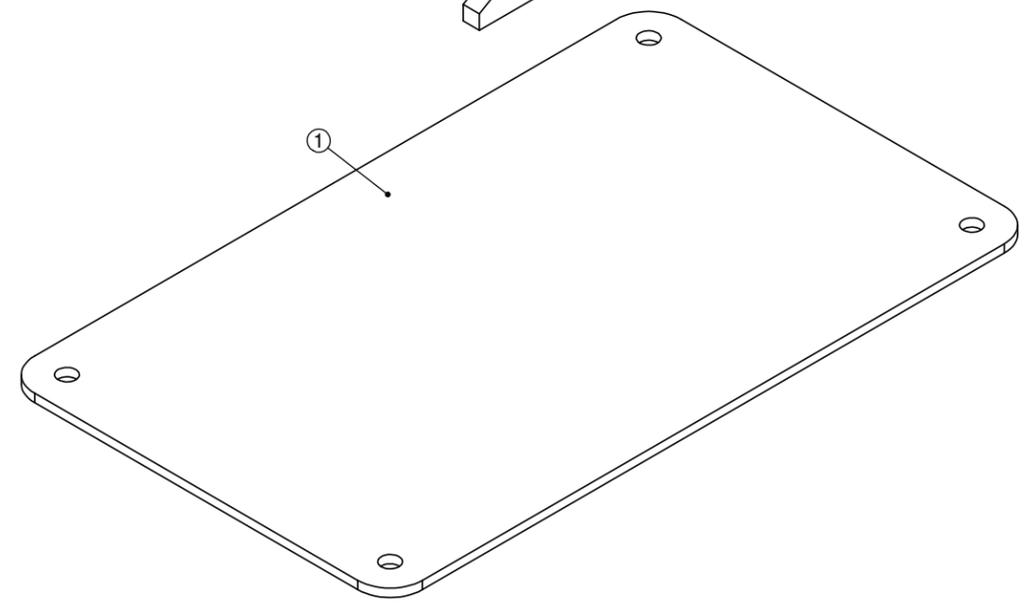
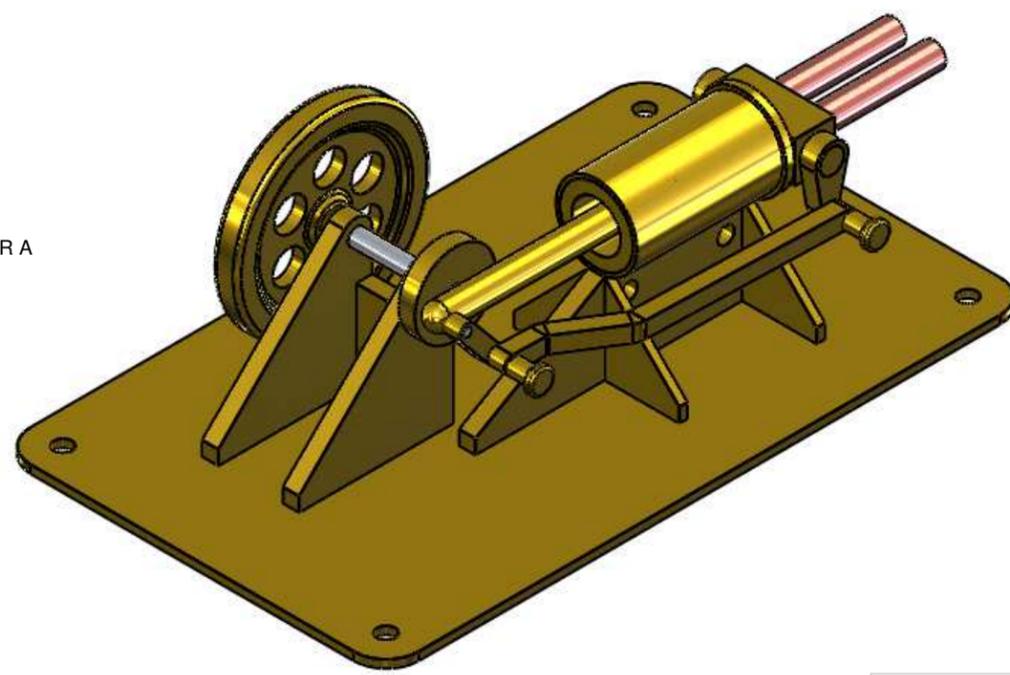
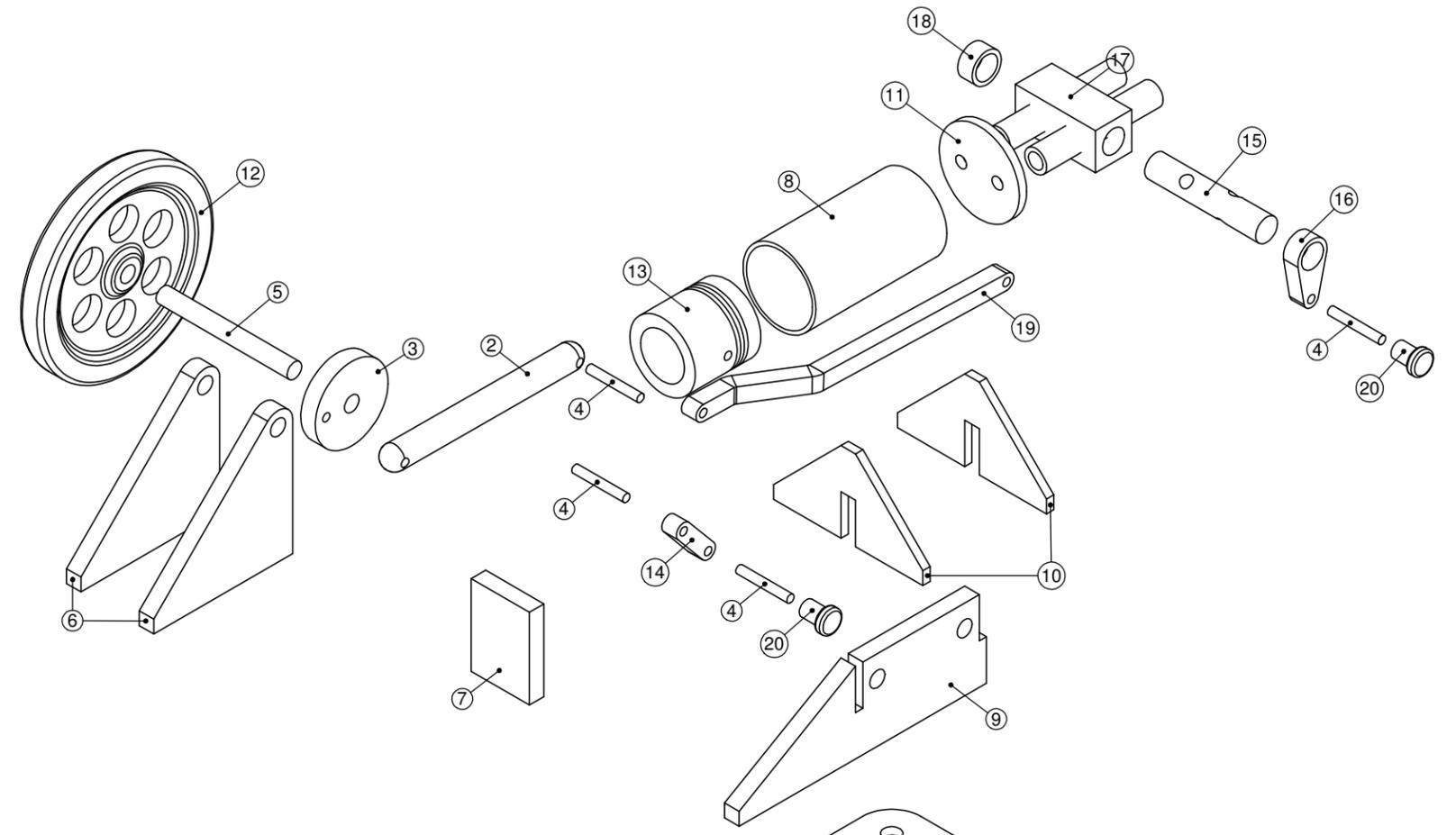


ITEM NO.	PART NUMBER	MATERIAL	QTY.
1	S&S Base Plate	1/16" BRASS SHEET	1
2	S&S Connecting Rod	Ø3/16" ROUND BRASS ROD	1
3	S&S Crank Disk	1/8" BRASS SHEET	1
4	S&S Crank Pin	Ø1/16" ROUND STAINLESS ROD	4
5	S&S Crank Shaft	Ø1/8" ROUND STAINLESS ROD	1
6	S&S Crank Support 1	1/8" BRASS SHEET	2
7	S&S Crank Support 2	1/8" BRASS SHEET	1
8	S&S Cylinder	Ø0.625" OD x 0.029" WALL x Ø0.567" ID BRASS TUBE, SEAMLESS	1
9	S&S Cylinder Base 1	1/8" BRASS SHEET	1
10	S&S Cylinder Base 2	1/16" BRASS SHEET	2
11	S&S Cylinder Head Disk	1/16" BRASS SHEET	1
12	S&S Flywheel	3/16" BRASS SHEET OR Ø1 1/2" ROUND ROD	1
13	S&S Piston	Ø9/16" BRASS ROD	1
14	S&S Throw	1/8" SQUARE BRASS BAR	1
15	S&S Valve	Ø3/16" BRASS ROD	1
16	S&S Valve Arm	1/8" BRASS SHEET	1
17	S&S Valve Body	5/16" SQUARE BRASS BAR	1
18	S&S Valve Keeper	Ø0.25" OD x 0.03" WALL x Ø0.19" ID BRASS TUBE, SEAMLESS	1
19	S&S Valve Rod	1/8" SQUARE BRASS BAR	1
20	S&S Valve Rod Keeper	Ø3/16" BRASS ROD	2
21	S&S Valve Inlet Exhaust Tube	Ø3/16" COPPER TUBE	2
22	CYLINDER LAGGING	OPTIONAL, 1/16" X 1/8" X 1 1/2" WOOD (NOT SHOWN)	AS NEEDED
23	WOOD BASE	OPTIONAL, BUILD AS DESIRED (NOT SHOWN)	1



GENERAL NOTES:

ENGINE DESIGN BASED UPON ARTICLE IN THE DECEMBER, 1950 ISSUE OF POPULAR SCIENCE (PAGES 196 and 197).

DIMENSIONS:
ARE GIVEN IN mm [INCHES].

SCALE IS 1 TO 1 IF PRINTED ON 11" X 17" PAPER (SEE SHEET 3).

DRILL SIZE #s GIVEN AS NEEDED, OTHERWISE FRACTIONAL DRILL SIZES USED.

MATERIALS:
SEE MATERIAL LISTED IN BILL OF MATERIAL.

ASSEMBLY:
SOLDER PARTS TOGETHER WITH SILVER SOLDER WHERE INDICATED.

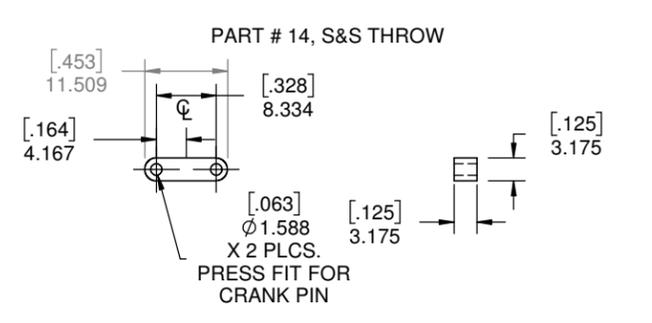
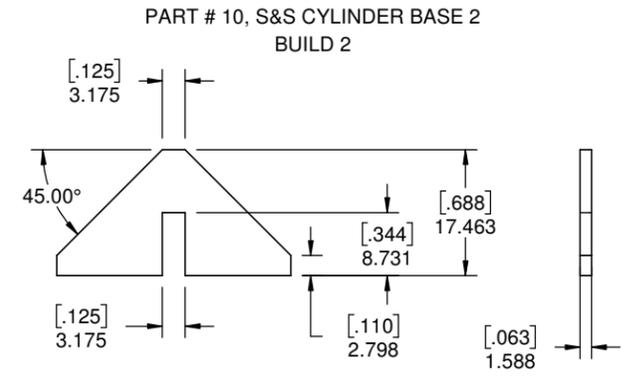
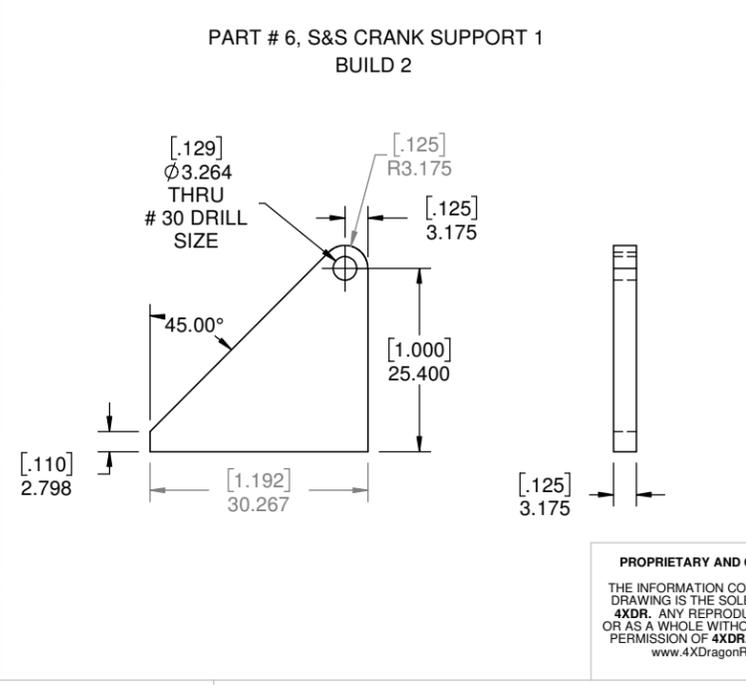
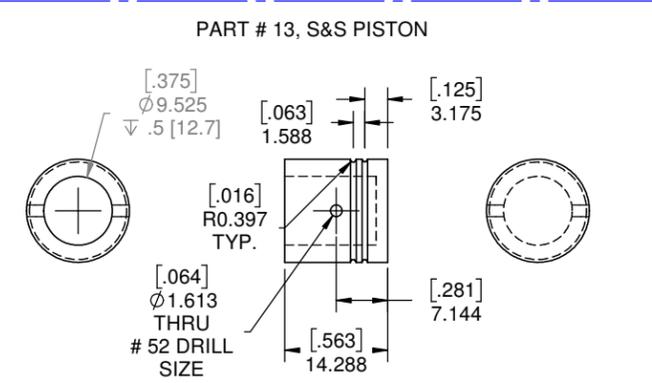
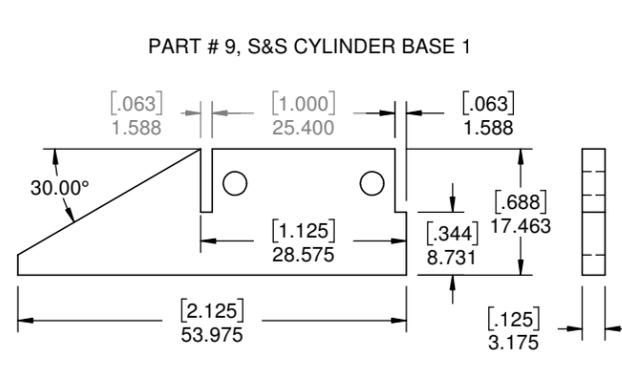
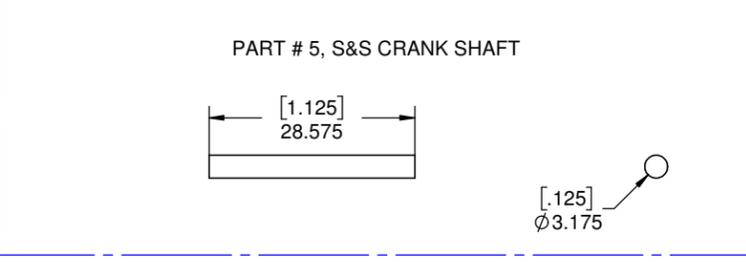
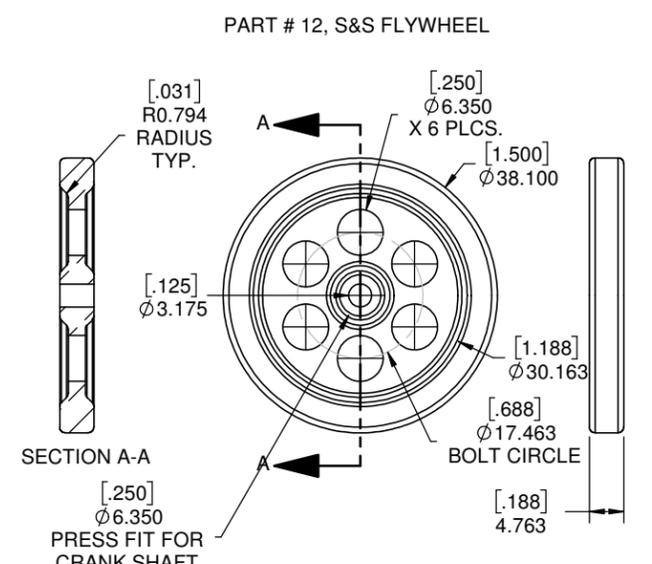
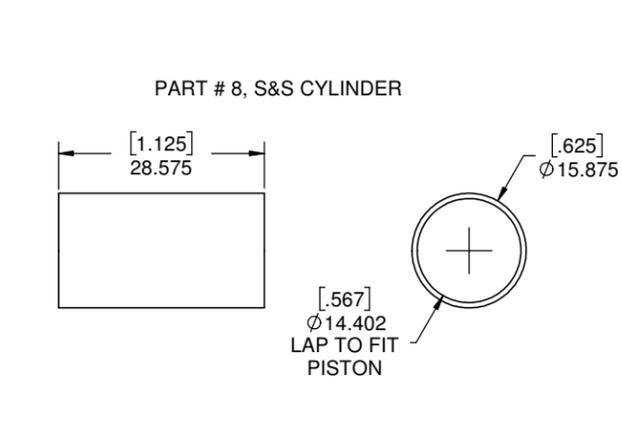
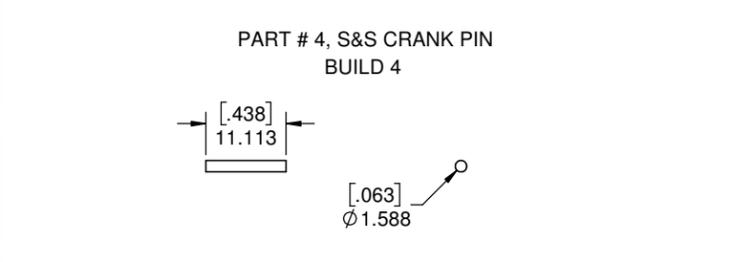
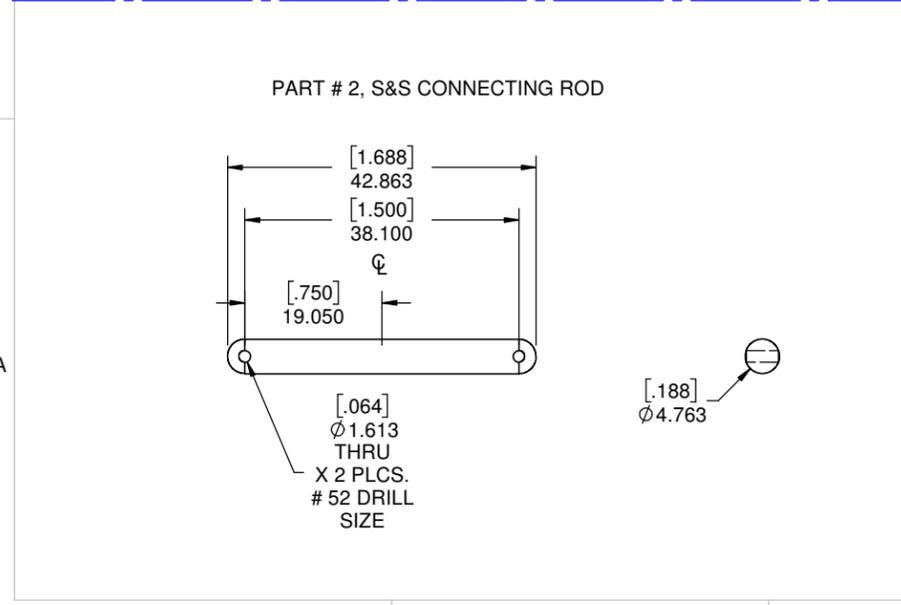
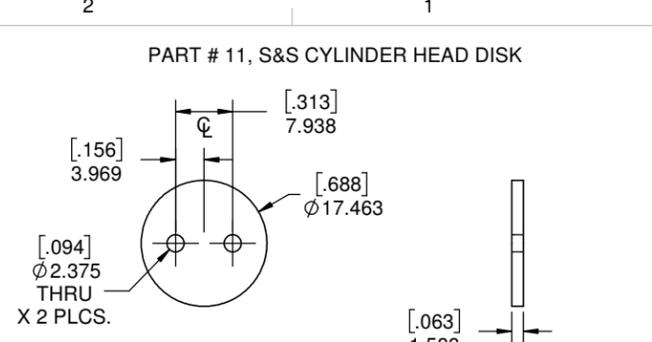
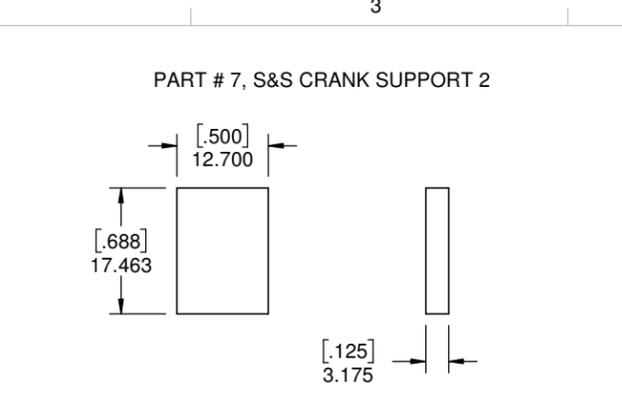
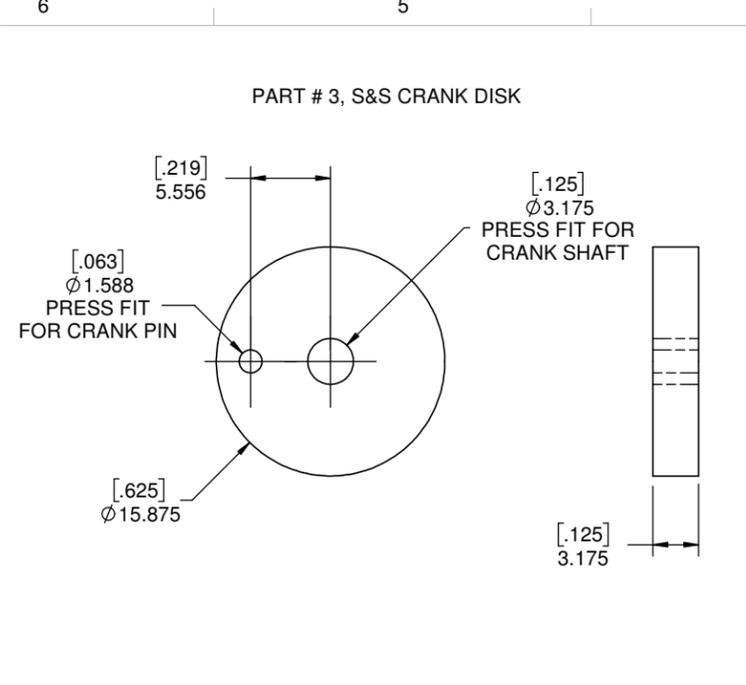
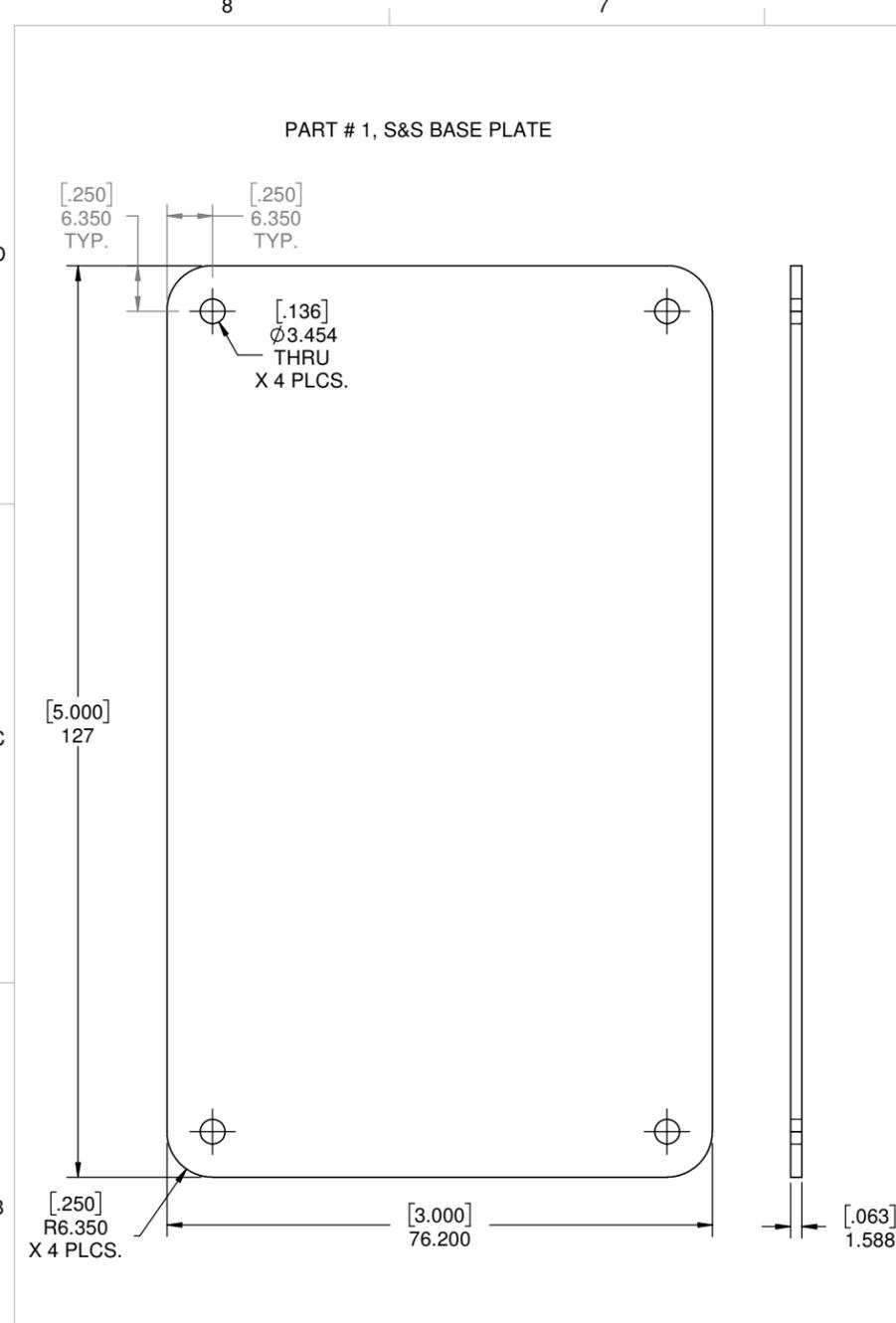
PRESS FIT PARTS SHOULD USE LOCTITE 620 RETAINING COMPOUND

PISTON TO CYLINDER CLEARANCE SHOULD BE CHECKED FOR A SHAKELESS BUT FREE RUNNING FIT.

TWO SCREW HOLES ARE INDICATED ON CYLINDER BASE 1, THESE CAN BE USED TO SECURE BANDS USED TO HOLD CYLINDER LAGGING WITH #4 SCREWS AND NUTS.

ENGINE INFORMATION:
FINISHED ENGINE WILL RUN FROM 2PSI AND UP TO 15 PSI STEAM PRESSURE.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	4XDR Mesa, Arizona
DIMENSIONS ARE IN INCHES DEBURR AND BREAK ALL SHARPS		DRAWN	IceFyre13th	
TOLERANCES:		CHECKED		TITLE: Scraps and Solder Engine
DECIMALS: .X = ± .1 .XX = ± .01 .XXX = ± .005		ENG APPR.		
FRACTIONS: ± 1/64		MFG APPR.		SIZE DWG. NO.
ANGULAR: ± .5°		Q.A.		B S&SE1
PROPRIETARY AND CONFIDENTIAL	INTERPRET GEOMETRIC TOLERANCING PER: ANSI Y14.5	COMMENTS:		REV A
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF 4XDR. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF 4XDR. IS PROHIBITED. www.4XDragonRacing.com	MATERIAL SEE NOTES			SCALE: 1:1
FINISH N/A	DO NOT SCALE DRAWING			SHEET 1 OF 3



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES DEBURR AND BREAK ALL SHARPS		DRAWN	IceFyre13th 12/19/2016
TOLERANCES: DECIMALS: X = ±.1 XX = ±.01 XXX = ±.005		CHECKED	
FRACTIONS: ± 1/64		ENG APPR.	
ANGULAR: ± 5°		MFG APPR.	
INTERPRET GEOMETRIC TOLERANCING PER: ANSI Y14.5		Q.A.	
MATERIAL: SEE NOTES		COMMENTS:	
FINISH: N/A			
DO NOT SCALE DRAWING			

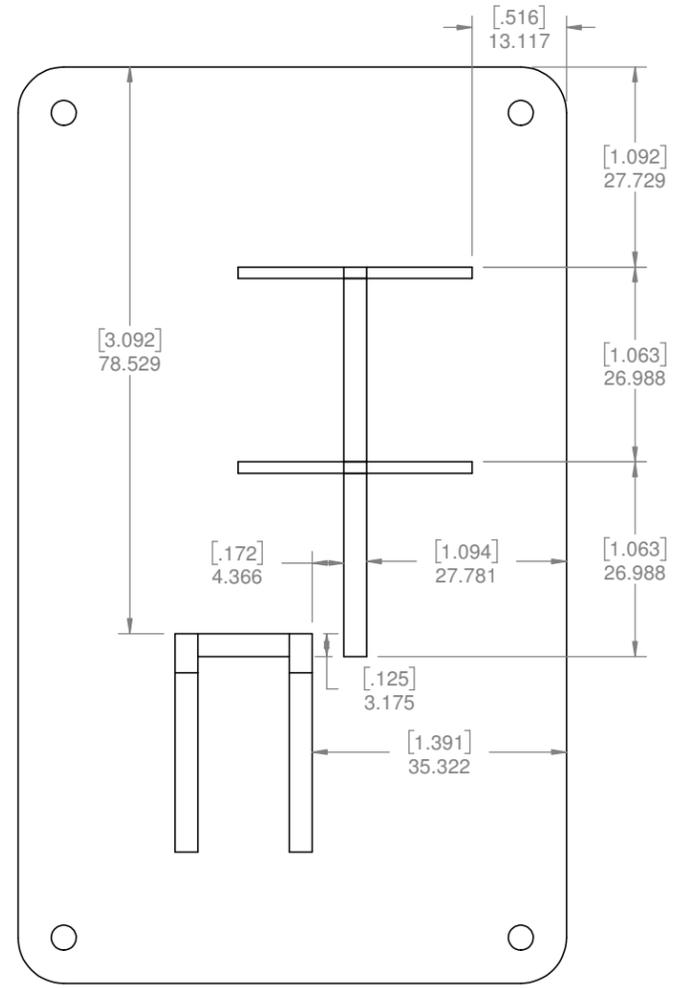
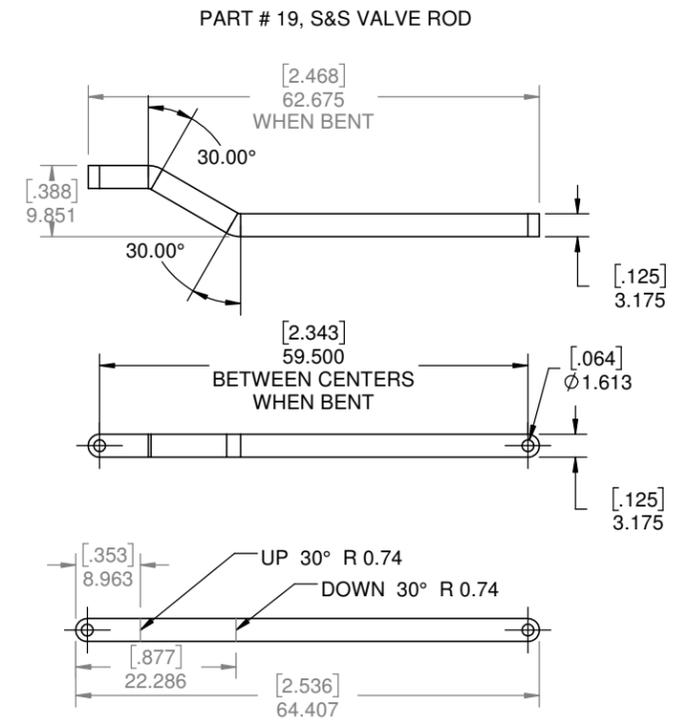
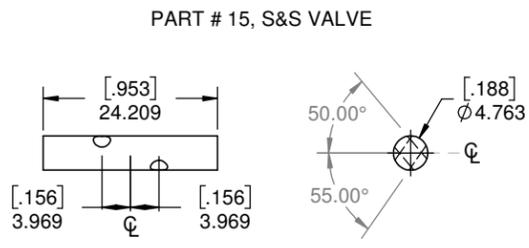
4XDR
Mesa, Arizona

TITLE: **Scraps and Solder Engine**

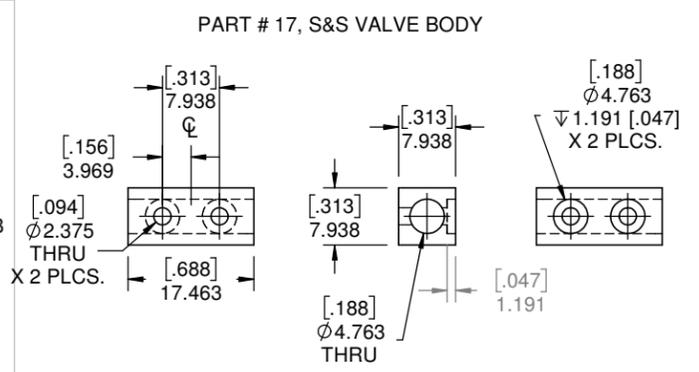
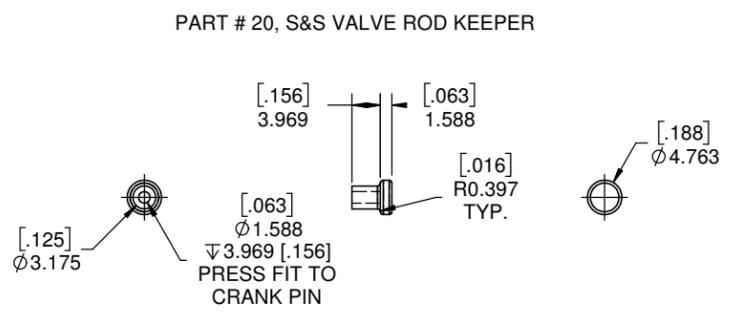
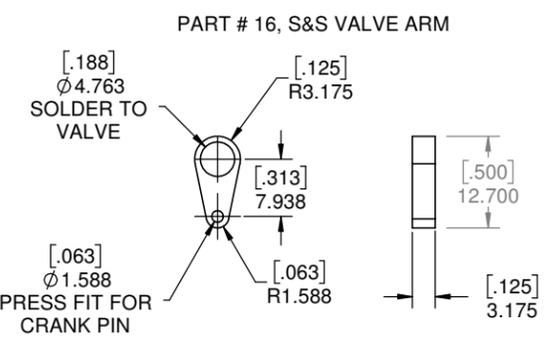
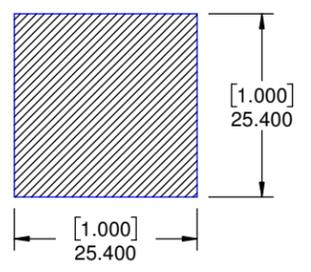
SIZE **B** DWG. NO. **S&SE1** REV **A**

SCALE: 1:1 SHEET 2 OF 3

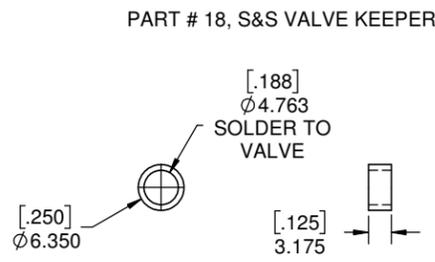
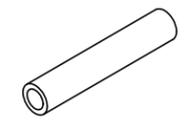
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF 4XDR. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF 4XDR. IS PROHIBITED.
www.4XDragonRacing.com



LAYOUT GUIDE FOR CYLINDER BASES AND CRANK SUPPORTS . PRINT TO SCALE AND CUT OUT TO USE AS GUIDE.
 SQUARE BELOW SHOULD MEASURE 25.4mm [1.0"] AFTER PRINTING ON 11" X 17" PAPER.



PART # 21, S&S VALVE INLET / EXHAUST TUBE
 BUILD 2, LENGTH AND SHAPE UP TO BUILDER.
 SOLDER TO VALVE BODY.



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES DEBURR AND BREAK ALL SHARPS		DRAWN	IceFyre13th 12/19/2016
TOLERANCES: DECIMALS: X = ± .1 XX = ± .01 XXX = ± .005		CHECKED	
FRACTIONS: ± 1/64		ENG APPR.	
ANGULAR: ± .5°		MFG APPR.	
INTERPRET GEOMETRIC TOLERANCING PER: ANSI Y14.5		Q.A.	
MATERIAL: SEE NOTES		COMMENTS:	
FINISH: N/A			
DO NOT SCALE DRAWING			

4XDR Mesa, Arizona			
TITLE: Scrap and Solder Engine			
SIZE	DWG. NO.	REV	
B	S&SE1	A	
SCALE: 1:1		SHEET 3 OF 3	

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF 4XDR. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF 4XDR. IS PROHIBITED.
 www.4XDragonRacing.com