



## DOUBLE FLANGES

### Let's Talk

Double flanges may remedy bolt stretching and blade and bolt breaking problems providing the intention is to protect the blade and blade bolts, and not to put the machine into conditions beyond its design capacity.

Blade breakage is most often caused by premature bolt failure or stretching of the bolt, allowing the blade to become loose. A loose blade is more likely to wander when it strikes an obstacle. As the blade wanders it is more likely to break when it hits the next obstacle, than a blade that is very tightly secured against the welded flange. A Double Flange Kit (DFK) is a set of additional un-welded half flanges which are bolted to the standard welded rotor flange using a special long blade bolt. The blade is sandwiched between the two flanges and accomplishes three things:

1. The blade bolt is placed in double shear, increasing the bolt capacity by approximately 100 percent.
2. The blade is supported on two sides, in a 'vise grip' action rather than with just the two bolt heads.
3. The welded rotor flange is strengthened.

Where possible, the standard 'C' agricultural speed blades or 'L' blades should be used, because the extra support of the double flanges, plus the holding capacity of the bolt in double shear, will give satisfactory results in most conditions.

The DFK is essential whenever the heavy-duty 1/2" thick 'L' blade is used, except where the soil condition is light, very abrasive and free from obstructions. The heavy duty 'L' blade is not recommended for general agricultural work in heavy soil or heavy residue conditions.

HOWARD uses a special 5/8" grade 8 fine thread hex head bolt with a specific length shoulder, hardened washers, and a locking nut in the DFK.

All metal surfaces must be as clean as possible to get a true torque reading. After the Rotavator is put to work, some blade 'seating' or 'bedding' in may occur. After the blades have 'bedded in', all blade bolts must be properly re-torqued to 180 ft /lbs. and checked and retorqued as may be required.

Standard blade attachment calls for the blade to be sandwiched between the bolt head and the welded flange. DFK bolts are longer than standard bolts. It is important that the bolts go through the welded flange first so that the bolt head is always against the welded flange. The bolt shoulder placed in the welded flange hole will prevent bolt threads from damaging the holes in the welded rotor flange, and make for a good positive fit.

The HW blade bolt (150 110 180) and locknut (107 110 330) may be used in the K, S, M, HR40, HR50 and HR60 DFKs. HOWEVER, the bolt WILL be slightly too long and requires the use of one or more 5/8" ID grade 5 or 8 flat washers as a spacer, to eliminate possible damage to threads that would be exposed beyond the end of the nut without the washers (spacers). Only one thread should be exposed when the lock nut is torqued to 180 ft/lbs. Use of the washers (spacers) will allow repeated use of the bolt and nut as long as the threads are not damaged.

Additional bolts, nuts and washers may be required to further clamp the un-welded half flanges to the welded flange using those bolt holes where a blade is not located. Washers must be used as a spacer (or a piece of an old blade with the tillage portion cut off) to prevent bending of the un-welded half flange as the bolts are tightened.

When installing the DFK on HR40, K, S, and M models, the blades must be mounted on the inside of the two end flanges. Without the DFK the blades always go on the outside of the end flanges, with the tillage part of the blade curved over the flange to protect it from wear. The un-welded half flanges on the HR40, K, S, and M models must always be located on the inside of the end flanges, which requires the blade to be relocated to the

inside of the end flange. To prevent unwanted wear to the outside edge of the end flanges, it is important to make some wear protection blades out of old worn out blades, and install them on the outside edge of the end flanges. These blades, when properly bent over the outside edge of the end flange will protect the welded flange from wear by providing a replaceable wearing surface.

A six blade/flange configuration (3 left and 3 right) should have three wear protection blades on the outside end flange. A four blade/flange configuration (2 left and 2 right) usually used in the fall for mulching heavy residue, should have four wear protection blades on the outside end flange. The wear protection blades will require a 5/8" bolt long enough to hold the blade, welded flange, washer/spacers, and un-welded half flange all together.

Refer to your owners' manual for correct six blade location and blade spiral pattern. If in doubt, ask Guy Machinery before proceeding.

A four blade/flange configuration is best for fall course tillage especially in heavy crop residue and moist sticky soil conditions. Four blades require less horse power than six blades because four blades do less work. A four blade configuration makes for a more open rotor allowing soil and residue to flow through more easily. Most Howard operator manuals suggest that the four blades work in pairs, a left hand blade located next to a right hand blade.

We propose a different 4 blade/flange configuration that works better than the pair configuration the manual explains. We propose that the blades be located as far apart from one another as is possible using the available holes in the welded flange. When the blades are approximately 90 degrees apart (12, 3, 6 and 9 on the face of a clock) wet sticky soil and residue flows thru better, the entire machine is more balanced and rides more evenly through the field. Four blades/flange in 'pairs' makes for large open (no blade) areas on the rotor, which allow the machine to 'fall down' because no blade in that area is engaging the ground. As such, a Rotavator with the 4 blade/flange configuration working in 'pairs' will duck walk-waddle through the field as blades engage and disengage the soil. Locating the blades at 90 degrees (or as evenly spaced as possible) places the blades more uniformly around the rotor, and makes for a more even blade strike pattern. Wet sticky soils and heavy residue will flow through the rotor better, and the Rotavator rides more smoothly over the ground. The better blade strike pattern cuts soil loose in more equal sized pieces, which leaves a more consistent finish on the surface and a better undercut down below.

A UHMW Poly Liner added to the underneath of the Rotavator shielding will go a long way to prevent moist sticky soil from building up above the rotating blades.

A ROTAVATOR SET UP WITH A 4 BLADE 90 DEGREE CONFIGURATION, 'C' BLADES, ADJUSTABLE REAR SOIL SHIELD ALL THE WAY UP OR OFF, A UHMW POLY LINER, AND THE CORRECT 'SELECT-A-TILTH' BLADE SPEED WILL ALLOW THE ROTAVATOR TO DO A BETTER JOB IN MOIST STICKY SOIL AND HEAVY RESIDUE CONDITIONS THAN ANY OTHER TOOL IN ONE PASS.

FOR ADDITIONAL INFORMATION ON HOW TO GET THE BEST PERFORMANCE FROM YOUR ROTAVATOR, OR HOW ROTARY TILLAGE CAN BEST FIT YOUR NEEDS, CONTACT GUY MACHINERY.

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