

Operator's Manual
09PDMS (100 Lb.) & P45PDMS (45 Lb.)
Poly Stainless MP⁺³
(Positive Displacement Metering System)



Gandy Company
815 Rice Lake Street
Owatonna, MN 55060

Telephone: 507-451-5430 800-443-2476 USA
Fax: 507-451-2857 800-597-4263 Canada
Web Site: www.gandy.net E-mail: custsrv@gandy.net

Table of Contents

Section #1	Page
Introduction	1
<hr/>	
Sections #2	
Overview	2
<hr/>	
Section #3	
Pre Assembly Instructions	3-4
Assembling for Red or Yellow Metering Wheels	5-12
Assembling for Black Metering Wheels	13-20
Installing Spout Adaptor	21
Installing Optional Agitator	22
<hr/>	
Section #4	
Ground Drive	23-24
Rate Control Sprocket Package	25-26
12-volt Electric Motor Drive	27-29
Heavy Duty 12-volt Electric Motor Drive	30-36
<hr/>	
Section #5	
Mounting Applicator	37
<hr/>	
Section #6	
General Information	38-39
<hr/>	
Section#7	
Calibration	40
<hr/>	
Section #8	
Trouble Shooting	42
<hr/>	

Note:

All photos and drawing in this manual are for illustrative purposes only. In some drawings the guards and other parts have been removed to show a particular detail. Never operate this unit without guards in place.

The manufacturer of this equipment reserves the right to make changes or improvements to this product without notice or obligation in respect to previously manufactured products.

Section 3

Pre-Assembly Instructions for Assembling Applicator

This unit is shipped without metering cups or wheels in place.
Follow step-by-step instruction for assembly.

First remove applicator & other components from carton.
Place applicator on a sturdy surface.
Locate parts carton and parts bag in parts carton.

Second, choose the correct metering wheel.
The Chemical (C) Black Metering Wheel is used for metering the following type of products:
Chemicals: (Herbicides & Pesticides) & small seeds, such as alfalfa, rye, canola, etc.

Note: If using black metering wheels Hole Closure Half (09094899-6) will need to be installed in cup.
This hole closure is needed when metering chemicals and small to fine seeds.

The Red Fertilizer/Seed (F) Metering Wheel is used for the following type of products:
Fertilizer & small grains such as oats, wheat, barley, rice, etc.

The Yellow High Volume (V) Metering Wheel is used primary for high rates of fertilizer.

Next, the user needs to decide how many outlets need to be assembled.

If using Red or Yellow metering wheels proceed to step #1-assembling Red or Yellow metering wheels.

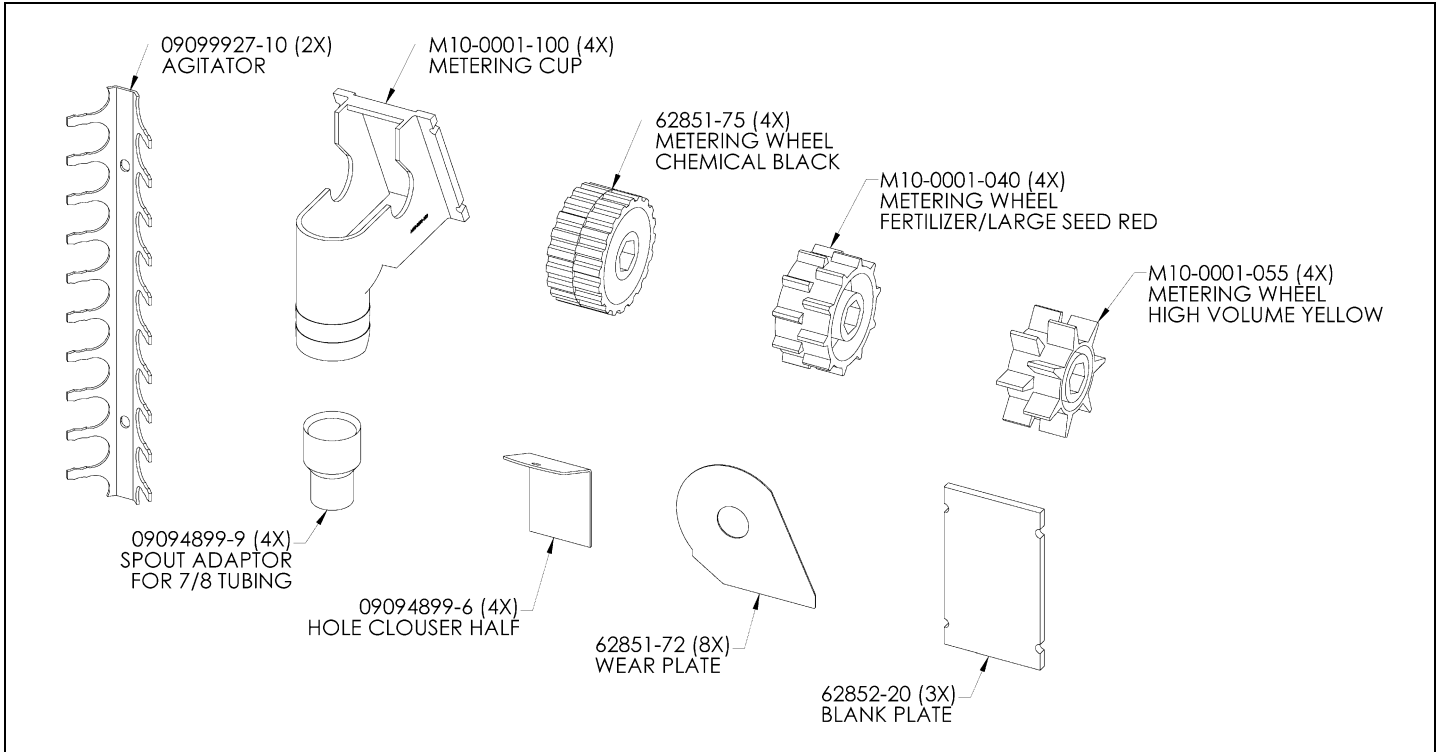
If using Black metering wheels proceed to step #1-assembling Black Metering wheels.

Note:

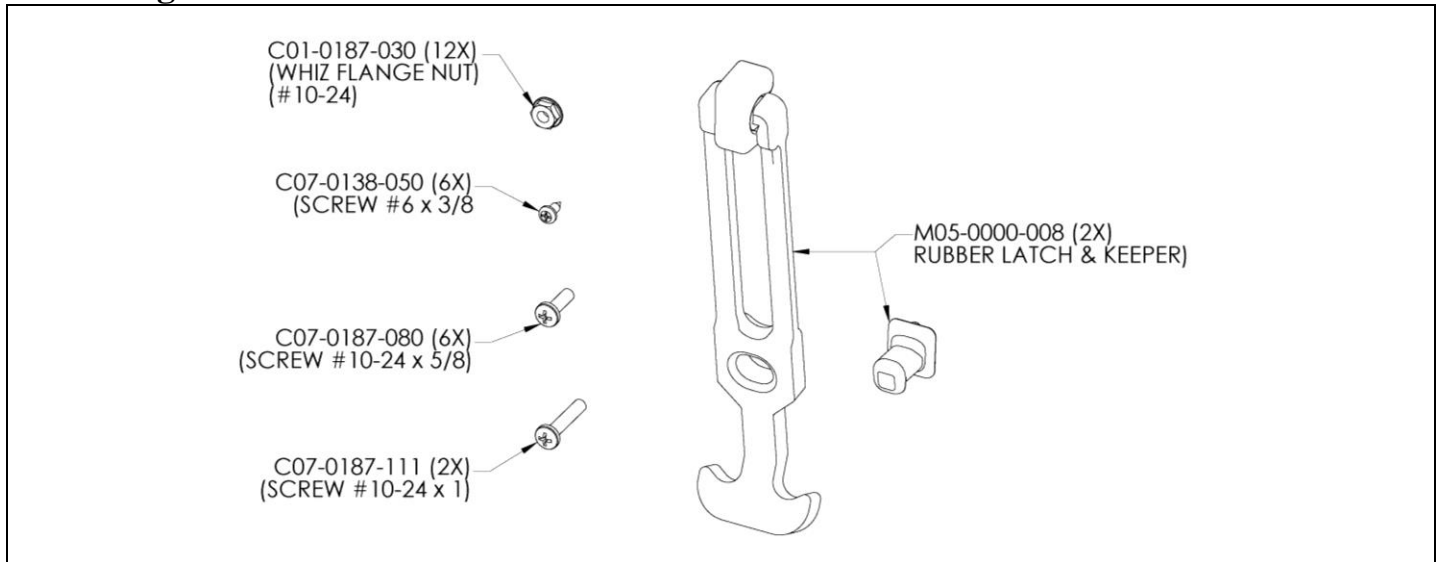
See next page for contents of parts carton and parts bag.

Section 3

Parts Carton 09PDMS-B Contents



Parts Bag P45PDMS-C Contents

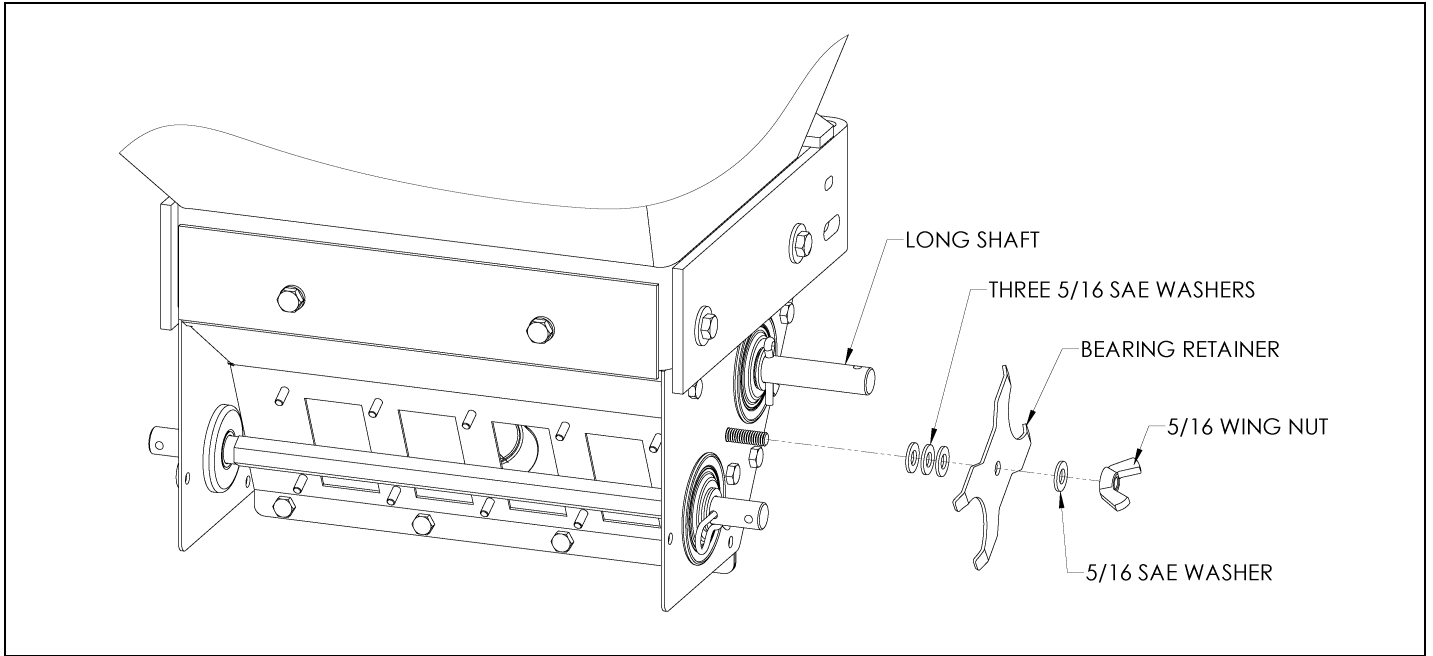


Section 3

Assembling for Red or Yellow Metering Wheels

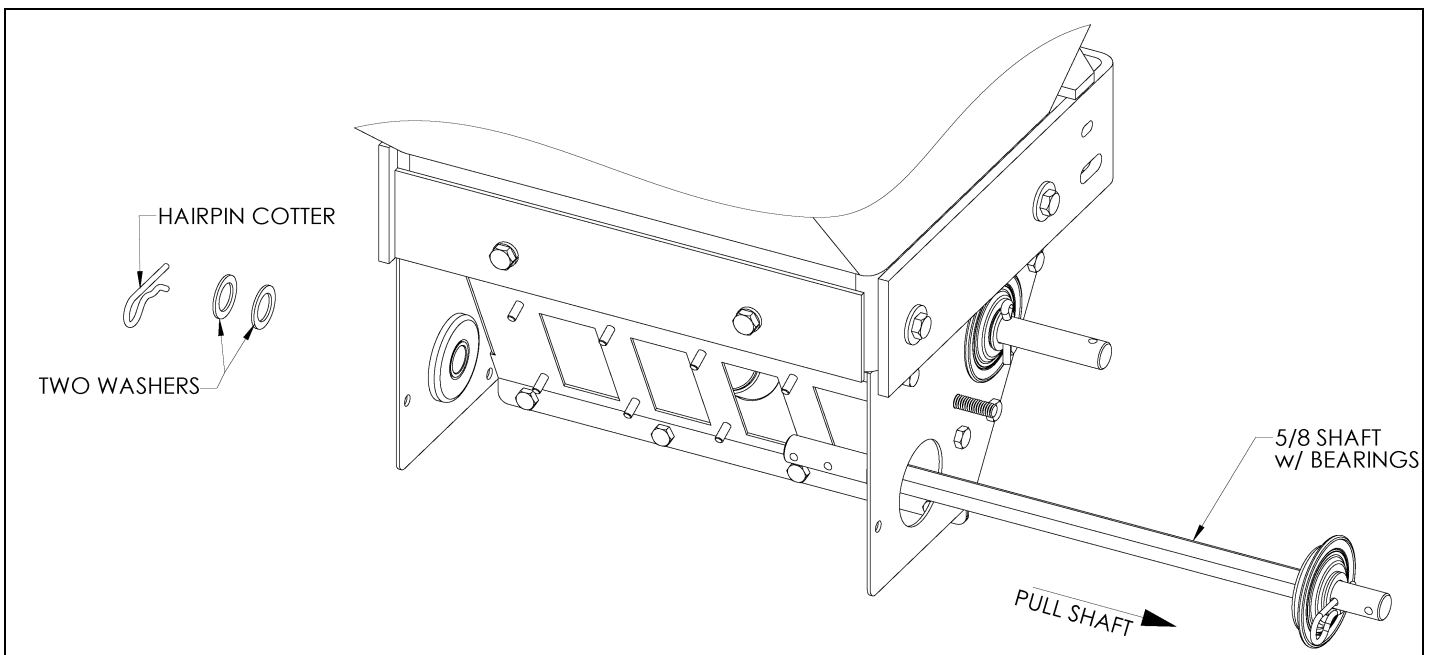
Step #1

Set applicator on a sturdy surface or bench. Locate side with longer shaft as shown.
Remove the 5/16 wing nut & 5/16 SAE washer from bearing retainer & remove bearing retainer.
Remove the three 5/16 SAE washers from under the bearing retainer.
Save these components as they will be reused later when reassembling.



Step #2

Remove the hairpin cotter & the two washers from the 5/8 hex shaft as shown.
With hairpin cotter removed pull 5/8 hex shaft with bearing in place out as indicated.
Save these components as they will be reused later when reassembling.



Section 3

Assembling for Red or Yellow Metering Wheels

In step #3 (Installing metering cups for use with Red or Yellow Metering wheels.)

See step #3A for one outlet.

See Step #3B for two outlets.

See Step #3C for three outlets.

See step #3D for four outlets.

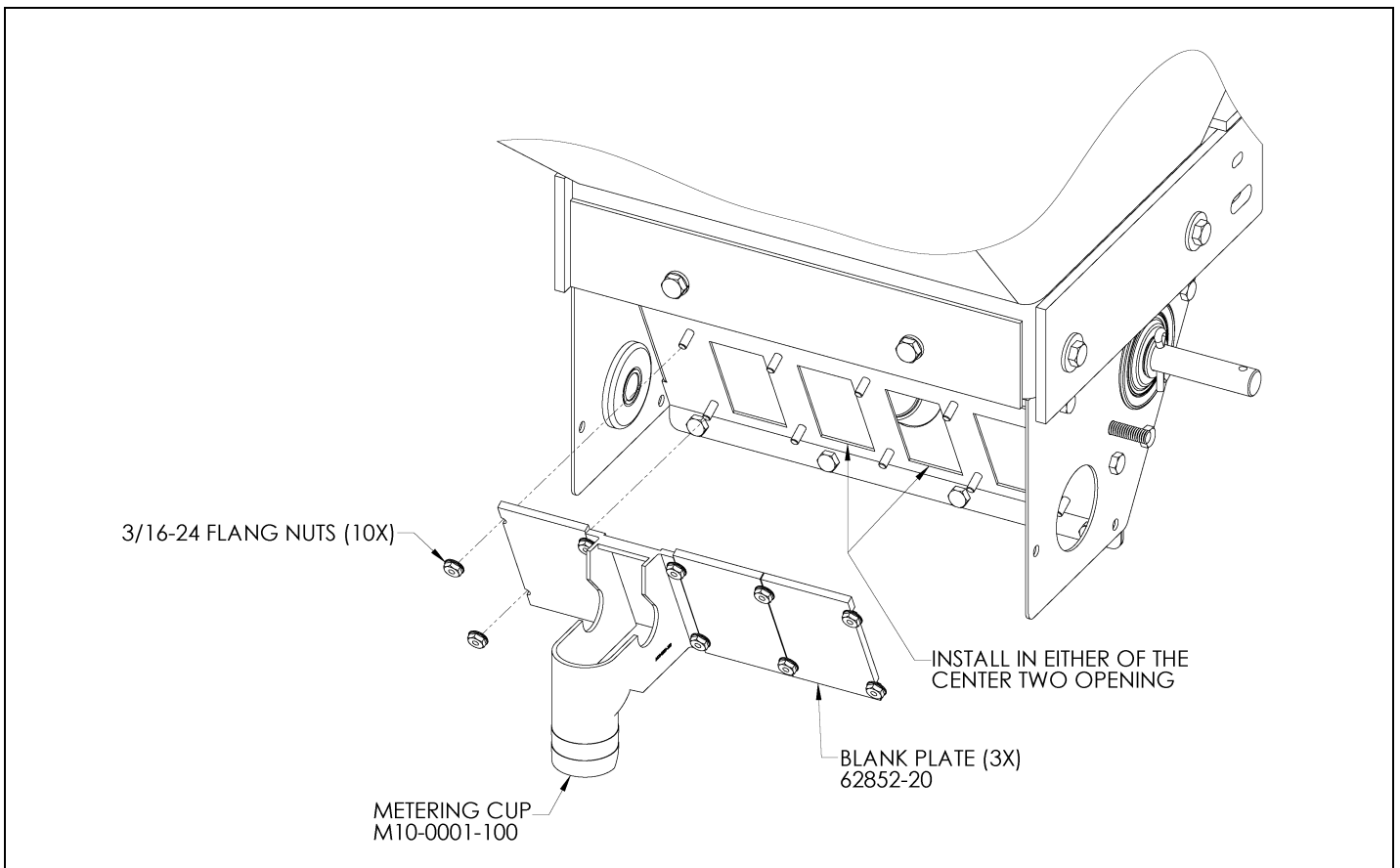
Step #3A (for 1 outlet)

For a one outlet set-up locate one metering cup (M10-1000-001) & three blank plates (62852-20) from parts carton. It is recommended when setting up for one outlet that the metering cup be mounted in either of the center two openings if possible for better flow of material from hopper.

Install the metering cup to the 3/16-24 threaded studs. Install the three blank plates to the threaded studs.

Use ten of the 3/16-24 flange nuts to secure the metering cup & blank plates in place.

Do not over tighten flange nuts.



Section 3

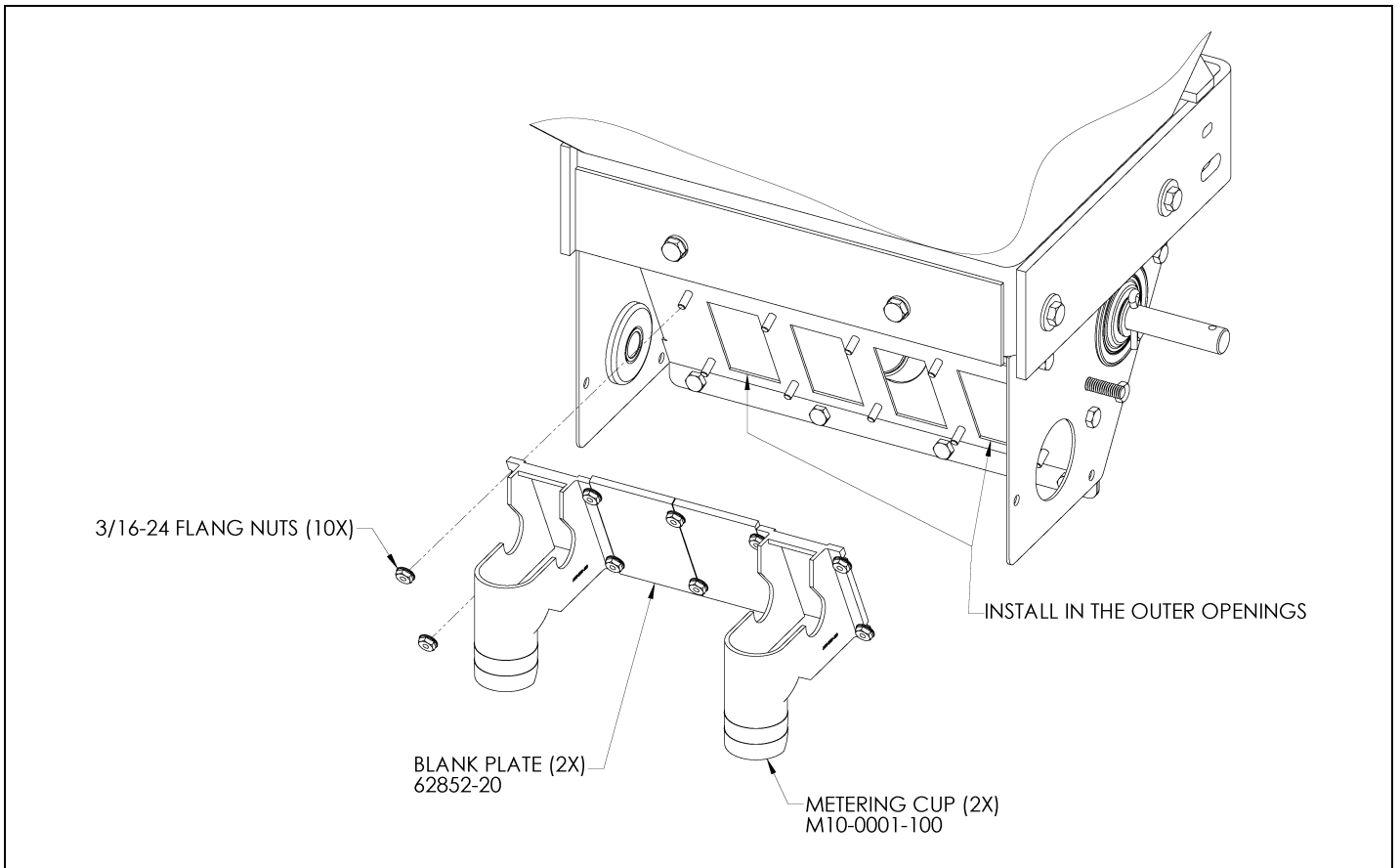
Assembling for Red or Yellow Metering Wheels

Step #3B (For Two Outlets) (Installing metering cups for use with Red or Yellow Metering wheels.)

For two outlet set-up locate two metering cups (M10-1000-001) & two blank plates (62852-20) from parts carton.

It is recommended when setting up for two outlets that the metering cup be mounted in the two outside openings if possible for better flow of material from hopper.

Install the metering cups to the 3/16-24 threaded studs. Install the two blank plates to the threaded studs. Use ten of the 3/16-24 flange nuts to secure the metering cups & blank plates in place. Do not over tighten flange nuts.



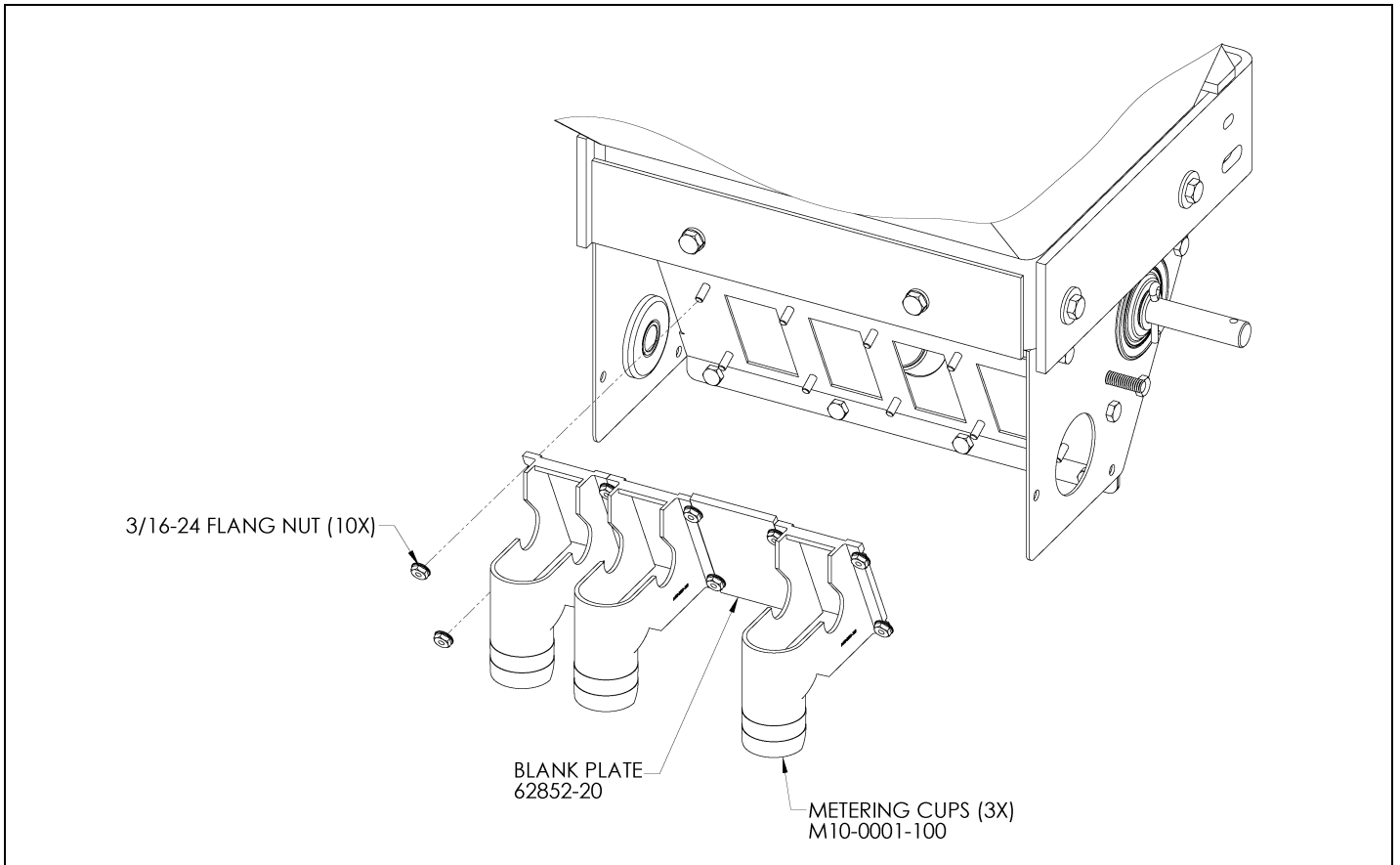
Section 3

Assembling for Red or Yellow Metering Wheels

Step #3C (For Three Outlets) (Installing metering cups for use with Red or Yellow Metering wheels.)

For three outlet set-up locate three metering cups (M10-1000-001) & one blank plate (62852-20) from parts carton. Metering cups can be installed in any location.

Install the metering cups to the 3/16-24 threaded studs. Install the blank plate to the threaded studs. Use ten of the 3/16-24 flange nuts to secure the metering cups & blank plate in place. Do not over tighten flange nuts.



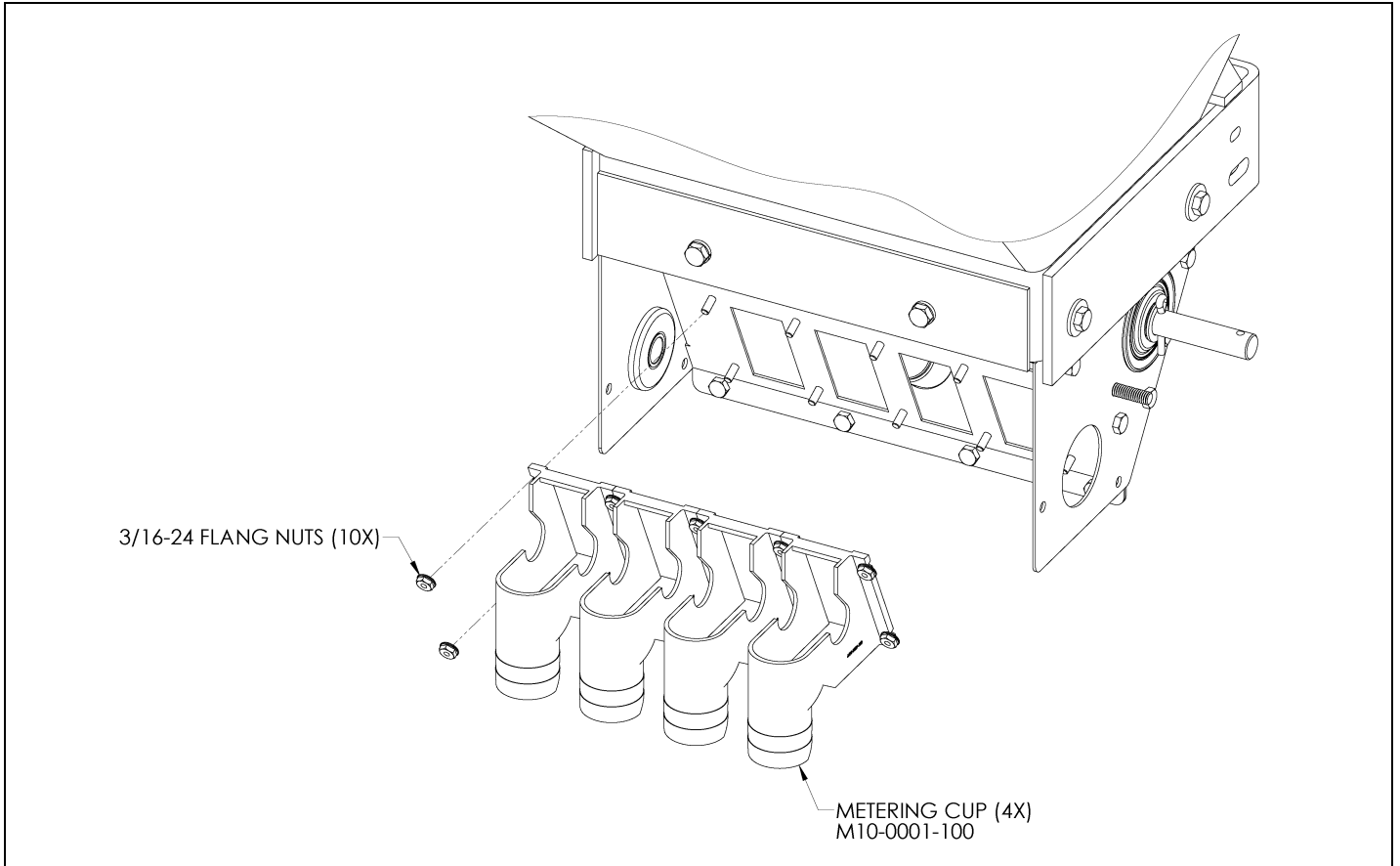
Section 3

Assembling for Red or Yellow Metering Wheels

Step #3D (For Four Outlets) (Installing metering cups for use with Red or Yellow Metering wheels.)

For four outlet set-up locate four metering cups (M10-1000-001) from parts carton.

Install the metering cups to the 3/16-24 threaded studs. Install the blank plate to the threaded studs. Use ten of the 3/16-24 flange nuts to secure the metering cups & blank plate in place. Do not over tighten flange nuts.



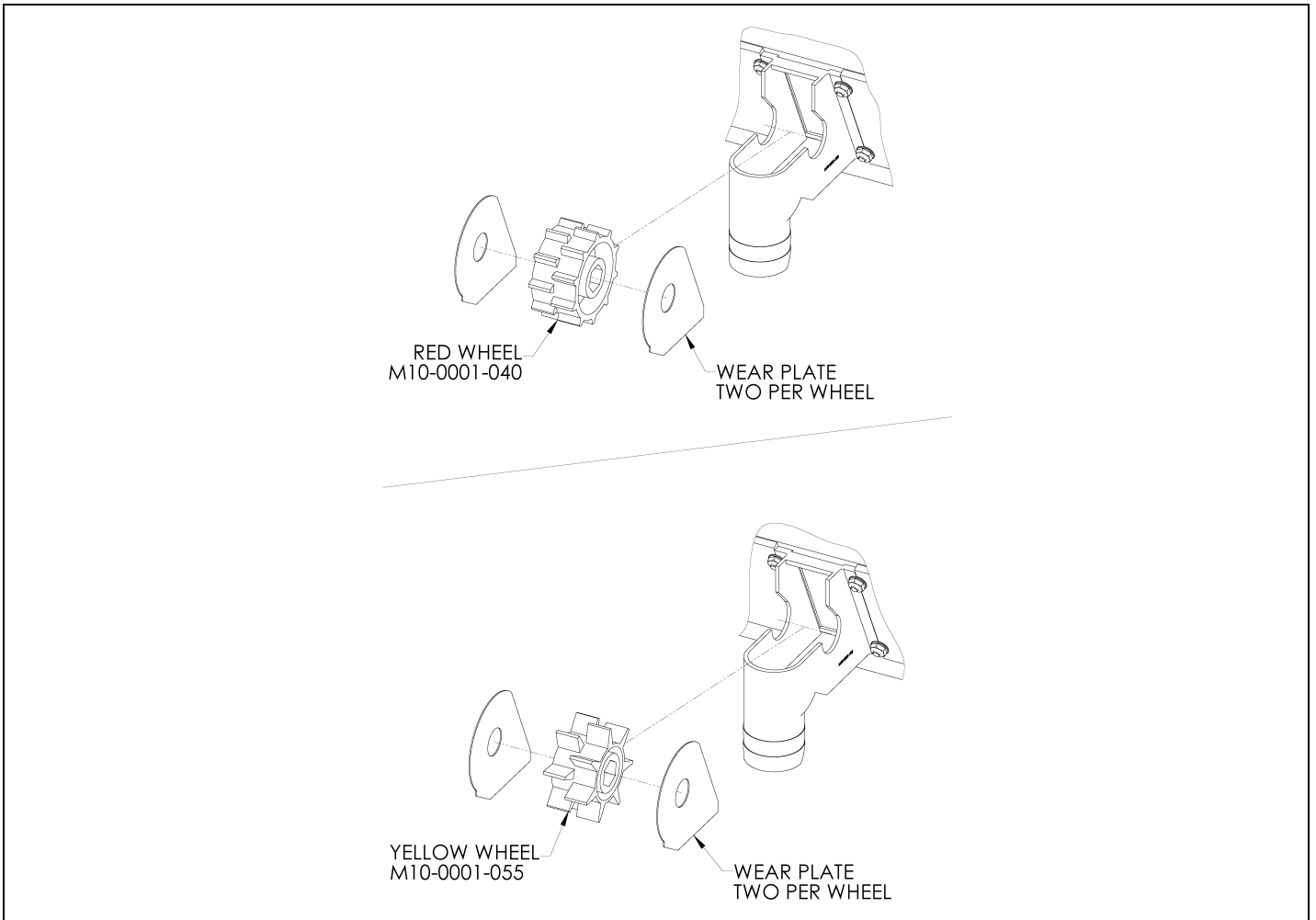
Section 3

Assembling for Red or Yellow Metering Wheels

Step #4 Install metering wheels (For Red or Yellow Metering Wheels)

Locate either red metering wheels (M10-0001-040) or yellow metering wheels (M10-0001-055) and stainless wear plates (62851-72) (two per wheel) from parts carton.

Install one metering wheel and two stainless wear plates per cup as shown. Place one stainless wear plate on each side of a metering wheel and insert point first on wear plate into metering cup. Do this for each cup.



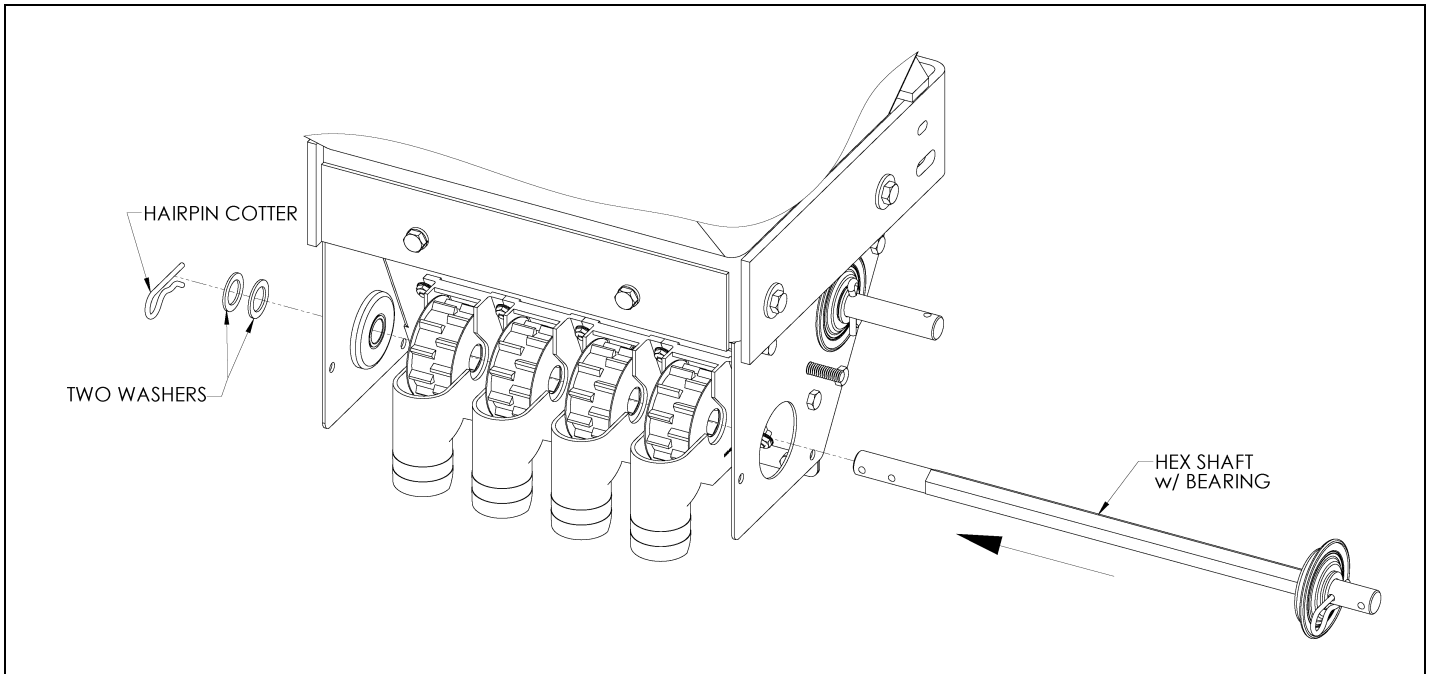
Section 3

Assembling for Red or Yellow Metering Wheels

Step #5 Reinstall hex shaft

With metering wheels installed, insert shaft with bearing (that was removed in step number #2) through all metering wheels and through bearing. Note: Turn hex shaft as you are inserting it through the metering wheel to align the hex shaft with the hex in the metering wheels.

With hex shaft in place reinstall the two washers and hairpin cotter (from stem #2) on end of hex shaft to hold it in place.



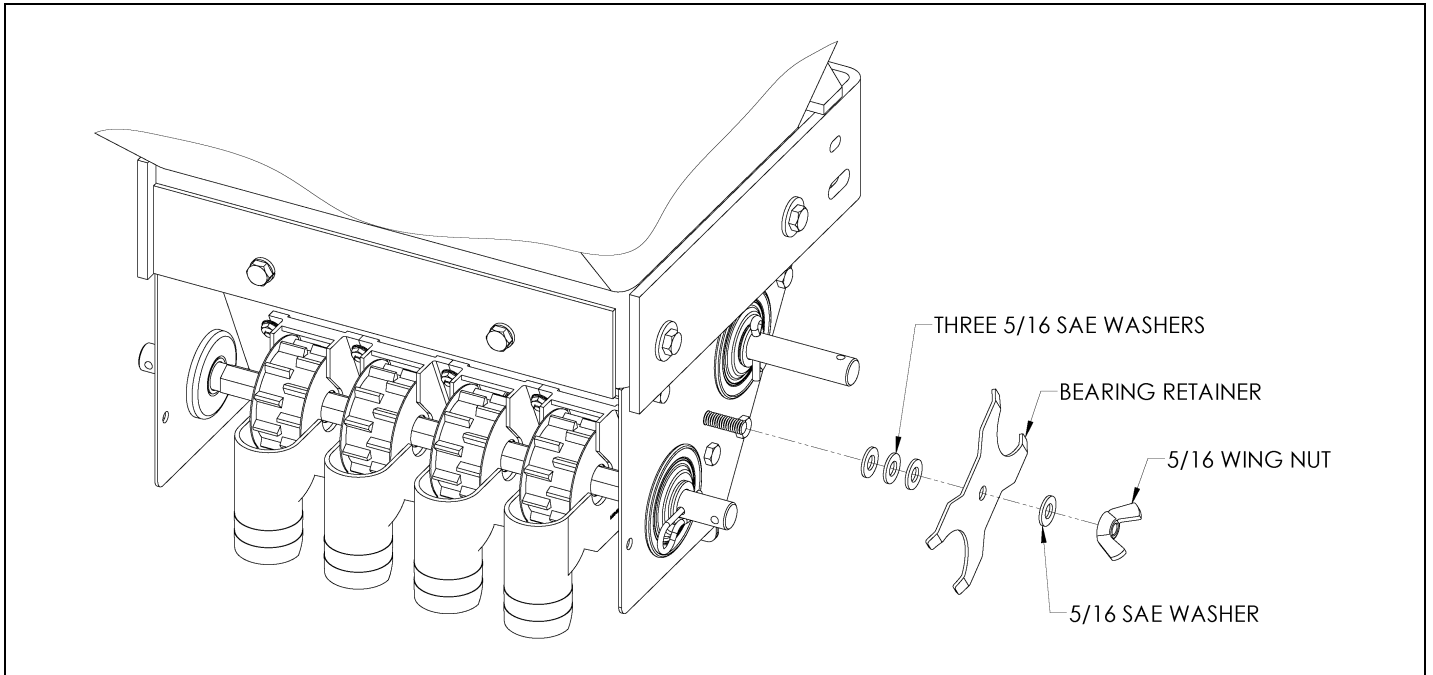
Note: diagram shown with four cups and red wheels in place.

Section 3

Assembling for Red or Yellow Metering Wheels

Step #6 Reinstall bearing retainer

Reinstall the bearing retainer removed in step #2. Install three 5/16 SAE washer on the threaded stud. Next install the bearing retainer on the threaded stud. Install the 5/16 SAE washer and 5/16 wing nut. Position bearing retainer so it will hold both bearings in place. Tighten wing nut securely.



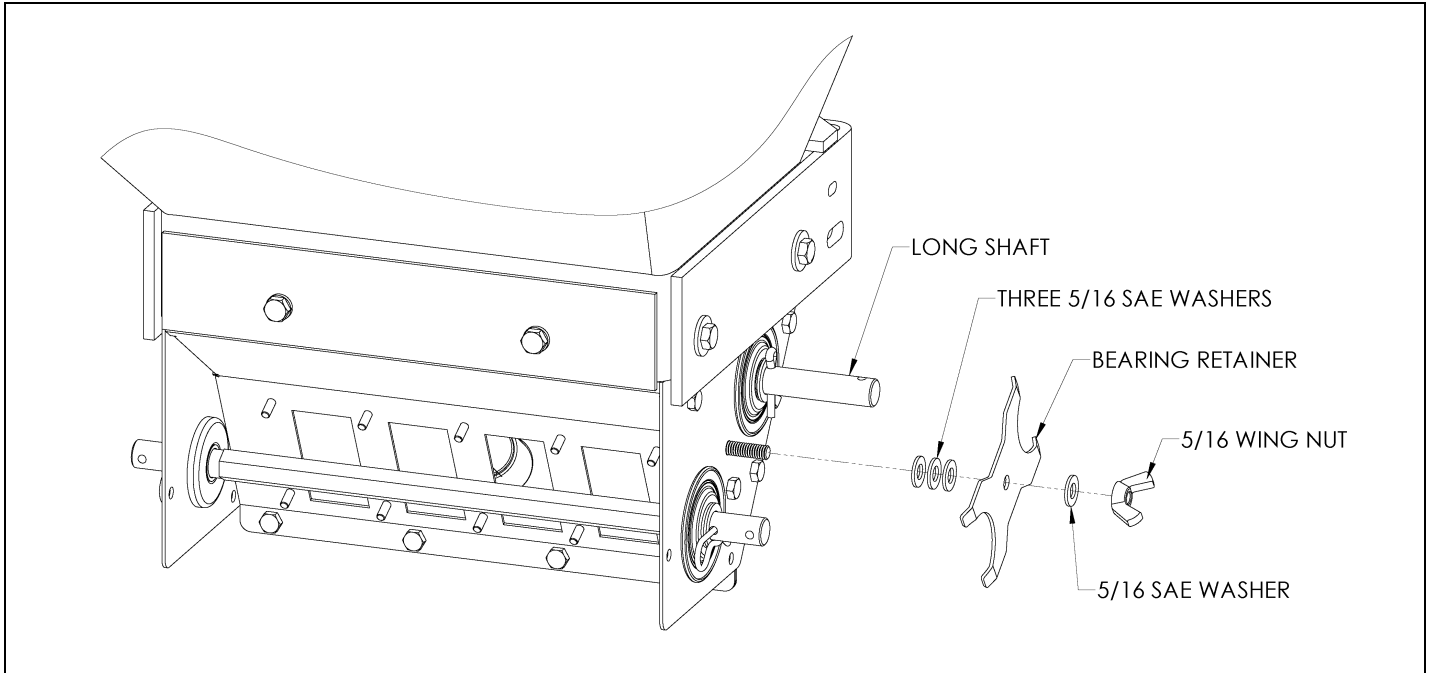
Note: diagram shown with four cups and red wheels in place.

Section 3

Assembling for Black Metering Wheels

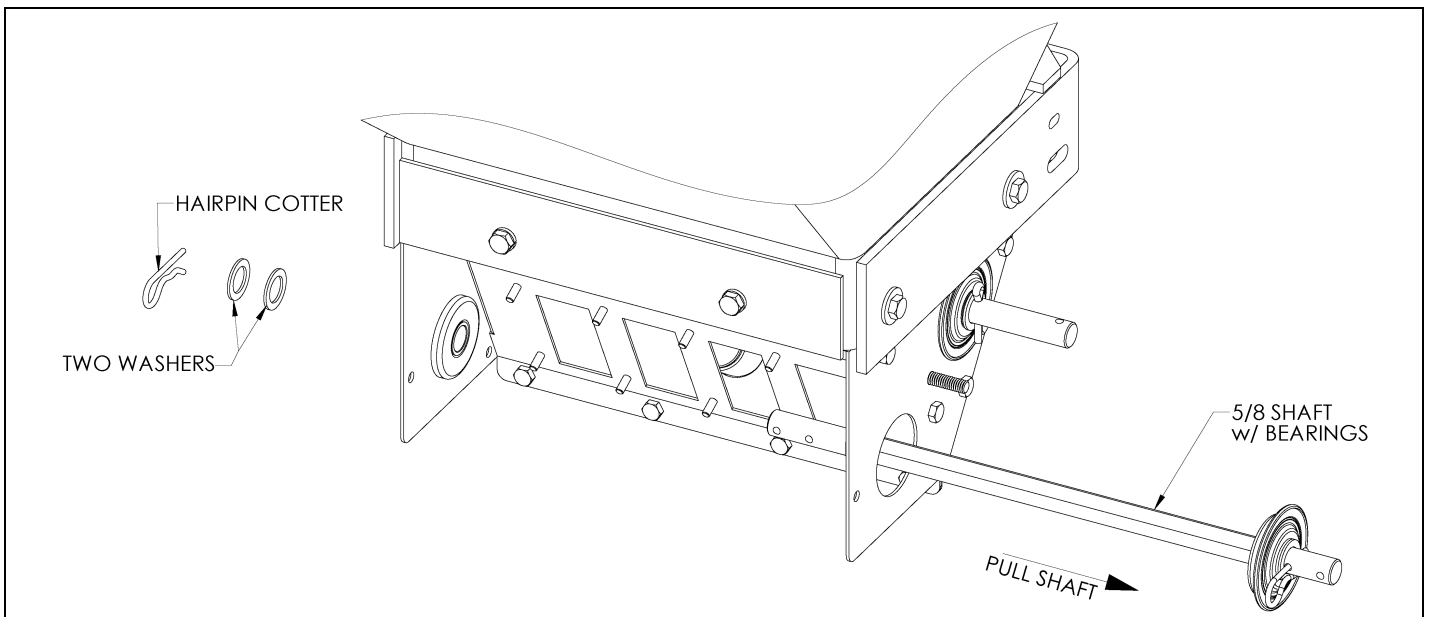
Step #1

Set applicator on a sturdy surface or bench. Locate side with longer shaft as shown.
Remove the 5/16 wing nut & 5/16 SAE washer from bearing retainer & remove bearing retainer.
Remove the three 5/16 SAE washers from under the bearing retainer.
Save these components as they will be reused later when reassembling.



Step #2

Remove the hairpin cotter & the two washers from the 5/8 hex shaft as shown.
With hairpin cotter removed pull 5/8 hex shaft with bearing in place out as indicated.
Save these components as they will be reused later when reassembling.



Section 3

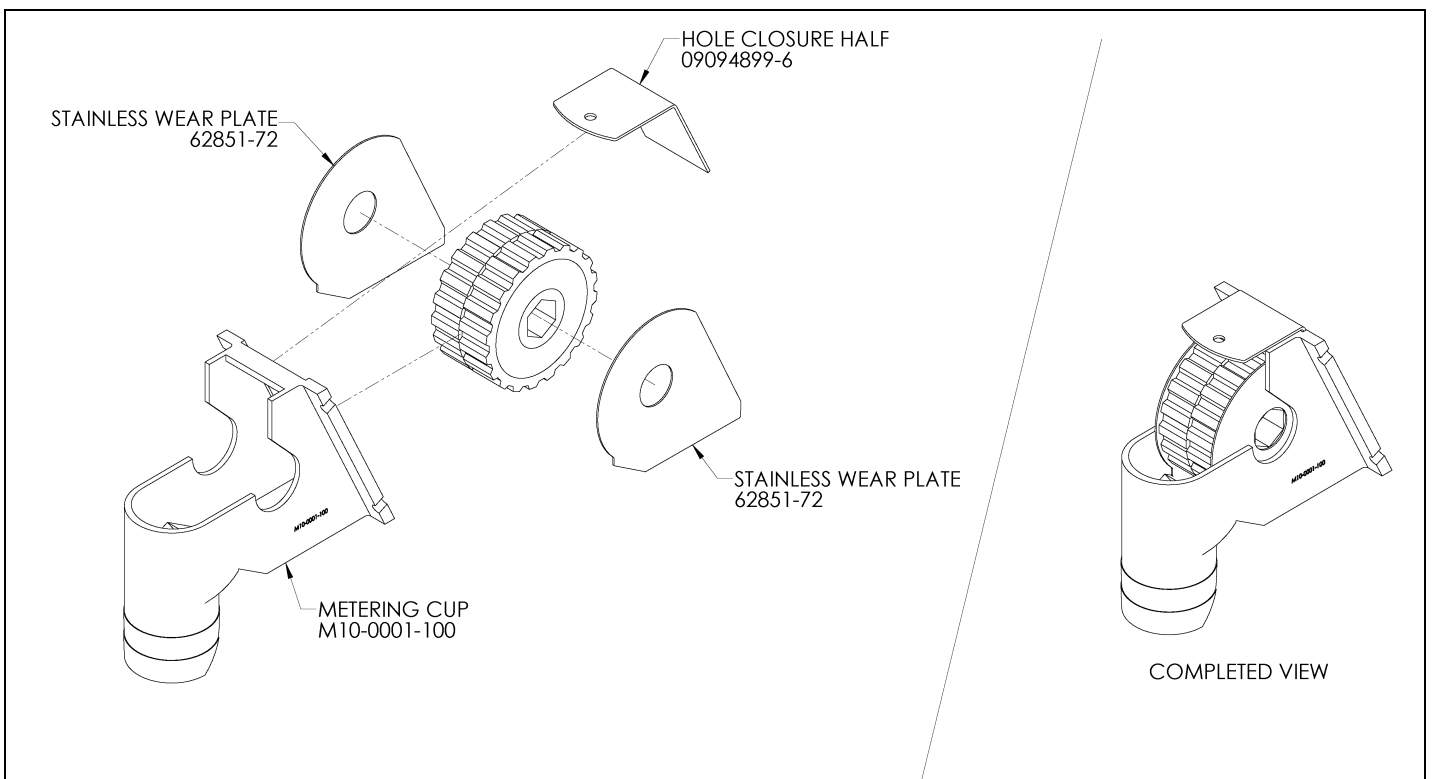
Assembling for Black Metering Wheels

Step #3

Black metering wheels, stainless wear plates and hole closure half need to be assembled in cup before attaching cup to hopper.

Locate one black metering wheel (62851-75), two stainless wear plates (62851-72), one metering cup (M10-1000-001), one hole closure half (09094899-6) from parts carton.

Place one stainless wear plate on each side of the black metering wheel and insert into metering cup as shown. Next, place hole closure half in slot as shown. Do this for each outlet used.



Section 3

Assembling for Black Metering Wheels

In Step #4 (Installing metering cups for use with Black Metering Wheels.)

See stem #4A for one outlet.

See Step #4B for two outlets.

See Step #4C for three outlets.

See step #4D for four outlets.

Step #4A (for 1 outlet)

For one outlet set-up locate one black metering wheel (62851-75), two stainless wear plates (62851-72), one metering cup (M10-1000-001), one hole closure half (09094899-6) and three blank plates (62852-20) from parts carton.

See page #14 for assembling black wheels into metering cup.

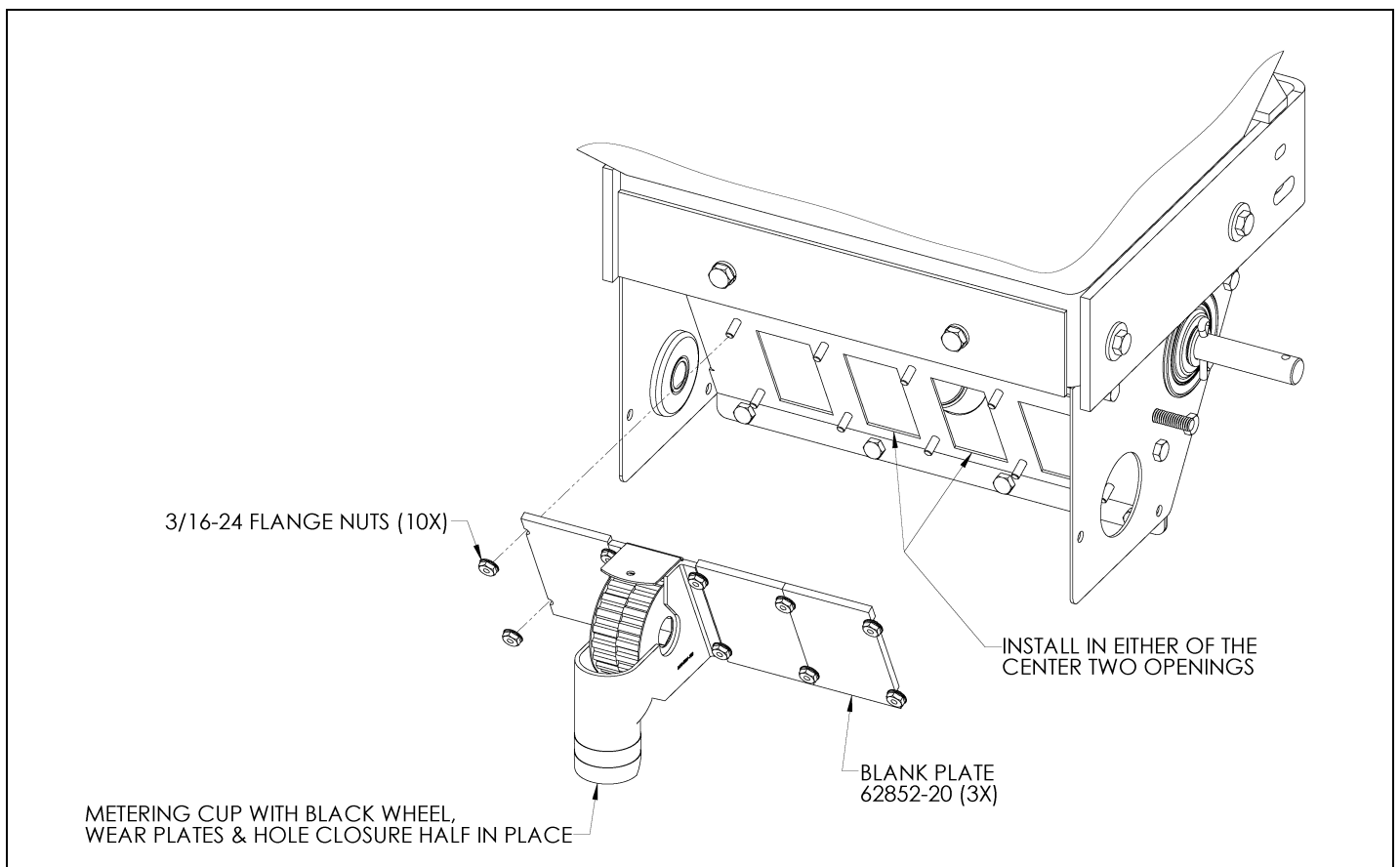
Install the metering cup with wheel, wear plates and hole closure half to the 3/16-24 threaded studs.

Install the three blank plates to the threaded studs.

Use ten of the 3/16-24 flange nuts to secure the metering cup & blank plates in place.

Do not over tighten flange nuts.

It is recommended when setting up for one outlet that the metering cup be mounted in either of the center two openings for better flow of material from hopper.



Section 3

Assembling for Black Metering Wheels

Step #4B (for 2-outlet) (Installing metering cups for use with Black Metering wheels.)

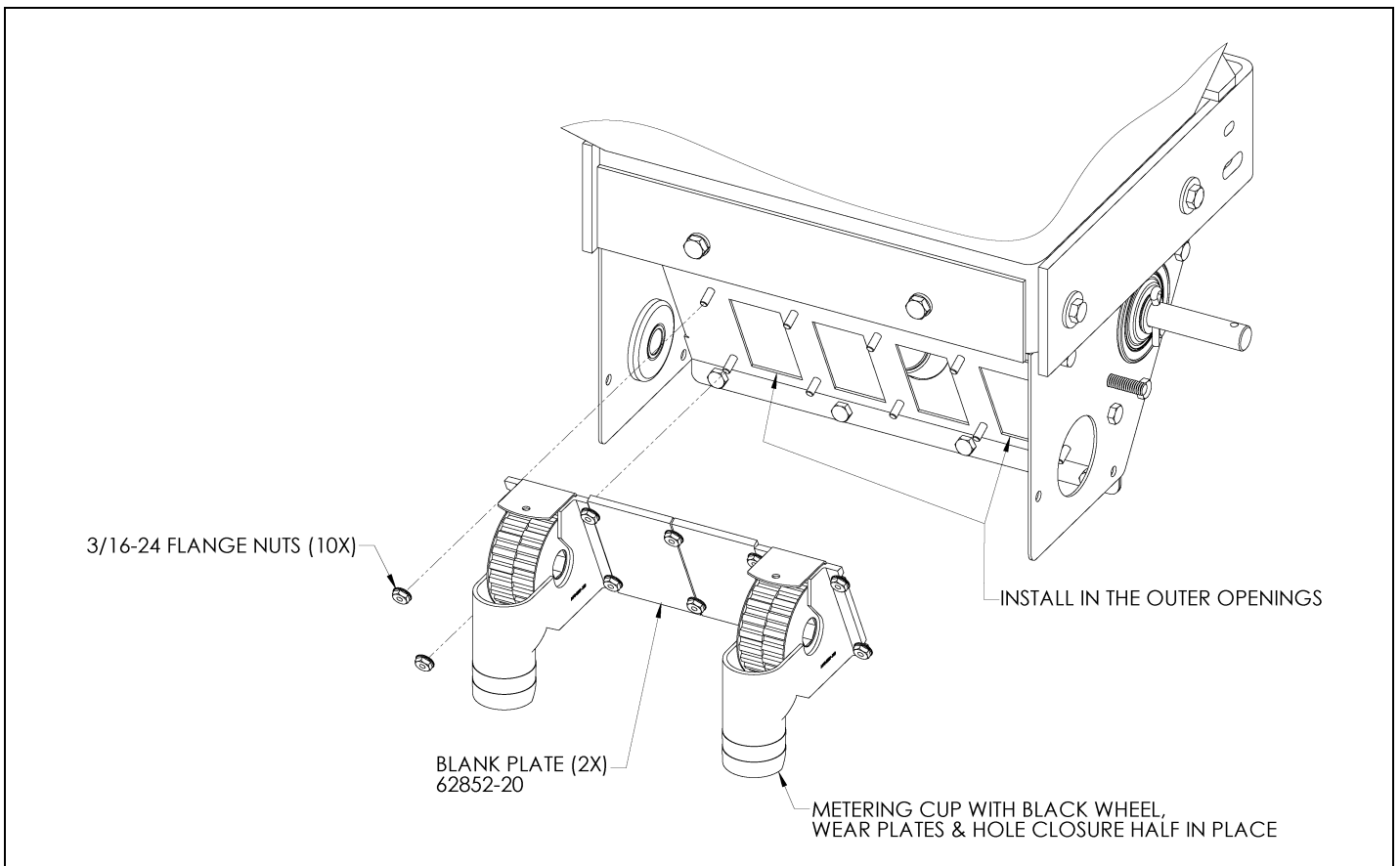
For two outlet set-up locate two black metering wheel (62851-75), four stainless wear plates (62851-72), two metering cups (M10-1000-001), two hole closure halves (09094899-6) and two blank plates (62852-20) from parts carton.

See page #14 for assembling black wheels into metering cup.

Install the metering cup with wheel, wear plates and hole closure half to the 3/16-24 threaded studs.
Install the two blank plates to the threaded studs.

It is recommended when setting up for two outlets that the metering cup be mounted in the two outside openings for better flow of material from hopper.

Use ten of the 3/16-24 flange nuts to secure the metering cups & blank plates in place.
Do not over tighten flange nuts.



Section 3

Assembling for Black Metering Wheels

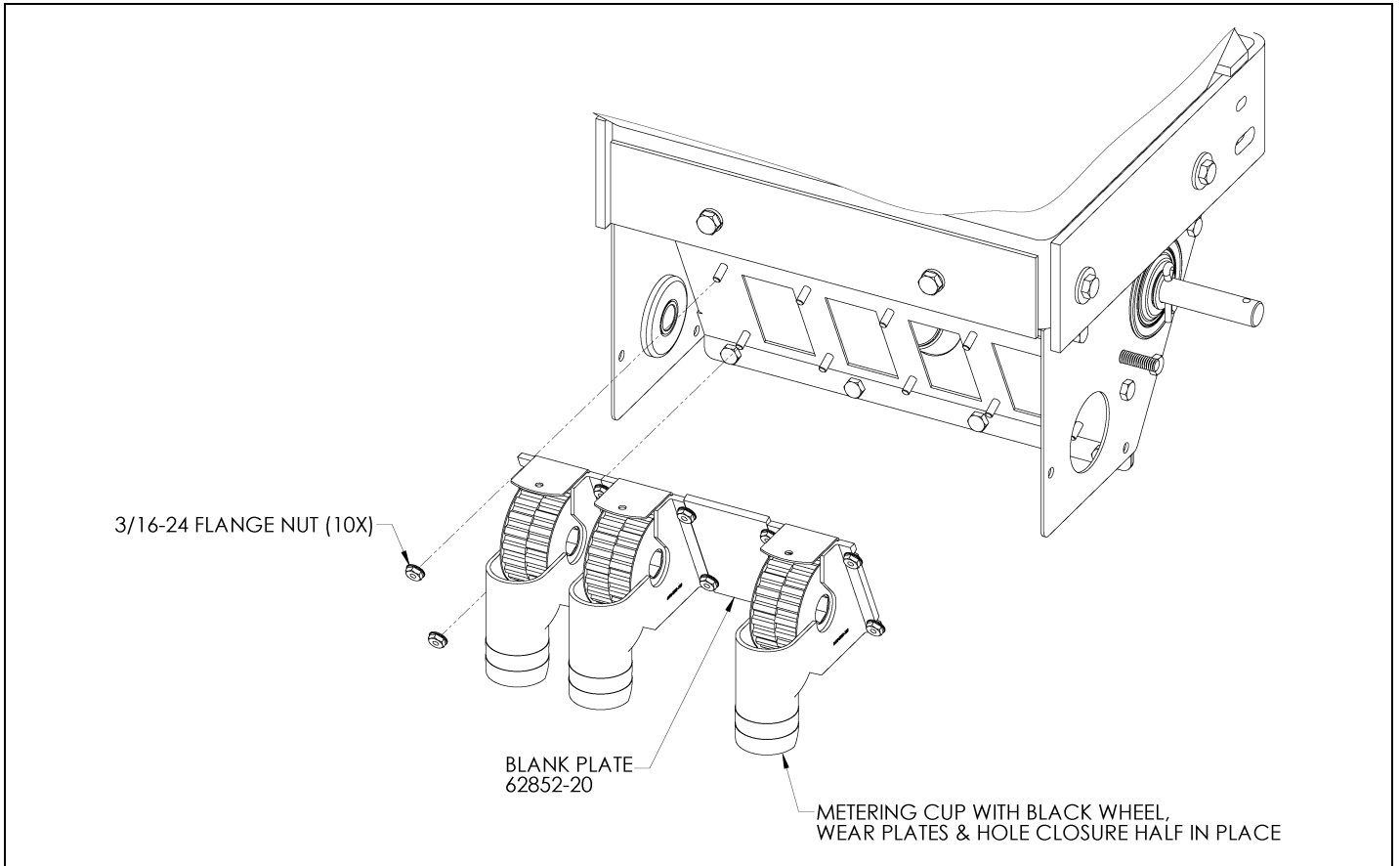
Step #4C (for 3-outlets) (Installing metering cups for use with Black Metering wheels.)

For three outlet set-up locate three black metering wheels (62851-75), six stainless wear plates (62851-72), three metering cups (M10-1000-001), three hole closure halves (09094899-6) and one blank plate (62852-20) from parts carton.

See page #14 for assembling black wheels into metering cup.

Install the metering cup with wheel, wear plates and hole closure half to the 3/16-24 threaded studs.
Install the blank plate to the threaded studs.

Use ten of the 3/16-24 flange nuts to secure the metering cups & blank plate in place.
Do not over tighten flange nuts.



Section 3

Assembling for Black Metering Wheels

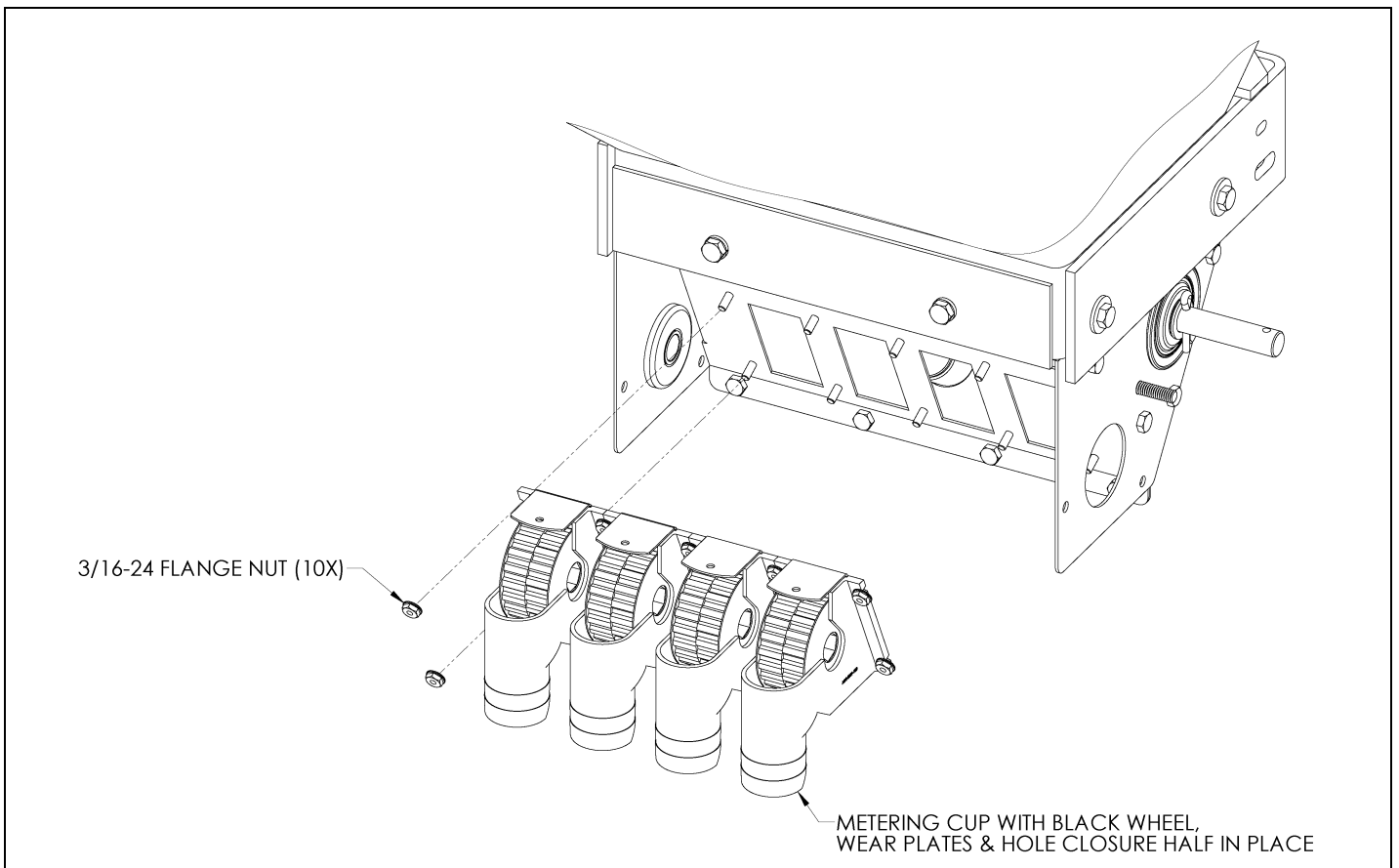
Step #4D (for 4-outlets) (Installing metering cups for use with Black Metering wheels.)

For a four outlet set-up locate four black metering wheels (62851-75), eight stainless wear plates (62851-72), four metering cups (M10-1000-001) and four hole closure halves (09094899-6) from parts carton.

See page #14 for assembling black wheels into metering cup.

Install the metering cup with wheel, wear plates and hole closure halves to the 3/16-24 threaded studs.
Install the blank plate to the threaded studs.

Use ten of the 3/16-24 flange nuts to secure the metering cups in place.
Do not over tighten flange nuts.



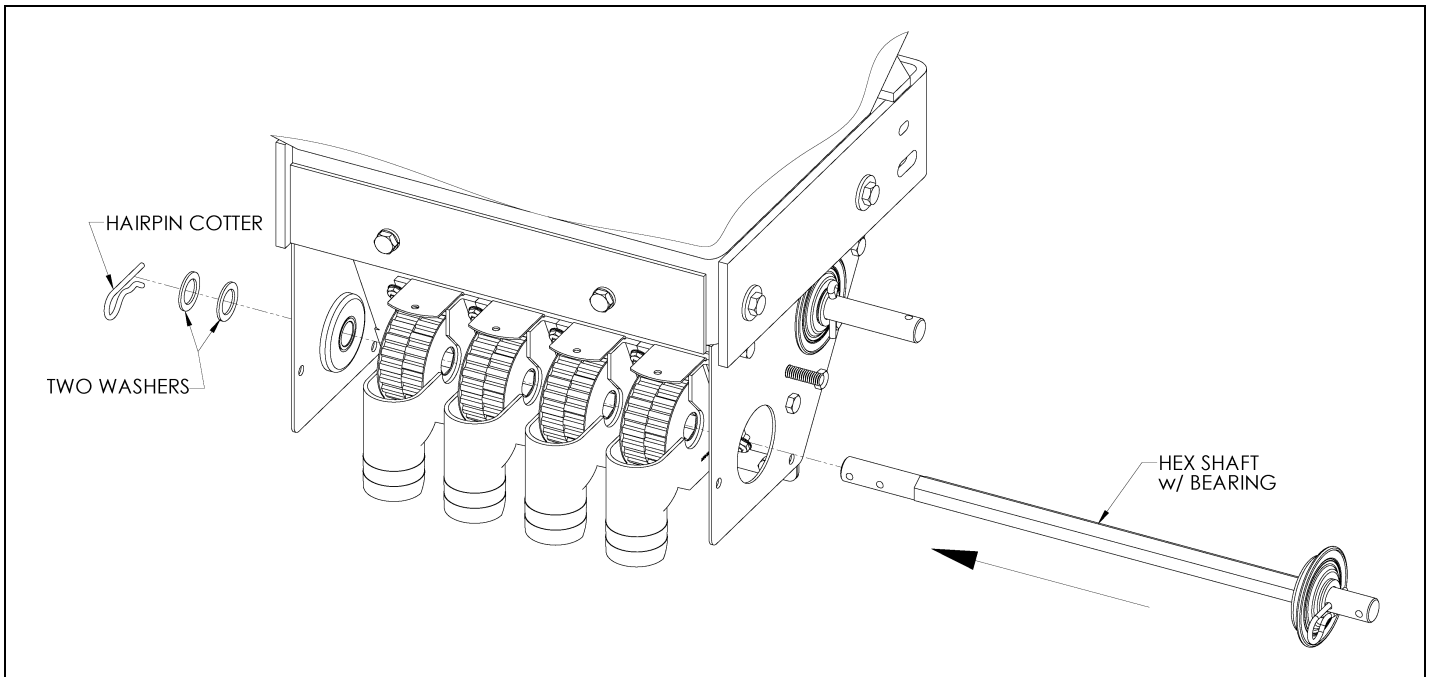
Section 3

Assembling for Black Metering Wheels

Step #5 Reinstall hex shaft

Reinstall hex shaft by inserting it (that was removed in step number #2) through all metering wheels and through bearing. Note: Turn hex shaft as you are inserting it through the metering wheels to align the hex shaft with the hex in the metering wheels.

With hex shaft in place reinstall the two washers and hairpin cotter (from step #1) on end of hex shaft to hold it in place.



Section 3

Assembling for Black Metering Wheels

Step #6 Reinstall bearing retainer

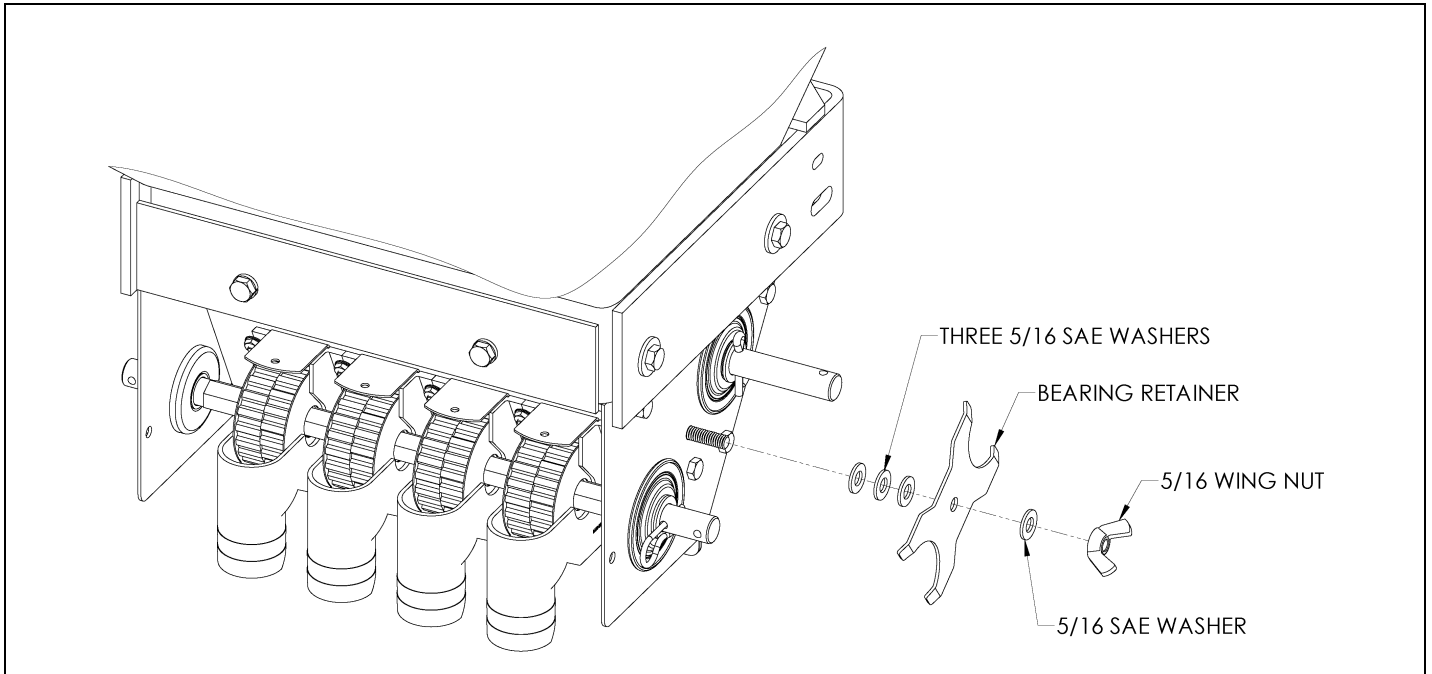
Reinstall the bearing retainer removed in step #1.

Reinstall three 5/16 SAE washer on the threaded stud.

Reinstall the bearing retainer on the threaded stud.

Reinstall the 5/16 SAE washer and 5/16 wing nut. Position bearing retainer so it will hold both bearings in place.

Tighten wing nut securely.



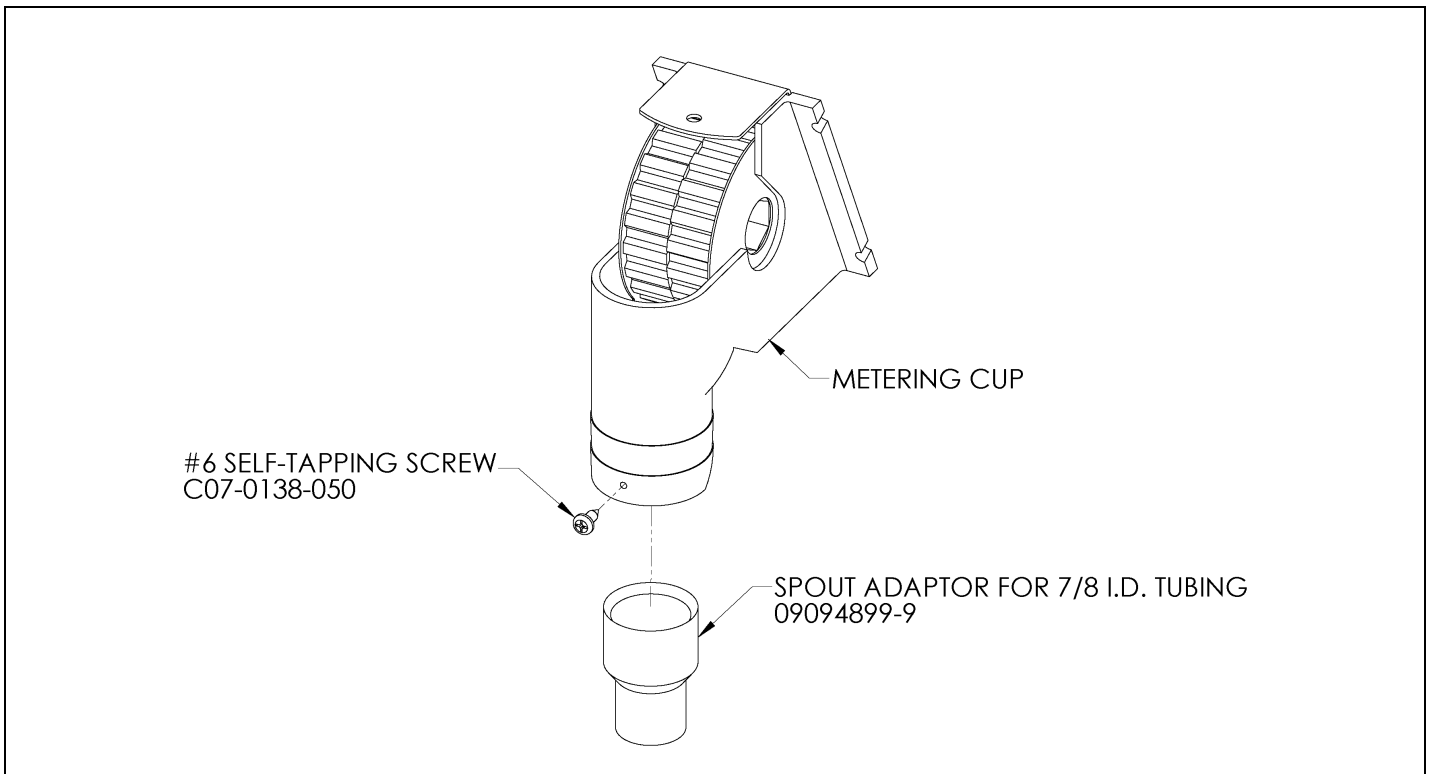
Section 3

Installing spout adaptor of use with 7/8 ID tubing.

Locate spout adaptor (09094899-9) and #6 self-tapping screw (C07-0138-050) in the parts carton and parts bag. Insert spout adaptor into metering cup as shown so spout adapter sticks out of metering cup about 15/16". Secure spout adaptor in place using the #6 self-tapping screw as shown. Do this for as many outlets as needed.

Note:

Spout adaptor should only be used with the black metering wheels when applying chemical and small to fine seeds. Fertilizer which is denser and larger and at higher rates can plug the smaller 7/8" ID tubing. See Section 6 for more information.



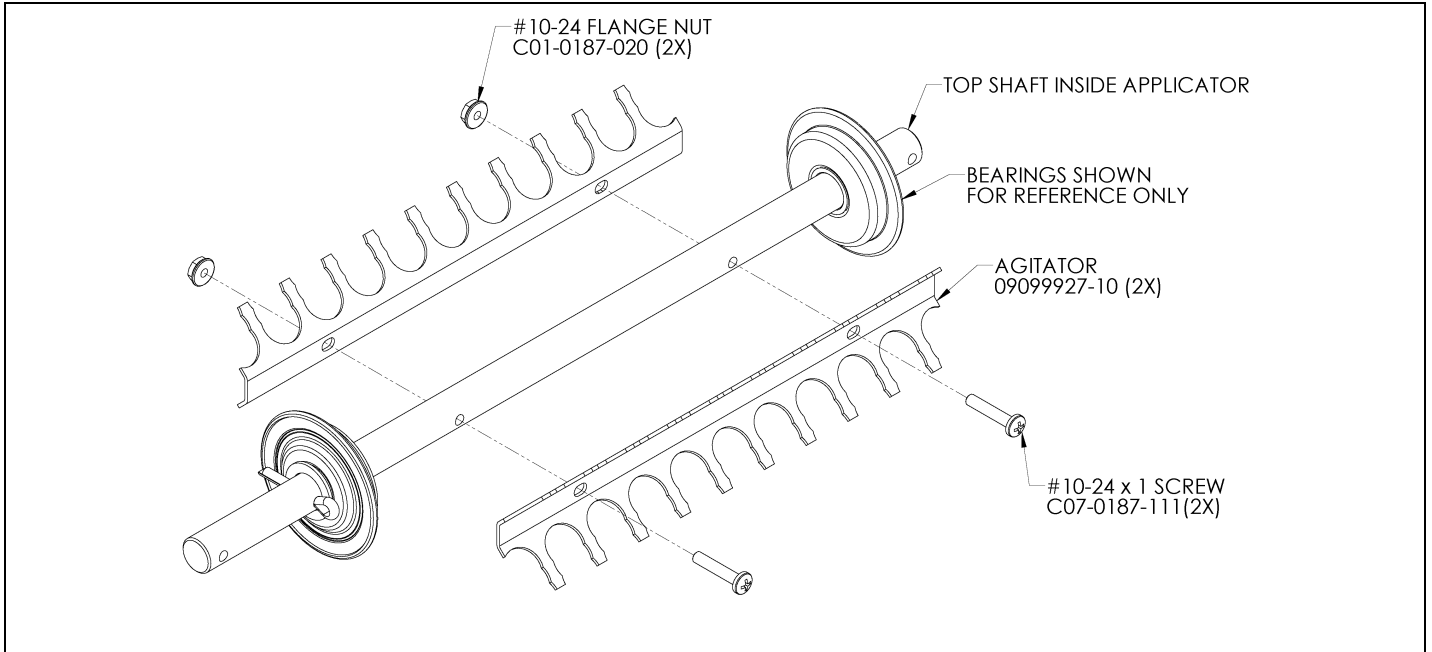
Section 3

Installing Optional Agitator

Only use agitator if needed to assist material to flow.

In most cases, normal vibration from moving is all that is needed to assist the material flow.

Locate two agitators (09099927-10), two #10-24 x 1 inch screws (C07-0187-111) and two #10-24 flange nuts (C01-0187-020) from parts carton and parts bag. The agitators fasten to the top shaft inside the applicator using the above mentioned screws and nuts. Tighten hardware securely.



Section 4

Ground Drive

Importance of Input RPM for Ground Speed Compensation

If the rate guidelines furnished with the ground driven hopper are to be followed, the key to metering material in the system is to have proper input RPM. Each revolution of the metering wheel will bring a certain amount of material out of the hopper for placement in the row, in a band or for broadcasting the material. The method of motion pick-up can be one of two ways.

- 1) Separate ground drive wheel. (See (a) below)
- 2) Placing a sprocket on the main shaft of a planter or drill. (See (b) below)

Most Gandy rate charts use an input RPM of either 2 or 4 revolutions in 88 feet (distance traveled in 1 minute at 1 mph) in order to convert the application ranges of many products. Other input revolutions can be used and calibrated as well.

- a) With the Gandy Ground Drive Package #09094903 (w/o clutch) the drive will be at 2 RPM if you use the 36-tooth outboard bearing sprocket #09094903-3. If you use the 18-tooth outboard bearing sprocket #09094903-6, the drive will be at 4 RPM at the applicator input shaft.
- b) If you are using the main shaft on a planter, find the RPM of that shaft. This can be done by starting at the drive wheel, finding the circumference in inches and then counting the number of teeth on the drive sprocket on that wheel. If the sprocket is not on the drive wheel, it may be on the same shaft or axle. Divide the circumference of the wheel by 12. Then divide 88 (the number of feet covered in one minute at one mile per hour) by the number of feet around the tire, to determine the number of revolutions the wheel and drive sprocket make in one minute. From the drive wheel sprocket, follow the chain to the next sprocket, counting the number of teeth on it. This sprocket may be on the main shaft or on a jack-shaft or clutch of some type. If it is on a jack-shaft or clutch, continue to count and record the sprocket teeth on each sprocket until reaching the main shaft. The RPM will increase, decrease, or stay the same according to the ratios of the number of teeth on the sprockets from the drive wheel to the main shaft. Adjusting drive wheel sprocket RPM at each subsequent sprocket change will yield the RPM of the input shaft. The diagram on next page is an example of a way to find the RPM discussed above.

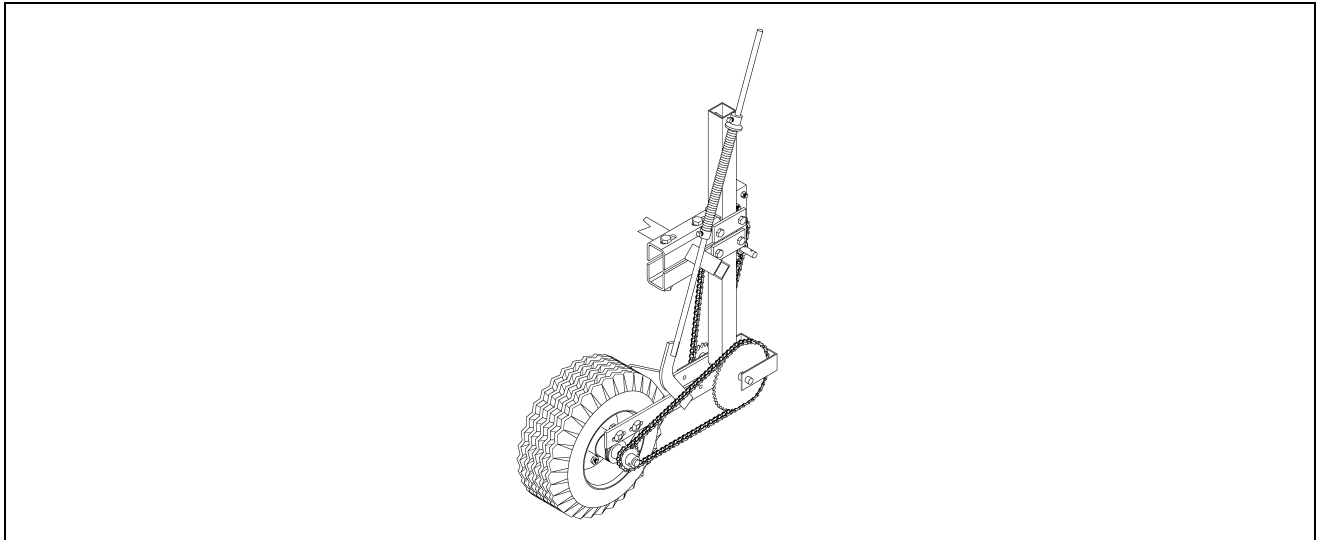
Section 4

Ground Drive 09094903

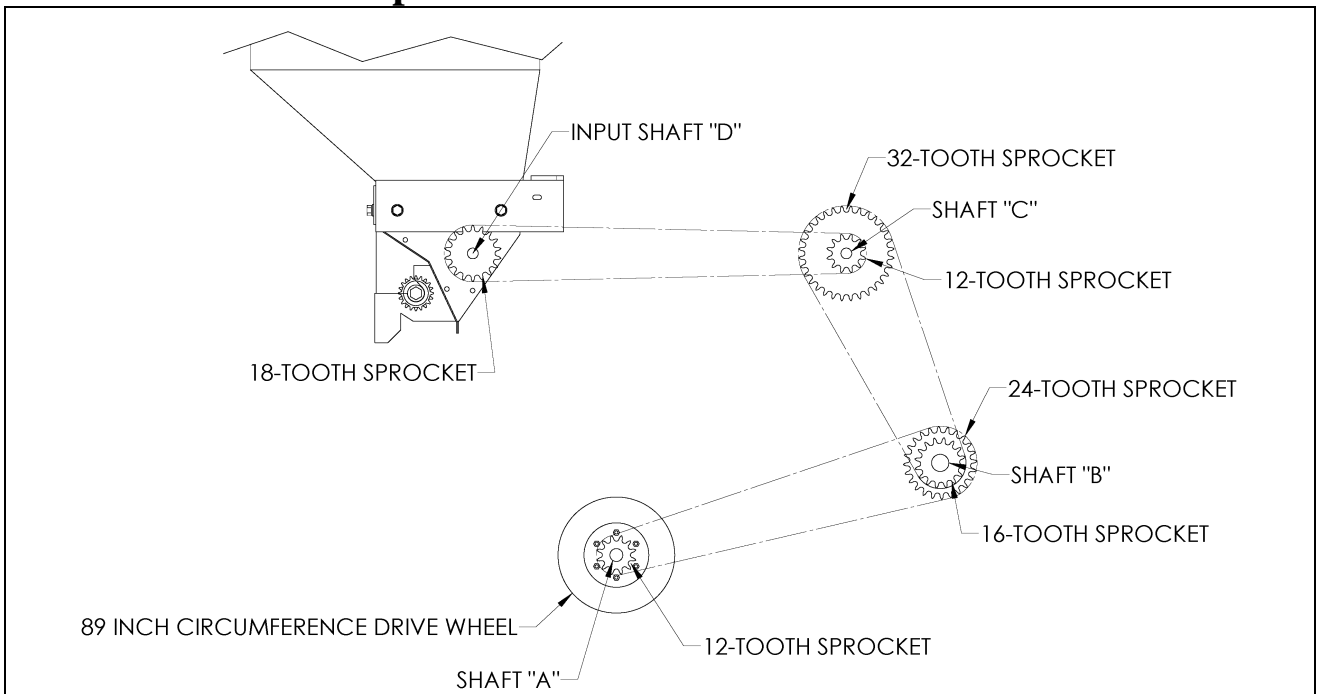
Example: Divide Wheel = 89 inches = 7.4 feet.

88 feet per minute at one mile per hour / 7.4 feet = 11.9 RPM at one mile per hour at the drive wheel shaft. Follow the diagram below to give you a picture of how this is determined to the input shaft of the hopper.

Ground Drive Package: 09094903



Shaft Drive from Implement



$$89 \text{ inch} / 12 \text{ inch} = 7.4 \text{ Ft}$$

$$88 \text{ Ft} / 7.4 \text{ Ft} = 11.9 \text{ RPM Shaft "A"}$$

$$12\text{-T} / 24\text{-T} \times 11.9 = 5.95 \text{ RPM Shaft "B"}$$

$$16\text{-T} / 32\text{-T} \times 5.95 = 2.975 \text{ RPM Shaft "C"}$$

$$12\text{-T} / 18\text{-T} \times 2.975 = 1.98 \text{ RPM Input Shaft "D"}$$

Section 4

Rate Control Sprocket Package #09099930

The Rate Control Sprocket Package contains 12 sprockets, ranging from 8-tooth to 34-tooth sprockets. There are two 16-tooth sprockets for a 1:1 ratio. By following the rate chart if available for your product and application rate and placing the correct sprockets on the designated shaft, you should achieve the proper metering shaft RPM and therefore the correct rate.

The following drawing shows an “exploded” view of this package and how it is assembled to this applicator. If parts are needed, please refer to the Parts & Packing List for the proper description.

Assembly of Rate Control Sprocket to Applicator (see diagram on next page)

1. Remove two cotter pins on both drive and metering wheel shafts. **Note:** Keep 5/8 washers in place.
2. Assemble shaft connector short (09094900-22) to drive shaft, using one of the 3/16 cotter pins.
3. Assemble shaft connector long (09094900-21) to metering drive shaft, using the other 3/16 cotter pin.
4. Remove the 5/16 wing nut and flat washer from bearing retainer stud.
Assemble the 5/16 shake-proof washer, chain tightener (09094900-2), 5/16 flat washer and 5/16 nylon lock nut.

Note: Do not tighten until chain and desired sprockets have been assembled in step #7.

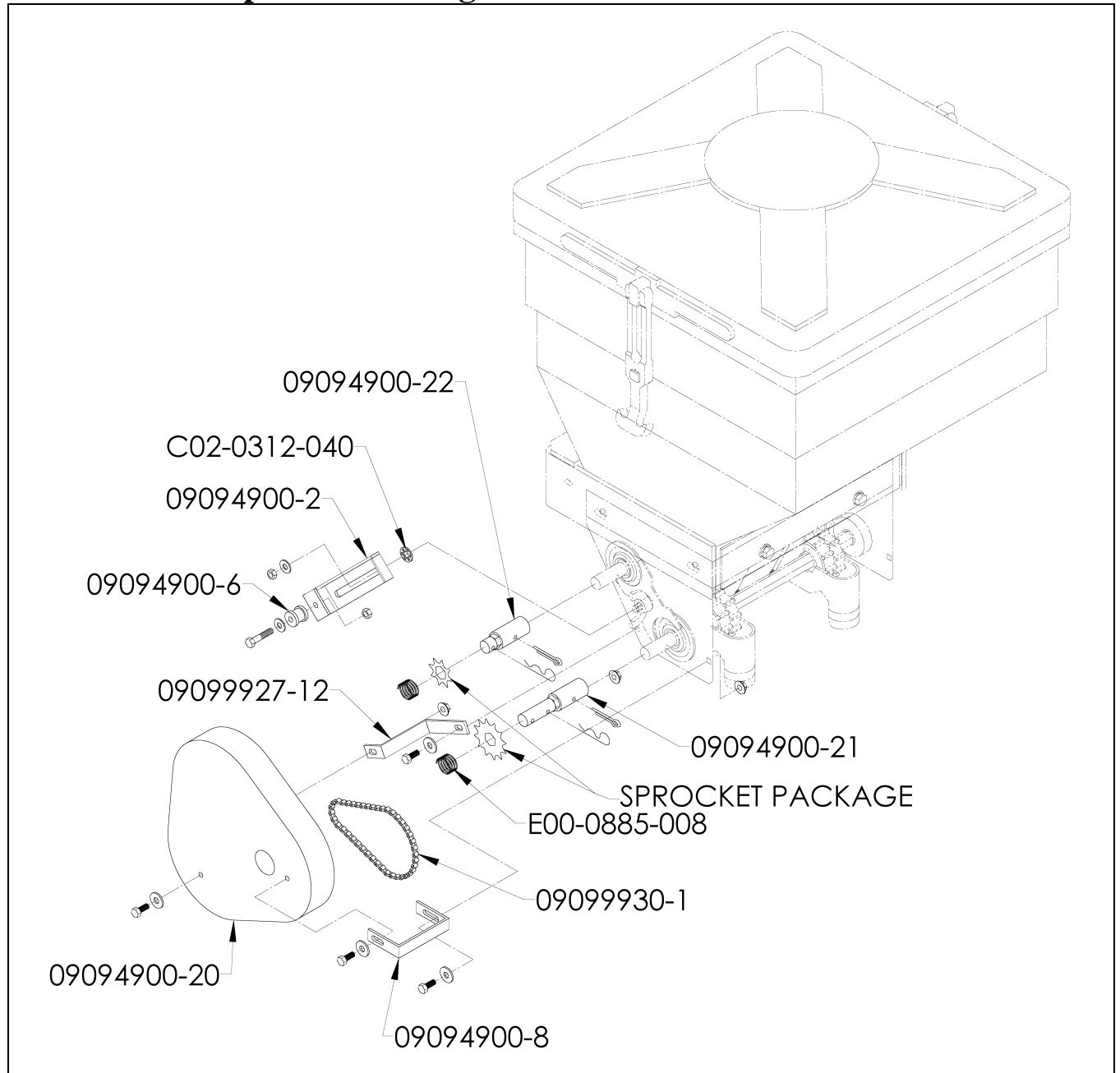
5. Select appropriate sprockets for material that is being metered from rate chart supplied by manufacture. **Note: Always calibrate before applying material.**
6. Assemble sprocket and spring (E00-0885-008) to shaft connectors assembled in step #2 & #3.
Compress spring and insert hairpin cotter to secure.

Note: When disassembling, spring is under pressure. Use Caution.

7. Assemble roller chain (09099930-1) to sprockets. Tighten chain with chain tightener (09094900-2).
Do not over tighten chain.
8. Assemble chain guard brackets (09094900-8 & 09099927-12) to chain guard (09094900-20) using the 1/4 hex bolts, washers and whiz flange nuts. Do not tighten these bolts until step #9.
9. Assemble chain guard to hopper bottom using the remaining 1/4 bolts, washers and whiz flange nuts.
Align chain guard so chain does not rub and that metering shaft is centered with hole on chain guard.
Tighten all hardware securely.

Section 4

Rate Control Sprocket Package #09099930



Section 4

Electric Motor Drive, 12-volt, 1/64 hp, 4 amp (Non-Speed Compensated)

The 12-volt electric motor package #09099934 will drive up to two applicators.

Because the metering wheel shaft must turn in a clockwise direction to feed the material under the wheels, the electric motor must be mounted properly.

Installation Instructions (Diagram on Next Page)

1. Locate side of poly hopper where motor mount bracket (09099926-8) is to be mounted and remove the two 5/16 bolts holding U-frame in place. These two bolts will not be reused.
2. Attach motor mount bracket (09099926-8) to side of hopper as shown using the two 5/16 x 1-1/4 stainless hex bolts and flat washers provided. Tighten bolts securely.
3. Attach the 32-tooth sprocket (09071589-16) to upper shaft on hopper as shown using one 3/16 hairpin cotter (C21-0177-020).
4. Fasten electric motor assembly to motor mount bracket (09099926-8) (step #2) using the two 5/16 x 3/4 hex bolts, 5/16 flat washers and 5/16 whiz flange nuts as shown. Do not tighten.

Note: Use the set of holes farthest away from the hopper when mounting electric motor.

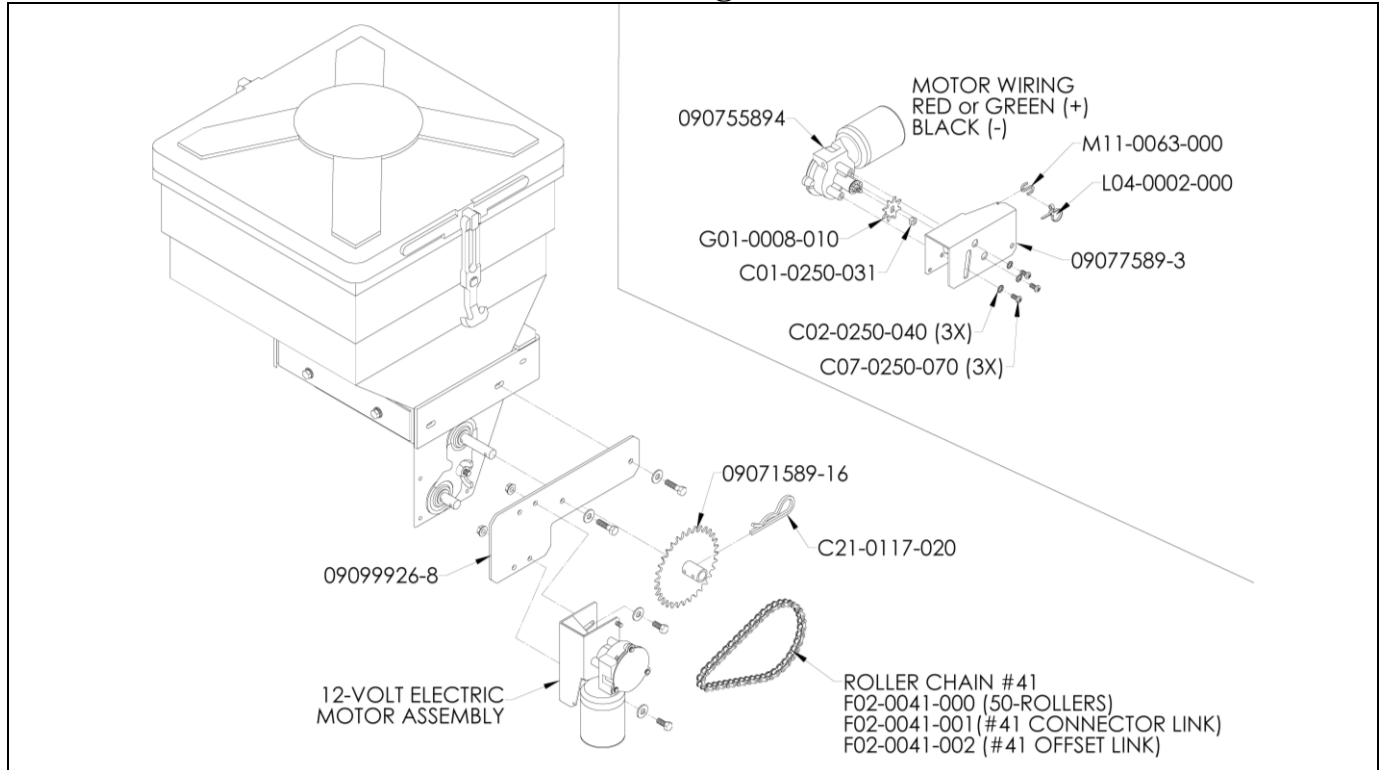
5. Position roller chain over 8-tooth sprocket on electric motor and 32-tooth sprocket just installed. Tighten chain so that it is neither floppy nor under tension. Tighten the 5/16 bolts on electric motor securely.
6. Attach chain guard (09099927-11) to 1/4 studs on electric motor mount as shown using the 1/4 whiz flange nuts in place on studs. Tighten nuts securely.
7. Attach switch-mounting bracket (09073589-9) in a convenient location in the tractor operator's area.
Note: Ground wire connects back to switch bracket. Switch mounting bracket needs to make good metal-to-metal contact to achieve this or motor will not run. If a good ground cannot be achieved you will have to run a wire from the switch bracket back to the frame or negative terminal on battery.
8. Fasten switch (L05-0001-000) to switch mounting bracket and tighten in place. Connect #8-32 screw (C07-0164-051) to switch mounting bracket using the #8-32 kep nut (C01-0164-040) as shown. Do not tighten. This is the ground screw. (See Wiring Diagram)
9. Attach ring terminal end of 8-foot red wire (09071589-11) to desired power source, such as live terminal on ignition switch or battery. Be sure you have 12-volts of current. Attach other end to either terminal on switch. (See Wiring Diagram)
10. Connect molded connector (Male end with fork terminals) (09082589-31) to switch as follows. Connect the red wire (positive) to terminal on switch. Connect brown wire (negative) to #8-32 ground screw. Tighten connections securely. (See Wiring Diagram)
11. String wire from switch back to motor following wiring diagram as shown. Fasten wires together using the eight blue wire connectors. If you do not need full length of wire, cut off excess to keep voltage drop to a minimum. Secure wires in place when done being sure wires cannot be pinched, cut or pulled apart.

Section 4

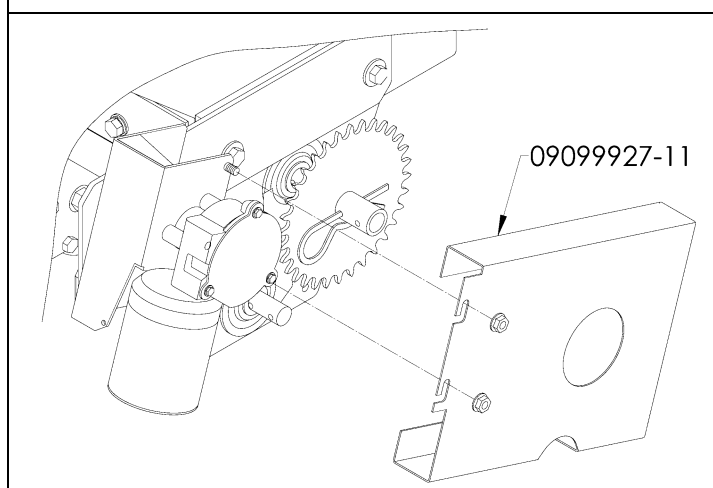
Electric Motor Drive 12-volt (continued)

12. Check that the motor turns in the proper direction. The 8-tooth sprocket on the motor should turn counterclockwise. The drive shaft should turn 15-20 rpm using the 8-32 tooth sprocket ratio with the applicator empty.
13. Connect the connector drive tubes (if used).
14. Be sure hoppers are clean and free of foreign objects before using.
They should also be in alignment with each other if running two hoppers.

Electric Motor Mounting & Parts Schematics



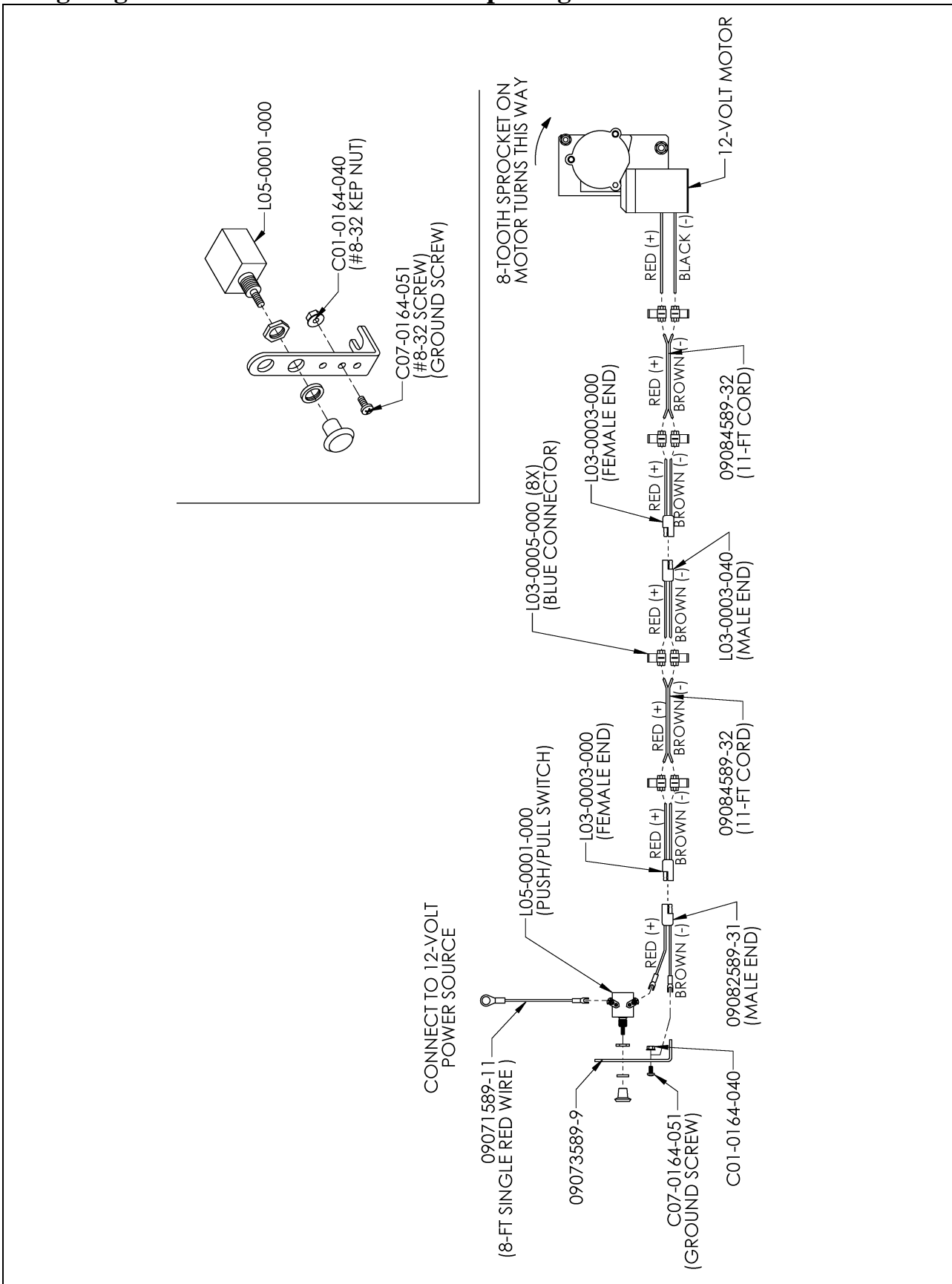
Chain Guard Installation



Shown without roller chain in place.

Section 4

Wiring diagram for 12-volt electric motor package #09099934.



Section 4

Heavy Duty 12-volt Electric Motor Drive (Non-Speed Compensated) 1/4 hp, 25 amps

The heavy-duty 12-volt electric motor package #09004956 can be ordered for driving multiple applicators. Because the metering wheel shaft must turn in a clockwise direction to feed the material under the wheels, the electric motor must be mounted properly.

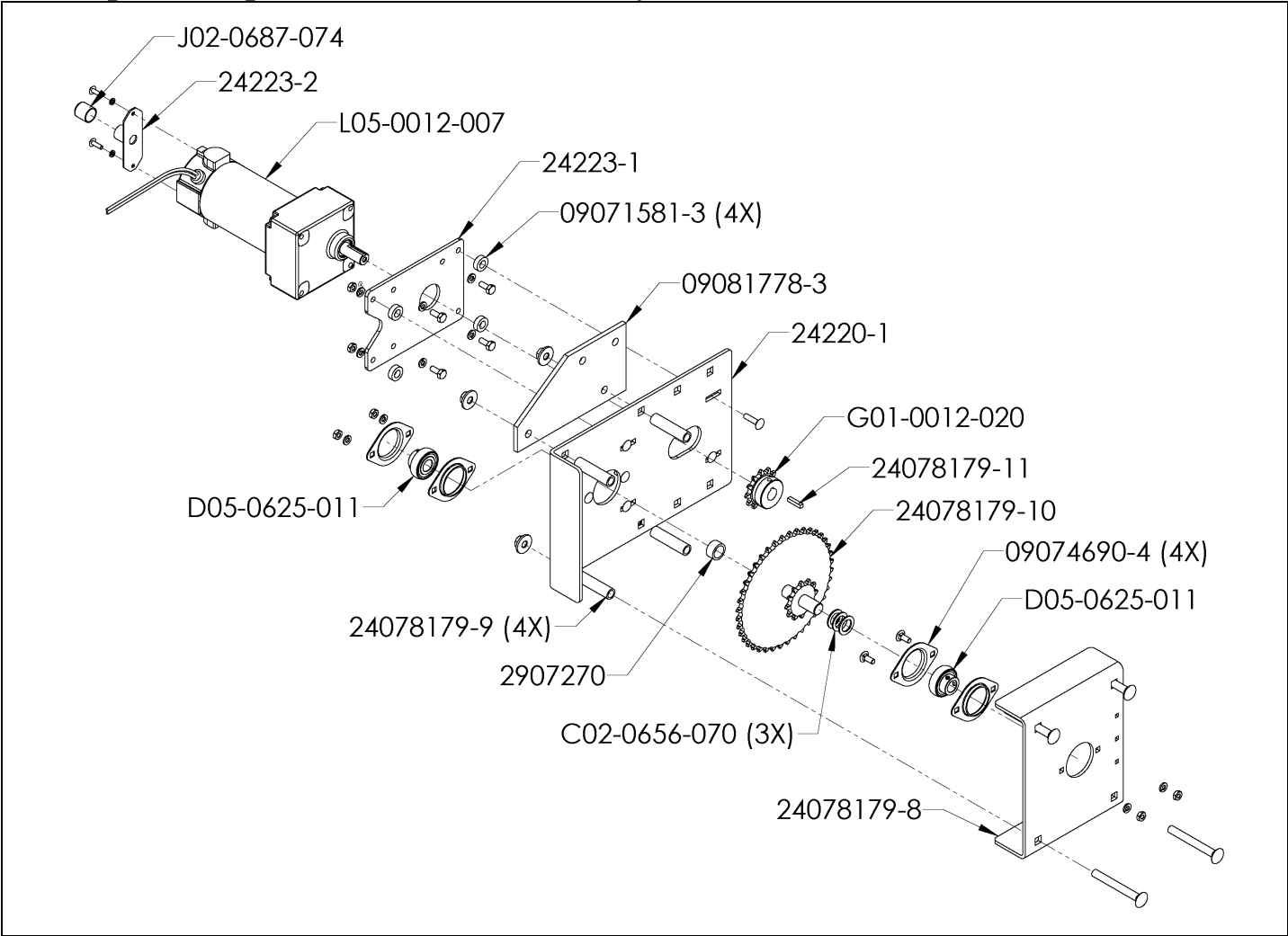
Assembly Instructions (See diagrams on following pages)

Note: Some components are partially assembled at factory.

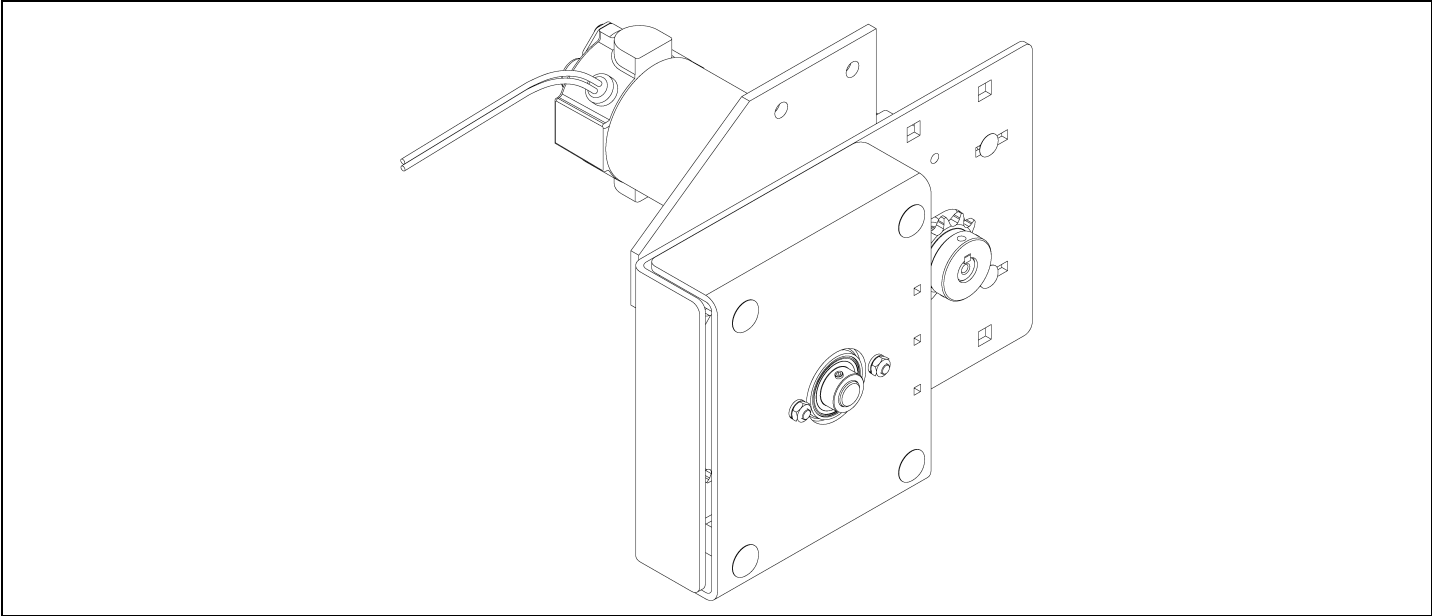
1. Attach outboard bearing bracket (09004956-1) to mounting bracket (09074678-3) using two 3/8 x 1-1/4 carriage bolts, 3/8 flat washers, lock washers and nuts. Do not tighten.
Attach the outboard bearings (09068341) to the inside of outboard bearing bracket (09004956-1) using the 1/4 x 3/4 hex bolts, lock washers and hex nuts. Do not tighten.
Insert shaft (09073678-5) through bearing 60-tooth sprocket (0406545-C4), and other bearing.
Securely tighten bolts holding bearings in place.
Use the 3/16 x 1-3/4 cotter pin to fasten sprocket to shaft and secure cotter pin in place.
Bolt nylon roller (62851-23) and bushing (0406548) in place as shown using the 5/16 x 2 hex bolt & 5/16 whiz flange nut. Tighten securely. Fasten connector tube (09004956-3) to end of shaft (09073678-5) using a 3/16 x 1-1/2 cotter pin and secure.
2. Slip connector tube (09074678-7) over aligning shaft on hopper (top longer shaft) and secure using the 3/16 x 1-1/2 cotter pin. **Note:** Top longer shaft on hopper may have to be removed and flipped over so long end of shaft is as shown in diagrams. (Step #2, Page 33)
Attach mounting bracket (09074678-3) to bolts holding U-frame for hopper to angle hopper mount or mounting post. (See diagram #2 Page 33) Do not tighten. Mounting bracket may need to be adjusted for proper alignment. Adjust outboard bearing bracket (09004956-1) and mounting bracket (09074678-3) to align shafts. If needed, loosen the four 5/16 bolts holding the hopper to the U-frame. The hopper then can be moved in or out to help in the alignment of the shafts and connector tube. Securely tighten carriage bolts on outboard bearing bracket and bolts connecting mounting bracket and U-frame.
3. Attach electric motor assembly to inside tab on mounting bracket (09074678-7) using two 3/8 x 1-1/4 carriage bolts, lock washers and hex nuts. Do not tighten. Wrap roller chain around 60-tooth sprocket and 12-tooth sprocket in electric motor assembly. (Chain goes under nylon roller.) Connect chain together using the connector link supplied. Slide electric motor assembly out to tighten chain and securely tighten carriage bolts. Do not over tighten chain. There should be some give in the chain when tightened. Check sprocket alignment.
4. Fasten hinge (24078179-15) to chain guard plate (09004956-2) and electric motor assembly as shown (Step #4, Page 34) using six 3/16 carriage bolts and 3/16 whiz nuts. Do not tighten bolts. Insert 3/8 x 3-1/4 carriage bolt through square hole as shown. Side bushing (24078179-9) over carriage bolt. Swing chain guard plate closed and tighten 3/16 whiz nuts securely. Use a 3/8 washer and 3/8 wing nut to secure chain guard in place.

Section 4

These parts are pre-assembled at the factory. (Electric Motor Assembly)

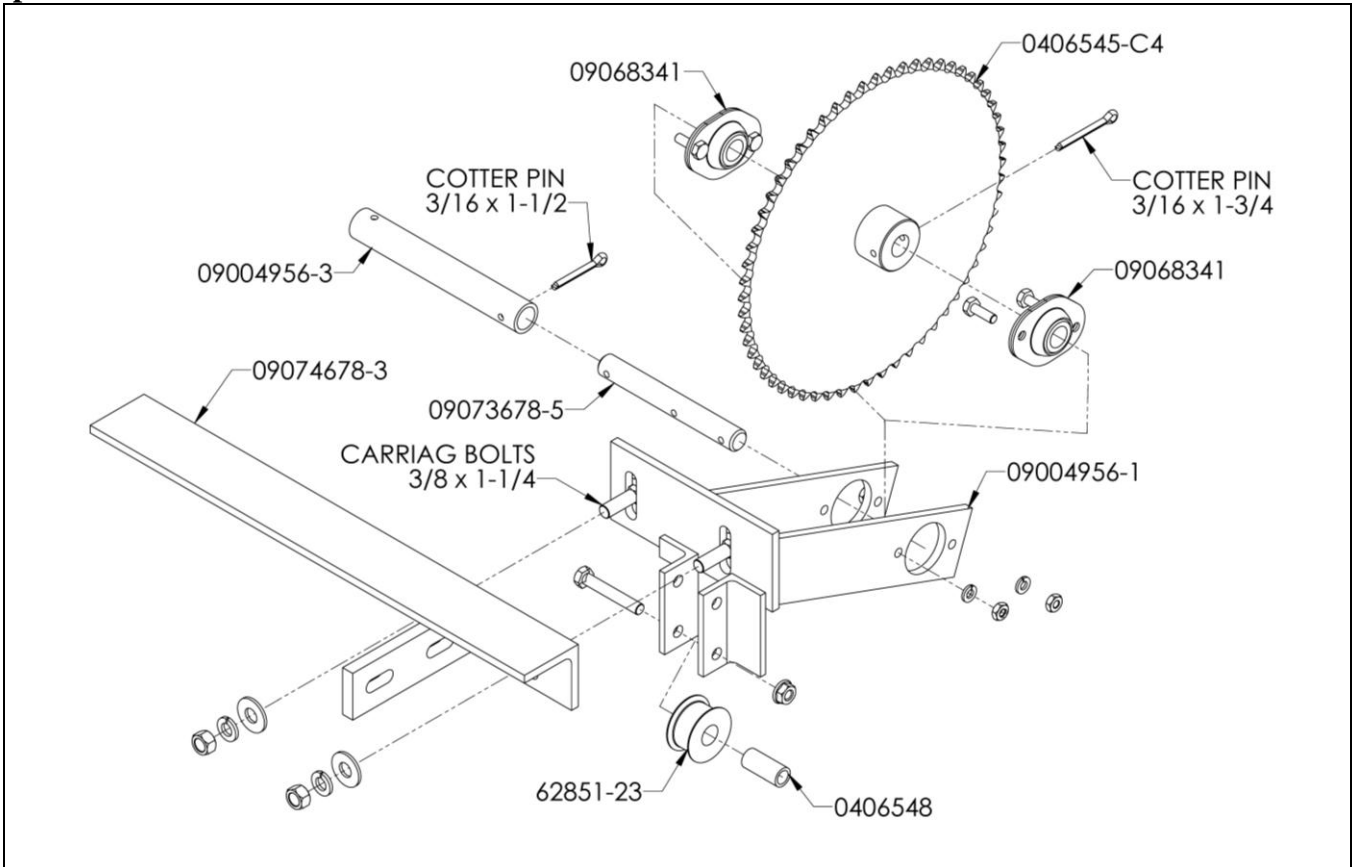


Assembled View

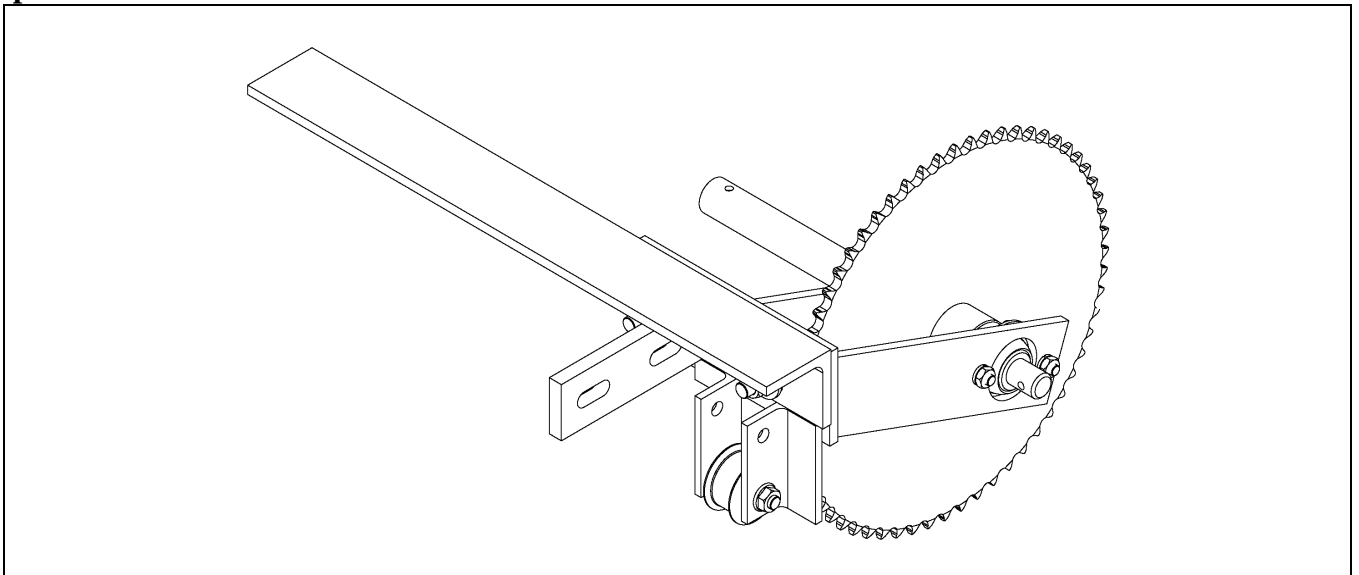


Section 4

Step #1

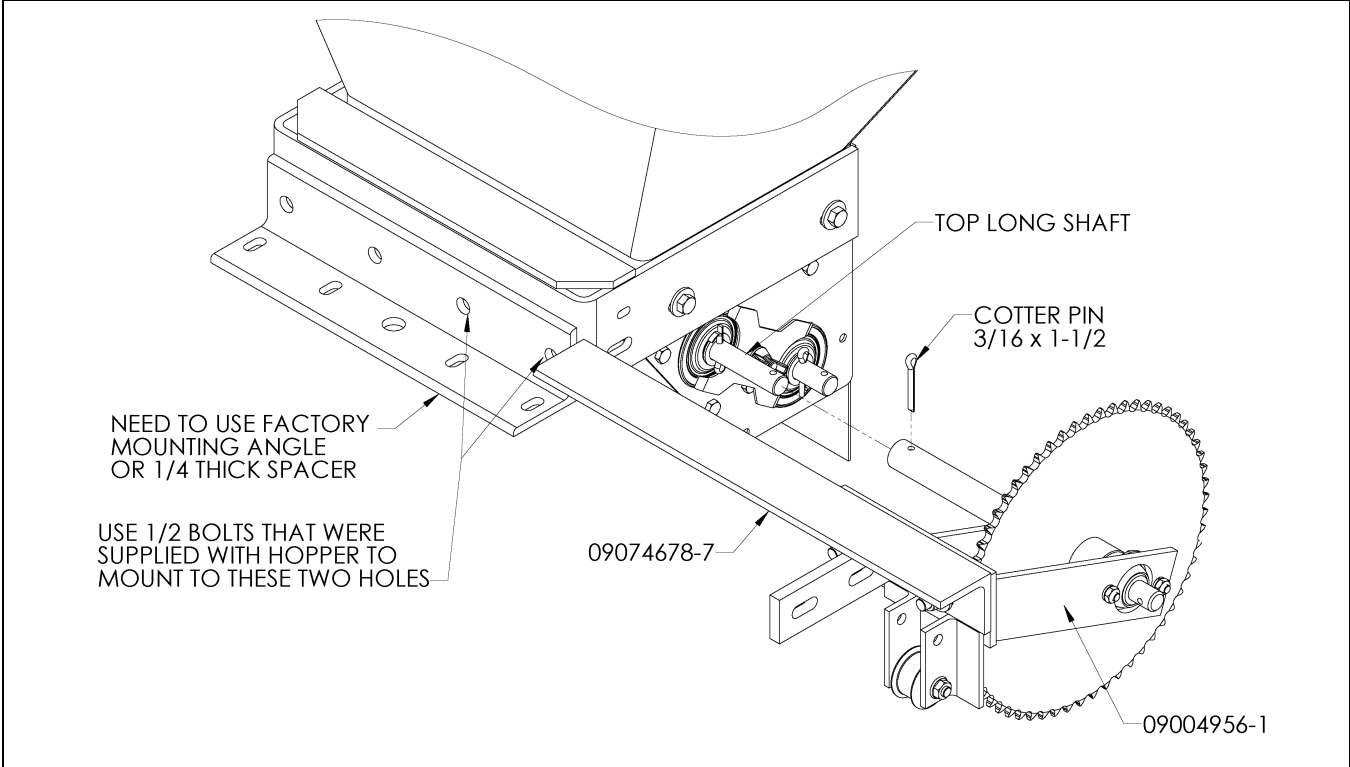


Step #1 Assembled

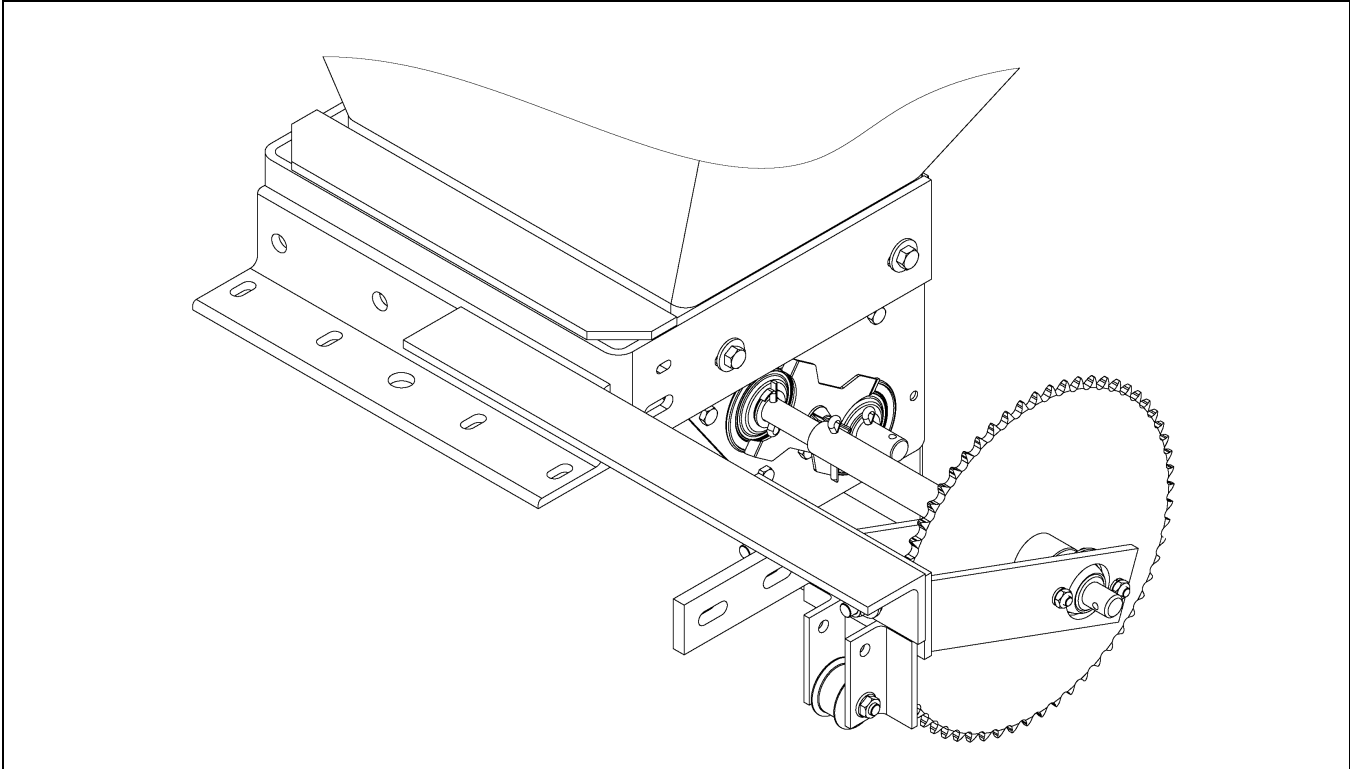


Section 4

Step #2

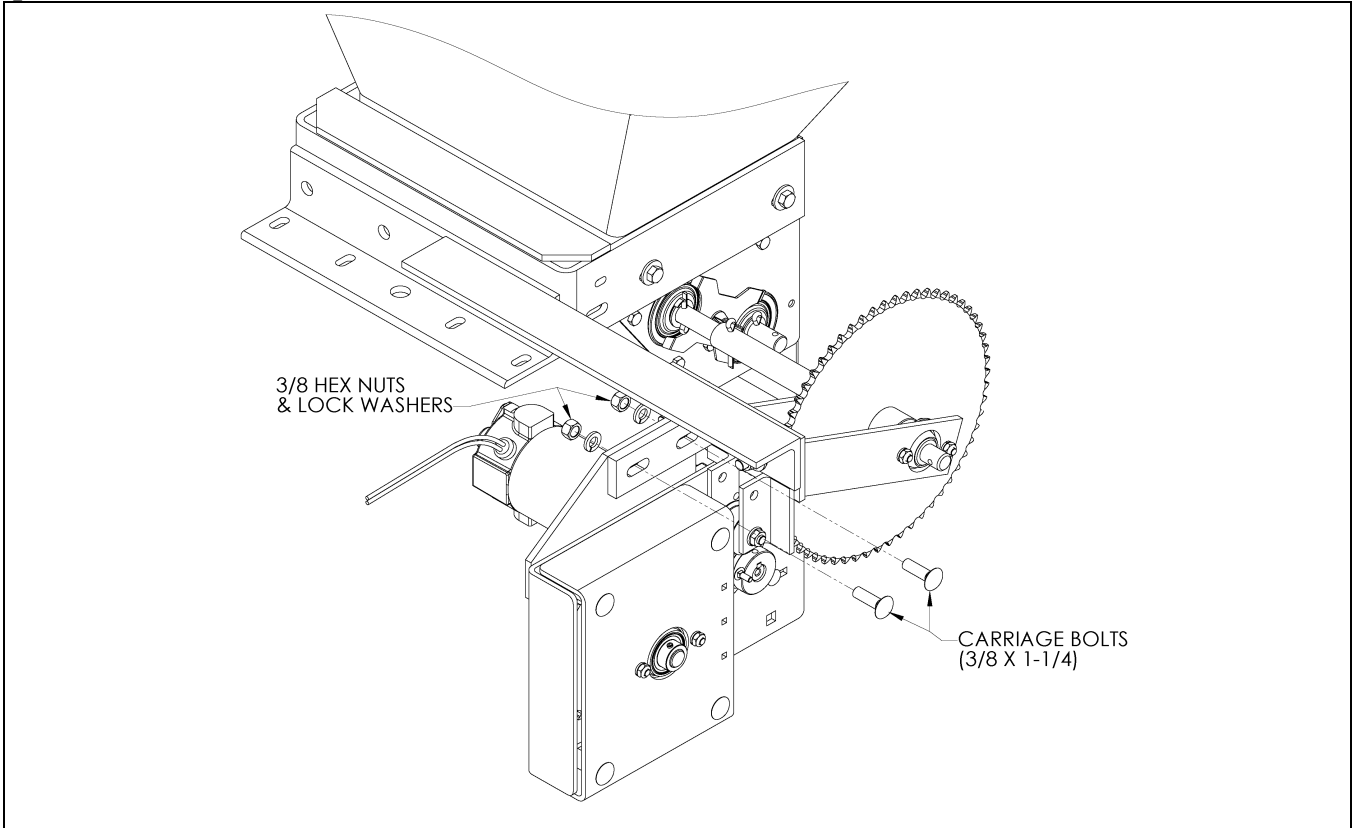


Step #2 Assembled

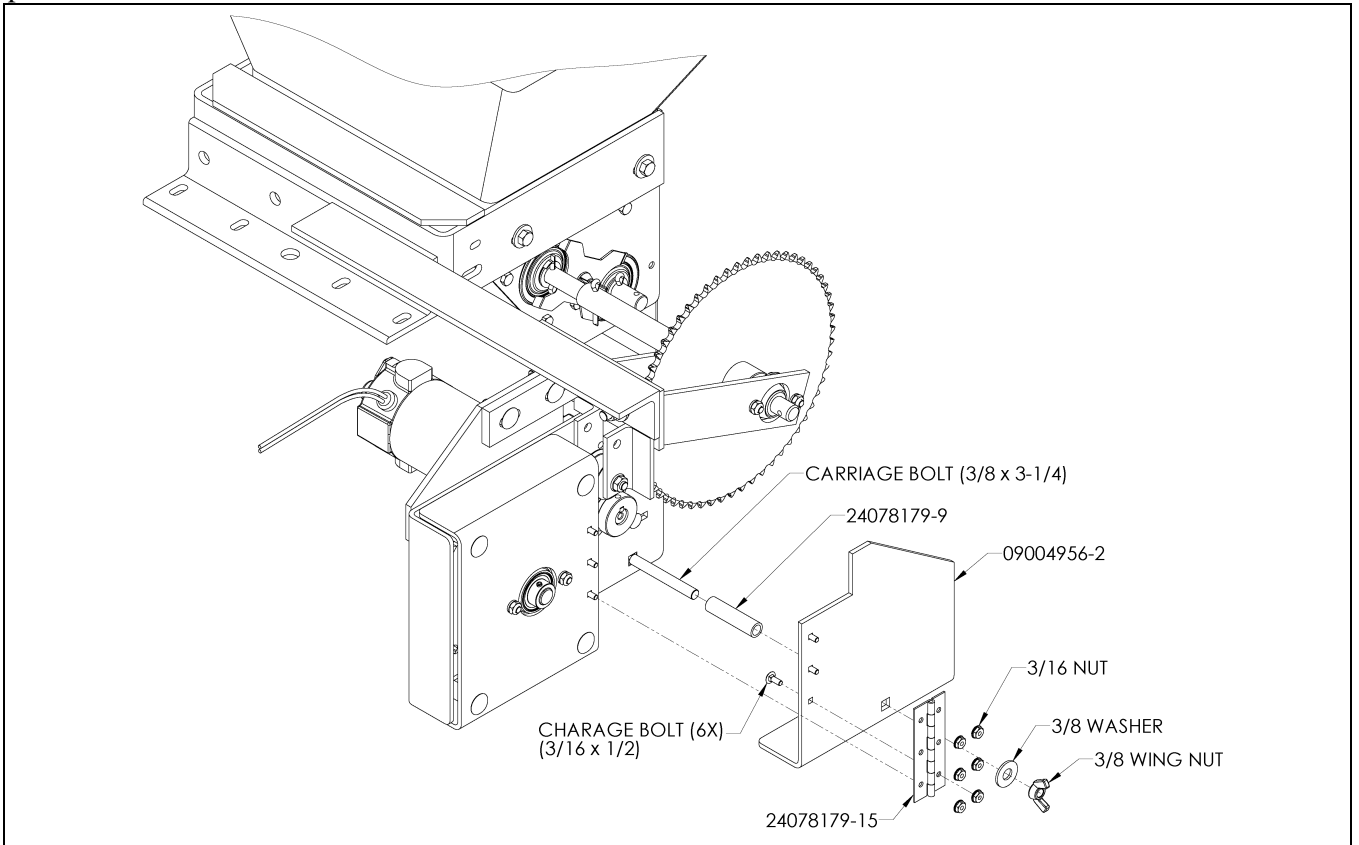


Section 4

Step #3



Step #4



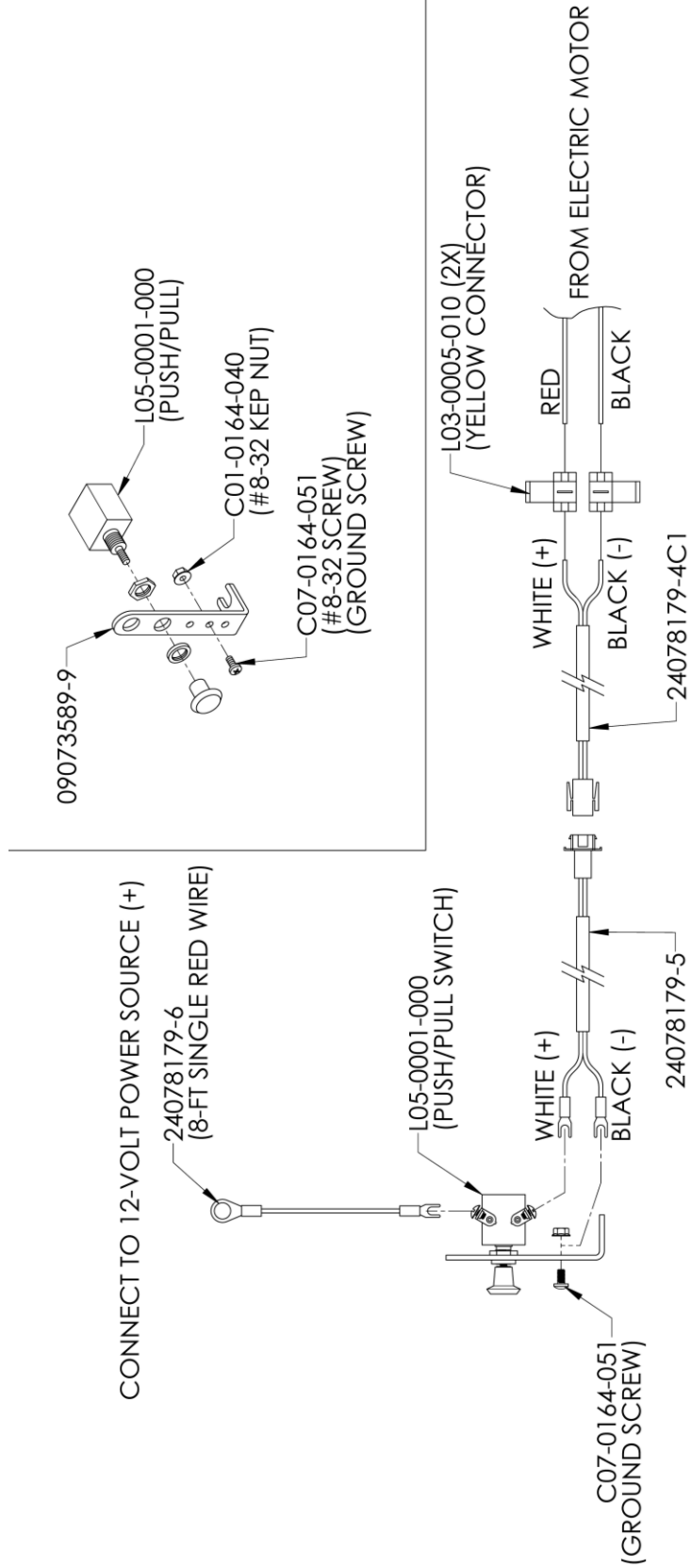
Section 4

Electrical Connections for Heavy Duty 12-volt Motor (See Diagram Next Page)

1. Attach switch-mounting bracket (09073589-9) in a convenient location in the tractors operators' area.
Note: Ground wire connects back to switch bracket. Switch mounting bracket needs to make good metal-to-metal contact to achieve this or motor will not run. If a good ground cannot be achieved, you will have to run a wire from the switch bracket back to the frame or negative terminal on the battery.
2. Fasten switch (L05-0001-000) to switch mounting bracket and tighten in place as shown. (Diagram Page 36)
Connect #8-32 screw (C07-0164-051) to switch mounting bracket using the #8-32 kep nut (C01-0164-040) as shown. Do not tighten. This is the ground screw. (See Wiring Diagram)
3. Attach ring terminal end of 8-foot red wire (24078179-6) to desired power source, such as live terminal on ignition switch or battery. Be sure you have 12-volts of current. Attach other end to either terminal on switch.
(See Wiring Diagram)
4. Connect wire (with two fork terminals) (24078179-5) to switch as follows. Connect the white wire (positive) to the open terminal on switch. Connect black wire (negative) to #8-32 ground screw. Tighten connections securely.
(See Wiring Diagram) Route wire out of cab as desired. Fasten wire in place being sure wires cannot be pinched, cut or pulled apart.
5. Connect wire (24078179-4C1) to wire installed in step #4. String this wire back to electric motor.
Connect white wire (positive) to red wire on electric motor using one of the yellow connectors (L03-0005-010).
Connect black wire (negative) to black wire on electric motor using the other yellow connector (L03-0005-010).
If you do not need full length of wire, cut off excess to keep voltage drop to a minimum.
Secure wires in place when done being sure wires cannot be pinched, cut or pulled apart.

Section 4

Wiring Diagram



Section 5

Mounting Applicator on Implement

Because the number of implements on which this applicator can be mounted ranges from planters, drills, and cultivators to practically any other farm implement, a universal mounting bracket is not available.

Gandy Company offers a number of mounting posts and brackets ready for mounting on various-sized tool bars. These are available through your local Gandy dealer. These will bolt to the U-frame that is furnished with the applicator. Placement of mounting posts will depend upon the equipment and whether a ground drive or shaft drive is used.

For planter or cultivator mounts, the applicator may be mounted to feed two rows. For drills and other close-rowed crops, you may wish to place the applicator in a position to take advantage of multiple-outlet metering or broadcasting. More will be discussed in Section 6 on setting up the installation for one or more rows.

Another consideration in the placement of the applicator is the angle of the tubing. The slope of the tubing should be no flatter than 45 degrees for the material to flow. This rule applies to most materials metered through the applicator. To increase the angle for better flow, raise the applicator higher. This relationship should be checked as soon as you start to use the equipment to give uninterrupted flow.

Tubing, ordered separately, must be the proper length and placed from the applicator to the openers to avoid kinking. Kinked tubing will defeat the purpose of the application, causing uneven flow or cause plugging. Tubing is available in two sizes, 1-1/2" I.D. clear plastic, part no. M06-1500-010, which would normally be used for fertilizer, or 7/8" I.D. wire-wound vinyl, part no. M06-0875-000 that permits vertical flexing and placement in narrower openers. Order flex tubing in foot lengths (4-ft. and 8-ft. lengths are common). Secure 1-1/2" I.D. tubing to hopper outlets with hose clamp 5/8" to 1-1/4", Part no. M11-024-000, or 7/8" I.D. tubing with adaptor 09094899-4 and mini-hose clamp, part no M11-0012-010, ordered separately.

All bolts are tightened when the applicator leaves the factory. Vibrations in transport and initial use may cause these bolts to loosen. It is a good idea to check them after a half day's use.

Another item to inspect is the clean-out feature at the rear of the bottom. The expansion plug should be seated so the groove in the rubber fits the edge of the round hole in the bottom. This will seal the bottom from outside as well as inside.

Section 6

Setting up for One, Two, Three or Four Rows

Metering Wheels: (For Fertilizer & Small Grains)

For most granular fertilizer and medium-sized seeds, the red (F) fertilizer metering wheel is standard. It is possible to meter fertilizer as low as 18 pounds per acre and up to 500 pounds per acre, depending on density and row spacing.

Metering Wheels: (For Chemical & Small Seeds)

For most granular chemical applications the black (C) chemical metering wheel is standard. It is possible to meter material as low as two ounces per 1,000 feet of row and up to 20 pounds per 1,000 feet of row, depending on density. A half-rate metering wheel (.625" inch width) can be ordered in place or as extra equipment for lower rates.

Metering Slides (Half-length slides standard on all units shipped with black wheels)

Half-length slides are for metering the small particles of seed or chemical. The half-length slides prevent material from working in between metering wheels and wear plates, causing excess torque on the input drive.

Note: If using red or yellow wheels for fertilizer or small grains, the half-length slides will need to be removed.

Sprocket Changes:

Sprocket combinations will provide you with the rate that you need for your product. Follow the general guidelines in the factory calibration for the proper sprocket set-up. More found in section 7 on calibration. Be sure that the chain tightener is secure. If the chain is too loose, it may slip on the sprocket teeth causing undue sprocket wear and reducing the RPM, and thus affecting the rate; too tight causes pulsing of material and binding of chain.

Tubing: (For units shipped with red (F) fertilizer or yellow (V) high-volume wheels)

The optional tubing choice is clear poly with 1-1/2" I.D. part no. M06-1500-010 to fit over the barbed metering cup and secured with a 2" hose clamp. This size tubing will provide for good flow from hopper to discharge point. Keep in mind that the tubes may be routed to feed rows on either side of the applicator, but at no time should the tubes be flatter than a 45 degree angle or the fertilizer may not flow. If adaptors are used for smaller tubing, be careful that the restriction does not impede the flow of fertilizer.

Section 6

Tubing for 7/8" Spout Adaptor: (For units shipped with black (C) chemicals wheels)

The optional tubing choice will be a flexible wire-wound vinyl which can move with the planter openers. This tubing, part no. M06-0875-000, can be ordered through your Gandy dealer in foot lengths (4-ft and 8-ft are common lengths). Tubing may be attached to the metering spouts by mini-hose clamps (5/8 to 1-1/4"), part no M11-0012-010.

Keep in mind that the tubes may be routed to feed rows on either side of the applicator, but at no time should the tubes be flatter than a 45 degree angle or the material may not flow.

Connecting Applicators Together:

It is possible to use one ground drive or connect to a parent implement shaft to drive multiple applicators in line, depending on number of outlets needed. With a 12-Volt motor package 09099934, a maximum of two hoppers can be driven. The Connector Drive Tube, part no. 09074323, is for up to 80-inch hopper spacing.

For up to 42-inch spacing, Connector Drive Tube, part no. 09074321, may be used.

Remember, if driving multiple applicators mounted in-line, only one rate control sprocket package needs to be used. Also, when using the 12-Volt electric motor there is no speed compensation, however, the unit still has the positive shut-off feature.

Section 7

Calibration

The importance of calibration cannot be stressed enough. The sprocket combinations in the sprocket kit range from 8-tooth to 34-tooth, with two 16T sprockets included for a 1:1 ratio. Any published rate charts should only be used as a guide. A manufacturer may change the formulation of the chemical or fertilizer and atmospheric conditions may affect flow. If a ground drive is used, the pressure of the tire on the soil surface must be set so that slippage does not occur. The primary concern is to maintain proper RPM for accurate flow rate. Please follow the calibration procedure found on the calibration charts.

How to Calibrate Granular Applicators:

Calibrate the applicator in a field that has already been worked, because field conditions as well as ground speed affect the application rate. It is important to do so, as any inadvertent change in sprocket ratio or change in chemical formulation can affect output rate.

1. Set each applicator to the setting yielding close to the range desired.
2. Fill the hoppers at least half full and run them until they begin to feed.
3. Remove the feed tubes and attach a calibration bag.
4. Select a ground speed and travel a measured course at that speed when using an electric motor to drive the hopper. When using a ground drive with the applicator, speed compensation is automatic. The longer the course, the more accurate the calibration.
5. Collect material from all spouts.
6. Weigh and record the amount of material collected in each container. Weigh in ounces or pounds depending on material using an accurate scale. Remember to subtract the weight of the empty container.
7. Calculate the application rate, using one of the following formulas. Note that some materials are labeled in pounds per acre, others in ounces (pounds) per 1000 feet for banding purposes.

Section 7

Calibration

Band Calculations:

In ounces (pounds) per thousand foot of row, band width is not considered in calibration.

$$\begin{array}{l} \text{Application Rate} \\ \text{(Ounces per 1000 row feet)} \end{array} = \frac{1,000 \times \text{ounces collected}}{\text{Distance traveled (feet)}}$$

or

$$\begin{array}{l} \text{Application Rate} \\ \text{(Pounds per acre)} \end{array} = \frac{43,560 \times \text{pounds collected}}{\text{Distance traveled (feet) X Row width (feet)}}$$

Banded Materials:

Some materials are applied in a band at a constant rate. Therefore, band width is critical for proper calibration.

$$\begin{array}{l} \text{Application rate} \\ \text{(Ounces per 1000 row feet)} \end{array} = \frac{1,000 \times \text{ounces collected}}{\text{Distance traveled (feet) x band width (feet)}}$$

or

$$\begin{array}{l} \text{Application Rate} \\ \text{(Pounds per acre)} \end{array} = \frac{43,560 \times \text{pounds collected}}{\text{Distance traveled (feet) x row width (feet)} \\ \text{x band width (feet)}}$$

Section 8

Trouble Shooting

Because the speed of the shafts in the hopper is relatively slow, preventative maintenance of the bearings is the main concern. After each use remove any excess material or dirt built up around bearings and shaft; this build up will work into the bearing and can cause the shaft to bind and turn harder.

Problem

Solution

Chain jumps sprocket teeth.

Tighten the chain tightener

Product pulses while metering

Chain on rate control sprocket too tight

Product does not flow

Check for blockage;
agitator may or may not be required

Incorrect Rate:

a. Input PRM not correct

Recalculate and make sure 2 or 4 RPM input,
depending on chemical

b. Ground drive slipping

Increase spring pressure

c. Incorrect rate sprocket

Check rate chart and use correct sprockets

d. Product not flowing properly

Install agitators