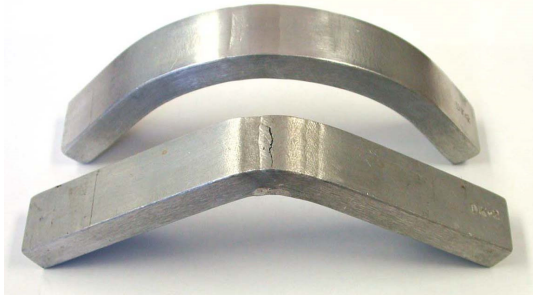
WRAP-AROUND GUIDED BEND TESTER

MODEL BT3

" The best choice for difficult-to-bend materials"

The Model BT3 uses a unique method for wrapping the bend specimen around the mandrel. The specimen are forced to conform to the mandrel diameter. Specimens from dissimilar metal weldments or those with a significant difference between weld and base metal strengths, when tested in a standard guided bend tester, will bend in the weakest material and effective radius in the mandrel and the effective radius in the bend becomes smaller than required. This can result in fracture in the weaker material.

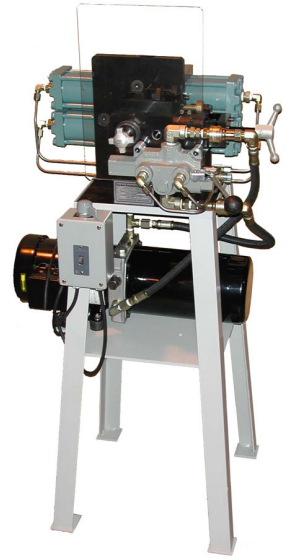


The specimen in front was tested in a standard guided bend tester and failed in weld metal. The specimen to the rear was tested in the wrap-around guided bend tester and was acceptable. In both test, the mandrel was 5 inch diameter (per MIS-22151, Aircraft and Missile Welding Operator's Qualification). Both specimens were removed from the same aluminum sample.

The Model BT3 in the best all–around bend tester for laboratory use. It will do everything the BT1 series roller guided bend testers will do and more. There is no roller spacing to measure or calibrate. Only the mandrel diameter determines the outcome of the test. This diameter is fixed and can be checked at any time.

Laboratories need to be able to meet a variety of codes and standards. Whether in an independent testing laboratory or an in-house laboratory, the manager needs the Model BT3 to meet the entire spectrum of tests that are possible. This unit exceeds all of the criteria specified by ASME, AWS, API, and numerous military and aerospace codes and standards.

The Model BT3 offers the widest range of bend radii; for 1/32 to 2-1/2 inches. The mandrel is located for easy access during mandrel changeovers and for a full, unobstructed view of the specimen during the conduct of a test. The Model BT3 can bend up to 3/8 or 1/2 inch thick specimens required by the ASME, AWS, API, military, and aerospace codes and standards.



The Model BT3-P

In most cases, "quick-clamping" is accomplished when the specimen is tightened between knurled mandrel and the hardened rolled. The shoe is brought into contact with rear vertical surface of the specimen and then remains unchanged for a given thickness. The specimen is then bent trough a full 180 degrees. The rate of bending is adjustable by means of a flow control valve.

A clamp attachment is also provided. This is used on very thin

SPECIFICATIONS

Code Compliance:	ASME, AWS, API, MIL
Specimen Thickness:	0.016 to 1/2 inch
Mandrel Range:	1/16 to 5 inch
Bending Force:	20,000 in.-lb. maximum
Service Required:	115 VAC, 60 Hz
Weight:	335 lb. (Pedestal Version)

Specification subject to change without notice.

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specimens for which quick clamping is not sufficient. On very difficult materials either thick or thin, a notch in one end if the specimen can be locked into the clamp to assure perfect alignment and to prevent any slippage.

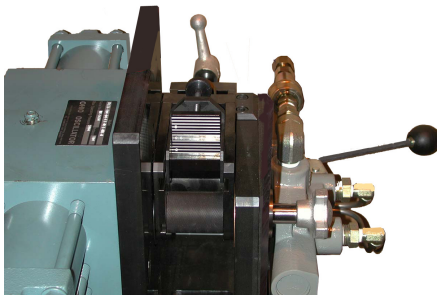
A 1.500 inch diameter mandrel is provided with the unit. This is the size most commonly used for 3/8 inch thick plain carbon and stainless steels.

How to Determine the Bend Radius (and Mandrel) Required for Your Application

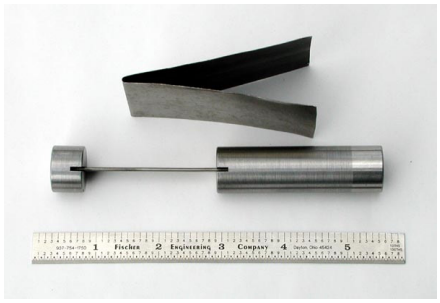
There are three factors that determine the bend radius to be used. These are 1) the code or standard, 2) the material being welded, and 3) its thickness. Each code and standard lists the required bend radius and the associated roller spacing to be used for a given material and thickness. The table above gives paragraph references from several popular codes and standards.

Interchangeable mandrels and adjustable rollers allow the Model BT3 to produce bend radii from 1/32 to 2-1/2 inches.

None of the commercial or military codes or standards require you to bend any specimen thicker than 3/8 inch (1/2 inch for API 1104). If you are testing thick material to ASME Section IX, 1-1/2 inch thick steel for example, you are required to prepare side bend specimens that are only 3/8 inch thick. The resulting 3/8 x 1-1/2 side bend specimens can easily be bent by the Model BT3.



Close-up view of the knurled mandrel, the support (shaft with hand knob), and graduated shoe. The roller is behind the mandrel, so it is not visible.



This is a 1/16 inch diameter mandrel and MS3 support used to bend 0.016 inch thick material for military applications.

WHERE TO LOOK IT UP

Code or Standard	Bend Radius	Description of Test
ASME Section IX:2021	Fig. QW-466.3	Parag. QW-160
AWS D1.1:2020	Fig. 6.12	Parag. 6.10.3.1
AWS B2.1:2021	Fig. A.5C	Parag. A5
AWS B4.0:2016	Fig. 6.3	Parag. 6.8.3

BT3 Mandrels, Supports, and Rollers (Optional)

All mandrels are hardened tool steel. The numerical port of the mandrel part number is the mean outside diameter, in inches, of the mandrel. The support and roller required for each mandrel size is shown below.

The mandrel listed are the most common ones. For sizes not listed, call for price and delivery.

Mandrel	Support	Roller
BT3-M0.063	BT3-MS3	BT3-R1
BT3-M0.125	BT3-MS1	BT3-R1
BT3-M0.200	BT3-MS1	BT3-R1
BT3-M0.250	BT3-MS1	BT3-R1
BT3-M0.313	BT3-MS1	BT3-R1
BT3-M0.375	BT3-MS1	BT3-R1
BT3-M0.400	BT3-MS1	BT3-R1
BT3-M0.500	BT3-MS1	BT3-R1
BT3-M0.625	BT3-MS1	BT3-R1
BT3-M0.750	BT3-MS2	BT3-R0
BT3-M0.872	BT3-MS2	BT3-R0
BT3-M1.000	BT3-MS2	BT3-R0
BT3-M1.120	BT3-MS2	BT3-R0
BT3-M1.250	BT3-MS2	BT3-R0
BT3-M2.000	BT3-MS2	BT3-R0
BT3-M2.063	BT3-MS2	BT3-R0
BT3-M2.500	BT3-MS2	BT3-R0
BT3-M3.000	BT3-MS2	BT3-R0
BT3-M3.500	BT3-MS2	BT3-R2
BT3-M3.750	BT3-MS2	BT3-R2
BT3-M4.000	BT3-MS2	BT3-R2
BT3-M4.500	BT3-MS2	BT3-R2
BT3-M5.000	BT3-MS2	BT3-R2

Note: Mandrels larger than 4.000" diameter require a BT3-4B shoe.

HOW TO ORDER

Part No.	Description
BT3-P	Wrap-Around Guided Bend Tester—Pedestal Version (shown on the front of this brochure). Includes BT3-M1.500 mandrel and BT3-MS0 mandrel support, and BT3-R0 roller. Unit is wired for 115 VAC, 1 phase, 60 Hz input. 53"H x 25"W x 22"D, 335 lbs.
BT3-B	Wrap-Around Guided Bend Tester—Bench Version. Same as BT3-P except there is no pedestal. 18" H x 24"W x 18"D (Bender) 9"H x 25"W x 7"D (Pump), 290 lbs.
BT3-MX.XXX	Mandrel (X.XXX indicates the mandrel diameter in inches).

Current pricing is available at upon request by email, sales@fischerengr.com

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