

Newsletter # 6

Welcome to another *Model Engine Builder* Newsletter

Note to Model Engine Builder Subscribers:

We've decided, because of greatly rising costs and continuing tough economic times to go all digital. Starting with magazine issue # 28, we will be creating downloadable PDF files for our subscribers. You will require your subscriber's number to access the files and we'll send that to you when we notify you of the availability of a new file. The best news is that a subscription is now \$24 for a year, no matter where you are in the world. Existing subscribers will receive 2 issues for every 1 left in their subscription.

Our Web site, www.modelenginebuilder.com will soon reflect these changes.

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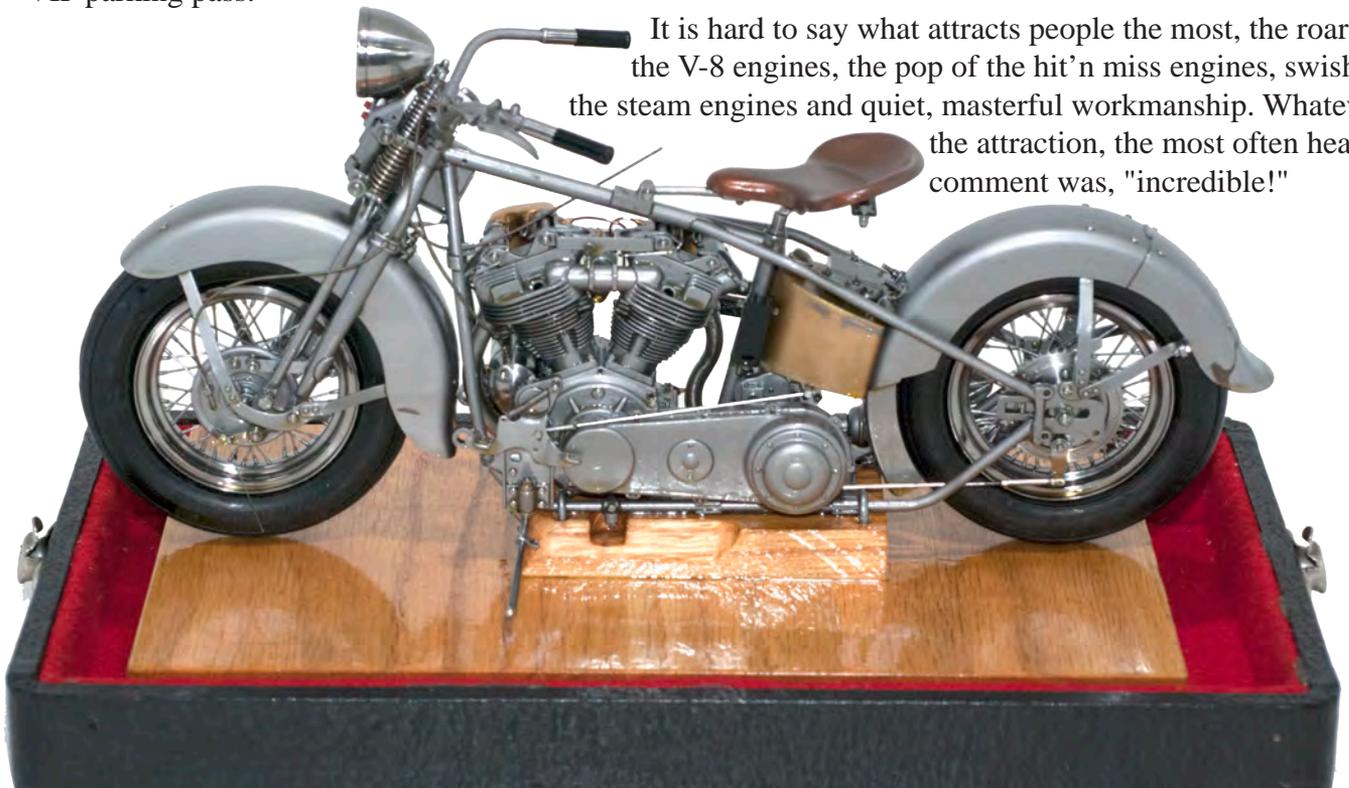
*First issue with a downloadable 3D PDF
This one is of the Scriber
See the end of the article on page 6*

Show Report

WEME, (we-me) as we like to call it was a smash success, just like last year. The Bay Area Engine Modelers (BAEM) are given a seven thousand square foot air-conditioned pavilion in which to hold our show. Concurrently, our host, Goodguys Rod and Custom Association, held the 26th West Coast Nationals hot rod show. For a Model Engineer, being in the middle of thousands of hot rods is no burden at all.

Of the 100,000 plus visitors who came in the front gates, more than 10,000 came through our pavilion each year. They think model engines are the hit of the hot rod show (as do we and the Goodguys staff). Next year, plan to come to WEME and show off your models. You will receive free entrance passes and a VIP parking pass.

It is hard to say what attracts people the most, the roar of the V-8 engines, the pop of the hit'n miss engines, swish of the steam engines and quiet, masterful workmanship. Whatever the attraction, the most often heard comment was, "incredible!"



Space to 3-hole punch

Model Engine Builder™

One of the most spectacular models this year was Jerry Kieffer's 1/8th scale 1947 Harley-Davidson "Knucklehead" motorcycle. This exact scale model has taken 7 years to bring to this state of completion. The tires hold air, the engine has been started and the keys for the toolbox can be found in the lock. Oh, by the way, the speedometer works and the pointer shudders just like the originals. Jerry's goal is to be able to kick-start the



engine and run through the gears while the motorcycle is supported on its kickstand. No doubt that it will do just that.

At one point, Jerry had installed solid rubber tires on the model but they did not look right because they didn't flatten where the rubber met the road. So he made miniature Schrader valves and molded a new set of tires that would hold air. Now, inflated to 4 PSI, they flatten out just like the tires on the full-sized 1947 motorcycle that sits on his front porch.

The crowd came to see the V-8's run and found many more interesting models to investigate



2012 WEME show, one-half of the pavilion

Model Engine Builder™



Our Show Master, John Gilmore not only builds exquisite models, he builds a nice hot rod too. His 1937 Ford has a tube frame, a fiberglass body and a Cadillac NorthStar V-8 engine in the rear. He did all the work himself.

Another show hit was the large group of models from Paul Knapp's Miniature Engineering Museum (<http://www.engine-museum.com/>). Paul drew quite a crowd when he ran his Bentley BR2 Rotary Engine.

Join us in 2013 at the Western Engine & Model Exhibition August 23-25, 2013.

Look at www.wemeshow.com for further information as it develops



We hope Michael Cooper will bring some more of his wild kinetic art. <http://www.michaelcooper.us/> for more information on his art

Two engines hidden in front

Yes, he made the tires too

Events

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Please visit our Web site
www.modelenginebuilder.com
Great articles, superb drawings on separate
pages so you can take them in the shop
All back issues are available
Get our Article Index



Machinist's hand tools do not come with operating instructions. This video will provide that training.

Learn to set up and operate the Sherline Lathe

By Mike Rehmus, Editor of *Model Engine Builder* magazine

A ByVideo Production

Purchase them directly from:

LittleMachineShop 396 W. Washington Blvd. #500 Pasadena, CA 91103 USA 1 - 800 - 981-9663 1 - 626 - 797-7850 www.littlemachineshop.com	Sherline Products, Inc. 3235 Executive Ridge Vista, California 92081-8527, USA 1-760-727-5857 1-800-541-0735 www.SherlineDirect.com
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GEARS

September 29th — 30th, 2012

Kliever Armory
10000 N.E 33rd Drive
Portland, Oregon

www.oregongears.org

25th Estevan Model Engineering Show

October 13th — 14th, 2012

Wylie Mitchell Building, Estevan Fairgrounds

www.estevanmodelengineeringshow.com

Estevan, Saskatchewan, Canada

<http://estevanmodelengineeringshow.com>

Midlands Model Engineering Exhibition

October 17th — 21th, 2012

Warwickshire Exhibition Centre
Fosse Way, near Leamington Spa
Junction of the A425 and B4455

<http://www.meridienneexhibitions.co.uk/our-events-detail.php?id=0000000007>

MidEast Model Engineering Expo

October 19th — 20th 2012

Muskingum County Fairgrounds

<http://www.deboltmachine.com/id13.html>

Cabin Fever Expo 2013

April 12th — 14th, 2013

York County Fairgrounds Expo Center
York, PA 17404

<http://www.cabinfeverexpo.com/>

Names-North American Model Engineering Expo.

Southgate MI April 20th — 21st, 2013

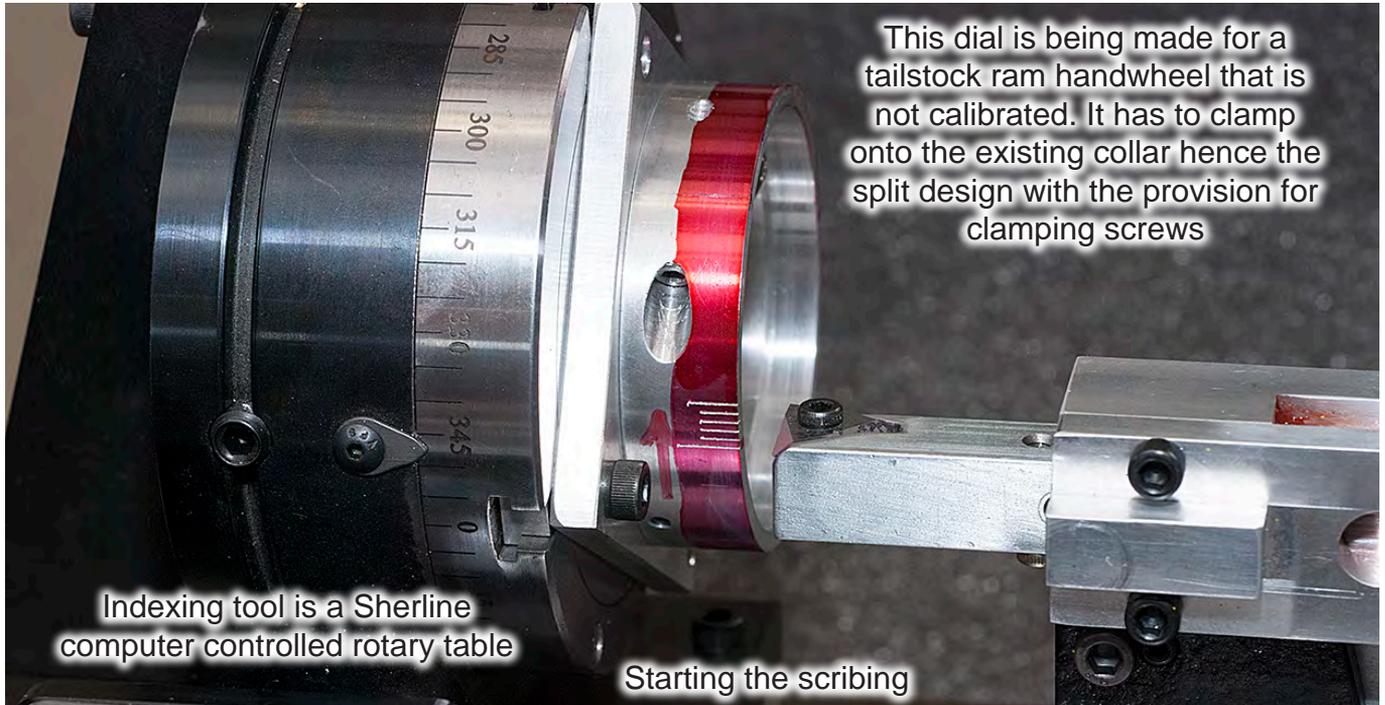
www.modelengineeringsoc.com

Do you have an upcoming event? Send information to us at this link:

www.modelenginebuilder.com/contactus.htm

Model Engine Builder™

We don't make many handwheel dials in our secret life as a Model Engineer but when we need to make one, it is nice to have a good tool with which to scribe the lines around the dial. Not only do we have to index the dial accurately, we have to make good looking scribe marks. In my opinion, there is nothing more unsightly on a machine tool than poorly marked handwheel dials. This scriber tool will help you to make uniform short-medium-long scribe marks.



The construction is straightforward and this design can be adapted to most scribing situations. The overall body is made from aluminum; the Ram is a 1/2" piece of key stock and the Base was cut from a piece of I-beam with the Scriber mounted at the appropriate centerline height of the indexing device. The marking cutter is an off-the-shelf carbide threading cutter. The cutter is quite sharp and will scribe just about any metal, and has 3 tips so it should last forever.

There are few critical points in the construction. Probably the most critical is to insure you have no more than about 0.0005" (a little over .01mm) fit between the Ram and the Body and Top Plate to avoid any wavy scribed lines. Grease the Ram when assembling the Scriber. The altitude of the scribing point is not overly sensitive so if you are close, it should be good enough.

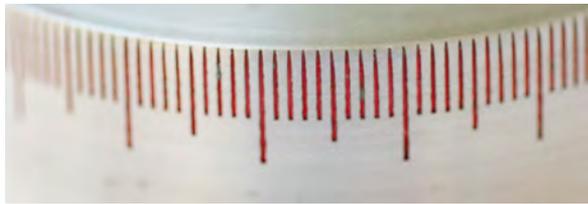
Note that Dykem® has been applied to make the work progress easier to see.

The only critical adjustment is to insure that the scribe marks are deep enough to see, but not so deep that they are difficult to make. On page 1 of the drawings, item #19 is the set screws which are adjusted to move the scribing tip left or right. To adjust, slacken the mount screws, item #16 and after touching the edge of the dial blank with the tip of the cutter, turn the 32 TPI set screws in about 60 degrees to obtain a scribe mark slightly more than 0.005" (a little over 0.1mm) deep. Then tighten the item 16 screws to secure the position of the scriber with reference to the dial periphery

Additionally, you will want to set the rotary depth dial stop screws to the proper depth so the scribe marks are as long as you want. The scribe marks on the sample shown on the next page are 5/16", 1/4" and 3/16" and are quite



Scribing completed, curls of metal will be removed on the lathe



readable in my opinion. You should make them the length that pleases you.

The next step is to remount the dial on the fixture and remove the curled bits of metal at the end of each scribe mark. This is easy to do with a very light cut or using a file or a strip of abrasive paper. This will remove the Dykem and, if you

wish, you can reapply the Dykem, making certain it fills the scribe marks. Then polish the dial surface with abrasive paper and the red-filled (or blue) scribe marks will be quite visible. The picture above shows the dial after all the scribe marks have been made and the dial is cleaned up and 'painted.' Now the only trick left is to carefully mark the numbers on the dial. Maybe we can have an article about that in the future.

Drawings start on page 7. Go to www.modelenginebuilder.com/newsland.htm to download a 3D PDF of the Scriber. The file name is Scriber 3d.pdf.

Stolen Engine Alert

Please be on the look out for this engine. If someone has this engine and is feeling guilty, I will even be the go between if they would like to return it. Or if someone wants to leave the engine in a safe location and make an anonymous call and let me know where it can be picked up, my phone number is 306 634-3214 ask for Kelly.

Thank You

Kelly Tytlandsvik

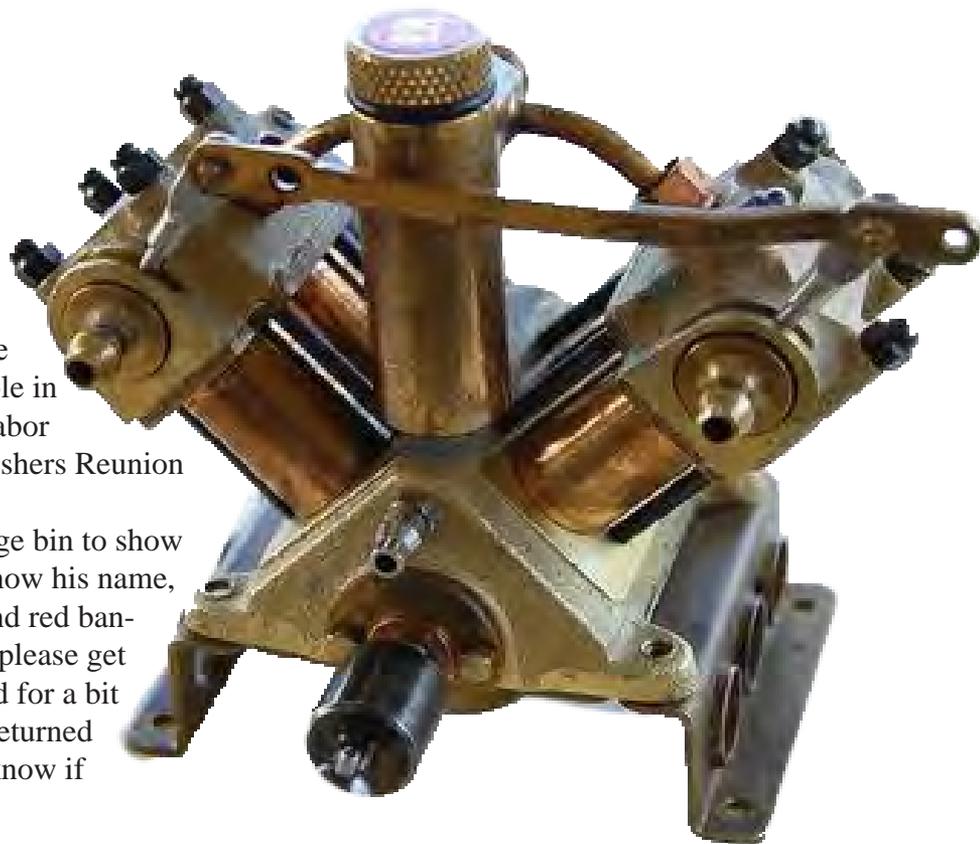
Hello, to all from
Steve Knutson
28484 Highway 10
Lake Park MN 56549
218-483-3469

I had the unfortunate occurrence of having my Saito V4PR steam engine stolen off the back of my exhibit table in the Model Engine Building at the Labor Day Western Minnesota Steam Threshers Reunion Sat. 9-1-2012 about 10:00 AM.

I had just taken it out of my storage bin to show a fellow model enthusiast (do not know his name, a fellow with reddish slight beard and red bandana (to this fellow: If you see this, please get in touch.) Soon after I was distracted for a bit to the end of the tables and when I returned to put it away, it was gone. Let me know if anyone sees or hears of anything.

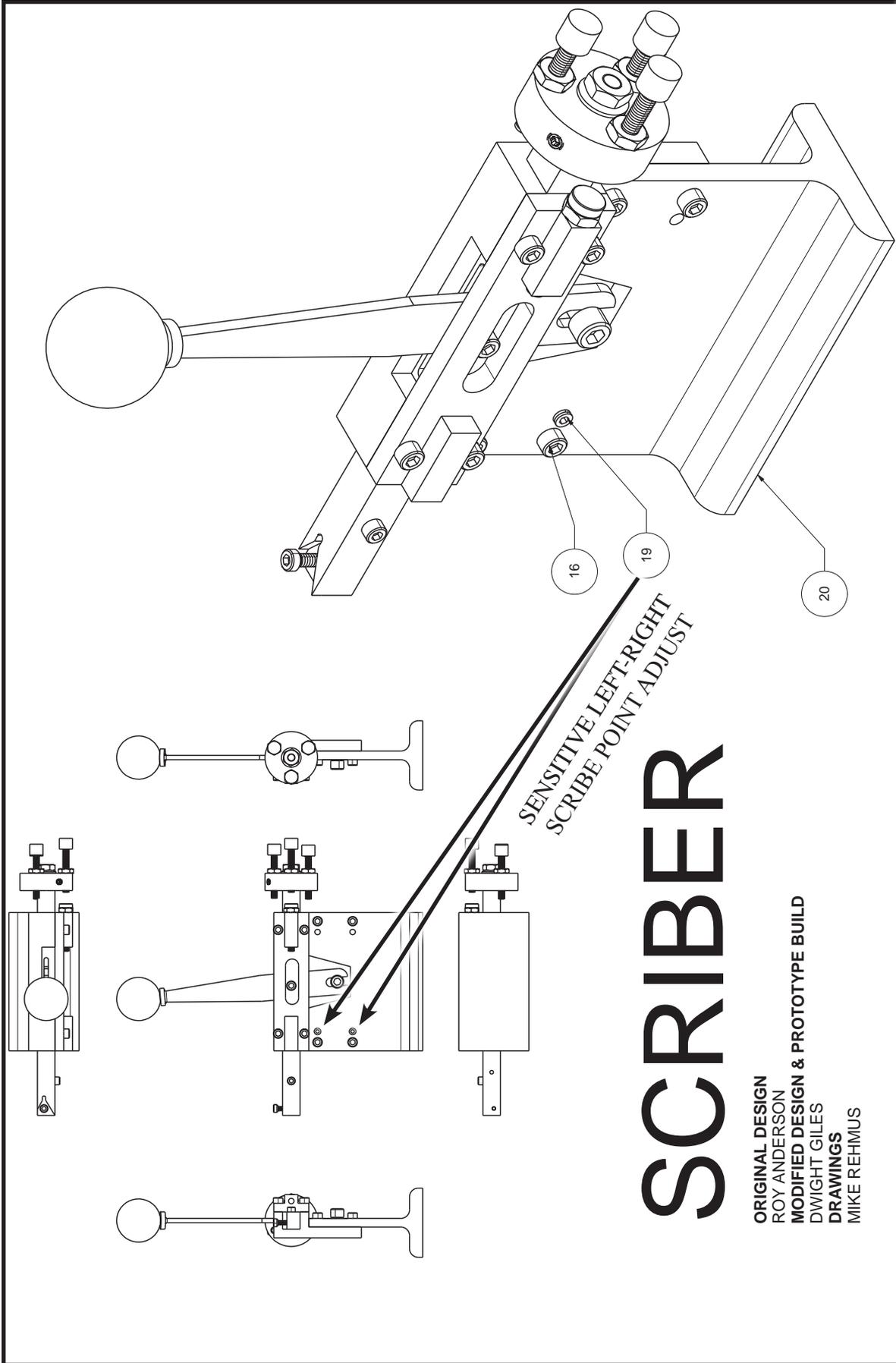
Thanks for your time.

Steve



I hope we don't have to start locking everything up but some shows have to thread alarm cables through every object on display to prevent theft. It is a sorry state of affairs when thieves take the pleasure out of sharing our work with the public. Ed.

Model Engine Builder™



SENSITIVE LEFT-RIGHT
SCRIBE POINT ADJUST

SCRIBER

ORIGINAL DESIGN
ROY ANDERSON
MODIFIED DESIGN & PROTOTYPE BUILD
DRAWINGS
MIKE REHMUS

NOTE: LIGHTLY GREASE ALL SLIDING COMPONENTS AND PIVOTS

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
METRIC
1 PLACE ± 0.3
2 PLACE ± 0.03
3 PLACE ± 0.003
4 PLACE ± 0.0005
IMPERIAL
2 PLACE ± 0.01
3 PLACE ± 0.001
4 PLACE ± 0.0005

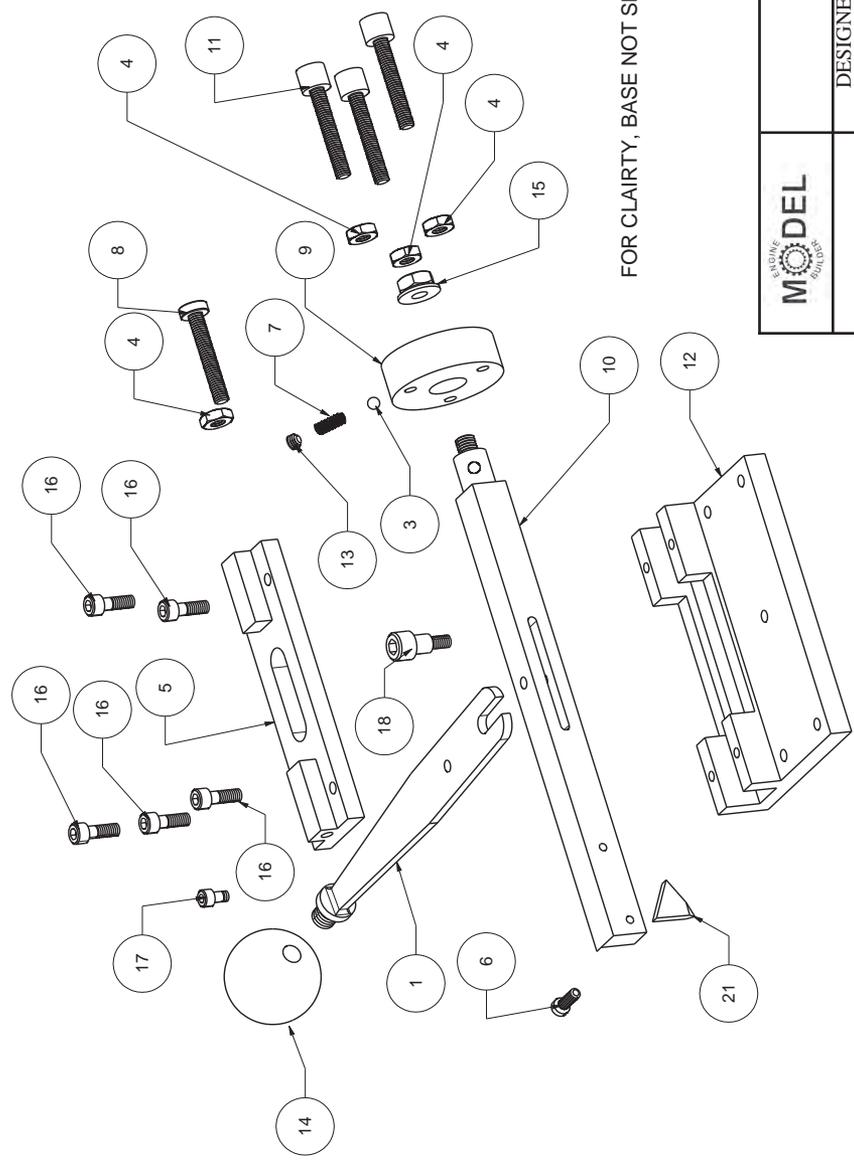
BREAK OR DEBURR
EDGES UNLESS OTHERWISE SPECIFIED

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	DESIGNED BY DWIGHT GILES	PROJECT DWG # 1 OF 7
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Item	Quantity	Part Name	Material	Item	Quantity	Part Name	Material
1	1	HANDLE	MILD STEEL	12	1	BODY	7075 OR 2024 ALUMINIUM
3	1	DETENT BALL	STEEL	13	1	SET SCREW 10-32 X 3/8	STEEL
4	4	HEX NUT - 10-32	STEEL	14	1	BALL HANDLE 1-1/4"	PLASTIC
5	1	TOP PLATE	7075 OR 2024 ALUMINIUM	15	1	DEPTH DISK NUT	STEEL
6	1	INSERT HOLD DOWN SCREW	MODIFIED SHCS	16	5	SOCKET HEAD CAP SCREW 10-32 X 1/2	STEEL
7	1	DETENT SPRING	SPRING STEEL	17	1	RAM RETRACT STOP	STEEL
8	1	STOP SCREW	STEEL	18	1	HANDLE PIVOT SCREW	STEEL
9	1	DEPTH DISK	STEEL	19	2	ADJUST SET SCREW 10-32 X 5/16	STEEL
10	1	RAM	STEEL	20	1	BASE	STEEL
11	3	DEPTH ADJUST SCREW	STEEL	21	1	TNML 32 NV-P30-370 INSERT	CARBIDE



FOR CLAIRTY, BASE NOT SHOWN

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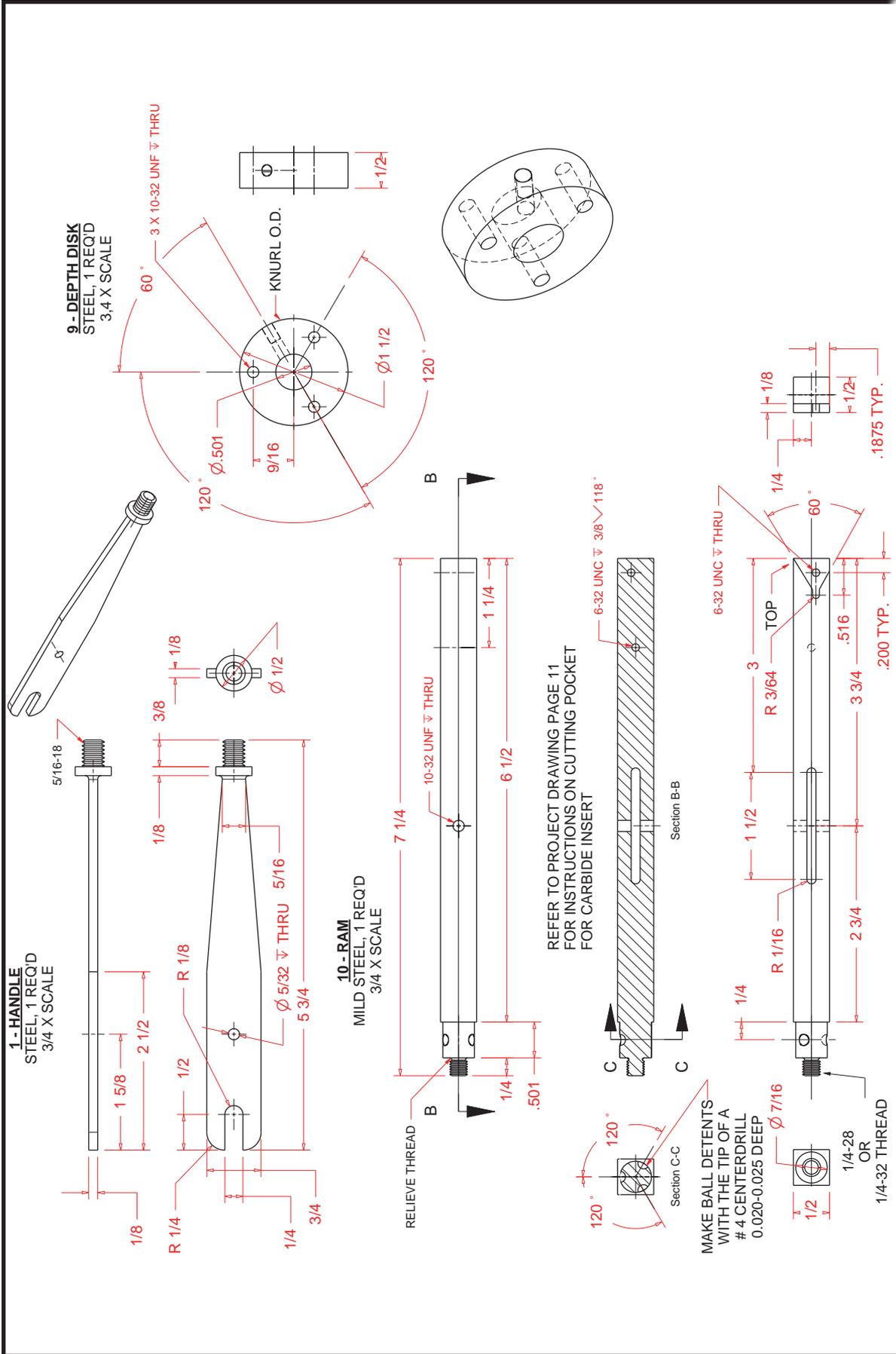
DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED

METRIC
 1 PLACE ± 0.3
 2 PLACE ± 0.01
 3 PLACE ± 0.001
 4 PLACE ± 0.0005

IMPERIAL
 2 PLACE ± 0.01
 3 PLACE ± 0.001
 4 PLACE ± 0.0005

BREAK OR DEBURR
 EDGES UNLESS OTHERWISE SPECIFIED





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DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED

METRIC

1 PLACE ±0.01

2 PLACE ±0.003

3 PLACE ±0.001

4 PLACE ±0.0005

IMPERIAL

1 PLACE ±0.01

2 PLACE ±0.003

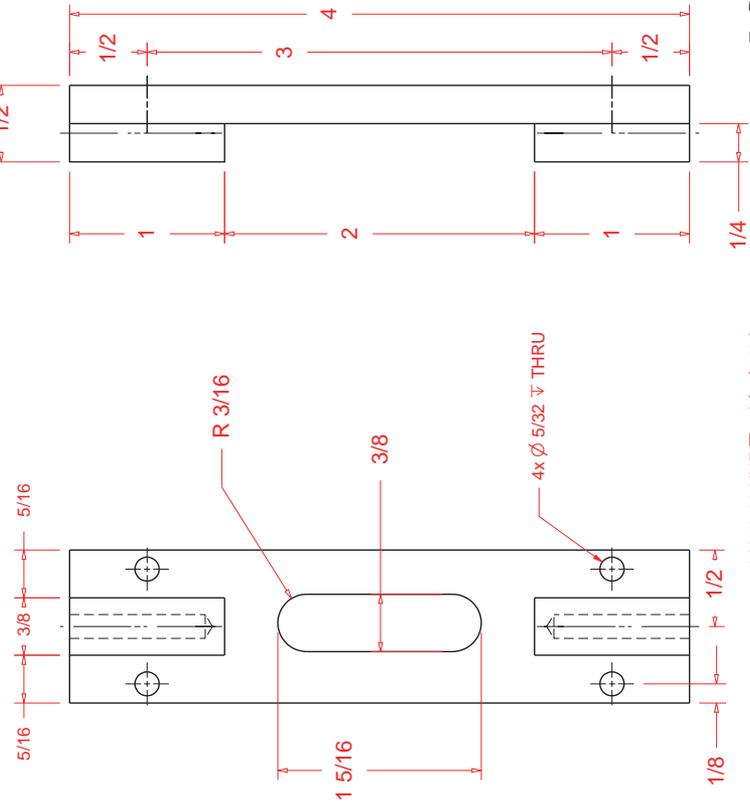
3 PLACE ±0.001

4 PLACE ±0.0005

BREAK OR DEBURR EDGES UNLESS OTHERWISE SPECIFIED

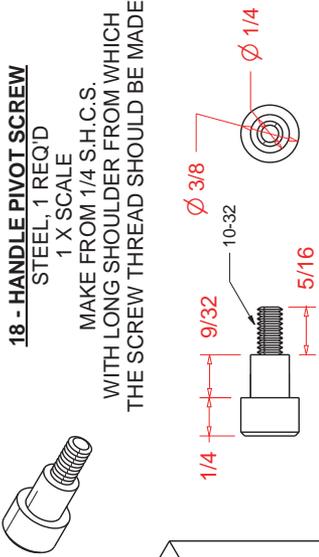


5 - TOP PLATE
7075 ALUMINUM, 1 REQ'D
1 X SCALE

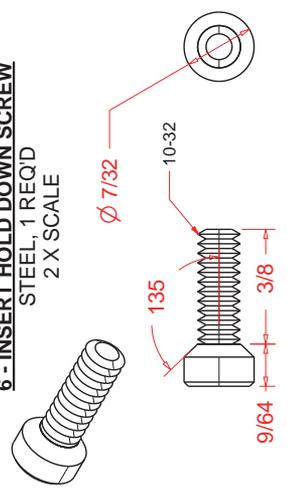


18 - HANDLE PIVOT SCREW
STEEL, 1 REQ'D
1 X SCALE

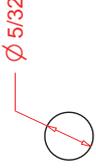
MAKE FROM 1/4 S.H.C.S. WITH LONG SHOULDER FROM WHICH THE SCREW THREAD SHOULD BE MADE



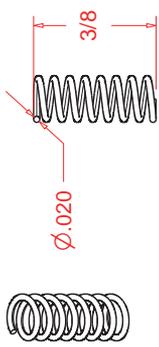
6 - INSERT HOLD DOWN SCREW
STEEL, 1 REQ'D
2 X SCALE



2 - DETENT BALL
STEEL, 1 REQ'D
2 X SCALE

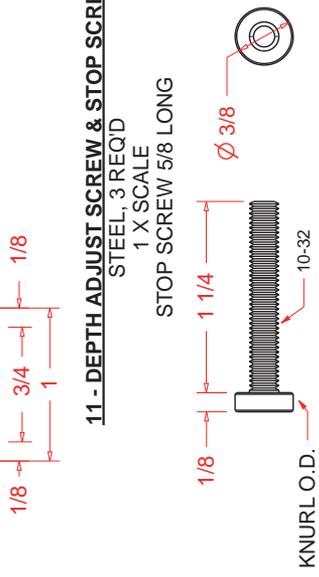


7 - DETENT SPRING
SPRING STEEL, 1 REQ'D
2 X SCALE



11 - DEPTH ADJUST SCREW & STOP SCREW
STEEL, 3 REQ'D
1 X SCALE

STOP SCREW 5/8 LONG



DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
METRIC
1 PLACE ±0.3
2 PLACE ±0.01
3 PLACE ±0.001
4 PLACE ±0.0005
IMPERIAL
2 PLACE ±0.01
3 PLACE ±0.001
4 PLACE ±0.0005

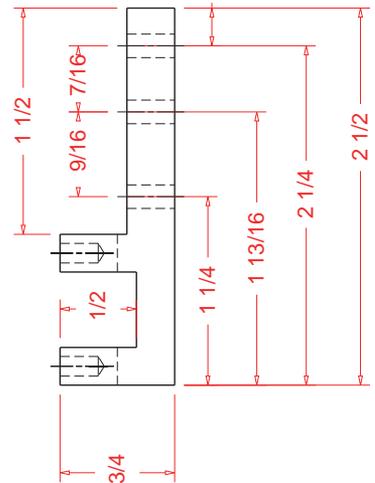
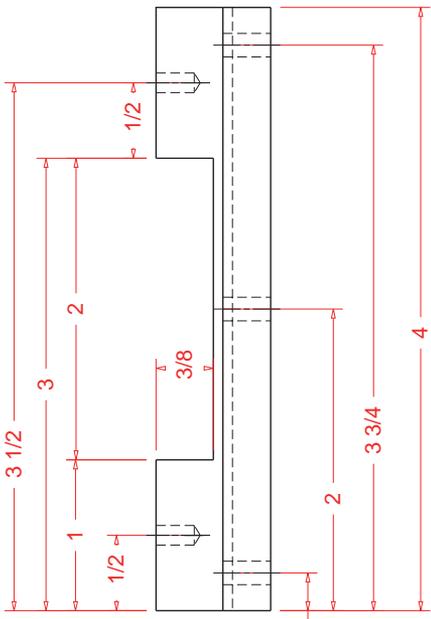
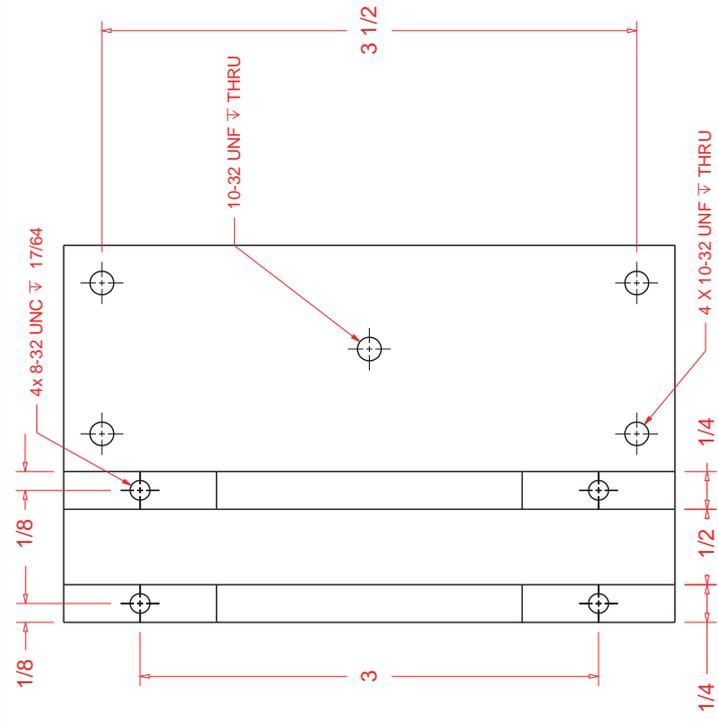
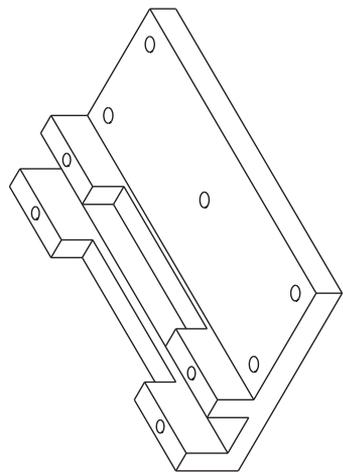
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12 - BODY
 2024 OR 7075 ALUMINUM, 1 REQ'D
 1 X SCALE
 ALLOW 0.0005 CLEARANCE FOR RAM



DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
 METRIC
 1 PLACE ±0.3
 2 PLACE ±0.03
 3 PLACE ±0.005
 4 PLACE ±0.0005
 IMPERIAL
 1 PLACE ±0.01
 2 PLACE ±0.001
 3 PLACE ±0.001
 4 PLACE ±0.0005

BREAK OR DEBURR
 EDGES UNLESS OTHERWISE SPECIFIED

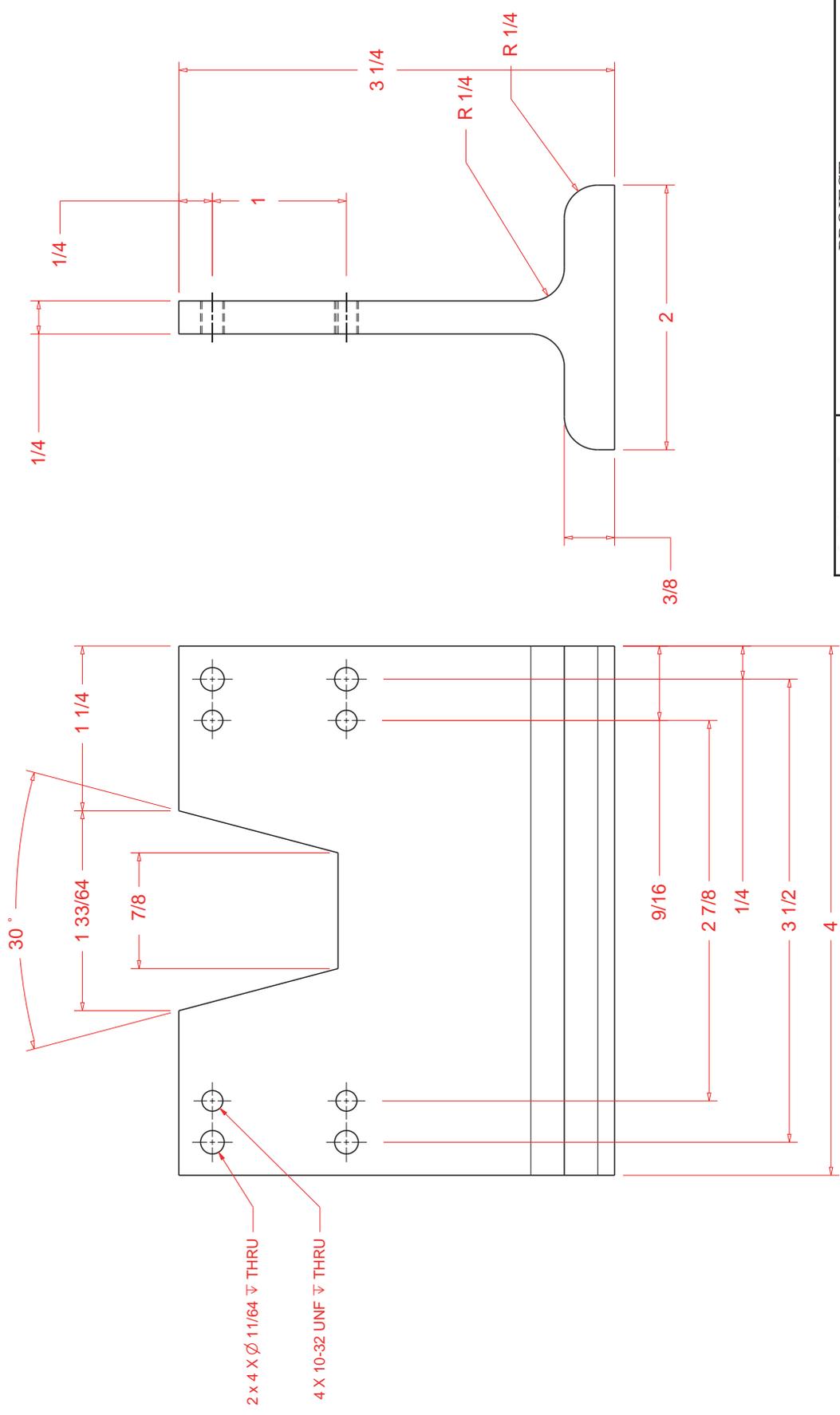
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20-BASE STEEL, 1 REQ'S 1 X SCALE

NOTE: THIS BASE IS DIMENSIONED FOR USE WITH AN ENCO INDEXING HEAD. ADJUST YOUR BASE DIMENSIONS AND SHAPE FOR USE WITH YOUR INDEXING DEVICE.



2 x 4 X Ø 1/64 ∇ THRU
4 X 10-32 UNF ∇ THRU

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
 METRIC
 1 PLACE ±0.3
 2 PLACE ±0.03
 3 PLACE ±0.005
 IMPERIAL
 1 PLACE ±0.01
 2 PLACE ±0.001
 3 PLACE ±0.0001
 4 PLACE ±0.00005

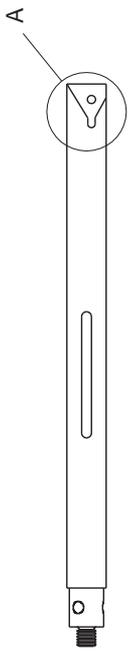
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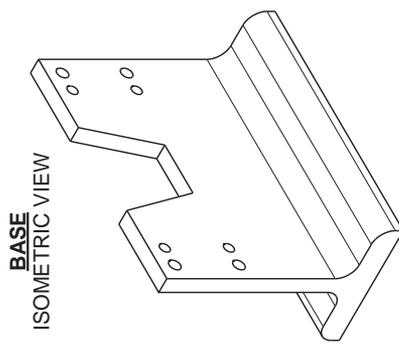


CUTTING THE POCKET FOR THE CARBIDE INSERT

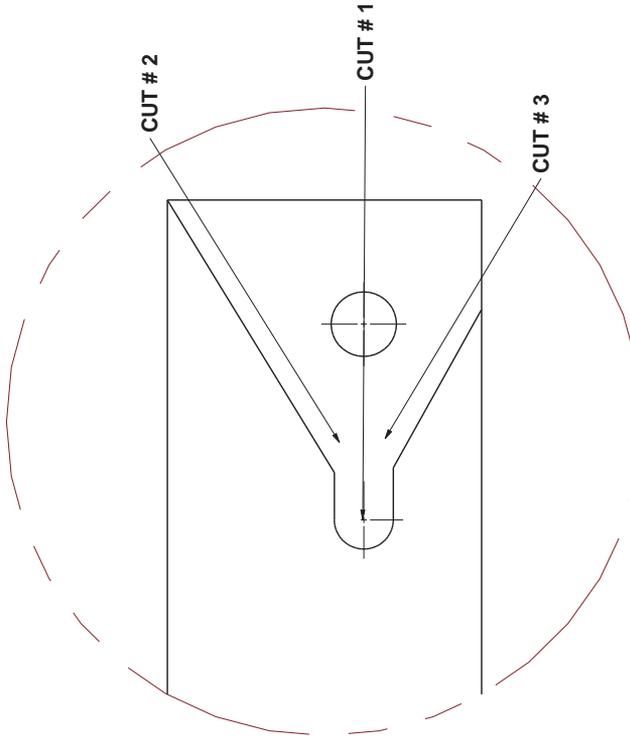
NOTE: TO CUT POCKET FOR THREADING INSERT, PUT RAM IN VISE PARALLEL TO X AXIS ON MILL. USE 3/32" END MILL TO CUT INSERT CENTERLINE SLOT 3/16" FROM 'BOTTOM' OF RAM, 1/8" (-1/32 FOR A FINISHING CUT) DEEP AND 9/16" LONG. CUT 0.01" DEEP PER PASS TO DEPTH. SET VISE AT 30° AND CUT SLOT SO THAT THE TOP EDGE INTERSECTS WITH 'TOP' CORNER OF THE OF RAM. THEN TURN VISE BACK 60° AND CUT SLOT TO FORM THE LOWER SIDE OF THE POCKET. MACHINE ALL MATERIAL FROM POCKET. NOW INCREASE THE OVERALL DEPTH OF THE POCKET UNTIL THE THREADING INSERT IS FLUSH WITH THE SIDE OF THE RAM. ADJUST VISE SO RAM IS PARALLEL TO X AXIS OF THE MILL TABLE AND PUT INSERT IN THE POCKET AND INDICATE THE LOCATION OF THE RETAINING SCREW HOLE. REMOVE THE INSERT, MOVE THE TABLE AN ADDITIONAL 0.003" SO THE HOLE WILL BE FURTHER BACK IN THE SOCKET AND DRILL AND TAP 6-32 THROUGH.



Detail A



BASE ISOMETRIC VIEW



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METRIC
 1 PLACE ±0.3
 2 PLACE ±0.01
 3 PLACE ±0.001
 4 PLACE ±0.0005

IMPERIAL
 2 PLACE ±0.01
 3 PLACE ±0.001
 4 PLACE ±0.0005

BREAK OR DEBURR EDGES UNLESS OTHERWISE SPECIFIED



Model Engineering Internet Resources

Click on these to explore the Web sites:

<http://www.homemodelenginemachinist.com/>
<http://modelengineneeds.org/>
<http://www.floridaame.org/>
http://groups.yahoo.com/group/Min_Int_Comb_Eng
http://groups.yahoo.com/group/R_and_R_engines
<http://www.practicalmachinist.com/>
<http://bbs.homeshopmachinist.net/>
<http://www.cnczone.com/>
<http://forums.americanmachinist.com/>
<http://www.machinistweb.com/forum/>
<http://www.chaski.com/homemachinist/>
<http://www.machinetools.com/us/forums>
<http://www.modeleng.org/>
<http://sites.google.com/site/kiwimodelengineering/home>

Do you have more links? Send them to us via this link www.modelenginebuilder.com/contactus.htm.

Want To Build Your First Engine?

Want to make a first engine? This Wobbler may be just what you are looking for. Written for beginners.
<http://blog.axmiistersskillcentre.co.uk>

Model Engineering Clubs

- Bay Area Engine Modelers
U.S.A., San Francisco www.baemclub.com
- Bournemouth & District Society of Model Engineers
U.K., www.littledownrailway.co.uk
- Chicago Model Engineers Association
U.S.A., e-mail: edsmerz@webtv.net
- Colorado Model Engineering Society
U.S.A., e-mail: jbeall303@juno.com
- Florida Association of Model Engineers
U.S.A., www.floridaame.org
- Hamilton Model Engineering Club
Canada, www.hamiltonmodelengineeringclub.com
- Kansas Association of Model Engineers
U.S.A., www.geocities.com/steammodel/index.html
- Model Engine Collectors Association (M.E.C.A)
U.S.A., www.modelengine.org
- New England Model Engineering Society
U.S.A., www.neme-s.org
- Northwest Model Engineers Association (Chicago)
U.S.A., dyoung1228@aol.com
- Portland Model Engineers
U.S.A., tomten@easystreet.net
- The Society of Model & Experimental Engineers
U.K., www.sm-ee.co.uk/
- Southern California Home Shop Machinists
U.S.A., www.schsm.org
- Toronto Society of Model Engineers
Canada www.tsme.ca

To add your club to this list, please send contact information by clicking on:

www.modelenginebuilder.com/contactus.htm

Photographing Bright & Shiny Things

By Mike Rehmus

Editor of *Model Engine Builder* magazine and a founding member of Bay Area Engine Modelers
www.modelenginebuilder.com — www.baemclub.com

Pay attention before you push the button

It is discouraging to take what you think will be the perfect picture only to find that something spoils the picture that you could have fixed had you noticed before the picture was taken. In this issue we will talk about how to make simple digital cameras focus where we want them to focus and to expose the picture correctly.

But before we begin, I want to mention that even simple cameras have amazingly competent automatic features. However, depending on automation to give us the perfect picture is frequently an exercise in futility. Most people buy a camera to take snapshots of people and the focus and exposure automation is designed to make the best picture possible of Aunt Bessie and her poodle, not pictures of engines and engine parts. Therefore, we have to fool the camera's Automation because most cameras don't allow you to disable their desire to take a great picture of Aunt Bessie and the poodle. Read your camera's manual to see if you can find a more desirable camera preset for your pictures.

It is a rare (more expensive) camera that allows you to turn off automatic focus and exposure. At best you may have the equivalent of a Brightness control in the camera menu that will allow you to modify the automatic exposure.

Newer cameras do have Scene Selections where you can choose a cute little picture of a mountain, a person, a group of people or a flower. But you are still going to get the picture that the camera automation chooses to give you.

What to do? Let us take what we know about the camera and then fool it. Yup, cheat the automation. What are the major concerns when we take a picture of an engine with all the shiny surfaces? Focus and exposure are the big issues and that is where we will focus our efforts (puns are intended).

Let us examine what tricks we need to employ to fool the camera.

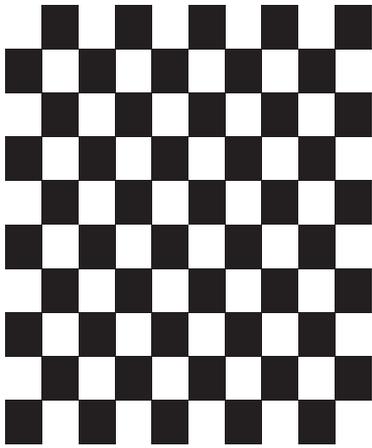
1. Most modern cameras actuate their focus and exposure automation when we push the shutter button half-way down. Both values are set and then locked as long as we hold the button half-way down.
2. Camera exposure automation is set to properly expose a scene that reflects 18% of the light striking it, back to the camera. That is the average reflection in a landscape picture that doesn't have too little or too much sky in it.
3. We know that the camera's automatic focus feature works best when it has a high-contrast scene on which to focus.
4. Digital cameras can correct for the 'color' of the light in the image field. So as long as you only have one color of light in the scene, the camera can deliver an image that is free of color artifacts.

Add this all up and we can create a solution. We need something that tricks the camera into properly exposing, focusing and color correcting the image. Fortunately, you can make an automation defeating tool on your computer and printer.

What you need is a black and white grid of small squares that will reflect a proper amount of light back to the camera. This is all there is to it.

Model Engine Builder™

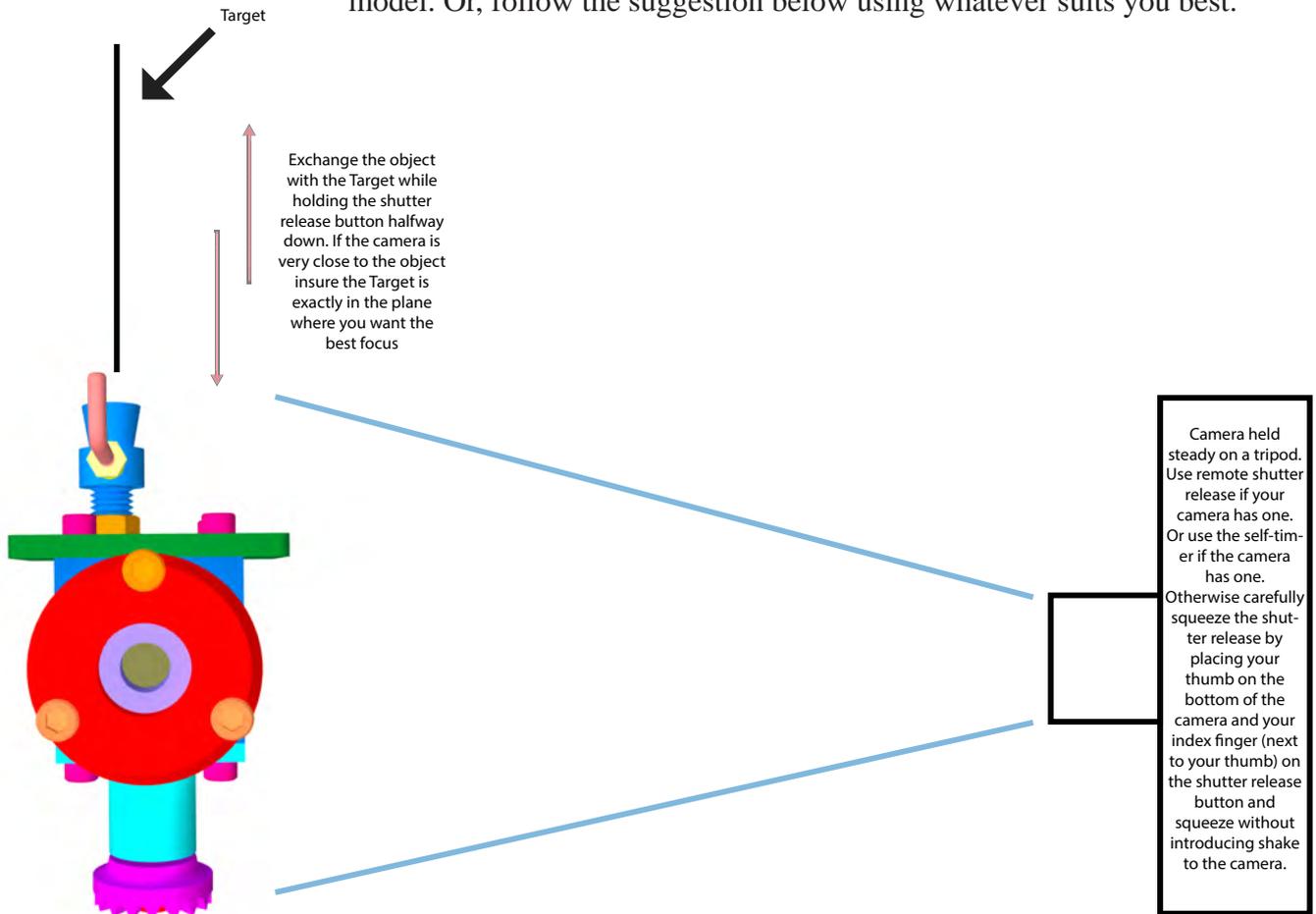
- You can set up the proper amount of reflected light to fool your camera into delivering a properly exposed image.
- The grid of white and black squares will give the automatic focus an ideal target for determining distance.
- The paper filled with squares will be reasonably neutral in reflecting light so whatever color of light falls on the paper, will be accurately reflected back to the camera and the camera can modify its setting to make the picture appear as if it were illuminated with a neutral color of light (that is, the whites will be white, not green or red or a color never seen in nature).



At the left is an Excel document with 100 blackened squares. I've blackened 50 of the squares (the other 50 squares are busy reflecting light). This works for my inexpensive camera and may or may not work for your camera. Add or subtract black squared until your camera delivers a good picture. Or, since most cameras have a way to adjust exposure (usually a lighten/darken control on the camera or in the menu).

The size should match the field of view you have set for the camera. Just set the computer print size to change the overall size of the printout.

I haven't mentioned where you place the target. You want to place it right where you want the best focus on your model. One trick is to turn the camera slightly to focus/set exposure on the card and then, holding down the shutter release button halfway, rotate the camera back to the proper frame for your model. Or, follow the suggestion below using whatever suits you best.

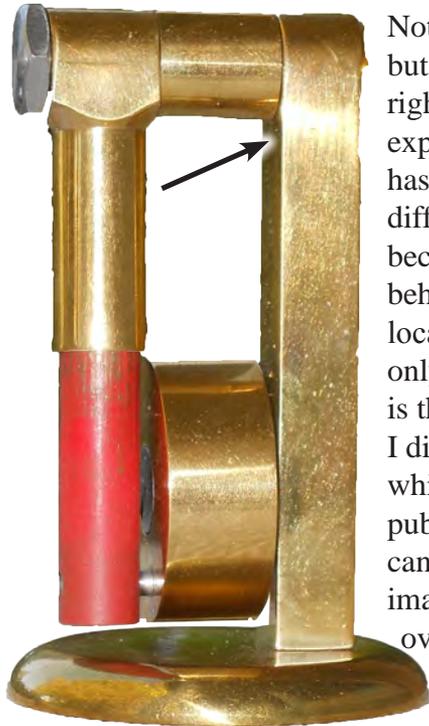


If you do not have Excel, then download Open Office, a free collection of programs that mimic and can interchange files with Microsoft Office. Go to this Web site:

<http://help-experts.com/openoffice/ver2/?source=CCN-CD333-C40-open%20office>

If you have a high-end camera, you can probably manually set exposure and focus and you will not require this approach. If exposure is a problem for your setup, one of the Kodak 18% gray cards will allow you to set exposure fairly close and set color temperature at the same time. But operating the camera in full manual mode should allow you to change exposure controls until you obtain a proper exposure.

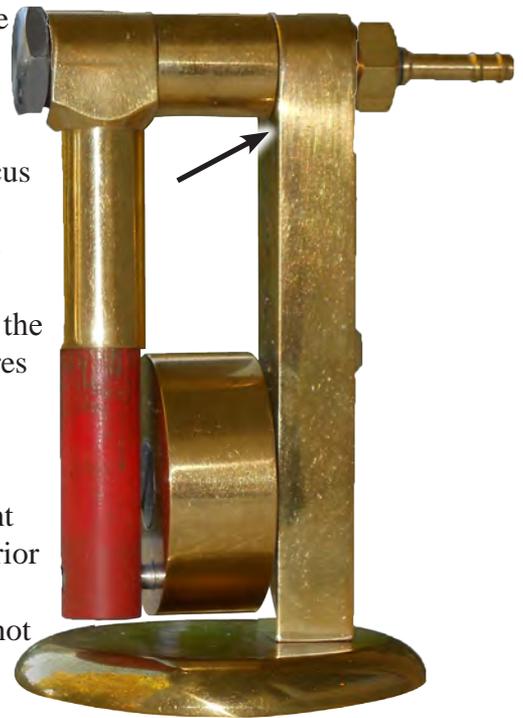
Without use of the Target



Note that the differences are subtle but noticeable. The image on the right has highlights at the correct exposure, not washed out and still has detail in the darkest areas. Focus differences are not really evident because the background was well-behind the wobbler. The camera location was fixed on a tripod and the only difference between the pictures is the use of the Target.

I did not touch up the images which I would normally do for publication. The image on the right can be 'Photoshopped' into a superior image, the image on the left has overexposed highlights that can not be fixed.

With use of the Target



A Color Of Light Digression

Scientists describe a light source as having a 'color temperature'. What does that mean to us? Every object with a temperature above absolute zero radiates some energy which increases as the temperature increases. If the temperature is high enough, the object starts to emit energy (light) that is visible to us (think of the color emitted by steel when we heat it from a dull red to white hot). That analogy isn't exactly correct because scientists use a theoretical 'blackbody' that will perfectly radiate heat/light. The blackbody is heated until it glows and the color of light it emits corresponds to the temperature of the blackbody. Hence the term, 'Color Temperature.' The blackbody color changes from a dull red to yellow, to white and then to blue.

Tungsten lamp light color has a color temperature of approximately 2300 degrees Kelvin which is the color of light emitted by a blackbody at that temperature. A 5500 degree Kelvin light source is approximately the color of the noonday sun and the blue sky has a color temperature of around 7200 degrees Kelvin. The electronic flash in your camera has a color temperature of approximately 5500.

The Kelvin temperature scale starts at absolute zero and relates to a temperature of -273.15 degrees Celsius or -459.67 degrees Fahrenheit. $1\text{ K} = 1^\circ\text{C} = 9/5^\circ\text{F}$. Note that Kelvins are not marked as degrees. Got all that? Wonderful but probably more than you wanted to know, eh?

