BUCKEYE TRACTOR CO

Operation Manual

Model 1721-D

BED SHAPER

Version A12 ● Serial No. 4960100 ● Effective 12-1-11

Serial No: _____ Date Received: ___ / ___ / ___

Purchased From: _____

Order / Invoice No: _____

BUCKEYE TRACTOR CO

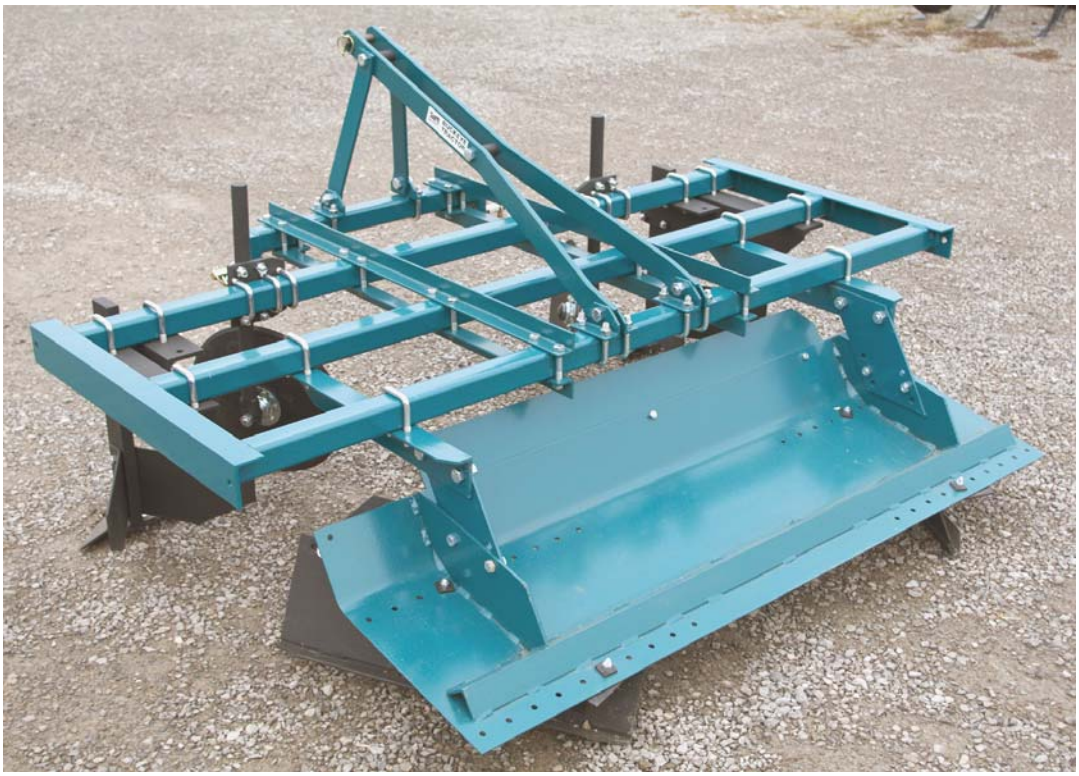
P.O.Box 97 ● 11313 Slabtown Road ● Columbus Grove, Ohio 45830 USA

call 419-659-2162 ● fax 419-659-2082

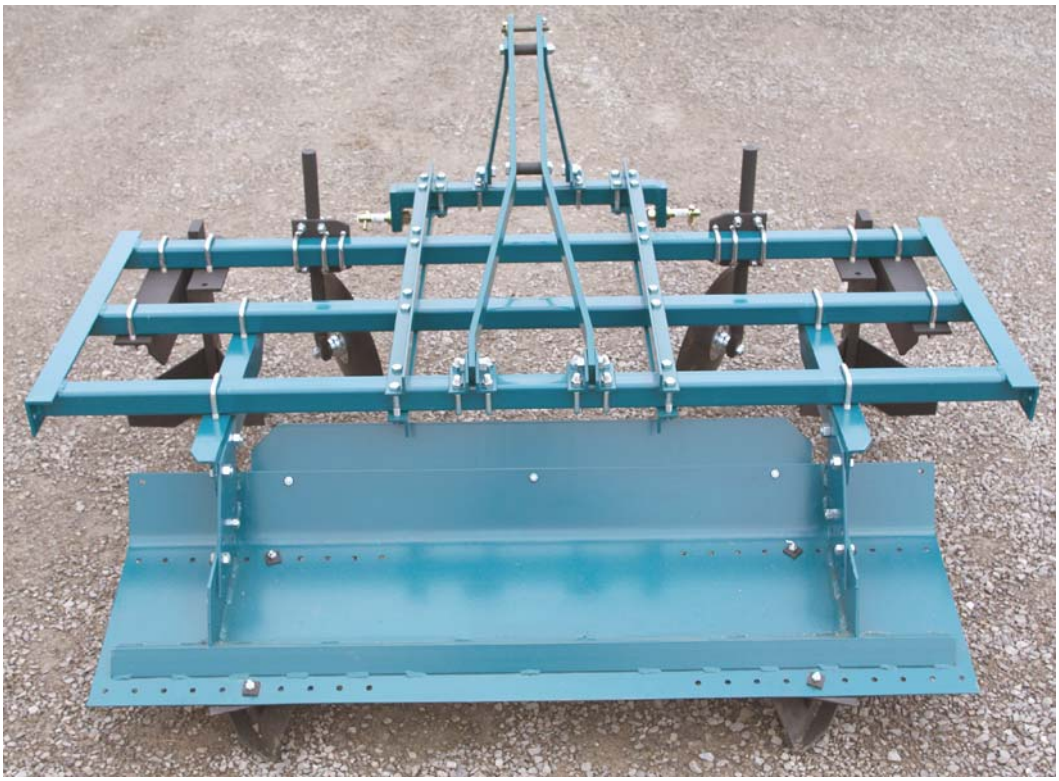
buckeyetractor@bright.net ● www.buctraco.com

YOUR PURCHASE INCLUDES COMPLETE AFTER-SALE SERVICE

GALLERY

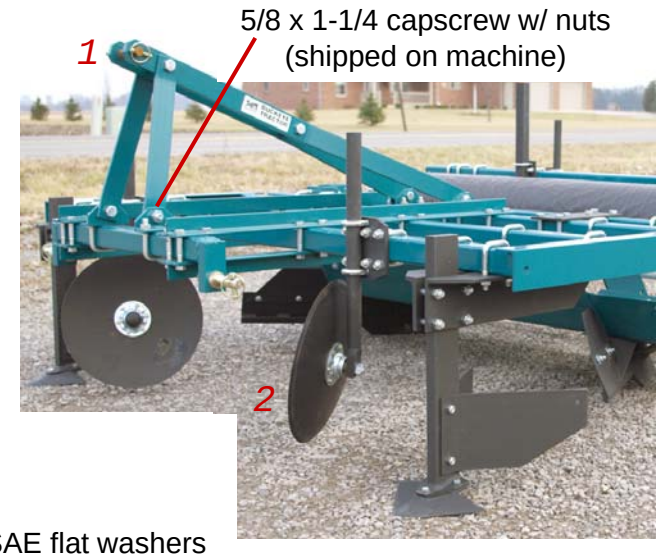


GALLERY



SET-UP

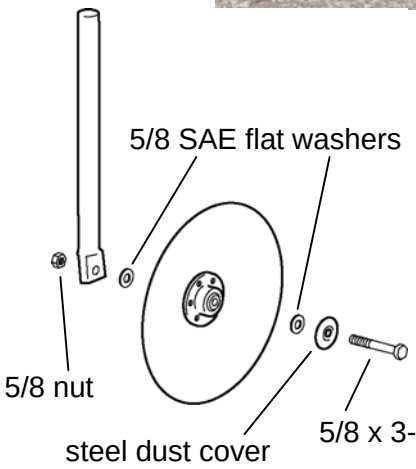
This equipment is "knocked down" for the best shipping rate by meeting applicable NMFC density requirements for LTL trucking services. Shipping equipment "set-up" costs twice as much, at leas. See PARTS LIST breakdowns if preferred to help visualize assembly. Contact Buckeye Service if you have any questions or comments about set-up.



Start with bed shaper, assembled but knocked-down.

1 - Raise hitch mast

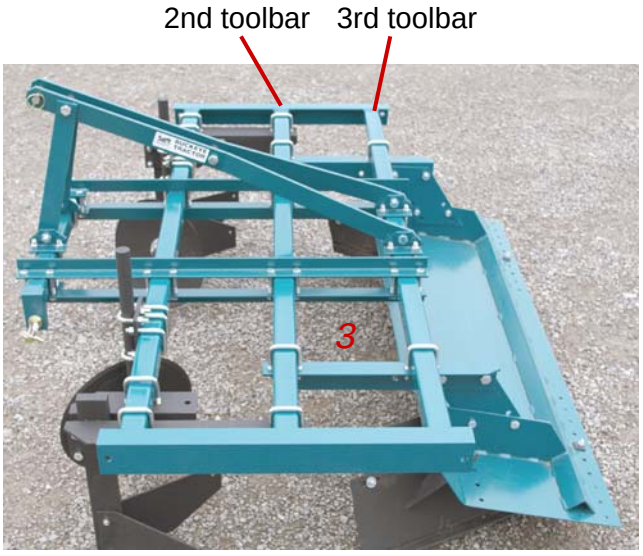
2 - Re-install shaping disks on toolbar. Position disk shanks on front side of 1st toolbar as shown. Disk assembly shown for reference

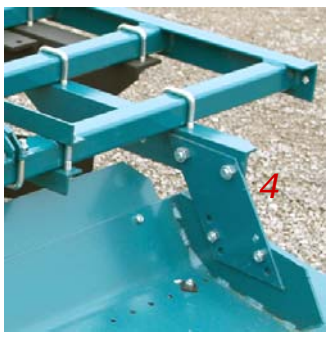


3 - Re-install shaper pan assembly on 2nd and 3rd toolbars

OPTION:
CROWNED SHAPER PAN
is pre-installed

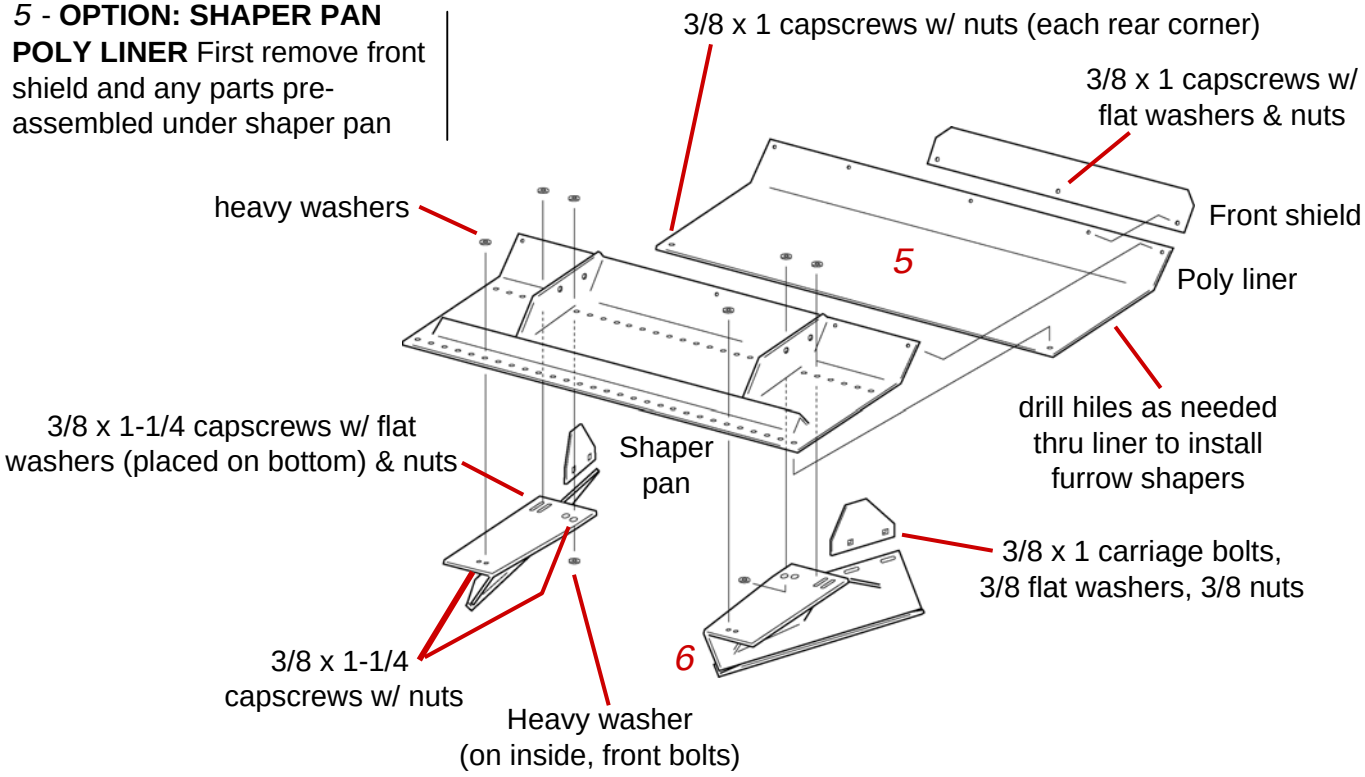
4 **-** Re-install shaper pan leg to rear position. If shaper pan is disassembled more (by request), assemble as shown





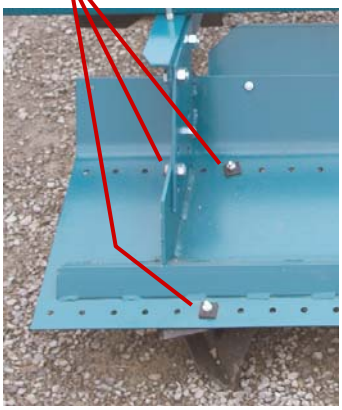
SET-UP

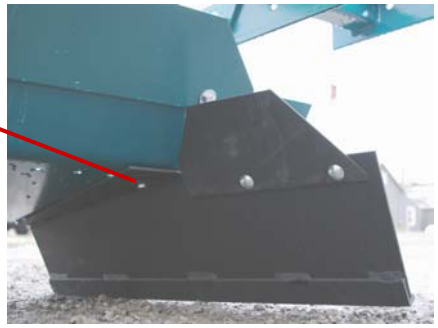
5 - **OPTION: SHAPER PAN POLY LINER** First remove front shield and any parts pre-assembled under shaper pan



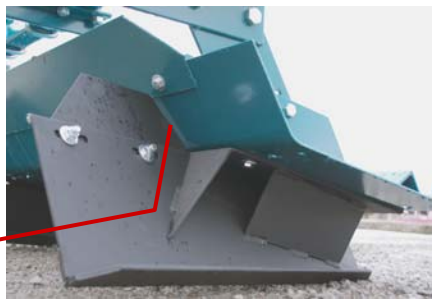
6 - Install Furrow Shapers (fasteners shipped on sub-assembly). Set-up for specific bed width - see ADJUSTMENTS

On each side, place (3) heavy washers on top, (1) heavy washer on bottom, inside





6

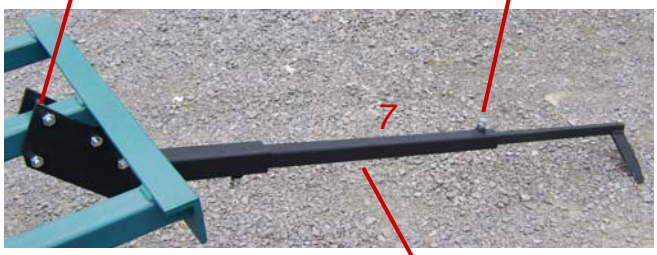


Position side shield near or against shaper pan

SET-UP

OPTION #20394 or #20396 (formerly #18394 or 18596) MANUAL-OPERATED ROW MARKERS

7 Install row markers on any toolbar.

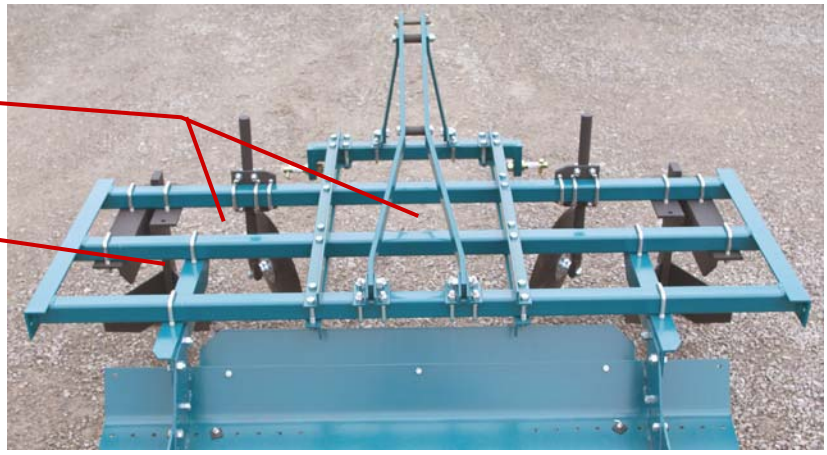


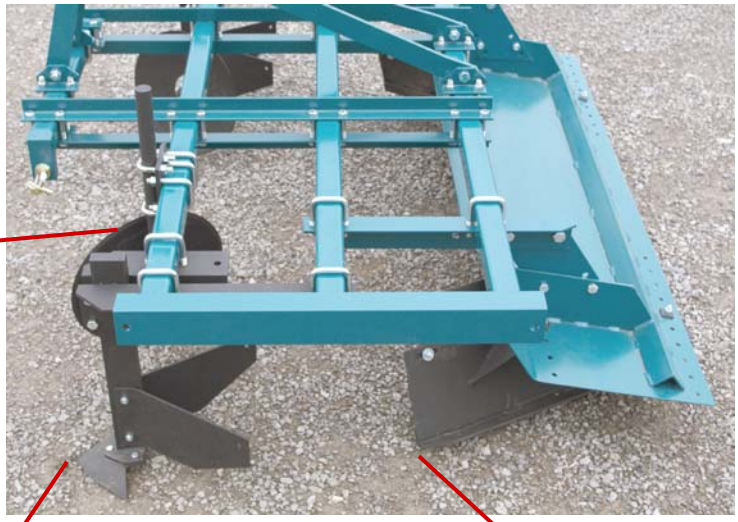
ADJUSTMENT

This reviews adjustments with photos specific to this model. See GENERAL ADJUSTMENT diagrams for more detail.

Soil should flow evenly between disks and between disks and wings

Align shanks with tractor wheel track spacing (measured center-to-center) to form beds with common furrows





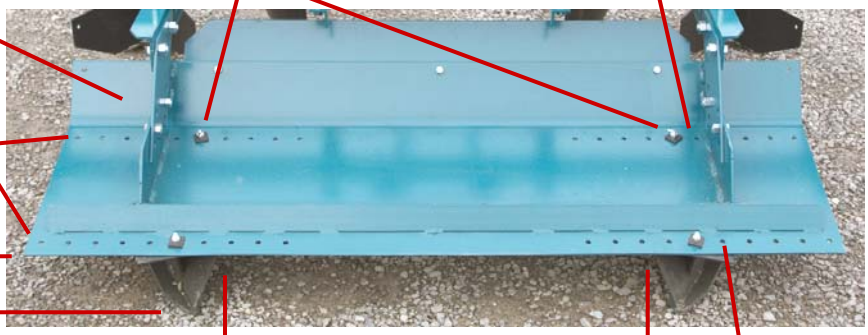
Shaping disks should be set no deeper than the intended depth of the furrow bottom

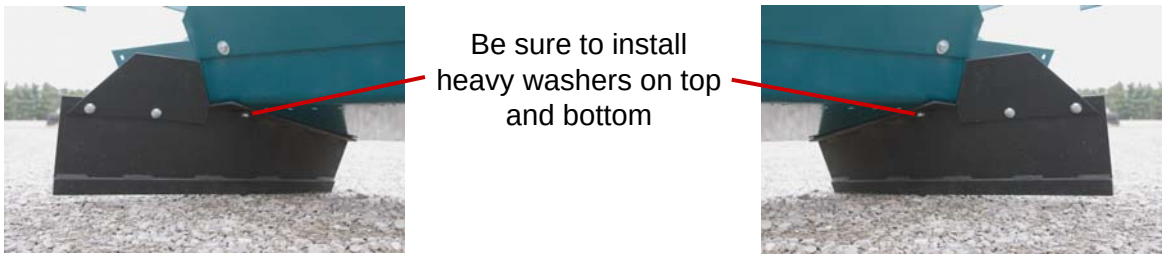
Furrow shanks are set 2” below furrow bottom, also 2” below shaping disks

Align front of furrow shapers roughly with center of furrow shanks. Close counts

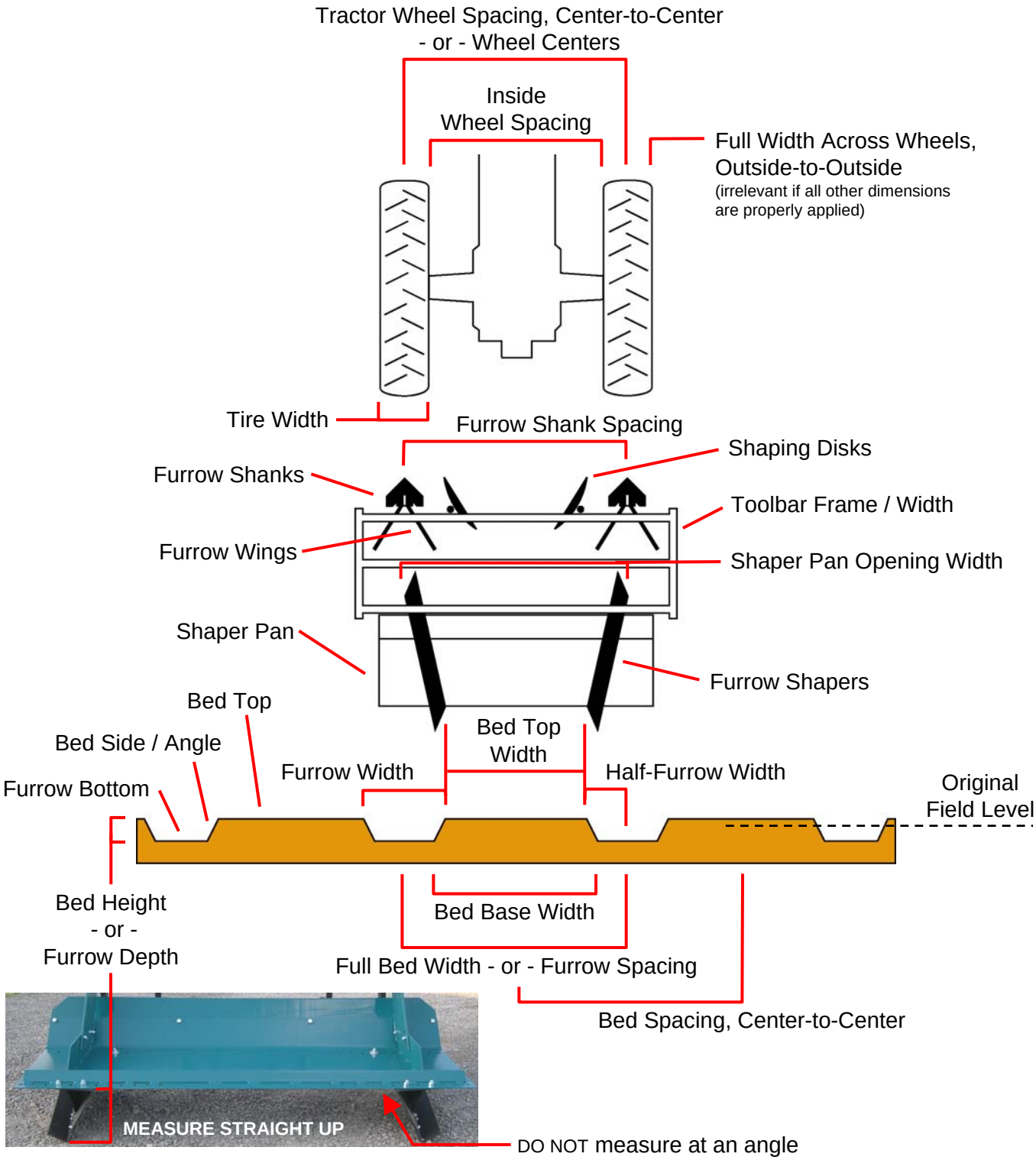
ADJUSTMENT

This reviews adjustments with photos specific to this model. See GENERAL ADJUSTMENT diagrams for more detail.





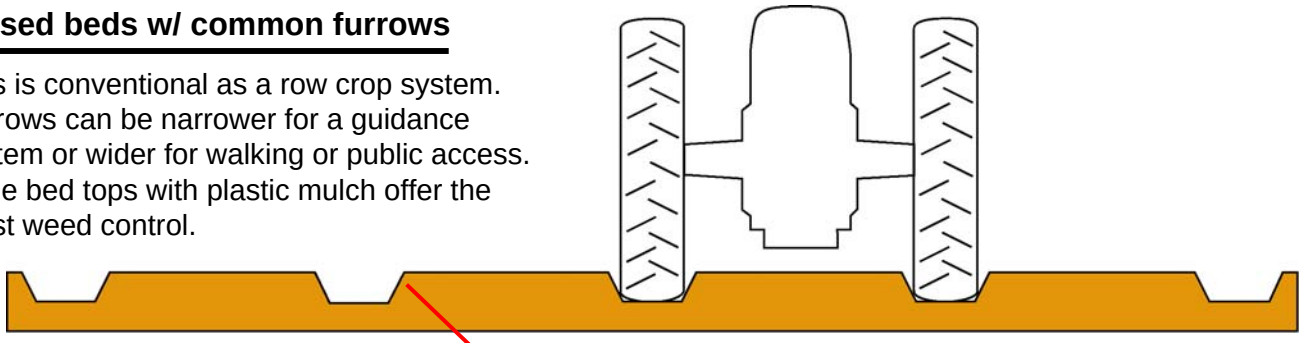
TERMINOLOGY



GENERAL SYSTEMS

Raised beds w/ common furrows

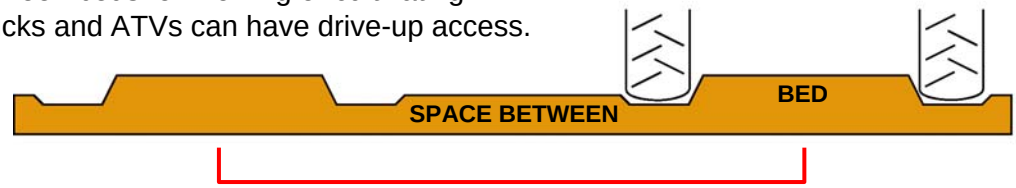
This is conventional as a row crop system. Furrows can be narrower for a guidance system or wider for walking or public access. Wide bed tops with plastic mulch offer the most weed control.



One common furrow between bed tops

Raised beds w/ wide spacing

With plenty of land available, wide spaces between bed tops allow tractors to drive between beds for mowing or cultivating. Trucks and ATVs can have drive-up access.

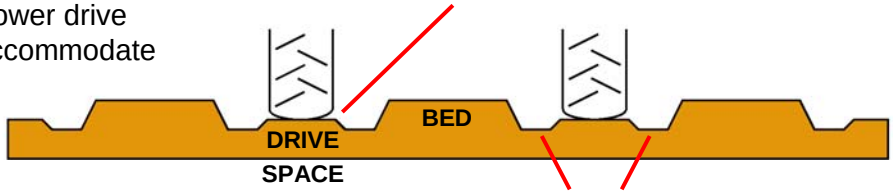


Wide Bed Spacing, Center-to-Center

Raised beds w/ drive spaces

This slight variation offers narrower drive spaces between bed tops to accommodate lawn mowers or rototillers for weed control. This system may also be needed for unusually narrow bed tops.

The “drive space” recognizes that soil under the wheels is not turned into the raised bed



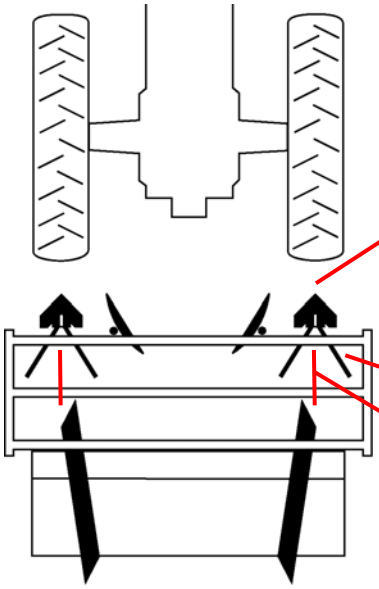
Half furrows inside of tractor wheels - the raised center usually flattens and one extra-wide wide furrow is apparent

See the Raised Bed handbook for a more extensive description of raised bed systems.

GENERAL ADJUSTMENT

FURROW SHANK SPACING / SHAPER PAN OPENING

Raised Beds w/ Common Furrows or Wide Spacing



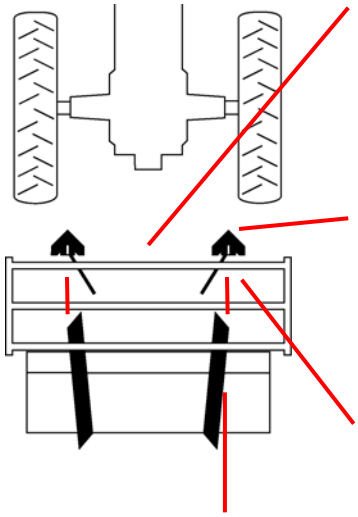
NEVER USE BED SHAPER WITHOUT FURROW SHANKS

Furrow shanks conventionally align with tractor wheels to loosen wheel compaction AND for accurate bed spacing / furrow spacing. With common furrow beds, furrow shank spacing matches bed spacing (or furrow spacing), which aligns with tractor wheels.

Outside furrow wings

To adjust shaper pan opening, align front corner of furrow shapers with furrow shanks. Close counts. Front of furrow shapers need only be within span of furrow wings

Raised Beds w/ Drive Space



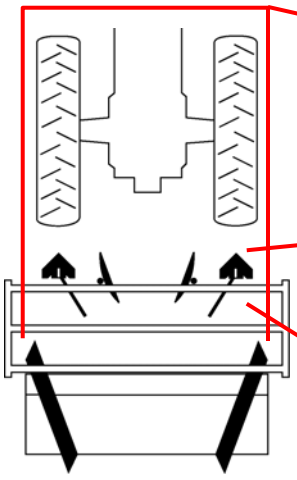
With unusually narrow beds, shaping disks may not be needed

Furrow shanks are placed inside of wheels, leaving a drive space under the wheels

Remove outside furrow wings

To adjust shaper pan opening, align front corner of furrow shapers with furrow shanks. Close counts.

Wider beds and narrow tractors



Shaper pan opening is wider than wheel spacing. Shaper pan opening should match bed spacing.

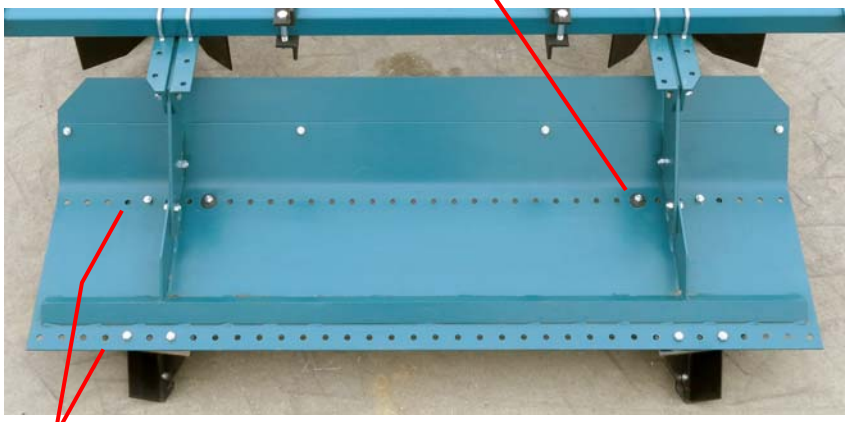
Furrow shanks align with tractor wheels

Remove outside furrow wings

GENERAL ADJUSTMENT

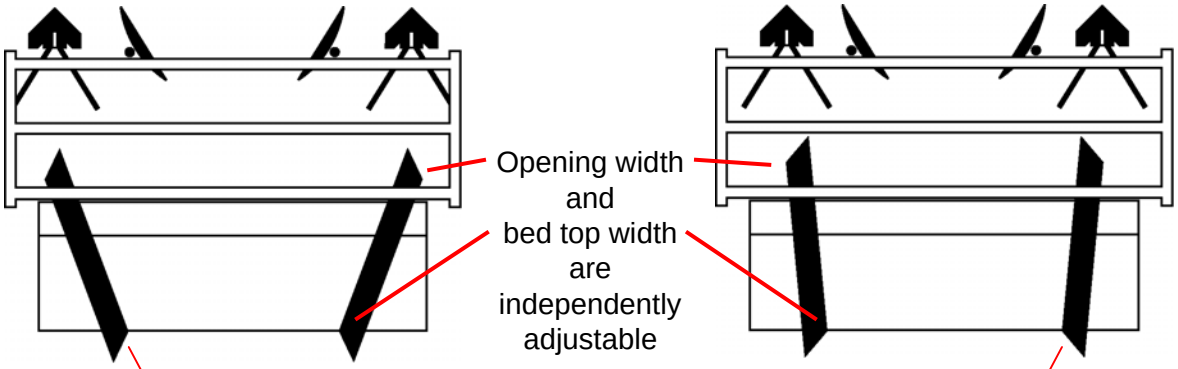
SHAPER PAN - BED TOP WIDTH, FURROW WIDTH

Be sure to re-install heavy washers



Multiple holes provided for bed width adjustment

For bed width, contact Buckeye Service for recommendations, if needed.

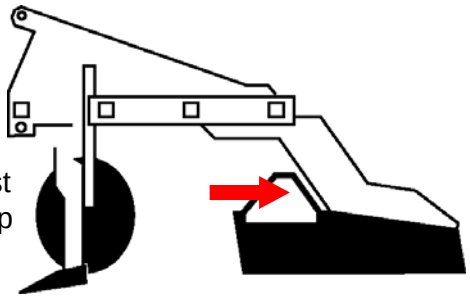


Opening width and bed top width are independently adjustable

Set furrow shapers at more angle for wider furrows

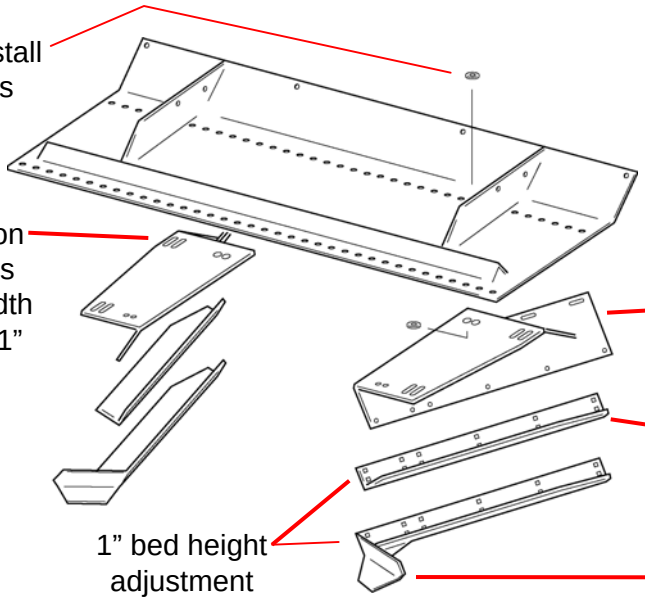
Set furrow shapers straighter for narrower furrows

When adjusting angle of furrow shapers, also adjust side shield to minimize gap in front of shaper pan



GENERAL ADJUSTMENT

SHAPER PAN - BED TOP WIDTH, FURROW WIDTH, BED HEIGHT



Be sure to re-install heavy washers

Double holes on furrow shapers provide bed width adjustment in 1” increments

1” bed height adjustment

Install different furrow shapers to change bed height on 2000 & 4000 Series - otherwise double holes on furrow shoes provide 1” adjustment

Furrow Shapers, Left and Right

Furrow Shoe for bed shapers

Furrow Shoe for bedder-layer combos features mulch furrow opener

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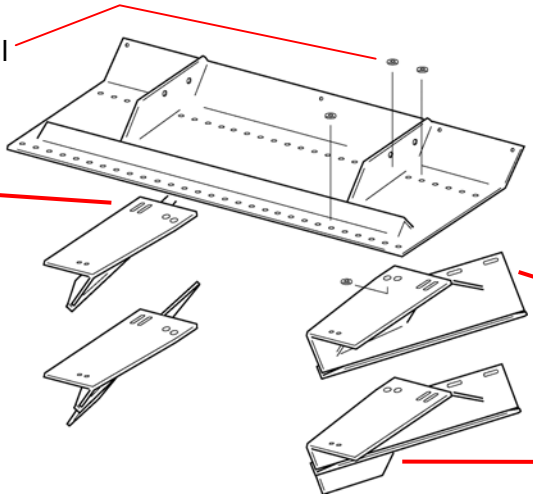


Be sure to re-install heavy washers

Double holes on furrow shapers provide bed width adjustment in 1” increments

Install different furrow shapers to change bed height on “Junior” Series

Furrow Shapers, Left and Right

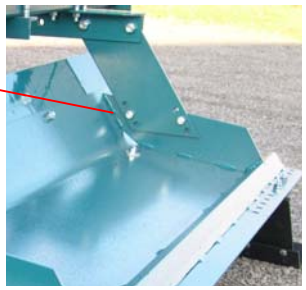
Furrow Shapers for bedder-layer combos features mulch furrow opener

Bed height is chosen at time of sale and most significant in management of soil, tillage and beds. Additional Bed Height Packages are available to easily change bed height.

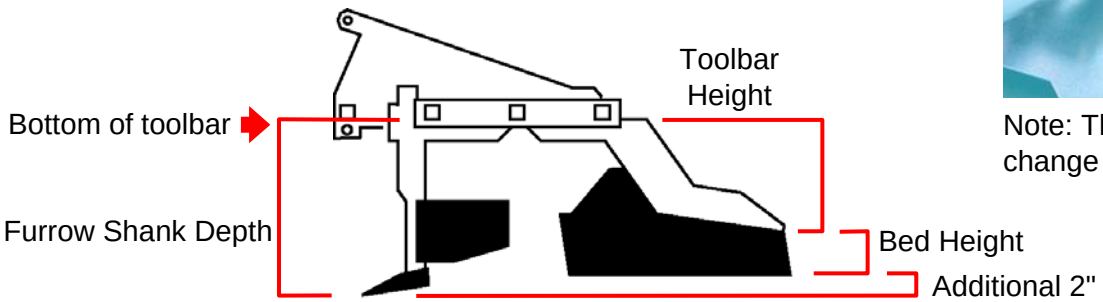
GENERAL ADJUSTMENT

FURROW SHANK DEPTH

These dimensions assume shaper pan is installed at the middle hole for the stated toolbar height



Note: This DOES NOT change bed height.



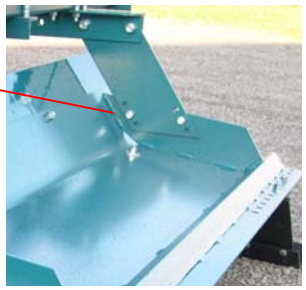
Furrow Shank Depth	Toolbar Height	Bed Height
“Junior” Series		
17”	12’	3”
18”	12”	4”
19”	12”	5”
20”	12”	6”

Furrow Shank Depth	Toolbar Height	Bed Height
2000 & 4000 Series		
21”	16”	3”
22"	16"	4"
23"	16"	5""
24"	16"	6“
Also 4000 Series		
25”	16”	7”
26”	16”	8”
27”	16”	9”
28”	16”	10”

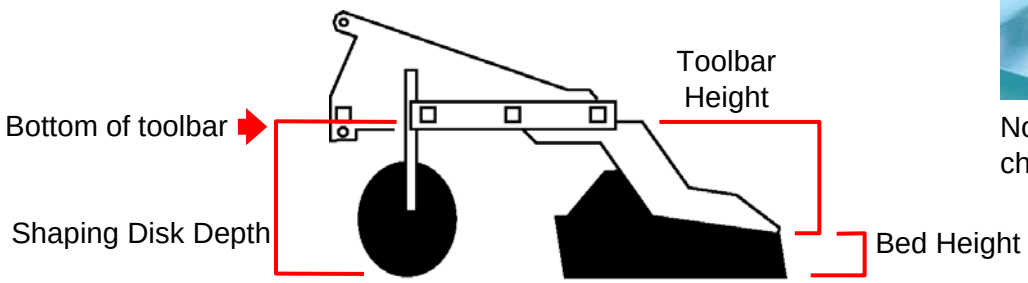
GENERAL ADJUSTMENT

SHAPING DISK DEPTH

These dimensions assume shaper pan is installed at the middle hole for the stated toolbar height



Note: This DOES NOT change bed height.



Furrow Shank Depth	Toolbar Height	Bed Height
“Junior” Series		
15”	12’	3”
16”	12”	4”
17”	12”	5”
18”	12”	6”

Furrow Shank Depth	Toolbar Height	Bed Height
2000 & 4000 Series		
19”	16”	3”
20"	16"	4"
21"	16"	5""
22"	16"	6“
Also 4000 Series		
23”	16”	7”
24”	16”	8”
25”	16”	9”
26”	16”	10”

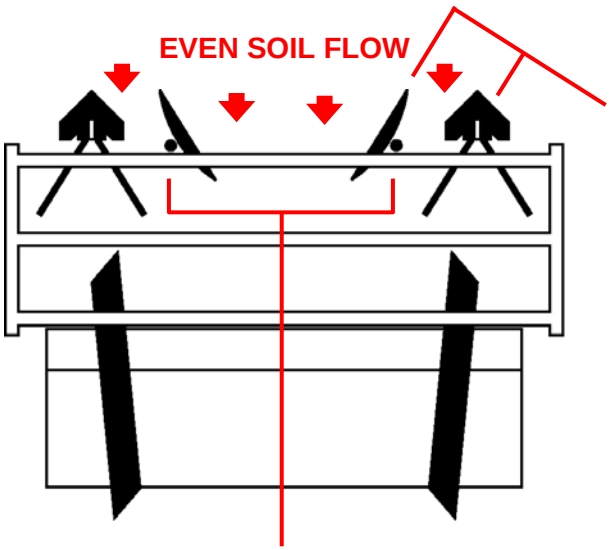
On all models, shaping disks can be raised 1-2” to adjust soil flow.

NEVER SET BELOW STATED DEPTH

GENERAL ADJUSTMENT

SHAPING DISK SPACING & ANGLE

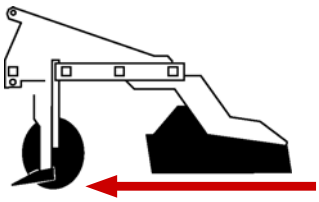
Disk shank spacing is general in nature. The goal is proper soil flow between furrow shanks and disks and between disks. Adjustments can somewhat depend on speed, bed height and soil moisture. But don't get too creatative. Disks are always positioned on the front side of the toolbar, beside the furrow shanks. Feel free to contact contact Buckeye Service for any advice on disk adjustment



Shaping disk spacing
(measure to centers of shanks)

To start, set shaping disk angle parallel to furrow wing. This disk angle is best for most applications. Otherwise, disk blades may be straighter for higher speeds or narrower beds.

Furrow Shank Spacing	Disk Shank Spacing
"Junior" and "Narrow" Bed shapers only	
42"	Please call
44"	Please call
46"	Please call
48"	24"
50"	26"
52"	28"
54"	30"
All bed shapers and disk bedders	
54"	30"
56"	32"
58"	34"
60"	36"
62"	37"
Larger bed shapers and disk bedders only	
64"	38"
66"	39"
68"	40"
70"	41"
72"	42"
74"	43"



NO!

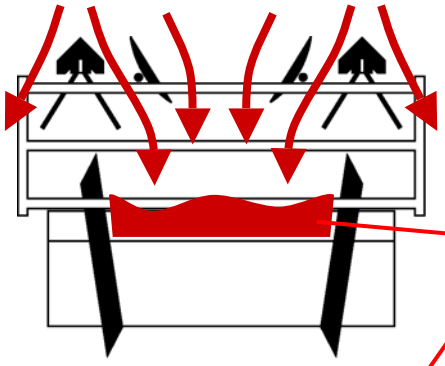
NEVER set shaping disks deeper than specified. Expect a poorly filled bed or disk failure.

GENERAL OPERATION

SOIL FLOW TO FILL BED

Shaping disks efficiently fill the bed center. Good bed shaper performance depends on 1) soil tilled to proper depth for furrow shanks and 2) proper disk adjustment. Frankly, since there are a few things to NOT DO, this leaves what TO DO to be fairly simple.

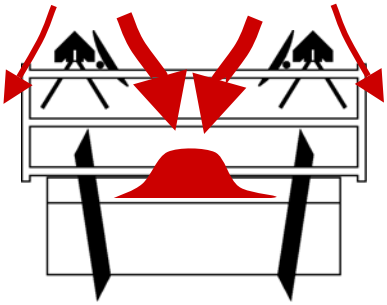
YES



Shaping disks properly lead inside furrow wings to fill bed center. Inside furrow wings move soil into disk cut.

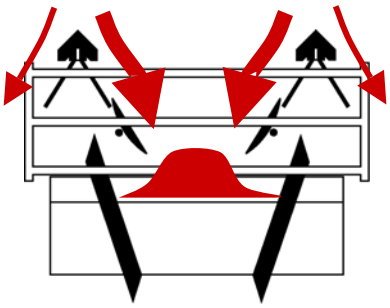
Balanced soil movement provides even soil build-up in front of shaper pan.

NO!



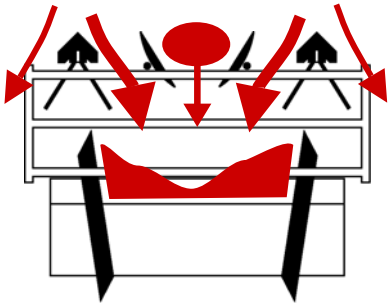
Don't set the disks too far apart and expect them to do most of the work. Furrow shanks do the most work.

NO!



This may be appealing for narrow bed tops with wide furrows, but disks are overloaded.

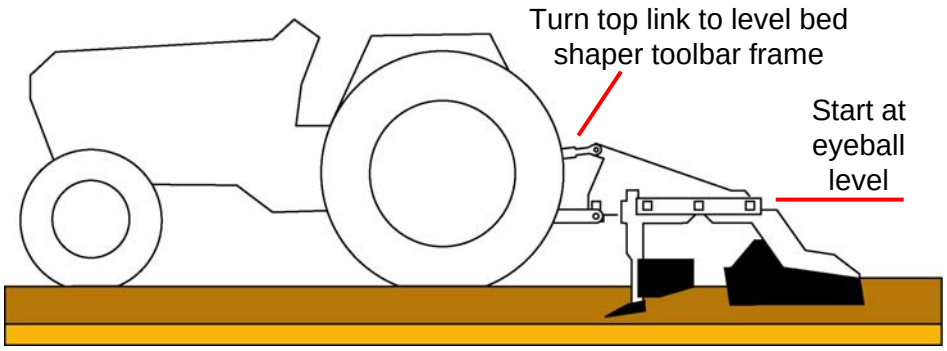
NO!



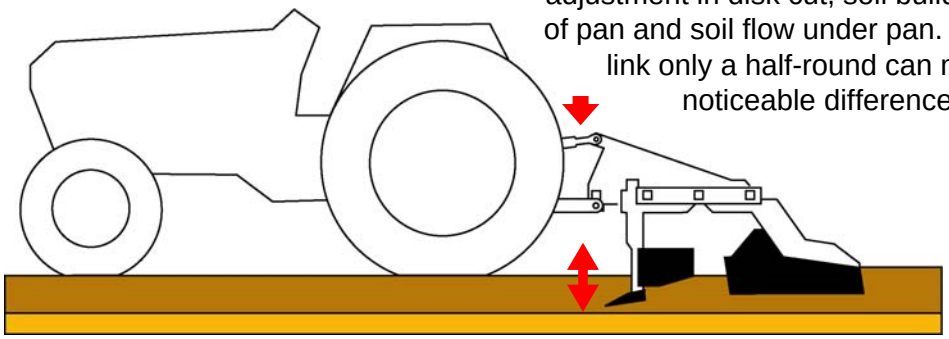
Shaping disks set too close will likely bulldoze soil. If all else is working, simply strighten blades.

GENERAL OPERATION

TRACTOR HITCH



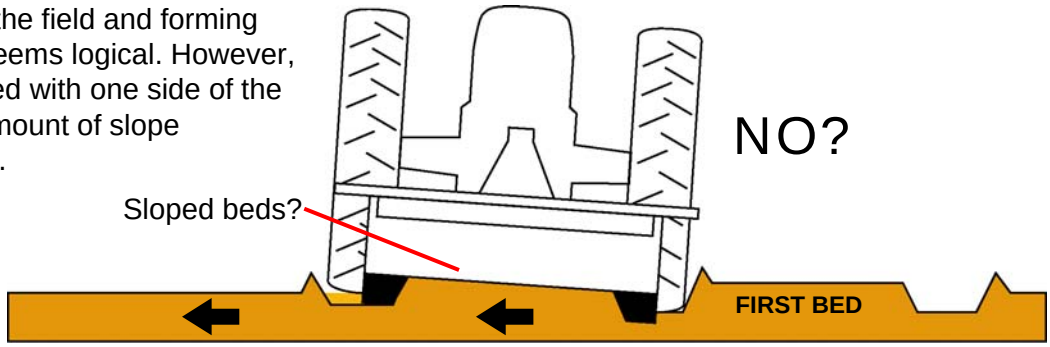
Adjust top link to slightly raise or lower the front of the bed shaper makes minor adjustment in disk cut, soil build-up in front of pan and soil flow under pan. Turning top link only a half-round can make a noticeable difference.



GENERAL OPERATION

ONE-PASS BED SHAPING - BEDS WITH COMMON FURROWS

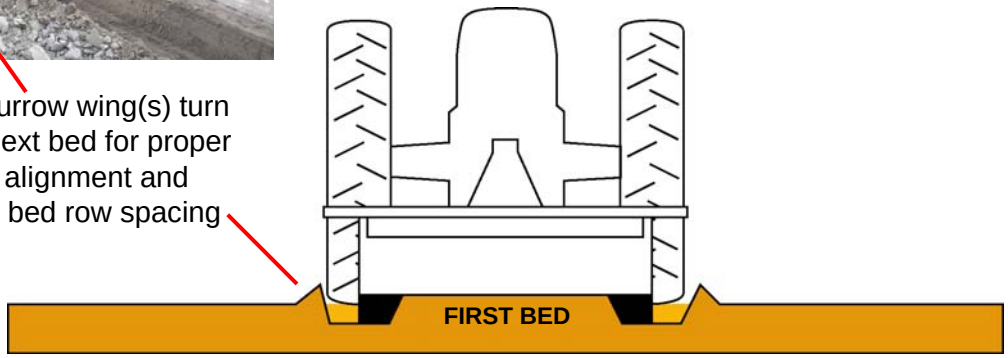
Starting at one side of the field and forming beds across the field seems logical. However, beds are typically sloped with one side of the tractor in the furrow. Amount of slope depends on bed height.
Solution follows.



1

Form first bed in center of field.

Outside furrow wing(s) turn soil into next bed for proper wheel alignment and accurate bed row spacing



GENERAL OPERATION

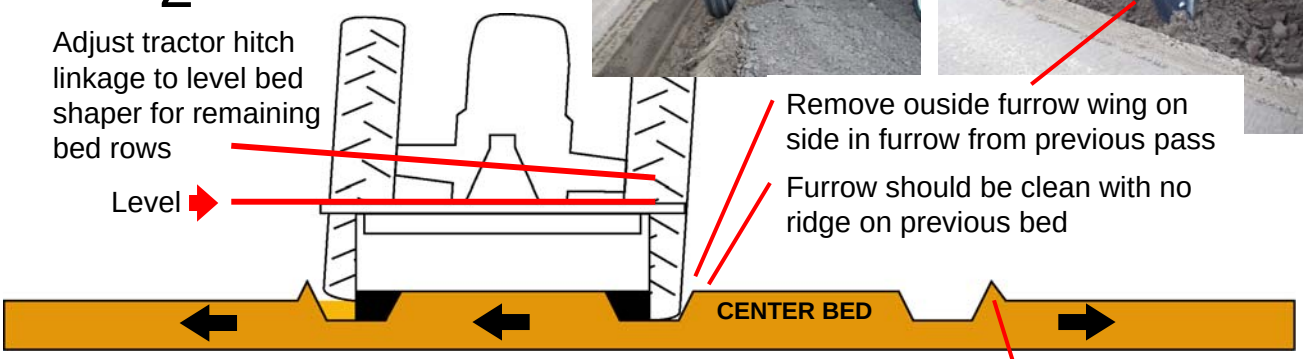
ONE-PASS BED SHAPING - BEDS WITH COMMON FURROWS

Wheels in furrow

2

Adjust tractor hitch linkage to level bed shaper for remaining bed rows

Level



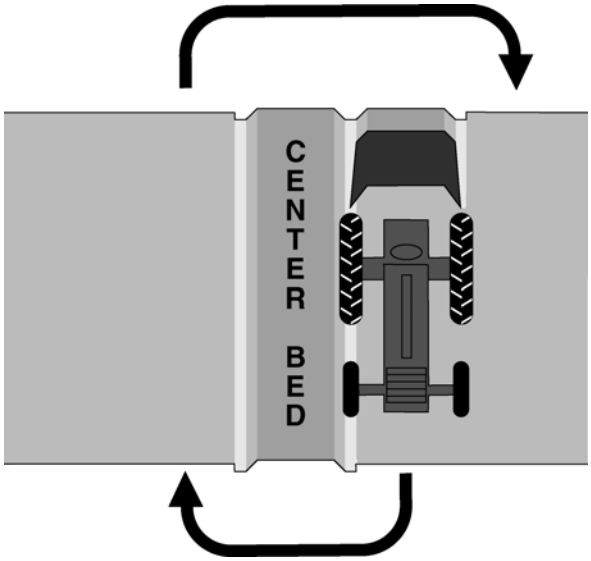
Remove ouside furrow wing on side in furrow from previous pass

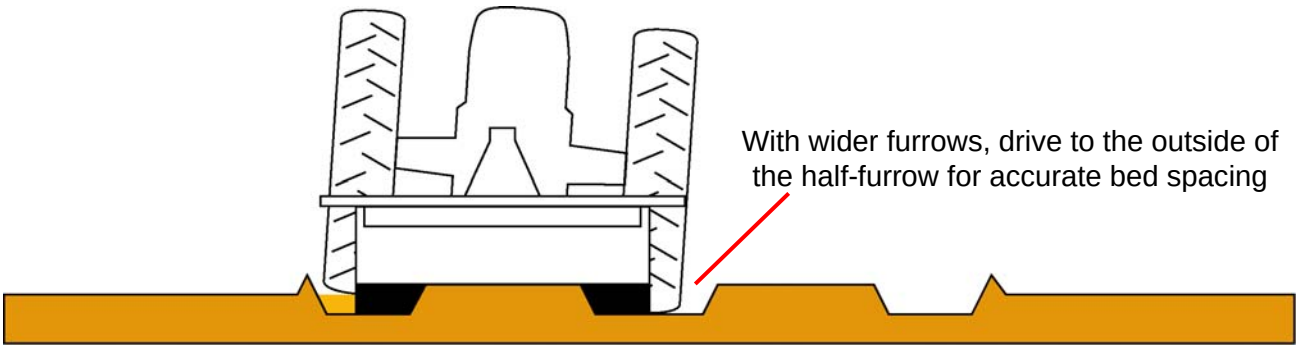
Furrow should be clean with no ridge on previous bed

Like the first bed, a ridge of soil remains on the outside furrow to fill the next bed

3

To lay-out beds with one-row bed shapers, work outward from the center bed. Form beds that are filled, straight and level. Follow the 1/2-furrow back for accurate bed spacing. Final result ultimately depends on ability and practice. Beauty is in the eye of the beholder





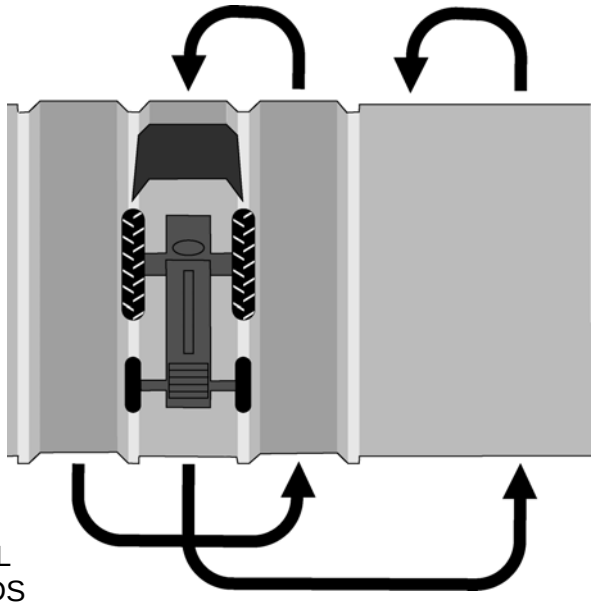
With wider furrows, drive to the outside of the half-furrow for accurate bed spacing

GENERAL OPERATION

ONE-PASS BED SHAPING - COMMON FURROWS - ALTERNATING BEDS

- Tractor remains level
- Form beds in one pass
- Start at the side of the field
- Form every-other bed

Form every-other bed first then come back to form in-between beds. Work beds progressively as shown.

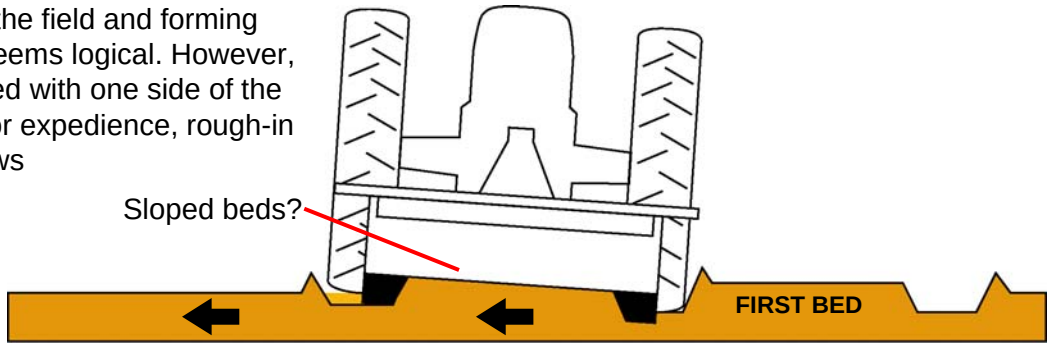


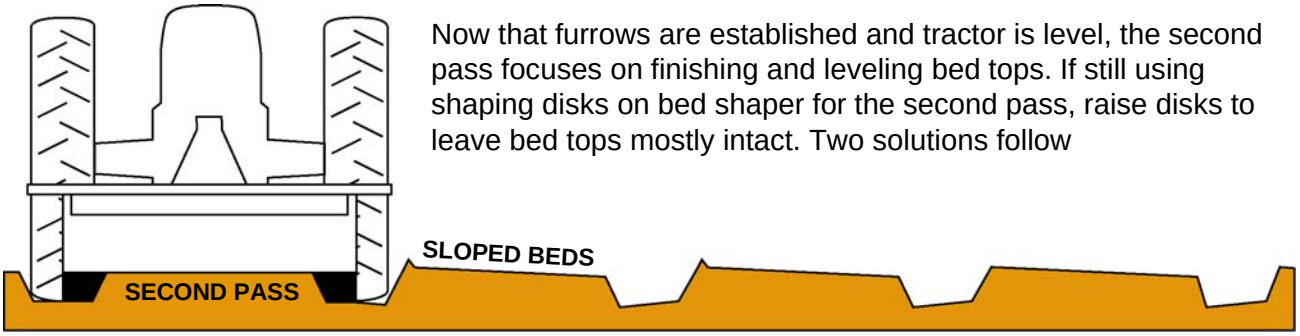
SEE RAISED BED HANDBOOK FOR A FULL DESCRIPTION OF BED SHAPING METHODS

GENERAL OPERATION

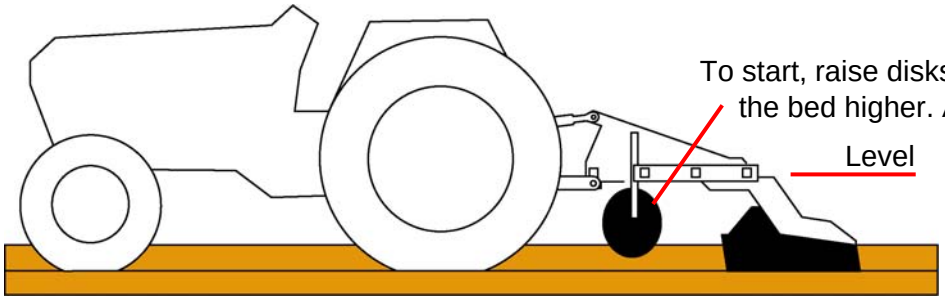
SECOND PASS / TWO-PASS BED SHAPING - BEDS WITH COMMON FURROWS

Starting at one side of the field and forming beds across the field seems logical. However, beds are typically sloped with one side of the tractor in the furrow. For expedience, rough-in beds to establish furrows

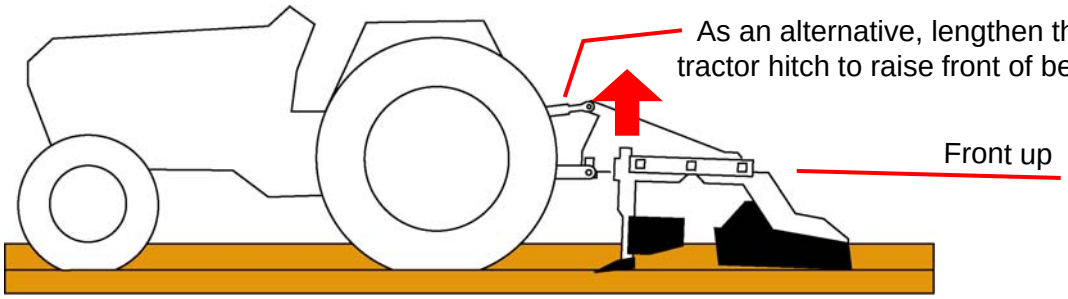




Now that furrows are established and tractor is level, the second pass focuses on finishing and leveling bed tops. If still using shaping disks on bed shaper for the second pass, raise disks to leave bed tops mostly intact. Two solutions follow



Note: Drip tape can be effectively and consistenty applied with the bed shaper on the second pass.

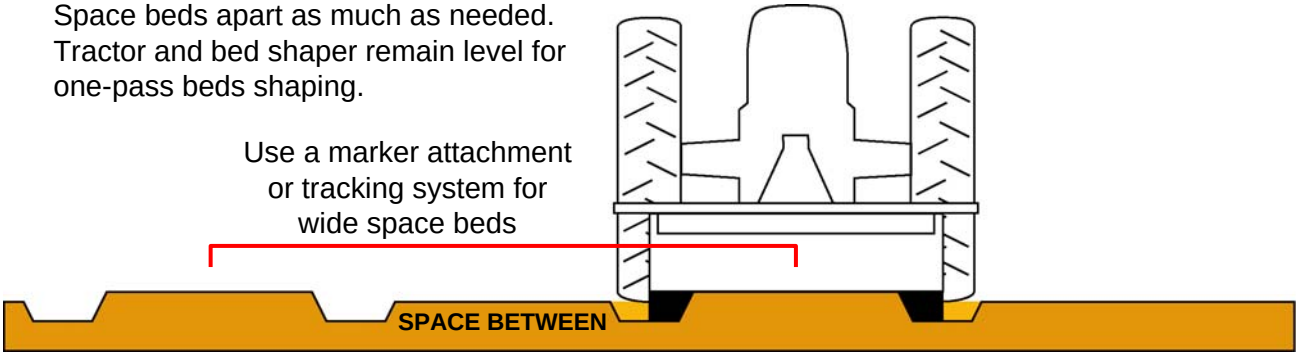


GENERAL OPERATION

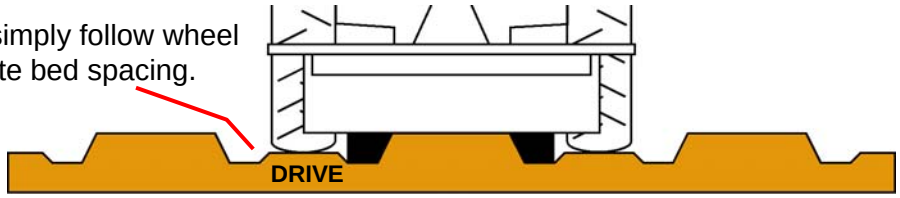
ONE-PASS BED SHAPING - WIDE-SPACED BEDS OR BEDS WITH DRIVE SPACES

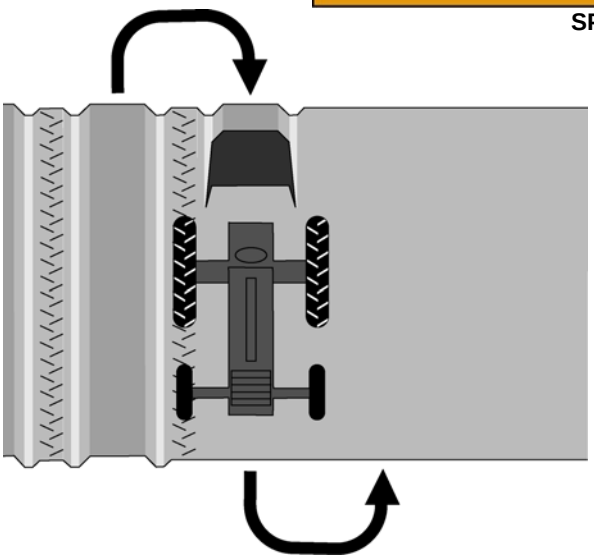
Space beds apart as much as needed. Tractor and bed shaper remain level for one-pass beds shaping.

Use a marker attachment or tracking system for wide space beds



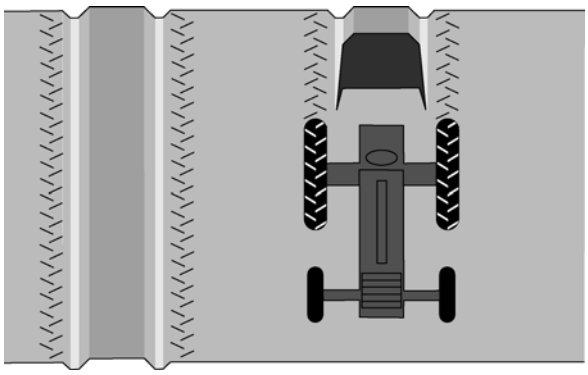
With drive space beds, simply follow wheel track back for accurate bed spacing.





Since the tractor is always level with the bed shaper, simply lay-out beds from one side of the field to the other. Follow the wheel track back for accurate bed spacing

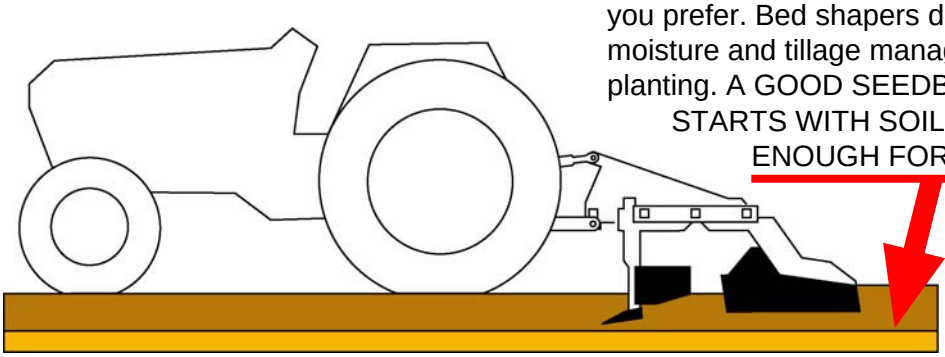
Wide-spaced beds are laid-out the same way except the next bed is too far away to follow wheel track. Use a row marker for accurate bed spacing. Lay-out may only be done once if the space between beds is grassed or if evidence of beds remains season-to-season



GENERAL OPERATION

ONE-PASS BED SHAPING - FIELD PREPARATION

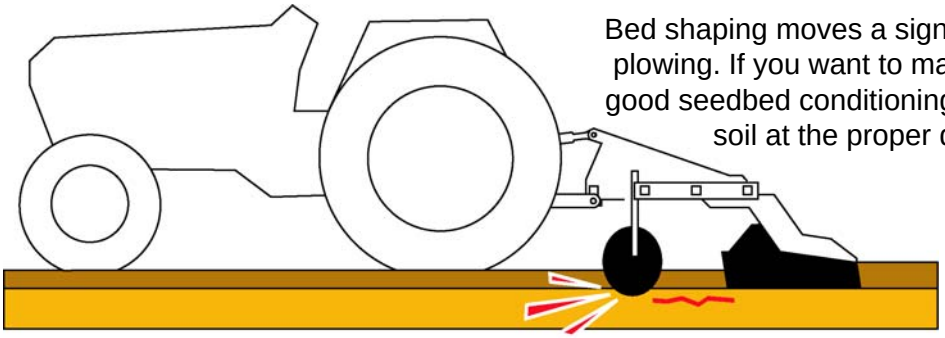
Bed shapers form new beds in one or two passes - as you prefer. Bed shapers do not condition the soil. Your moisture and tillage management conditions the soil for planting. A GOOD SEEDBED ON RAISED BEDS STARTS WITH SOIL WORKED DEEP ENOUGH FOR THE BED HEIGHT.



GOOD TILLAGE DEPTH

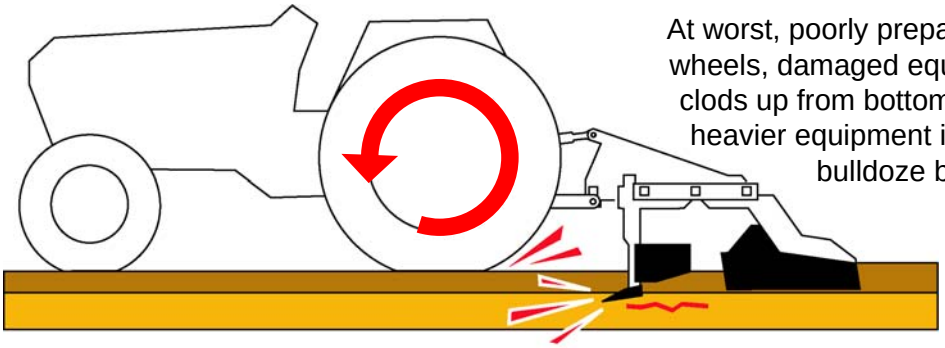
Forming “new” beds in one or two passes - either way, this is “quick bedding” - soon before planting involves deep preparation of soil with conventional tillage. For “wide” beds - one raised bed under the tractor, including half-furrows on each side of the bed top - tillage depth should be at least equal to the planned bed height.

Bed shaping moves a significant volume of soil - like plowing. If you want to make well-formed beds with good seedbed conditioning to plant in, properly tilled soil at the proper depth is essential.



PROBLEM:
SHALLOW TILLAGE DEPTH

At worst, poorly prepared soil results in spinning wheels, damaged equipment and/or turning wet clods up from bottom soil.. Bigger tractors and heavier equipment is available if you want to bulldoze beds into place.

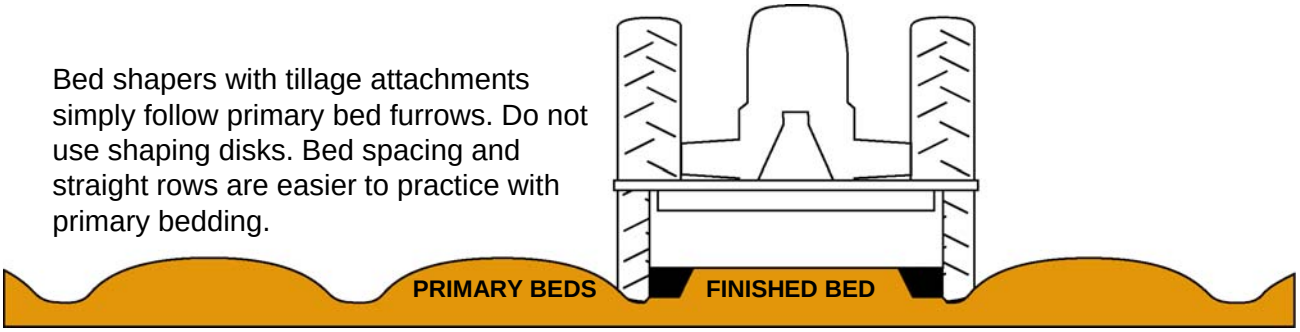


Many real farming solutions are possible for proper soil management and to fully benefit from raised beds, which ultimately cooperates with nature, simplifies agriculture and bears more fruit.

GENERAL OPERATION

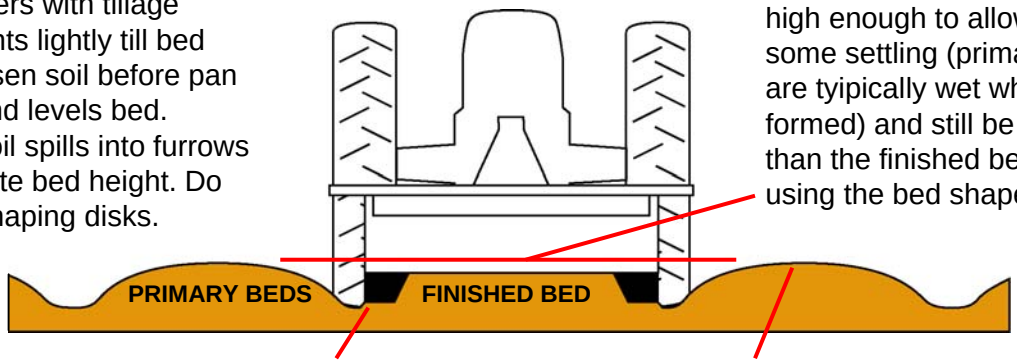
FINISHING PRIMARY BEDS

Bed shapers with tillage attachments simply follow primary bed furrows. Do not use shaping disks. Bed spacing and straight rows are easier to practice with primary bedding.



Bed shapers with tillage attachments lightly till bed top to loosen soil before pan shaves and levels bed. Excess soil spills into furrows for accurate bed height. Do not use shaping disks.

Primary beds should start high enough to allow for some settling (primary beds are tyipically wet when formed) and still be higher than the finished bed when using the bed shaper.



Avoid turning additional soil from furrows into the bed. Further, bed tops typically dry quicker. Furrows can be wet and bed shaper can still function properly. If furrows are muddy, raise furrow shanks out of soil, which is an expedient solution for severe conditions only.

S-tine attachments on bed shaper

Primary beds or stale beds

Light tillage and final shaping

OPERATION

IMPLEMENT DRAFT & LIFT

Standards established by The American Society of Agricultural Engineers (ASAE) are intended to ensure that connecting points between tractor 3-point hitches and implement 3-point hitches are routinely compatible. With the invention of the 3-point hitch system, Harry Ferguson established proper hitch geometry for implement draft and proper lift. However, ASAE standards do not necessarily standardize tractor hitch geometry. Some design elements of hitch geometry can affect implement lift, which are largely at the discretion of the tractor manufacturers.

Poor hitch geometry effects implement draft and lift. Draft problems include implement side-sway or fish-tailing, inconsistent depth control between front and rear of implement or implement seeming to pull out of the ground or seemingly unwilling to penetrate the soil. Quick fixes like adding guide disks or more gauge wheels or adding weight may be considered when the true problem is poor tractor hitch geometry. Lift problems include limited lift height with heavier implements and long implements that won't raise on the back end. Quick fixes? Sorry.

Given the history of 3-point hitches on farm tractors, most older tractors have acceptable to good hitch but some are nothing less than junk. Most newer tractors have good 3-point hitches. Most problems originate on the tractor when the top link is anchored too high or the position of the lower arms, where pinned to the tractor, is too wide or too narrow.

Why not find cause with the implement? The tractor was owned and used first - and costs more. OK, but then it would be impossible to have any standards at all. Of course, implements are easier to modify if you don't mind using implements that can only be used the tractor with the bad hitch. Some implement manufacturers offer many top link pin holes, which is workable if it doesn't create more confusion. Adjusting the lower arm spread is also possible on many implements, depending on design.

If there is any question on implement draft and lift, please contact Buckeye Service before making any modifications.

OPERATION

In the ground, toolbar frame should be eyeball level

Outside furrow wings move soil into the next bed.

For one pass bedding, start with the first bed in the center of the field. With one side of the tractor in the furrow, adjust the tractor hitch to level bed shaper and lay-out bed rows in a circular pattern. As an alternative, form every-other bed then in-between beds for evenly spaced beds with clean furrows.

Just as effective, beds can be formed in two passes. The first pass focuses on establishing furrows and accurate bed spacing. The second pass focusses on leveling beds with both tractor wheels in furrows. Beds can simply be made in succession across the field. The two passes can usually be done at faster ground speeds.

Beds can also be formed with a wide space between beds or a narrower drive space between beds. See GENERAL ADJUSTMENTS or the RAISED BED HANDBOOK for other bed shaping methods.

Remove or turn furrow wings out of the way when needed for clean furrows

OPERATION

Photo is lightened to show typical soil build-up in front of pan

MAINTENENCE

1) Use oil on threads to prevent nut seizure as well as easing the ability to tighten. Dry and squeaky threads are harder to tighten and secure. Oil on threads DOES NOT cause fasteners to loosen.

2) Adding oil to hitch pins improves wearability and eases insertion and removal.

3) Disks with ball bearing hubs require no lubrication.

4) Grease, oil or paint the scoured surfaces before storage to improve initial use next time.

5) Any equipment lasts longer and is more trouble-free when stored inside or under cover.