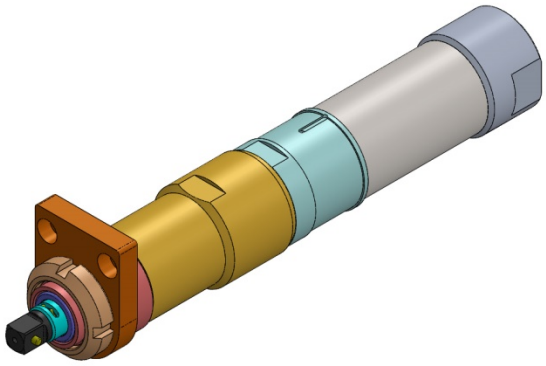
American
ASSEMBLY TOOLS



AP2L-R016

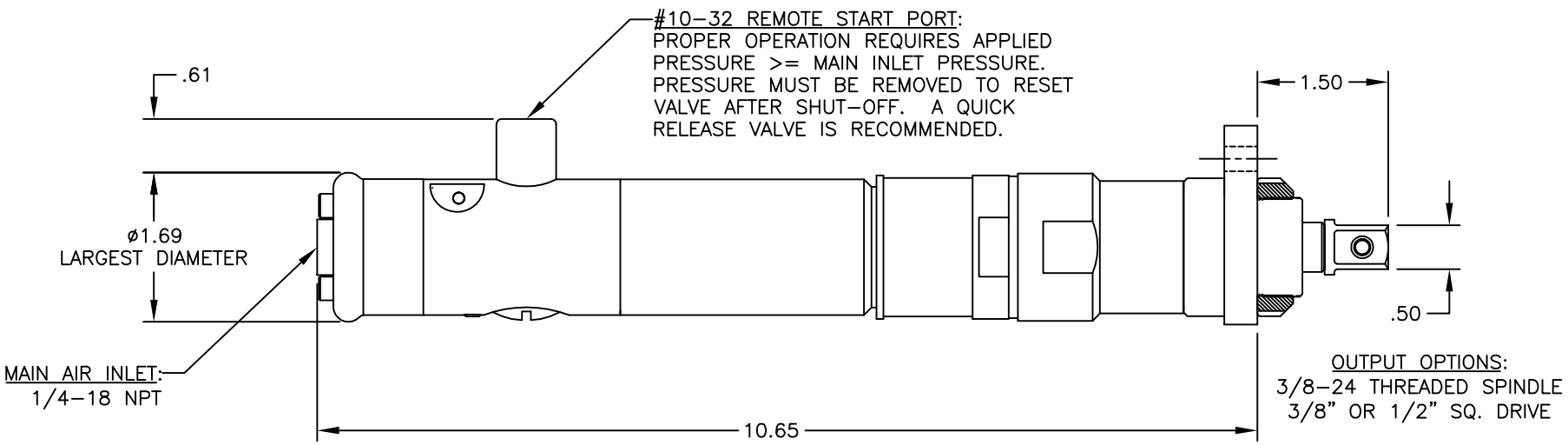
Pneumatic Nutrunner

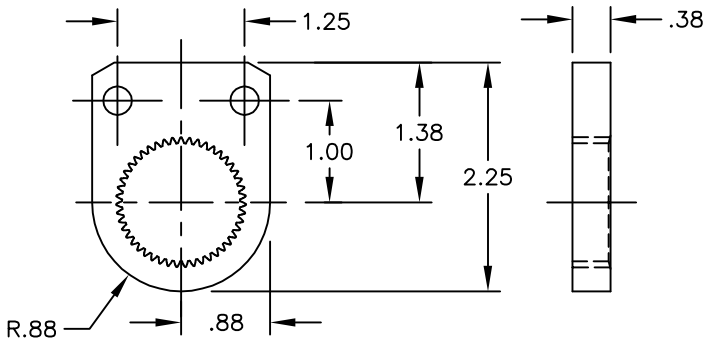
Dec. 2016

Table of Contents

Model No. ***AP2L-R016***

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE





MOUNTING PLATE

THE MATERIALS AND DESIGN PRINCIPLES PRESENTED ON THIS DRAWING ARE THE EXCLUSIVE PROPERTY OF AMERICAN ASSEMBLY TOOLS, INC. (AAT) AND IS CONFIDENTIAL INFORMATION. THIS INFORMATION IS GIVEN TO YOU FOR YOUR USE IN THE REPAIR AND MAINTENANCE OF OUR PRODUCT, OR IN THE MANUFACTURE OF COMPONENT PARTS FOR THE SOLE USE OF AAT. THIS DRAWING MAY NOT BE COPIED OR LOANED IN PART, OR IN WHOLE, NOR IS THIS INFORMATION TO BE RELAYED TO ANY OTHER INDIVIDUAL OR COMPANY OUTSIDE YOUR ORGANIZATION. ACCEPTANCE OF THIS DRAWING WILL BE CONSTRUED AS ACCEPTANCE OF THE ABOVE CONDITIONS.

MATERIAL:	APPROVED	DATE
	DRAWN: D. CLINE	10/07/09
HT TREAT:	CHKD:	
	APPD:	
FINISH:	REL:	

UNLESS OTHERWISE SPECIFIED

1. MACHINED SURFACES TO BE $\sqrt{}$
2. DIAMETERS ON A COMMON ℄ TO BE CONCENTRIC WITHIN .003 T.I.R.
3. FACES TO BE SQUARE WITHIN .001 TOTAL (ON A 1/2 IN. RADIUS)
4. FILLET RADII TO BE .015
5. BREAK ALL SHARP CORNERS AND EDGES

TOLERANCES:
DECIMAL .XX ± .010
DECIMAL .XXX ± .005
ANGULAR ± 1/2°

AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE
AP2L–R010 thru –R025

DRWG SIZE	PART NO.	REV LTR
B		

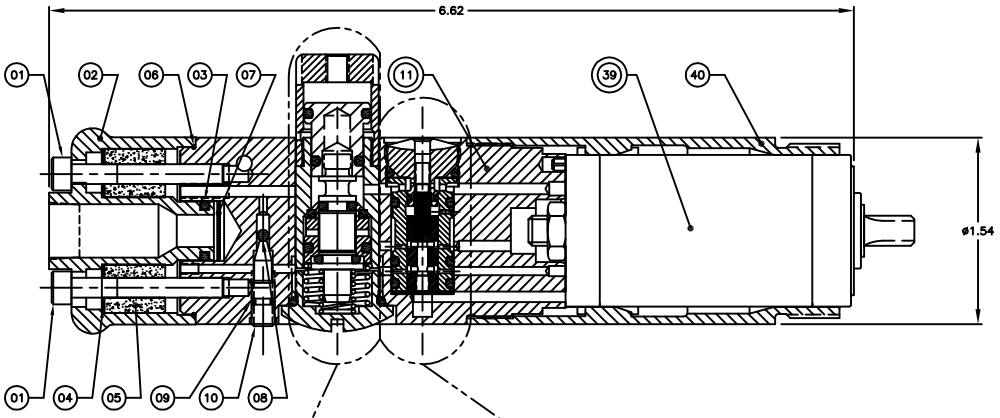
SCALE	WGHT	SHEET
1=2	LB	1 OF 1

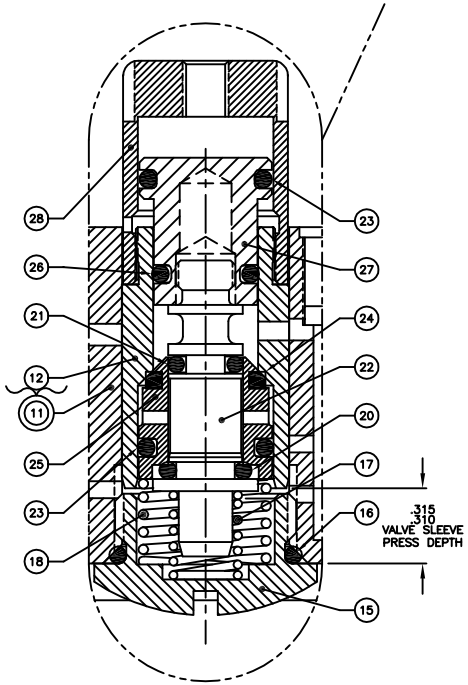
5 4 3 2 1

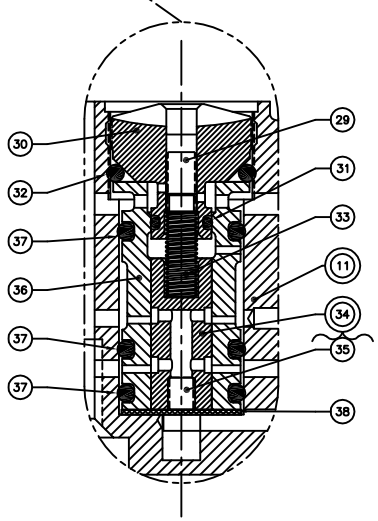
D C B A

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE

ADD LENGTH OF ADJOINING SEGMENTS TO DETERMINE OVERALL LENGTH OF NUTRUNNER







SEE DWG. SHEET #2 FOR REMAINING ITEMS & EXPLODED ASSEMBLY.

ITEM	PART NO.	DESCRIPTION	QTY.
42	8601-00014	LABEL, AAT NOT SHOWN	01
41	9050-62506	SETSCREW	01
40	1200-00009	MOTOR HOUSING	01
39	1000-90120	MOTOR ASSEMBLY	01
38	8321-00005	SCREEN DISK	01
37	9200-00012	O-RING	03
36	1501-00002	VALVE SLEEVE, PAC	01
35	9050-50402	SETSCREW	01
34	1510-00027	VALVE BODY ASSEMBLY, PAC	01
33	8100-00085	SPRING, PAC	01
32	9204-01060	O-RING	01
31	9202-00193	O-RING	01
30	1530-00031	VALVE CAP, PAC	01
29	9052-50504	SETSCREW	01
28	1501-00006	ACTUATOR SLEEVE	01
27	1520-00027	PLUNGER, REMOTE	01
26	9200-00011	O-RING	01
25	1510-00017	VALVE BODY, MAIN	01
24	9205-00011	SQUARE RING	01
23	9204-01060	O-RING	02
22	1520-00028	VALVE STEM	01
21	9202-00107	O-RING	01
20	9203-00009	O-RING	01
19	1520-90029	VALVE STEM ASSEMBLY	01
18	8100-01251	SPRING	01
17	9100-10505	SPRING	01
16	9200-00016	O-RING	01
15	1530-00027	VALVE CAP	01
14	9050-50202	SETSCREW	03
13	9050-50402	SETSCREW	02
12	1500-00024	VALVE SLEEVE	01
11	1210-90029	VALVE HOUSING ASSEMBLY	01
10	1810-01012	SCREW	01
09	9202-00101	O-RING	01
08	9418-00833	STEEL BALL	01
07	8321-00005	SCREEN DISK	01
06	9202-00141	O-RING	01
05	8650-00025	MUFFLER	01
04	8651-00025	SCREEN, MUFFLER	01
03	9200-00012	O-RING	01
02	1231-99022	EXHAUST HOUSING	01
01	9000-00820	SCREW	02

MATERIAL
APPROVED D. CLINE 10/26/00
DATE
FINISH

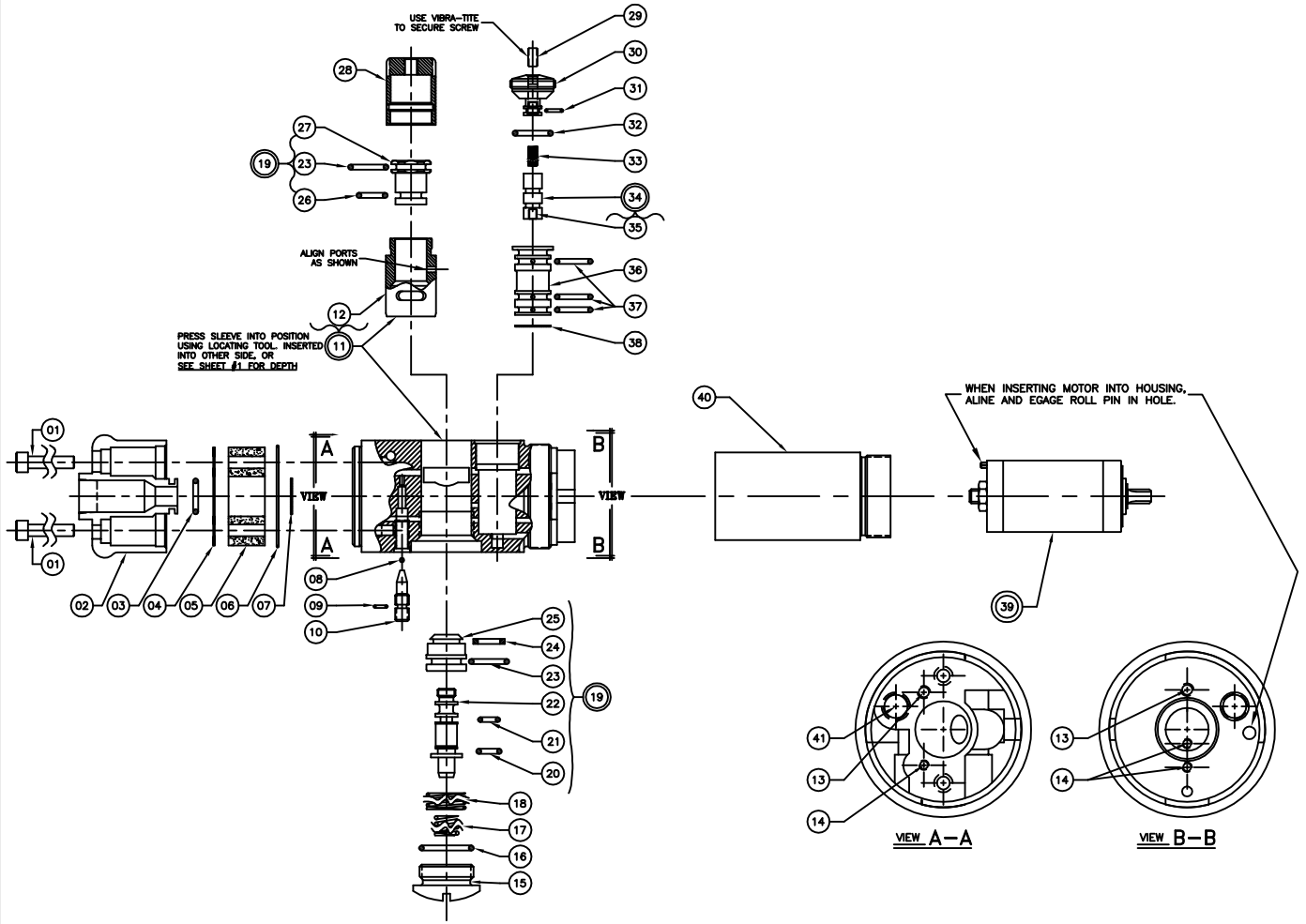
UNLESS OTHERWISE SPECIFIED

AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE MOTOR GROUP ASSEMBLY
2 SIZE, AIR
PAC, REMOTE

DWG SIZE D | PART NO. 1000-12101 | REV

SCALE 2=1 | WGHT LB | SHEET 1 OF 2



REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE

ITEM	PART NO.	DESCRIPTION	QTY.
41	8601-00014	LABEL, AAT NOT SHOWN	01
41	9050-82506	SETSCREW	01
40	1200-00008	MOTOR HOUSING	01
39	1000-90021	MOTOR ASSEMBLY	01
38	8321-00005	SCREEN DISK	01
37	9200-00012	O-RING	03
36	1501-00002	VALVE SLEEVE, PAC	01
35	9050-50402	SETSCREW	01
34	1510-90027	VALVE BODY ASSEMBLY, PAC	01
33	8100-00085	SPRING, PAC	01
32	9204-01060	O-RING	01
31	9202-00193	O-RING	01
30	1530-00031	VALVE CAP, PAC	01
29	9052-50504	SETSCREW	01
28	1501-00006	ACTUATOR SLEEVE	01
27	1520-00027	PLUNGER, REMOTE	01
26	9200-00011	O-RING	01
25	1510-00017	VALVE BODY, MAIN	01
24	9205-00011	SQUARE RING	01
23	9204-01060	O-RING	02
22	1520-00028	VALVE STEM	01
21	9202-00107	O-RING	01
20	9203-00009	O-RING	01
19	1520-90029	VALVE STEM ASSEMBLY	01
18	8100-01251	SPRING	01
17	9100-10505	SPRING	01
16	9200-00016	O-RING	01
15	1530-00027	VALVE CAP	01
14	9050-50202	SETSCREW	03
13	9050-50402	SETSCREW	02
12	1500-00024	VALVE SLEEVE	01
11	1210-90029	VALVE HOUSING ASSEMBLY	01
10	1810-01012	SCREW	01
09	9202-00101	O-RING	01
08	9418-00833	STEEL BALL	01
07	8321-00005	SCREEN DISK	01
06	9202-00141	O-RING	01
05	8650-00025	MUFFLER	01
04	8651-00025	SCREEN, MUFFLER	01
03	9200-00012	O-RING	01
02	1231-99022	EXHAUST HOUSING	01
01	9000-00820	SCREW	02

UNLESS OTHERWISE SPECIFIED

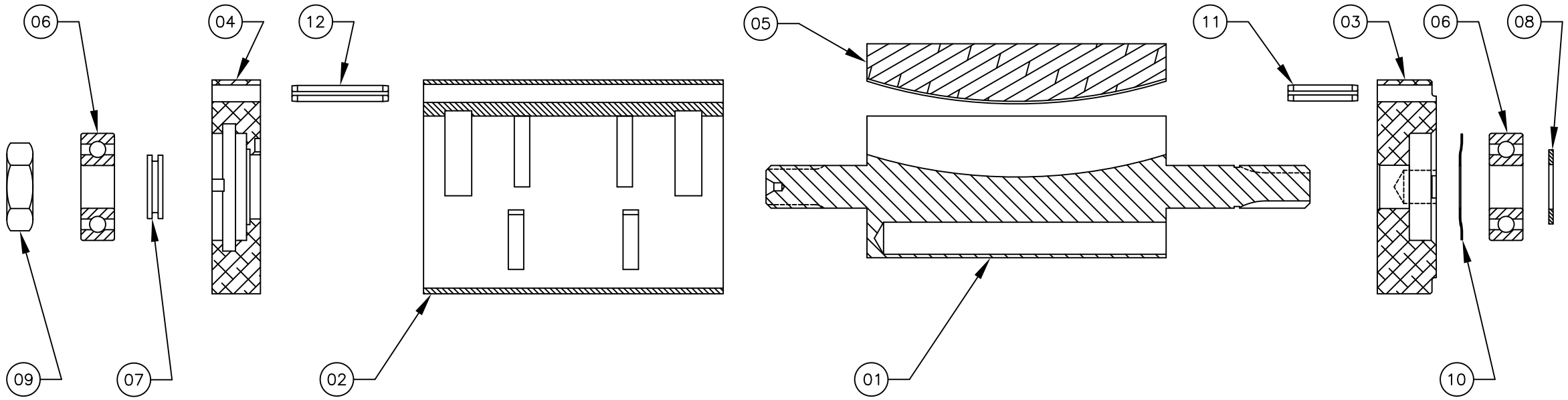
AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE: MOTOR GROUP ASSEMBLY
2 SIZE, AIR
PAC, REMOTE

SIZE: D | PART NO. 1000-12101

SCALE 1=1 | WGHT LB | SHEET 2 OF 2

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE



ROTOR POSITION ADJUSTMENT

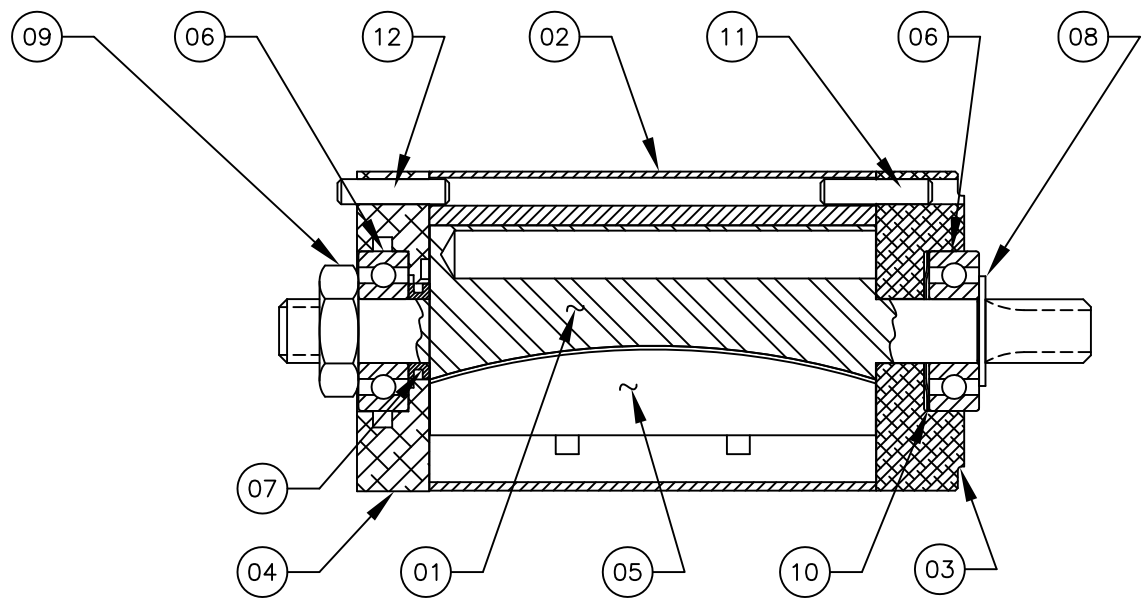
CLAMP MAIN BODY OF ROTOR (01) IN SOFT JAW VICE WITH THREADED END UP.

PLACE CRUSHABLE SPACER(07) ON THE ROTOR SHAFT WITH THE CHAMFERED I.D. TOWARD THE ROTOR.

ASSEMBLE THE INLET END PLATE(04) AND BEARING(08). APPLY BLUE LOCTITE SPARINGLY TO CLEAN THREADS ON THE ROTOR AND ASSEMBLE NUT(09).

TIGHTEN THE NUT CAREFULLY SO THAT THE INLET END PLATE IS FREE TO ROTATE AND IS ABLE TO MOVE ONLY VERY SLIGHTLY WHEN THE END PLATE IS ROCKED USING TWO HANDS HOLDING IT ON ITS EDGES. WHEN THE NUT IS PROPERLY TIGHTENED, THE END PLATE WILL ROTATE WITH NO DRAG BUT WILL BE ALMOST RIGID WHEN ROCKED.

IF THE NUT IS OVERLY TIGHTENED, THE SPACER MAY BE CRUSHED BELOW ITS ALLOWABLE MINIMUM LENGTH AND MAY NEED TO BE REPLACED. THE NUT MUST CLAMP THE INNER RACE OF THE BEARING AND THE CRUSHABLE SPACER TO THE ROTOR BODY.



ITEM	PART NO.	DESCRIPTION	QTY.
12	9300-00609	ROLL PIN	02
11	9300-00607	ROLL PIN	02
10	9102-06208	SPRING WAVE WASHER	01
09	9031-00025	NUT	01
08	9307-00025	RETAINING RING	01
07	8320-05166	SPACER, BEARING – CRUSHABLE	01
06	9400-00004	BEARING, BALL	02
05	1130-00035	BLADE	05
04	1120-00025	INLET END PLATE	01
03	1120-00027	DRIVE END PLATE	01
02	1100-99065	MOTOR CYLINDER	01
01	1110-00022	ROTOR	01

MATERIAL:
HT TREAT:
FINISH:

	APPROVED	DATE
DRAWN	D. CIOLLI	12/07/01
CHECK		
APPD		
MFG		

UNLESS OTHERWISE SPECIFIED
1. MACHINED SURFACES TO BE ▽
2. DIAMETERS ON A COMMON ℄ TO BE CONCENTRIC WITHIN .003 T.I.R.
3. FACES TO BE SQUARE WITHIN .001 TOTAL (ON A 1/2 IN. RADIUS)
4. FILLET RADII TO BE .015
5. BRK. ALL SHARP CORNERS
6. CHAM. ALL THREADS ENDING AT EDGES @ 1/OUTS 45°

TOLERANCES:
DECIMAL .XX ± .010
DECIMAL .XXX ± .005
ANGULAR ± 1/2°

AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE PNEUMATIC MOTOR ASSEMBLY 2 SIZE (PAC)

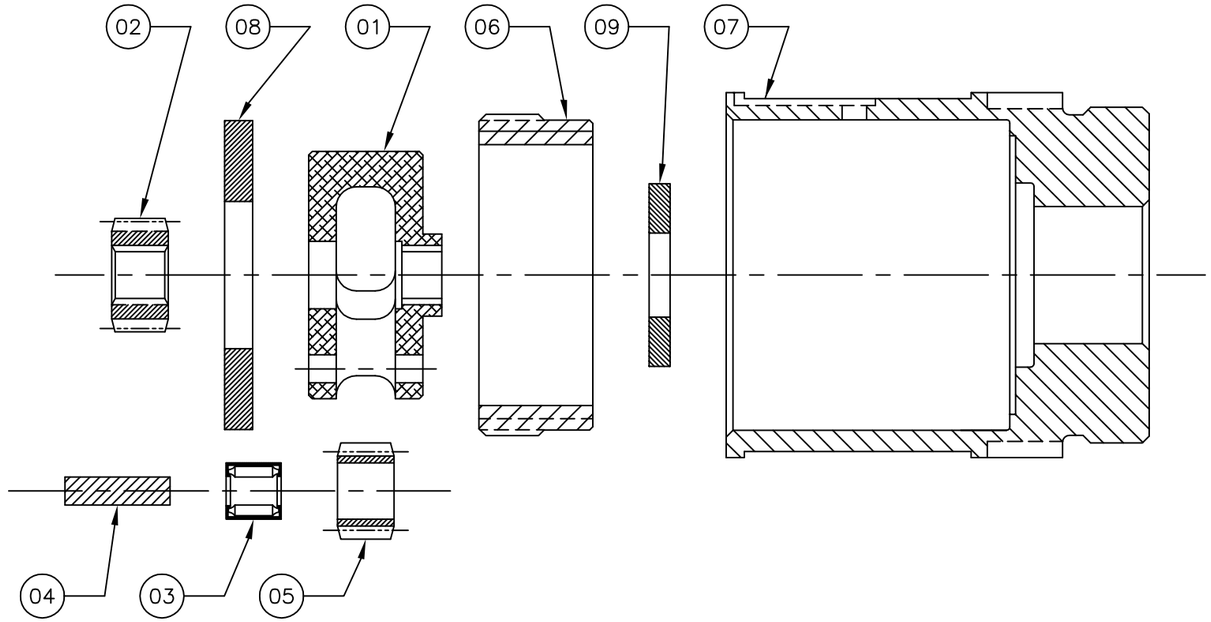
DRWG SIZE D | PART NO. 1000-90120 | REV LTR

SCALE 4=3 | WGHT LB | SHEET 1 OF 1

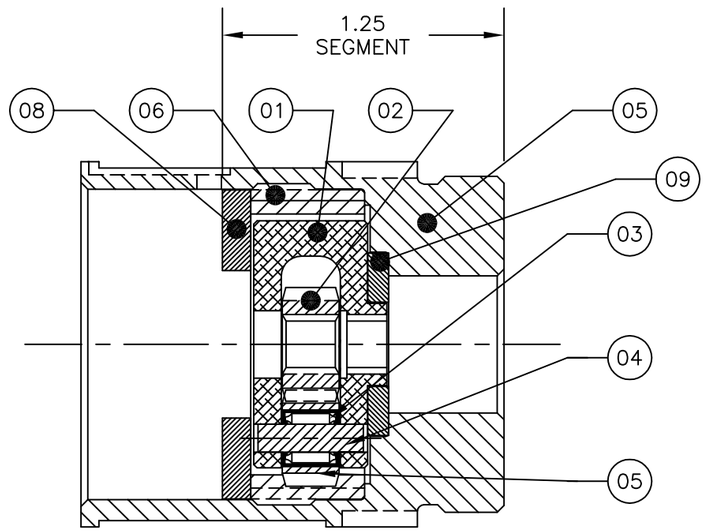
11 10 9 8 7 6 5 4 3 2 1

F E D C B A

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE



ADD LENGTH OF ADJOINING SEGMENTS TO DETERMINE OVERALL LENGTH OF NUTRUNNER



IN SOLIDWORKS

ITEM	PART NO.	DESCRIPTION	QTY.
09	9432–06133	WASHER, THRUST	01
08	8320–00039	WASHER, THRUST	01
07	3211–00028	GEAR HOUSING	01
06	3210–40473	RING GEAR	01
05	3120–40150	GEAR, PLANET (15T)	03
04	8303–00414	PIN	03
03	9413–00024	BEARING, NEEDLE	03
02	3100–40160	PINION (16T)	01
01	3402–99415	PLANET CARRIER	01

MATERIAL:

HT TREAT:

FINISH:

	APPROVED	DATE
DRAWN: D. CLINE		6/11/98
CHKD:		
APPD:		
REL:		

UNLESS OTHERWISE SPECIFIED

1. MACHINED SURFACES TO BE $\sqrt{}$
2. DIAMETERS ON A COMMON ℄ TO BE CONCENTRIC WITHIN .003 T.I.R.
3. FACES TO BE SQUARE WITHIN .001 TOTAL (ON A 1/2 IN. RADIUS)
4. FILLET RADII TO BE .015
5. BREAK ALL SHARP CORNERS AND EDGES

TOLERANCES:
DECIMAL .XX ± .010
DECIMAL .XXX ± .005
ANGULAR ± 1/2°

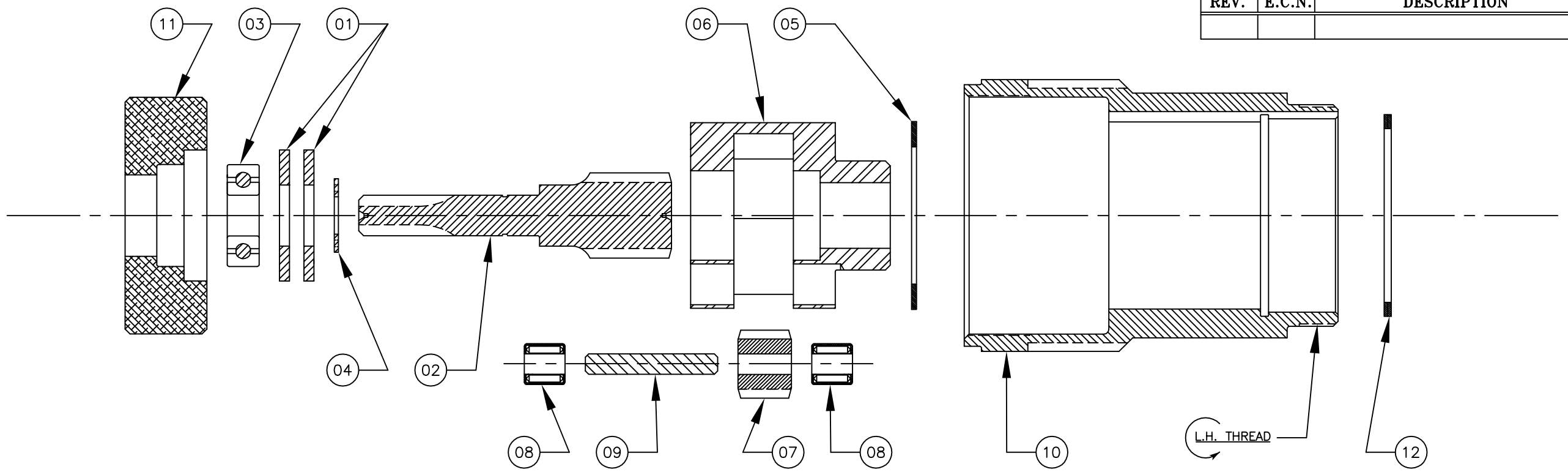
AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE
FIRST STAGE GEAR GROUP
16 TOOTH PINION

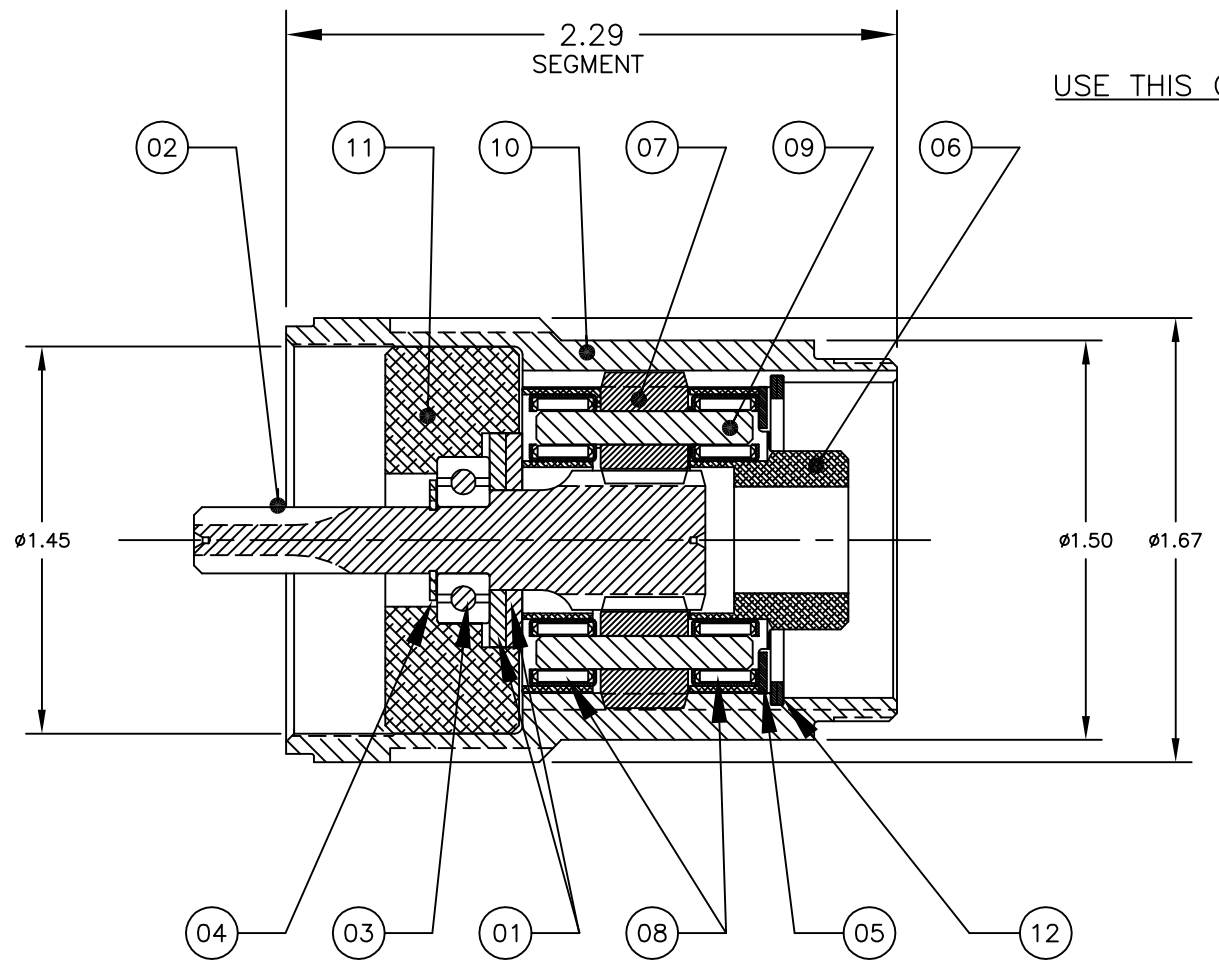
DRWG SIZE	PART NO.	REV LTR
C	3002–12160	

SCALE 2=1 WGHT LB SHEET 1 OF 1

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE



ADD LENGTHS OF ADJOINING SEGMENTS TO DETERMINE OVERALL LENGTH OF NUTRUNNER



USE THIS GROUP →

GEAR GROUP #	ITEM # 2	"T"	6	7	8	9
3010–12000	3300–40190	19	3410–99414	3120–40141	3410–00024	8303–00428
3010–12001	3000–40160	16	3410–99415	3120–40151	3410–00254	8303–00528
3010–12002	3300–40130	13	3410–99417	3120–40170	3410–00024	8303–00428
3010–12003	3300–40100	10	3410–99418	3120–40180	3410–00024	8303–00428
3010–12004	3300–40070	7	3410–99420	3120–40201	3410–00024	8303–00428
3010–12005	3300–40060	6	3410–99421	3120–40202	3410–00024	8303–00428

ITEM	PART NO.	DESCRIPTION	QTY.
12	9324–00118	RING, RETAINING	01
11	3250–00004	PINION SUPPORT	01
10	3200–40471	GEAR, HOUSING	01
09	SEE CHART	PIN	03
08	SEE CHART	BEARING, NEEDLE	06
07	SEE CHART	GEAR, PLANET	03
06	SEE CHART	OUTPUT, CARRIER	01
05	8320–00040	WASHER, THRUST	01
04	9307–00025	RING, RETAINING	01
03	9400–00004	BEARING, BALL	01
02	SEE CHART	SHAFT, PINION SEE CHART "T" NUM. TEETH	01
01	9432–06132	WASHER, THRUST	02

MATERIAL:

HT TREAT:

FINISH:

	APPROVED	DATE
DRAWN:	D. CLINE	2/4/98
CHKD:		
APPD:		
REL:		

UNLESS OTHERWISE SPECIFIED

1. MACHINED SURFACES TO BE 125
2. DIAMETERS ON A COMMON ℄ TO BE CONCENTRIC WITHIN .003 T.I.R.
3. FACES TO BE SQUARE WITHIN .001 TOTAL (ON A 1/2 IN. RADIUS)
4. FILLET RADII TO BE .015
5. BRK. ALL SHARP CORNERS
6. CHAM. ALL THREADS ENDING AT EDGES & U'CUTS 45°

TOLERANCES:
DECIMAL .XX ± .010
DECIMAL .XXX ± .005
ANGULAR ± 1/2°

AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

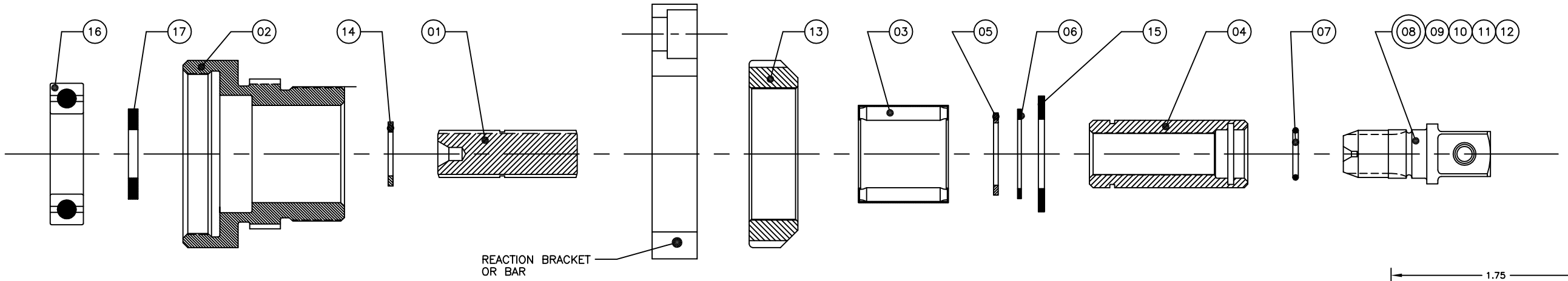
TITLE
GEAR GROUP
SINGLE STAGE
(A/E2)

DRWG SIZE C | PART NO. 3010–12000 thru 12005 | REV LTR

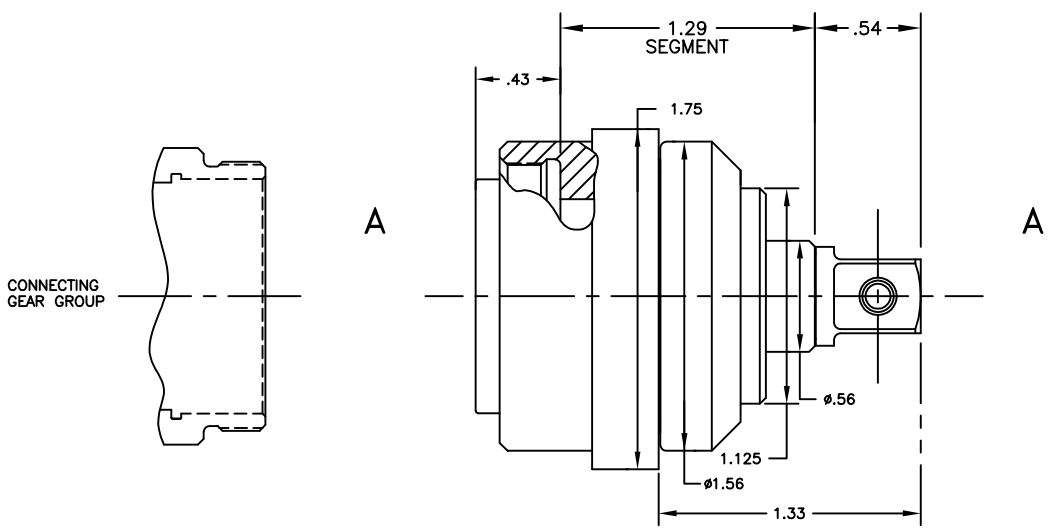
SCALE 2=1 | WGHT LB | SHEET 1 OF 1

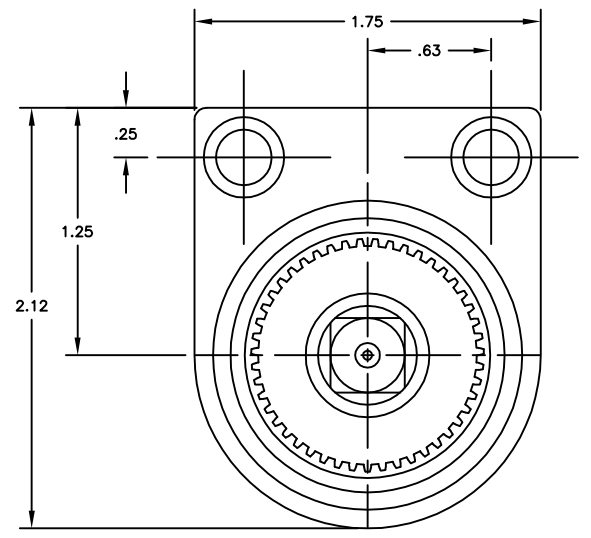
8 7 6 5 4 3 2 1

REV.	E.C.N.	DESCRIPTION	BY	APVD	DATE

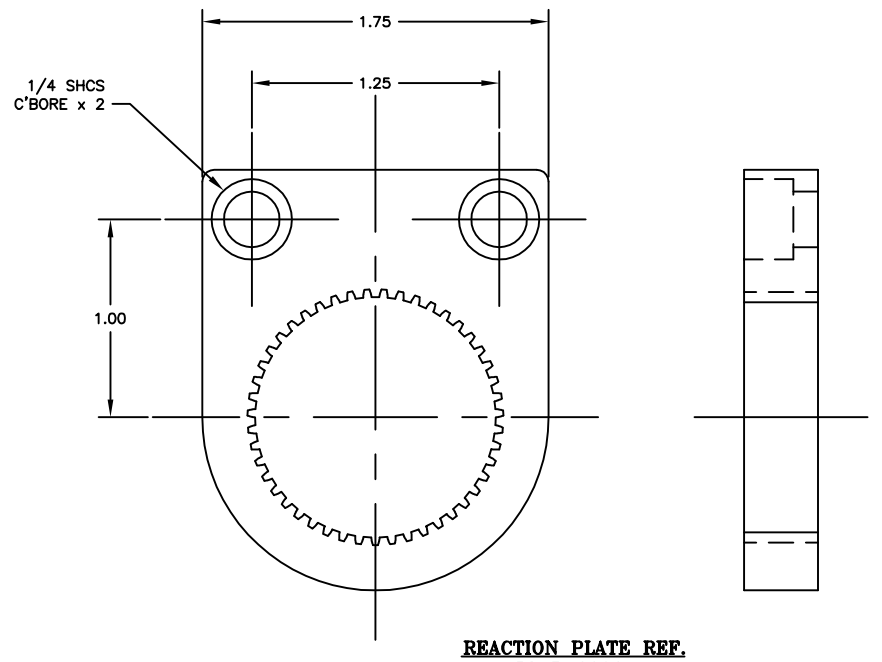


ADD LENGHTS OF AJOINING SEGMENTS TO DETERMINE OVERALL LENGTH OF NUTRUNNER

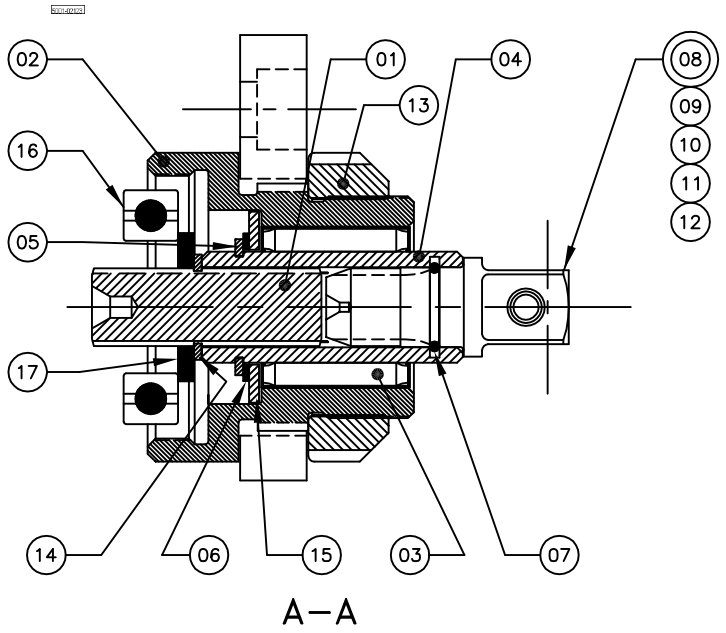




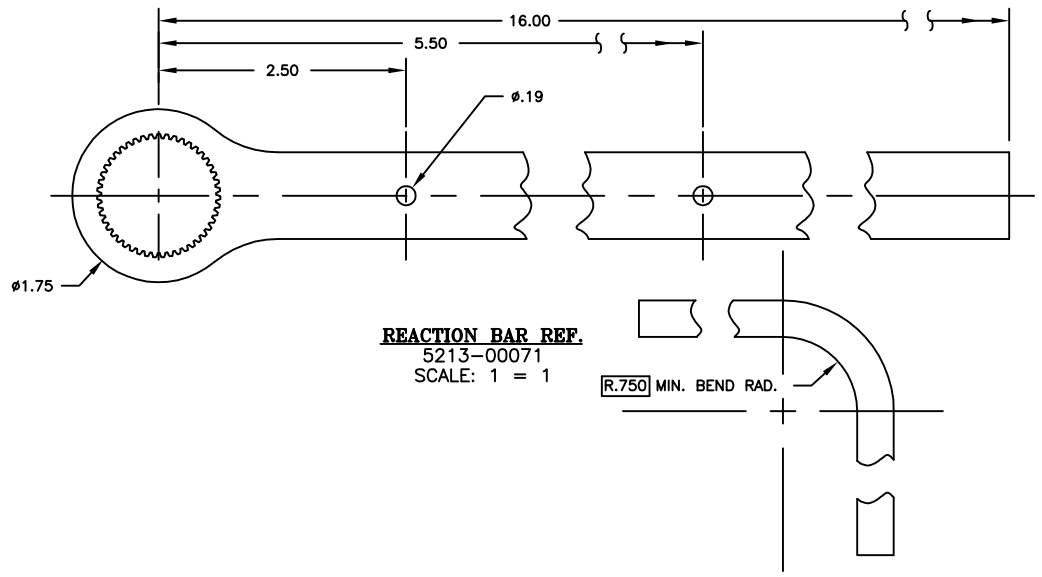
REACTION PLATE REF.
5213–00061
VIEW ROTATED



REACTION PLATE REF.
5213–00061



A–A



REACTION BAR REF.
5213–00071
SCALE: 1 = 1

BEND ALLOWANCE PER. APPLICATION
SCALE: 1 = 1

ITEM	PART NO.	DESCRIPTION	QTY.
17	8320–00042	WASHER	01
16	9400–01903	BEARING, BALL	01
15	8320–00041	WASHER	01
14	9315–00039	RING, WALDES	01
13	8041–00005	NUT, FIXTURE, 2 SERIES, L. H. THR'D	01
12	9322–00003	PLUG, EXPANSION	01
11	8100–00375	SPRING, SOCKET LOCK PIN	01
10	8500–00321	PIN, SOCKET LOCKING	01
09	5300–10003	SQUARE DRIVE, 3/8"	01
08	5300–91003	SQUARE DRIVE ASSEMBLY	01
07	8310–00157	RING, RETAINING	01
06	8320–00021	WASHER	01
05	9327–00056	RING, RETAINING	01
04	5310–32101	OUTPUT SHAFT, FIXED, INT., A/E2	01
03	9420–00912	BEARING, NEEDLE	01
02	5210–40474	MOUNTING, HOUSING, FIXED SPINDLE, A/E2	01
01	3300–32105	SHAFT, SPLINED, FIXED, EXT., A/E2	01

MATERIAL:

HT TREAT:

FINISH:

	APPROVED	DATE
DRAWN	D. CLINE	2/4/98
CHECK		
APVD		
REL		

UNLESS OTHERWISE SPECIFIED
1. MACHINED SURFACES TO BE 125
2. DIAMETERS ON A COMMON ℄ TO BE CONCENTRIC WITHIN .003 T.I.R.
3. FACES TO BE SQUARE WITHIN .001 TOTAL (ON A 1/2 IN. RADIUS)
4. FILLET RADII TO BE .015
5. BRK. ALL SHARP CORNERS
6. CHAML ALL THREADS ENDING AT EDGES @ 1/2UTS 45°

TOLERANCES:
DECIMAL .XX ± .010
DECIMAL .XXX ± .005
ANGULAR ± 1/2°

AMERICAN ASSEMBLY TOOLS, INC.
Cleveland, Ohio 44128

TITLE
OUTPUT SPINDLE,
(A/E2) FIXED

DRWG SIZE	PART NO.	REV LTR
	5001–02123	

SCALE 2=1 WGHT LB SHEET 1 OF 1

11 10 9 8 7 6 5 4 3 2 1

F E D C B A

American
Assembly
Tools, Inc.

4554 Renaissance Parkway
Cleveland, OH 44128
Ph: (216)464-9434
Fx: (216)464-3474

BLEED SCREW & PAC VALVE ADJUSTMENT
for
AP2 SERIES & AP3 SERIES PAC NUTRUNNERS

The bleed screw and PAC adjustment screw are flow control valves that interact to shut-off **PAC** pneumatic nutrunners. The valves are factory adjusted to optimize shut-off response. Re-adjustment is usually required when a nutrunner is serviced. Also adjustment may be required if the tool is to be operated under 70 PSI (4.1 bar).

The **SIZE 2** nutrunner bleed screw is located in the aluminum valve housing near the round, slotted main valve cap toward the main air inlet. The size 2 nutrunner PAC valve adjustment screw is located in the PAC valve cap in-line with the main valve toward the output of the nutrunner. On size 2 manual tools, the PAC valve cap adjustment screw is accessable through a small hole in the throttle lever.

The **SIZE 3** nutrunner bleed screw is located in the aluminum valve/motor housing near the hexagonal main valve cap toward the tool output. The size 3 nutrunner PAC valve is at an angle to the main valve and is slightly toward the output of the nutrunner.

The bleed screw is adjusted first. Before adjusting the bleed screw, the PAC valve adjusting screw must be adjusted to fully open the PAC valve sensing port. Use a 1/16" (0.063 inch) hex key to back out the PAC valve adjusting screw counter-clockwise until the top of the screw is about even with the bottom of the slot in the PAC valve cap.

PAC VALVE ADJUSTMENT

1. Set the air pressure to 45 psi (3.1 bar). Using a 3/32" (0.094 inch) hex key, close off the bleed valve by turning the screw clockwise all the way in until it bottoms. Then back it out 1/4 turn to open it slightly. (If the screw is a replacement, tighten it firmly and loosen it several times to reseat the valve before adjusting it.)
2. Run the tool. If the tool starts and runs, back the bleed out further in small increments until the tool "burps", i.e., begins to start but immediately shuts off.
3. Turn the bleed adjusting screw clockwise, in small increments, until the tool starts and runs reliably. This is the proper setting.
4. Increase the air pressure to a 85 psi (5.8 bar), or to where the tool will be operating, and proceed with the PAC valve adjustment.

Once the bleed screw has been properly adjusted, the PAC valve can be adjusted so that the tool will shut-off reliably when used over a range of operating pressure and when used to tighten joints from hard to soft tightening rates. The PAC valve should be adjusted with the air pressure set at 85 psi (5.8 bar). If, when the tool is in use, the air pressure is adjusted to 65 psi. (4.4 bar), or less, the PAC valve should be adjusted with the air pressure set at 65 psi.

PAC VALVE ADJUSTMENT

1. Run the tool several times on a **medium** test joint to establish the tools stall torque capability. Note the average stall torque. If you do not have the means to measure the torque, note the time required to tighten the test joint (do not include rundown time) and the changing sound of the tool from start to stall.
2. Turn the PAC adjusting screw in four (4) full turns from its full open position (even with the bottom of the slot) and run the tool on the test joint. If the tool shuts off, go to step 3. If the tool stalls, screw in the adjusting screw a small increment (less than 1/8 turn) and run the tool on the test joint. Repeat the incremental adjustment until the tool shuts off then go to step 3.
3. Run the tool on the test joint several times and compare the torque (or the time and sound) of the tool to that recorded earlier while running the tool to stall. The objective is to get as close as possible to stall torque and reliably shut-off. If the tool is shutting off early, back the screw out a small increment. If it stalls occasionally, screw it in a small increment. Compare the torque (or the time and sound) as you continue.
4. After the tool satisfactorily delivers torque and shuts-off, test the tool on a hard joint at the same pressure, Run the tool at least 15 times. If the tool fails to shut-off, even once, screw in the adjusting screw a very small increment and re-test on the hard joint. Continue until you are sure the tool will shut-off reliably.

The adjustment is complete. If the tool is lubricated properly and the air supply remains clean and dry, the AAT PAC shut-off control nutrunner will provide long life and reliable torque performance.

American
Assembly
Tools, Inc.

4554 Renaissance Parkway
Cleveland, OH 44128
Phone (216)464-9434
Fax: (216)464-3474

AAT PNEUMATIC NUTRUNNERS

AIR LINE REQUIREMENTS

Optimum perfomance of AAT 2 and 3 Series nutrunners is achieved when the tools are properly lubricated and supplied with clean air regulated at 85 to 90 PSI (5.8 to 6.1 BAR). Pressure should not exceed 105 PSI (7.1 BAR). Air pressure is adjusted to change torque output on AAT's PAC and stall type nutrunner. Accu-Brake and Accu-Trol nutrunners can operate at lower pressures as long as the tool can still achieve the target torque

2 Series nutrunners require a hose diameter of 3/8" for lengths up to 25' and 1/2" for lengths up to 50'. 3 Series nutrunners require a hose diameter of 1/2" for lengths up to 25' and 3/4" for lengths up to 50'

The tool should be supplied air through a Filter/Regulator/Lubricator (FRL) that has a flow rating capable of supplying the nutrunner with minimal pressure drop so that the rated torque can be achieved. Generally a 3/4" NPT FRL is adequate for the 3 Series and a 1/2" NPT FRL is adequate for the 2 Series. American Assembly Tools highly recommends single-point, injection type lubricators (as opposed to oil mist or drip types) to insure proper lubrication. An injection type lubricator is adjustable and should be set for one drop of oil every fifth cycle. A good quality oil, specifically for use in pneumatic tools, should be used (such as Peeroyl R-43 air line oil). Lubricating oils that contain cleaning or anti-gumming agents should not be used. These additives may cause swelling of O-rings and other rubber components that can cause malfunction. Inadequate lubrication is considered abnormal operation under atypical conditions. Tool failures caused by inadequate lubrication will not be warranteed.

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4554 Renaissance Parkway
Cleveland, OH 44128
(216) 464-9434
Fax: (216) 464-3474
www.AmericanAssemblyTools.com

AMERICAN ASSEMBLY TOOLS, INC.
LIFETIME WARRANTY

American Assembly Tools, Inc. (AAT) warrants AAT Tools and Accessory Equipment against defects in material and workmanship for the life of the Tool or Accessory Equipment. Without charge to the original purchaser, AAT, at its option, will repair or replace any Tool or Accessory or component part if it is found to be defective or not in accordance with AAT Engineering specifications in effect at the time of manufacture and said Tool or Accessory or component part is in active commercial production by AAT. Without charge to the original purchaser, AAT will also, at its option, repair or replace any Assembly Tool or Accessory used for assembly operations or component part (excepting Tools and Accessory Equipment and parts thereof designated for light or limited duty) in the event of a failure due to wear encountered in normal operation under typical specified conditions where typical maintenance procedures have been observed if such failure occurs within one year of the original purchase date of the Tool or Accessory and the failed Tool or Accessory has been subjected to 500,000 operations or less. The Tool or Accessory is to be returned to AAT's factory with shipping charges prepaid.

This warranty will not apply to any Tool or Accessory which has been misused, modified or has been subjected to negligence or has been damaged by accidental misuse or other damage by accidental occurrences; or in which parts not manufactured by or specified by AAT have been used for repair; or which shall have been repaired or altered by other than AAT authorized personnel in such a manner, as determined by AAT, that the function of the Tool or Accessory has been affected.

THIS WARRANTY CONSTITUTES THE ENTIRETY OF THE OBLIGATION OF AAT RELATIVE TO THE SALE AND USE OF SAID PRODUCTS AND ITS MAXIMUM LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT. IN NO EVENT WILL AAT BE LIABLE FOR CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL OR PUNITIVE DAMAGES ARISING FROM THE USE OR SALE OF SUCH PRODUCT.