

# TC Wrench

# TC Indexable Grip

# Simple Torqon

**STONE**®



St. Louis  
**SL**  
1887  
Screw & Bolt



# St. Louis Screw & Bolt

## TABLE OF CONTENTS

### TONE Shear Wrench

Operating Methods & Specifications . . . . .	1
Tone Mid-Size Shear Wrench – S-60EZA . . . . .	2
Tone Heavy Duty Shear Wrench – S-90EZ & S-110EZ . . . . .	3
Tone Corner Shear Wrench – S-80EZ . . . . .	4
Tips & Problem Solving Solutions . . . . .	5

### TONE Indexable Grip Type Shear Wrench

Specifications – M-221HRZ . . . . .	6
-------------------------------------	---

### TONE Simple Torqon Electric Wrench

Specifications – SR31E, SR51E, SR71E . . . . .	7
Specifications – SR121E, SR211E, SR171E . . . . .	8
Bar Socket . . . . .	9



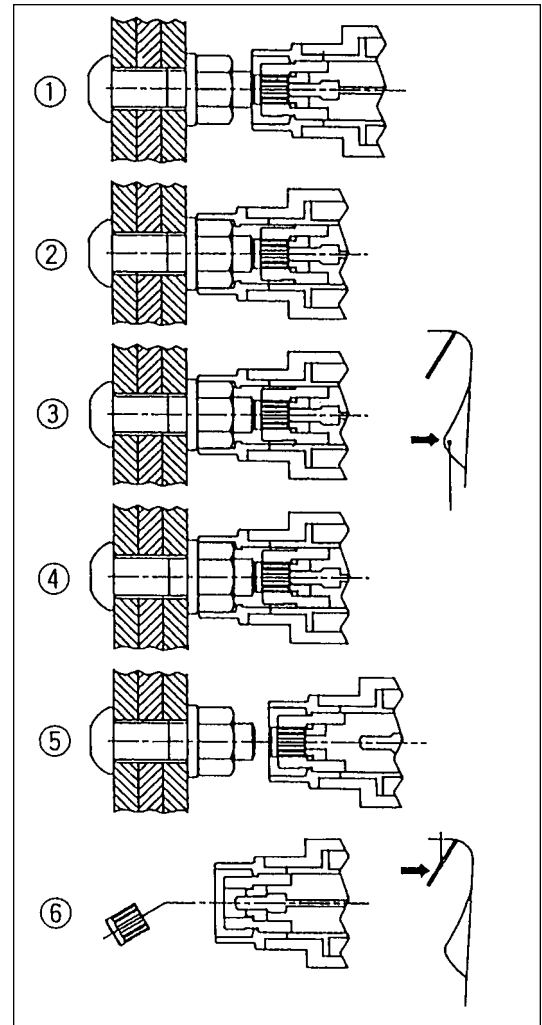
# TONE Shear Wrench

## OPERATING METHODS

- Insert bolt into the work, then put washer, turn nut through to make primary tightening.

(Fig.1)

- 1 Place bolt thru hole in the joining members.
- 2 Attach washer & run up nut finger tight to the working members.
- 3 Fit the inner socket firmly over the bolt tip (spline).
- 4 Engage the outer socket over the nut by pushing the wrench.
- 5 Pull lever switch to on. The outer socket rotates the nut until the torque control groove in the spline shears off, thereby achieving proper bolt tension.
- 6 Turn off wrench when bolt tip (spline) shears off.
- 7 Pull the wrench back to remove outer socket from the nut.
- 8 Pull the eject lever on the wrench to discharge the severed bolt tip (spline) from the inner socket.



## SPECIFICATIONS

Model	Maximum Torque (lbf•ft)	Voltage (v)	No-load Speed (rpm)	Weight (lb.)	Applicable Bolt Dia.
S-60EZA	435	Single Phase 115	22(20)	13	7/8"
S-90EZ	595		15(16)	19	1"
S-110EZ	747		16(16)	28	1 1/8"
S-80EZ	595		12(12)	18	1"

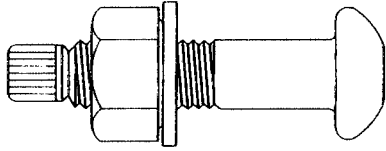
# TONE Shear Wrench

## TONE MID-SIZE SHEAR WRENCH

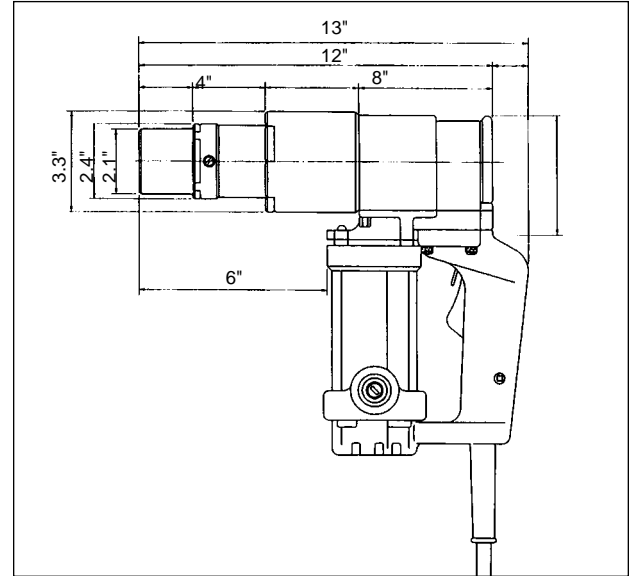
### S-60EZA

#### SIZE RANGE

5/8" Ø & 3/4" Ø A325 ASTM F1582/A325 & A490  
 7/8" Ø ASTM F1852/A325



TONE S-60EZA Dimensional Drawing  
 (For specifications, refer to separate chart)



Subject to change through improvement without previous notice.

#### Accessories

1. Steel case
2. Interchangeable (-) screw driver for socket.
3. Inner socket for 3/4"
4. Outer socket for 3/4"



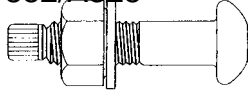
# TONE Shear Wrench

## TONE HEAVY DUTY SHEAR WRENCH

### S-90EZ

#### SIZE RANGE

3/4"Ø & 7/8"Ø ASTM F1852/A325 & A490  
1"Ø ASTM F1852/A325

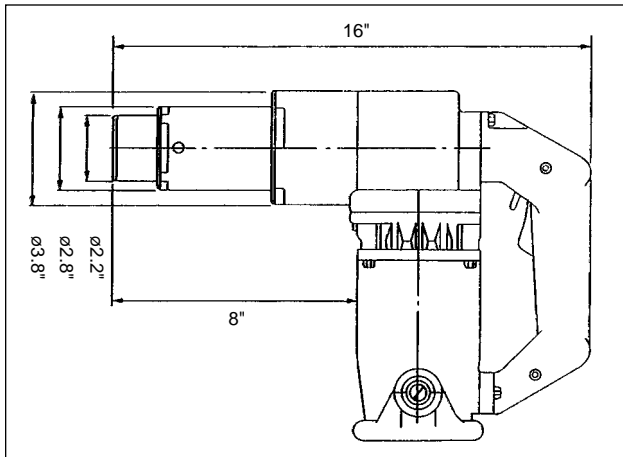


#### Accessories

1. Steel case
2. Interchangeable (-) screw driver for socket.
3. Inner socket for 1"
4. Outer socket for 1"

#### TONE S-90EZ Dimensional Drawing

(For specifications, refer to separate chart)

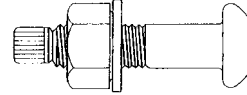


Subject to change through improvement without previous notice.

### S-110EZ

#### SIZE RANGE

1"Ø & 1 1/8"Ø ASTM F1852/A325 & A490

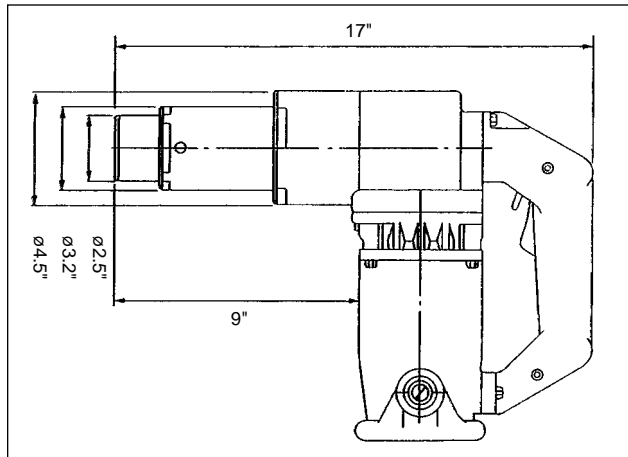


#### Accessories

1. Steel case
2. Interchangeable (-) screw driver for socket.
3. Inner socket for 1"
4. Outer socket for 1"

#### TONE S-110EZ Dimensional Drawing

(For specifications, refer to separate chart)



Subject to change through improvement without previous notice.

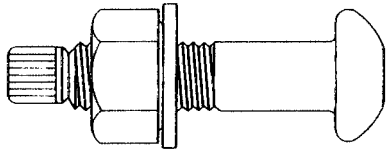


## TONE CORNER SHEAR WRENCH

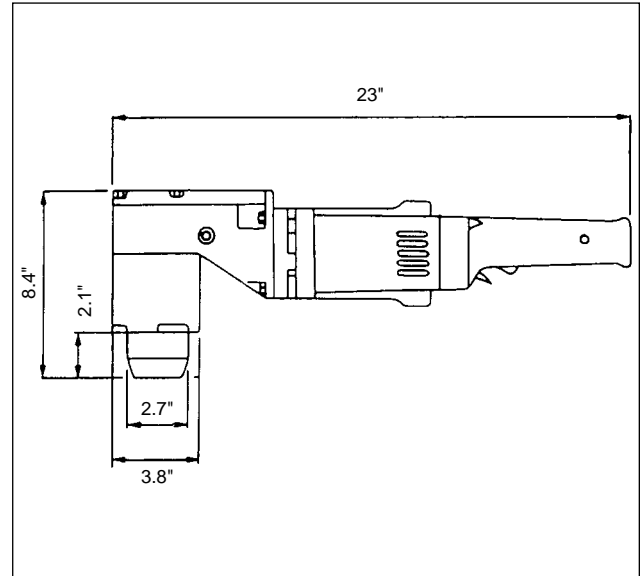
### S-80EZ

#### SIZE RANGE

3/4"Ø & 7/8"Ø ASTM F1852/A325 & A490  
 1"Ø ASTM F1852/A325



TONE S-80EZ Dimensional Drawing  
 (For specifications, refer to separate chart)

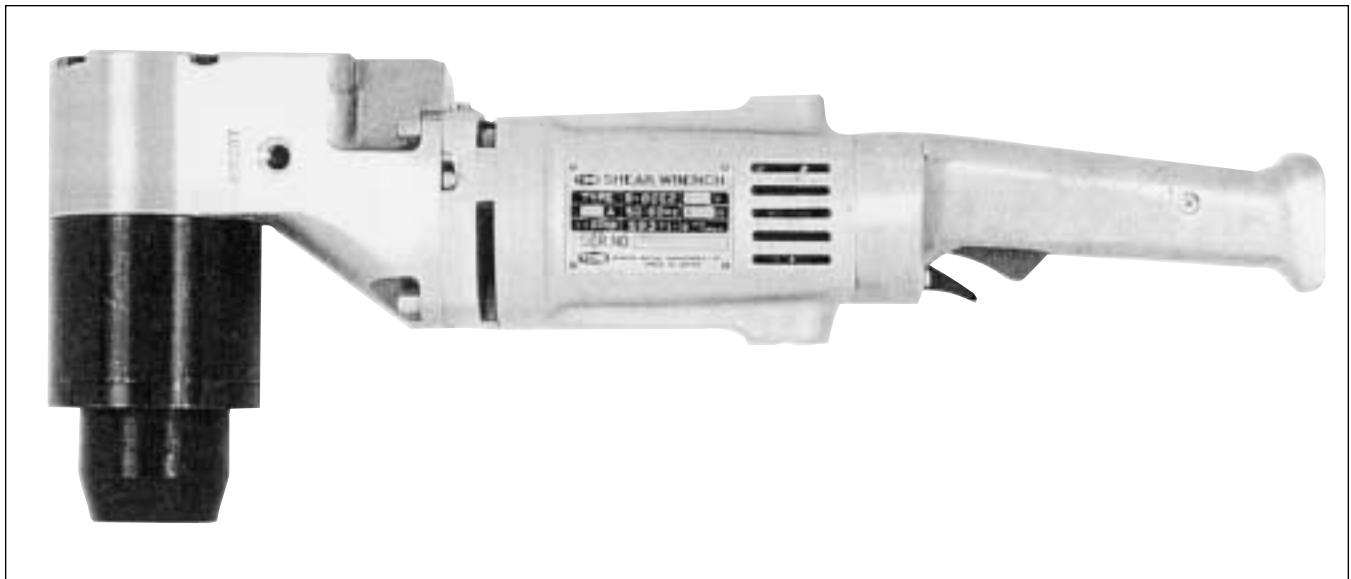


Subject to change through improvement without previous notice.

#### Accessories

1. Metal case
2. Instruction Manual
3. Screwdrive
4. Inner sockets for 3/4", 7/8" & 1"
5. Outer sockets for 3/4", 7/8" & 1"
6. Connector

The S-80EZ was developed for use on bridge U-ribs, truss joints, and other confined locations where conventional shear wrenches cannot be used.



## TIPS & PROBLEM SOLVING SOLUTIONS

### STAYING OUT OF TROUBLE AT THE JOB SITE

#### I. VERIFY BOLT TENSION AT THE JOB SITE

- A) Review the basic calibrator set up as described for a bolt tension calibrator such as a Skidmore-Wilhelm.
- B) Be sure that the unit is in calibration and that adapters for tension control bolts are in the unit.
- C) Review the instructions for use of the calibrator and test the assembly.
- D) It is recommended that the test procedure be performed three times, each time with a new fastener set selected from the same lot intended to be used in the actual bolted connection. The actual number of tests is at the discretion of the inspector.

#### II. INSTALLATION PROBLEMS

##### A) *Bolt breaks at the threaded portion before the pintails shears off?*

**Answer: Most likely the torque co-efficiency value has become lower.**

##### **Possible Causes:**

- 1) Storage conditions allowing exposure to rain, water, moisture, high humidity, temperatures over 140°F or similar environmental conditions.
- 2) Lubrication of the product beyond “as delivered” condition from the factory. (Use of oil, grease, or wax on the product components at the job site)
- 3) Adhesion of oil, paint, mill scale, dirt burrs, or foreign material on the faying surfaces which may allow rotation of the bolt, or rotation of the washer with the nut during the tightening operation.
- 4) Not properly making the connection “snug” tight before final wrench tightening which may allow the bolt to rotate.  
(Same as common hex bolt)
- 5) Possible misalignment of the connection surfaces that may prevent proper contact of the head and faying surface.
- 6) Exposure to the environment over an extended period before final tightening.

##### B) *Pintail breaks at the shear groove before joint connection is made or before specified fastener tension is achieved.*

**Answer: Most likely the torque coefficient value has become higher.**

##### **Possible Causes:**

- 1) Storage and handling conditions allowing sand, dirt or other foreign material to accumulate on the threads of the bolt or nut.
- 2) Rough handling of the fasteners that would cause nicks or gouges on the bolt and nut.
- 3) Exposure to environmental conditions that cause rust to form on the threads of the bolt, nut or washer face.
- 4) Failure to follow AISC procedures for initial tightening in bringing all plies of the joint into firm contact before final tightening. (ie, trying to draw the distorted plies together and shearing the pintail before the plies are in contact rather than sequentially tightening, or using “fit up” bolts to draw them together)  
On a T.C. bolt, the pintail will shear off when too great a torque is applied. Whereas a hex bolt may be torqued beyond the plastic limit of the bolt without the knowledge of the installer when pulling the distorted steel together.

#### III. CAUSE OF WRENCH PROBLEMS (See wrench booklet for instructions)

##### A) *Pintail does not discharge from socket.*

- 1) Check inner socket for abrasions or upsets. Remove and replace socket
- 2) Check inner socket for rust, sand, dirt, oil or other foreign material caused by poor handling or care in the field. Clean inner socket and replace if necessary.
- 3) Check bolt pintail for foreign material as a result of poor handling in the field. Remove foreign material from pintail, or discard the T.C. assemblies that are contaminated. DO NOT remove lubrication from “as received” products nor re-lubricate.
- 4) Check ejector pin and spring for contamination. Disassemble and clean components. Replace spring if broken, and pin if worn.
- 5) Check sockets for wear. Replace if necessary.

##### B) *Socket does not engage properly with pintail or nut.*

- 1) Check serrations of the socket for wear. Replace sockets if necessary.
- 2) Check socket size to be sure correct size for the fastener is being used. An oversized socket will wear faster and create tightening problems.



# Indexable Grip

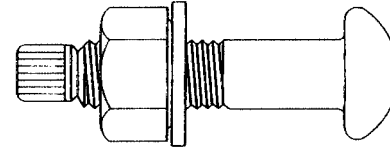
## INDEXABLE GRIP TYPE SHEAR WRENCH

**M-221HRZ** for 3/4" A325, A490 and 7/8" ASTM F1852/A325

Tension Control Bolts



SHORT SOCKET WRENCH SHOWN



- Based on M221EZ wrenches, this wrench has a special feature, that the grip can be indexed at every 90 degrees and locked.
- At 180 degrees, upper use is made easier while operator stays above beam.
- At 90 degrees, tightening bolts on the web is made easier.

### SPECIFICATIONS

MODEL	M-221HRZ
Voltage(S)	115V
Max. Current	13.5A
Frequency	50/60Hz
Max. Power Consumption	1300W
Rated Max. Torque	544 ft. lbs.
Free Rotation	19 rpm
Weight - SS Model	13.3 lbs.
Weight - LS Model	16.0 lbs.

Indexable Angles: 0, 90, 180 & 270°

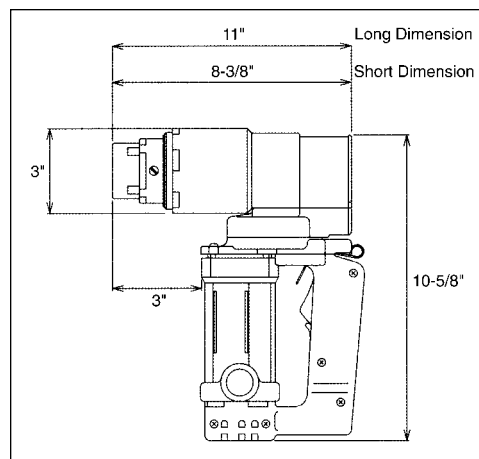
### ACCESSORIES INCLUDED

- 3/4" Inner & Outer Sockets (1 pc.) 4" Long
- Screw Driver (-)
- Connector (115V only)
- Instruction Manual
- Metal Case

### OPTIONAL ACCESSORIES

- 7/8" Inner & Outer Sockets 4" Long
- 3/4" & 7/8" Short Inner & Outer Sockets 1-1/2" Long

### EXTERNAL DIMENSIONS



### SR31E, SR51E, SR71E for Hexagonal Bolts

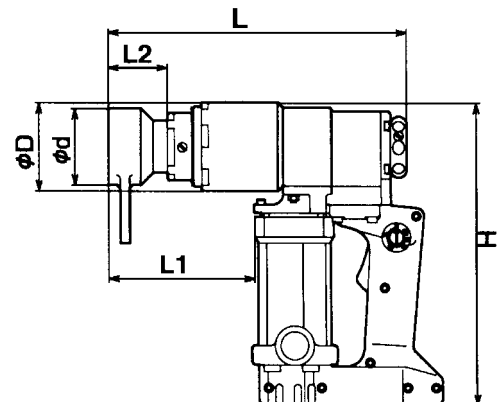


- ① Torque control functions in both directions.
- ② Non-impact, very smooth and high precision wrench of a new design. Simple to set targeted torque and easy and comfortable to operate.
- ③ No separate control unit, as the torque control device is built into the main body. The wrench design is compact, light in weight and well-balanced.
- ④ Socket with reaction bar turns independently to a certain angle to make it easier to insert socket into the nut.
- ⑤ Main body will stand still during the movement of the reaction bar until it makes contact with opposing resistance i.e. another bolt or the structure.

### SPECIFICATIONS

Model	SR31E	SR51E	SR71E
Size Range	5/8 Ø A325 & A490	5/8 Ø A325 & A490 3/4 Ø A325	3/4 Ø A325 & A490 7/8 Ø A325
Voltage(S)	115V	115V	115 V
Max. Current	13.5 A	13.5 A	13.5 A
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Power Consumption	max 1100 W	max 1100 W	max 1100 W
Controllable Range	150~300 N•m 110~220 lbf•ft	300~500 N•m 220~370 lbf•ft	350~700 N•m 260~520 lbf•ft
Free Rotation	31 rpm	25 rpm	17 rpm
Weight (Mainbody)	9.5 lb	11.2 lb	12.1 lb

Model	SR31E	SR51E	SR71E
L	9 – 10 1/2"	9 3/8 – 10 5/8"	9 3/4 – 11"
L1	4 – 5 1/4"	4 1/8 – 5 1/2"	4 5/8 – 5 7/8"
L2	1 5/8 – 2 7/8"	1 5/8 – 2 7/8"	1 5/8 – 2 7/8"
H	9 7/8"	10"	10 1/4"
ØD	2 1/4"	2 5/8"	3"
Ød	2 1/8 – 3 1/2"	2 1/8 – 3 1/2"	2 1/8 – 3 1/2"



#### ACCESSORIES

- 1) 1pc. Bar Socket
- 2) Screw Driver (-)
- 3) Metal Case
- 4) Instruction Manual

### SR121E, SR211E, SR171E for Hexagonal Bolts

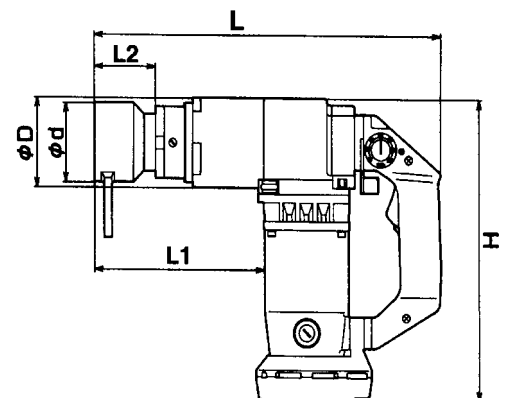


- ① Torque control functions in both directions.
- ② Non-impact, very smooth and high precision wrench of a new design. Simple to set targeted torque and easy and comfortable to operate.
- ③ No separate control unit, as the torque control device is built into the main body. The wrench design is compact, light in weight and well-balanced.
- ④ Socket with reaction bar turns independently to a certain angle to make it easier to insert socket into the nut.
- ⑤ Main body will stand still during the movement of the reaction bar until it makes contact with opposing resistance i.e. another bolt or the structure.

### SPECIFICATIONS

Model	SR121E	SR211E	SR171E
Size Range	7/8 Ø A325 & A490 1 Ø A325	1 Ø A325 & A490 1 1/8 Ø A325 & A490 1 1/4 Ø A325	1 Ø A325 & A490 1 1/8 Ø A325 & A490
Voltage(S)	115V	115V	115V
Max. Current	15.0 A	12.0 A	12.5 A
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Power Consumption	max 1400 W	max 1100 W	max 1200 W
Controllable Range	600~1200 N•m 450~900 lbf•ft	1000~2100 N•m 750~1550 lbf•ft	850~1700 N•m 630~1250 lbf•ft
Free Rotation	16 rpm	4 rpm	6 rpm
Weight (Mainbody)	19.4 lb	38.6 lb	17 lb

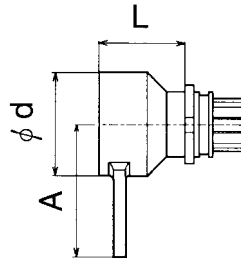
Model	SR121E	SR211E	SR171E
L	13 5/8 – 15 1/8"	16 5/8 – 18"	11"
L1	6 7/16 – 7 7/8"	9 3/8 – 10 7/8"	6"
L2	2 – 3 7/16"	2 – 3 7/16"	2 1/2"
H	11 1/4"	11 5/8"	10 5/8"
ØD	3 3/8"	4 3/4"	4"
Ød	2 1/2 – 4 1/4"	2 1/2 – 4 1/4"	3 – 3 3/8"



#### ACCESSORIES

- 1) 1pc. Bar Socket
- 2) Screw Driver (-)
- 3) Metal Case
- 4) Instruction Manual

## BAR SOCKET

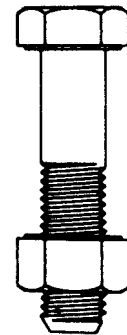


### SR31E, SR51E, SR71E

Code No.	AF Size (in)	d	A	L	Bolt Ø
MRUB 34 Z	1 1/16	2 3/8	3 1/4	2	5/8
MRUB 40 Z	1 1/4	2 3/8	3 1/4	2	3/4
MRUB 46 Z	1 7/16	2 1/2	3 1/4	2	7/8
MRUB 52 Z	1 5/8	2 3/4	3 1/2	2 3/8	1

### SR121E

Code No.	AF Size (in)	d	A	L	Bolt Ø
HRUB 46 Z	1 7/16	2 3/4	3 1/4	2 1/8	7/8
HRUB 52 Z	1 5/8	3	3 1/2	2 1/2	1
HRUB 58 Z	1 13/16	3 1/8	4	2 5/8	1 1/8



### SR211E

Code No.	AF Size (in)	d	A	L	Bolt Ø
SRUB 58 Z	1 13/16	3 3/8	4 5/8	2 1/2	1 1/8
SRUB 64 Z	2	3 1/2	5	2 1/2	1 1/4

### SR171E

Code No.	AF Size (in)	d	A	L	Bolt Ø
VRU 41 T	1 5/8	3	4 15/16	2 1/2	1
VRU 46 T	1 13/16	3 3/8	4 15/16	2 1/2	1 1/8

Specifications are subject to change without notice

#### PLEASE NOTE:

WHEN USING THESE WRENCHES TO ESTABLISH THE CORRECT TORQUE SETTING THE METHODS RECOMMENDED BY THE FOLLOWING AGENCIES MUST BE APPLIED.

THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS, AMERICAN INSTITUTE OF STEEL CONSTRUCTION & INDUSTRIAL FASTENERS INSTITUTE ALL RECOMMEND THE FOLLOWING PROCEDURES.

1. A BOLT TENSION CALIBRATOR WHICH MEASURES DIRECT TENSION.
2. TURN-OF-NUT TIGHTENING.

FOR EXACT DETAILS REFER TO SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.



**CONSTRUCTION FASTENER MANUFACTURERS  
SINCE 1887**

**6900 N. Broadway ♦ St. Louis, MO 63147**

**800-237-7059 ♦ Fax: 314-389-7510**

**[www.stlouisscrewbolt.com](http://www.stlouisscrewbolt.com)**

