Installation and Rotation Instructions



Twister 360 Limited Warranty

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General Instructions:

- Your new Twister 360 requires assembly and installation. Customer may, at their sole discretion, elect to use a third party to assemble and install the Twister 360 components. Twister 360 assumes no responsibility or liability for any charges incurred by the Customer for any assembly or installation services. Customer should provide this manual or a copy of this manual, which can also be located on our website (www.twister360.com), to any third party assisting with assembly, installation or maintenance of the Twister 360.
- When assembling the Product, do not use any parts that are not original equipment supplied by the Manufacturer.
- Do NOT use any pipe spout less than 1/4 inch thick with Twister 360.

Installation-Specific Instructions:

- If a cable support frame is to be used on a spout pipe with a Twister 360 unit, all cables must be tensioned equally, and the pipe must be straight. Failure to do so will both void the warranty on the Twister 360 and may result in damage to equipment, injury, or death.
- Pipes used with the Twister 360 must weigh less than 4,000 lbs. For example, if installing a 16-inch pipe with a 1/4 inch wall that weighs 42.1 lbs. per foot, the total allowable pipe length is 95 feet. (4,000 / 42.1 = 95.01) Use of the Twister 360 with a pipe weighing more than 4,000 lbs. will impede the unit's function, void the warranty, and may result in damage to the facility, bodily injury, or death.
- Before proceeding with any welding during the installation process, the grain bin must be empty and well ventilated. Failure to satisfy this condition may result in an increased risk of explosion and/or fire, which could lead to severe injury or death. A designated person and/or persons equipped with fire extinguishers should stand post as a fire watch at or near the grain bin while the welding process is being performed.
- Pipes must be connected or spliced to one another only by the installation of National Standard Angle Flanges with drilled holes, not punched. Such connected or spliced pipes shall not be connected or spliced by use of spout welding sleeves. When splicing the pipes, the use of clamp bands is not permissible. All angle flanges must be bolted. All splicing shall be completed consistent with instructions published by the manufacturer.
- When installing the Product with spliced pipes, the pipe must be extremely straight, both vertically and horizontally, for the entire length of the pipe. If the pipe is not straight, the Product will not properly function and may cause bodily injury and/or equipment damage.
- Any flow retarders installed with the product may not operate as intended if the flow retarder fails to permit a three hundred and sixty degree (360°) flow reduction. Customer should contact the manufacturer of the flow retarder for recommendations as to use of same.

Contact and Registration:

- If you have any questions about your Twister 360, please call us at (270) 604-7176 from 8 am to 5 pm (CST) Monday through Friday.
- To register your Twister 360, please visit us online at www.twister360.com.

TOOLS AND MATERIALS REQUIRED FOR INSTALLATION

(Not Included)

- 1. Two foot framing square
- 2. Two foot level
- 3. Two to Four adjustable pipe stands
- **4.** Portable welding machine (with appropriate length welding leads)
- 5. Welding rods
- 6. Welding hood
- 7. Welding gloves
- 8. Chipping hammer
- 9. Wire brush
- 10. Hard hat
- 11. Steel toe boots
- 12. Safety glasses
- 13. Ear protection
- 14. Safety face shield
- **15.** 14-guage or larger extension cords
- **16.** 4.5 or 5-inch side grinder with flat cutting disc, grinding and flap wheels
- **17.** 4.5 inch vice grip (c-clamp)
- **18.** Tape measures 30 and 100 ft.
- 19. Wrap-A-Round (pipe marking tool)
- 20. Fire extinguisher
- 21. Anti-seize (Lubricant)
- 22. Safety harness and lanyard (O.S.H.A. approved)
- **23.** Rope tag line (for erecting spout pipe)
- 24. Safety barricade (warning ribbon)
- **25.** 2" Polyester web sling (6,400 vertical lift capacity)
- **26.** 3/4-inch screw pin shackle (9,500 lb. weight limit)
- **27.** 2x 1-1/8 inch wrench
- 28. Twister 360 turning handle

PREPARING THE NEW SPOUT PIPE

Note: Twister 360 units are to be installed on pipe only and not tubing.



STEP 3

Subtract 3 feet from the old spout pipe length. The result is the length of your new spout pipe.

Example:

Old Spout Pipe Length – **12 feet, 0 inches** Subtract – **3 feet, 0 inches** New Spout Pipe Length – **9 feet, 0 inches**



STEP 4

Mark the new spout pipe at the length calculated in step 3. The example distance is 9'. Yours will vary. Place a cut mark at that point.

STEP 5

Place one side of a Wrap-A-Round tool on the cut mark you made in Step 4. Make 2 complete wraps around the new spout pipe so both sides of the Wrap-A-Round tool are matching, but not overlapping.



STEP 6

After measuring, mark and cut the new spout pipe to the correct length. Grind the unwanted metal shavings or slag off the new cut.

ANGLE FLANGE AND TWISTER 360 (DESCRIPTION)

Note: You must use National Standard Angle Flanges with drilled holes, (not punched elongated holes) every time you install a set of Twister 360 units.

Note: Reducers are not included with each set of Twister 360 units.



Front and side view of the National Standard Angle Flange used on the new spout pipe.

Note: The 1-1/4 inch x 1-1/4 inch Angle Flange shown is used as an example only, yours may differ in size.

Note: Use the 1-hole bolt pattern method when installing all angle flanges. The top hole and bottom hole should be vertically plumb, as show in figs. 1, 2, and 3.



The top of the unit will bolt next to the Grain Elevator Distributor, located near the turn head of the elevator. A reducer (not included) is bolted to the bottom of the upper Twister 360 Unit. The bottom of the reducer bolts onto the top of the Angle Flange, located on the top of the spout pipe.



The top side of this unit will bolt to the bottom angle flange on the bottom of the new spout pipe. The bottom of the reducer will bolt to the flange on the spout end box on the top of the grain bin.

Note: For clarity, instructions will refer to the four sides of the spout pipe as A, B, C, and D.

Note: Do not allow the spout pipe to rotate while on the adjustable pipe stands until both of the twister units have been installed.



(Fig. 4)

(Side View)



STEP 1

Check to ensure the spout pipe is level.

STEP 2

Slide the angle flange over the end of the new spout pipe.

(Fig. 5)

(End View)



STEP 3

Vertically plumb the top and bottom bolt holes on the angle flange with a 2-foot level before tack welding it to the new spout pipe.

(Fig. 6)

(Side View)



STEP 4

Allow ¼ Inch from the bottom end of the spout pipe to the outside face of the angle flange.

STEP 5

Once the angle flange is properly positioned on the spout pipe, place tack weld #1 on the bottom outside of the angle flange, as shown.





STEP 6

Place a 2-foot framing square vertically against the outside face of the angle flange, with the long side of the framing square resting on top of the angle flange as shown.

(Fig. 8)

(Side View)



STEP 7

Tilt the top of the angle flange over until the long side of the framing square is parallel with the A-side of the spout pipe.

STEP 8

Check measurements A and B, they should be the same.

(Fig. 9)

(Side View)



STEP 9

Place tack weld #2 on the top outside center of the spout pipe and angle flange, as shown.

(Fig. 10) (Top View)



(End View)



STEP 10

After vertically tack welding the angle flange to the spout pipe, place the framing square horizontally on the center outside face of the angle flange.

STEP 11

Position the long side of the framing square so it is parallel with B-side of the spout pipe.

STEP 12

Check measurements A and B, they should be the same.

STEP 13

Place tack weld #3 on the D-Side of the spout pipe and angle flange.



STEP 14

Remove the framing square from the angle flange.

STEP 15

Place tack weld #4 on the B-Side of the spout pipe and angle flange.



(End View)



STEP 16

Place a tack weld on the inside of the angle flange in this order, (C, A, D, B) as shown in Fig. 12. You may now finish welding the remainder of the inside of the angle flange.

(Fig. 13) (Top View)



STEP 17 Weld the outside of t

Weld the outside of the spout pipe and angle flange.

Note: After welding the inside and outside of the angle flange, you must chip and wire brush all welds and grind off any weld spatter that remains on the outside face of the angle flange. Prime or paint all the welds after finishing the welding process.

Repeat Figs. 5-13 and steps 1-17 on the other end of the spout pipe.

Angle flange installation is now complete.

Note: If you plan to apply silicone caulking, do so BEFORE bolting any flanges together.

Note: Bolt-on reducers are not included with Twister 360 units.

TWISTER 360 UPPER UNIT HARDWARE INSTALLATION



STEP 1

Bolt the large flange side of the bolt-on reducer to the bottom side flange of the Twister 360 upper unit.

TWISTER 360 LOWER UNIT HARDWARE INSTALLATION

(Fig. B)	(Side)	View)	
(Bolt-On Reduce (Large Flange S (Top Side Lower U	of _/	(Step 1) (Bottom Side Flange, of Twister 360 Unit)	STEP 1 Bolt the large flange side of the bolt-on reducer to the bottom side flange of the Twister 360 lower unit.

The Upper and Lower units are now ready to be bolted on to the new spout pipe.

Note: If you plan to apply silicone caulking, do so BEFORE bolting any flanges together.

Note: Bolt-on reducers are not included with Twister 360 units.

TWISTER 360 INSTALLATION

Note: Twister 360 units are to be installed on pipe only and not tubing.

Note: When using a set of Twister 360 units on a 12 inch pipe or smaller, you must use an additional reducer on the top side of the Upper Unit Twister 360.







STEP 1 AND 2

Bolt the Twister 360 upper unit with attached reducer to the top end angle flange of the spout pipe. Be sure to position the drain hole on the bottom side of the spout pipe.

STEP 3 AND 4

Bolt the Twister 360 lower unit with attached reducer to the lower end angle flange of the spout pipe. Be sure to position the turn indicator at or near the top side of the spout pipe.

STEP 5

Bolt a National Standard Angle Flange onto the top of each Twister 360 Upper Unit before erecting, (as shown in step 5). Before erecting a 12 inch or smaller Spout Pipe, you must bolt a Reducer to the existing Distributor outlet flange, (located beneath the Turn Head section). Both Twister 360 units have been installed on the new spout pipe. The new spout pipe is ready to be erected.

HARDWARE NEEDED FOR ALL SPOUT PIPE INSTALLATION

To install the Twister 360 units to a 6", 8", 10", or 12" Pipe Spout, you will need the following reducers and flanges.

Note: All bolt patterns for the angle flanges and reducers are National Standard.

Pipe Size: A 6-5/8" outside diameter Pipe assembly requires:

- One (8" to 6-5/8" reducer) Bolts onto the bottom side of the Upper Unit Twister 360 and the angle flange located on the top end of the spout pipe.
- Two (6-3/4" x 1-1/4" x 1-1/4" x 3/16" angle flanges) Welds onto each end of the 6" spout pipe.
- One (6-5/8" to 6" reducer), Bolt the 6" side of this Reducer onto the distributor outlet as shown on page 15, (Fig D), Drawing 2).
- Two (6-3/4" x 1-1/4" x 1-1/4" x 3/16 angle flanges) will be bolted and welded onto the field located filler pipe during the erecting process, (located between the 6-3/4" to 6" reducer, and the top side of the Upper Unit Twister 360).
- One (8" to 6" reducer) Bolts onto the bottom side of the Lower Unit Twister 360 and the Spout End Cushion Box that is located on top of the grain bin.

Pipe Size: An 8-5/8" outside diameter Pipe assembly requires:

- One (10" to 8-5/8" reducer) Bolts onto the bottom side of the Upper Unit Twister 360 and the angle flange located on the top end of the spout pipe.
- Two (8-3/4" x 1-1/4" x 1-1/4" x 3/16" angle flanges) Welds onto both ends of the 8" pipe spout.
- One (8-5/8" to 8" reducer) Bolt the 8" side of this Reducer onto the distributor outlet as shown on page 15, (Fig. D), Drawing 2).
- Two (8-3/4" x 1-1/4" x 1-1/4" x 3/16" angle flanges) will be bolted and welded onto the field located filler pipe during the erecting process (located between the 8-5/8" to 8" reducer, and the top side of the Upper Unit Twister 360).
- One (10" to 8" reducer) Bolts onto the bottom side of the Lower Unit Twister 360 and the Spout End Cushion Box that is located on top of the grain bin.

Pipe Size: A 10-3/4" outside diameter Pipe assembly requires:

- One (12" to 10-3/4" reducer) Bolts onto the bottom side of the Upper Unit Twister 360 and the angle flange located on the top end of the spout pipe.
- Two (10-7/8" x 1-1/2" x 1-1/2" x 3/16" angle flanges) Welds onto both ends of the 10" pipe spout.

- One (10-3/4" to 10" reducer) Bolt the 10" side of this Reducer onto the distributor outlet as shown on page 15, (Fig. D), Drawing 2).
- Two (10-7/8" x 1-1/2" x 1-1/2" x 3/16" angle flanges) will be bolted and welded onto the field located filler pipe during the erecting process (located between the 10-3/4" to 10" reducer, and the top side of the Upper Unit Twister 360).
- One (12" to 10" reducer) Bolts onto the bottom side of the Lower Unit Twister 360 and the Spout End Cushion Box that is located on top of the grain bin.

Pipe Size: A 12-3/4" outside diameter Pipe assembly requires:

- One (14" to 12-3/4" reducer) Bolts onto the bottom side of the Upper Unit Twister 360, and the angle flange located on top end of the spout pipe.
- Two (12-7/8" x 1-1/2" x 1-1/2" x 3/16" angle flanges) Welds onto both ends of the 12" standard pipe spout.
- One (12-3/4" to 12" reducer), Bolt the 12" side of this Reducer onto the distributor outlet as shown on page 15, (Fig. D), Drawing 2).
- Two (12-7/8" x 1-1/2" x 1-1/2" x 3/16" angle flanges) will be bolted and welded onto the field located filler pipe during the erecting process (located between the 12-3/4" to 12" reducer, and the top side of the Upper Unit Twister 360).
- One (14" to 12" reducer) Bolts onto the bottom side of the Lower Unit Twister 360, and the Spout End Cushion Box that is located on top of the grain bin.

Pipe Size: A 14" outside diameter Pipe assembly requires:

- Two (16" to 14" reducers) bolts onto the bottom of the Upper & Lower Unit Twister 360.
- Four (14"x1-1/2"x1-1/2"x 3/16" angle flanges), (2) weld onto each end of the 14" spout pipe, (1) bolts to the top of the Upper Unit Twister 360 and welds to the short filler pipe, and (1) bolts to the distributor outlet and welds to the short filler pipe.

Pipe Size: A 16" outside diameter Pipe assembly requires:

- Two (18" to 16" reducers) bolts onto the bottom of the Upper & Lower Unit Twister 360.
- Four (16"x1-1/2"x1-1/2"x3/16" angle flanges), (2) weld onto each end of the 16" spout pipe, (1) bolts to the top of the Upper Unit Twister 360 and welds to the short filler pipe, and (1) bolts to the distributor outlet and welds to the short filler pipe.

Note: When rigging spout pipe to be lifted, the millwright will determine how such rigging should be installed. Faulty rigging practices and/or equipment may result in equipment damage, personal injury and/or death.

Note: Locate one person on top of the grain bin and one person where the Twister 360 upper unit will bolt on to the distributor. Both persons should wear O.S.H.A. approved safety harnesses and lanyards, and must stay tied off at all times during the installation.

Note: All millwright workers must wear hard hats, safety glasses, ear protection, reflective vests and steel toe boots at all times during installation.

Note: When using a 6", 8", 10" or 12" pipe, you must bolt a Reducer on the spout outlet located at the Distributor or elbow, as shown in (Fig. D, Drawing 2), steps 7 and 8.



(Aerial View)

(Side View)

20 foot deep designated safety personnel areas



STEP 1

Barricade the work area where spout pipe is to be erected with caution and or warning tape or ribbon.

STEP 2

Designate a safety person or persons on the ground at all times in the work area where the spout pipe is to be installed. This person should ensure no one on the ground enters the dangerous work area.

STEP 3

Tie a safety tag line to the Twister 360 lower unit. Be sure the tag line is long enough to reach the top of the grain bin. One person should always hold onto the tag line, helping to guide the spout pipe while it is being lifted into position.

STEP 4

Lift the spout pipe into place with a hydraulic crane. One person should hold the tag line while the load is being lifted into position.

WARNING: Do not use the adjustable spout end with expansion joint when using a set of Twister 360 units.

Note: It is permissible to use a two-piece clamp band, but only on the bottom side of the adjustable spout end box. The clamp band should be loose enough to swing in the correct direction as to allow the spout pipe to be properly aligned with the top distributor spout outlet. The clamp band must not be able to come off while erecting the spout pipe.



(Fig. C)



STEP 6

The hydraulic crane should set the Twister 360 lower unit on the spout end box. Loosely attach the top and bottom flange bolts.

Note: This drawing assumes the Twister 360 lower unit and reducer are resting on top of the adjustable spout end box and are held in place by a hydraulic crane. (Fig. C, step 6)

Note: Bolt all flange connections between the distributor and the Twister 360 upper unit , when applicable.

(Fig. D)







(Fig. D), Drawing 2)





STEP 9

After determining both distances, add ¾ inch to both sums. That is the length necessary for the filler pipe. Example show below.



Mark and cut a piece of spout pipe based on your calculations.

(Fig. F)

Shows the filler pipe and angle flange, parts needed to connect the Twister 360 upper unit to the bottom elbow flange.

(Fig.G)

(Top View)



STEP 10

Crane operator should swing the spout pipe either left or right, just enough to clear the bottom elbow flange.

STEP 11

Slide the filler pipe inside the prebolted angle flange on top of the Twister 360 upper unit.

STEP 12

Slide the bolt-on angle flange over the filler pipe with the hole side to the top.

Note: Before any welding is performed, the grain bin must be empty and well ventilated. Failure to satisfy this condition may result in an increased risk of explosion and/or fire, which could lead to severe injury or death. All safety personnel must keep fire extinguishers nearby at all times.

Note: Always brush, prime and/or paint after welding.



(Side View)

(Fig. K) (Example) (Slole A) Twister 360, Lower Unit (THIS CONNECTION MUST BE BOLTED) (Step 17) (Step 20) Weld (Slole A), Adjustable Spout End Box

STEP 17

Install remaining angle flange bolts and tighten.

STEP 18

Tighten both sides of the clamp band located on the bottom side of the adjustable spout end box.

STEP 19

Weld seams across top of the adjustable spout end box.

STEP 20

Weld both vertical seams of the adjustable spout end box. This must be duplicated on the other side of the spout end box.

The installation process is now complete. You may remove the rigging used to lift the spout pipe.

SPOUT PIPE ROTATION INSTRUCTIONS

WARNING: NEVER attempt to rotate the spout pipe while running grain through it. The spout pipe must be empty during rotation.

1. Hard hat	7. Safety harness and lanyard (O.S.H.A. approved)	
2. Steel toe boots	8. Safety barricade (warning ribbon)	
3. Safety glasses	9. 2" Polyester web sling (6,400 vertical lift capacity)	
4. Ear protection	10. 5/8-inch screw pin shackles (3.25 ton weight limit)	
5. Fire extinguisher	11. 2x 1-1/8 inch wrench	
6. Anti-seize (Lubricant)	12. Twister 360 turning handle	



STEP 1

Barricade the work area where spout pipe is to be rotated with caution and/or warning tape or ribbon. Safety personnel must keep fire extinguishers nearby at all times.



STEP 2

Designate a safety person or persons on the ground at all times in the work area where the spout pipe is to be rotated. This person or persons should patrol the designated safety perimeter beyond the safety barricade to ensure no one on the ground enters the barricaded work area.

SPOUT PIPE ROTATION INSTRUCTIONS

Do not remove any bolts from the Twister 360 upper unit. Spout pipe could pull free from the upper unit and cause damage, injury, or death.



You must install all four 3/4 inch bolts on the Twister 360 lower unit and tighten after each rotation. Any lost bolts must be replaced with NO EXCEPTIONS.

All workers assisting in the spout pipe rotation process must be equipped with safety items 1-4 on page 20.

Anyone working off the ground must also wear an O.S.H.A. approved safety harness and lanyard, and be tied off to a secure object (other than the spout pipe) at all times when rotating the spout pipe.



STEP 3

Place 2 two-inch polyester slings around the spout pipe, one on each end. Use a 3/4 inch screw pin shackle on each sling to secure the sling to a sturdy object.

SPOUT PIPE ROTATION INSTRUCTIONS



STEP 3A

Bolt the turning handle onto the Twister 360 lower unit star plate with two bolts. Tie a rope from the turning handle to the top of the grain bin.

STEP 4

Remove four ¾-inch bolts from the Twister 360 lower unit.

STEP 5

Pull the turning handle until you rotate the spout pipe to the next number.

STEP 6

WARNING: Apply anti-seize to all four ³/₄-inch bolts before reinstalling and tightening.

STEP 7

Hand tighten all four 3/4-inch bolts equally with two 1-1/8-inch wrenches. Never use any impact wrenches when tightening the 3/4-inch bolts.

STEP 8

Remove the turning handle from the Twister 360 lower unit. Remove both web slings on the spout pipe. The Rotation process is now complete.

NON-ADJUSTABLE SPOUT END BOX

After rotating the spout pipe, you must apply anti-seize to all four ³/₄-inch bolts before tightening.

Note: Correctly fastened lower unit bolt-on reducer to a non-adjustable spout end box.

Note: Bolt-on reducers are not included with the Twister 360.



Twister 360 lower unit with bolt-on reducer bolted to a non-adjustable spout end box.

STEP 1

Bolt the Twister 360 lower unit directly to the non-adjustable spout end box.

STEP 2

The turn indicator must be positioned at or near the top of the spout pipe.

PROPER EXTENDED SPOUT PIPE BRACING



If the Twister 360 lower unit does not bolt directly to an adjustable or non-adjustable spout end box, you must support the extended spout pipe with an x-braced frame. (Figs. A and B)

Failure to properly x-brace the short extended spout pipe may result in equipment damage, failure and/or personal injury and/or death.

If you cannot properly x-brace the short extended spout pipe, do not install the Twister 360 units.



Non-adjustable spout end box with an extended spout pipe attached.

STEP 1

Angle flange connection must be bolted and not clamped.

STEP 2

This clamp band must be tack welded to the short extended spout pipe.

STEP 3

The extended spout pipe must be supported by an x-braced frame.

IMPROPER INSTALLATION OF THE TWISTER 360

(Fig.C)

Do not install the Twister 360 on an extended spout pipe that has not been properly braced. Figs. C and D show examples and consequences of improper installation.



DETAIL 1: ³/₄-inch structural bolts located in the Twister 360 lower unit have not been removed.



- DETAIL 2: All four ³/₄-inch structural bolts have been removed from the Twister 360 lower unit.
- DETAIL 3: The Twister 360 lower unit is beginning to separate on the bottom side after removing all four ³/₄-inch structural bolts.
- **DETAIL 4:** Non-Adjustable spout end box incurs damage from the weight of the longer spout pipe as a result of not bracing the short extended spout pipe.

COMMON PROBLEMS AND SOLUTIONS

Problem:

3/4-inch Structural Bolts will not break loose.

Cause:

Did not apply and/or apply enough Anti-Seize to the 3/4-inch bolts after previously rotating the Twister 360 unit.

Solution:

1. Spray Lubricant on the bottom nut and wait 30-60 minutes, and then try again. If unsuccessful, try solution 2.

2. Use an impact wrench with a 1-1/8 inch impact socket, and a hand wrench to remove the bolt only. NEVER USE AN IMPACT WRENCH TO TIGHTEN ANY BOLTS. If unsuccessful, try solution 3.

3. Use a 4-1/2 and/or 5-inch side grinder with a flat cutting disc to cut off the bottom nut of the 3/4 - inch bolt. Be careful not to cut into the bottom plate of the Twister 360 Lower Unit. When finished, pull the bolt out from the top.

WARNING: NEVER USE A CUTTING TORCH ON, AND/OR NEAR A TWISTER 360 UNIT.

Problem:

3/4-inch Structural Bolt is cross threaded.

Solution:

Use a 4-1/2 and/or 5-inch side grinder, with a flat cutting disc to cut off the bottom nut of the 3/4-inch bolt. Be careful not to cut into the bottom plate of the Twister 360 Lower Unit. When finished, pull the bolt out from the top.

WARNING: NEVER USE A CUTTING TORCH ON AND/OR NEAR A TWISTER 360 UNIT.

Problem:

Bolts won't properly fit through the bottom holes on the Twister 360 lower unit.

Cause:

When the Twister 360 Lower Unit was rotated, the desired number was not properly lined up with the Turn Indicator.

Solution:

Push or pull the Turning Handle until the Turn Indicator is in the center of the desired number, and install bolts and hand tighten.

SPOUT PIPE ROTATION FREQUENCY

The frequency with which you should rotate your spout pipe depends on five factors.

Factor 1 – TYPE

The Type of product that is being moved through your spout pipe. Every type of grain and/or material has a different degree of abrasiveness, and will wear pipes accordingly.

Factor 2 – AMOUNT

The Amount of product that is being moved over a given period of time through your spout pipes.

Factor 3 – FREQUENCY

The Frequency of use, or how often the spout pipe is used. (Hourly, Daily, Weekly or Monthly)

Factor 4 – ANGLE

The Angle of the spout pipe. The steeper the angle on the spout pipe, the faster material moves in that spout pipe. The faster the material moves, the more friction it causes. More friction equals faster wear.

Factor 5 – LENGTH

The Length of the spout pipe factors into the speed and wear of the spout pipe.

Note:

YOU MUST KEEP A ROTATION FREQUENCY CHART ON EVERY SPOUT PIPE THAT INCORPORATES A SET OF TWISTER 360 UNITS (FOR YOUR OWN SAFETY).

Example: 1

IF YOUR 3/8-INCH WALL SPOUT PIPE IS WEARING A HOLE EVERY 12-MONTHS, YOU NEED TO ROTATE YOUR SPOUT PIPE EVERY 8-MONTHS, (OR TWO THIRDS OF THE ORIGINAL ROTATION CYCLE).

WARNING: FAILURE TO ROTATE YOUR 3/8-INCH WALL SPOUT PIPE ON A TWO-THIRDS WEAR CYCLE (THAT IS THE TIME FRAME THAT YOU ARE CURRENTLY ROTATING YOUR SPOUT PIPE) MAY RESULT IN THE SPOUT PIPE WEAR-ING TOO THIN. IT MAY BREAK OFF AND CAUSE SEVERE DAMAGE TO YOUR FACILITY AND/OR CAUSE PERSONAL INJURY AND/OR DEATH.

Example: 2

IF YOUR 1/4-INCH WALL SPOUT PIPE IS WEARING A HOLE EVERY 12-MONTHS, YOU NEED TO ROTATE YOUR SPOUT PIPE EVERY 6-MONTHS, (OR ONE HALF OF THE ORIGINAL ROTATION CYCLE).

WARNING: FAILURE TO ROTATE YOUR 1/4-INCH WALL SPOUT PIPE ON A ONE HALF WEAR CYCLE (THAT IS THE TIME FRAME THAT YOU ARE CURRENTLY ROTATING YOUR SPOUT PIPE) MAY RESULT IN THE SPOUT PIPE WEARING TOO THIN. IT MAY BREAK OFF AND CAUSE DAMAGE TO YOUR FACILITY AND/OR CAUSE PERSONAL INJURY AND/OR DEATH.

WARNING: AFTER YOU HAVE ROTATED THE 1/4-TURN MODEL TWISTER 360 THREE TIMES, YOU MUST REMOVE THE WORN SPOUT PIPE AND REPLACE IT AND THE TWISTER 360 UNITS WITH NEW ONES.

WARNING: AFTER YOU HAVE ROTATED THE 1/3-TURN MODEL TWISTER 360 TWO TIMES, YOU MUST REMOVE THE WORN SPOUT PIPE AND REPLACE IT AND THE TWISTER 360 UNITS WITH NEW ONES.

WARNING: PIPE MUST BE TURNED BEFORE APPEARANCE OF WEAR HOLES. (IT IS RECOMMENDED THAT THE WALL THICKNESS OF A PIPE SHOULD NOT BE WORN LESS THAN 1/8-INCH). FAILURE TO DO SO WILL VOID THE WARRANTY AND MAY CAUSE SPOUT PIPE TO BREAK OFF AND CAUSE SEVERE DAMAGE TO YOUR FACILITY AND/OR DEATH.

WARNING: NEVER USE A SET OF TWISTER 360 UNITS ON A PIPE THAT HAS A WALL THICKNESS LESS THAN 1/4-INCH. FAILURE TO DO SO WILL VOID THE WARRANTY AND MAY CAUSE THE SPOUT PIPE TO BREAK OFF AND CAUSE SEVERE DAMAGE TO YOUR FACILITY AND/OR DEATH.

TWISTER 360[™] LIMITED WARRANTY

Subject to all terms, conditions, and limitations set forth herein, WCH Industries, LLC, a Kentucky limited liability company ("Manufacturer"), warrants as follows:

A. General

This Limited Warranty ("Warranty") establishes and sets forth the terms of Manufacturer's obligations to the purchaser ("Owner") of the Twister 360 product ("Product").

THE WARRANTY SET FORTH HEREIN IS GIVEN EXPRESSLY AND IS THE ONLY WARRANTY GIVEN BY MANUFACTURER WITH RESPECT TO THE PRODUCT. MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. MANUFACTURER HEREBY SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Dealers and distributors of the Product are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for the Product in addition to those terms expressly stated above. An officer of Manufacturer must authorize any exceptions to this Warranty in writing. Manufacturer reserves the right to change models and specifications, as well as the instructions for installation and use of the Product, at any time without notice or obligation to improve previous models.

B. Term of Warranty

Subject to the conditions and exclusions provided herein, this Warranty shall be effective for the Warranty Period. The Warranty Period shall begin upon Owner's installation of the Product and shall last until three quarter rotations of the Product have been completed and it is time for the replacement of the original pipe upon which the Product was installed, as specified in the Manufacturer's installation and use instructions. Notwithstanding anything stated herein, the Effective Term shall not last more than two (2) years following Owner's purchase of the product and the Warranty shall thereafter be voided in its entirety.

C. Scope of Warranty

In the event that Owner alleges a defect in the workmanship with respect to the Product during the Warranty Period, within five (5) days of Owner becoming aware of such alleged defect, Owner shall provide Manufacturer with written notice of the alleged defect, which notice shall describe the alleged defect in reasonable detail sufficient to determine the general nature of the defect (such notice, the "Alleged Defect Notice"). Within twenty-one (21) days after service of the Alleged Defect Notice, Manufacturer shall serve a written response on Owner, whereby Manufacturer may, but shall not be required to, reserve the right to inspect the Product. In the event that Manufacturer elects to inspect the Product, such inspection shall occur within fourteen (14) days of Owner's receipt of notification of Manufacturer's election. In the event that Manufacturer determines that the claim is valid, Manufacturer shall repair or replace the Product at Manufacturer's expense within a reasonable time period. Without limiting the generality of the preceding sentence, Manufacturer shall have the opportunity to inspect the

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alleged defect and to repair or otherwise remedy the alleged defect within a reasonable time period of receipt of notice of the alleged defect.

D. Exclusions

This Warranty does NOT cover, and Manufacturer shall NOT be liable for, any defect in the Product caused by or resulting from: (a) normal wear, tear, and/or deterioration; (b) damage or deterioration caused by accidents, windstorm, tornado, lightning, fire, accidents, hail, flood, earthquakes, sinkholes, or acts of God; (c) damage or deterioration caused by some event or occurrence covered by insurance maintained by Owner or some other party for the benefit of Owner; (d) the failure of Owner to take reasonable action to reduce the damage or maintain the Product; and/or (e) the acts or omissions of any person other than Manufacturer or its agents and/or employees.

E. Conditions and Voidance of Warranty

The following conditions shall apply with respect to the Warranty. Any failure or violation of the following conditions shall void the Warranty in its entirety.

- 1. The product must be installed by and operated in accordance with the instructions published by the Manufacturer.
- 2. The Warranty is void if all components of the Product are not original equipment supplied by the Manufacturer.
- 3. The Product is designed for grains and/or free-flowing materials and is not warranted for other distribution or substances. Contact WCH Industries for approved uses of the Product.
- 4. Malfunctions or damage resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under the Warranty.
- 5. When welding an adjustable spout end, the bin must be empty and free of dust. Failure to satisfy this condition may result in an increased risk of explosion and/or fire, which could lead to severe injury or death.
- 6. Pipes shall be connected or spliced to one another only by the installation of angle flanges. Such connected or spliced pipes shall not be connected or spliced by use of sleeves. In splicing the pipes, the use of clamp bands is not permissible. All angle flanges must be bolted. All splicing shall be completed consistent with instructions published by the Manufacturer.
- 7. When installing the Product, the spout pipe must be extremely straight, both vertically and horizontally, for the entire length of the spout pipe. If the spout pipe is not straight, the Product will not properly function.
- 8. In the event that a pipe develops a hole, tear, or other opening during use, this Warranty shall be immediately void with respect to any Product installed on any such pipe.

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- 9. This Warranty only applies with respect to installation of the Product on new pipes and products. The Warranty does not apply if the Product is installed on a used or pre-worn pipe.
- 10. Any pipe connected or used with the Product shall be installed at an angle no less than twenty degrees (20°). Installation of any pipe at a lesser angle shall void the Warranty.
- 11. The failure to properly brace the Product and/or the pipe on which it is installed, consistent with the instructions for the Product, shall void the Warranty.
- 12. If a cable support frame is to be used on a spout pipe with the Product, all cables must be tensioned equally, and the pipe must be straight. Failure to do so will both void the warranty on the Product and may result in damage to equipment, injury, or death.
- 13. Pipes used with the Product must weigh less than 4,000 lbs. Use of the Product with a pipe weighing more than 4,000 lbs. will impede the unit's function, void the warranty, and may result in damage to the facility, bodily injury, or death.

F. Limitation of Liability

NOTWITHSTANDING ANYTHING CONTAINED HEREIN TO THE CONTRARY, UNDER NO CIRCUMSTANCES SHALL MANUFACTURER BE LIABLE TO ANY PARTY FOR INJURY TO OR DEATH OF ANY PERSON OR DAMAGE TO PROPERTY, OR FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, OR PUNITIVE DAMAGES ARISING FROM OR RELATING TO THE USE OF (OR THE INABILITY TO USE) THE PRODUCT OR ANY DEFECT IN CONSTRUCTION, WORKMANSHIP, OR MATERIALS OF THE PRODUCT.

G. Resolution of Dispute by Arbitration

If Owner and Manufacturer are not able to resolve any dispute arising out of or relating to this Warranty, then such dispute shall be resolved by binding arbitration in accordance with the rules of the American Arbitration Association. The arbitration shall be held in Bowling Green, Kentucky or such other location as may be mutually agreeable to the parties, before an arbitrator chosen by the parties from a pool of arbitrators selected by the American Arbitration Association. In the event that the parties to the dispute cannot mutually agree on an arbitrator, then the dispute shall be held before a panel of three arbitrators, with each party selecting one arbitrator and the two selected arbitrators then selecting a third arbitrator. The decision of the arbitrators shall be final and binding upon Owner and Manufacturer and judgment upon such award may be entered in any court of competent jurisdiction. The costs of any arbitration shall be borne one-half by each of the parties. MANUFACTURER AND OWNER EACH ACKNOWLEDGE THAT THE TIME AND EXPENSE REQUIRED FOR A LAWSUIT AND A TRIAL BY JURY EXCEED THE TIME AND EXPENSE REOUIRED FOR **ARBITRATION PROCEEDINGS AND MANUFACTURER AND OWNER HEREBY** KNOWINGLY, VOLUNTARILY, AND IRREVOCABLY WAIVE, TO THE FULLEST EXTENT PERMITTED BY LAW, AND AFTER HAVING CONSULTED OR HAVING HAD AMPLE OPPORTUNITY TO CONSULT THEIR RESPECTIVE LEGAL COUNSEL

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CONCERNING THE CONSEQUENCES OF SUCH WAIVER, THE RIGHT TO COMMENCE A LAWSUIT IN ANY JURISDICTION AND THE RIGHT TO TRIAL BY JURY WITH RESPECT TO ANY DISPUTE ARISING UNDER OR RELATING TO THIS LIMITED WARRANTY.

H. Claim Reporting Procedure

Any claim, including any Alleged Defect Notice, should be submitted under this warranty by either: (1) telephone at phone number (270) 604-7176; or (2) mail or e-mail submitted to the following address:

WCH Industries, LLC Attention: Twister 360 Warranty Claim P.O. Box 55 Elkton, KY 42220 E-mail: Twister360@Twister360.com

To fully evaluate your claim, we may ask you to provide and forward, at your expense, pictures and/or a description of the alleged defect. Repairs made prior to Manufacturer's response to a claim and without Manufacturer's written approval shall be at Owner's expense.

THE WARRANTY SHALL NOT BE VALID IF SUBMITTED INFORMATION IS ERRONEOUS OR FRAUDULENT.

Any claims for repairs or replacements made prior to Manufacturer receiving written notification of the claim will be denied.

I. Warranty Not Transferable

This warranty is provided only to the original purchaser of the Product and is not transferable.

J. Acknowledgement

Manufacturer makes every effort to ensure that a copy of this Warranty, as well as the instructions for installation and use of the Product, is provided to every purchaser of the Product. However, Owner acknowledges that Manufacturer is not responsible for the actions and omissions of any individuals and/or entities who advertise, distribute, or install the Product independently from Manufacturer. Owner further acknowledges by acceptance of the Product that it shall not seek to hold Manufacturer liable for the negligent acts and/or omissions of any such advertisers, distributors, and/or installers.

K. Acceptance of Warranty

Acceptance of the Product by Owner shall indicate that Owner has read and agrees to be bound by the terms and conditions of this Warranty.

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IMPORTANT:

REGISTRATION OF PRODUCT AND WARRANTY

This Limited Warranty is not valid until you have registered youTwister 360 product. To register your product, please visit www.Twister360.com

WCH INDUSTRIES APPRECIATES YOUR PURCHASE OF THE TWISTER 360 AND WISHES TO THANK YOU FOR YOUR SUPPORT AND PATRONAGE.

CONTACT US

WCH Industries, LLC P.O. Box 55 Elkton, KY 42220

Phone:

270-604-7176

Fax: 270-265-5125

Email: Twister360@Twister360.com