

R&R SUBSOILER MODEL AND OPTION SELECTION GUIDE

Step 1: Selecting the Proper Shank Size

TABLE 1

Shank size is determined primarily by the desired operating depth you require. From Table 1 select the appropriate shank size for your intended working depth.

| <u>Shank Size</u> | <u>Working Depth</u> |
|--------------------|----------------------|
| 32" x 1 1/2" thick | 14 to 22 inches |
| 36" x 1-1/2" thick | 14 to 22 inches |
| 36" x 2" thick | 14 to 26 inches |
| 42" x 2" thick | 18 to 32 inches |

The 32" shank is available only for the Medium Duty models. If your particular application requires more than normal trash clearance, you may wish to select the next longer shank. A 36" x 1-1/2" T-1 steel shank is available as an option for MD models.

Step 2: Find the Horsepower Required Per Shank

Because of the Stoneville Parabolic shanks, the required horsepower to pull an R&R subsoiler is considerably less than most subsoilers. The required power is a function of shank selection (working depth) and the type of soil. From the table below (Table 2) note the required horsepower per shank when operated at the maximum working depth in different types of soils. These horsepower requirements are estimates only and may require adjustment to local soil conditions. When operating at less than the maximum working depth of the shank, an adjustment would be made for a reduction in horsepower requirements.

TABLE 2 HORSE POWER REQUIREMENTS PER SHANK

| Shank Size: (Maximum Depth) | Sandy | Sandy Loam | Loam | Sandy Clay | Clay | Adobe Clay | Rocky, Volcanic or Buried Obstacles |
|--------------------------------|-------|---------------|------|---------------|------|---------------|--|
| 32" (22" max.) | 20 | 26 | 32 | 38 | 44 | 50 | NA |
| 36" (26" max.) | 22 | 30 | 38 | 46 | 54 | 60 | Resettable Trip Shank |
| 42" (32" max.) | 25 | 36 | 47 | 58 | 69 | 80/100 | |

Step 3: Determine the Maximum Number of Shanks You Can Pull

Divide the horsepower of your tractor by the required horsepower per shank obtained in Step 2.

Step 4: Select the Appropriate Frame

If you have selected the 32" shank, use Table 3 to select the appropriate Medium Duty machine using the calculated number of shanks obtained in Table 3 and the desired spacing.

Table 3

| Model | Transport Width | No. of Shanks | Shank Spacing | Working Width |
|------------|-----------------|---------------|---------------|-----------------|
| R13 532 MD | 13'2" | 5 | 24", 30", 36" | 10', 12'6", 15' |
| R13 732 MD | 12'2" | 7 | 24" | 14' |
| R16 732 MD | 16'10" | 7 | 24", 30" | 14', 17'6" |
| R16 932 MD | 16'10" | 9 | 24" | 18' |
| R18-22 MD | 18' | 11 | 26" | 22' |
| R18-25 MD | 18' | 13 | 26" | 26' |

In the event that the number of shanks obtained in Step 3 is less than five, either it is time to buy a new tractor, or if you plan to do that later, you may use an R-13 532 MD, with one or more shanks removed until more power is available. Medium Duty machines should be limited to tractors with 325 HP or less. The working depth limitations of the 32" shank should be considered when high horsepower tractors are available.

Heavy Duty Models

If you have selected the 36" shank, or the 42" for trash clearance, the Heavy Duty Models (HD) will accommodate up to 9 shanks and a maximum width of 21'. Use the Table #4 below to select the Heavy Duty Model that will give you the number of shanks and the spacing you desire. Note that the R-13 and R18H have 24" and 36" spacing that is not available with the R-17 and R-21H models. Also the R-13 or R-18H may be selected because of the narrower transport width of 13 feet. If you do not require 24" spacing or the 13' travel width, we recommend the larger frames.

Table 4

| Model | Transport Width | Working Width Max. # of shanks | 24" | 30" | 36" | 40" | 42" | 48" | 60" | 72" |
|--------------|------------------------|---------------------------------------|-------------|------------|------------|------------|------------|------------|------------|------------|
| R13 HD | 13'2" | 14' | 3,4,5,6,7 | 3,5 | 3,4,5 | 3 | 3 | 3,4 | 3 | 3 |
| R18H-HD | 13'2" | 18' | 3,4,5,6,7,9 | 3,5,7 | 3,4,5,7 | 3 | 3 | 3,4,5 | 3,4 | 3 |
| R17 HD | 17'0" | 17'6" | | 3,5,7 | | 3,5 | | 4 | 3,4 | 3 |
| R21H-HD | 17'0" | 22'6" | | 3,5,7,9 | | 3,5,7 | | 4,6 | 3,4,5 | 3 |

Heavy Duty Machines should be limited to 60 horsepower per 36" shank. If the 42" shank is chosen, the horsepower should be limited to 50 HP per shank. An R-21H HD with nine 36" shanks will perform behind a 470 HP wheel tractor or D-8 size crawler tractor.

Extra Heavy Duty Models

The Extra Heavy Duty (EHD) models should be chosen when the 42" shank is selected to obtain a 32" maximum working depth, or when the horsepower per shank exceeds 60 HP for the 36" shank or 50 HP for the 42" shank.

Table 5

| Model | Transport Width | Working Width | 24" | 30" | 36" | 40" | 42" | 48" | 60" | 72" |
|--------------|------------------------|----------------------|-------------|------------|------------|------------|------------|------------|------------|------------|
| R13-EHD | 13'2" | 14' | 3,4,5,6,7 | 3,5 | 3,4,5 | | 3 | 3,4 | 3 | 3 |
| R18H-EHD | 13'2" | 18' | 3,4,5,6,7,9 | 3,5,7 | 3,4,5,7 | | 3 | 3,4,5 | 3,4 | 3 |
| R17-EHD | 17' | 17'6" | | 3,5,7 | | 3,5 | | 4 | 3,4 | |
| R21H-EHD | 17' | 22'6" | | 3,5,7,9 | | 3,5,7 | | 4,6 | 3,4,5 | |
| R26H-EHD | 17' | 27'6" | | 3,5,7,9,11 | | 3,5,7 | | 4,6 | 3,4,5,6 | |

The EHD frame is engineered for a maximum horsepower load of approximately 100 HP per shank (8,000 lbs. drawbar pull per shank). This maximum is also the design strength of the shank brackets and bolts. The EHD is designed for the largest wheel tractors (650 HP) or D-9 size crawlers. It is also chosen for smaller tractors when conditions are severe and/or operators are untrained. Some owners select the EHD for its "over designed" duty cycle and durability when used with medium to large tractors. Standard widths for the Extra Heavy Duty machine are the same as the Heavy Duty, with the addition of 26' model. The R21H-EHD and R26H-EHD have the 17' center section and fold down to 17' for travel. As in the HD models, if you do not need the 24" spacing of the 13' travel width, select the larger frames,

(R17EHD, R21H, or R-26H. These models have additional bracing that is not available on the R13EHD or R18H-EHD and are stronger in design. An R-17EHD is approximately 50% stronger than an R-13EHD.

Super Heavy Duty Models

The SHD models are designed expressly for the use behind large crawler (track type) tractors. Available in 17' (R17 SHD, 21' (R21H-SHD), and 26' (R26H-SHD) models. These models are identical to the EHD models with the exception of the tongue construction. A massive 6" x 16" deep truss type tongue is wrapped with $\frac{3}{4}$ " rolled plate in the nose area. This plated and rounded nose prevents damage from track grousers when the tractor is turned too tightly. "Bullet Proof" model.

Step 5: Choosing Your Options

Standard T-1 Steel Wear Point:

Included as standard equipment on all Models. T-1 is a strong and abrasion resistant steel alloy, but in most soil types, the wear life is not acceptable unless the top plate is hard faced. An economical choice if the hard facing is maintained.

R&R Chrome Alloy Wear Points:

Available for all shank sizes, the chrome point is highly recommended in all but rocky soil types. This point features a 6 $\frac{1}{2}$ pound chrome alloy plate welded to the top surface of the standard point and typically outwears our standard T-1 point by a factor of 5 to 10 times. When the chrome plate shines up, it has an extremely low coefficient of friction, reducing draft requirements up to 20% over the standard point. The chrome plate is quite vulnerable to severe impact, but will survive moderately rocky conditions if tractor speed is reduced in rocky areas. The plate is somewhat repairable if the point is removed from the subsoiler immediately after damage. If soils to be encountered are partially rocky, try one or two of the chrome points alongside the standard points to determine if the chrome points will perform acceptably in your soils.

Standard-Heavy T-1 Hard Faced Point

This is designed for rocky/volcanic soil conditions when the R&R Chrome Alloy point or Standard point does not survive. Similar construction to the Standard T-1 point, but has a 1" T-1 top

plate instead of 5/8", and is hard faced with high chrome alloy rod. The point is more resistant to bending at the tip than either the Standard or Chrome point.

Three Piece Chrome Alloy Wear Point:

A large point, 4" wide and weighs 36 pounds, is made up of a base point, replaceable wear tip and replaceable top wear plate. The tip, which weighs fourteen pounds, and top plate are cast chrome alloy. The tip is available in two designs, either blunt or droop nose.

Designed for severe abrasion and heavy impact, this point will outwear any other point we offer, and will survive in severe conditions that will damage the Standard or one piece 3" Chrome Alloy points. This is the most expensive point to purchase initially, but the least cost per acre to use.

Hard Surfaced Shank Shin Guards:

Available in all shank sizes. Recommended when soils are moderately to highly abrasive. It reduces amount of down time to replace the weld-on shin guards. It is also available as a weld-on replacement wear part.

Chrome Segment Shank Shin Guards:

Available in all shank sizes. Provides maximum wear protection to shank face. Slightly wider than the shank, they also provide some protection to the shank sides. Estimated wear factor is 10x over standard shin and 5x over Hard Faced Shin.

Shin Guard Clod Splitter with Chrome Knife and Chrome Segments:

Designed for use in heavy clay or adobe soils where large clods ride up the shank face and are left on the surface. The Clod Splitter w/Chrome Knife is mounted on the shin guard directly behind the wear point. It splits the clods coming up the face and leaves them below the soil surface. Chrome segments ahead of and behind the clod Splitter complete this long wearing option.

5" x 16" Heavy Duty Hydraulic Cylinders:

Standard equipment on all EHD or SHD models. Required on HD models if equipped with 42" shanks. A 3000 psi tie-rod Prince cylinder with a greaseable clevis pin (rod end), this cylinder

is substantially heavier than the 4" x 16" tie rod cylinder used as standard equipment on the MD and HD models. The HD hydraulic cylinders provide much longer life before servicing is required. Also recommended for low pressure tractor hydraulic systems.

Resettable Trip Shank:

This option is available in the 36" and 42" shank sizes. The trip mechanism is spring loaded, cam operated and adjustable. Resetting is accomplished by simply backing up and over the tripped shank. Designed primarily for rocky/volcanic, and buried obstacle soil conditions, the trip shank eliminates shear bolt replacement, and the costly down time. Another benefit of the resettable trip shank is the added protection given to the brackets and frame. Since the release pressure is adjustable, only the pressure required to keep the shank in the ground at normal operating depths is needed. Many times this pressure is much lower than would be required to shear a shear bolt. Consequently, the shank releases at lower, more consistent pressures than is possible with a shear bolt.

T-1 Steel Shank Upgrade:

Available in 36" x 1½" for the MD, 36"x2" and 42"x2" in shear bolt or reset trip. For severe conditions when large buried obstacles can bend shanks to the side. T-1 alloy is typically 120,000 psi minimum yield as contrasted to our standard shank material, which is A 572 Gr 50, i.e. 50,000 psi minimum yield. More than twice as strong.

Heavy Duty Parking Stand:

Most operators leave their R&R Subsoiler with the shanks partially engaged in the ground when they unhook from the tractor. When parking in lot, blocking is required under the rear shanks, or the HD parking stand may be installed, to prevent the Subsoiler from tipping over backwards.