



PRECISION VALVE GUIDES & SEATS

# QUALITY ISN'T EXPENSIVE. IT'S PRICELESS.

Have you ever heard the expression, "An engine is only as strong as its weakest link?" Professional engine builders live by it. They understand that compromising the quality of even the smallest component can cost more money and time in the long run. That's why the leading engine builders for NASCAR, Indy Car and NHRA rely on C.H.E. Precision valve guides and valve seats for uncompromising quality and performance.



# THE C.H.E. STORY







C.H.E.'s reputation wasn't built over night. It has developed through 30 years of motor sport involvement by its President and Founder, Claude Holguin. C.H.E.'s experience includes everything from building racing engines to the management and operation of successful racing teams. It became very apparent that the valve guides available to the racing world were simply not up to the task of a 10,000+ rpm racing engine. The most popular materials - silicon bronze, phosphorous bronze and nickel bronze - were all lacking in some way, either in wear resistance, thermal conductivity or both. Through outright persistence and trial and error, C.H.E. found a foundry willing to work in the development of a proprietary manganese bronze alloy. The new material proved to have better wear resistance and thermal conductivity characteristics superior to anything available.

In 1989 the Holguin family began building the best guides available. At a time when valve guides were inconsistent from both a materials and machine practices standpoint, C.H.E. initiated statistical process control (SPC) techniques (typically used in the aerospace industry) that enabled the company to build their product line with an unusually high level of quality and accuracy. In similar fashion, C.H.E. soon began building their own line of precision valve seats - again using their own proprietary alloys that exhibited excellent thermal conductivity and resistance to wear, regardless of the fuel being burned.

Today, C.H.E. is more committed than ever to producing top quality valve guides and seats. In fact, some might say they are obsessed. C.H.E.'s loyal customers are the top engine builders in both the domestic field as well as the racing industry. They all believe only the best will do.

# WHY DO YOU NEED C.H.E. VALVE GUIDES?



In one word: consistency. C.H.E. valve guides use a proprietary manganese bronze alloy that exhibits excellent thermal conductivity and wear characteristics - but that's just the start. In an industry where the typical manganese bronze valve guide is around .004 total indicator reading (T.I.R.), C.H.E. uses its own tooling to produce valve guides that are .001 T.I.R. or less. For the most demanding engine builders, C.H.E. offers the XP ("Extra Precision") line of valve guides, which are guaranteed to be concentric within .0005 or better.

Using materials with predictable and consistent expansion rates allows you to run tighter stem-to-guide clearances - as tight as .0005! A tighter valve guide keeps unwanted lateral valve movement under control, which in turn reduces wear on the guide, seat and valve face. That may not sound like a significant benefit to you - but consider this: an engine that wears slower makes power longer. For example, a Championship Winston Cup team reported that, before a 500 mile race their engine was making 785 horsepower. After the race the engine was making 710 horsepower. Now we all know that some degree of horsepower degradation is to be expected. However, after installing C.H.E. valve guides, the team reported that the engine was typically making 740 horsepower after 500 miles. Any way you slice it, it is a clear advantage over the competition, which is why C.H.E. valve guides have remained one of the racing world's best kept secrets.

# **ISN'T A SEAT JUST A SEAT?**

All professional engine builders will tell you that a valve seats function is more than just a place for the valve to land - it is a heat sink. When intake and exhaust valves are subjected to the extreme temperatures of the combustion chamber, the only chance they have to get rid of the heat is on the valve seat. That is why C.H.E. valve seats are made from proprietary alloys and are typically thicker than competitive seats, so they can extract as much heat from the valve as possible.

For after market performance applications, C.H.E. offers their own ductile iron seats that are both denser and more evenly structured than competitive seats. They are hardened to RC 32-38 and are then surface and OD ground to +/-.0002 inch in diameter and +/-.001 inch in thickness.

For competition applications, C.H.E. offers two of their own specially-formulated copper alloys: CA-18 and X-274. CA-18 was developed for the kind of temperature cycling intake valve seats typically experience and has thermal conductivity characteristics far superior to ductile iron. X-274 was designed to resist the extreme exhaust temperatures generated by racing engines and features thermal conductivity that is 15% greater than that of beryllium copper. Both materials have been designed to minimize valve bounce at a high rpm, and have a rate of expansion very close to that of the aluminum used in the casting of aftermarket cylinder heads. Tolerances are held at +/-.0001 inch in diameter and +/-.0005 inch in thickness. Any angle, multiple angles, radius and multiple radii can be machined inside the valve seat to suit the customer's specific application.

Want to know more about how C.H.E. Precision valve guides and seats can improve the performance and longevity of your racing engines? Call us at (805) 499-8885 or email: <a href="mailto:sales@cheprecision.com">sales@cheprecision.com</a>.



## **Manufacturing**

By using state of the art CNC machining equipment, CHE can manufacture components efficiently and repeatedly with unparalleled accuracy. You can be sure you will get a CHE "PRECISION" part manufactured here in the USA!





## **Materials**

CHE uses the finest materials available today. With 30-years of industry experience, CHE has developed its own proprietary material that has revolutionized the industry by setting a new standard for wear and performance.

## **Research & Development**

Testing and Developing is part of this industry. CHE goes to great lengths to continually research and develop products that will ultimately benefit the end user. From Spintron testing to NASCAR racing you can be sure you will have the very best components available.





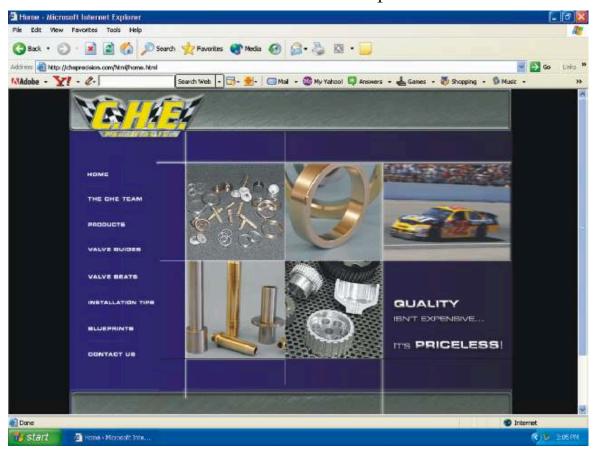
## **Quality Control**

"Quality isn't Expensive - It's Priceless!" There is a lot to be said about this quote. If you have a component in your engine of less quality, it could cost you much more. CHE Precision prides itself on holding a next to perfect rejection rate.



Table of Contents	Page
Valve Guides	6
Valve Seats	
Retainers / LS1 Rocker Arms	
Spring Cups / Spring Bases / Lifter Bore Bushings	9
Intake Val ve Guide Special Order Work Sheet	11
Exhaust Valve Guide Special Order Work Sheet	
Valve Seat Special Order Work Sheet	
Retainer Special Order Work Sheet	14
Spring Cup Special Order Work Sheet	
Spring Base Special Order Work Sheet	
Lifter Bore Bushing Special Order Work Sheet	17
Notes	
Legal	19

## Visit us on the Web at: www.cheprecision.com



Email:sales@cheprecision.com



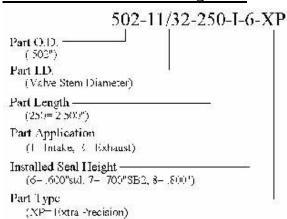
## Valve Guides



Valve guides can be manufactured from a variety of materials, but CHE's **Proprietary Blended Bronze Alloy** has extraordinary wear and greater thermal properties than all other bronze alloys tested. This material is excellent for extreme temperatures and high rpm engines. They are carefully machined and ground for long lasting wear and performance. Using our **Proprietary Blended Bronze Alloy** material in valve guides allow for a more predictable and consistent expansion rate. This will allow you to run tighter stem-to-guide clearances as tight as 0.0008" seen in our **XP Series** valve guide. A tighter valve guide keeps unwanted lateral valve movement under control, which in turn reduces wear on the guide, seat and valve face.

6mm Intake	7mm Intake	5/16" Intake	5/16" Exhaust	11/32" Intake	11/32" Exhaust
502-6MM-250-I-6	502-7MM-200-I-6	502-5/16-200-I-6	502-5/16-200-E-6	502-11/32-250-I-6	502-11/32-200-E-6
502-6MM-250-I-7	502-7MM-225-I-6	502-5/16-235-I-6	502-5/16-212-E-6	502-11/32-200-I-6	502-11/32-220-E-6
502-6MM-260-I-6	502-7MM-235-I-6	502-5/16-260-I-6	502-5/16-220-E-6	502-11/32-220-I-6	502-11/32-240-E-6
503-6MM-260-I-7	502-7MM-250-I-6	502-5/16-260-I-7	502-5/16-250-E-6	502-11/32-240-I-6	502-11/32-250-E-6
503-6MM-250-I-6	502-7MM-250-I-7	503-5/16-220-I-6	503-5/16-250-E-7	502-11/32-250-I-6	503-11/32-200-E-7
503-6MM-260-I-6	502-7MM-260-I-6	503-5/16-220-I-7	503-5/16-200-E-6	502-11/32-260-I-6	503-11/32-200-E-6
	503-7MM-260-I-7	503-5/16-250-I-6	503-5/16-220-E-6	503-11/32-200-I-7	503-11/32-220-E-6
6mm Exhaust	503-7MM-250-I-6	503-5/16-250-I-7	503-5/16-250-E-6	503-11/32-200-I-6	503-11/32-250-E-6
502-6MM-220-E-6	503-7MM-260-I-6	504-5/16-250-I-6	504-5/16-250-E-7	503-11/32-220-I-6	504-11/32-200-E-7
502-6MM-220-E-7	504-7MM-260-I-7	504-5/16-250-I-7	504-5/16-220-E-6	503-11/32-250-I-6	504-11/32-200-E-6
	520-7MM-250-I-6	520-5/16-250-I-7	513-5/16-200-E-6	504-11/32-200-I-7	504-11/32-220-E-6
	520-7MM-260-I-6		545-5/16-200-E-6	504-11/32-250-I-6	504-11/32-250-E-6
			545-5/16-220-E-6	505-11/32-250-I-6	505-11/32-250-E-6
Guide Blanks	7mm Exhaust			513-11/32-250-I-6	513-11/32-200-E-6
625-25	502-7MM-220-E-6			545-11/32-200-I-6	545-11/32-200-E-6
750-25	502-7MM-220-E-7			545-11/32-210-I-6	545-11/32-220-E-6
	502-7MM-250-E-7			545-11/32-220-I-6	546-11/32-200-E-6
	502-7MM-260-E-7			546-11/32-220-I-6	546-11/32-220-E-6
				547-11/32-220-I-6	

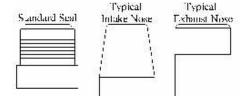
### **Valve Guide Part Numbering Inde**•



## **Installation Tech Tip!**

• Press fitment of .002" is recommended.

The use of adhesives or sealants is 'not' recommended as they can inhibit heat transfer.



CHE Precision can custom machine any valve guide to your specific application.

Refer to our Valve Guide order work sheet on Pages 11 & 12.



## Valve Seats

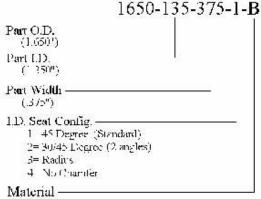


CHE's **Proprietary Blended Bronze Alloy** has been developed specifically with valve seats in mind. It has extraordinary wear and greater thermal properties than all other bronze alloys tested. This material is excellent for extreme temperatures as seen in high horsepower applications. These work especially well in Nitrous Oxide and Turbo applications.

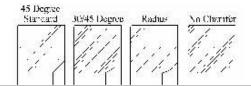
CHE also offers **Beryllium Copper** and an **XP series** valve seat. The XP series offers ultra tight tolerances with key dimensions held to within  $\pm$  0.0002" and finishes better than 16Ra. The XP series valve seat is typically used in racing and aviation applications when ultra high precision is a must.

Intake (Bronze)	Exhaust (Bronze)	Intake (Iron)	Exhaust (Iron)
2200-181-375-1-B	1650-135-375-1-B	2200-160-312-1-D	1650-135-375-1-D
2210-181-375-1-B	1650-135-400-1-B	2200-181-375-1-D	1660-135-375-1-D
2220-181-375-1-B	1660-135-375-1-B	2210-181-312-1-D	1670-135-375-1-D
2230-181-375-1-B	1660-135-400-1-B	2210-181-375-1-D	1680-135-375-1-D
2240-181-375-1-B	1670-136-375-1-B	2220-181-312-1-D	1680-135-400-1-D
2250-181-375-1-B	1670-136-400-1-B	2220-181-375-1-D	1690-135-375-1-D
2250-181-400-1-B	1680-137-375-1-B	2230-181-312-1-D	1690-135-400-1-D
2250-165-400-1-B	1680-137-400-1-B	2230-181-375-1-D	1700-135-375-1-D
2250-165-500-1-B	1690-137-400-1-B	2240-181-312-1-D	1710-135-375-1-D
2250-181-500-1-B	1690-137-500-1-B	2240-181-375-1-D	1720-135-375-1-D
2260-181-375-1-B	1700-137-375-1-B	2250-181-312-1-D	1760-135-375-1-D
2260-181-400-1-B	1700-135-400-1-B	2250-181-375-1-D	1850-135-375-1-D
2260-181-500-1-B	1700-137-500-1-B	2260-181-312-1-D	2000-135-375-1-D
2270-181-375-1-B	1710-137-375-1-B	2260-181-375-1-D	2100-160-425-1-D
2270-181-400-1-B	1710-137-400-1-B	2270-181-312-1-D	2130-160-450-1-D
2280-181-375-1-B	1720-137-400-1-B	2270-181-375-1-D	2150-160-500-1-D
2280-181-400-1-B	1750-137-375-1-B	2280-181-375-1-D	2170-160-500-1-D
2280-165-400-1-B	1750-137-450-1-B	2290-181-375-1-D	2190-160-500-1-D
2280-181-500-1-B	1780-137-375-1-B	2300-200-375-1-D	
2290-181-375-1-B	2000-160-375-1-B	2360-200-375-1-D	
2290-181-400-1-B	2100-160-500-1-B	2450-200-375-1-D	
2290-165-400-1-B		2500-200-375-1-D	
2290-181-500-1-B		2510-210-375-1-D	
2290-165-400-1-B		2520-210-500-1-D	
2290-181-500-1-B		2550-210-375-1-D	
2510-210-500-1-B		2550-210-500-1-D	
2610-210-500-1-B		2600-210-500-1-D	
2710-210-500-1-B			

## Valve Seat Part Numbering Index



- )= Ducti e Iron
- B- Bronze (CHI) Proprietary).
- BC Berylium Copper



## **Installation Tech Tip!**

- Press fitments for Iron Seats: Iron Heads = 0.006" Alum. Heads = 0.008"
  - Press fitment for Bronze Seats:
    Alum. Heads = 0.006"

The uses of adhesives or sealants are 'not' recommended as they can inhibit heat transfer.

CHE Precision can custom machine any valve seats to your specific application.

Refer to our Valve Guide order work sheet on Pages 13.



## **Spring Retainers**

CHE's retainers have been extensively engineered and tested to perform under the most extreme conditions. Our racing designed titanium spring retainers are the lightest in the industry and have been proven to have less valve bounce at high RPM. This amazing achievement has been accomplished without sacrificing part longevity. From race teams to streetcars, CHE can manufacture the right retainer to fit your application.



Super 7 (Steel)	Super 7 (Titanium)	Top Lock (Tita nium)
929-41	929-B-1	1541-G-1
929-B-4	943-B-1	1570-D
943	1040E/1540	1572-ML-B
LS-1-41	1240	JHE-B-1
	1242	JHE-C-1-6
	1541-S7-C	
	1541-S7-2	

CHE Precision can custom machine any Retainer to your specific application.

Refer to our Retainer order work sheet on Pages 14.

## LS1, LS2 & LS6 Rocker Arms



CHE Precision has teamed up with some of the industries top engine builders to come up with one of the most advanced production replacement LS1, LS2 & LS6 rockers available.

The factory production rocker arm works well right out of the box, but CHE Precision found ways to improve upon its reliability. One issue roller rockers inherently have is that they are prone to failure at high RPM. By replacing the roller bearings assembly with CHE's proprietary material bushing, this will allow the rocker arm to survive the extreme rigors of high RPM race engines. If you are looking for a reliable LS series rocker arm replacement, look no further.



## **Spring Cups & Bases**



Spring cups and bases from CHE endure the same precision machining as seen with all of our parts. All steel spring cups and bases receive heat treatment, which gives long lasting wear. CHE Precision can manufacture any component to your specific needs. Call us and find out what we can do for you!

Spring Base	Spring Cup	
SB60-690-155	SC1550	
SB60-735-152	SC1655-035	
SB60-75-15	SC1655-065	

## **Lifter Bore Bushings**

Introducing CHE Precision Inc. Lifter B ore B ushings t hat 1 ast 2 -4 times longer than our competitors. As with all CHE products, if you are searching for precision, quality, and long lasting performance, you will not find a better product anywhere. CHE Precision understands racing needs and can manufacture a lifter bore bushing to your specifications.



Keyed GM (Small Block)	Keyed Ford	Non-Keyed (Universal)
1062-937-199-R-GM	1062-937-207-R-F	LBB17-843
1062-937-199-L-GM	1062-937-207-L-F	LBB17-874
		LBB175-904
		LBB17-937-1062
Keyed GM (Big Block)	Keyed Dodge	Non-Keyed (Special)
1188-1058-209-R-GM	1062-937-199-R-D	LBB-17-840
1188-1058-209-L-GM	1062-937-199-L-D	LBB17-870
1188-1059-209-R-GM		LBB17-940

CHE Precision can custom machine any Spring Cup, Base or Lifter Bore Bushing to your specific application. Refer to our ordering work sheet on Pages 15, 16 & 17.















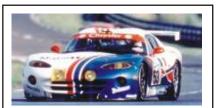


With over 30 years of real world racing experience, CHE Precision knows what it takes to manufacture world-class valve train products. There isn't an engine built that won't benefit from CHE's valve train components. From the daily driver, to the all out race engine, CHE Precision has the part you need.

One of many areas that CHE prides itself on is Technical Support. When engine builders, race teams and cylinder head manufacturers are in need of technical assistance, they know they can rely on CHE Precision to get the support they need.









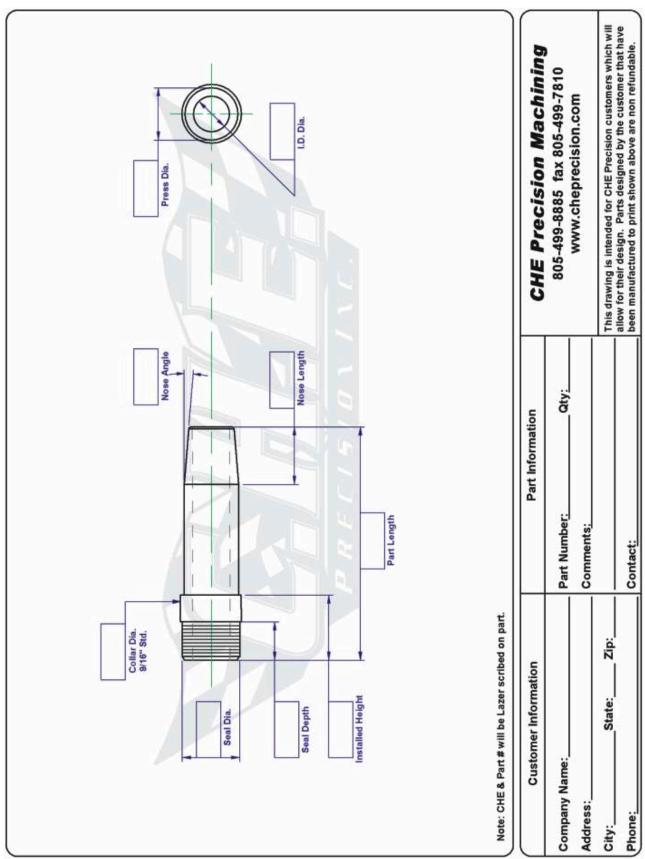




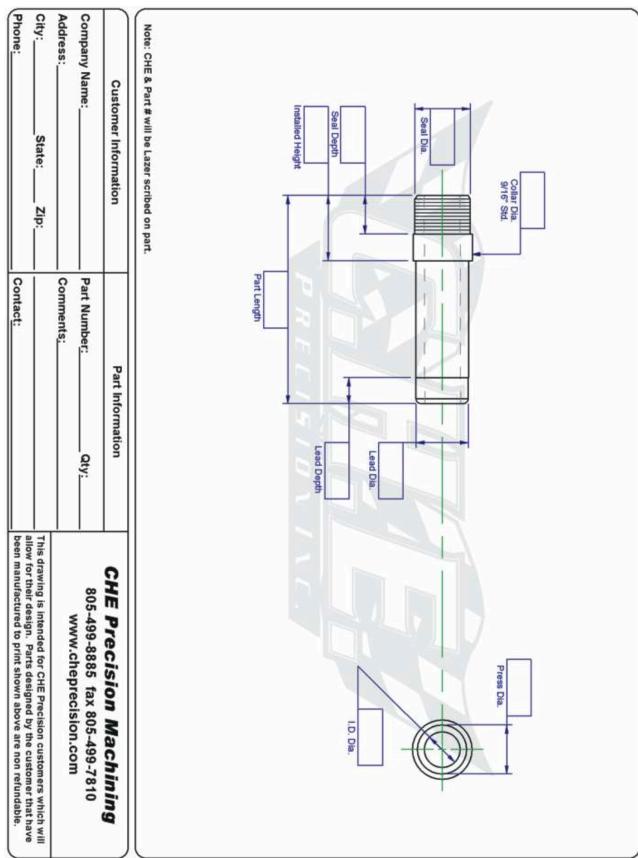




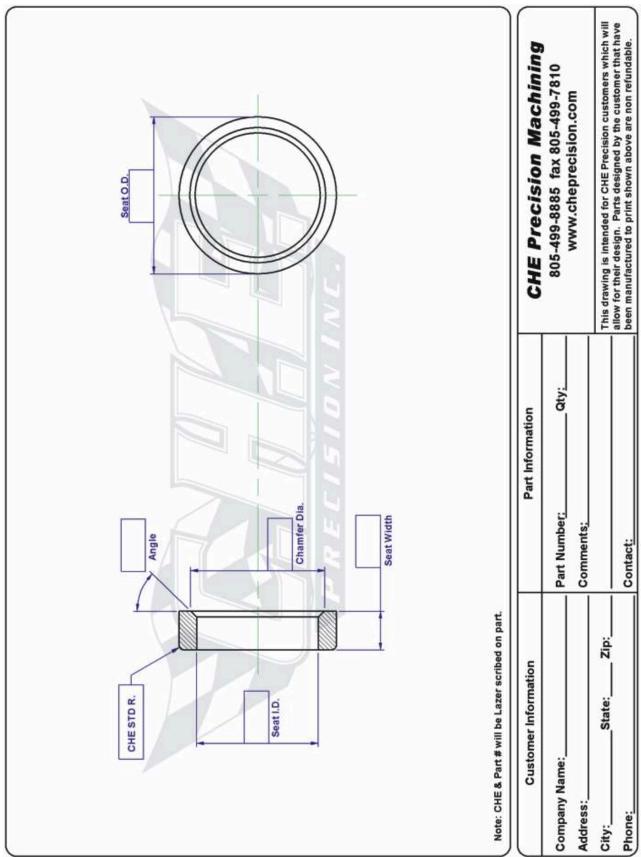




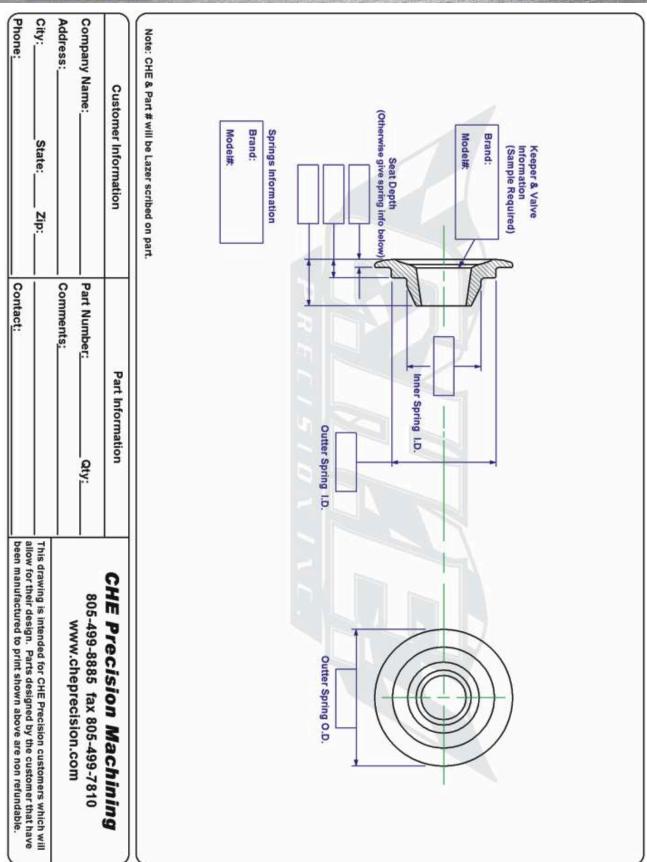




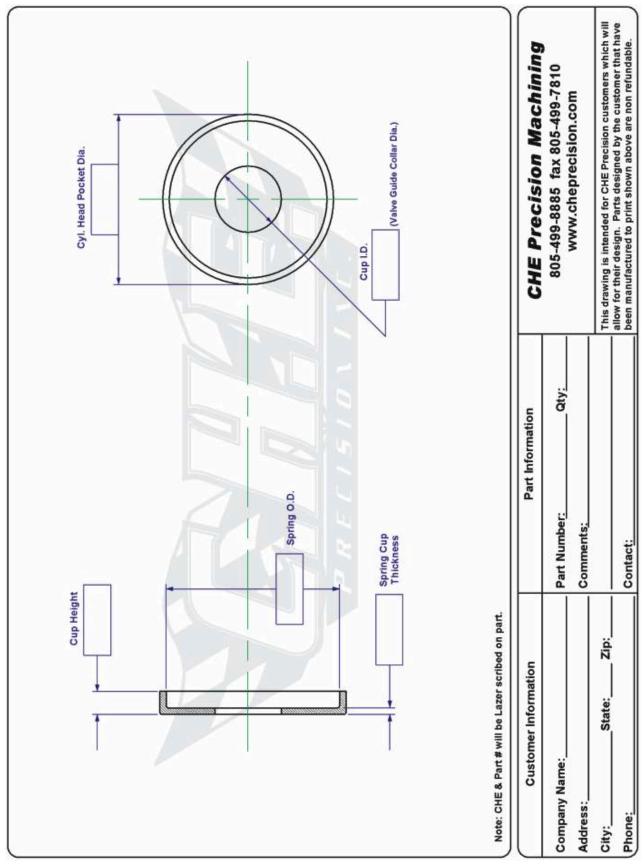




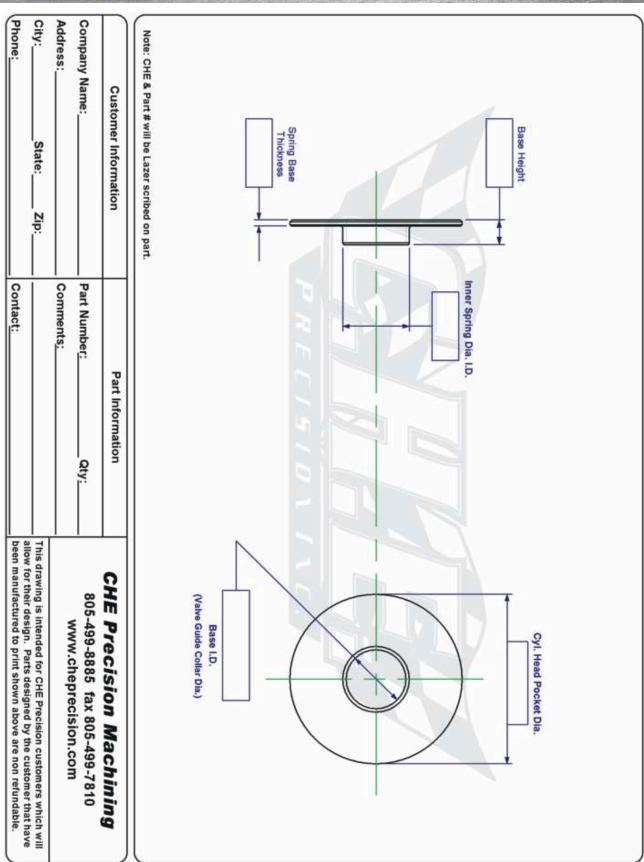




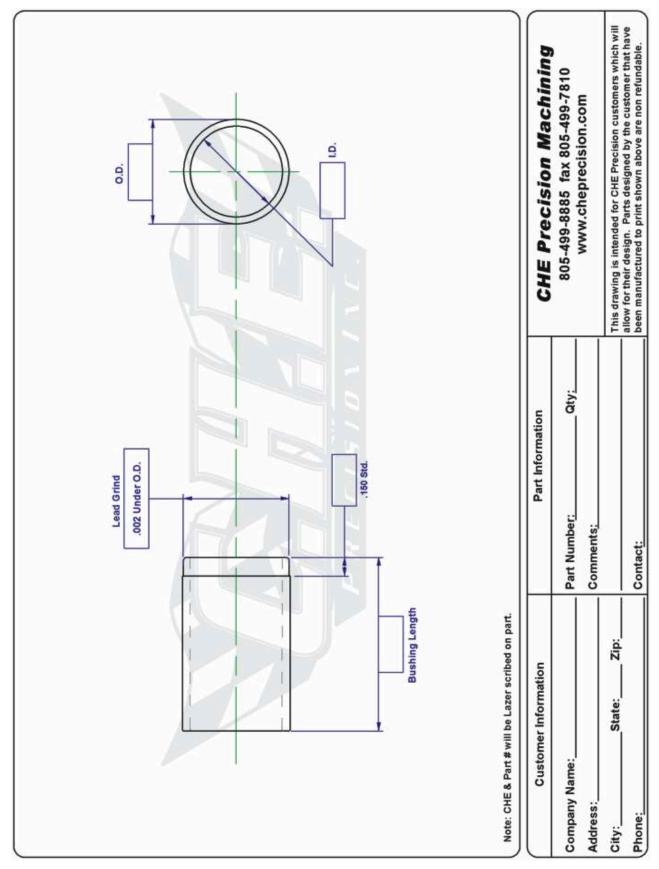














# "Quality Isn't Expensive – It's Priceless"

Notes	



#### **Prices and Specifications:**

Prices and specifications on all products are subject to change without prior notice. Racer Net pricing is available to retail customers of CHE Precision.

#### Payment Terms:

CHE Precision accepts cash, checks and C.O.D. terms (cash and check at CHE's option) for payment of all orders. Under limited circumstances CHE Precision may extend Net 30 days from date of invoice terms to qualifying distributors. Full payment without any discount allowed must be received by CHE Precision by the 30th day following the date of invoice. An account becomes past due if payment is not received by CHE Precision by the 30th day following the date of invoice. Any account which has become past due will have the new orders held until the account is current. All accounts having a past due balance will be charged a monthly service charge at the highest rate permitted in the state where they are located, but in no case will exceed 1.5% per month.

### **Shipping and Freight:**

All pricing is FOB CHE Precision, Newbury Park, CA 91320.

### **Returned Merchandise:**

Returned merchandise will not be accepted without prior permission from an authorized agent at CHE Precision Inc. Return freight charges must be prepaid and include a copy of the original invoice. A 20% restocking charge is levied on all returned merchandise except warranty returns due to CHE Precision's error. Inventory exchange with approved authorization only. Custom orders or merchandise that has been installed and used, no returns allowed.

#### **Printing and Typographical Errors:**

CHE Precision is not responsible for errors in type-setting and/or printing regarding either content or price.

#### **Rights Reserved:**

CHE Precision reserves the right to make any and all changes, improvements, and/or revisions to products offered, as deemed necessary or configuration without liability or obligation based on similar products previously offered. CHE Precision assumes no responsibility to upgrade previously purchased products of CHE Precision or products manufactured by other manufacturers supplied and offered by CHE Precision. Because racing components are used under severe and unpredictable conditions, CHE Precision assumes no liability for incidents resulting from racing accidents or gross misuse, neglect, improper installation, improper adjustments, dirt or other contaminants, or poor fuel quality.

#### **Emissions Disclaimer:**

Unless otherwise noted, products listed herein are not legal for use on pollution controlled motor vehicles in the United States of America; and may not be legal for use on pollution controlled vehicles in other countries as well.

#### Limited Warranty:

All products manufactured by CHE Precision are warranted in the United States to be free from defects in workmanship and materials for a period of ninety (90) days from the date of purchase to the original purchaser. CHE Precision will repair or replace, at its option, any product manufactured by CHE Precision retuned prepaid by the original purchaser when it has been determined by CHE Precision, at its sole discretion, that the product has failed due to defective workmanship or materials. When CHE Precision has determined, at its sole discretion, that the returned product does indeed have a warrantable problem, CHE Precision will reimburse UPS ground service charges for the return of the product and will ship the product back to the original purchaser, freight prepaid, via UPS ground service. Products manufactured by other companies which may be included with CHE Precision Products are not warranted in any way by CHE Precision. Any warranties available on products manufactured by other companies are provided by those companies. This warranty does not cover fitness for purpose and /or merchantability on any product sold by CHE Precision. This warranty does not cover the following:

- 1. Failure due to improper installation or maintenance, misuse, abuse, unauthorized repairs, modification, or alteration determined at the sole discretion of CHE Precision.
- 2. If your machine shop, engine builder or installer performs any unauthorized repairs, CHE Precision's warranty will be voided and CHE Precision will not reimburse any cost you were charged.
- 3. Removal or replacement costs.
- 4. Costs incurred due to the downtime of the vehicle
- 5. Damage to related components.
- 6. Normal wear and tear.
- 7. Products manufactured by other companies.
- 8. Fitness for purpose or merchantability.

## **Implied Warranty:**

This warranty is in lieu of all other warranties and/or representations express or implied, including, without limitations, warranties of merchantability and fitness for purpose, and all other liabilities, including special or consequential damages, in connection with the sale or use of any CHE Precision product. Any warranties implied by law are limited in duration to the duration of this warranty, except in those states where prohibited by law.



**PRECISION VALVE GUIDES & SEATS** 

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