UNIVERSAL ENGINEERING, INC.
Aviation & Aerospace Research & Development

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Universal Engineering Mk I Drive info

General:

Engines:	This unit will fit all 90 degree-V Chevrolet engines and after market Chevy clones. 90 degree V6 (3.8 and 4.3 liter), all small block and all big block (Mark IV).
Power:	500 HorsePower (HP) continuous.
Experience:	Total time in service is approx. 200 hours.(9-1-92, update periodically).
Life:	With what we know now, chain life appears to be 1000 hours or greater.
Idler:	No idler is used. In the range of ratios and center distances that we normally use, an idler is not recommended by the manufacturer.
Thrust:	Thrust is taken by the large ball bearing in the front case. Because it is a ball type bearing it needs no special preloading.
Prop flange:	Large Lycoming flange is provided. 4.75 IN bolt circle with 6 bolts, Lycoming style drive lugs with 1/2 - 20 threads. Some other flanges are available, ask me.

Ratios:

General:	Optional ratios haven't been tested in actual flight conditions.	
Standard:	1.83 : 1	(23 tooth small gear, 42 tooth large gear)
	2.00: 1	(25 tooth small gear, 50 tooth large gear)
	2.28: 1	(25 tooth small gear, 57 tooth large gear)
Optional:	2.48: 1	(23 tooth small gear, 57 tooth large gear)
	1.68: 1	(25 tooth small gear, 42 tooth large gear)

Materials:

General:	We have produced cases in magnesium before and will again on special order
Cases:	A356 aluminum heat treated to a T-6 condition.
Top gear:	4140 alloy steel. Core of gear is heat treated to 28 Rockwell C Teeth are flame hardened to 57-60 Rockwell C.
Top shaft:	4140 alloy steel. Heat treated to 42-44 Rockwell C.
Lower shaft:	4140 alloy steel. Heat treated to 42-44 Rockwell C.
Lower gear:	As received from the manufacturer.
Chain:	As received from the manufacturer.

Bearings:

General: 4 anti-friction bearings (roller and ball).

Bottom: 2 inch roller bearing on the end of the input shaft for support.

Top:
1. Snout bearing; 2.6 inch high capacity roller.
2. Front bearing; 2.6 inch ball bearing, 4.75 IN O.D.
3. Rear bearing; 2.25 inch roller bearing.

Oiling:

General: Pressure lubricated bearings and chain with customer supplied feed from the engine oil system. Dash 16 A.N. fitting in the bottom of the front case (supplied), provides a gravity drain to the oil pan (customer supplied).

Operation: One external oil fitting (supplied) provides oil to the rear top bearing and the inner side of the chain as it comes into contact with the top gear.

One external oil fitting (supplied) provides oil to the snout bearing. This oil is required to drain back to the case by passing through the front ball bearing.

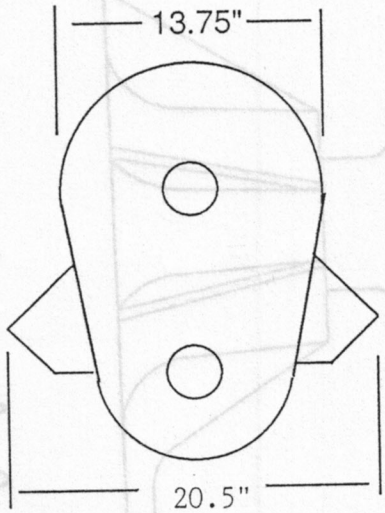
Drain back and spray oil lubricate the bottom bearing.

Mounting:

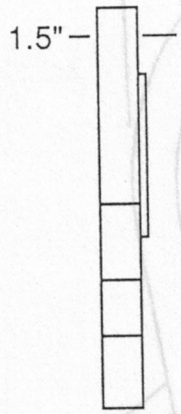
General: The drive unit bolts to the flywheel end of the engine through the threaded holes normally used for bellhousing mounting. The drive is designed to be supported by the engine mount (customer supplied) through the mounting attachment flanges on the side of the rear case. (If the customer has seen a picture of the unit, the mounting flanges are the ears on the lower sides of the rear case). The attachment flanges are supplied undrilled so the customer may machine them for his particular application.

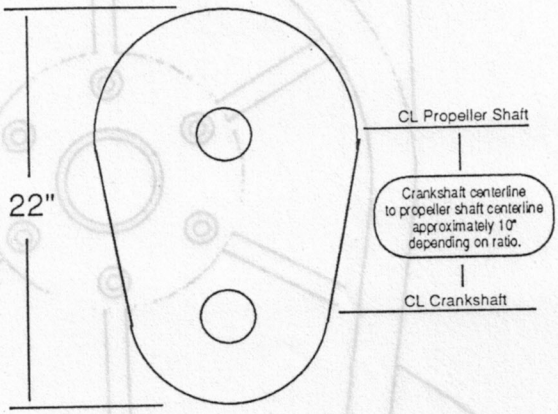
Universal Engineering
MK I Freedom Drive

Nominal Dimensions and Weights



Back Cover



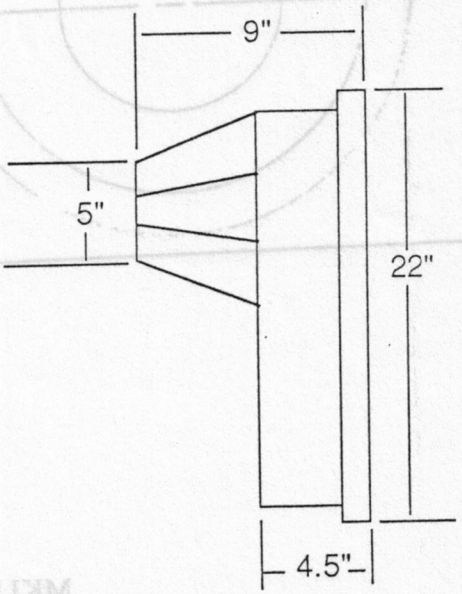


ALUMINUM

Drive Component Weights

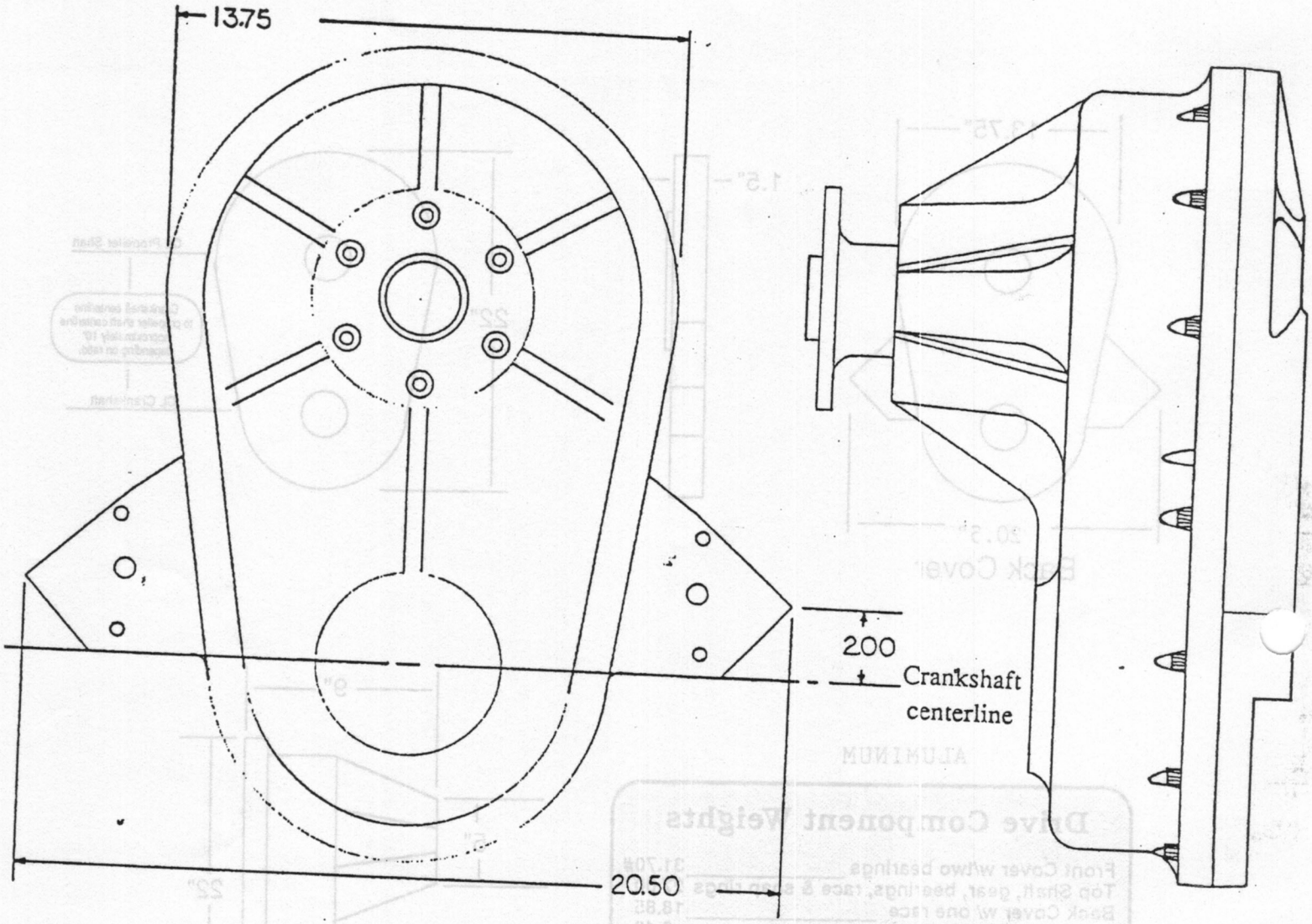
Front Cover w/two bearings	31.70#
Top Shaft, gear, bearings, race & snap rings	27.00
Back Cover w/ one race	18.85
Chain	9.40
Bottom Shaft	4.82
Bottom Gear	3.20
Race	.30
Small Cover	.60
Misc screws & seals	.68
TOTAL	96.55#

Magnesium cases weigh approx 30% less

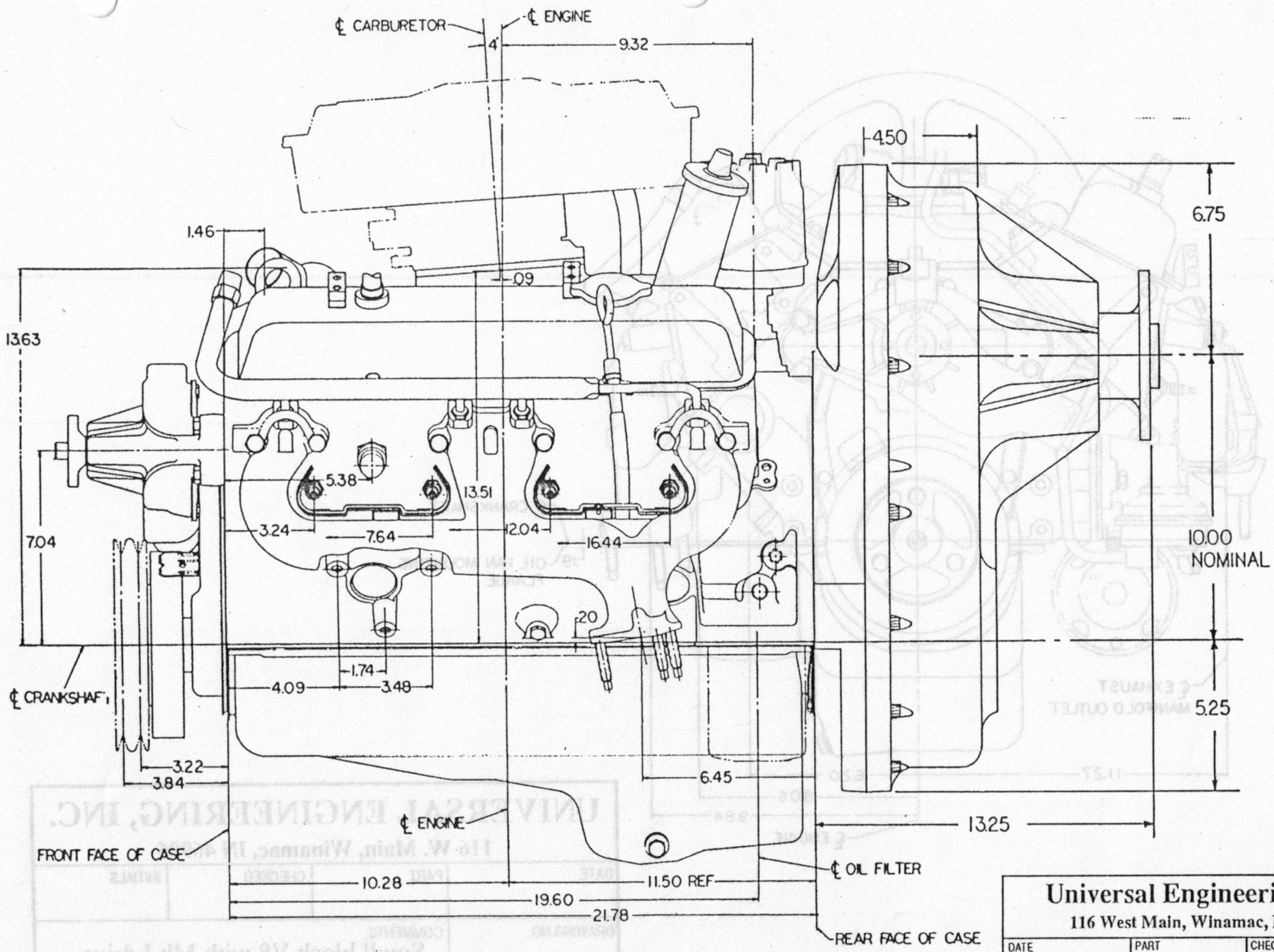


Front Cover

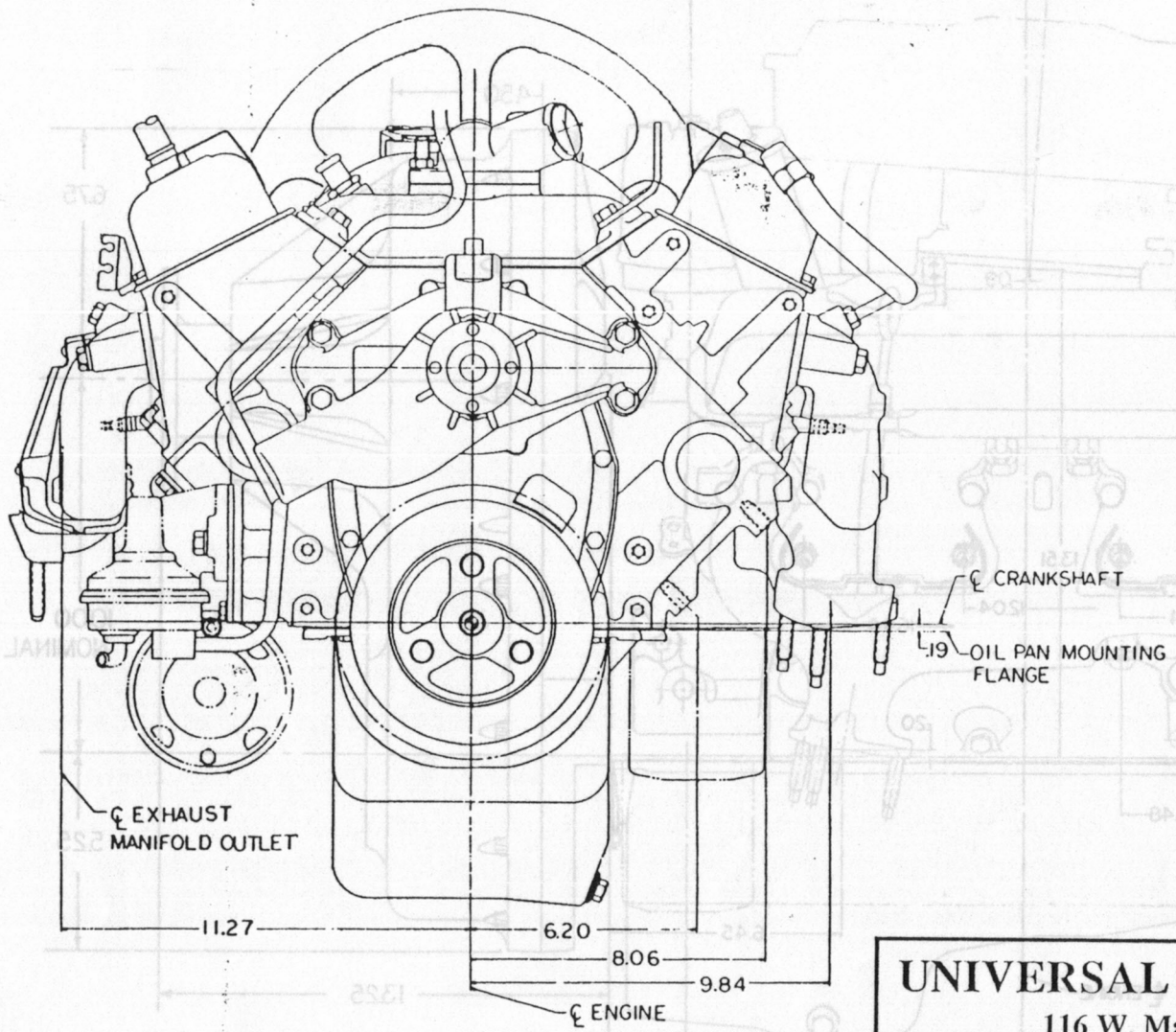
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MKI Drive Front and Side View



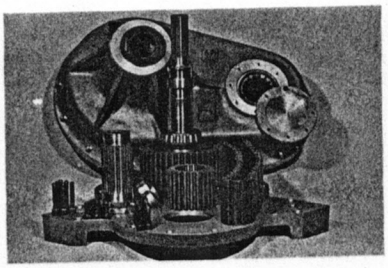
Universal Engineering, Inc. 116 West Main, Winamac, IN 46996			
DATE	PART	CHECKED	INITIALS
DWG. NO.	Small Block V-8 w/MK I Drive Side View Pictorial		
REVISION			



UNIVERSAL ENGINEERING, INC. 116 W. Main, Winamac, IN 46996			
DATE	PART	CHECKED	INITIALS
DRAWING NO.	COMMENTS: Small block V8 with Mk I drive rear view installation pictorial		
REVISION			

REDUCTION DRIVE FOR CHEVROLET "V" ENGINES

UNIVERSAL ENGINEERING PROPELLER DRIVE - fits all Chevrolet 90° "V" engines: big block and small block V-8, V-6 and Falconer Industries "V-12". Output ranges from 150 to over 900 horsepower. The heavy-duty housings are made from A345 aluminum, heat treated to a T-7 hardness. This ensures excellent machineability to very close tolerances, and long life of drive components. The V-8 & V-12 drive weighs approximately 95 lbs. The V-6 drive weighs approximately 64 lbs. Heavy lugs are cast on the lower side of the drive's back cover. These are suitable for use as front motor mounts, giving a very sturdy installation. Power is transmitted quietly and efficiently by a super-strong involute-tooth link-plate chain that is continuously pressure oiled. The higher horsepower drives use a 3" wide chain. Lower power drives use a narrower chain. Several output shafts are available: A prop flange for a fixed-pitch propeller, or with a governor and oil system suitable for a constant-speed prop; splined for use with a slip joint for use in an aircraft such as a Cirrus; or custom made to your project specifications. The propeller shaft is approximately 10" above the engine crankshaft centerline. The face of the propeller flange is 15" from the bell housing face of the block. The drive is no taller than a regular ignition distributor. Delivery time for a drive is 8-10 weeks. The governor mounts are normally in stock. The governor mount and its toothed-belt drive include water pump pulley and drive



DESCRIPTION	PART NO.	PRICE EA.
Chevrolet reduction drive	CRD-V*	4995.00
Governor mount	CRD-GM	585.00

*State choice of ratio
Not stocked drop ship from supplier.

DUAL SPARK-PLUG ALUMINUM SMALL-BLOCK CHEVROLET CHYLINDER HEADS by Universal Engineering. A stand-alone computerized cranktrigger ignition system is available with the heads so that you have true dual ignition (one magneto and one crank trigger), not a two-coils-into-one-sparkplug apparition. You cannot push current reliably from two coils into one spark plug at the same time. Heads are cast from A356-T6 aluminum and precision machined to exacting tolerance. They will fit any Chevrolet small-block. 400 horspower at less than 4700 rpm is easily obtainable. The heads use 2.055" one-piece stainless steel intake valves and 1.60" one-piece Inconel® exhaust valves. The intake seats are hardened steel. The exhausts are stelite. Both are locked together in the seat pockets. The intake and exhaust runners are optimally sized for the engine rpm range encountered in aircraft use. The center siamesed exhaust ports are spread to permit better heat control, and a water passage is run between them for additional cooling. The dual spark plugs allow for true redundant ignition systems, such as computerized crank triggers ignition and magneto. These heads are also a good choice for an off-road 4WD vehicle. They make lots of power, help cooling and give you the added safety of a spare ignition system.

DESCRIPTION	PART NO.	PRICE EA.
Chevrolet cylinder heads	CCD-400	

Not stocked drop ship from supplier

