TOOLING CATALOG

ENGLISH

FIXED-TURNING

-NE/WEN-®

FIXED-TURNING®

the new standard
in valve seat machining™

ZERO Defect... 100% Perfection!
FIXED-TURNING® in all its forms

CONTOUR-BB™
... the best budget

EPOC-XL™
... objective no-limit

Who is best able to guaranty the 2012 OEM quality requirements on the following operations...	NEWEN FIXED-TURNING® machines		The best Form-Tool seat & guide machines in the market	
	YES	NO	YES	NO
Machine the hardest valve seats with a 100% guaranteed precision and, of course, chatter free	✔			X
Machine round and concentric valve seats 100% of the time regardless of the material to machine	✔			X
Machine round and concentric valve seats for a 100% seal regardless of the diameter of the seat ranging from 14 to 240mm (.55" to 9.45")	✔			X
Machine perfectly round & square valve seat housings within a 0.005mm (.0002") circularity tolerance and perpendicularity of the resting face (OEM tolerance)	✔			X
Machine valve guides with "H7" (OEM Tolerance) automatically	✔			X
Carry out all the machining operations in automatic with depth tolerances within a few hundredths of mm regardless of the diameters of the valve seats and their hardness	✔			X
Guaranty optimum quality with an operator who only has a few days of training	✔			X
Guaranty the same quality for decades to come regardless of the materials and precision levels required	✔			X
Guaranty the machining of all the shapes and profiles with one standard single point cutting tool	✔			X
Guaranty an inventory of the most complex profiles and make them available at any moment with a few simple touches on the screen	✔			X
Guaranty the capacity to machine all types of cylinder heads that may exist, including the ones featuring venturi type shapes (back cuts) below the seats	✔			X

BE> THINK> INNOVATE>

CONTOUR™
... the extra comfort

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*the new standard
in valve seat machining™*

KOMATSU Natural Gas Cylinder Head
- Valve Seat Hardness: **56/58HRC** (573HB+ / 610HV50+)
- Cutter used: **CNTR-FBN-1**
- Cutting Speed: **180 meter/min**
- Machining Mode: **Dry Cut**
- Cutting Cycle: **28 seconds per seat**
- Circularity (measured w/ TALYRON 365XL machine): **1µ to 2.40µ**
 => **(0.001 to 0.0024mm or .00004" to .000095")**
- Surface Finish: **0.20Ra**

FIXED-TURNING®

the new standard
in valve seat machining™

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■ IDENTIFICATION *of* NEWEN® FIXED-TURNING® SINGLE POINT CUTTERS

CONTOUR

F	FULL SIZE
T	TRUNCATED

S	SHARPENABLE
O	NON-SHARPENABLE

RELIEF ANGLES

C	5°
B	7°
A	11°

N	CBN (Cubic Boron Nitride)
P	PCD (Polycrystalline Diamond)
K	CERMET (Metallic Ceramics)
G	COATED CARBIDE
H	CERAMICS

C N T R - T O A N - 4 11 2 04
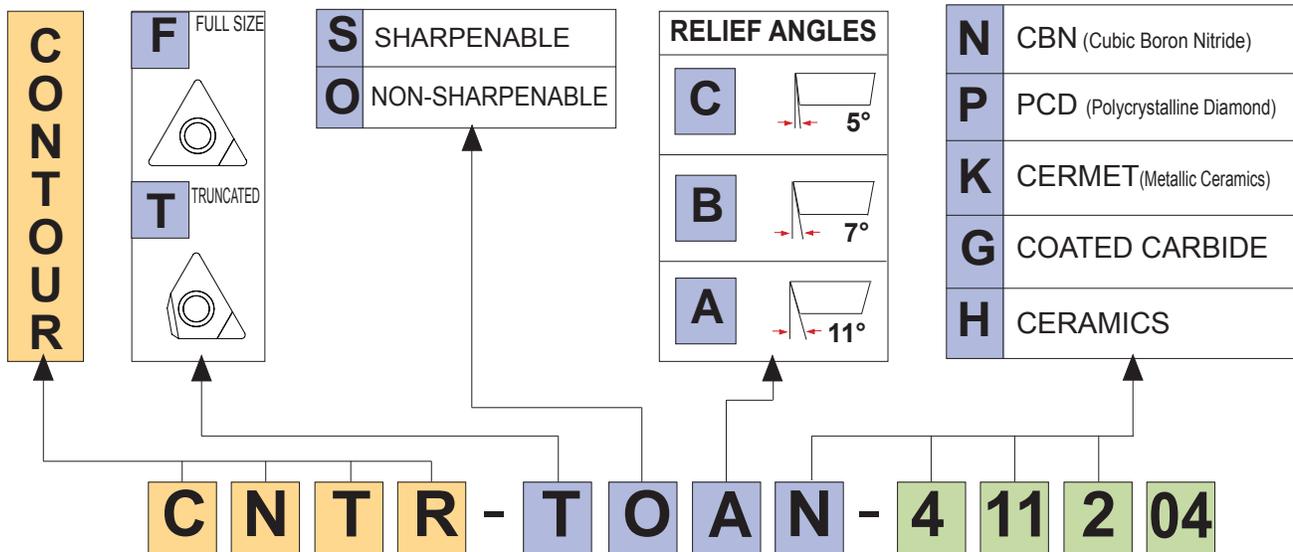
N⁰	DESCRIPTION	APPLICATIONS	SUGGESTED CUTTING SPEEDS	REMARKS
1	CBN *Type 1*	Hardened Steels & Cast Irons, Stellites.	150 to 250 m/min	Very hard valve seats such as Well-Tite and Hardened steels.
2	CBN *Type 2*	Alloys which do not present any particular machining difficulties.	100 to 250 m/min	Steels and Standard Powder metals.
3	PCD	Beryllium, Aluminum, Copper, Bronze.	400 to 600 m/min	Do **NOT** use for ferrous materials.
4	CERMET	Very hard steels which do not present any particular machining difficulties.	80 to 350 m/min	Finish of very hard materials & Beryllium. Fragile for interrupted cuts.
5	COATED CARBIDE	Alloys which do not present any particular machining difficulties.	80 to 200 m/min	
6	CBN *Type 3*	Wide range of hardened steels, Cast Irons	150 to 200 m/min *Maximum cutting speed 200m/min*	Ceramic Coated - Enhanced edge strength and wear resistance. Good for finishing applications
7	CBN *Type 4*	Hard & heat resistant alloys, Stellites.	200 to 400 m/min	Extreme resistance to breakage & wear- Without protective chamfer on cutting edge.
8	CBN *Type 5*	Cast irons in general. Especially well suited for nodular cast iron.	150 to 250 m/min	Extreme breakage and wear resistance. For the high speed and high precision machining of cast iron.
9				

DIMENSIONS

06	6mm
08	8mm
11	11mm

NOSE RADIUS

02	0,20mm
04	0,40mm
08	0,80mm
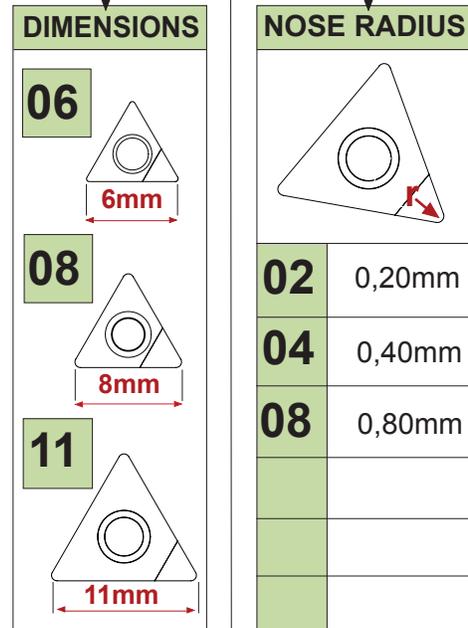
CUTTING ANGLES

1	Negative cut with protective chamfer.
2	Negative cut without protective chamfer.
3	Positive cut obtained from sintering.
4	Positive cut obtained from grinding.

These values are merely suggested values and must be validated with actual trials. Always make sure that the cutter rest properly against the tip holder.

GRADE	MATERIAL		CUTTING SPEED RANGE	AVERAGE FEED RATE	AVERAGE CUTTING DEPTH	DRY CUT	WET CUT
Tungsten Carbide	• Cast Iron • Steel • Powdered Metal	Hardness < 40HRC	50 to 100 m/min *164 to 328 ft/min*	*ROUGH FEED:* 0.2 / 0.3 mm/rev *.0079 / .0118 "/rev* *FINISH FEED:* 0.08 mm/rev *.0031 "/rev*	*ROUGH DEPTH:* 0.3 / 0.5 mm/rev *.0118" / .0197 "/rev* *FINISH DEPTH:* 0.05 to 0.1 mm/rev *.0020 to .0039 "/rev*	Acceptable	Recommended in difficult cases
CERMET with positive cut obtained from sintering	• Aluminum • Copper Berrylium • Non Ferrous Metals • FIXED-TURNING® Applications		100 to 200 m/min *328 to 656 ft/min*	*ROUGH FEED:* .15 mm/rev *.0059 "/rev* *FINISH FEED:* 0.05 mm/rev *.0020 "/rev*	*ROUGH DEPTH:* 0.10 to 0.25 mm/rev *.0039 to .0098 "/rev* *FINISH DEPTH:* 0.05 mm/rev *.0020 "/rev*	Acceptable if the metal shaving does not stick to the tool.	Recommended in case of metal shaving sticking
CBN Coated CBN	• Tempered Cast Iron • Treated Steel • Powdered Metal	Hardness > 40HRC	90 to 180 m/min *295 to 590 ft/min*	*ROUGH FEED:* .12 mm/rev *.0047 "/rev* *FINISH FEED:* 0.02 mm/rev *.0079 "/rev*	*ROUGH DEPTH:* 0.10 to 0.25mm/rev *.0039 to .0098 "/rev* *FINISH DEPTH:* 0.04 mm/rev *.0016 "/rev*	Yes	Desirable in case of metal shaving sticking
CBN for cast irons	• Tempered Cast Iron - Very Hard		150 to 300 m/min *492 to 984 ft/min*	*ROUGH FEED:* .15 mm/rev *.0059 "/rev* *FINISH FEED:* 0.02 mm/rev *.0079 "/rev*	*ROUGH DEPTH:* 0.20 mm/rev *.0079 "/rev* *FINISH DEPTH:* 0.08 mm/rev *.0031 "/rev*	Yes	Yes
PCD	• Non Ferrous Materials		300+ m/min *984+ ft/min*	*ROUGH FEED:* .15 mm/rev *.0059 "/rev* *FINISH FEED:* 0.02 mm/rev *.0079 "/rev*	*ROUGH DEPTH:* 0.15 mm/rev *.0059 "/rev* *FINISH DEPTH:* 0.02 mm/rev *.0079 "/rev*	Yes	Yes

COOLANT:
Abundant coolant is mandatory for the reaming of guides. One need a water extendible coolant (8%) for chip evacuation, temperature control and reamer protection. For valve seat machining applications, the coolant is recommended when one machines steels and cast irons heavily alloyed and any light alloys that tend to stick to the cutter.

CUTTING SPEED:
The cutting speed is expressed in meter per minute or foot per minute. **It corresponds to the distance travelled by the tip of the tool in one minute.**

Example:
For a valve seat with a diameter of 40mm (.04m) (.1312 feet) and a Spindle Rotation of 1500 RPM :
A- *Cutting Speed in meter per minute* =
    Valve seat diameter (Meter) x 3.14 X Spindle Rotation (RPM) = .04 x 3.14 x 1500 = **188.4m/min**
B- *Cutting Speed in foot per minute* =
    Valve seat diameter (Foot) x 3.14 x Spindle Rotation (RPM) = .1312 x 3.14 x 1500 = **617.95 feet/min**

How to calculate RPM from meter or foot per minute

1) Convert the cutting speed expressed in meter to millimeters or foot to inches: 160meter/min = 160,000 mm/min (524.9 feet/min = 6298.8 inch/min)
2) Divide this value by the average circumference of the valve seat: (circumference = 40mm x3.14 = 125.6mm) 160,000/125.6 = 1274 RPM or [6298.8/(1.575X3.14) = 1274 RPM]

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Diameter (inch) mm

(0.394")	(0,787")	(1.181")	(1.575")	(1.969")	(2.362")	(2.756")	(3,150")	(3,543")	(3,937")	(4,331")	(4,724")
10	20	30	40	50	60	70	80	90	100	110	120

Spindle Speed (RPM)

50 m/min
90 m/min
100 m/min
150 m/min
180 m/min
200 m/min
300 m/min
400 m/min

164 ft/min
295 ft/min
328 ft/min
492 ft/min
591 ft/min
656 ft/min
984 ft/min
1312 ft/min

CARBIDE
50 to 100 m/min
164 to 328 ft/min

CERMET
100 to 200 m/min
328 to 656 ft/min

CBN
90 to 180 m/min
295 to 590 ft/min

CBN - Cast Iron
150 to 300 m/min
492 to 984 ft/min

PCD
300+ m/min
984+ ft/min

Full Size   **Truncated**

■ **CBN**

REFERENCE	DESCRIPTION	GEOMETRY	GENERAL GUIDE LINES*	SUGGESTED CUTTING SPEED
FOR SS Tip Holder Series				
•FT-06-10	CNTR-TOAN-1-06-1-02*	Flat, T	Standard - All purpose cutter.	150-250m/min
•FT-06-11	CNTR-TOAN-2-06-2-02*	Flat, T	Any sintered alloys and cast irons presenting machining difficulties.	100-300m/min
For S Tip Holder Series				
•FT-08-10	CNTR-TOAN-1-08-1-04	Flat, T	Standard - All purpose cutter.	150-250m/min
•FT-08-11	CNTR-TOBN-2-08-2-04	Flat, T	Any sintered alloys and cast irons presenting machining difficulties.	100-300m/min
For A, B, C, D & E Tip Holder Series				
•FT-11-10	CNTR-TOBN-1-11-1-04	Flat, T	Standard - All purpose cutter.	150-250m/min
•FT-11-11	CNTR-TOBN-2-11-2-04	Flat, T	Any sintered alloys and cast irons presenting machining difficulties.	100-300m/min

* WARNING: 0,20mm nose radius - value
of radius must be changed accordingly on
machine screen.

* General Guide Lines. Performance of cutters may vary depending upon actual make-up of material machined.

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Full Size   Truncated

■ **PCD**

REFERENCE	DESCRIPTION	GEOMETRY	GENERAL GUIDE LINES*	SUGGESTED CUTTING SPEED
FOR SS Tip Holder Series				
•CNTR-FCP-1 •CNTR-TCP-2	CNTR-FOCP-3-06-4-04 CNTR-TOCP-3-06-4-04	Sharpened, 10° Sharpened, 10°, T	PCD with positive cut for high level finishes. Use on Non-Ferrous Metals only (Beryllium, Aluminmum, Copper, Bronze...).	400-600m/min
For S Tip Holder Series				
•CNTR-FAP-13 •CNTR-TAP-23	CNTR-FOAP-3-08-2-04 CNTR-TOAP-3-08-2-04	Flat Flat, T	Economical PCD with negative cut without chamfer. Less fragile. Use on Non-Ferrous Metals only. (Beryllium, Aluminum, Copper, Bronze...). Roughing & finishing.	400-600m/min
For A, B, C, D & E Tip Holder Series				
•CNTR-FAP-9 •CNTR-TAP-10	CNTR-FOAP-3-11-4-04 CNTR-TOAP-3-11-4-04	Sharpened, 10° Sharpened, 10°, T	PCD with positive cut for high level finishes. Use on Non-Ferrous Metals only (Beryllium, Aluminmum, Copper, Bronze...).	400-600m/min
•CNTR-FAP-11 •CNTR-TAP-21	CNTR-FOAP-3-11-2-04 CNTR-TOAP-3-11-2-04	Flat Flat, T	Economical PCD with negative cut without chamfer. Less fragile. Use on Non-Ferrous Metals only. (Beryllium, Aluminum, Copper, Bronze...). Roughing & finishing.	400-600m/min

* General Guide Lines. Performance of cutters may vary depending upon actual make-up of material machined.

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CERMET

Full Size   Truncated
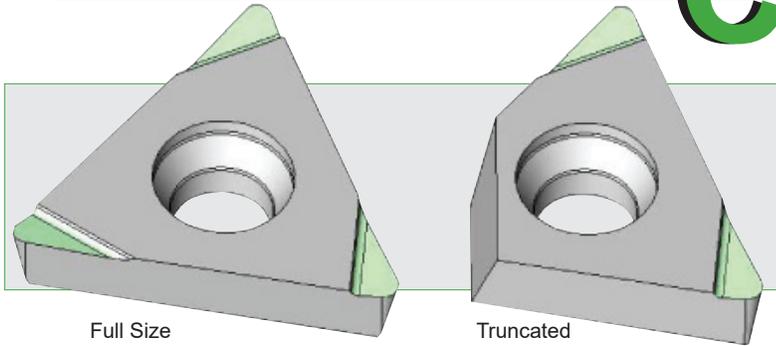
■ CERMET

REFERENCE	DESCRIPTION	GEOMETRY	GENERAL GUIDE LINES*	SUGGESTED CUTTING SPEED
FOR SS Tip Holder Series				
•CNTR-FCK-1	CNTR-FOCK-4-06-4-02*	Chip Breaker	Conventional cermet fragile for interrupted cut.	80-200m/min
•CNTR-TCK-2	CNTR-TOCK-4-06-4-02*	Chip Breaker, T		
For S Tip Holder Series				
•CNTR-FAK-7	CNTR-FOAK-4-08-3-04	Chip Breaker	Conventional cermet. Good finish of very hard steels which do not present any particular machining difficulties and Beryllium. Fragile for interrupted cut.	80-200m/min
•CNTR-TAK-8	CNTR-TOAK-4-08-3-4	Chip Breaker, T		
For A, B, C, D & E Tip Holder Series				
•CNTR-FAK-5	CNTR-FOAK-4-11-3-04	Chip Breaker.	Conventional cermet. Good finish of very hard steels which do not present any particular machining difficulties and Beryllium. Fragile for interrupted cut.	80-200m/min
•CNTR-TAK-6	CNTR-TOAK-4-11-3-04	Chip Beaker, T		

* WARNING: 0,20mm nose radius - value of radius must be changed accordingly on machine screen.

* General Guide Lines. Performance of cutters may vary depending upon actual make-up of material machined.

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CARBIDE

Full Size   Truncated
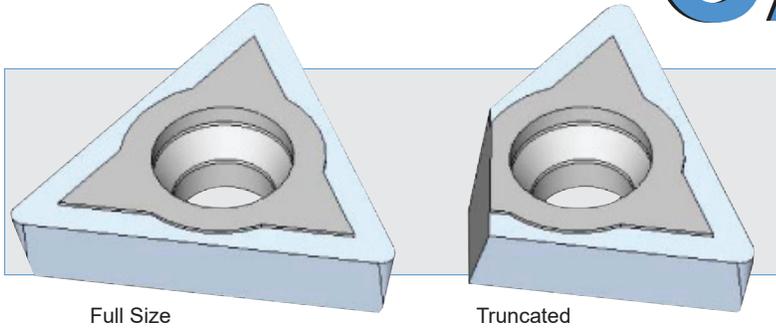
■ **CARBIDE**

REFERENCE	DESCRIPTION	GEOMETRY	GENERAL GUIDE LINES*	SUGGESTED CUTTING SPEED
FOR SS Tip Holder Series				
•CNTR-FCG-1 •CNTR-TCG-2	CNTR-FOCG-5-06-4-02* CNTR-TOCG-5-06-4-02*	Chip Breaker Chip Breaker, T		100-200m/min
For S Tip Holder Series				
•CNTR-FAG-15 •CNTR-TAG-25	CNTR-FOAG-5-08-4-04 CNTR-TAOG-5-08-4-04	Chip Breaker Chip Breaker, T		100-200m/min
For A, B, C, D & E Tip Holder Series				
•CNTR-FBG-17 •CNTR-TBG-27	CNTR-FOBG-5-11-3-04 CNTR-TOBG-5-11-3-04	Chip Breaker Chip Breaker, T	Light to medium cutting of steels, medium cutting of cast iron. Good wear resistance from hard coating which is comparable to CBN hardness.	100-200m/min

* WARNING: 0,20mm nose radius - value
of radius must be changed accordingly on
machine screen.

* General Guide Lines. Performance of cutters may vary depending upon actual make-up of material machined.

FIXED-TURNING® pilots are centered with precision within the machining head of the machine owing to a hydraulic centering system and separate driving mechanism with flat at the tip of the pilot.

This distinctive NEWEN® feature is one of the precision characteristics of the centering of the NEWEN® machines, and this precision allows to work with minimum plays between guides and pilots.

Note: only "C2" type solid carbide pilots may be used on a FIXED-TURNING® machine under penalty of permanently destroying the machining head.

How to select a pilot for a given cylinder head type.

Metric size cylinder heads:

In metric sizes, valve guides usually have round dimensions, for example 7, 8, 9, 10mm, but there also exist intermediate sizes such as 5.5mm, 6.5mm, etc...
In all cases, the "round" dimension is called the nominal size and is subject to an ISO system tolerance. The most common tolerance is H7, sometimes H6 (tighter) or H8 (broader).

For example (most common case), a 7mm valve guide with an H7 tolerance will measure 7.00mm + 0.018mm, hence from 7.00mm to 7.018mm (as an information, ISO tolerance tables are available on the Internet).
In this specific case, one cannot use a 7.00mm pilot, for if the valve guide is at its minimum tolerance, hence 7.00mm, the pilot will not fit in. The pilot that will fit within all the valve guides shall measure 7.00mm minus 0.01mm, hence 6.99mm. A 7.00mm pilot will be perfect for engines that have already run.

We can therefore recommend two pilots per nominal size, and the minus 0.01mm dimension for new engines. For a 7.00mm nominal dimension, two pilots are recommended, a 7.00mm pilot and a 6.99mm pilot.

Nominal hole sizes (mm)				
over	3	6	10	18
inc.	6	10	18	30
micrometers (10^{-6}m)				
H6	+8 0	+9 0	+11 0	+13 0
H7	+12 0	+15 0	+18 0	+21 0
H8	+18 0	+22 0	+27 0	+33 0
H9	+30 0	+36 0	+43 0	+52 0

Cylinder heads with Imperial dimensions (in inches):

The principle is the same, one must take the smallest diameter defined by the tolerance as the nominal dimension, for example 3/8, hence .375" + or - .001". The smallest diameter shall be .375"-.001" = .374". The pilot that will fit all the valve guides will measure .374" less .0004'' =.3736".

For engines that have already run, a .374" pilot can be used for optimum precision.

In summary, one needs to determine the smallest diameter of the nominal dimension to subtract .01mm or .0004" for the smallest pilot and add the same value for an engine that has already run (second pilot). Then one can take stronger pilots in increments of .01mm or .0004", as long as the pilot fits within the valve guide without pressure.

Never use pilots that jam within the valve guides, they must always fall under their own weight, otherwise the risk of seizing up shall be important, with all the consequences that we know.

Minimum play between the valve guide and the pilot.

If one can measure with precision the dimention of the valve guide, which is difficult without precision measuring equipment, indeed in addition to measuring the diameter in various parts of the bore in order to find out the smallest diameter, one must also check the shape of the axis of the valve guide, which often is "banana shaped" and will therefore result in a pilot being able to enter at either end without being able to go through the guide.

In this case, the dimension of the bore is not enough to determine a pilot dimension.

Only trial and error with different pilot diameters, will allow, little by little, to determine the pilot that is capable of going through the valve guide with a minimum play. The strongest pilot that is going through the guide without seizing up within it is the best possible pilot.

Maximum play between the valve guide and the pilot.

For one same cylinder head with identical size pilots between intake and exhaust, the smallest acceptable pilot does not have the same size for exhaust and intake.

Explanation:

The machining spindle of the machine centers with more precision if the pilot has minimum play within the valve guide. The valve that will in that valve guide will have a stem diameter inferior to that of the pilot diameter. Indeed, the functional play of the valve is determined by the dilations and flexing of the valve while the engine is running.
The play between the valve stem and the valve guide varies from .003mm (.0001") to nearly .10mm (.0039") depending upon the stem sizes and the nature of the valve (intake or exhaust).

With an equipment like a FIXED-TURNING® machine, that guaranties very precise centering with respect to the play between the valve guide and the pilot, the tilt of the spindle shall always be less that the tilt of the valve could have with a stem diameter inferior to one thousands of an inch or more, in that case the valve shall yield a perfect seal with its seat.

What needs to be noted, is that the valve stem diameters are not identical between intake valves and exhaust valves. Intake valve heat up less than exhaust valves and they require less functional play to work.

As a result, it is necessary to select the pilot for one same cylinder head, in function to the intake valve which exhibits a stem approximately one thousand stronger than that of the exhaust valve stem.

The dimension of the smallest acceptable pilot for one same cylinder head shall be equivalent to the precise dimension of the intake valve stem + one hundredth of mm (.01mm) or four thenth of a thousand (.0004").
With this pilot, the centering will not be perfect but all the valves will be able to have an angle superior to that which will have been authorized to the Fixed-Turning machining spindle, and the four valves shall seat properly on their respective seats and shall yield a good seal to the cylinder.

Summary:

Optimum diameter of a pilot = diameter of the strongest pilot capable of going through the valve guide without getting stuck within the bore.

Minimum pilot diameter (maximum acceptable play) = diameter of the intake valve stem + .01mm or .0004"

In all cases, the length of the pilot must allow it to go through the guide during the auto-centering process, just like the valve goes completely through the valve guide while it is working and centers according to the entire length of the valve guide. If you are not sure on how to select the appropriate pilot length, please refer to chart on following page.

FIXED-TURNING®
*the new standard
in valve seat machining™*

HOW TO SELECT THE APPROPRIATE PILOT LENGTH

90mm (3.54") + X + Y + 15mm (.59") = Correct Pilot Length

FIXED-TURNING®
*the new standard
in valve seat machining™*

Based on a
40mm (1.575")
Length Tip Holder

90mm (3.543")

X

Y

minimum
15mm (.59")

Legend: • Stock
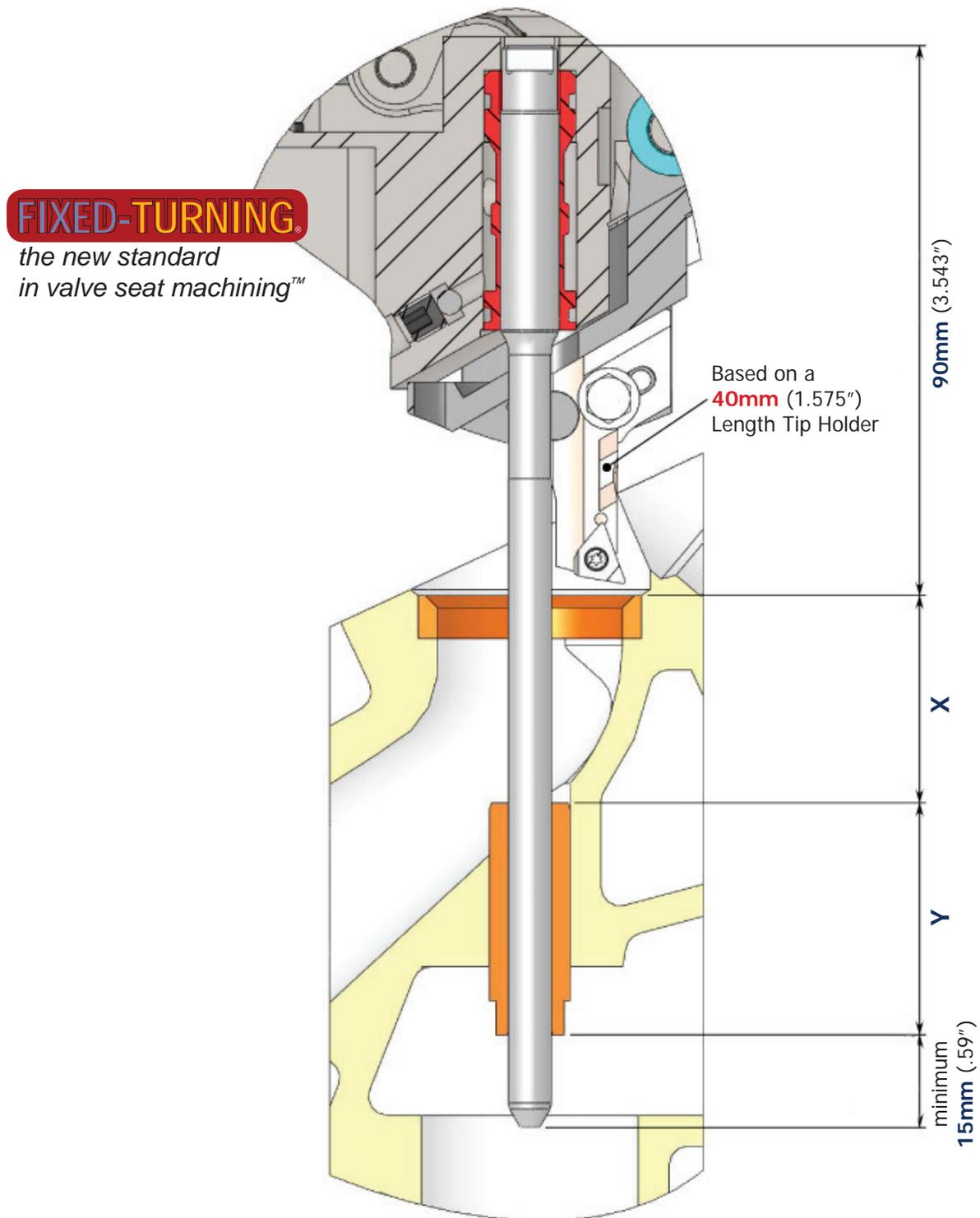
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
3.96	0.1559	4.64	0.1827	5.32	0.2094	5.985	0.2356	6.67	0.2626	7.35	0.2894
3.97	0.1563	4.65	0.1831	5.33	0.2098	5.99	0.2358	6.68	0.2630	7.36	0.2898
3.98	0.1567	4.66	0.1835	5.34	0.2102	5.995	0.2360	6.69	0.2634	7.37	0.2902
3.99	0.1571	4.67	0.1839	5.35	0.2106	6.00	0.2362	6.70	0.2638	7.38	0.2906
4.00	0.1575	4.68	0.1843	5.36	0.2110	6.01	0.2366	6.71	0.2642	7.39	0.2909
4.01	0.1579	4.69	0.1846	5.37	0.2114	6.02	0.2370	6.72	0.2646	7.40	0.2913
4.02	0.1583	4.70	0.1850	5.38	0.2118	6.03	0.2374	6.73	0.2650	7.41	0.2917
4.03	0.1587	4.71	0.1854	5.39	0.2122	6.04	0.2378	6.74	0.2654	7.42	0.2921
4.04	0.1591	4.72	0.1858	5.40	0.2126	6.05	0.2382	6.75	0.2657	7.43	0.2925
4.05	0.1595	4.73	0.1862	5.41	0.2130	6.06	0.2386	6.76	0.2661	7.44	0.2929
4.06	0.1599	4.74	0.1866	5.42	0.2134	6.07	0.2339	6.77	0.2665	7.45	0.2933
4.07	0.1602	4.75	0.1870	5.43	0.2138	6.08	0.2394	6.78	0.2669	7.46	0.2937
4.08	0.1606	4.76	0.1874	5.44	0.2142	6.09	0.2398	6.79	0.2673	7.47	0.2941
4.09	0.1610	4.77	0.1878	5.45	0.2146	6.10	0.2402	6.80	0.2677	7.48	0.2945
4.10	0.1614	4.78	0.1882	5.46	0.2150	6.11	0.2406	6.81	0.2681	7.49	0.2949
4.11	0.1618	4.79	0.1886	5.47	0.2154	6.12	0.2409	6.82	0.2685	7.50	0.2953
4.12	0.1622	4.80	0.1890	5.48	0.2157	6.13	0.2413	6.83	0.2689	7.51	0.2957
4.13	0.1626	4.81	0.1894	5.49	0.2161	6.14	0.2417	6.84	0.2693	7.52	0.2961
4.14	0.1630	4.82	0.1898	5.50	0.2165	6.15	0.2421	6.85	0.2697	...	...
4.15	0.1634	4.83	0.1902	5.51	0.2169	6.16	0.2425	6.86	0.2701	7.56	0.2976
4.16	0.1638	4.84	0.1906	5.52	0.2173	6.17	0.2429	6.87	0.2705	7.57	0.2980
4.17	0.1642	4.85	0.1909	5.53	0.2177	6.18	0.2433	6.88	0.2709	7.58	0.2984
4.18	0.1646	4.86	0.1913	5.54	0.2181	6.19	0.2437	6.89	0.2713	7.59	0.2988
4.19	0.1650	4.87	0.1917	5.55	0.2185	6.20	0.2441	6.90	0.2717	7.60	0.2992
4.20	0.1654	4.88	0.1921	5.56	0.2189	...	...	6.91	0.2720	7.61	0.2996
4.21	0.1657	4.89	0.1925	5.57	0.2193	6.24	0.2457	6.92	0.2724	7.62	0.3000
4.22	0.1661	4.90	0.1929	5.58	0.2197	6.25	0.2461	6.93	0.2728	7.63	0.3004
4.23	0.1665	4.91	0.1933	5.59	0.2201	6.26	0.2465	6.94	0.2732	7.64	0.3008
4.24	0.1669	4.92	0.1937	5.60	0.2205	6.27	0.2469	6.95	0.2736	7.65	0.3012
4.25	0.1673	4.93	0.1941	5.61	0.2209	6.28	0.2472	6.96	0.2740	7.66	0.3016
4.26	0.1677	4.94	0.1945	5.62	0.2213	6.29	0.2476	6.97	0.2744	7.67	0.3020
4.27	0.1681	4.95	0.1949	5.63	0.2217	6.30	0.2480	6.98	0.2748	7.68	0.3024
4.28	0.1685	4.96	0.1953	5.64	0.2220	6.31	0.2484	6.99	0.2752	7.69	0.3028
4.29	0.1689	4.97	0.1957	5.65	0.2224	6.32	0.2488	7.00	0.2756	7.70	0.3031
4.30	0.1693	4.98	0.1961	5.66	0.2228	6.33	0.2492	7.005	0.2758	7.71	0.3035
4.31	0.1697	4.99	0.1965	5.67	0.2232	6.34	0.2496	7.01	0.2760	7.72	0.3039
4.32	0.1701	5.00	0.1969	5.68	0.2236	6.35	0.2500	7.02	0.2764	7.73	0.3043
4.33	0.1705	5.01	0.1972	5.69	0.2240	6.36	0.2504	7.03	0.2768	7.74	0.3047
4.34	0.1709	5.02	0.1976	5.70	0.2244	6.37	0.2508	7.04	0.2772	7.75	0.3051
4.35	0.1713	5.03	0.1980	5.71	0.2248	6.38	0.2512	7.05	0.2776	7.76	0.3055
4.36	0.1717	5.04	0.1984	5.72	0.2252	6.39	0.2516	7.06	0.2780	7.77	0.3059
4.37	0.1720	5.05	0.1988	5.73	0.2256	6.40	0.2520	7.07	0.2783	7.78	0.3063
4.38	0.1724	5.06	0.1992	5.74	0.2260	6.41	0.2524	7.08	0.2787	7.79	0.3067
4.39	0.1728	5.07	0.1996	5.75	0.2264	6.42	0.2528	7.09	0.2791	7.80	0.3071
4.40	0.1732	5.08	0.2000	5.76	0.2268	6.43	0.2531	7.10	0.2795	7.81	0.3075
4.41	0.1736	5.09	0.2004	5.77	0.2272	6.44	0.2535	...	...	7.82	0.3079
4.42	0.1740	5.10	0.2008	5.78	0.2276	6.45	0.2539	7.13	0.2807	7.83	0.3083
4.43	0.1744	5.11	0.2012	5.79	0.2280	6.46	0.2543	7.14	0.2811	7.84	0.3087
4.44	0.1748	5.12	0.2016	5.80	0.2283	6.47	0.2547	7.15	0.2815	7.85	0.3091
4.45	0.1752	5.13	0.2020	5.81	0.2287	6.48	0.2551	7.16	0.2819	7.86	0.3094
4.46	0.1756	5.14	0.2024	5.82	0.2291	6.49	0.2555	7.17	0.2823	7.87	0.3098
4.47	0.1760	5.15	0.2028	5.83	0.2295	6.50	0.2559	7.18	0.2827	7.88	0.3102
4.48	0.1764	5.16	0.2031	5.84	0.2299	6.51	0.2563	7.19	0.2831	7.885	0.3104
4.49	0.1768	5.17	0.2035	5.85	0.2303	6.52	0.2567	7.20	0.2835	7.89	0.3106
4.50	0.1772	5.18	0.2039	5.86	0.2307	6.53	0.2571	7.21	0.2839	7.895	0.3108
4.51	0.1776	5.19	0.2043	5.87	0.2311	6.54	0.2575	7.22	0.2843	7.90	0.3110
4.52	0.1780	5.20	0.2047	5.88	0.2315	6.55	0.2579	7.23	0.2846	7.91	0.3114
4.53	0.1783	5.21	0.2051	5.89	0.2319	6.56	0.2583	7.24	0.2850	7.92	0.3118
4.54	0.1787	5.22	0.2055	5.90	0.2323	6.57	0.2587	7.25	0.2854	7.93	0.3122
4.55	0.1791	5.23	0.2059	5.91	0.2327	6.58	0.2591	7.26	0.2858	7.94	0.3126
4.56	0.1795	5.24	0.2063	5.92	0.2331	6.59	0.2594	7.27	0.2862	7.95	0.3130
4.57	0.1799	5.25	0.2067	5.93	0.2335	6.60	0.2598	7.28	0.2866	7.96	0.3134
4.58	0.1803	5.26	0.2071	5.94	0.2339	6.61	0.2602	7.29	0.2870	7.97	0.3138
4.59	0.1807	5.27	0.2075	5.95	0.2343	6.62	0.2606	7.30	0.2874	7.98	0.3142
4.60	0.1811	5.28	0.2079	5.96	0.2346	6.63	0.2610	7.31	0.2878	7.99	0.3146
4.61	0.1815	5.29	0.2083	5.97	0.2350	6.64	0.2614	7.32	0.2882	8.00	0.3150
4.62	0.1819	5.30	0.2087	5.98	0.2354	6.65	0.2318	7.33	0.2886	8.01	0.3154
4.63	0.1823	5.31	0.2091			6.66	0.2622	7.34	0.2890	8.02	0.3157

mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
8.03	0.3161	8.71	0.3429	9.39	0.3697	10.07	0.3965	12.59	0.4957
8.04	0.3165	8.715	0.3431	9.40	0.3701	...	...	12.60	0.4961
8.05	0.3169	8.72	0.3433	9.41	0.3705	10.25	0.4035	12.61	0.4965
8.06	0.3173	8.73	0.3437	9.42	0.3709	10.26	0.4039	12.62	0.4969
8.07	0.3177	8.74	0.3441	9.43	0.3713	10.27	0.4043	12.63	0.4972
8.08	0.3181	8.75	0.3445	9.44	0.3717	10.28	0.4047	12.64	0.4976
8.09	0.3185	8.76	0.3449	9.45	0.3720	10.29	0.4051	12.65	0.4980
8.10	0.3189	8.77	0.3453	9.46	0.3724	10.30	0.4055	12.66	0.4984
8.11	0.3193	8.78	0.3457	9.47	0.3728	10.31	0.4059	12.67	0.4988
8.12	0.3197	8.79	0.3461	9.48	0.3732	10.32	0.4063	12.68	0.4992
8.13	0.3201	8.80	0.3465	9.49	0.3736	10.33	0.4067	12.69	0.4996
...	...	...	...	9.50	0.3740	10.34	0.4071	12.70	0.5000
8.17	0.3217	8.83	0.3476	9.51	0.3744	10.35	0.4075	12.71	0.5004
8.18	0.3220	8.84	0.3480	9.52	0.3748	10.36	0.4079	12.72	0.5008
8.19	0.3224	8.85	0.3484	9.53	0.3752	10.37	0.4083	12.73	0.5012
8.20	0.3228	8.86	0.3488	9.54	0.3756	10.38	0.4087	12.74	0.5016
8.21	0.3232	8.87	0.3492	9.55	0.3760	10.39	0.4091	12.75	0.5020
8.22	0.3236	8.88	0.3496	9.56	0.3764	10.40	0.4094	12.76	0.5024
8.23	0.3240	8.89	0.3500	9.57	0.3768	10.41	0.4098	12.77	0.5028
8.24	0.3244	8.90	0.3504	9.58	0.3772	10.42	0.4102	12.78	0.5031
8.25	0.3248	8.91	0.3508	9.59	0.3776	10.43	0.4106	12.79	0.5035
8.26	0.3252	8.92	0.3512	9.60	0.3780	10.44	0.4110	12.80	0.5039
8.27	0.3256	8.93	0.3516	9.61	0.3783	10.45	0.4114	...	...
8.28	0.3260	8.94	0.3520	9.62	0.3787	10.46	0.4118	14.20	0.5591
8.29	0.3264	8.95	0.3524	9.63	0.3791	...	...	14.21	0.5594
8.30	0.3268	8.96	0.3528	9.64	0.3795	10.96	0.4315	14.22	0.5598
8.31	0.3272	8.97	0.3531	9.65	0.3799	10.97	0.4319	14.23	0.5602
8.32	0.3276	8.98	0.3535	9.66	0.3803	10.98	0.4323	14.24	0.5606
8.33	0.3280	8.99	0.3539	9.67	0.3807	10.99	0.4327	14.25	0.5610
8.34	0.3283	9.00	0.3543	9.68	0.3811	11.00	0.4331	14.26	0.5614
8.35	0.3287	9.01	0.3547	9.69	0.3815	11.01	0.4335	14.27	0.5618
8.36	0.3291	9.02	0.3551	9.70	0.3819	11.02	0.4339	14.28	0.5622
8.37	0.3295	9.03	0.3555	9.71	0.3823	11.03	0.4343	14.29	0.5626
8.38	0.3299	9.04	0.3559	9.72	0.3827	11.04	0.4346	14.30	0.5630
8.39	0.3303	9.05	0.3563	9.73	0.3831	11.05	0.4350	14.31	0.5634
8.40	0.3307	9.06	0.3567	9.74	0.3835	11.06	0.4354	14.32	0.5638
8.41	0.3311	9.07	0.3571	9.75	0.3839	11.07	0.4358	14.33	0.5642
8.42	0.3315	9.08	0.3575	9.76	0.3843	11.08	0.4362	14.34	0.5646
8.43	0.3319	9.09	0.3579	9.77	0.3846	11.09	0.4366	14.35	0.5650
8.44	0.3323	9.10	0.3583	9.78	0.3850	11.10	0.4370	14.36	0.5654
8.45	0.3327	9.11	0.3587	9.79	0.3854	11.11	0.4374	14.37	0.5657
8.46	0.3331	9.12	0.3591	9.80	0.3858	...	...	14.38	0.5661
8.47	0.3335	9.13	0.3594	9.81	0.3862	11.45	0.4508	14.39	0.5665
8.48	0.3339	9.14	0.3598	9.82	0.3866	11.46	0.4512	14.40	0.5669
8.49	0.3343	9.15	0.3602	9.83	0.3870	11.47	0.4516	...	...
8.50	0.3346	9.16	0.3606	9.84	0.3874	11.48	0.4520	15.75	0.6201
8.51	0.3350	9.17	0.3610	9.85	0.3878	11.49	0.4524	15.76	0.6205
8.52	0.3354	9.18	0.3614	9.86	0.3882	11.50	0.4528	15.77	0.6209
8.53	0.3358	9.19	0.3618	9.87	0.3886	11.51	0.4531	15.78	0.6213
8.54	0.3362	9.20	0.3622	9.88	0.3890	11.52	0.4535	15.79	0.6217
8.55	0.3366	9.21	0.3626	9.89	0.3894	...	...	15.80	0.6220
8.56	0.3370	9.22	0.3630	9.90	0.3898	11.98	0.4717	15.81	0.6224
8.57	0.3374	9.23	0.3634	9.91	0.3902	11.99	0.4720	15.82	0.6228
8.58	0.3378	9.24	0.3638	9.92	0.3906	12.00	0.4724		
8.59	0.3382	9.25	0.3642	9.93	0.3909	12.01	0.4728		
8.60	0.3386	9.26	0.3646	9.94	0.3913	12.02	0.4732		
8.61	0.3390	9.27	0.3650	9.95	0.3917	...	...		
8.62	0.3394	9.28	0.3654	9.96	0.3921	12.48	0.4913		
8.63	0.3398	9.29	0.3657	9.97	0.3925	12.49	0.4917		
8.64	0.3402	9.30	0.3661	9.98	0.3929	12.50	0.4921		
8.65	0.3406	9.31	0.3665	9.99	0.3933	12.51	0.4925		
8.66	0.3409	9.32	0.3669	10.00	0.3937	12.52	0.4929		
8.67	0.3413	9.33	0.3673	10.01	0.3941	12.53	0.4933		
8.68	0.3417	9.34	0.3677	10.02	0.3945	12.54	0.4937		
8.685	0.3419	9.35	0.3681	10.03	0.3949	12.55	0.4941		
8.69	0.3421	9.36	0.3685	10.04	0.3953	12.56	0.4945		
8.695	0.3423	9.37	0.3689	10.05	0.3957	12.57	0.4949		
8.70	0.3425	9.38	0.3693	10.06	0.3961	12.58	0.4953		

How to order a FIXED-TURNING® Pilot depending on its Overall Length (OAL):

OAL = 210mm (8.27")
STANDARD LENGTH
NWN-C2-pilot Ø**-1**

OAL = 236mm (9.29")
NWN-C2-Pilot Ø

FIXED-TURNING®
*the new standard
in valve seat machining™*

HYDRAULIC LOCK CARBIDE PILOT FOR MERCEDES ACTROS DECOMPRESSOR VALVE
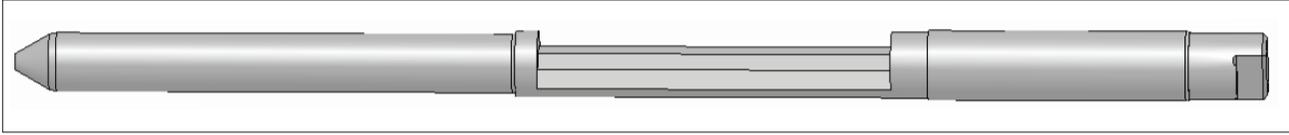
■ **NWN-C2-MMD**
Hydraulic Lock Carbide Pilot, OAL 160mm (6.30"), Pilot Diameter 8.01mm (.3154")
(pilot to be used on CNTR1685, EPOC™, EPOC-CS™, EPOC-XL™ and with EPC-SS35 Tip Holder Only)

■ **NWN-C2-MMD2**
Hydraulic Lock Carbide Pilot, OAL 160mm (6.30"), Pilot Diameter 8.01mm (.3154")
(pilot to be used on CONTOUR-BB™, CONTOUR-BB-CS™, CONTOUR™, CONTOUR-CS™ and with CNTR-BB-SS40A
Tip Holder Only - Requires Custom Truncated Cutter, Ref. CNTR-TCK-2-A)

FIXED-TURNING®
*the new standard
in valve seat machining*™

A

W

Angle between valve seat & gasket surface

B

G

H

C

D

Overall length of profile to be machined

E

F

MEASURING UNIT *used to fill out form:* ☐ INCH ☐ MM

Guide Diameter
BEFORE REAMING: Diameter _____ Tolerance _____

Guide Diameter
AFTER REAMING: Diameter _____ Tolerance* ☐ H6 ☐ H7

TOLERANCE TABLE*					
		D	Tolerance	D	Tolerance
H7	Inch	.1181 to .2362	+ .00048 + 0	.2362 to .3937	+ .0006 + 0
	mm	3 to 6	+ 0.012 + 0	6 to 10	+ 0.015 + 0
H6	Inch	.1181 to .2362	+.00032 + 0	.2362 to .3937	+.00036 + 0
	mm	3 to 6	+ 0.008 + 0	6 to 10	+ 0.009 + 0

Select *Machine Model* you will be using this reamer on:
__ CONTOUR-BB-CS™ __ CONTOUR-CS™ __ EPOC-CS™ __ EPOC-XL™

This reamer will be used for:
____ Guide reaming ONLY ____ COMBINATION guide reaming & valve seat machining

Tip holder used:

Reaming of guide will be done from the valve seat side _____ or from the back side of the cylinder head _____ *(reaming from the back side requires a shorter reamer and thus guarantying better results).*

TYPE \ LENGTH	25	35	40	45	50	55	60	OTHER
A								
B								
C								
D								
SS								
S								
OTHER								

Please, fill out table below with geometric dimensions of your cylinder head:

A	B	C
D	**E**	**F**
G	**H**	**W**

APPLICATION

Make: _____

Model _____

Engine Type: _____

Year: _____

Guide Material: _____

N.B.: CUSTOM ORDERS **CANNOT** BE CANCELLED ONCE PROCESSED. **SALE IS FINAL**: NO RETURN, EXCHANGE OR REFUND.

Company:

Contact:

Address:

Country:
Tel:
Fax:
Email:

FIXED-TURNING®

the new standard in valve seat machining™!

NEWEN®

Machine 100% of
the cylinder heads
to PERFECTION!

NEWEN

FIXED-TURNING®
the new standard in valve seat machining™

FALSE GUIDE DATA ORDER SHEET

K = Valve Seat OD

L = Valve Seat Height

A = Valve Seat ID

C = Distance between the top of the valve guide and the top of the valve seat

E = Valve Guide Length

D = Finished Valve Guide Diameter
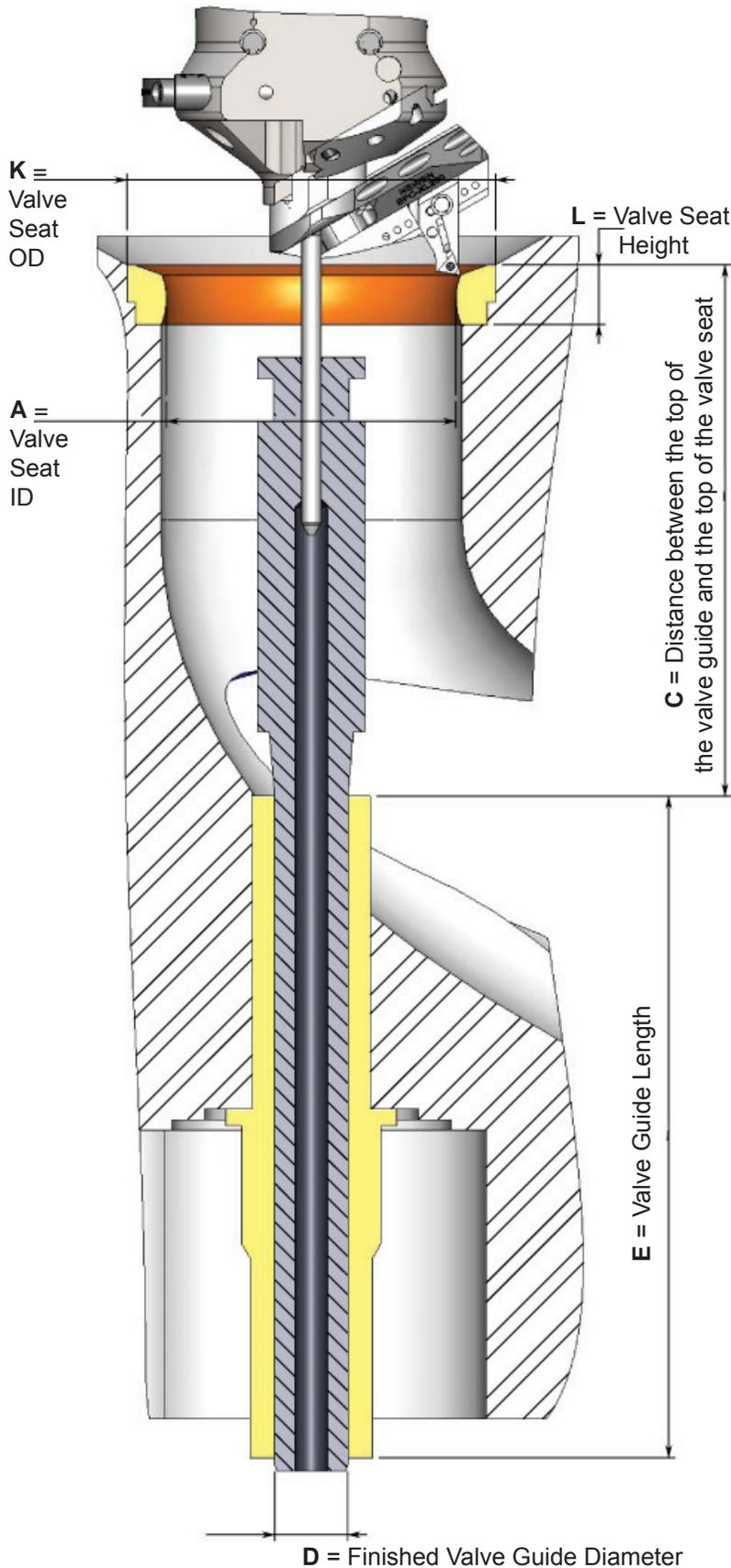
MEASURING UNIT *used to fill out form:* ☐ INCH ☐ MM

Please, Select *Machine Model*:

—— CONTOUR-BB™ —— CONTOUR-BB-CS™ —— CONTOUR™
—— CONTOUR-CS™ —— EPOC™ —— EPOC-CS™ —— EPOC-XL™

Finished valve guide diameter measured and noted in hundredth of millimeters (0,01mm) or (.00039").

Maximum Dimension	
Minimum Dimension	

DIMENSIONS REQUIRED:

A	C	D
E	**K**	**L**

ENGINE APPLICATION

Make: _____

Model _____

Engine Type: _____

Year: _____

N.B.: CUSTOM ORDERS **CANNOT** BE CANCELLED ONCE PROCESSED. **SALE IS FINAL**: NO RETURN, EXCHANGE OR REFUND.

Company:

Contact:

Address:

Country:

Tel:

Fax:

Email:

CNTR-BB-SS40   CNTR-BB-SS40A* CNTR-BB-SS50
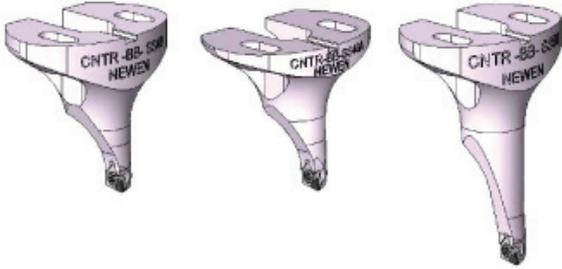
Single Point Cutters need to seat properly within tip-holder. Please check your tip-holders on a regular basis and replace them as needed to maintain optimum machining quality.

CNTR-BB-S40   CNTR-BB-SV40   CNTR-BB-S60   CNTR-BB-S85
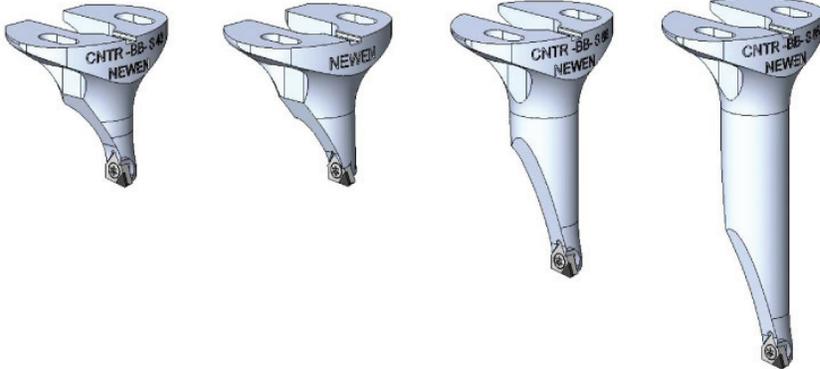
CNTR-BB-A40   CNTR-BB-A45   CNTR-BB-A55   CNTR-BB-A70   CNTR-BB-A70H
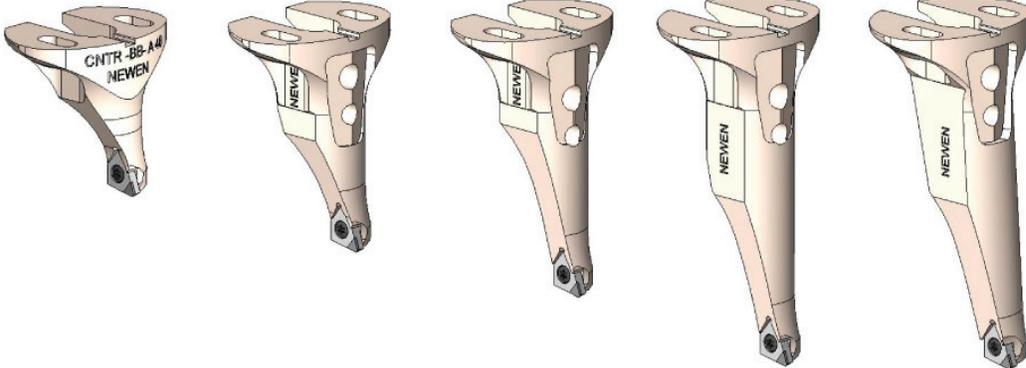
CNTR-BB-C40   CNTR-BB-D30

Note:
• It is recommended to select an "S" series tip holder to machine valve seats ranging in diameter from 17mm to 22mm (.67" to .87").
• For diameters greater than 22mm (.87"), use an "A" series tip holder, the cutters are more affordable and stronger. Likewise, it is advised **not to use** an "SS" series tip holder to machine diameters greater than 18mm (.71").
• From 18mm (.71") on, it is recommended to use an "S" series tip holder, less restricted in terms of depth of cut and feed rate.

CONTOUR™ FAMILY TIP HOLDERS

2-Axis FIXED-TURNING® Machines:
CONTOUR-BB™, CONTOUR-BB-CS™, CONTOUR™, CONTOUR-CS™

NEWEN REFERENCE	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)	MACHINING CAPACITY		TIP-HOLDER OAL	STOCK	GENERAL APPLICATIONS
		Minimum Diameter	Maximum Diameter			
CNTR-BB-SS40	4mm (.1575")	14.1mm (.56")	56.8mm (2.24")	33.5mm (1.32")	YES	Motorcycle and automotive cylinder head valve seats, from Ø14mm (.55")
CNTR-BB-SS40A	NWN-C2-MMD2	13mm (.51")	52.8mm (2.08")	31.6mm (1.24")	YES	*MERCEDES Actros Decompressor Valve
CNTR-BB-SS50	4mm (.1575")	14.1mm (.56")	56.8mm (2.24")	48.5mm (1.91")	YES	Tuning - motorcycle and automotive cylinder head valve seats, from Ø14mm (.55")
CNTR-BB-S40	5mm (.1968")	17.1mm (.67")	58.7mm (2.31")	32mm (1.26")	YES	Motorcycle and automotive cylinder head valve seats, from Ø17mm (.67")
CNTR-BB-SV40	5mm (.1968")	17.4mm (.69")	59.1mm (2.33")	31.6mm (1.24")	YES	Venturi, from Ø17mm (.67")
CNTR-BB-S60	5mm (.1968")	17.1mm (.67")	58.7mm (2.31")	52mm (2.05")	YES	Tuning - motorcycle and automotive cylinder head valve seats, from Ø17mm (.67")
CNTR-BB-S85	5mm (.1968")	17.1mm (.67")	58.7mm (2.31")	72mm (2.83")	YES	Cam-bucket bore housing, from Ø17mm (.67")
CNTR-BB-A40	6mm (.2362")	21.6mm (.85")	63.7mm (2.51")	33mm (1.30")	YES	Common cars and trucks
CNTR-BB-A45	6mm (.2362")	21.6mm (.85")	63.7mm (2.51")	46mm (1.81")	YES	Car - Tuning
CNTR-BB-A55	6mm (.2362")	21.6mm (.85")	63.7mm (2.51")	56mm (2.20")	YES	Car - Tuning
CNTR-BB-A70	6mm (.2362")	21.6mm (.85")	63.7mm (2.51")	71mm (2.80")	YES	Car - Tuning
CNTR-BB-A70H	6mm (.2362")	27.2mm (1.07")	70.6mm (2.78")	71mm (2.80")	YES	Cars and motorcycles with *hemispherical* cylinder heads
CNTR-BB-C40	9.52mm (.375")	41mm (1.61")	80.6mm (3.17")	33mm (1.30")	YES	Industrial engines, Ø < 80mm (3.15")
CNTR-BB-D30	9.52mm (.375")	56.9mm (2.24")	100.7mm (3.96")	32mm (1.26")	NO	Industrial engines, Ø < 100mm (3.94")

VENTURI: An open angle below the seat that allows to accelerate the speed of exhaust gases through decompression

107.50° MAX — 2 mm Max (.079" Max)
CNTR-BB-SS40

107.50° MAX — 2 mm Max (.079" Max)
CNTR-BB-S40

107.50° MAX — 3.50mm Max (.138" Max)
CNTR-BB-A40

CNTR-BB-SV40

107.50° MAX — 4.50mm Max (.177" Max)

112.50° MAX — 3.50mm Max (.138" Max)
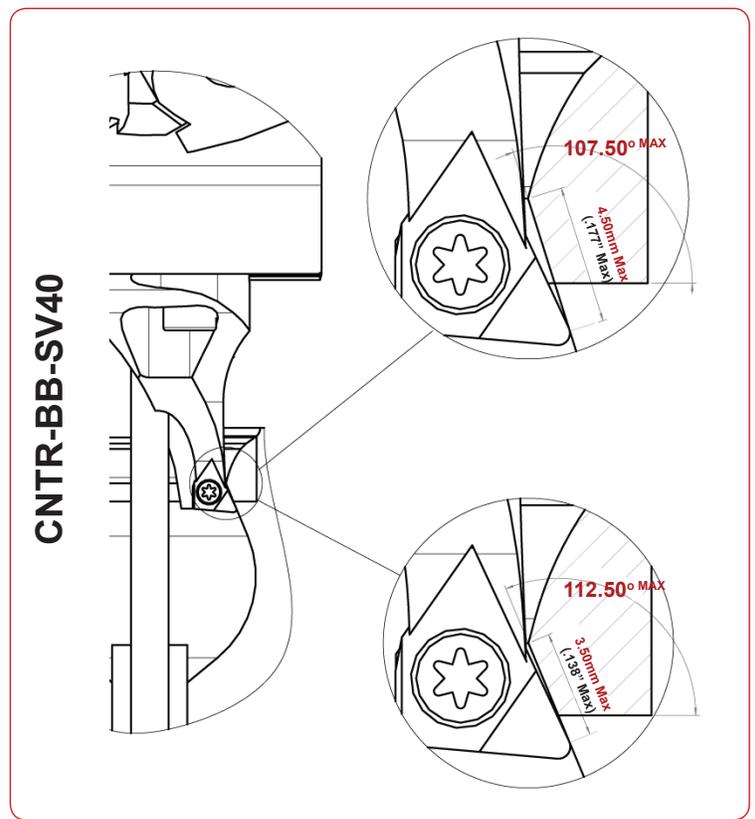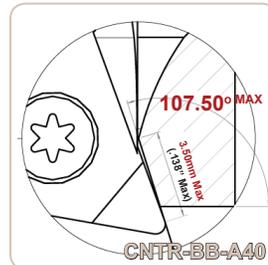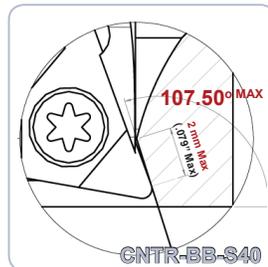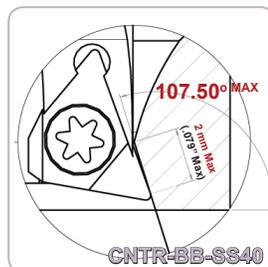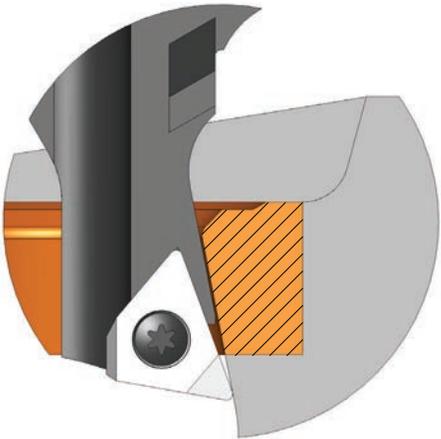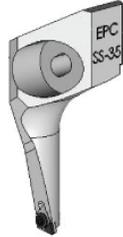
EPC-SS25   **EPC-SS35**   **EPC-SS45**
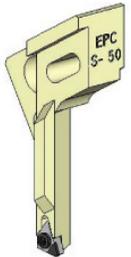
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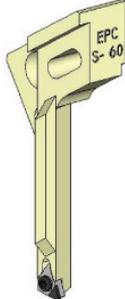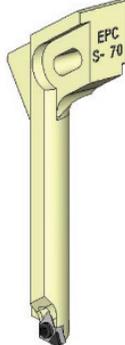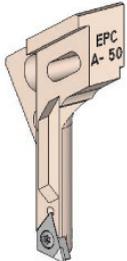
EPC-A40   **EPC-A50**   **EPC-A60**
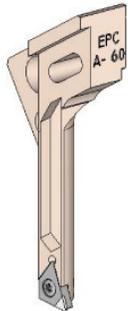
Single Point Cutters need to seat properly within tip-holder. Please check your tip-holders on a regular basis and replace them as needed to maintain optimum machining quality.
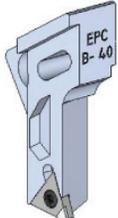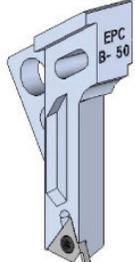
EPC-B40   **EPC-B50**   **EPC-B60**   **EPC-B70**
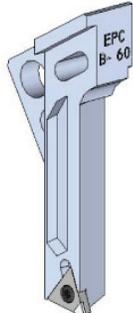
NEWEN REFERENCE	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)	MACHINING CAPACITY		TIP-HOLDER OAL	STOCK	GENERAL APPLICATIONS
		Minimum Diameter	Maximum Diameter			
EPC-SS25	4mm (.1575")	13.4mm (.53")	60.3mm (2.37")	25mm (.984")	YES	Motorcycle and automotive cylinder head valve seats, from Ø14mm (.55")
EPC-SS35	4mm (.1575")	13.4mm (.53")	60.3mm (2.37")	35mm (1.38")	YES	Tuning - Motorcycle and automotive cylinder head valve seats, from Ø14mm (.55")
EPC-SS45	4mm (.1575")	13.4mm (.53")	60.3mm (2.37")	45mm (1.77")	YES	
EPC-S40	5mm (.1968")	17.1mm (.67")	65.3mm (2.57")	40mm (1.58")	YES	Motorcycle and automotive cylinder head valve seats, from Ø17mm (.67")
EPC-S50	5mm (.1968")	17.1mm (.67")	65.3mm (2.57")	50mm (1.97")	YES	Tuning - Motorcycle and automotive cylinder head valve seats, from Ø17mm (.67")
EPC-S60	5mm (.1968")	17.1mm (.67")	65.3mm (2.57")	60mm (2.36")	YES	
EPC-S70	5mm (.1968")	17.1mm (.67")	65.3mm (2.57")	70mm (2.76")	YES	Cam-bucket housings, from Ø17mm (.67")
EPC-A40	6mm (.2362")	21.5mm (.85")	68.7mm (2.71")	40mm (1.58")	YES	Common cars and trucks
EPC-A50	6mm (.2362")	21.5mm (.85")	68.7mm (2.71")	50mm (1.97")	YES	Tuning - Cars
EPC-A60	6mm (.2362")	21.5mm (.85")	68.7mm (2.71")	60mm (2.36")	YES	
EPC-B40	9.52mm (.375")	35mm (1.38")	75.7mm (2.98")	40mm (1.58")	YES	Industrial Engine Cylinder Heads
EPC-B50	9.52mm (.375")	35mm (1.38")	75.7mm (2.98")	50mm (1.97")	YES	
EPC-B60	9.52mm (.375")	35mm (1.38")	75.7mm (2.98")	60mm (2.36")	YES	
EPC-B70	9.52mm (.375")	35mm (1.38")	75.7mm (2.98")	70mm (2.76")	YES	

Note:

• It is recommended to select an "S" series tip holder to machine valve seats ranging in diameter from 17mm to 22mm (.67" to .87").

• For diameters greater than 22mm (.87"), use an "A" series tip holder, the cutters are more affordable and stronger. Likewise, it is advised **not to use** an "SS" series tip holder to machine diameters greater than 18mm (.71").

• From 18mm (.71") on, it is recommended to use an "S" series tip holder, less restricted in terms of depth of cut and feed rate.

FIXED-TURNING®

*the new standard
in valve seat machining™*
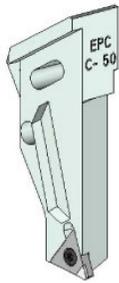
EPC-C40   **EPC-C50**   **EPC-C60**
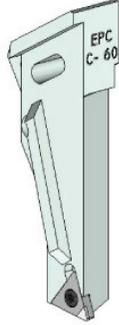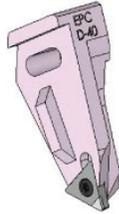
EPC-D40   **EPC-E40**
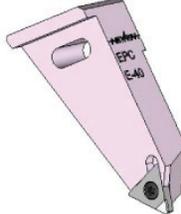
Single Point Cutters need to seat properly within tip-holder. Please check your tip-holders on a regular basis and replace them as needed to maintain optimum machining quality.

NEWEN REFERENCE	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)	MACHINING CAPACITY		TIP-HOLDER OAL	STOCK	GENERAL APPLICATIONS
		Minimum Diameter	Maximum Diameter			
EPC-C40	9.52mm (.375")	49.6mm (1.95")	91.7mm (3.61")	40mm (1.58")	YES	
EPC-C50	9.52mm (.375")	49.6mm (1.95")	91.7mm (3.61")	50mm (1.97")	YES	Industrial Engine & Car Cylinder Heads
EPC-C60	9.52mm (.375")	49.6mm (1.95")	91.7mm (3.61")	60mm (2.36")	YES	
EPC-D40	9.52mm (.375")	60.3mm (2.37")	104.7mm (4.12")	40mm (1.58")	YES	Industrial Engine Cylinder Heads
EPC-E40	9.52mm (.375")	95.3mm (3.75")	125.4mm (4.94")	40mm (1.58")	YES	

Note:

• It is recommended to select an "S" series tip holder to machine valve seats ranging in diameter from 17mm to 22mm (.67" to .87").

• For diameters greater than 22mm (.87"), use an "A" series tip holder, the cutters are more affordable and stronger. Likewise, it is advised **not to use** an "SS" series tip holder to machine diameters greater than 18mm (.71").

• From 18mm (.71") on, it is recommended to use an "S" series tip holder, less restricted in terms of depth of cut and feed rate.

FIXED-TURNING®

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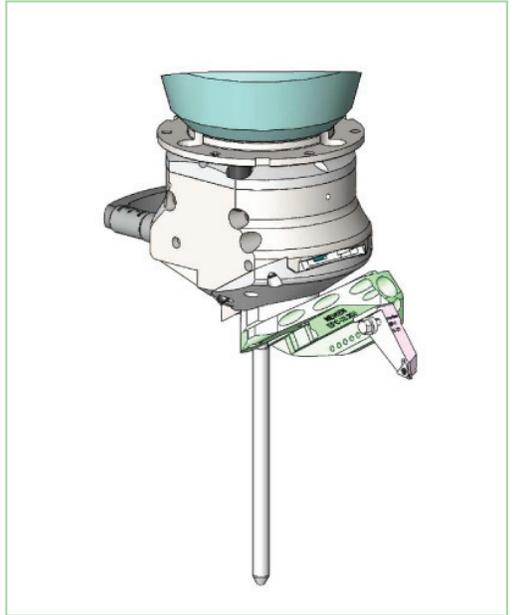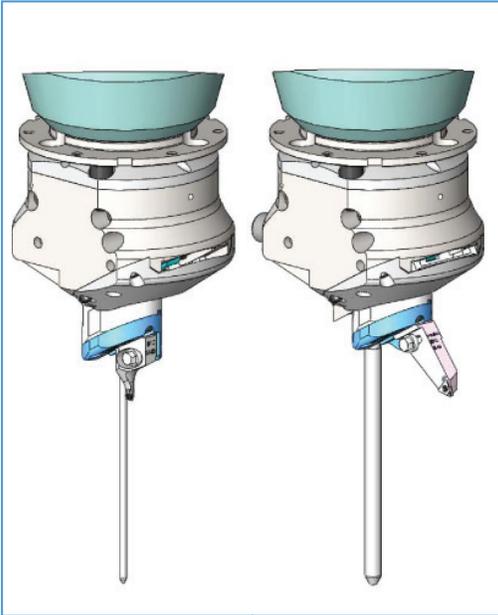
■ EPC-XL90
Carriage Extension

■ EPC-XL135
Carriage Extension
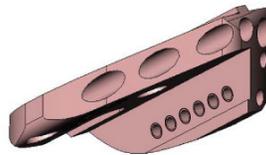
■ EPC-XL200
Carriage Extension
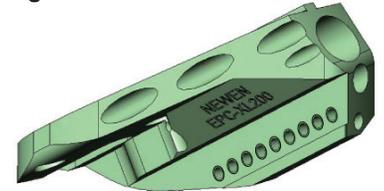
N/A

■ EPC-XL135CW-EXT
Counterweight Extension Kit

■ EPC-XL200CW-EXT
Counterweight Extension Kit
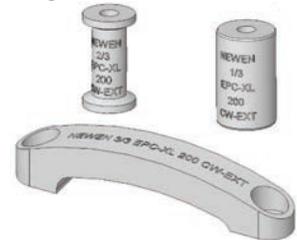
FIXED-TURNING®
*the new standard
in valve seat machining™*

NEWEN REFERENCE	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)	MACHINING CAPACITY				TIP-HOLDER OAL	STOCK
		EPC-XL90		EPC-XL135	EPC-XL200		
		Minimum Diameter	Maximum Diameter	Maximum Diameter	Maximum Diameter		
EPC-SS25	4mm (.1575")	13.4mm (.53")	60.2mm (2.37")	N/A	N/A	25mm (.984")	YES
EPC-SS35	4mm (.1575")	13.4mm (.53")	60.2mm (2.37")			35mm (1.38")	YES
EPC-SS45	4mm (.1575")	13.4mm (.53")	60.2mm (2.37")			45mm (1.77")	YES
EPC-S40	5mm (.1968")	17.1mm (.67")	62.2mm (2.45")	N/A	N/A	40mm (1.58")	YES
EPC-S50	5mm (.1968")	17.1mm (.67")	62.2mm (2.45")			50mm (1.97")	YES
EPC-S60	5mm (.1968")	17.1mm (.67")	62.2mm (2.45")			60mm (2.36")	YES
EPC-S70	5mm (.1968")	17.1mm (.67")	62.2mm (2.45")			70mm (2.76")	YES
EPC-A40	6mm (.2362")	21.5mm (.85")	68.6mm (2.70")	N/A	N/A	40mm (1.58")	YES
EPC-A50	6mm (.2362")	21.5mm (.85")	68.6mm (2.70")			50mm (1.97")	YES
EPC-A60	6mm (.2362")	21.5mm (.85")	68.6mm (2.70")			60mm (2.36")	YES
EPC-B40	9.52mm (.375")	35mm (1.38")	75.6mm (2.98")	119.2mm (4.69")	190.4mm (7.50")	40mm (1.58")	YES
EPC-B50	9.52mm (.375")	35mm (1.38")	75.6mm (2.98")	119.2mm (4.69")	190.4mm (7.50")	50mm (1.97")	YES
EPC-B60	9.52mm (.375")	35mm (1.38")	75.6mm (2.98")	119.2mm (4.69")	190.4mm (7.50")	60mm (2.36")	YES
EPC-B70	9.52mm (.375")	35mm (1.38")	75.6mm (2.98")	119.2mm (4.69")	190.4mm (7.50")	70mm (2.76")	YES
EPC-C40	9.52mm (.375")	49.6mm (1.95")	91.6mm (3.61")	135.2mm (5.32")	206.4mm (8.13")	40mm (1.58")	YES
EPC-C50	9.52mm (.375")	49.6mm (1.95")	91.6mm (3.61")	135.2mm (5.32")	206.4mm (8.13")	50mm (1.97")	YES
EPC-C60	9.52mm (.375")	49.6mm (1.95")	91.6mm (3.61")	135.2mm (5.32")	206.4mm (8.13")	60mm (2.36")	YES
EPC-D40	9.52mm (.375")	60.3mm (2.37")	104.6mm (4.12")	148.2mm (5.84")	219.4mm (8.64")	40mm (1.58")	YES
EPC-E40	9.52mm (.375")	95.3mm (3.75")	125.3mm (4.93")	168.9mm (6.65")	240.1mm (9.45")	40mm (1.58")	YES

Note:

• It is recommended to select an "S" series tip holder to machine valve seats ranging in diameter from 17mm to 22mm (.67" to .87").

• For diameters greater than 22mm (.87"), use an "A" series tip holder, the cutters are more affordable and stronger. Likewise, it is advised **not to use** an "SS" series tip holder to machine diameters greater than 18mm (.71").

• From 18mm (.71") on, it is recommended to use an "S" series tip holder, less restricted in terms of depth of cut and feed rate.
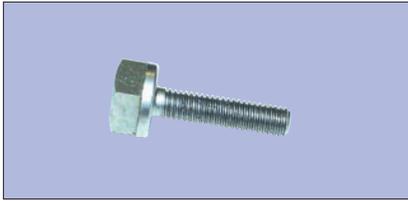
CNTR735*
3-Axis FIXED-TURNING® machines (EPOC™, EPOC-CS™, EPOC-XL™) tip holder lock screw with right hand thread.

CNTR736
Single point cutter lock screw **(2.0mm)**; fits all FIXED-TURNING® machines (CONTOUR-BB™, CONTOUR-BB-CS™, CONTOUR™, CONTOUR-CS™, EPOC™, EPOC-CS™ & EPOC-XL™) tip holder series S & SS (set of 5).


CNTR734
Single point cutter lock screw **(2.5mm)**; fits all FIXED-TURNING® machines (CONTOUR-BB™, CONTOUR-BB-CS™, CONTOUR™, CONTOUR-CS™, EPOC™, EPOC-CS™ & EPOC-XL™) tip holder series A, B, C, D & E (set of 5).

CNTR-BB-THLS
2-Axis FIXED-TURNING® machines tip holder lock screw (CONTOUR-BB™, CONTOUR-BB-CS™, CONTOUR™, CONTOUR-CS™) CHC M4x10 (set of 10).

NWN100
T8 torx L-key.
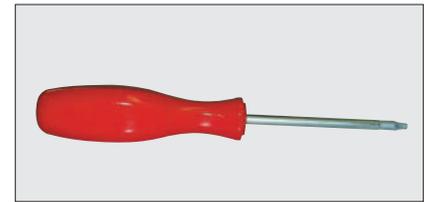
NWN101
T8 x 60 Torx driver.

NWN102
T6 x 50 Torx driver.

NEW

NWN-EZ-CAL™
EZ PreciseTool Dimension Measuring Device for NEWEN FIXED-TURNING® Machines.
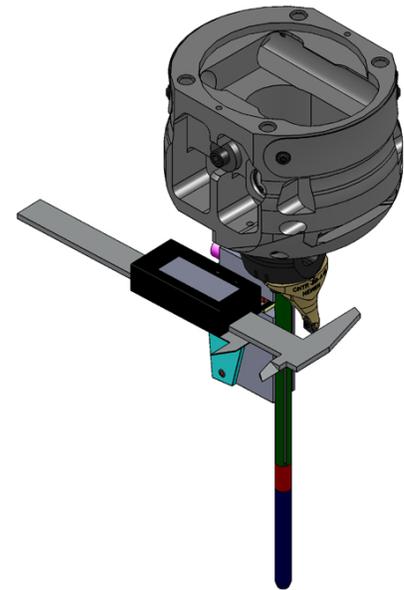
NWN103
3MM T-Handle Hex Driver

NWN104
5MM T-Handle Hex Driver

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*CNTR735: These tip holder lock screws are made of a special steel alloy named "double fusion" that makes an alloy with superior mechanical characteristics much more resistant, when following a cycle of appropriate heat treatments.
The NEWEN screws (CNTR735) are made to guaranty a resistance to elongation that is sufficient to avoid vibrations of all sorts that negatively impact the machining quality and shorten the lifespan of the cutting tools.
These screws are made entirely by NEWEN and undergo individual inspection. Standard screws purchased from regular sources cannot guaranty these characteristics inherent to the FIXED-TURNING® system.

NEWEN • Tel: +1-760-233-0067 • Fax: +1-760-233-0068
Toll Free (USA & Canada): 1-800-639-3693

Email: fixed-turning@newen.com • Website: www.newen.com

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