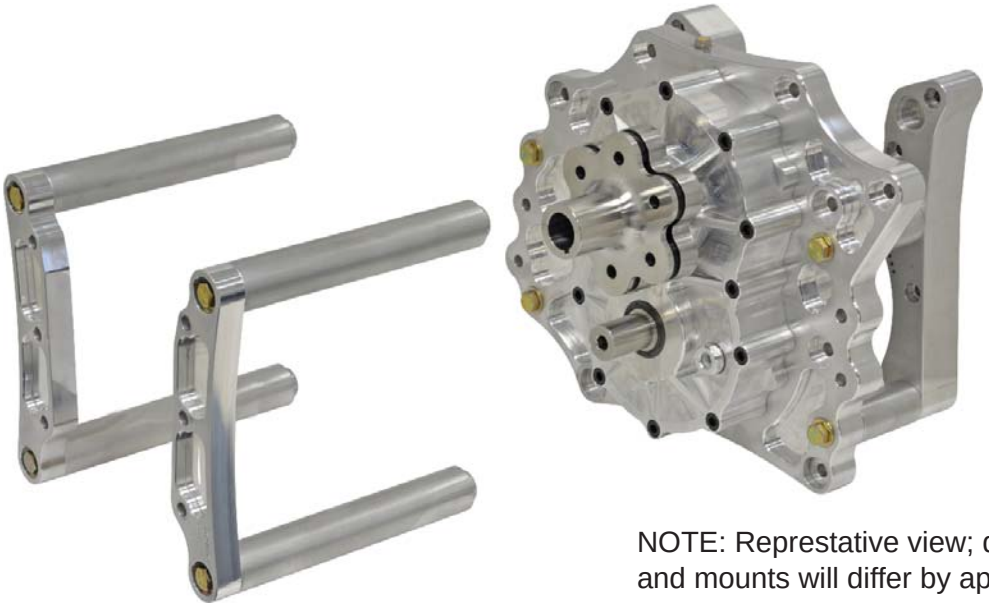
READ ALL INSTRUCTIONS COMPLETELY AND THOROUGHLY UNDERSTAND THEM BEFORE DOING ANYTHING.
CALL CHASSISWORKS TECH SUPPORT (916) 388-0288 IF YOU NEED ASSISTANCE.

TECHNICAL GUIDE

Vortech Gear Drive



NOTE: Represtative view; drive orientation and mounts will differ by application.

WARRANTY NOTICE:
There are NO WARRANTIES, either expressed or implied. Neither the seller nor manufacturer will be liable for any loss, damage or injury, direct or indirect, arising from the use or inability to determine the appropriate use of any products. Before any attempt at installation, all drawings and/or instruction sheets should be completely reviewed to determine the suitability of the product for its intended use. In this connection, the user assumes all responsibility and risk. We reserve the right to change specification without notice. Further, Chris Alston's Chassisworks, Inc., makes **NO GUARANTEE** in reference to any specific class legality of any component. **ALL PRODUCTS ARE INTENDED FOR RACING AND OFF-ROAD USE AND MAY NOT BE LEGALLY USED ON THE HIGHWAY**. The products offered for sale are true race-car components and, in all cases, require some fabrication skill. **NO PRODUCT OR SERVICE IS DESIGNED OR INTENDED TO PREVENT INJURY OR DEATH**.

Chris Alston's Chassisworks
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Sacramento, CA 95828
Phone: 916-388-0288
Technical Support: sales@cachassisworks.com

ITEM	QTY	PART NO.	DESCRIPTION
1	1	7993-062	PLATE, VERTICAL SINGLE DRIVE, 1.38 WIDE GEAR x 3.50 CENTER DISTANCE
2	1	3428-04-02	SWIVEL ELBOW, 90°, 1/4 TUBE x 1/8 NPT MALE
3	1	3401-04-BK	TUBING, AIR LINE, 1/4 OD x .040 WALL
4	1	3420-04-02	ADAPTER, STRAIGHT, 1/4 TUBE x 1/8 NPT FEMALE
5	1	3240-MNPT-02	BREATHER VENT, 1/8 NPTM, 7/16 HEX, BRONZE FILTER
6	4	3174-375-0.75H	DOWEL PIN, Ø.375 x 75H, HARDENED ALLOY STEEL
7	2	3180M-30X040X07	SEAL, 30MM BORE x 40MM OD x 7MM WIDE, SINGLE LIP
8	2	3180M-35X055X08	SEAL, 35MM BORE x 55MM OD x 8MM WIDE, SINGLE LIP
9	2	3115M-25-62-17	BALL BEARING, 25MM BORE x 62MM OD x 17MM WIDE, SINGLE ROW, OPEN
10	2	3115M-35-62-14	BALL BEARING, 35MM BORE x 62MM OD x 14MM WIDE, SINGLE ROW, OPEN
11	1	7993-153	COVER, 1.50 SINGLE DRIVE, 3.50 CENTER, 1.380 GEARS, NO SIGHT GLASS
12	1	3116-6.984-07B	O-RING, #2-262, 6.984 ID x 7.262 OD x .139 WIDE, BUNA-N, 70 DUROMETER
13	12	3108-031H-S	HIGH COLLAR LOCKWASHER, 5/16 INCH 18-8 STAINLESS
14	12	3103-031C2.50C	SOCKET HEAD CAP SCREW, 5/16-18 x 2 1/2, CLEAR ZINC
15	2	3416-02	PLUG, 1/8 MNPT, 5/16 HEX SOCKET, BRASS
16	1	7993-081-0	SHAFT, 1 1/4-10 SPLINE, 1.38 WIDE GEAR, 33 TOOTH 20/40 SPLINE, 35MM
17	1	7993-083	HUB, 33 SPLINE, B12 ON 4.700 BOLT CIRCLE, ALUMINUM
18	12	7993-023	DRIVE BUSHING, 95 SHORE A, BLACK, .680 ID x 1.125 OD x .575 LONG
19	1	7993-094	CRANK HUB/TRIGGER, B12 CHEVY/FORD, ALUMINUM
20	3	3184-038063P	WASHER, NYLON, 3/8 x 5/8 x .062 THICK
21	3	3185-038C0.75S	STRIPPER BOLT, STAINLESS STEEL, 3/8 x 3/4, 5/16-18 THREAD
22	6	3182-038C1.25B	SOCKET HEAD CAP SCREW, LOW HEIGHT, 3/8-16 x 1 1/4, BLACK OXIDE
23	1	7993-053	SHAFT, 1 1/4-10 SPLINE, 1.38 WIDE GEAR, A6, 35MM, Ø1.250 x .550 DEEP
24	6	7993-017	DRIVE BUSHING, 95 SHORE A, BLACK, .740 ID x 1.250 OD x .575 LONG
25	1	7993-120	HUB, A6 BLOWER, 25MM VORTEC V28, Ø.985 BORE x 3/16 KEY, ALUMINUM
26	1	7993-084	WASHER, INPUT SHAFT, Ø1 1/4 OD x Ø25/64 ID x 1/4 LONG
27	1	3100-038F1.00Y	HEX BOLT, 3/8-24 x 1, GRADE 8, YELLOW ZINC
28	1	7998-B-1.700	GEAR SET #33, 1.700 RATIO, 20T x 34T, 10 SPLINE x 1.380 WIDE
29	1	7993-004-150	SHAFT, EXTENSION, 1/2-20 UNF LH, Ø.998 x 1.50, Ø1.181 OD x 2.600
30	1	7993-004-000	SHAFT, EXTENSION PLUG, 1/2-20 UNF LH,
31	4	7993-161-5.900	STANDOFF, 1 1/4 OD x 5.900, Ø7/8 x 1/4, 3/8-16 UNC, UNIVERSAL
32	1	7993-026	MOUNT, TIMING POINTER, LSX
33	22	3157-038S-C	WASHER, 3/8 SAE, ZINC PLATED, 13/32 ID x 13/16 OD x 1/16 THICK,
34	8	3100-038C1.25Y	HEX BOLT, 3/8-16 x 1 1/4, GRADE 8, YELLOW ZINC
35	14	3100-038C1.50Y	HEX BOLT, 3/8-16 x 1 1/2, GRADE 8, YELLOW ZINC
36	6	3108-M10H-C	HIGH COLLAR LOCKWASHER, 10mm STEEL, CLEAR ZINC
37	6	3146-10C-045-C	SOCKET HEAD CAP SCREW M10-1.5 x 45MM, CLEAR ZINC
38	1	7993-011	TAB, TIMING POINTER, ADJUSTABLE
39	1	7993-012	STUD, TIMING POINTER, #10-32
40	2	3103-016F0.38S	SOCKET HEAD CAP SCREW, 8-32 x 3/8, SS

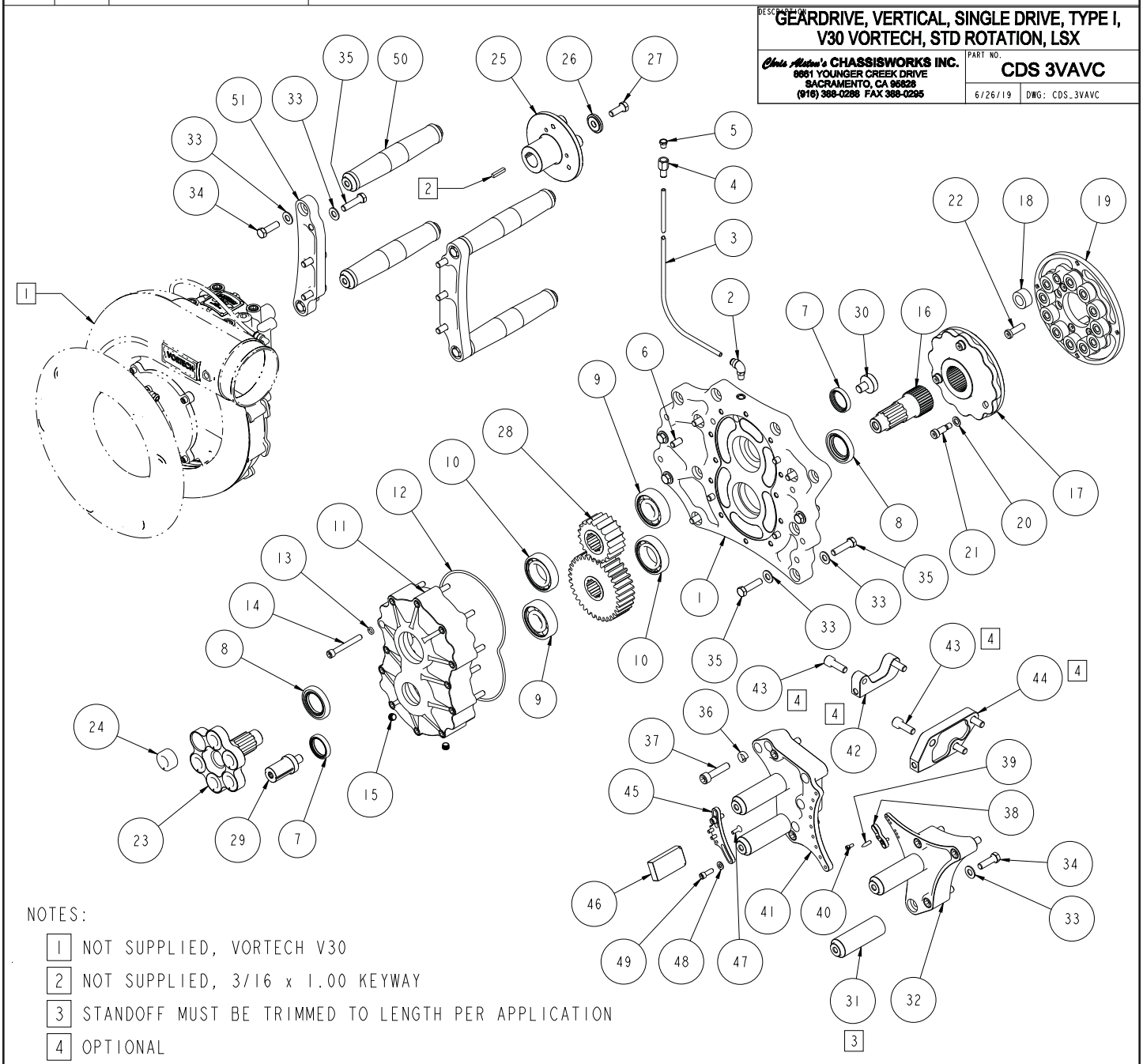
ITEM	QTY	PART NO.	DESCRIPTION
41	1	7993-027	MOUNT, CRANK TRIGGER, LSX
42	1	7993-030	MOTOR PLATE/ACCESSORY MOUNT, LS SERIES BLOCK, UPPER A/C BOSS
43	5	3146-10C-030-C	SOCKET HEAD CAP SCREW, M10-1.5 x 30MM, CLEAR ZINC
44	1	7993-031	MOTOR PLATE/ACCESSORY MOUNT, LS SERIES BLOCK, LOWER A/C BOSS
45	1	7993-145	BASE, PICKUP STAND, 2 PIECE CRANK TRIGGER
46	1	7993-146	PICKUP STAND, 2 PIECE CRANK TRIGGER
47	3	3105-019F0.63C	FLAT HEAD SOCKET SCREW, 10-32 x 5/8, CLEAR ZINC
48	2	3109-025-S-2-Y	AIRCRAFT WASHER 1/4 x .062 THICK
49	2	3103-025C0.75C	SOCKET HEAD CAP SCREW, 1/4-20 x 3/4, CLEAR ZINC
50	4	7993-137-748	STANDOFF, Ø1 1/4 x 7.475, Ø7/8 x 1/4, 3/8-16 UNC
51	2	7993-070	MOUNT, VORTECH V-20, VERTICAL

DESCRIPTION
GEARDRIVE, VERTICAL, SINGLE DRIVE, TYPE I, V30 VORTECH, STD ROTATION, LSX

Chris Alston's CHASSISWORKS INC.
8681 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0268 FAX 388-0295

PART NO. **CDS 3VAVC**

6/26/19 | DWG: CDS_3VAVC



NOTES:

1. NOT SUPPLIED, VORTECH V30
2. NOT SUPPLIED, 3/16 x 1.00 KEYWAY
3. STANDOFF MUST BE TRIMMED TO LENGTH PER APPLICATION
4. OPTIONAL

INSTRUCTIONS

These instructions cover basic order of procedure. Refer to the assembly diagram during installation.

ALIGNMENT NOTE: It is extremely important that the input shaft connections at the gear box to crank and gear box to supercharger are correctly aligned. All hardware and drive hubs should assemble easily when alignment is correct.

1. INSTALL CRANK HUB

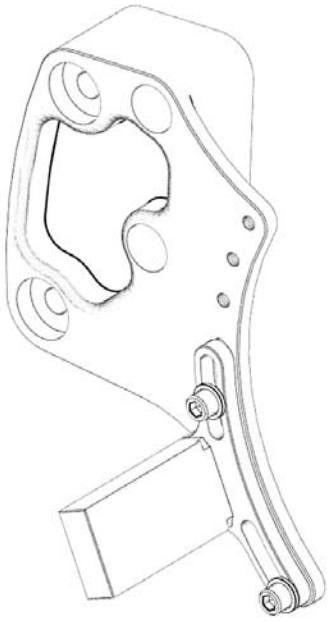
- Torque hub mounting bolts. (3/8-16 to 27 ft-lb, 3/8-24 to 30 ft-lb)
- Install bushings into crank hub. (6x hub 7993-017-BLK, 8x and 12x hub 7993-023-BLK)
- Install cover over hub and bushings using three stripper (shoulder) bolts with nylon washers.
- Torque stripper (shoulder) bolts. (5/16-18 thread 13 ft-lb or 153 in-lb)

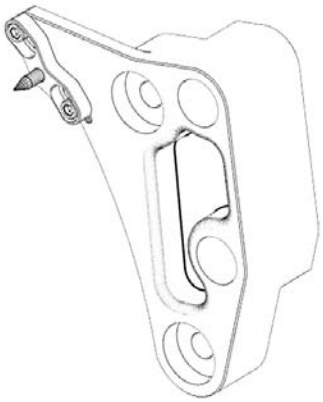
2. SET UP CRANK TRIGGER SENSOR LOCATION

- Install passenger side block mount.
- Assemble crank trigger mount (7993-145, 7993-146) (10-32 to 3 ft-lb or 40 in-lb)
- Install onto engine bracket using 1/4” socket-head with aircraft washer. (1/4-20 to 7 ft-lb or 87 in-lb)
- Mark center of crank trigger wheel.
- Drill and tap crank trigger bracket for customer supplied crank trigger sensor.

3. INSTALL TIMING POINTER

- Install driver side block mount.
- Set engine at TDC.
- Install timing pointer using two 8-32 socket-heads. (7993-011, 7993-012) (8-32 to 2 ft-lb or 21 in-lb)
- Adjust pointer to ZERO on balancer and tighten.





4. INSTALL ENGINE SIDE STANDOFFS

- *Standoff length must be verified and machining completed before proceeding. Follow the STANDOFF SPACER INSTRUCTIONS found on the following pages.*
- Install standoff spacers into both engine mounts using 3/8” hex head cap screws and flat washers.
- Torque standoff bolts. (3/8-16 to 27 ft-lb)

5. MOUNTING GEAR DRIVE TO ENGINE

- Loosely attach mounts with standoffs to engine block using 7/16” socket-heads with lock washers.
- Insert splined input shaft into crank hub cover plate on balancer.
- Place gear drive assembly over the standoffs and secure using 3/8-16 x 1-1/2” hex bolts with washers.
- Torque gear drive mounting bolts. (3/8-16 to 27 ft-lb)
- Tighten and torque engine mount bolts to engine block. (7/16-14 to 44 ft-lb)

6. SUPERCHARGER MOUNT

- Attach standoffs to supercharger mounting plate using 3/8-16 x 1-1/4” hex-head bolts with flat washers. (3/8-16 to 27 ft-lb)
- Loosely attach mounting plate to supercharger using 3/8-24 x 1” hex-head bolts with flat washers.
- Install 6x hub onto supercharger using 7/16-20 x 1” hex-head bolt. (7/16-20 to 65 ft-lb) *Key for supercharger input shaft keyway is not included.*

7. MOUNT SUPERCHARGER TO GEAR DRIVE

- Install bushings into supercharger hub. (6x hub 7993-017-BLK)
- Align bushings with gear drive output shaft and seat standoffs into gear drive base plate.
- Torque standoff mounting bolts. (3/8-16 to 27 ft-lb)
- Torque supercharger bolts at mounting plate. (3/8-24 to 30 ft-lb)

8. ADD OIL TO GEAR DRIVE

- Oil Type: 75/90 Synthetic Gear Oil; Capacity: 5 oz.
- Fill through threaded port along top edge of gear drive base plate. Air line fitting must be removed.
- Oil is drained through lowest of the two threaded plugs along bottom of gear drive base plate.
- Change gear drive oil at regular maintenance interval along with supercharger oil.

9. MOUNT BREATHER VENT

- Install 90-degree elbow fitting into threaded port along the top edge of the gear drive base plate.
- Cut end of flexible line square before inserting into elbow fitting.
- Route flexible line as necessary to mount breather end fitting.
- Breather vent must be mounted higher than elbow fitting.
- Flexible line must run downhill toward gear box with no dips to avoid collecting fluid.

STANDOFF SPACER INSTRUCTIONS

Factory-Machined Standoff Spacers

As an optional paid service Chassisworks can machine finished standoff spacers based off your measurements. Inquire with our sales techs for additional information.

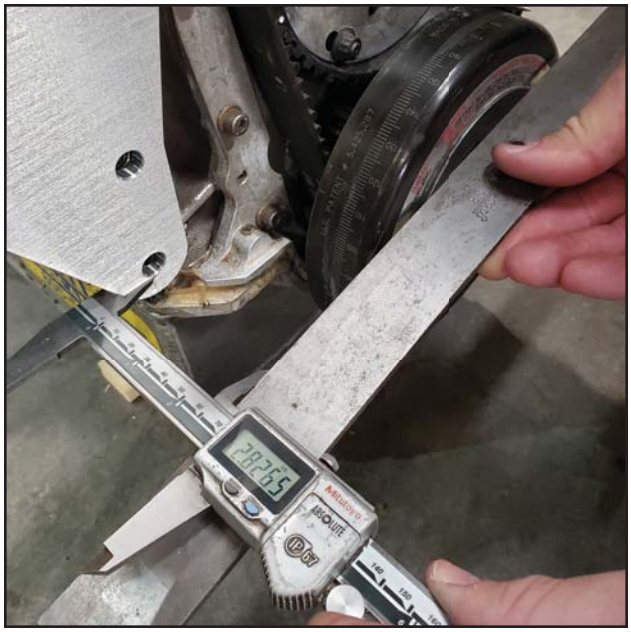
Measuring for Standoff Spacer Length

You will have received four partially finished spacers with your new CDS supercharger gear drive. Each spacer will come with only one end machined. The following steps will determine the proper cut length for the spacer. You must machine the unfinished end to match. Dimensions are provided below.

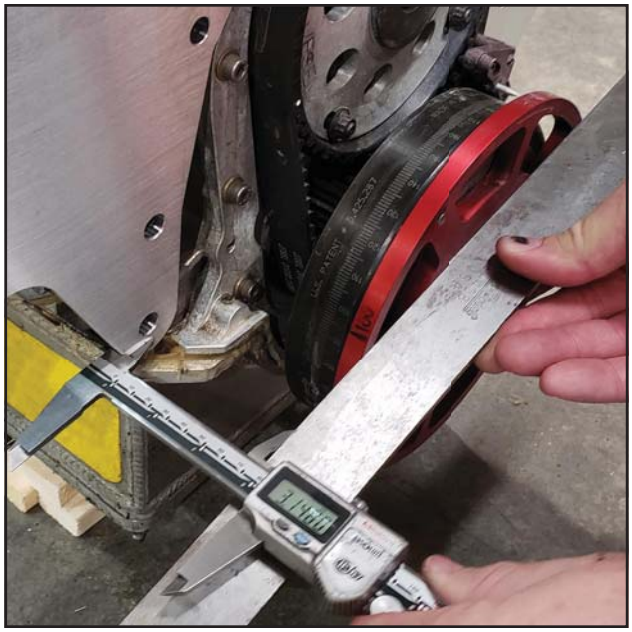
Measurement

Motor-plate, balancer and crank-trigger wheel (if used) must be installed prior to measurement.

EXCEPTION: The CDS crank-trigger wheel is integrated into the drive hub and must not be installed for measurement. Measure from the balancer face.



Harmonic balancer measurement



Non-CDS crank-trigger wheel measurement

1. Using calipers and a straight-edge, measure the distance between the front face of the motor-plate and forwardmost face of the balancer or crank-trigger wheel.

   Record this as **MEASURED LENGTH**.

   CN and Noonan Blocks - See footnote in chart.

2. Add **1.800** to the **MEASURED LENGTH**, then subtract the **ENGINE MOUNT THICKNESS** found in the table to the right.

   This is the **STANDOFF SHOULDER LENGTH**.

3. Add **0.500** to the **STANDOFF SHOULDER LENGTH**.

   This is the **STANDOFF OVERALL LENGTH**.

   Formula is shown in box below.

4. Complete machining of Standoff Spacer using drawing on following page.

Machining Notes

- **STANDOFF SHOULDER LENGTH** must be within **± 0.020”** of calculated value.
- All four **STANDOFF SHOULDER LENGTHS** must be within **0.005”** of each other.

Make	Engine	Engine-Mount Thickness
Chevrolet	Big Block	1.500”
	Small Block	1.500”
	LSX	1.500”
Ford	Small Block 302-351	1.000”
	Big Block 429-460	1.000”
	Modular	0.750”
Mopar	Gen-2 426 Hemi	1.250”
	Gen-3 Hemi	1.000”
	B-Block 383-440	1.250”
Oldsmobile	Oldsmobile V8	1.000”
Aftermarket	Alan Johnson 481X	1.500”
	Alan Johnson TFX Hemi	1.250”
	Brad Anderson Hemi	1.250”
	All Pontiac V8	1.500”
	*CN Blocks Big Block Chevy	0.000”
	Miner Bros Racing	1.000”
	*Noonan Hemi	0.000”

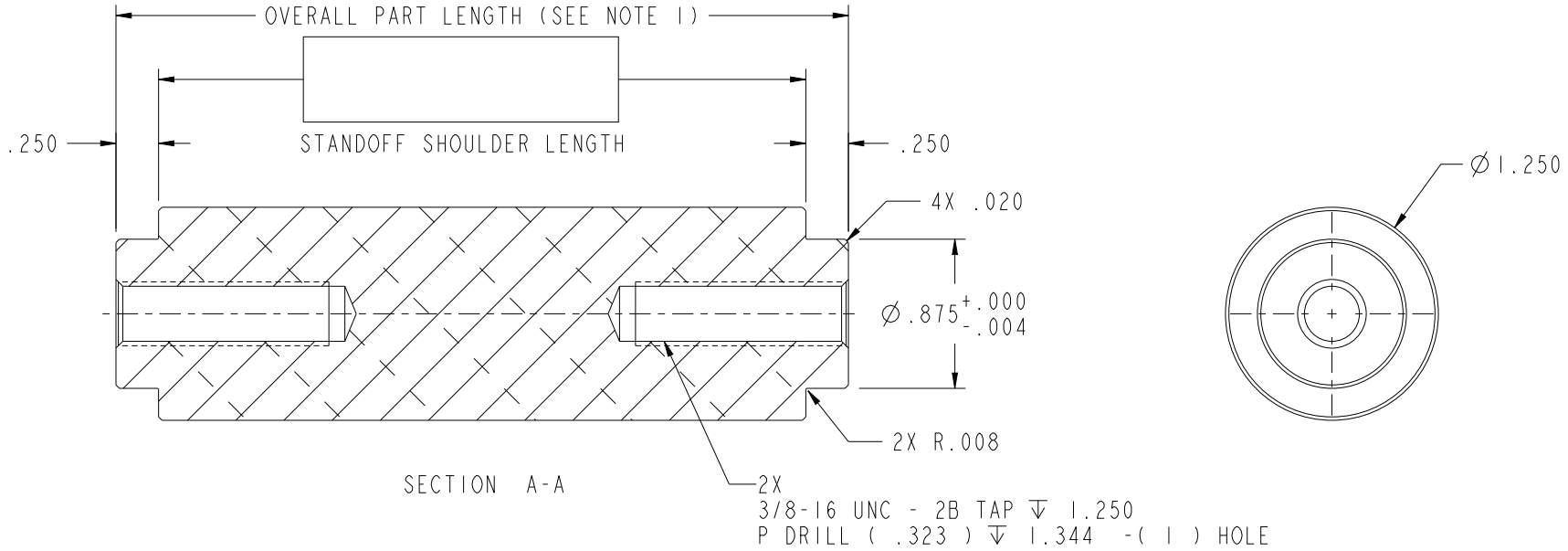
Notes

* - Block manufacturer integrates or provides mounting face for the CDS standoff. Measure from mounting face to balancer or crank-trigger wheel. No additional engine mount thickness used in calculation.

STANDOFF LENGTH CALCULATION

MEASURED LENGTH + **1.800 CONSTANT** − **ENGINE MOUNT THICKNESS FROM CHART** = **STANDOFF SHOULDER LENGTH**

NOTES:
1. OVERALL PART LENGTH IS STANDOFF SHOULDER LENGTH PLUS .500
2. STANDOFF SHOULDER LENGTH MUST BE WITHIN ±.020 OF CALCULATED VALUE
3. ALL 4 STANDOFF SHOULDER LENGTHS MUST BE WITHIN .005 OF EACH OTHER



MEASURED LENGTH + 1.800 CONSTANT - ENGINE MOUNT THICKNESS FROM CHART = STANDOFF SHOULDER LENGTH

DESCRIPTION

STANDOFF SHOULDER LENGTH

Chris Alston's CHASSISWORKS INC.
8661 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0288 FAX 388-0295

PART NO. 7993-162-X

7/15/19 | DWG: 7993-162-X