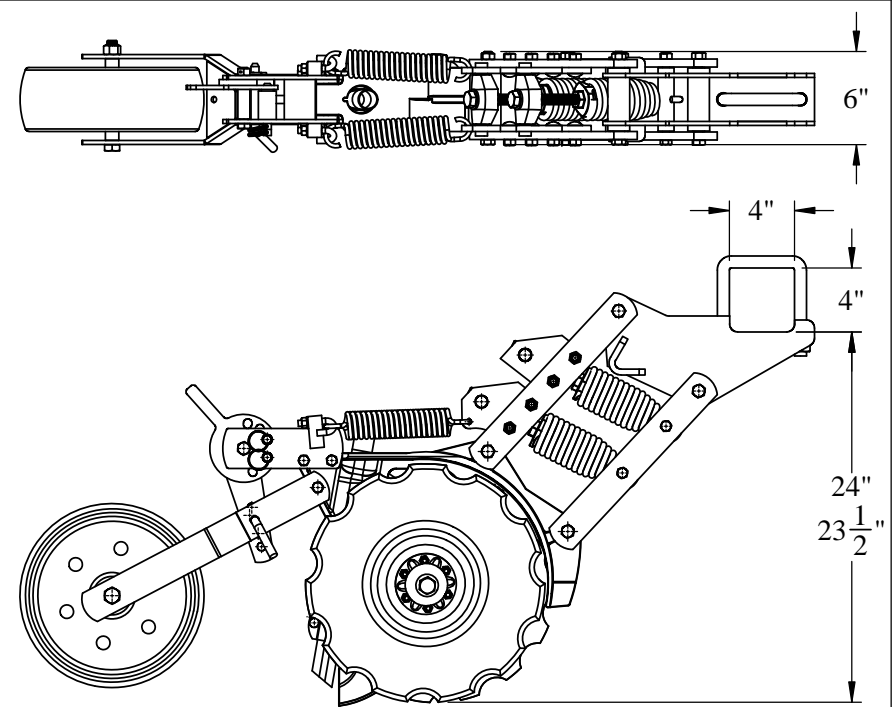
0.00 +/- .020

0.000 +/- .005

0.0000 +/- .001

ANGLE +/- 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-500531	U-BOLT, 5.50" X 4" X 3/4-10	1
2	AP-305630	ADU 4" EXTENDED MOUNT BRACKET	1
3	LW6	3/4" SPLIT LOCK WASHER	2
4	N6	3/4-10 HEX NUT	2
5	AP-334999	EXTENDED PARALLEL LINKS WITH DOUBLE SPRING	1
6	AP-302242-S	ADU CENTER BODY W/ STEEL SEED TUBE	1
7	AP-300133	DOUBLE HOOK SPRING	2
8	AP-500541	J-BOLT, 2" X 9/16" X 3/8-16	2
9	AP-500613	3/8" FLAT WASHER, SAE	2
10	N2	3/8-16 HEX NUT	2
11	AP-305135	GAGE WHEEL DEPTH ADJUSTMENT	1
12	AP-300413	ADU PRESS WHEEL ARM	1
13	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	1
14	AP-500583	NUT, TOP LOCK 7/16	1
15	AP-500552	3" PULL PIN WITH CLIP	1
16	AP-500553	1/8" HAIRCLIP, INCLUDED WITH PULL PIN	1
17	AP-510716	5/8-11 X 6-1/2" HEX BOLT GR 5	1
18	AP-510713	PRESS WHEEL, 4X12 WIDE CROWN	1
19	AP-501540	ADU PRESS WHEEL SPACER, DUAL ARM	2
20	AP-510597	5/8-11 TOP LOCK NUT	1

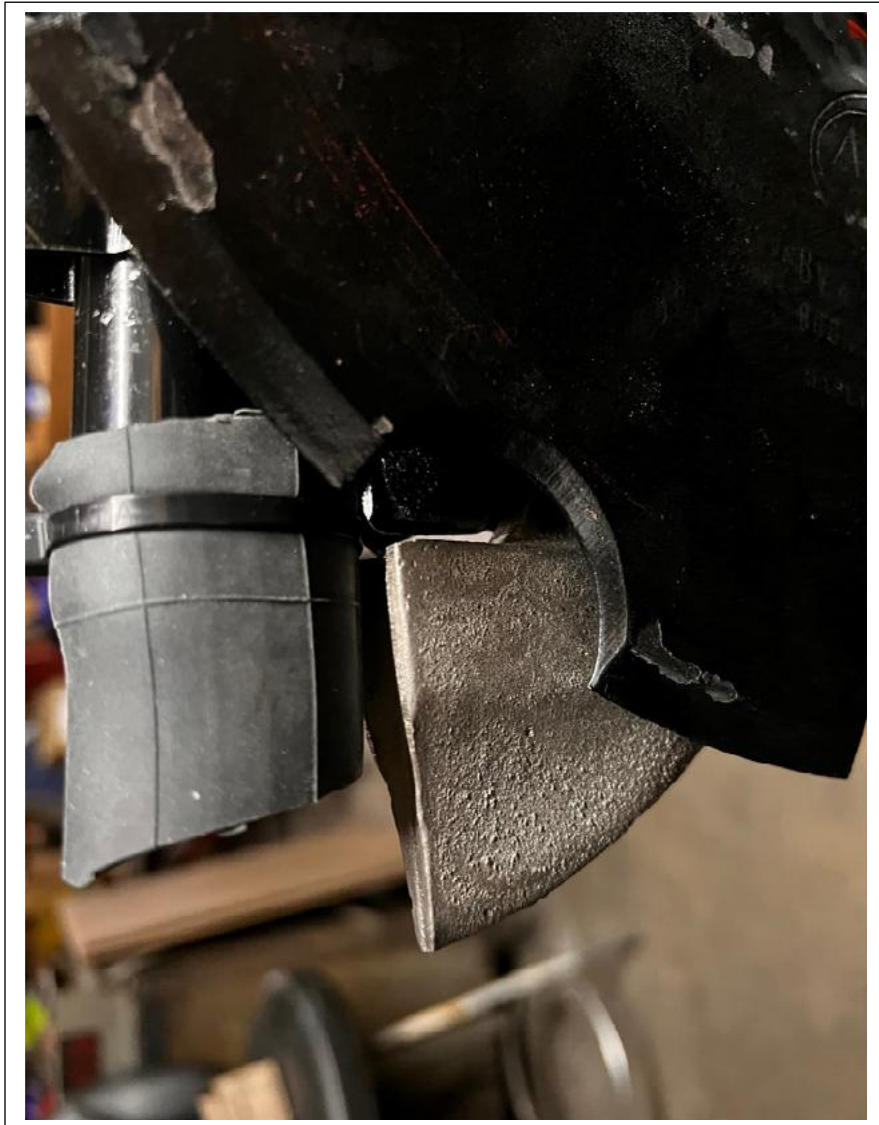


				AP-ADU4X4E/DS/AS/WC		NC
				SHIELD AGRICULTURAL EQUIPMENT		
				DRAWN BY:	HURLBUT	DATE: 11/29/2021
				CHECKED BY:		DATE:
				TOLERANCE UNLESS OTHERWISE NOTED 0/0 +/- .06 0.00 +/- .020 0.000 +/- .005 0.0000 +/- .001 ANGLE +/- 1		
				DO NOT SCALE DRAWING Weight: 116 LBS		
DESCRIPTION ADU 4X4 EXT, DBL SPRING, AUX SPRINGS, DUAL ARM WITH 4X12 PRESS WHEEL				MATERIAL ASSEMBLY		REV. NC
REV.	BY	DATE	DESCRIPTION			

AP-301103-F ADU Seed tube flap installed 12/01/2021

This is an estimate of a “starter location”. Researchers should adjust as needed, and may want to even cut slots down each side to allow the flap to open up if dirt plugging may be a problem.

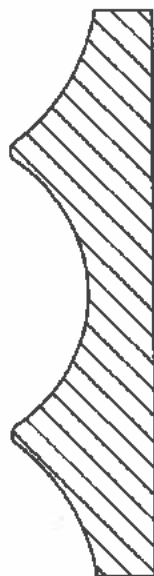
We do recommend a very light coating of Gorilla Glue smeared on the bottom of the steel seed tube. Glue is not supplied by ShieldAg/Acra Plant.



ShieldAg / AcraPlant makes no warranty for fitness for a specific use. Researchers should monitor results immediately after installation and modify the flap as needed.

800-798-1968 620-662-7221 shieldag.com

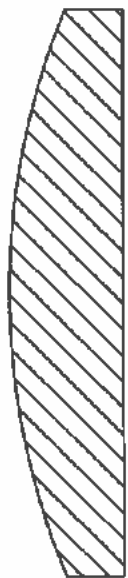
Press Wheel Options



AP-510723 4 x 12"Ø

Double Peak

Used for small grains & beans



AP-510713 4 x 12"Ø

Smooth



AP-510711 1 x 12"Ø

Round Crown

Used on V-Wheel Closers



AP-510712 2 x 13"Ø

Smooth

Most popular for small grains

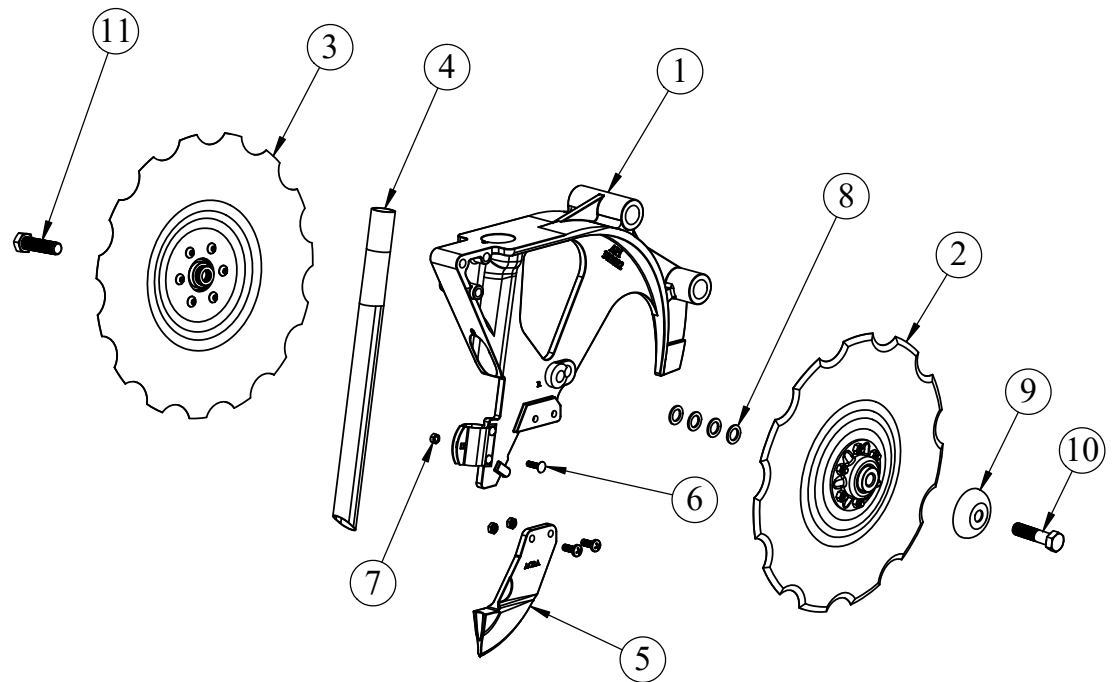
NOTES:

4 X 12 press wheels require double-arm press wheel brackets and may increase the minimum row spacing without stagger ADU toolbar mounts

2 X 13 press wheels can be used with single- or double-arm press wheel brackets

Other Styles Available On Special Order

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-302132	ADU CENTER BODY WITH CLIPS	1
	AP-302032	ADU CENTER BODY	1
	AP-301201	ADU SEED TUBE CLIP	2
	RIVET-2	SOLID RIVET FLAT HD STEEL 1/4" X 3/4"	2
2	AP-301151	15" ADU OFFSET DISC, 11 NOTCHES	1
	AP-299143	BEARING FLANGE	1
	AP-301111	ADU 15" OFFSET DISC BLADE, 11 NOTCHES	1
	AP-301155	ADU DISC BEARING, 5/8" BORE	1
	AP-299050	BEARING FLANGE GASKET	1
	AP-500448	5/16-18 X 3/4" BTN HD SOC	6
	AP-500582	NUT, TOP LOCK 5/16-18	6
	AP-698051	BEARING RETAINER RING	1
3	AP-301152	15" ADU OFFSET DISC, 15 NOTCHES	1
	AP-301115	15" ADU OFFSET DISC BLADE, 15 NOTCHES	1
	AP-299143	BEARING FLANGE	1
	AP-301155	ADU DISC BEARING, 5/8" BORE	1
	AP-299050	BEARING FLANGE GASKET	1
	AP-500448	5/16-18 X 3/4" BTN HD SOC	6
	AP-500582	NUT, TOP LOCK 5/16-18	6
	AP-698051	BEARING RETAINER RING	1
4	AP-301103	ADU SEED TUBE, STEEL	1
5	AP-331100	ADU INSERT W/ BOLTS & NUTS	1
	TF-331100	ADU V-SLICE INSERT	1
	AP-500599	5/16-18 TOP LOCK JAM	2
	AP-500438	5/16-18 X 7/8" PAN HEAD	2
6	ZK1-1	1/4-20 X 1" CARR BOLT GR 5	1
7	AP-500593	NUT, TOP LOCK 1/4-20	1
8	SHIM	SHIM, 14 GA.	14
9	AP-299041	ADU DUST COVER	2
10	AP-500510	5/8-11 X 2-1/2" HEX BOLT GR 5	1
11	AP-500506	5/8-11 X 2-1/2" LEFT HAND HEX BOLT GR 5	1

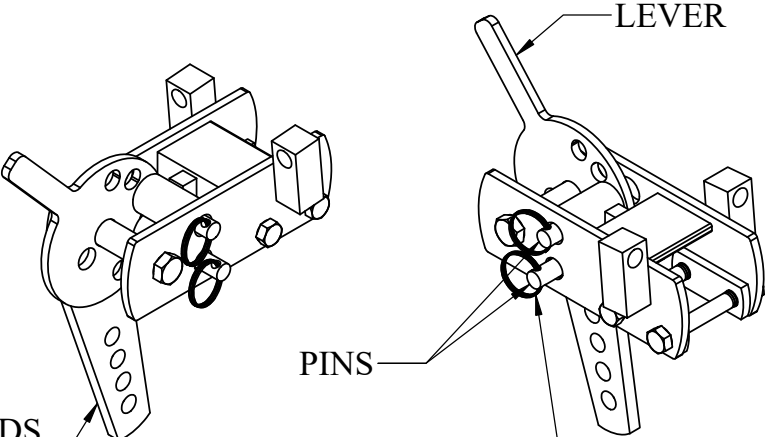
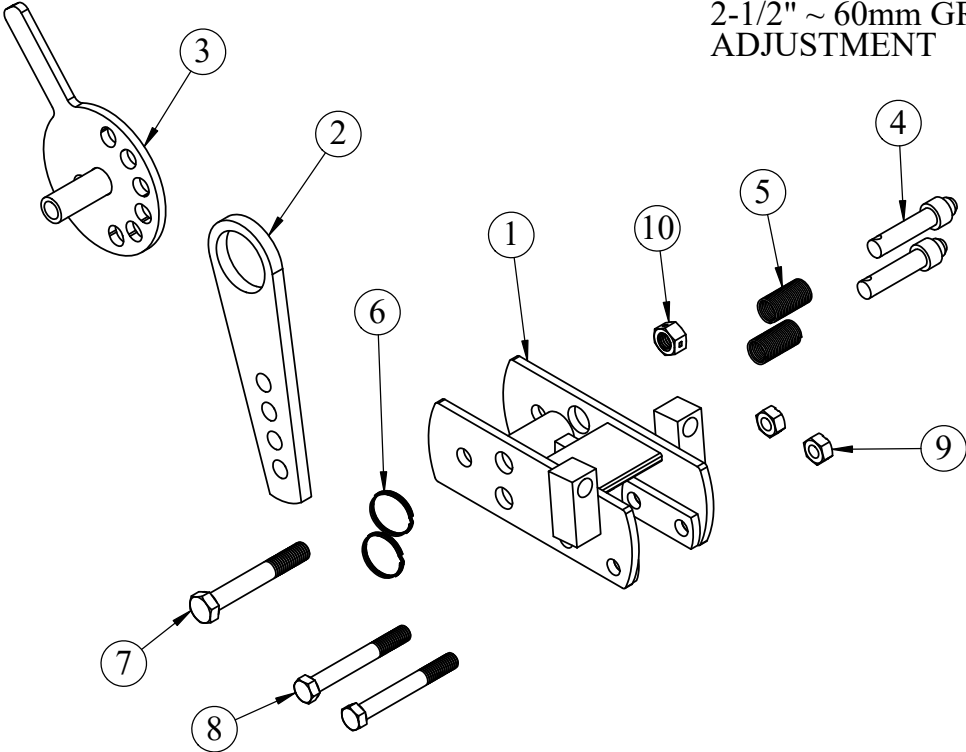


								AP-302242-S		NC
								SHIELD		
								AGRICULTURAL EQUIPMENT		
								DRAWN BY: HURLBUT		DATE: 5/23/2017
								CHECKED BY:		DATE:
REV.				BY				DATE		
DESCRIPTION				MATERIAL				DO NOT SCALE DRAWING		REV.
ADU CENTER BODY W/ STEEL SEED TUBE				ASSEMBLY				Weight: 32.55 LBS		AP-302242-S
										NC

TOLERANCE UNLESS
OTHERWISE NOTED

0/0 +/- .06
0.00 +/- .020
0.000 +/- .005
0.0000 +/- .001
ANGLE +/- 1

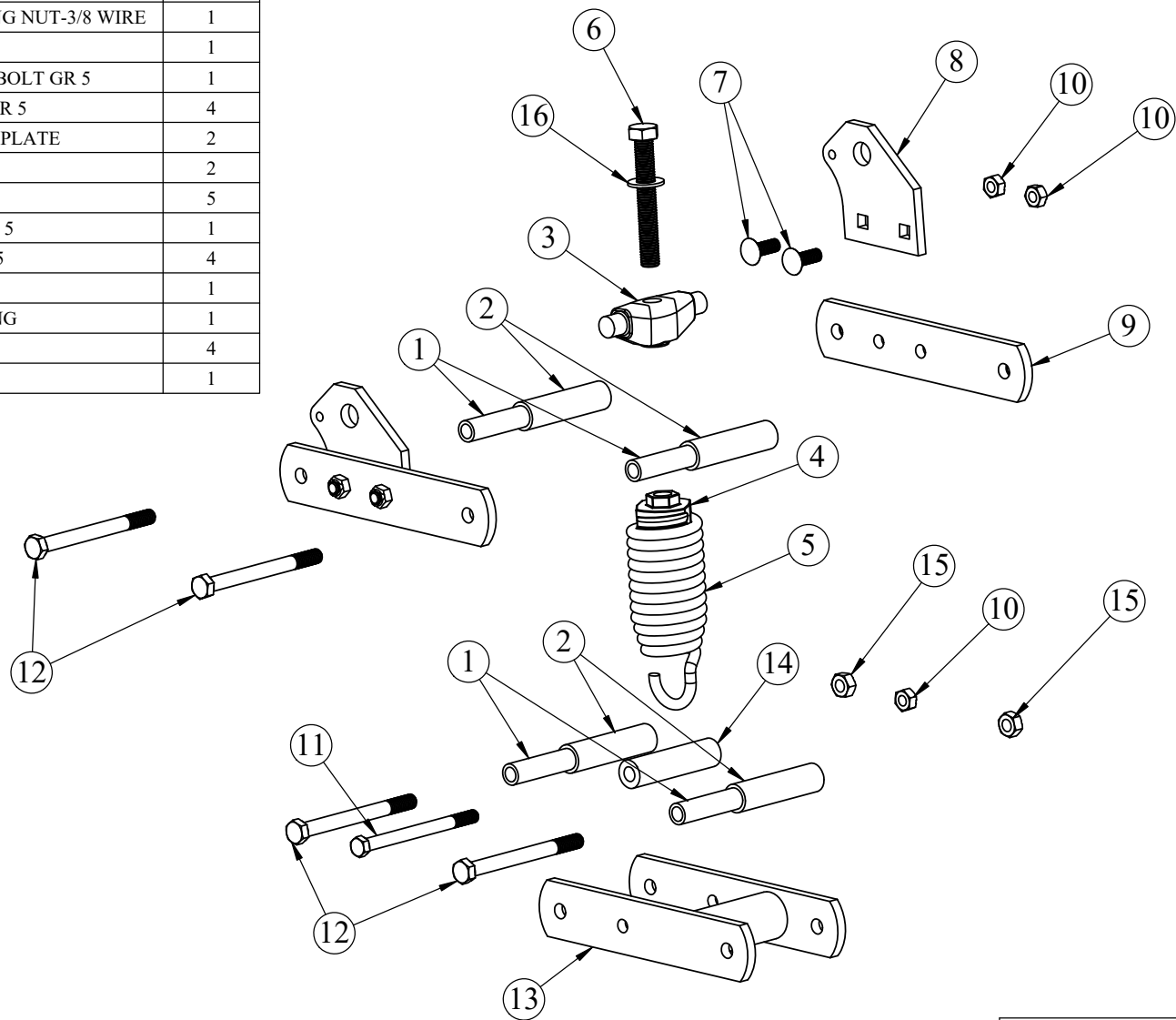
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-300124	ADU HEEL BRACKET W/ SPRING ASSIST	1
2	AP-505031	ACRA DRILL UNIT DEPTH ADJUSTER	1
3	AP-300122L	ADU PRESS WHEEL ADJUSTER	1
4	AP-510764	CAM ADJUSTER PIN	2
5	AP-510765	AP ADJUSTER SPRING	2
6	AP-510766	CAM ADJUST SPLIT RING	2
7	104-C3	1/2-13 X 3-1/2" HEX BOLT GR 5	1
8	AP-500481	7/16-14 X 3-1/2" HEX BOLT GR 5	2
9	AP-500583	NUT, TOP LOCK 7/16	2
10	AP-500600	1/2-13 LOCK NUT	1



				AP-305135		NC
				SHIELD AGRICULTURAL EQUIPMENT		
				DRAWN BY: HURLBUT	DATE: 5/16/2017	
				CHECKED BY:	DATE:	
DESCRIPTION GAGE WHEEL DEPTH ADJUSTMENT				MATERIAL ASSEMBLY		PART NO. AP-305135
				DO NOT SCALE DRAWING Weight: 45.80 LBS		REV. NC

TOLERANCE UNLESS OTHERWISE NOTED
0/0 +/- .06
0.00 +/- .020
0.000 +/- .005
0.0000 +/- .001
ANGLE +/- 1

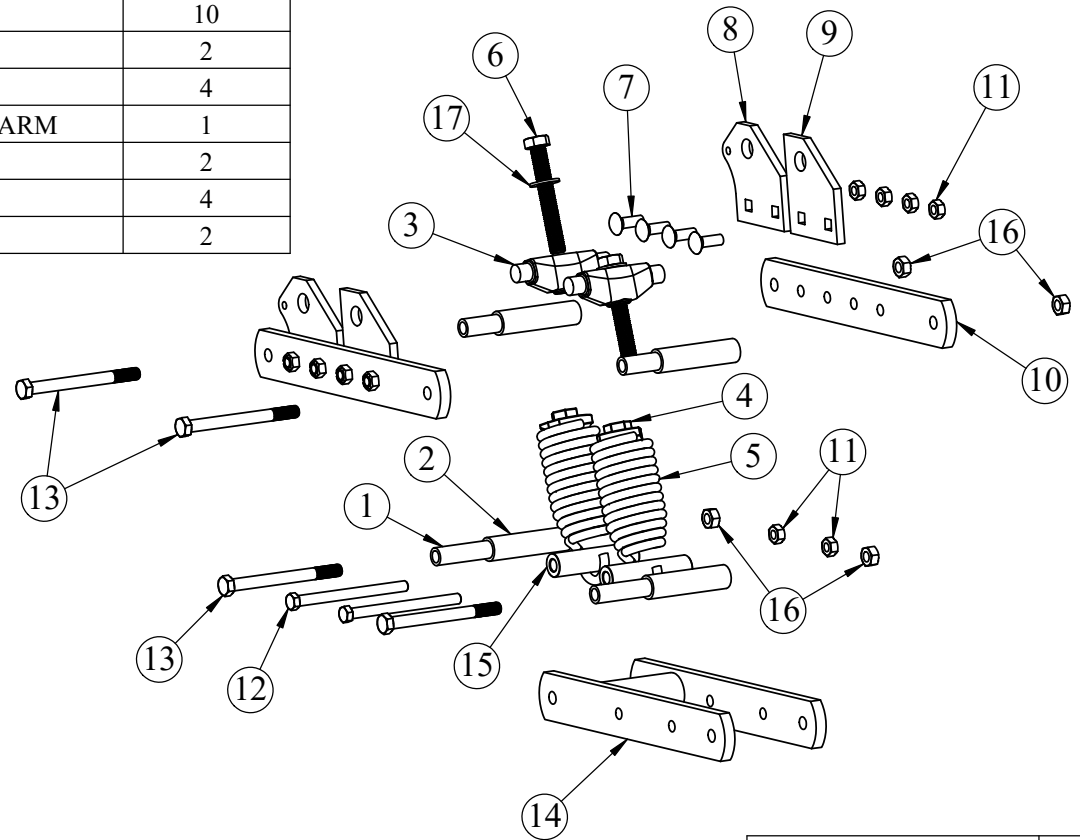
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-300527	ADU GREASELESS HINGE BUSHING	4
2	AP-300537	ADU NYLATRON BUSHING	4
3	AP-300039	ADU SPRING ANCHOR BAR	1
4	AP-300055	ADU DOWN PRESSURE SPRING NUT-3/8 WIRE	1
5	AP-300196	ADU MAIN SPRING	1
6	AP-500512	5/8-11 X 4-1/2" ALL THD HEX BOLT GR 5	1
7	AP-510679	7/16-14 X 1-1/4" CARR BOLT GR 5	4
8	AP-300041	ACRA ADU SPRING ANCHOR PLATE	2
9	AP-300112	ADU UPPER LINK ARM	2
10	AP-500583	NUT, TOP LOCK 7/16	5
11	AP-500484	7/16-14 X 5-1/2" HEX BOLT GR 5	1
12	AP-500499	1/2-13 X 5-1/2" HEX BOLT GR 5	4
13	AP-300121	ADU LOWER LINK ARM	1
14	AP-300011	ADU SPRING MOUNT BUSHING	1
15	AP-500584	1/2-13 TOP LOCK NUT	4
16	AP-500621	5/8" FLAT WASHER, SAE	1



				AP-333999		NC
				SHIELD		
				AGRICULTURAL EQUIPMENT		
				DRAWN BY: HURLBUT	DATE: 12/21/2017	
				CHECKED BY:	DATE:	
DESCRIPTION				PART NO.		REV.
AUD PARALLEL LINKS & SPRING				AP-333999		NC
MATERIAL				DO NOT SCALE DRAWING		
ASSEMBLY				Weight: 4.26 LBS		

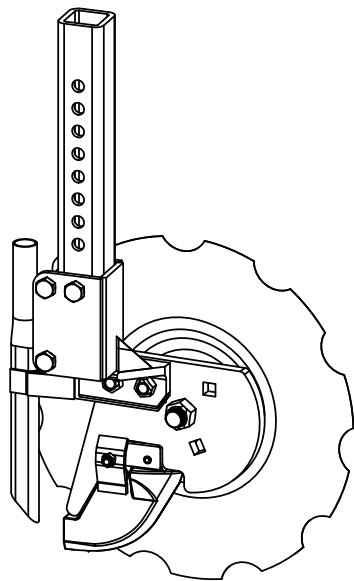
TOLERANCE UNLESS OTHERWISE NOTED
0/0 +/- .06
0.00 +/- .020
0.000 +/- .005
0.0000 +/- .001
ANGLE +/- 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-300527	ADU GREASELESS HINGE BUSHING	4
2	AP-300537	ADU NYLATRON BUSHING	4
3	AP-300039	ADU SPRING ANCHOR BAR	2
4	AP-300055	ADU MAIN SPRING NUT, 3/8 WIRE	2
5	AP-300196	ADU MAIN SPRING	2
6	AP-500512	5/8-11 X 4-1/2" ALL THD HEX BOLT GR 5	2
7	AP-510679	RHSNBOLT 0.4375-14x1.25x1.25-N	8
8	AP-300041	ACRA ADU SPRING ANCHOR PLATE	2
9	AP-300056	ACRA ADU SPRING ANCHOR PLATE	2
10	AP-501106	ADU HD EXT. UPPER LINK ARM	2
11	AP-500583	NUT, TOP LOCK 7/16	10
12	AP-500484	HFBOLT 0.4375-14x5.5x1.125-N	2
13	AP-500499	1/2-13 X 5-1/2" HEX BOLT GR 5	4
14	AP-305121	ADU DOUBLE SPRING LOWER LINK ARM	1
15	AP-300011	ADU SPRING MOUNT BUSHING	2
16	AP-500584	1/2-13 TOP LOCK NUT	4
17	AP-500621	5/8" FLAT WASHER, SAE	2



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	AP-305151	DISC ASSEMBLY, OFFSET, 15" X 11 NOTCH	1
2	AP-501679	1/2-13 X 1-1/2" CARR BOLT, GROUND FLAT	2
3	AP-692507	ACRA PLACE INSERT MOUNT, LEFT HAND	1
4	AP-790209	ACRA PLACE, 1" DRY TUBE, LH	1
5	AP-510826	ACRA PLACE INSERT MOUNT ADJUSTMENT SHIM	2
6	AP-500600	1/2-13 LOCK NUT	3
7	AP-692019	ACRA PLACE STAND ALONG BRACKET, LEFT HAND	1
8	AP-500493	1/2-13 X 3" HEX BOLT GR 5	3
9	AP-500584	1/2-13 TOP LOCK NUT	2
10	AP-510693	SPING PIN, 5/16" X 1"	1
11	AP-510636	5/16-18 X 1-3/4" CARR BOLT GR 5	1
12	AP-API4L	ACRA PLACE CAST INSERT, LEFT HAND	1
13	AP-510825	ACRA PLACE INSERT BUMPER	1
14	AP-501745	ACRA PLACE INSERT ADJUSTING CLAMP	1
15	AP-500582	NUT, TOP LOCK 5/16-18	1
16	AP-249748	ACRA PIN-ADJUST STEM	1



-	-	-	-	TOLERANCE UNLESS OTHERWISE NOTED 0/0 +/- .06 0.00 +/- .020 0.000 +/- .005 0.0000 +/- .001 ANGLE +/- 1	<div> <div>SHIELD</div> <div>AGRICULTURAL EQUIPMENT</div> </div> <div> <div>DRAWN BY: HURLBUT</div> <div>DATE: 1/13/2022</div> </div> <div> <div>CHECKED BY:</div> <div>DATE:</div> </div>
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REV.	BY	DATE	DESCRIPTION		
DESCRIPTION				MATERIAL	DO NOT SCALE DRAWING
15" ACRA PLACE W/ 1" TUBE, LH				ASSEMBLY	Weight: 25.69 LBS
					<div> <div>PART NO.</div> <div>AP-790301L</div> </div> <div> <div>REV.</div> <div>NC</div> </div>

