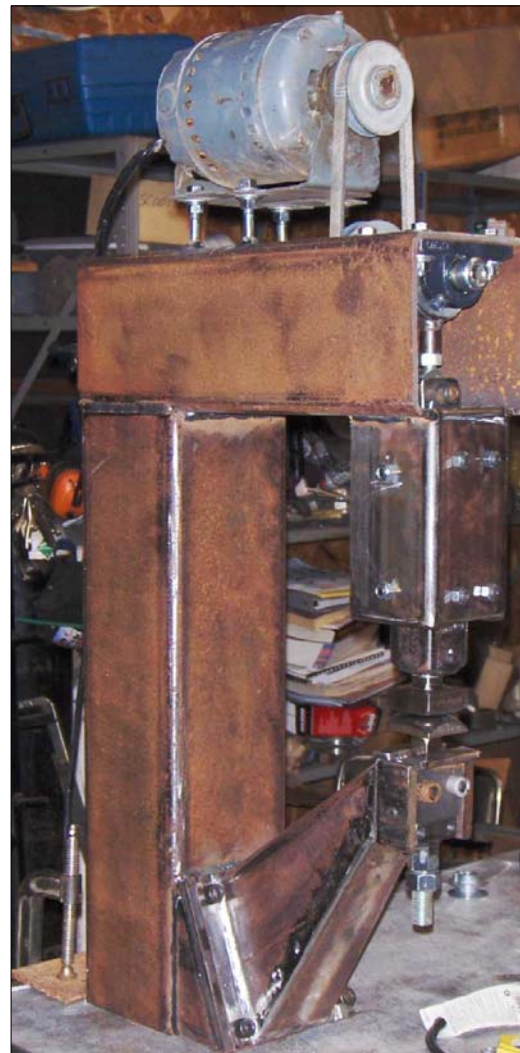


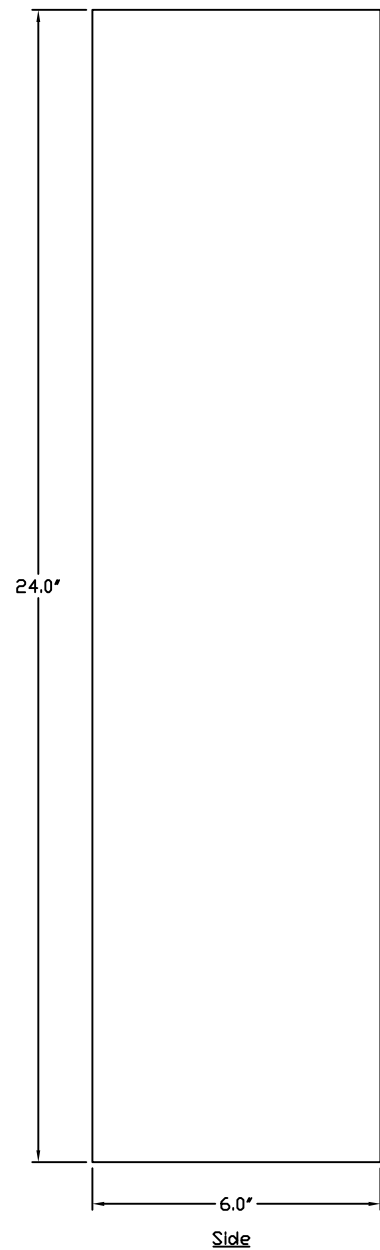
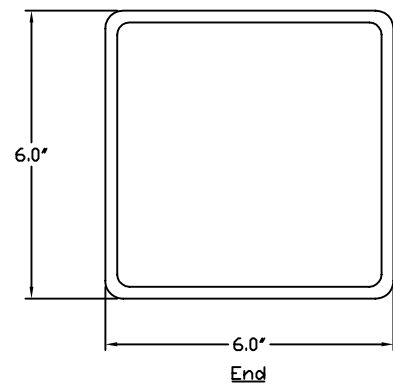
# Reciprocating Shrinker Fabrication Drawings



Photos of Reciprocating Shrinking machine under construction during the AllMetalShaping.com group build.

CAL Cobras  
Danville, CA  
Email: [chuckcobra@aol.com](mailto:chuckcobra@aol.com)  
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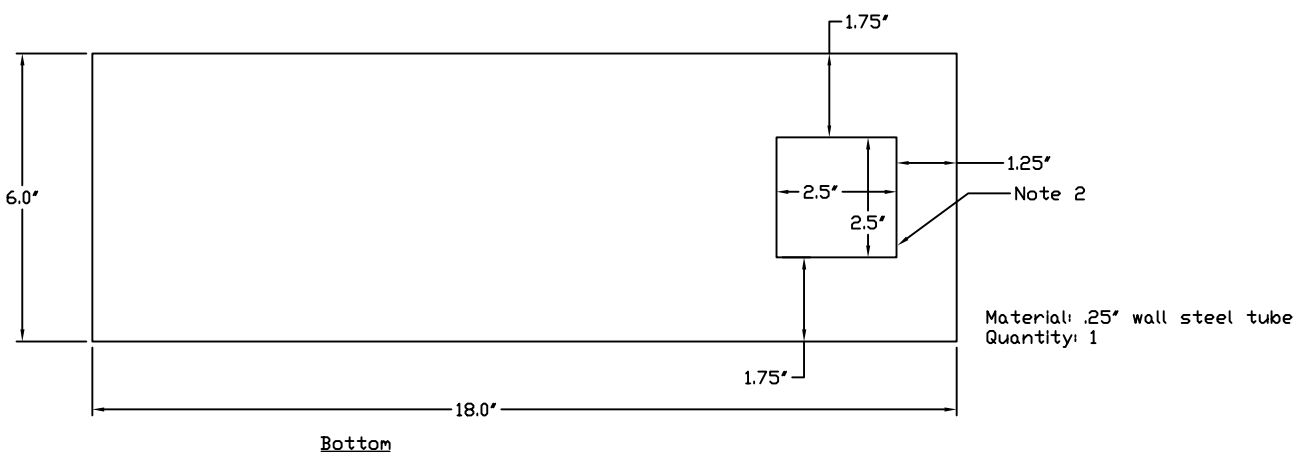
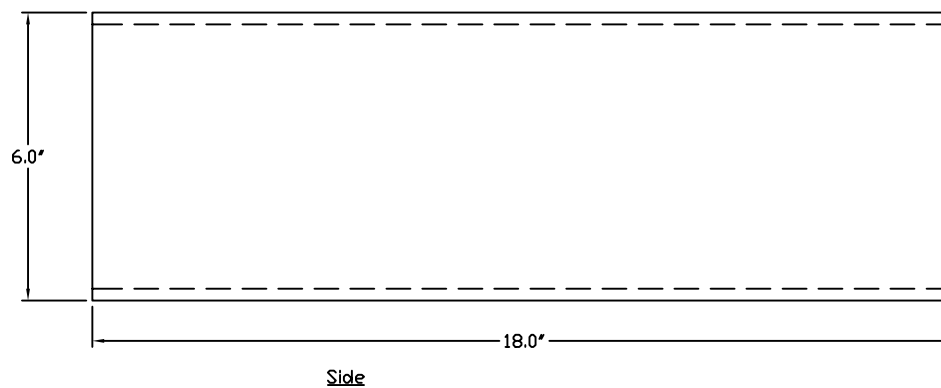
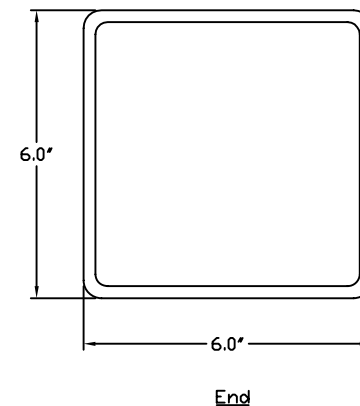
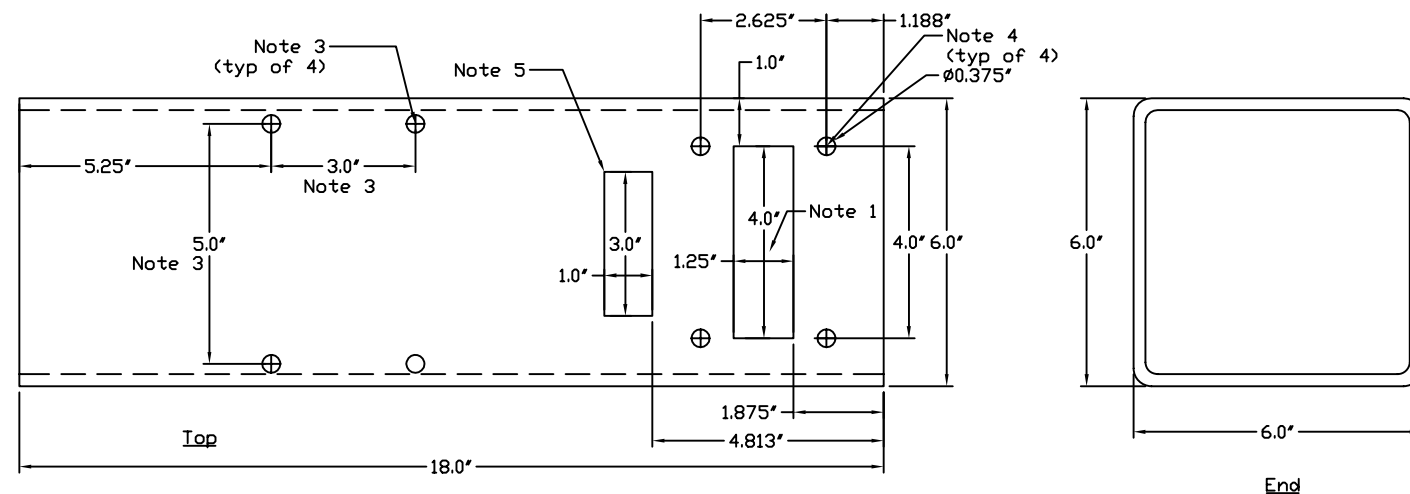




Material: .25" wall steel tube  
Quantity: 1

F01 -  
Frame -  
Vertical tube

Issued: 9/22/2018

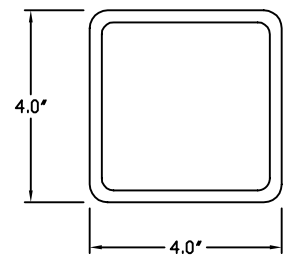


Material: .25" wall steel tube  
Quantity: 1

- Notes:
1. Top hole for access and installation of connecting rod. Coordinate exact size with parts used.
  2. Bottom hole for connecting rod to qull pass through and connection (shoulders provide gbk retention).
  3. Motor mount holes. Coordinate spacing with motor base plate used. Drill and tap for 3/8" studs (length as required) to provide vertical adjustment of motor above frame for drive belt tensioning. (Original machine utilized 3/8" bolts welded to the tube versus the drilled and tapped holes detailed.)
  4. Pillow block attachment holes. Coordinate spacing with pillow block parts used.
  5. Top hole for access and installation of driven pulley and drive belt. Coordinate exact size with parts used.

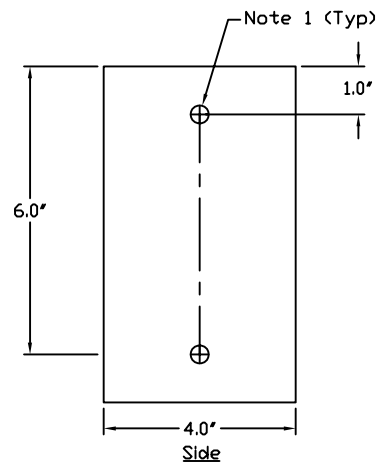
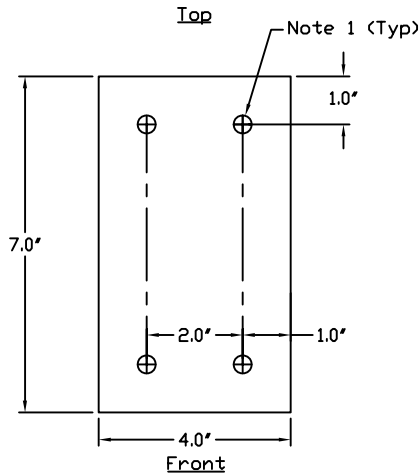
F02 -  
Frame -  
Top cross tube  
Issued: 1/22/2019

Rev.	Description	Date	Recipricating Shrinker		Line is 1 inch	Scale	Title	Drawing Number
			Recipricating Shrinker		at full scale	1" = 2"	F01 & F02	RS02
			CAL COBRAS Danville, CA.		(if not 1" scale accordingly)			
			Drawings prepared by:					
			CAL COBRAS Danville, CA.					
			These drawings are offered free of charge to all interested individuals wanting to build a similar machine for personal use. These drawings are not to be resold or used to manufacture a completed machine offered for commercial sale without the express written consent of CAL COBRAS DANVILLE, CA. (email: chuckcobra@aol.com)					
			Drawing registration No.: 02					
			Name: chuckcobra.com					
			Date: February 2019					

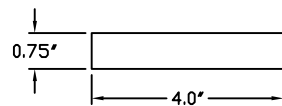


Notes:  
1. Gullb adjusting bolt holes. Drill and tap for 3/8" NF set screws. 8 required (2 on left side, 2 on right side and 4 on front).

Material: .25" wall steel tube  
Quantity: 1



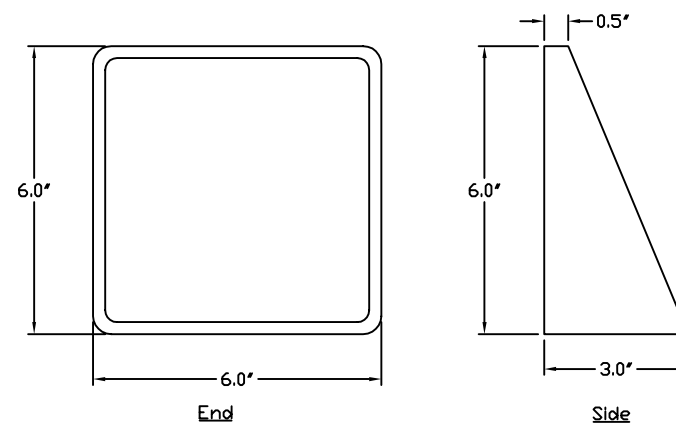
F03 -  
Frame -  
Quill support tube  
Issued: 11/15/2018



Notes:  
1. Weld to F03 on bottom sides only. (Provides support for quill gullbs.)

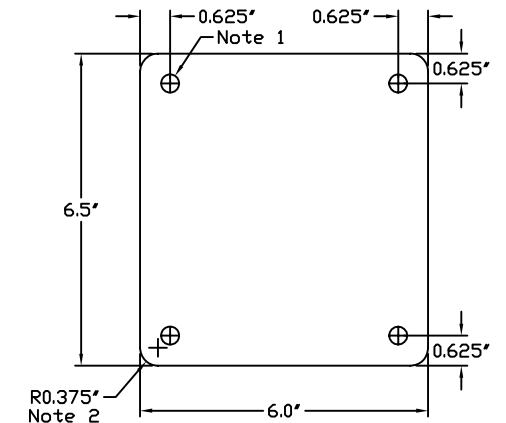
Material: .125" thk steel plate  
Quantity: 2

F04 -  
Frame -  
Quill support tube -  
End caps  
Issued: 9/22/2018



Material: .25" wall steel tube  
Quantity: 1

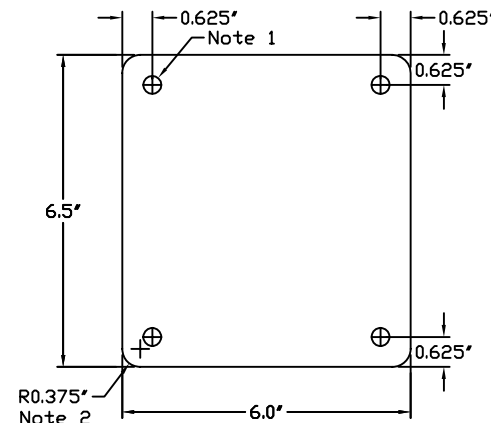
F05 -  
Frame -  
Lower tool arm -  
Mounting tube  
Issued: 9/22/2018



Material: .25" wall steel plate  
Quantity: 1

Notes:  
1. Drill and tapped for 3/8" NC bolts.

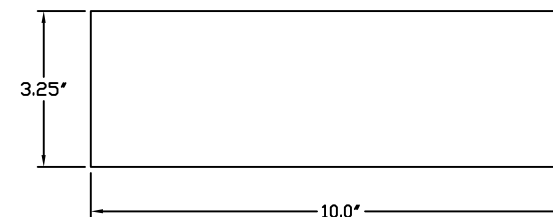
2. Match tube corner radius.  
F06 -  
Frame -  
Lower tool arm -  
Tube Mounting Plates  
Issued: 10/4/2018



Material: .25" wall steel plate  
Quantity: 1

Notes:  
1. Drilled for 3/8" bolt clearance hole.  
2. Match tube corner radius.

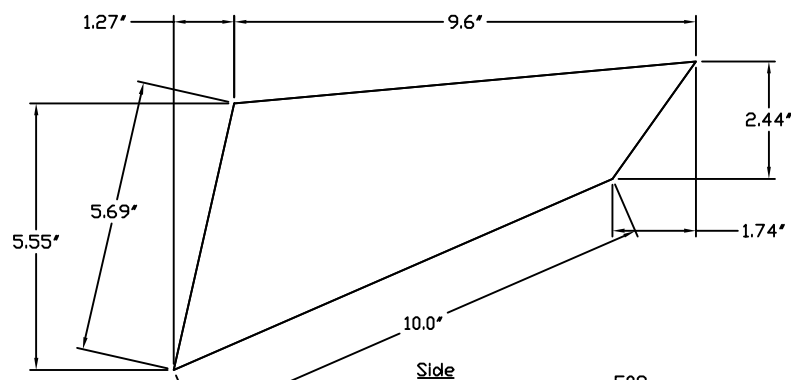
F07 -  
Frame -  
Lower tool arm -  
Side Tube Mounting Plate  
Issued: 11/21/2018



Material: .25" steel plate  
Quantity: 1

Notes:  
1. Size is only approximate. Make template to establish exact size.

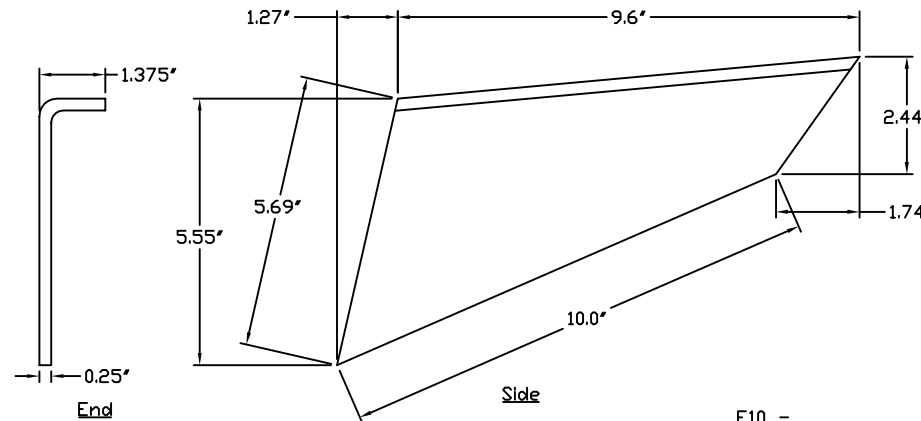
F08 -  
Frame -  
Lower tool arm -  
Bottom plate  
Issued: 1/22/2019



Material: .5" wall steel plate  
Quantity: 1

Notes:  
1. Size is only approximate. Make template to establish exact size.

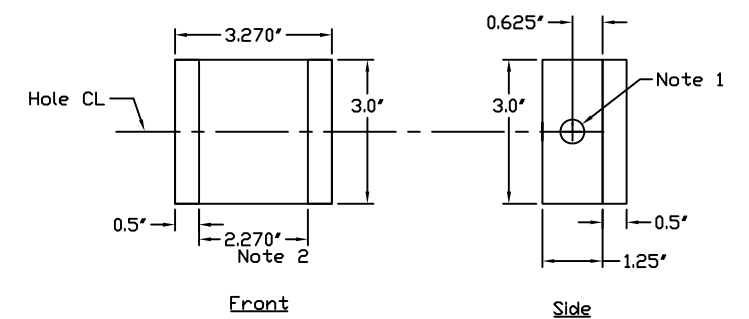
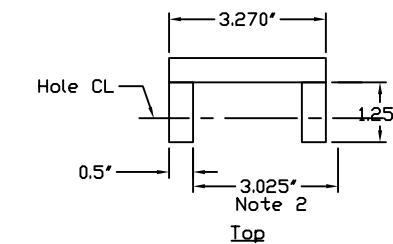
F09 -  
Frame -  
Lower tool arm -  
Reinforcement plate  
Issued: 1/22/2019



Material: .25" wall steel tube  
Quantity: 2 (1 as shown and 1 mirror image)

Notes:  
1. Size is only approximate. Make template to establish exact size.

F10 -  
Frame -  
Lower tool arm -  
Side tube  
Issued: 1/22/2019



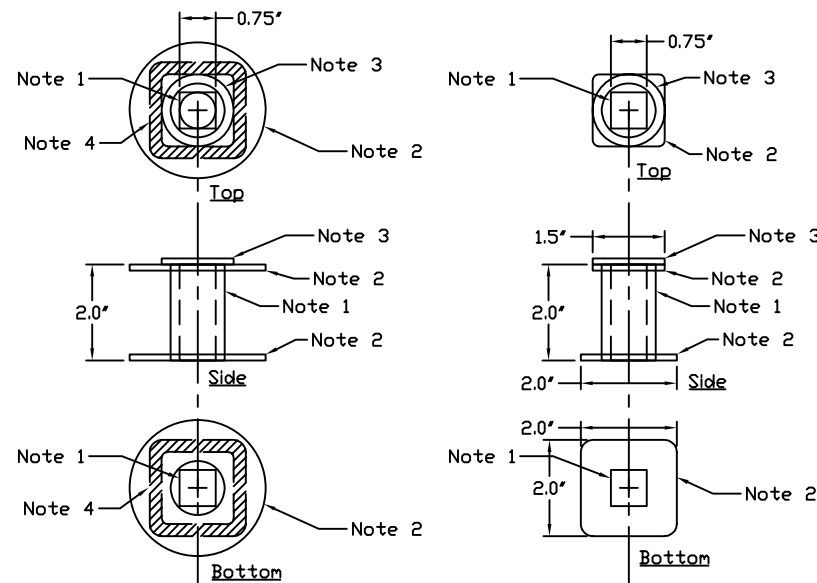
Material: .5" steel plate  
Quantity: 1

Notes:  
1. Mounting screw hole to retain LTH01. Drill and tap for 1/2" NF setscrew both sides.

2. Provide slip fit for LTH01 of approximately .020".

F11 -  
Frame -  
Lower Tool Holder -  
Mount  
Issued: 11/21/2018

Rev.	Description	Date	Reciprocating Shrinker		Line is 1 inch	Scale	Title	Drawing Number
			Reciprocating Shrinker		at full scale	1" = 2"	F03, F04, F05, F06, F07, F08, F09 & F10	RS03
			CAL COBRAS Danville, CA.		(if not 1" scale accordingly)			
			Drawings prepared by: CAL COBRAS Danville, CA.					
			These drawings are offered free of charge to all interested individuals wanting to build a similar machine for personal use. These drawings are not to be resold or used to manufacture a completed machine offered for commercial sale without the express written consent of CAL COBRAS DANVILLE, CA. (email: chuckcobra@aol.com)					
			Name: chuckcobra.com Date: February 2019					



Welding Layout

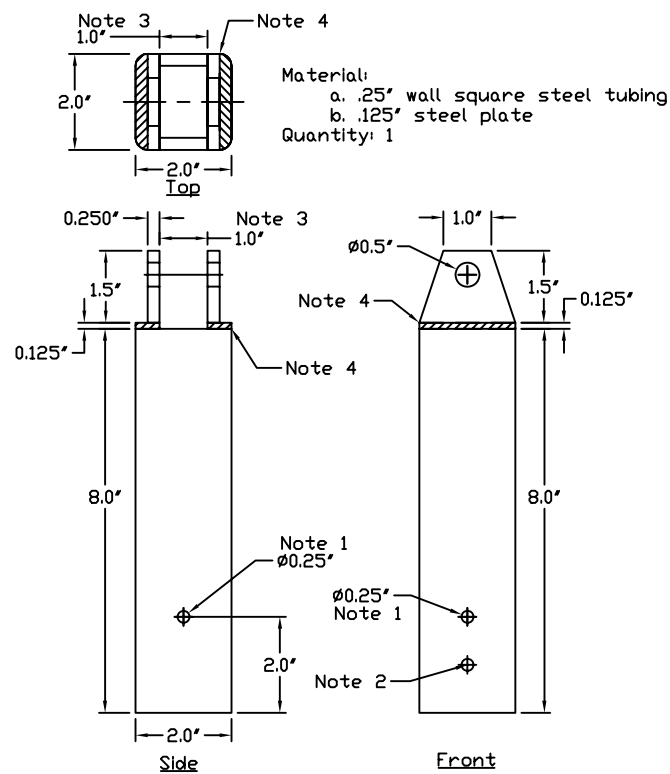
Finished Part

Notes:

- .75 (19 mm) square holed machine sleeve non threaded (Reid Part # Supply Inc. part SHS-P75). Cut to length shown.
- 1" ID x \_\_\_" OD heavy washer (UTH01 to UTH02 mounting):
  - Washer ID bored to fit sleeve OD.
  - Top washer OD ground to fit ID of UTH02 (Quill).
  - Bottom washer OD ground to fit OD of UTH02 (Quill).
  - Top and bottom washers welded to sleeve.
  - (Alternatively instead of 1" heavy washers, use .125" thick steel plate with OD and ID finished same as washer.)
- 1/2" ID x \_\_\_" OD heavy washer. Weld to top face of top 1" washer. (Provides tool shank stop and center hole allows maintenance access to remove stuck tool shank if necessary.)
- UTH02 (Quill) shown for reference only in this view.

UTH01 -  
Upper Tool Holder -  
Tool Retainer

Issued: 11/21/2018

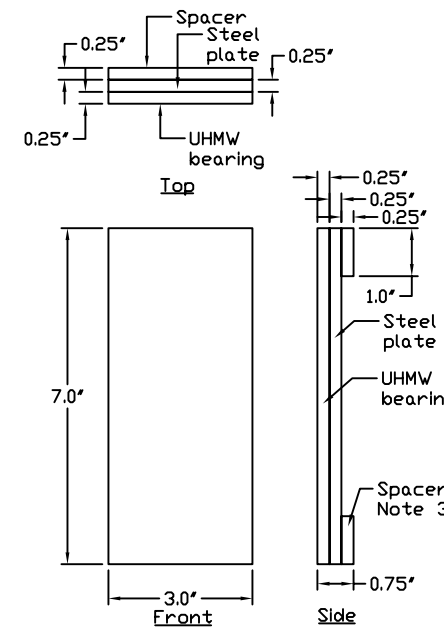


Notes:

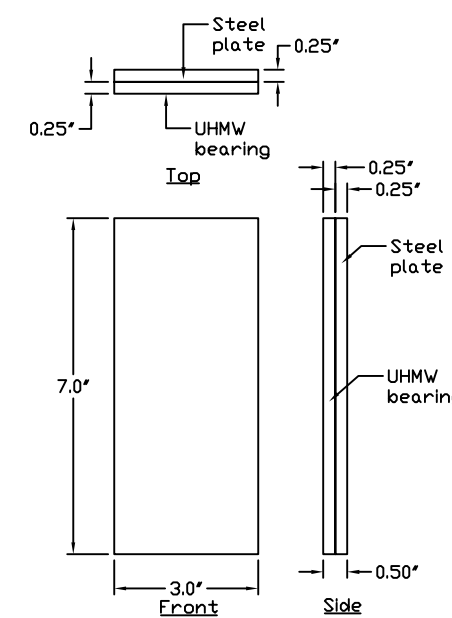
- .25" hole to provide for plug welding to UTH01. Coordinate exact location with length of UTH01 part. Provide plug welding holes on all 4 sides of quill.
- Drill and tap for 1/8" allen head tool retention set screw.
- Coordinate mounting tab 1" spacing to accommodate D02 rod end used.
- .125" Thk plate (shown hatched for clarity) to be trimmed at outer corners to match tube corner radius.) Typ of 2.

UTH02 -  
Upper Tool Holder -  
Quill

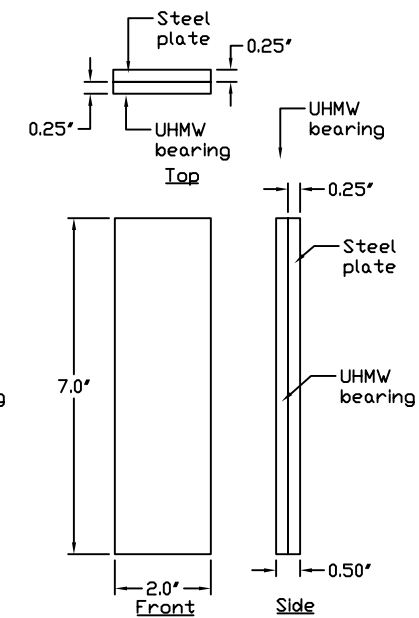
Issued: 11/21/2018



UTH03A  
Rear Guide  
Quantity: 1



UTH03B  
Front Guide  
Quantity: 1



UTH03C  
Side Guide  
Quantity: 2

Notes:

- Trim UHMW to match size of steel plates and glue to plate.
- Trim of widths if required to allow parts to fit against ID of F03. (i.e. A larger corner radius of F03 will require the width of these guides to be trimmed slightly.)
- Tack weld .25" thick spacers to 1/4" plate on top and bottom of Rear Guide only. (Final adjustment of quill is adjusted with set screws on F03.)

UTH03 -  
Upper Tool Holder -  
Guides

Issued: 9/22/2018

Rev.	Description	Date	Reciprocating Shrinker		Line is 1 inch at full scale (if not 1" scale accordingly)	Scale	Title	Drawing Number
			Reciprocating Shrinker		1" = 2"		UTH01, UTH02 & UTH03	RS04

These drawings are offered free of charge to all interested individuals wanting to build a similar machine for personal use. These drawings are not to be resold or used to manufacture a completed machine offered for commercial sale without the express written consent of CAL COBRAS DANVILLE, CA. (email: [chuckcobra@aol.com](mailto:chuckcobra@aol.com))

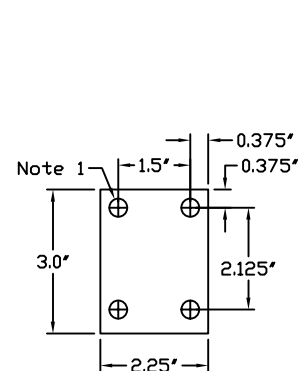
Drawings prepared by:  
CAL COBRAS  
Danville, CA.

Reciprocating Shrinker

Scale  
1" = 2"

Title  
UTH01, UTH02 & UTH03

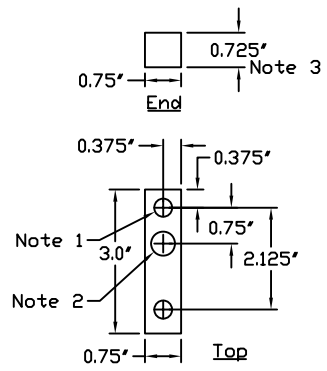
Drawing Number  
RS04



Material: 1/4" steel plate  
Quantity: 1

Notes:  
1. Holes threaded for 3/8" NF adjustment jacking bolts. Typ of 4.

LTH01A-  
Lower Tool Holder -  
Base

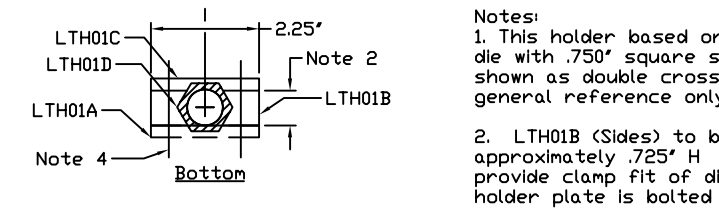
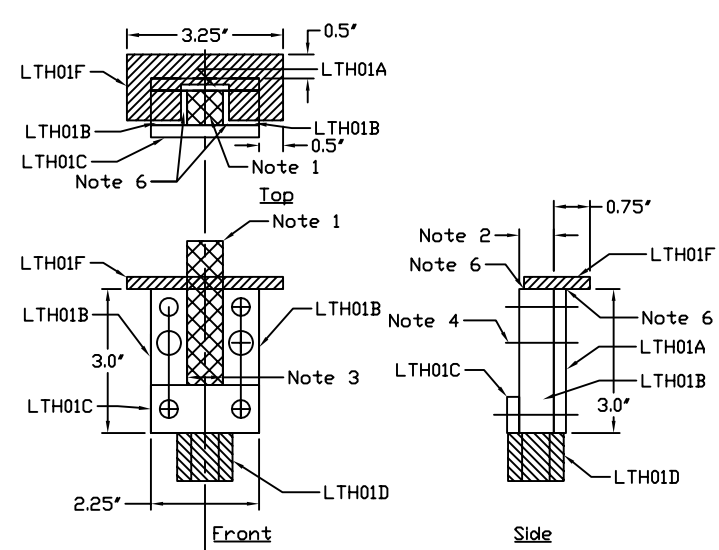


Material: 3/4" steel  
Quantity: 2

Notes:  
1. Clearance holes for 3/8" NF adjustment jacking bolts. Typ of 2.  
2. Holes threaded for 1/2" NF cover retention bolts. Typ of 1.

3. Machine to approximately .725" H x .750" W to provide clamp fit of die stem when LTH020 is bolted in place.

LTH01B-  
Lower Tool Holder -  
Side



Notes:  
1. This holder based on use of shrinking die with .750" square stem. Tool holder shown as double cross hatch for general reference only.  
2. LTH01B (Sides) to be machined to approximately .725" H x .750" W to provide clamp fit of die stem when top holder plate is bolted in place.

3. Loose slip fit (approximately .010") between LTH01A, LTH02, LTH03 to allow free movement of LTH02E (adjusting screw).

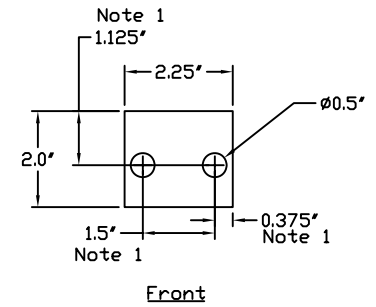
4. Align all tapped and through holes before welding.

5. All parts to be welded together to form the Tool Holder Assembly.

6. LTH01F dashed for clarity. Welding of LTH01F to rest of part must allow tool clearance at front and flush fit to F11 at bottom rear and sides.

LTH01-  
Lower Tool Holder -  
Assembly

Issued: 11/21/2018

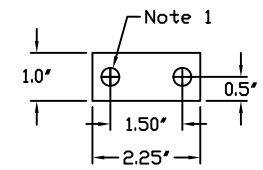


Notes:  
1. Clearance hole for 1/2" Allen head cap screw. Coordinate exact hole spacing to match holes on LTH01.

Material: 1/4" Steel plate  
Quantity: 1

LTH02 -  
Lower Tool Holder -  
Tool Retaining Plate

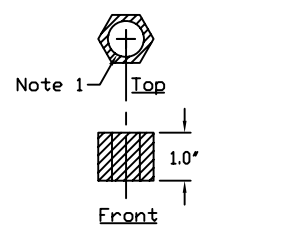
Issued: 10/3/2018



Material: 1/4" steel  
Quantity: 1

Notes:  
1. Clearance holes threaded for 3/8" NF adjustment jacking bolts. Typ of 2.

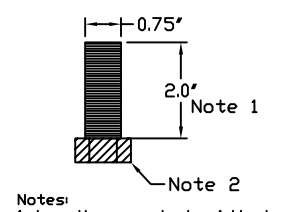
LTH01C-  
Lower Tool Holder -  
Top



Material: 3/4" threaded rod coupling nut  
Quantity: 1

Notes:  
1. Threaded 3/4" NC.

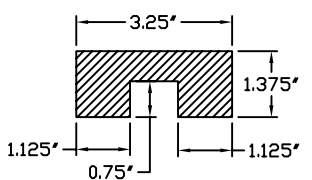
LTH01D-  
Lower Tool Holder -  
Adjustment Hex



Notes:  
1. Length approximate. Adjust length as required to provide adjustment of lower die based on lower die stem utilized.  
2. 3/4" nut welded to all-thread rod

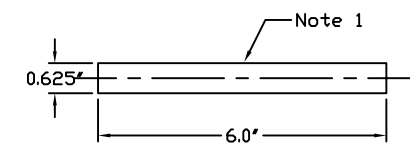
Material: 3/4" NC all-thread rod and nut  
Quantity: 1

LTH01E-  
Lower Tool Holder -  
Die Height Adjuster



Material: 1/4" steel  
Quantity: 1

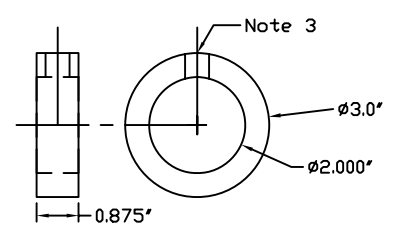
LTH01F-  
Lower Tool Holder -  
Push out stop plate



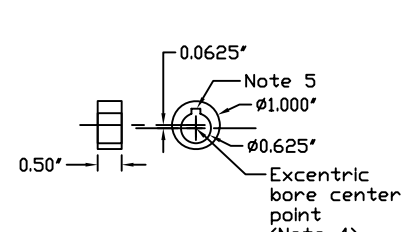
Notes:  
1. Keyway: 3/16" W x entire shaft length. (Size given is typical, but match to keyway on pulley and eccentric used.)  
Material: 5/8" Dia steel round  
Quantity: 1

D01 -  
Drive -  
Shaft

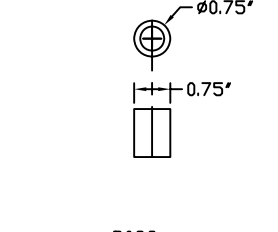
Issued: 11/21/2018



D02A -  
Bearing Holder

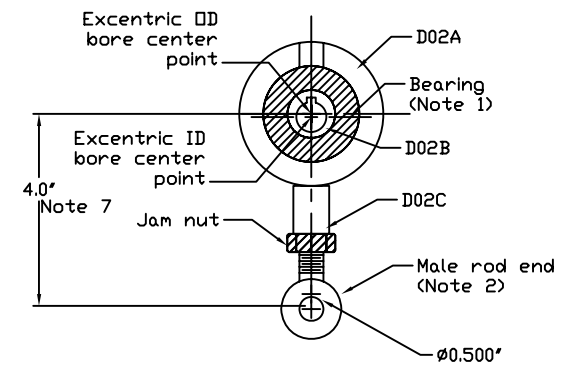


D02B -  
Eccentric



D02C -  
Connecting Rod

Notes:  
1. Shielded bearing: 3" DD x 2" ID x .5" W (part number R162RS)  
2. Male rod end (Helm joint): .5" bore ID x 1.0" L x 1/2" NF thread  
3. Drill and tap for 1/2" x NF set screw. (Bearing retention.)  
4. Eccentric center hole offset .0625" from center of part outside diameter. (This provides a .125" stroke.) Press fit into bearing.  
5. 3/16" keyway (Match to D01 and drive pulley keyway size.)  
6. Weld Connecting Rod to Bearing Holder.  
7. D02C (Connecting Rod) threaded 1/2" NF to match rod end. (Allows adjustment of center to center length of Connecting Rod Assembly.)



D02 -  
Drive -  
Connecting Rod Assembly

Issued: 11/15/2018

Rev.	Description	Date	Reciprocating Shrinker		Line is 1 inch	Scale	Title	Drawing Number
			Reciprocating Shrinker Drawing registration No.: 02 Name: chuckcobra.com Date: February 2019		(at full scale if not 1" scale accordingly)	1" = 2"	LTH01, LTH02, D01 & D02	RS05



