



Marshall
PRESENTS

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International Manufacturing
Technology Show of the year.

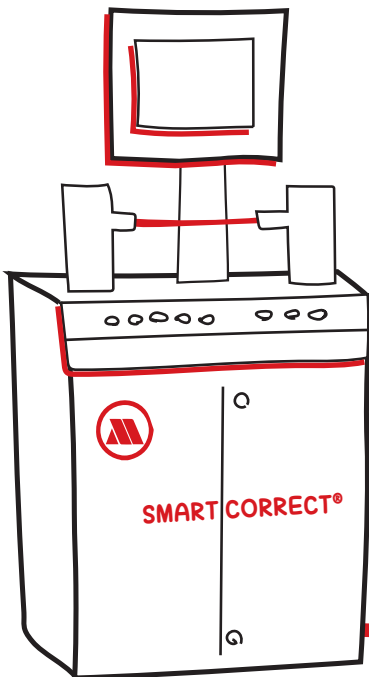
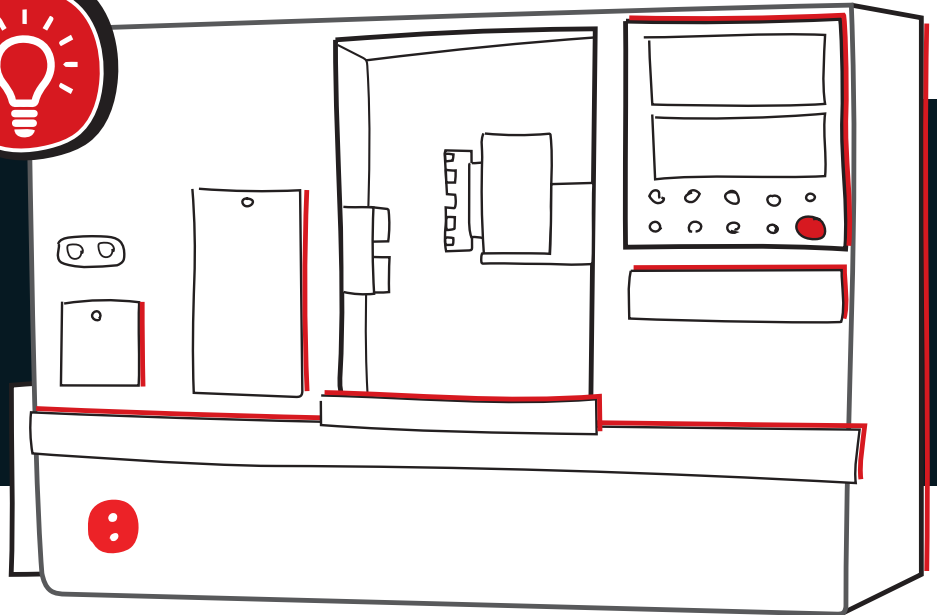


IMTS2018 | 10-15th
SEPTEMBER
McCormick Place, Chicago, IL, USA

BOOTH NO. 121474, EAST BUILDING, LEVEL TWO

SmartCorrect[®]

'Plug & Play'
Technologies
to make CNC lathes
'Smarter'



SmartCorrect[®]
for measurement of Jobs &
Auto Correction of CNC Offsets

Marshall: Transforming Manufacturing... Smartly !

THE PROBLEM:

Machine Shops are dependent on 'Skilled' Operators & Inspectors to ensure Quality of manufactured Jobs.

Decline in 'Attitude' & 'Aptitude' of Operators results in following errors:



Error #1 = Measurement

Error due to non calibration or carelessness



Error #2 = Judgement

Which dimension to correct & how much?



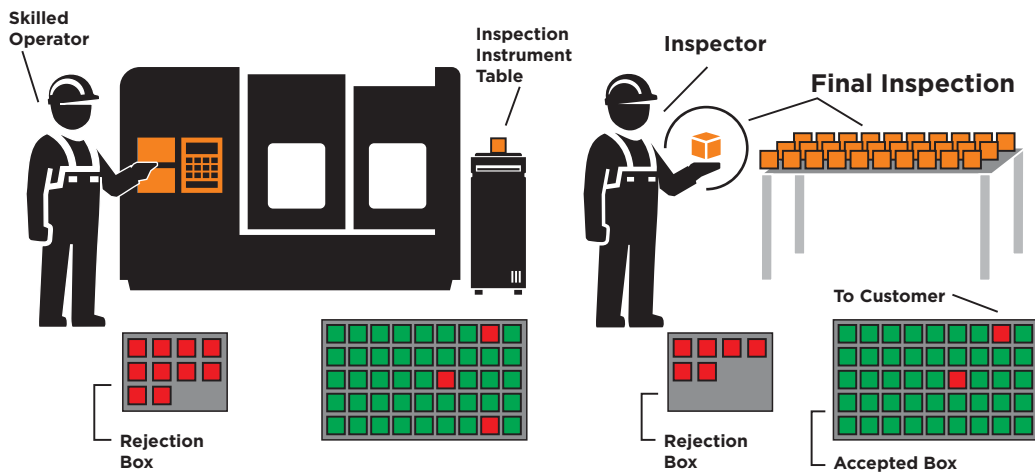
Error #3 = Input

e.g. 0.04 value given in place of 0.004

RESULT:

THESE ERRORS RESULT IN MACHINE PRODUCING HIGH NUMBER OF DEFECTIVES IN PPM (PARTS PER MILLION)

Despite Inspectors, some defectives WILL reach the customer



(ZERO PPM TO CUSTOMER IS IMPOSSIBLE)

CONSEQUENCES

PROFITS WIPED OUT

UNHAPPY CUSTOMER

NEED FOR HIGH NUMBER OF INSPECTORS

LOSS OF BUSINESS



FACTORY

THE SOLUTION:

SmartCorrect[®] Gauging Station for **ZERO DEFECT QUALITY**

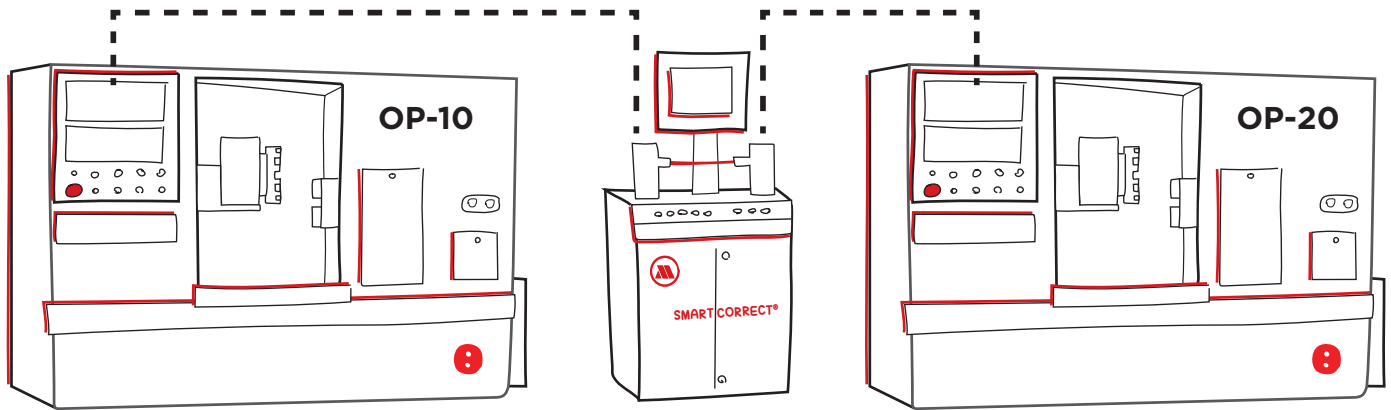


AXLE SHAFT INSPECTION MODULE

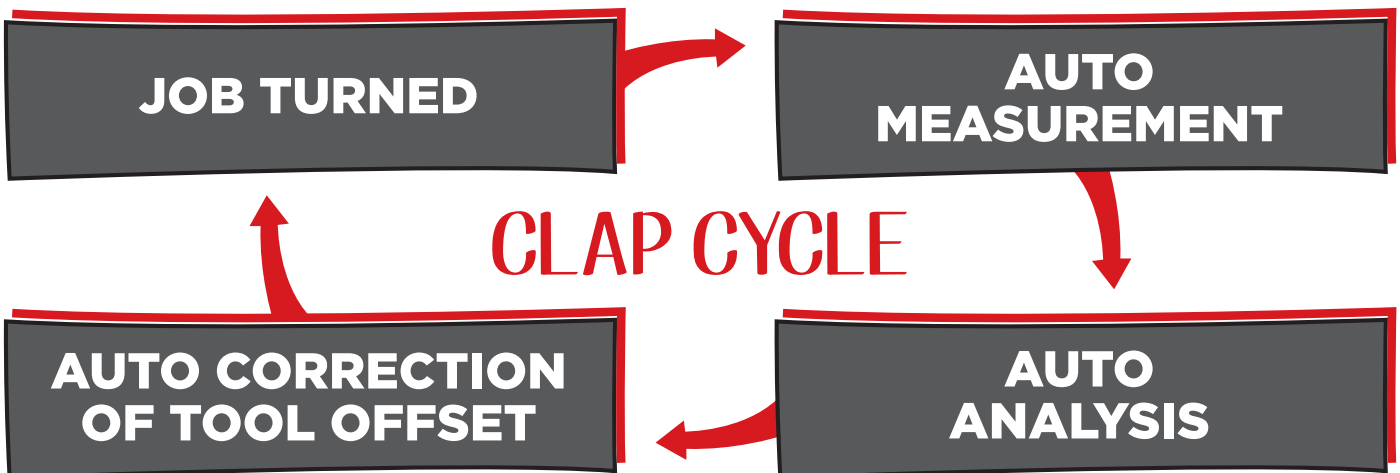


THREAD MEASUREMENT MODULE

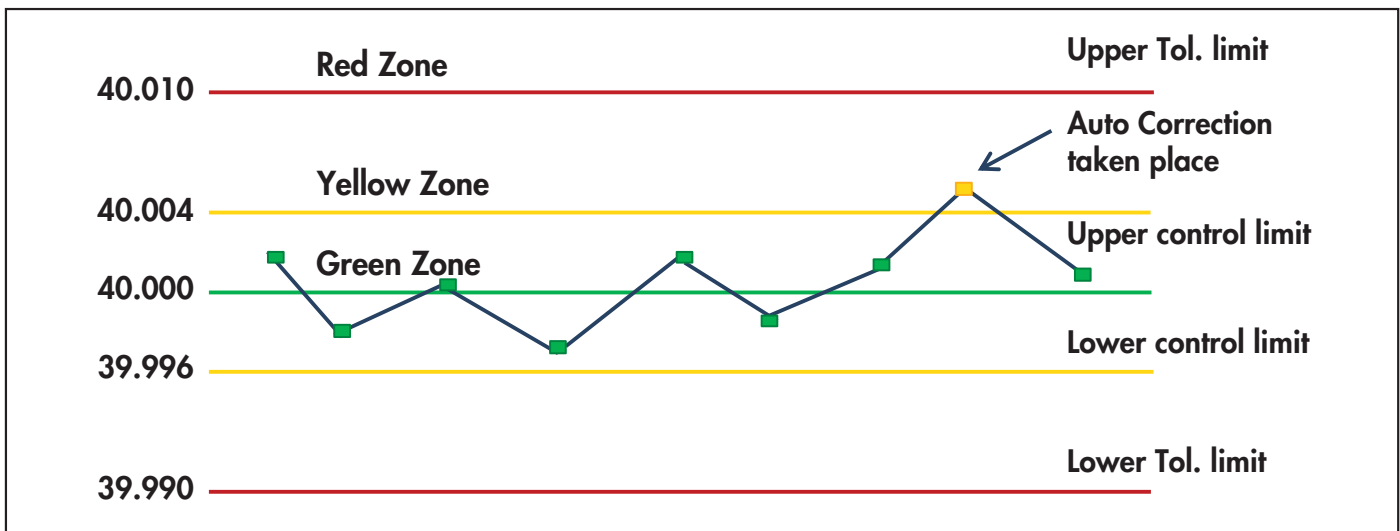
One *SmartCorrect*[®] connects with Two CNC Lathes



SmartCorrect[®] uses *Marshall's* patented **CLAP** (Closed Loop Auto-Corrected Production) technology to ensure near ZERO defect production & helps to shift from OBQ (Operator Based Quality) to SBQ (System Based Quality)



The advanced **ALGORITHMS** in CLAP software calculate Process Mean and automatically correct wear offsets to match the Mean of tolerance limit



SmartCorrect[®] Magic 'MANTRA' for ZERO DEFECT PRODUCTION

$$Cpk > 0.9 \times Cp.$$

HIGH QUALITY INSPECTION PARTS FROM MARPOSS, HEIDENHEIN, & SOLATRON



DIGITAL PROBES




ELEMENTS



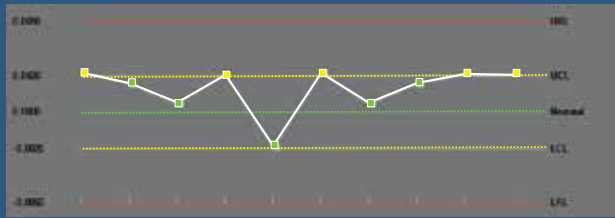
ELECTRONIC SIGNAL PROCESSORS

OPTION OF PC BASED SOFTWARE AUTOCOMP FROM CARON ENGG. (USA)




MACHINE ENHANCEMENT TECHNOLOGY

AutoComp software makes automatic tool offsetting and error-free tooling control a reality.

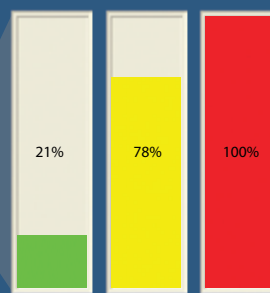


Name	Life	Active	Cpi	Comp.	1	2	3	4	5	6	7	8	9	10
1. FIRST	21		0.948	-0.0021	0.022	0.016	0.005	0.021*	0.018	0.022	0.005	0.018	0.021*	0.021*
2. SECOND	0		2.361	0	0.095	0.002	-0.003	0.0048	-0.0021	0.005	-0.003	0.002	-0.0049	0.0048
3. THIRD	1		1.037	0	0.016	0.001	0.022*	0.015	-0.005	0.016	0.023	0.001	0.016*	0.016
4. FOURTH	0		3.005	0	0.004	0.001	0.002	0.003	-0.0023	0.004	0.002	0.003	0.003	0.003
5. FIFTH	0		11.342	0	0.002	0	-0.002	0.001	-0.001	0.002	-0.002	0	0.001	0.001
6. SIXTH	0		0.655	0	0.016	-0.002	0.012*	0.017	-0.0067	0.016	0.013	0.002	0.017*	0.017
7. SEVENTH	0		3.121	0	0.001	0.012	0.002	0.002	-0.002	0.003	-0.002	0.012	0.002	0.002
8. EIGHTH	0		0.318	0.0008	0.016	-0.004	0.020*	-0.009*	-0.020*	0.016	0.002*	-0.003	-0.009*	-0.009*
9. NINTH	0		0.343	0	0.0022	0.016	0.001	0.0012	-0.0024*	0.0022	0.001	0.016	0.0012	0.0012
10. TENTH	0		2.523	0	-0.002	0.004	-0.005	-0.001	0.001	-0.002	-0.003	0.004	-0.001	-0.001

REAL TIME DATA



PARTDATA



TOOLLIFEUSED

COMPILES AND REPORTS HISTORICAL TOOL WEAR MEASUREMENTS

All measurement and compensation data is saved to a file. The data is date and time stamped for future analysis. The operator also receives real-time status of the useful life for each tool.

ACCEPTS PART MEASUREMENTS FROM WIFI GAUGING DEVICES

Wireless data entry allows the operator to measure and simultaneously transmit the data. AutoComp will then automatically compensate tool offsets, without manual data input. This feature expedites the data-entry process and virtually eliminates data-entry errors.

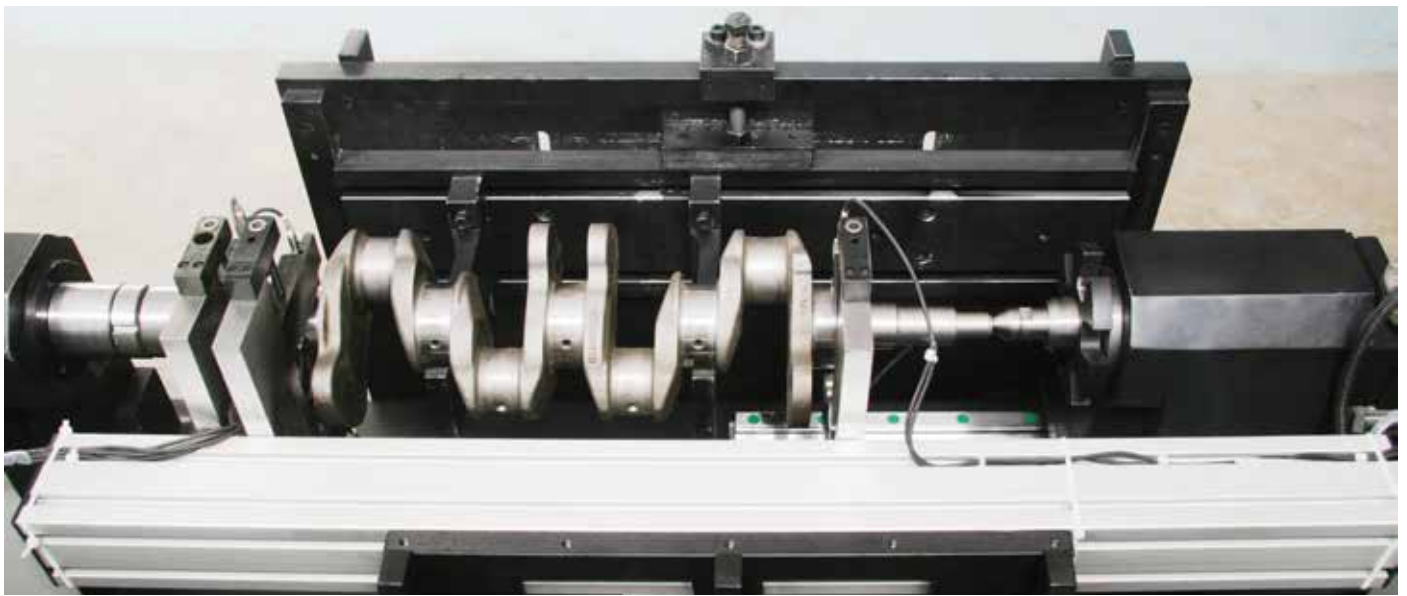
MAINTAINS ACCEPTABLE TOLERANCES OF MACHINED PARTS

AutoComp statistically controls your tool offsets to maintain acceptable tolerances of your machined parts. AutoComp calculates tool compensation based on tolerance limits and tool compensation limits.

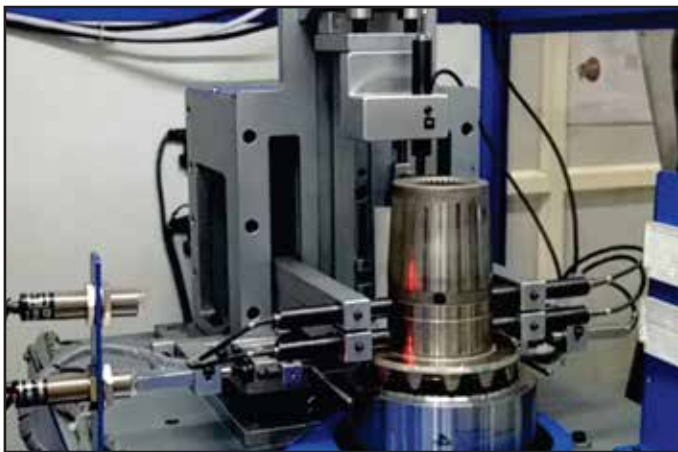
REPORTS A TOOL CHANGE NEED TO THE OPERATOR

When tool compensation has exceeded a userdefined threshold, a wear-limit is issued, informing the operator that the tool needs to be changed. A signal can also be sent to the CNC control so a redundant tool can be called automatically or the machine can be stopped before the next cycle.

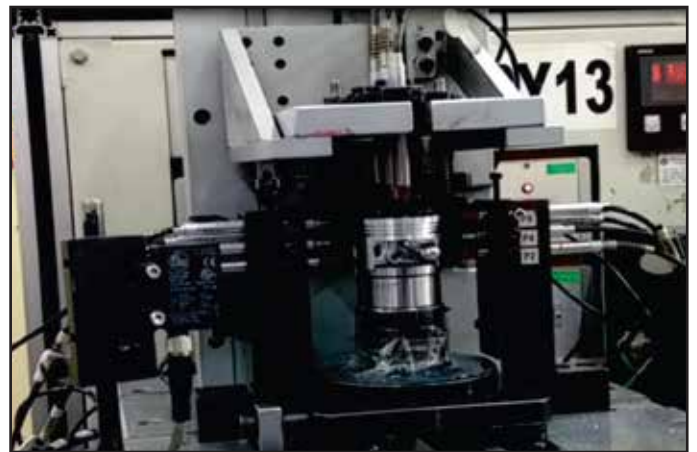
SmartCorrect[®] @ Work



4 CYLINDER CRANKSHAFT INSPECTION MODULE



OUTER GEAR INSPECTION MODULE



PISTON INSPECTION MODULE



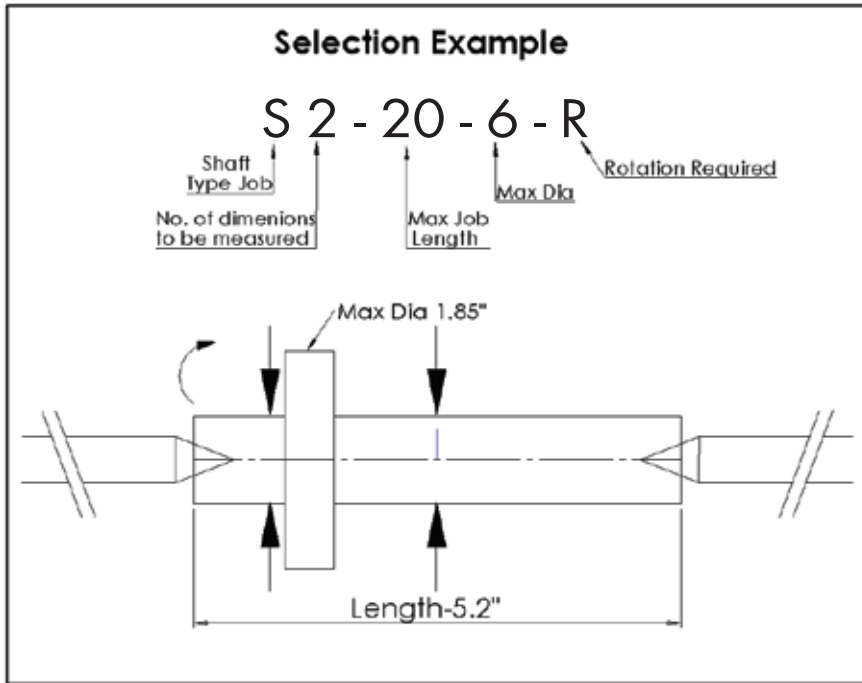
INSPECTION MODULE FOR GEAR BLANK



INSPECTION MODULE FOR PINION SHAFT

ORDERING INFORMATION

1. S Series (Shaft type Job)

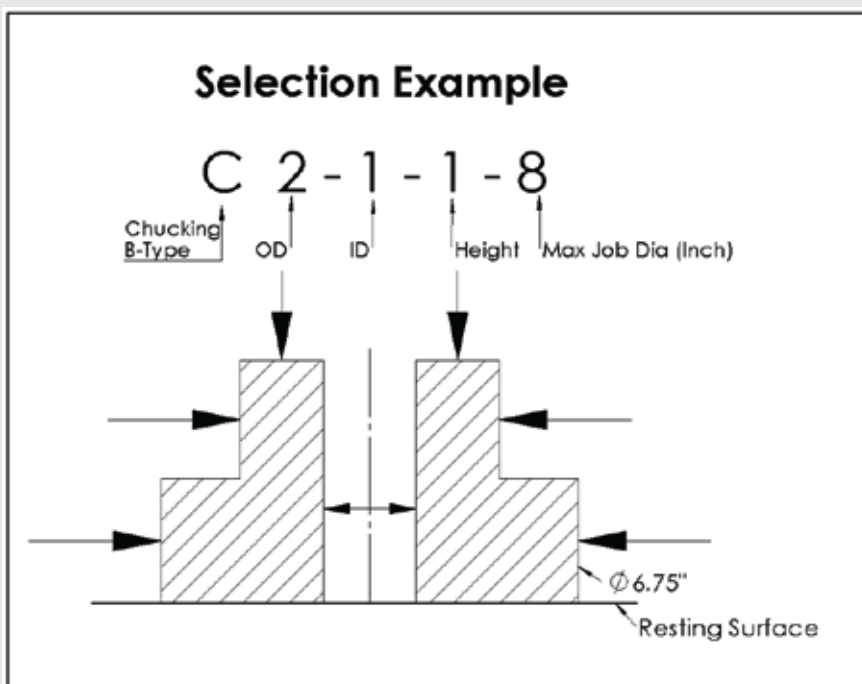


SmartCorrect® selection example

Measured Diameters	1/2/3/4
Max. Length	20/40
Max. Dia.	6/12
Rotation or not	R/

all dimensions are in inches

2. C Series (Chucking type Job)



SmartCorrect® selection example

OD	1/2/3
ID	1/2
Height	1/2/3
Max. Job. Dia	6/12/18

all dimensions are in inches

Our Clients Who Use *SmartCorrect*TM Supply Parts to:



Factories & Works:



Headoffice & Works
(Ludhiana, India)



Automation Unit
(Ludhiana, India)



Tech Center
(Delhi, India)



Tech Center
(Atlanta, USA)



Head Office & Works

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Phone: +91-0124-4241813-15 | Cell: +91-96502 93944

Automated Solutions Division (Unit II)

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Dealers