MITTLER BROS. MACHINE & TOOL

Operating, Servicing, and Safety Manual
Model # 2800
48” & 72”
Ultimate Box & Pan Brake

CAUTION: Read and Understand

These Operating, Servicing, and Safety Instructions, Before Using This Machine.

1-800-467-2464

10 Cooperative Way Wright City, MO 63390

P.O. Box 110 Foristell, MO 63348

1-636-745-7757 Fax 1-636-745-2874

www.mittlerbros.com

02-08-2013 Rev 4

SAFETY

The purpose of the safety section of this manual is to inform operators and maintenance personnel of the precautions to be taken while operating or servicing the machine. The following are a few basic guidelines to follow, but as with any type of machinery good judgment and a safe attitude should be applied at all times.

1. Always wear safety clothing, including eye protection and protective footwear, while operating or servicing the machine.

2. Keep all body parts and any foreign objects away from the nose bar and clamping area of the brake while in operation.

4. Never use a pipe or bar on the clamp handles for additional leverage.

5. Keep clear of the counterweight and apron swing area while operating the brake.

6. Keep the work area around the brake clear and clean to avoid slipping or tripping.

5. Do not operate the machine if it has been damaged or is not operating properly.

6. Do not wear jewelry (watches, rings, necklaces, etc.), or loose fitting clothing while operating or servicing the machine.

7. The machine should only be operated or serviced by properly trained, authorized personnel.

8. Replacement parts should have the same specification and operation as the original parts on the machine.

9. All guards and covers must be in place before operating the machine.

10. Before starting the machine, be sure it is set up properly.

11. Do not operate or service any machine while under the influence of drugs or alcohol.

NOTE: THESE SAFETY RULES ARE FOR YOUR BENEFIT TO HELP PREVENT INJURY TO YOURSELF AND/OR YOUR CO-WORKERS. REVIEW ALL SETUP AND OPERATING PROCEDURES, WHETHER COVERED OR NOT, IN THIS MANUAL TO HELP INSURE SAFE OPERATION OF THE MACHINE.

INSTALLATION

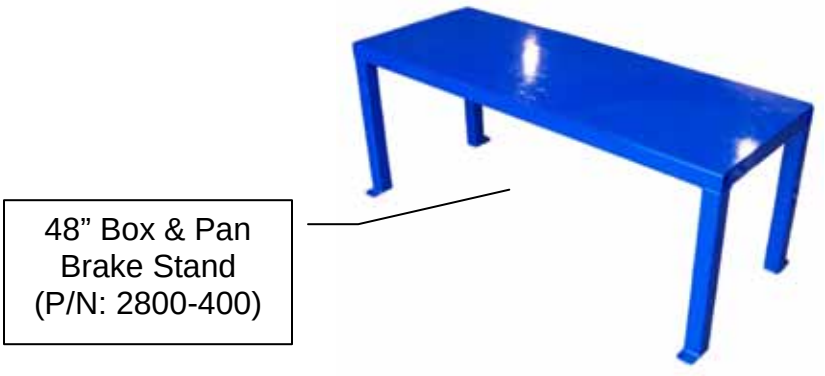
RECEIVING

Use caution in handling and moving the brake. The brake weighs 550 pounds and is top-heavy. Handling should be performed with proper equipment such as a fork lift. **Do not insert forks between the pallet and the bottom of the brake.**

INSTALLATION

Locate the brake in a well-lighted area on a solid level work bench capable of supporting 550 pounds. The bench should generally be secured to the floor by bolts or lag screws. Be certain that there is adequate clearance to swing the apron and that the brake is at a comfortable and convenient working height.

Mittler Bros. Machine & Tool offers a work bench for the 48” Box & Pan Brake (P/N: 2800-400). This bench includes the following features: provides a sturdy base designed specifically for the brake, easy attachment of the brake to the stand, pre-drilled holes for attaching the stand to the floor, sets the working height of the brake to an ergonomic 38”.



48” Box & Pan Brake Stand (P/N: 2800-400)

ASSEMBLY

The brake requires only minor assembly for proper operation. Place the counterweight in the tube on the apron assembly's left end so that the apron is balanced. Tighten the two set screws in the tube to secure the counterweight in place.

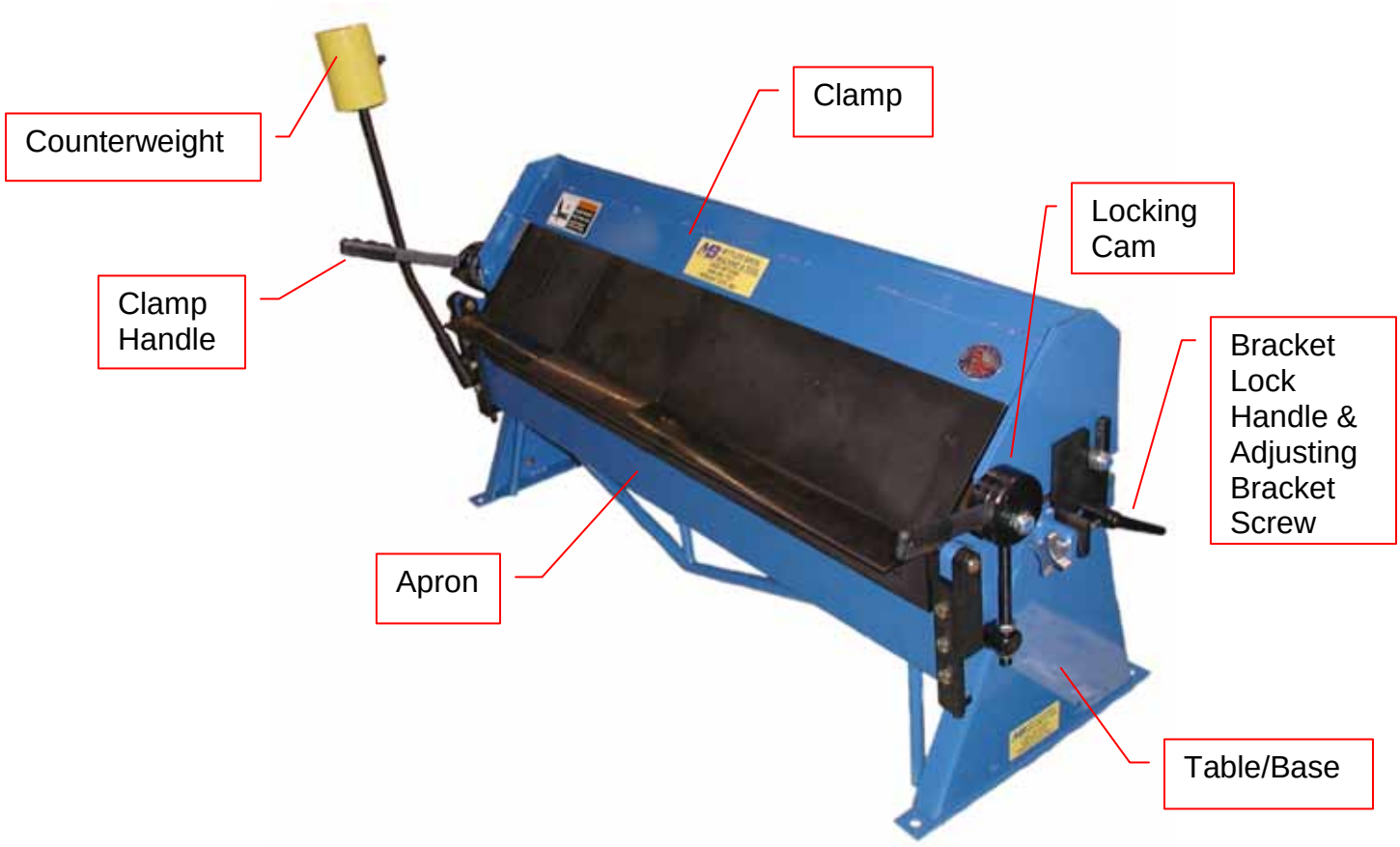
MACHINE SET-UP

PRECAUTIONS:

1) Read and understand the safety instructions on page 3 of this manual before proceeding.
2) Always adjust the clearance and clamping pressure for different thicknesses of material.
3) Always bend short pieces of material in the center of the brake in order to equalize the stress and avoid damage to the brake.

Getting to know your Box & Pan Brake

The basic components of a brake are: Table – the base or major frame; Clamp – the top which holds against the material being formed; and Apron – the front plate which you swing up to form material.

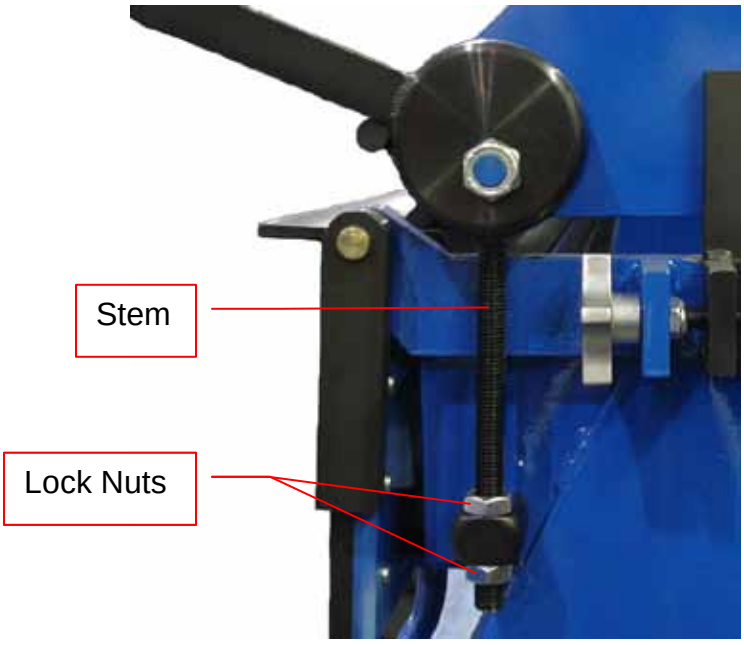


For the following adjustments, use test strips of metal, each approximately 3 inches by 3 inches, of the thickness being formed.

When bending use the longer bend fingers and leaf fingers, as the material allows.

Step 1: Clamping Pressure

Check clamping pressure by clamping test strips in the brake approximately 3 or 4 inches away from each end of the brake. Clamping pressure should be enough to keep the material from slipping during a bend. It is not desirable to use excessive clamping pressure. To change clamping pressure, locate the stem coming from the bottom of the locking cam. There are two nuts on the stem. By loosening the top nut and adjusting the bottom nut, clamping pressure can be increased or decreased.

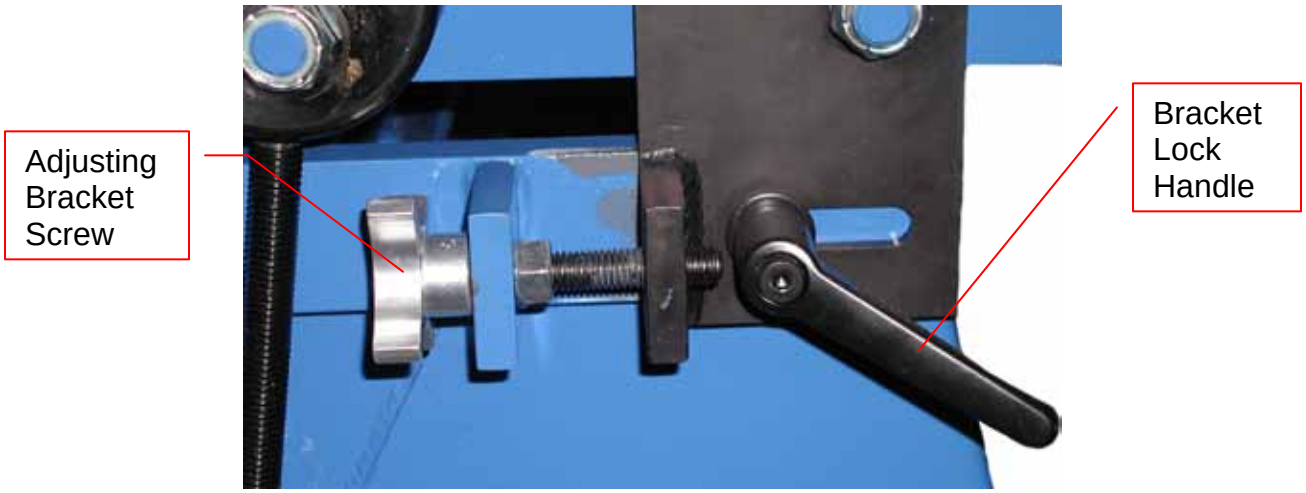


Clamping pressure should be adjusted according to the thickness of the material being worked. A common cause of bending and forming problems is excessive clamping pressure. Clamping pressure should be adequate to hold the material securely in place but not so great as to require undue effort in locking the clamp handles.

Step 2: Allowing for Metal Thickness

The clamp assembly must be adjusted to allow for clearance according to the thickness of the material being worked. To adjust the clearance on the clamp assembly, slightly unclamp the clamp handle, loosen the bracket lock handle and turn the adjusting bracket screw. When the correction is made, retighten the bracket lock handle. Move the clamp back from the apron at least one and one half times the thickness of material being formed when forming up to 18 gauge (.050) material, and at least 2 times the thickness of material being formed when forming 16 gauge (.0625) or more. Re-check clamping pressure.

If the clamp fingers are too far from the edge of the bed fingers, a larger radius may be made in the material. If the clamp fingers are too close to the edge of the bed fingers, the clamp fingers may be damaged. Lock the bracket locking handles for repeat bends.



OPERATION

Your brake is a general purpose tool for bending and forming sheet metal. The brake is operated in the following manner. The clamp of the brake is opened by pushing the clamp handles toward the rear of the brake. Insert the material to be bent into the opening between the clamp and table assembly and clamp the material in place by pulling the clamp handles forward. Raise the apron to bend the material to the desired angle.

Capacity

The capacity of the 48" Brake is 16 gauge mild steel or 20 gauge stainless steel.
The capacity of the 72" Brake is 18 gauge mild steel or 22 gauge stainless steel.

Box & Pan Bending

The fingers can be removed and repositioned on the clamp assembly by moving the clamp handles fully to the rear and loosening the finger clamp screws. Reposition the fingers to assemble the desired width and secure the fingers to the clamp by tightening the finger clamp screws. Be certain that the tops of the fingers are flush and parallel with the milled edge on the clamp and that the finger clamps are parallel with the bottom edge of the clamp. As a general rule, use the wider fingers first and fill in with the narrower fingers. Small gaps between the fingers may be left with no adverse effect to the work piece.

Hemming

The brake may be used to form hems on the edge of the work-piece in lighter materials. A hem is formed by making an acute (reverse) bend in the work-piece and then clamping the bend flange under the clamp to press the flange closed (to 180 degrees). Often the hem will not fully close in the center of a long piece due to the fact that the outer ends of the brake are more rigid than the center. This situation can be improved by inserting a strip of material (of the same thickness as the work-piece) between the work-piece and the clamp block slightly longer than the open portion of the hem. Re-clamp the clamp to close the hem. A tinner’s mallet or hammer is also useful for closing hems. Use caution not to use excessive force on the clamp handles to close the hem.

NOTE: Forming hems is a secondary operation for a hand brake. If you adjust the brake to close a hem in the center of the work-piece the brake most likely will not bend straight.

Over-bending

Check end-to-end alignment by clamping two test strips in the brake, about 3 or 4 inches away from either end of the brake. Bend to about 90 degrees, and see if they appear to be bent to the same degree. Remove them from the brake and stack one inside the other. Compare the sharpness of the radius. If one test strip is over-bent or has a sharper radius, move the end of the clamp which that strip came from back slightly. The clamp assembly should be moved back on the end where the over-bending occurs by slightly unclamping the clamp handle, loosening the bracket lock screw and turning the adjusting bracket screw. When the correction is made, retighten the bracket lock screw.

Test again.

When your brake was assembled at the factory it was adjusted for proper operation. Due to handling and repositioning, the brake may require adjustment and alignment. Read the adjustment and operating instructions completely before making any adjustments. Operate the brake and bend some material first before attempting any major adjustment.

SPECIFICATIONS

MODEL 2800-48-16

Mittler Brothers ULTIMATE 48" 16ga Top & Bottom Box & Pan Brake

The Mittler Brothers Model 2800-48-16 ULTIMATE Box & Pan Brake is designed with three different removable finger segments -- Upper, Bed, & Apron Angle fingers, which provides for unparalleled bend options. This brake allows you to make a bend in the middle of a panel, or on down flanged parts. The bench-mounted brake is designed with all-steel construction and wrench-less upper set-back adjustment providing an efficient and economical solution to sheet metal bending and forming operations not offered before.

The Model 2800-48-16 Brake is designed for making Top & Bottom box & pan or straight bends in mild steel up to 16-gauge thick material. Standard equipment includes wrench-less set-back adjustment, easily removed upper, bed, and apron angle fingers, and a counterweight.

Specifications:

Capacity: Mild Steel - 16 gauge; Stainless Steel - 20 gauge; Aluminum – 12 gauge
Bending length: 48" with 49" overall clearance
Maximum depth of box: 3-1/2”
Maximum lift of beam: 1-1/2"
Front to rear adjustment: 1"
Minimum reverse bend: 1/4"
Maximum Degree of Bend: 125-degrees
2” Downleg Clearance – From Bend Point to 4-3/4” behind bending point
Upper finger widths: 1", 2", 3", 6", 6”, 6”, 6”, 6”, 6”, 6” (standard)
Bed finger widths: 1", 2", 3", 6", 12", 12", 12” (standard)
Apron Angle (Leaf) finger widths: 1”, 2”, 3”, 6”, 12”, & 24” (standard)

Shipping weight: (truck line)

550 pounds (Brake Only)	Size: 24” W x 72” L x 40” H skid
680 pounds (Brake & Floor Stand on one skid)	Size: 24” W x 72” L x 40” H skid

NOTE: Set-back clearance between the nose of the upper fingers and the bending apron should be 1-1/2 times the thickness of 0.050" or less material or 2 times the thickness of 0.060" or more material.

OPTIONAL FEATURES:

#2800-400	Floor Stand
#2800-A300-48	Bolt-On ½” Radius Bar – 48” long
#2800-A350-K	Back Gauge – 1 pair
#2800-A350	Back Gauge – each
#2800-A360	Apron Stop – each

MODEL 2800-72-18

Mittler Brothers ULTIMATE 72" 18ga Top & Bottom Box & Pan Brake

The Mittler Brothers Model 2800-72-18 ULTIMATE Box & Pan Brake is designed with three different removable finger segments -- Upper, Bed, & Apron Angle fingers, which provides for unparalleled bend options. This brake allows you to make a bend in the middle of a panel, or on down flanged parts. The bench-mounted brake is designed with all-steel construction and wrench-less upper set-back adjustment providing an efficient and economical solution to sheet metal bending and forming operations not offered before.

The Model 2800-72-18 Brake is designed for making Top & Bottom box & pan or straight bends in mild steel up to 18-gauge thick material 72” long. Standard equipment includes wrench-less set-back adjustment, easily removed upper, bed, and apron angle fingers, and a 2 counterweights.

Specifications:
Capacity: Mild Steel - 18 gauge; Stainless Steel - 22 gauge; Aluminum – 14 gauge
Bending length: 72" with 73" overall clearance
Maximum depth of box: 3-1/2”
Maximum lift of beam: 1-1/2"
Front to rear adjustment: 1"
Minimum reverse bend: 1/4"
Maximum Degree of Bend: 125-degrees
2” Downleg Clearance – From Bend Point to 4-3/4” behind bending point
Upper finger widths: 1", 2", 3", 6", 6”, 6”, 6”, 6”, 6”, 6”, 6”, 6”, 6” (standard)
Bed finger widths: 1", 2", 3", 6", 12", 12", 12”, 12”, 12” (standard)
Apron Angle (Leaf) finger widths: 1”, 2”, 3”, 6”, 12”, 24”, 24” (standard)
Floor Stand (standard)

Shipping weight: (truck line)
1275 pounds 36” Wide x 96” Long x 45” High

NOTE: Set-back clearance between the nose of the upper fingers and the bending apron should be 1-1/2 times the thickness of 0.050" or less material or 2 times the thickness of 0.060" or more material.

OPTIONAL FEATURES:

#2800-410	Floor Stand
#2800-A300-72	Bolt-On ½” Radius Bar – 72” long
#2800-A350-K	Back Gauge – 1 pair
#2800-A350	Back Gauge – each
#2800-A360	Apron Stop – each

Box & Pan Brake Fingers

(Fit Models #2800-48-16 & 2800-72-18)

Apron (leaf) Fingers

Please call our sales staff to discuss your finger needs.

1/4" Thick - 12" Kit.....2800-A151-K12 contains 1ea. of 1", 2", 3", 6" Wide
1/2" Thick - 12" Kit.....2800-A150-K12 contains 1ea. of 1", 2", 3", 6" Wide

1/4" Thick - 24" Kit.....2800-A151-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
1/2" Thick - 24" Kit.....2800-A150-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide

1/4" Thick - 36" Kit.....2800-A151-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
1/2" Thick - 36" Kit.....2800-A150-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide

1/4" Thick - 48" Kit.....2800-A151-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
1/2" Thick - 48" Kit.....2800-A150-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide

1/4" Thick - 60" Kit.....2800-A151-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
1/2" Thick - 60" Kit.....2800-A150-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide

1/4" Thick - 72" Kit.....2800-A151-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide
1/2" Thick - 72" Kit.....2800-A150-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide

Upper Radius Fingers

Please call our sales staff to discuss your finger needs.

(radius is measured inside of bend)

1/16" Radius 12" Kit.....2800-A255-K12 contains 1ea. of 1", 2", 3", 6" Wide
1/16" Radius 24" Kit.....2800-A255-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
1/16" Radius 36" Kit.....2800-A255-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
1/16" Radius 48" Kit.....2800-A255-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
1/16" Radius 60" Kit.....2800-A255-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
1/16" Radius 72" Kit.....2800-A255-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide

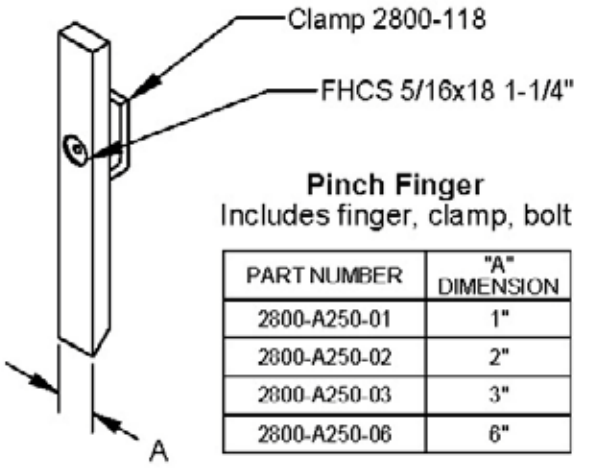
1/8" Radius 12" Kit.....2800-A260-K12 contains 1ea. of 1", 2", 3", 6" Wide
1/8" Radius 24" Kit.....2800-A260-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
1/8" Radius 36" Kit.....2800-A260-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
1/8" Radius 48" Kit.....2800-A260-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
1/8" Radius 60" Kit.....2800-A260-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
1/8" Radius 72" Kit.....2800-A260-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide

Upper Radius Fingers -- continued

3/16" Radius 12" Kit.....2800-A270-K12 contains 1ea. of 1", 2", 3", 6" Wide
3/16" Radius 24" Kit.....2800-A270-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
3/16" Radius 36" Kit.....2800-A270-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
3/16" Radius 48" Kit.....2800-A270-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
3/16" Radius 60" Kit.....2800-A270-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
3/16" Radius 72" Kit.....2800-A270-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide

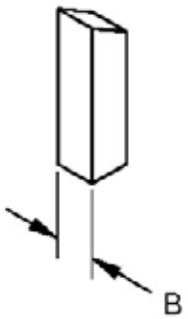
1/4" Radius 12" Kit.....2800-A280-K12 contains 1ea. of 1", 2", 3", 6" Wide
1/4" Radius 24" Kit.....2800-A280-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
1/4" Radius 36" Kit.....2800-A280-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
1/4" Radius 48" Kit.....2800-A280-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
1/4" Radius 60" Kit.....2800-A280-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
1/4" Radius 72" Kit.....2800-A280-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide

5/16" Radius 12" Kit.....2800-A290-K12 contains 1ea. of 1", 2", 3", 6" Wide
5/16" Radius 24" Kit.....2800-A290-K24 contains 1ea. of 1", 2", 3", 3ea. of 6" Wide
5/16" Radius 36" Kit.....2800-A290-K36 contains 1ea. of 1", 2", 3", 5ea. of 6" Wide
5/16" Radius 48" Kit.....2800-A290-K48 contains 1ea. of 1", 2", 3", 7ea. of 6" Wide
5/16" Radius 60" Kit.....2800-A290-K60 contains 1ea. of 1", 2", 3", 9ea. of 6" Wide
5/16" Radius 72" Kit.....2800-A290-K72 contains 1ea. of 1", 2", 3", 11ea. of 6" Wide



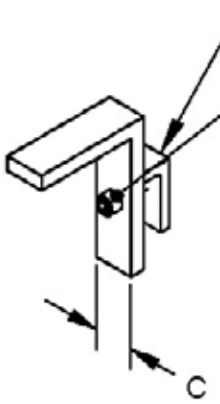
Pinch Finger
Includes finger, clamp, bolt

PART NUMBER	"A" DIMENSION
2800-A250-01	1"
2800-A250-02	2"
2800-A250-03	3"
2800-A250-06	6"



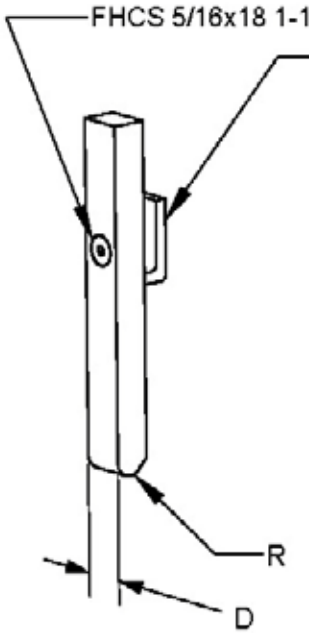
Bed Finger

PART NUMBER	"B" DIMENSION
2800-050-01	1"
2800-050-02	2"
2800-050-03	3"
2800-050-06	6"
2800-050-12	12"



Leaf Angle Fingers
Includes angle finger, clamp, bolt

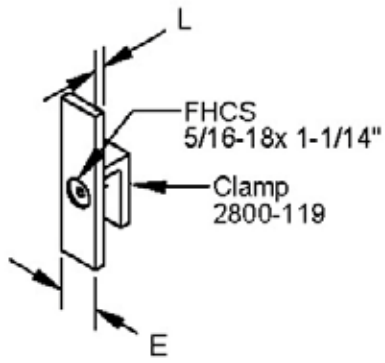
PART NUMBER	"C" DIMENSION
2800-A160-01	1"
2800-A160-02	2"
2800-A160-03	3"
2800-A160-06	6"
2800-A160-12	12"
2800-A160-24	24"



Radius Pinch Finger
Includes radius finger, clamp, bolt

PART NUMBER	"R" RADIUS	"D" DIMENSION
2800-A255-01	1/16"	1"
2800-A255-02	1/16"	2"
2800-A255-03	1/16"	3"
2800-A255-06	1/16"	6"
2800-A260-01	1/8"	1"
2800-A260-02	1/8"	2"
2800-A260-03	1/8"	3"
2800-A260-06	1/8"	6"
2800-A270-01	3/16"	1"
2800-A270-02	3/16"	2"
2800-A270-03	3/16"	3"
2800-A270-06	3/16"	6"
2800-A280-01	1/4"	1"
2800-A280-02	1/4"	2"
2800-A280-03	1/4"	3"
2800-A280-06	1/4"	6"
2800-A290-01	5/16"	1"
2800-A290-02	5/16"	2"
2800-A290-03	5/16"	3"
2800-A290-06	5/16"	6"

PART NUMBER	"L" LEAF SIZE	"E" DIMENSION
2800-A151-01	1/4"	1"
2800-A151-02	1/4"	2"
2800-A151-03	1/4"	3"
2800-A151-06	1/4"	6"
2800-A150-01	1/2"	1"
2800-A150-02	1/2"	2"
2800-A150-03	1/2"	3"
2800-A150-06	1/2"	6"
2800-A150-12	1/2"	12"
2800-A150-24	1/2"	24"
2800-A170-01	1"	1"
2800-A170-02	1"	2"
2800-A170-03	1"	3"
2800-A170-06	1"	6"
2800-A170-12	1"	12"
2800-A170-24	1"	24"



Leaf Finger
Includes leaf finger, clamp, bolt

4/1/2010

MITTLER BROS. MACHINE & TOOL
10 Cooperative Way, Wright City, MO. 63390
(636)745-7757 Fax (636)745-2674

TITLE: Finger Assemblies

SIZE	DWG. NO.	REV
A	Finger Assemblies	

SCALE: 1:4 | WEIGHT: 1.189 | SHEET 1 OF 1

5 4 3 2 1

OPTIONS

Floor Stands

2800-400 Floor Stand for 2800-48-16

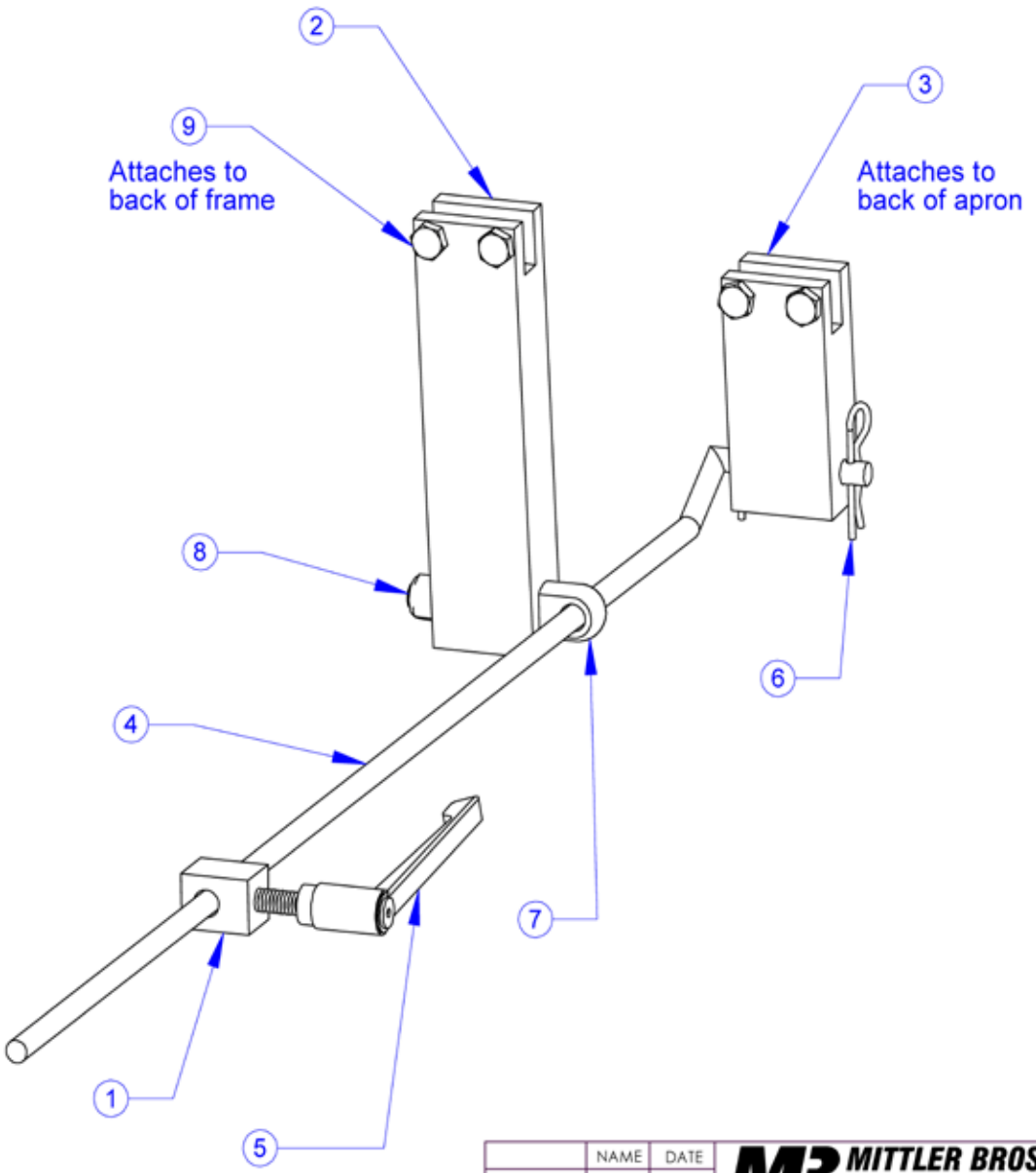
2800-410 Floor Stand for 2800-72-18

Back Gauge

2800-350 Back Gauge

Apron Stop

2800-A360 Apron Stop



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	2800-361	Adjustable Handle Block	1
2	2800-363	Stationary Block	1
3	2800-362	Apron Block	1
4	2800-364	Rod	1
5	2800-535	Adjustable Handle	1
6	2800-533	Hairpin Cotter Pin	2
7	2800-534	Square Shoulder Solid Rod End	1
8	2800-521	3/8-16 Nylok Hex Nut	1
9	1/4-20 x 5/8"	Hex Head	4

	NAME	DATE
DRAWN	BAB	9/14/10
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS		

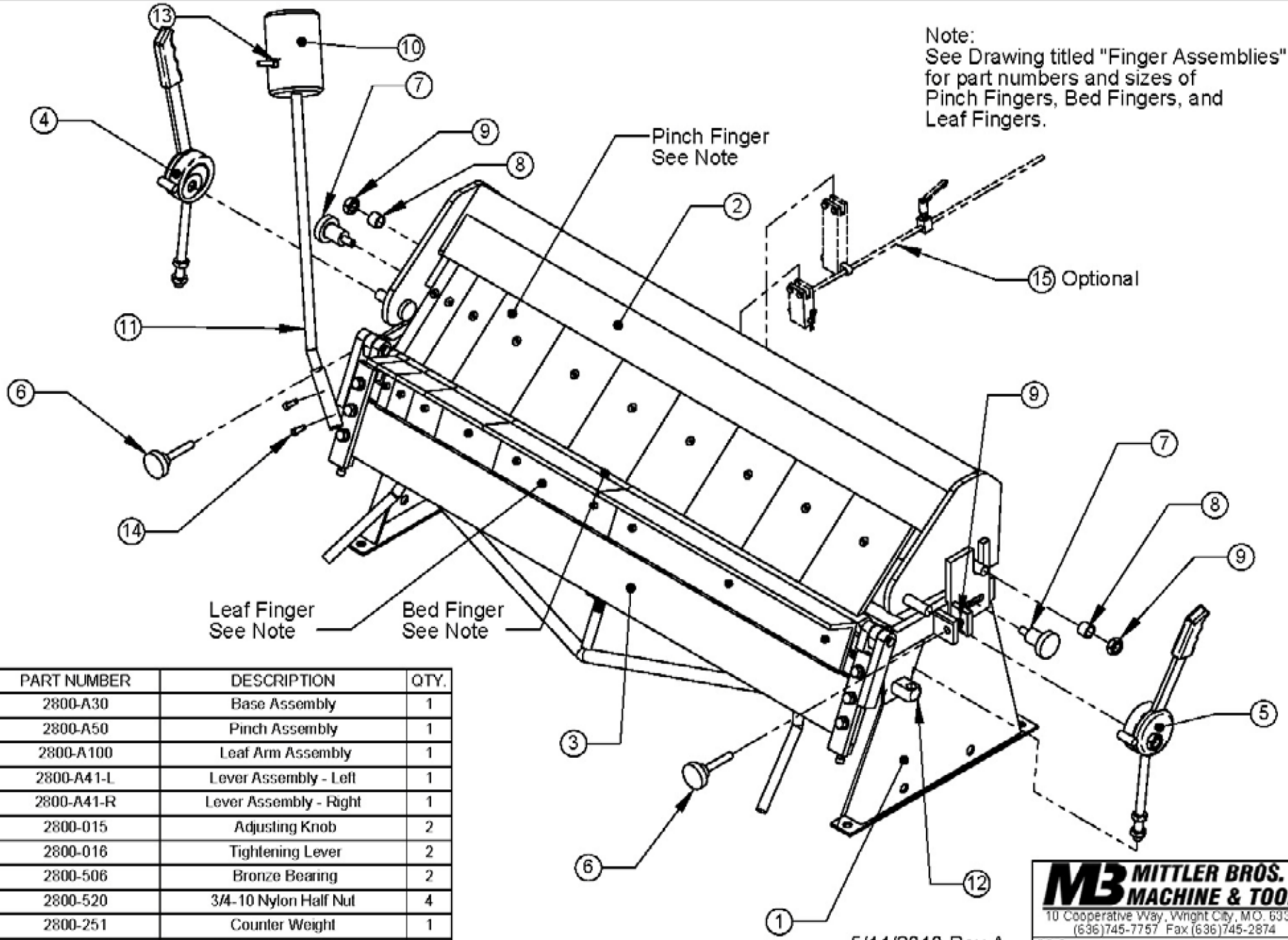
MITTLER BROS. MACHINE & TOOL
10 Cooperative Way, Wright City, MO. 63390
(636)745-7757 Fax (636)745-2874

TITLE: Adjustable Apron Stop

SIZE	DWG. NO.	REV
A	2800-A360	

SCALE: 1:2 | WEIGHT: 4.470 | SHEET 1 OF 1

5 4 3 2 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2800-A30	Base Assembly	1
2	2800-A50	Pinch Assembly	1
3	2800-A100	Leaf Arm Assembly	1
4	2800-A41-L	Lever Assembly - Left	1
5	2800-A41-R	Lever Assembly - Right	1
6	2800-015	Adjusting Knob	2
7	2800-016	Tightening Lever	2
8	2800-506	Bronze Bearing	2
9	2800-520	3/4-10 Nylon Half Nut	4
10	2800-251	Counter Weight	1
11	2800-252	Counter Weight Rod	1
12	2800-115	Threaded Rod Block	2
13	3/8-16 x 1-1/4"	Set Screw	1
14	5/16-18 x 3/4"	SHCS	2
15	2800-A360	Optional - Adjustable Apron Stop	1

5/11/2010 Rev A

MITTLER BROS. MACHINE & TOOL
10 Cooperative Way, Wright City, MO. 63390
(636)745-7757 Fax (636)745-2874

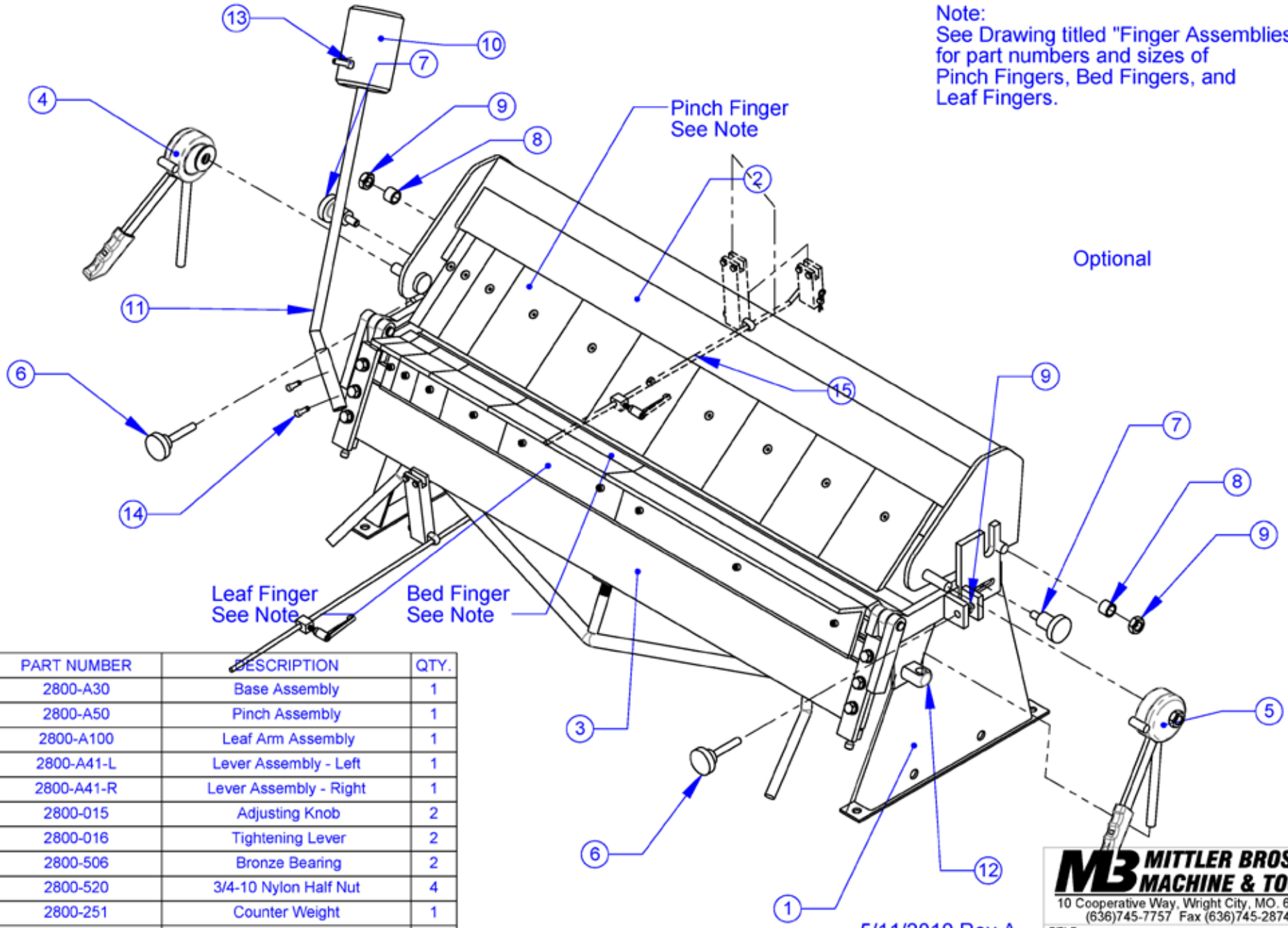
TITLE: Full Assembly

SIZE	DWG. NO.	REV
A	2800-A01 E.V.	

SCALE: 1:10 | WEIGHT: 476.68 | SHEET 1 OF 1

5 4 3 2 1

Note:
See Drawing titled "Finger Assemblies" for part numbers and sizes of Pinch Fingers, Bed Fingers, and Leaf Fingers.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2800-A30	Base Assembly	1
2	2800-A50	Pinch Assembly	1
3	2800-A100	Leaf Arm Assembly	1
4	2800-A41-L	Lever Assembly - Left	1
5	2800-A41-R	Lever Assembly - Right	1
6	2800-015	Adjusting Knob	2
7	2800-016	Tightening Lever	2
8	2800-506	Bronze Bearing	2
9	2800-520	3/4-10 Nylon Half Nut	4
10	2800-251	Counter Weight	1
11	2800-252	Counter Weight Rod	1
12	2800-115	Threaded Rod Block	2
13	3/8-16 x 1-1/4"	Set Screw	1
14	5/16-18 x 3/4"	SHCS	2
15	2800-A360	Optional - Adjustable Apron Stop	1

5/11/2010 Rev A

MITTLER BROS. MACHINE & TOOL
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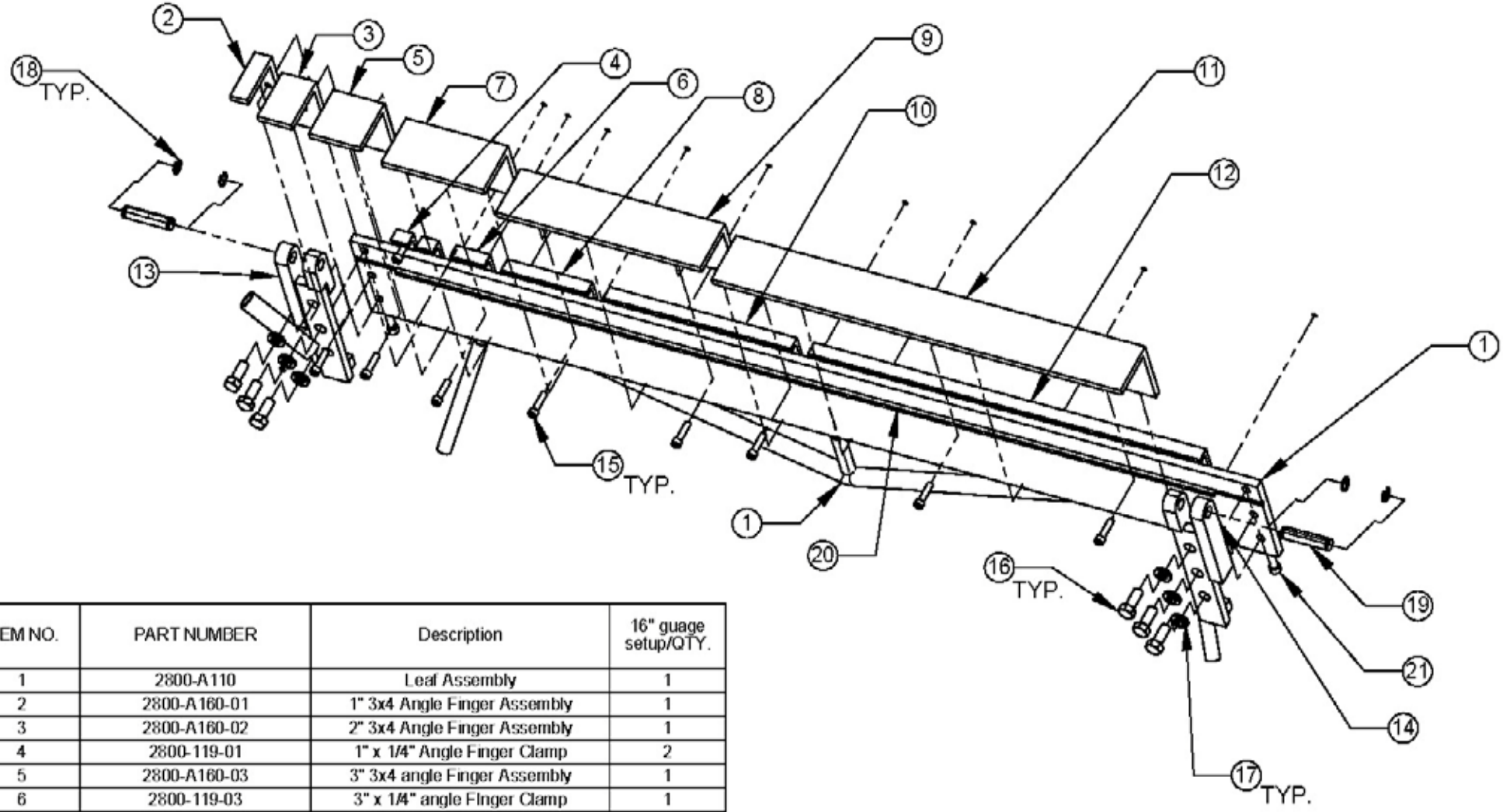
TITLE: Full Assembly

SIZE	DWG. NO.	REV
A	2800-A01 E.V.	

SCALE: 1:10 WEIGHT: 530.339 SHEET 1 OF 1

5 4 3 2 1



ITEM NO.	PART NUMBER	Description	16" guage setup/QTY.
1	2800-A110	Leaf Assembly	1
2	2800-A160-01	1" 3x4 Angle Finger Assembly	1
3	2800-A160-02	2" 3x4 Angle Finger Assembly	1
4	2800-119-01	1" x 1/4" Angle Finger Clamp	2
5	2800-A160-03	3" 3x4 angle Finger Assembly	1
6	2800-119-03	3" x 1/4" angle Finger Clamp	1
7	2800-A160-06	6" 3x4 angle Finger Assembly	1
8	2800-119-06	6" x 1/4" angle Finger Clamp	1
9	2800-A160-12	12" 3x4 angle Finger Assembly	1
10	2800-119-12	12" x 1/4" angle Finger Clamp	1
11	2800-A160-24	24" 3x4 angle Finger Assembly	1
12	2800-119-24	24" x 1/4" angle Finger Clamp	1
13	2800-A130-L	Pivot Assembly	1
14	2800-A130-R	Pivot Assembly	1
15	5/16-18 x 1-1/4"	SHCS	9
16	1/2-13 x 1-1/4"	HHCS	6
17	LW 1/2"	Spring Lock Washer	6
18	2800-523	5/8" External Snap Ring	4
19	2800-104	3/4" dia. Brass Pivot Pin	2
20	2800-121	Leaf Finger Key	1
21	3/8-16 x 1-1/2"	SHCS Jack Bolt	2

4/1/2010

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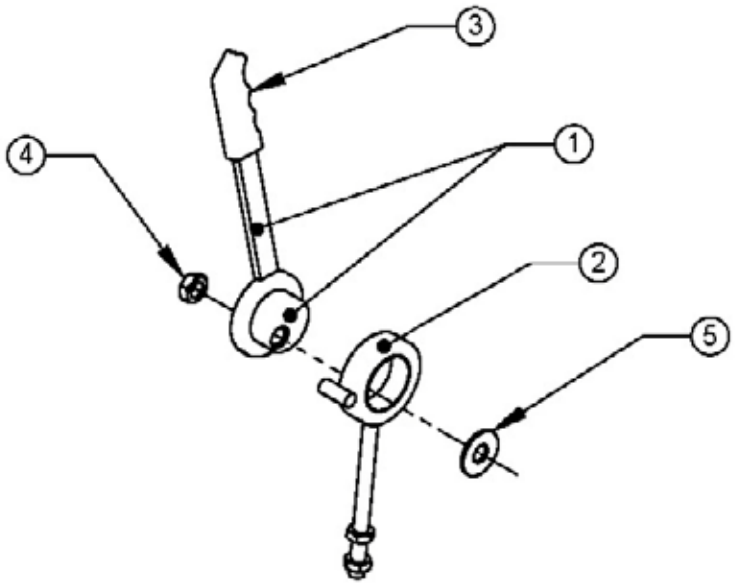
TITLE: Break Arm Assembly

SIZE A | DWG. NO. 2800-A100 E.V. | REV

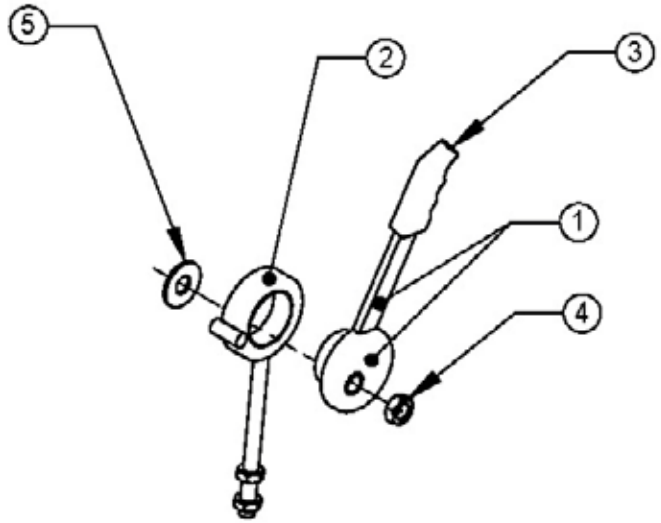
SCALE: 1:16 | WEIGHT: 126.68 | SHEET 1 OF 1

5 4 3 2 1



Left Lever Assembly
2800-A41-L

LEFT LEVER ASSEMBLY			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2800-A42-L	Upper Cam Lever Assembly - Left	1
2	2800-A43-L	Cam Ring Threaded Assebmly - Left	1
3	2800-504	Grip	1
4	2800-520	3/4-10 Nylon Half Nut	1
5	3/4"	Narrow Flat Washer	1



Right Lever Assembly
2800-A41-R

RIGHT LEVER ASSEMBLY			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2800-A42-R	Upper Cam Lever Assembly - Right	1
2	2800-A43-R	Cam Ring Threaded Assebmly - Right	1
3	2800-504	Grip	1
4	2800-520	3/4-10 Nylon Half Nut	1
5	3/4"	Narrow Flat Washer	1

4/1/2010

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TITLE: Lever Assemblies

SIZE A | DWG. NO. 2800-A41 E.V | REV

SCALE: 1:8 | WEIGHT: 47.22 LB | SHEET 1 OF 1

5 4 3 2 1

NOTES:

CAUTION: Read and Understand

These Operating, Servicing, and
Safety Instructions, Before Using
This Machine.

1-800-467-2464
10 Cooperative Way Wright City, MO 63390
P.O. Box 110 Foristell, MO 63348
1-636-745-7757 Fax 1-636-745-2874
www.mittlerbros.com