

APPLICATION DATA SHEET

COPPER BRASS BRONZE

FREE-CUTTING BRASS FOR LOWER SCREW MACHINE PRODUCT COST

APPLICATION	Automotive
SPECIAL FEATURES	Deep Blind Hole,
PART WEIGHT	0.032 lb. (Brass)
BRASS RAW MATERIAL PREMIUM	32% (Including Turnings Allowance)
CYCLETIME (C360 BRASS)	4.8 sec (565 pieces per hour @ 80% Efficiency)
CYCLETIME (12L14 STEEL)	8.1 sec (327 pieces per hour @ 70% Efficiency)
PRODUCTIVITY GAIN USING BRASS	73%
NET COST SAVINGS (BRASS VS. BARE STEEL)	17% = \$39.00 per 1000
NET COST SAVINGS (BRASS VS. PLATED STEEL)*	21% = \$48.18 per 1000
*Zinc/chromate; assumes 0% plating rejects.	



TEMPERATURE SENSOR

STRENGTH PLUS CORROSION RESISTANCE EQUALS SAFETY

This temperature sensor, a typical screw machine part, must provide strength and corrosion resistance to satisfy automotive requirements. It was originally made from 12L14 leaded steel and zinc/chromate plated to retard corrosion from water and road salts. The sensor is now produced in Free-Cutting Brass, Copper Alloy 360 (UNS C36000) and it's as strong as steel but doesn't have to be plated... so it costs 21% less. The strength of half-hard Free-Cutting Brass is in the same range as 12L14 steel. Published nominal values for these materials are:

MATERIAL	TENSILE PROPERTIES	
	YIELD STRENGTH	ULTIMATE STRENGTH
C36000	45 ksi	58 ksi
Hot Rolled 12L14	34 ksi	57 ksi
Cold Drawn 12L14	60 ksi	78 ksi

That means that for almost one-half of all screw machine products, brass can be substituted for leaded steel without any sacrifice in strength or safety.

BRASS PARTS COST LESS THAN STEEL

Many designers think that because brass costs more than steel, machined brass parts must cost more too. That's not true for typical screw machine jobs. Only brass rod's off-the-shelf material cost is significantly higher; this sensor produces more than three times as much turnings weight as it does product and after discounting for the turnings' high value, the net material cost difference is only 32%.

HIGH MACHINABILITY MEANS LOWER PRODUCTION COSTS

When you buy machine parts you are paying for machine time. The faster the cut, the lower the cost, and free cutting brass machines faster than leaded steel. The productivity gained by switching from steel to brass for this actuating sleeve was a very significant 73%.

ELIMINATE PLATING COSTS

Steel rusts, brass tarnishes; an important difference. Exposed steel screw machine parts must be zinc/ chromate plated. Brass parts are ready to use without protective platings. The savings are between 11 and 16 cents per pound of product. If your part has deep holes, threads, or sharp corners, it can be difficult to insure uniform plating on all surfaces. Make the part in brass in you eliminate that concern. The natural corrosion resistance of brass uniformly protects the entire surface. If decorative plating is desired, brass plates more easily and is better looking than plated steel.

