

FIXED-TURNING.

the new standard in valve seat machining™

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





NEWEN

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KOMATSU Natural Gas Cylinder Head • <u>Valve Seat Hardness</u>: 56/58HRC (573HB+ / 610HV50+)

- Cutter used: CNTR-FBN-1 Cutting Speed: 180 meter/min
- Machining Mode: Dry Cut
- <u>Cutting Cycle</u>: 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

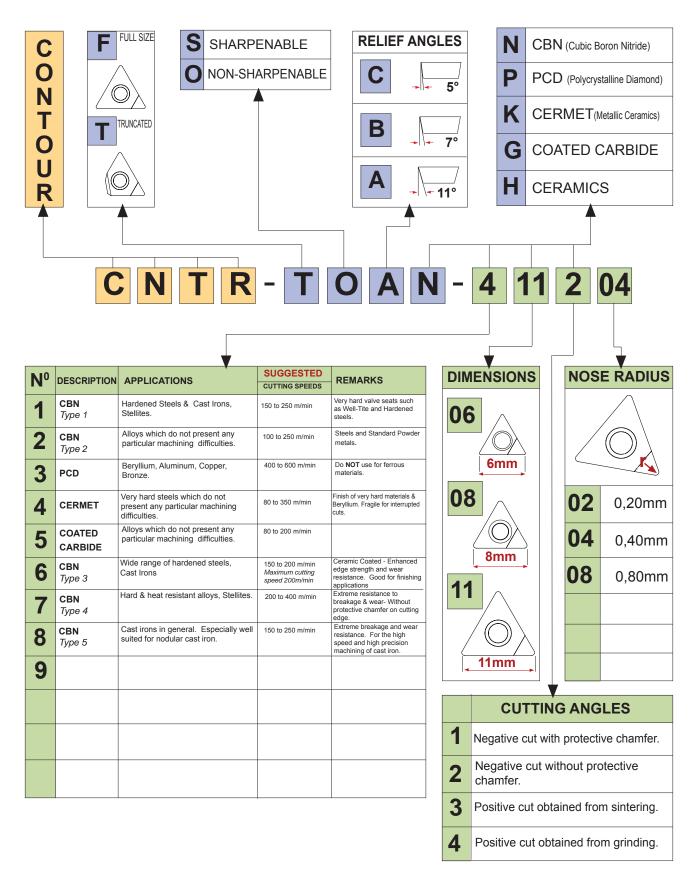
FIXED-TURNING.

the new standard in valve seat machining™

VISA



IDENTIFICATION of NEWEN® FIXED-TURNING® SINGLE POINT CUTTERS





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

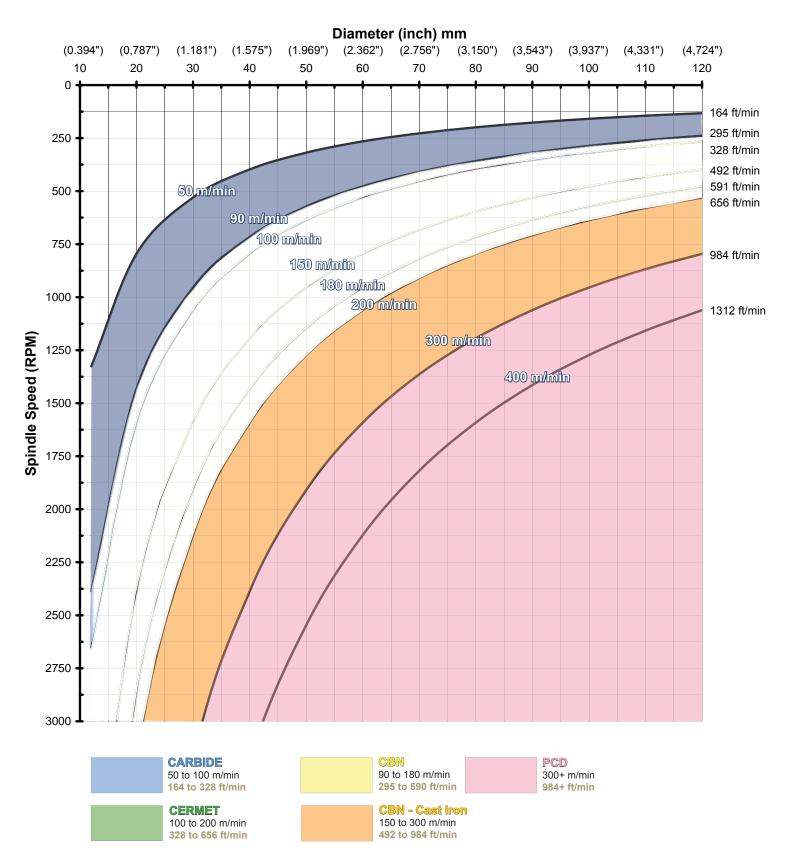
How to calculate RPM from meter or foot per minute

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 = 40 mm x 3.14 = 125.6 mm) 160,000/125.6 = 1274 RPM or [6298.8/(1.575X3.14) = 1274 RPM]

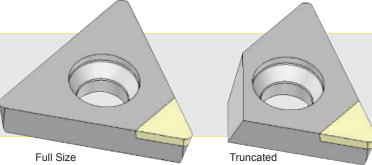












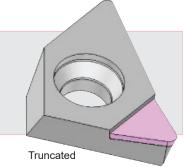
CBN

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.





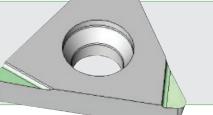


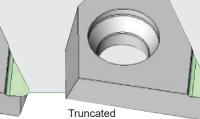
PCD

Full Size

—				
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-FOAP-3-08-2-04	Flat	Economical PCD with negative cut without chamfer. Less fragile.	400-600m/min
•CNTR-TAP-23	CNTR-TOAP-3-08-2-04	Flat, T	Use on Non-Ferrous Metals only. (Beryllium, Aluminum, Copper, Bronze). Roughing & finishing.	
For A, B, C, D & E Tip Hold	ler Series	I		
•CNTR-FAP-9	CNTR-FOAP-3-11-4-04	Sharpened, 10°	PCD with positive cut for high level	400-600m/min
•CNTR-TAP-10	CNTR-TOAP-3-11-4-04	Sharpened, 10°, T	finishes. Use on Non-Ferrous Metals only (Beryllium, Aluminmum, Copper, Bronze).	
•CNTR-FAP-11	CNTR-FOAP-3-11-2-04	Flat	Economical PCD with negative cut	400-600m/min
•CNTR-TAP-21	CNTR-TOAP-3-11-2-04	Flat, T	without chamfer. Less fragile. Use on Non-Ferrous Metals only. (Beryllium, Aluminum, Copper, Bronze). Roughing & finishing.	







Full Size

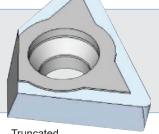
CERMET	

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	80-200m/min								
•CNTR-TAK-8	CNTR-TOAK-4-08-3-4	Chip Breaker, T	very hard steels which do not present any particular machining difficulties and Beryllium. Fragile for interrupted cut.									
For A, B, C, D & E Tip Hold	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	80-200m/min								
•CNTR-TAK-6	CNTR-TOAK-4-11-3-04	Chip Beaker, T	very hard steels which do not present any particular machining difficulties and Beryllium. Fragile for interrupted cut.									

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



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.



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.

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.

Nomir	Nominal hole sizes (mm)								
over	3	6	10	18					
inc.	6	10	18	30					
micro	meters	(10 ⁻⁰m)						
H6	+8	+9	+11	+13					
	0	0	0	0					
H7	+12	+15	+18	+21					
	0	0	0	0					
H8	+18	+22	+27	+33					
	0	0	0	0					
Н9	+30	+36	+43	+52					
	0	0	0	0					



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.



the new standard in valve seat machining[™]

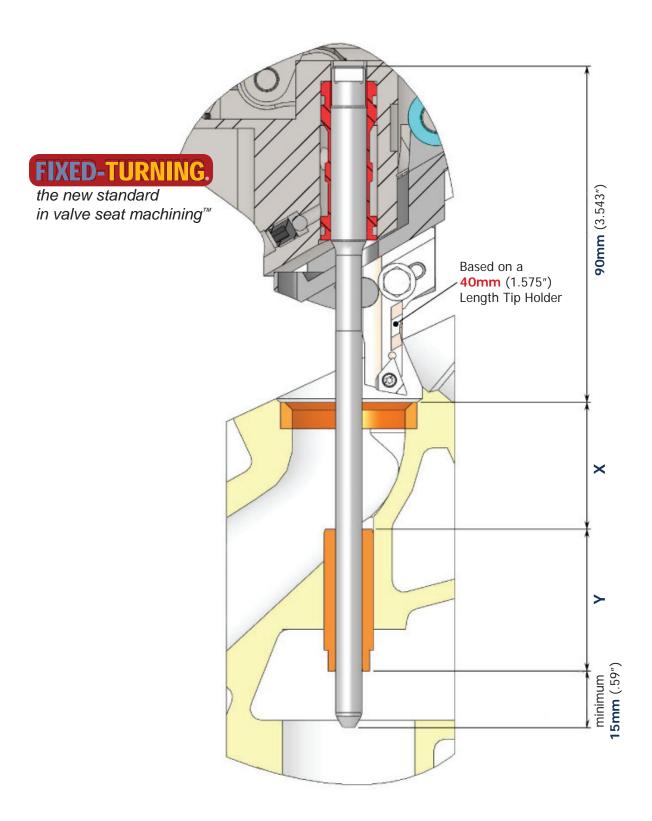






HOW TO SELECT THE APPROPRIATE PILOT LENGTH

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







		, // //		₩ ®		Legend	: • Stock				I
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 0.2126	6.04 6.05	0.2378 0.2382	6.74	0.2654	7.42 7.43	0.2921
4.04	0.1591 0.1595	4.72 4.73	0.1858 0.1862	5.40 5.41	0.2126	6.05	0.2382	6.75	0.2657	7.43	0.2925 0.2929
4.05 4.06	0.1595	4.73	0.1866	5.42	0.2134	6.07	0.2339	6.76 6.77	0.2661 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 6.16	0.2421 0.2425	6.85	0.2697	 7.56	 0.2976
4.15 4.16	0.1634 0.1638	4.83 4.84	0.1902 0.1906	5.51	0.2169	6.17	0.2425	6.86	0.2701	7.50	0.2978
4.10	0.1638	4.85	0.1909	5.52 5.53	0.2173 0.2177	6.18	0.2433	6.87	0.2705	7.58	0.2984
4.18	0.1646	4.86	0.1913	5.53 5.54	0.2177	6.19	0.2437	6.88 6.89	0.2709 0.2713	7.59	0.2988
4.19	0.1650	4.87	0.1917	5.55	0.2185	6.20	0.2441	6.90	0.2713	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 0.2476	6.96	0.2740	7.66	0.3016
4.26 4.27	0.1677 0.1681	4.94 4.95	0.1945 0.1949	5.62	0.2213	6.29 6.30	0.2476	6.97	0.2744	7.67 7.68	0.3020 0.3024
4.27	0.1685	4.95	0.1949	5.63	0.2217	6.31	0.2484	6.98	0.2748	7.69	0.3024
4.29	0.1689	4.97	0.1957	5.64	0.2220	6.32	0.2488	6.99	0.2752	7.70	0.3031
4.30	0.1693	4.98	0.1961	5.65	0.2224	6.33	0.2492	7.00 7.005	0.2756	7.71	0.3035
4.31	0.1697	4.99	0.1965	5.66 5.67	0.2228 0.2232	6.34	0.2496	7.005	0.2758 0.2760	7.72	0.3039
4.32	0.1701	5.00	0.1969	5.68	0.2232	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 6.40	0.2516 0.2520	7.06	0.2780	7.77 7.78	0.3059 0.3063
4.37 4.38	0.1720 0.1724	5.05 5.06	0.1988 0.1992	5.73	0.2256	6.40	0.2520	7.07	0.2783	7.79	0.3063
4.30	0.1724	5.07	0.1992	5.74	0.2260	6.42	0.2528	7.08	0.2787	7.80	0.3071
4.40	0.1732	5.08	0.2000	5.75	0.2264	6.43	0.2531	7.09	0.2791	7.81	0.3075
4.41	0.1736	5.09	0.2004	5.76	0.2268	6.44	0.2535	7.10	0.2795	7.82	0.3079
4.42	0.1740	5.10	0.2008	5.77	0.2272	6.45	0.2539	 7.13	 0.2807	7.83	0.3083
4.43	0.1744	5.11	0.2012	5.78	0.2276	6.46	0.2543	7.13	0.2807	7.84	0.3087
4.44	0.1748	5.12	0.2016	5.79	0.2280	6.47	0.2547	7.15	0.2815	7.85	0.3091
4.45	0.1752	5.13	0.2020	5.80 5.81	0.2283 0.2287	6.48	0.2551	7.16	0.2819	7.86	0.3094
4.46	0.1756	5.14	0.2024	5.82	0.2287	6.49	0.2555	7.17	0.2823	7.87	0.3098
4.47	0.1760	5.15	0.2028	5.83	0.2291	6.50	0.2559	7.18	0.2827	7.88 7.885	0.3102 0.3104
4.48 4.49	0.1764 0.1768	5.16 5.17	0.2031 0.2035	5.84	0.2299	6.51 6.52	0.2563 0.2567	7.19	0.2831	7.885	0.3104
4.49	0.1766	5.17	0.2035	5.85	0.2303	6.52	0.2507	7.20	0.2835	7.895	0.3108
4.51	0.1776	5.19	0.2043	5.86	0.2307	6.54	0.2575	7.21	0.2839	7.90	0.3110
4.52	0.1780	5.20	0.2047	5.87	0.2311	6.55	0.2579	7.22	0.2843	7.91	0.3114
4.53	0.1783	5.21	0.2051	5.88	0.2315	6.56	0.2583	7.23 7.24	0.2846 0.2850	7.92	0.3118
4.54	0.1787	5.22	0.2055	5.89	0.2319	6.57	0.2587	7.24	0.2850	7.93	0.3122
4.55	0.1791	5.23	0.2059	5.90	0.2323	6.58	0.2591	7.26	0.2858	7.94	0.3126
4.56	0.1795	5.24	0.2063	5.91	0.2327	6.59	0.2594	7.27	0.2862	7.95	0.3130
4.57	0.1799	5.25	0.2067	5.92	0.2331	6.60	0.2598	7.28	0.2866	7.96	0.3134
4.58	0.1803	5.26	0.2071	5.93 5.94	0.2335 0.2339	6.61	0.2602	7.29	0.2870	7.97	0.3138
4.59	0.1807	5.27	0.2075	5.94 5.95	0.2339	6.62	0.2606	7.30	0.2874	7.98 7.99	0.3142 0.3146
4.60 4.61	0.1811 0.1815	5.28 5.29	0.2079 0.2083	5.95	0.2345	6.63	0.2610	7.31	0.2878	8.00	0.3146
4.61	0.1815	5.29	0.2083	5.97	0.2350	6.64 6.65	0.2614 0.2318	7.32	0.2882	8.00	0.3154
4.63	0.1823	5.31	0.2091	5.98	0.2354	6.66	0.2318	7.33	0.2886	8.02	0.3157
								7.34	0.2890		

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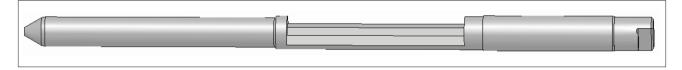




mm inch mm inch mm inch mm inch mm inch mm inch 6.46 6.3165 8.715 0.3437 9.43 0.3705 11.255 0.4035 12.269 0.4991 12.26 0.4991 12.26 0.4095 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.26 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67 0.4991 12.67							Legena	• Stock		L	
8.03 6.3161 8.71 0.3429 9.39 0.3671 </td <td>-</td> <td></td>	-										
8.04 0.3165 8.71's 0.3433 9.40 0.3701 12.60 0.4981 8.06 0.3173 8.73 0.3437 9.42 0.3706 10.25 0.4035 12.64 0.4891 8.07 0.3171 8.73 0.3441 9.43 0.3713 10.25 0.4035 12.64 0.4897 8.10 0.3184 8.77 0.3443 9.44 0.3722 10.31 0.4047 12.65 0.4987 8.11 0.3193 8.77 0.3441 9.44 0.3722 10.31 0.4057 12.66 0.4987 8.12 0.3191 8.76 0.3441 9.44 0.3736 10.33 0.4067 12.77 0.5062 8.12 0.3274 8.43 0.3776 10.33 0.4075 12.77 0.5062 8.11 0.3246 8.86 0.3448 8.56 0.3776 10.33 0.4087 12.77 0.5062 8.22 0.3226 8.86 0.3488 8.56 0.3776 10.38 0.4087 12.77 0.5061	mm	inch	mm	inch	mm	inch	mm	inch	mm		
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8.06 0.3169 8.72 0.3437 9.44 0.3705 10.25 0.4026 12.64 0.4986 8.07 0.3177 8.73 0.3437 9.44 0.3713 10.27 0.4043 12.64 0.4986 8.09 0.3186 8.76 0.3446 9.44 0.3717 10.28 0.4041 12.64 0.4986 8.10 0.3186 8.77 0.3447 9.46 0.3724 10.30 0.4651 12.64 0.4986 8.11 0.3186 8.77 0.3445 9.46 0.3732 10.30 0.4061 12.65 0.4986 8.13 0.3217 8.80 0.3446 9.52 0.3744 10.33 0.4071 12.70 0.5006 8.14 0.3226 8.84 0.3486 9.52 0.3776 10.38 0.4067 12.74 0.5006 8.22 0.3228 8.86 0.3786 10.38 0.4067 12.77 0.5028 8.23 0.3264 9.55 0.3776 10.38 0.4087 12.76 0.5038 8.24											
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8.07 0.3177 B.74 0.3445 9.43 0.3713 10.27 0.4043 12.64 0.4727 How to order a 8.09 0.3185 B.76 0.3449 9.45 0.3727 10.28 0.40451 12.64 0.4787 How to order a 8.10 0.3185 B.77 0.3445 9.47 0.3722 10.30 0.4055 12.66 0.4867 8.11 0.3191 B.78 0.3461 9.46 0.3722 10.30 0.4055 12.66 0.4867 8.13 0.3201 B.84 0.3465 9.67 0.3744 10.35 0.4067 12.77 0.5006 8.13 0.3220 B.84 0.3464 9.50 0.3766 10.38 0.4067 12.78 0.5006 8.21 0.3228 B.86 0.3766 10.38 0.4067 12.78 0.5001 8.22 0.3248 B.86 0.3766 10.38 0.4067 12.78 0.5001 8.23 0.3244 B.90 0.3569 B.50 0.3776 10.41 0.4012 12.79 <td< td=""><td>8.06</td><td>0.3173</td><td>8.73</td><td>0.3437</td><td>9.42</td><td>0.3709</td><td>10.26</td><td>0.4039</td><td>12.62</td><td>0.4969</td><td></td></td<>	8.06	0.3173	8.73	0.3437	9.42	0.3709	10.26	0.4039	12.62	0.4969	
8.08 0.3181 8.75 0.3449 9.44 0.3171 10.28 0.4047 12.66 0.4987 FixED-TURNING@ 8.10 0.3189 8.77 0.3453 9.46 0.3724 10.30 0.4055 12.66 0.4981 8.11 0.3189 8.77 0.3453 9.46 0.3724 10.30 0.4055 12.66 0.4982 8.12 0.3197 8.79 0.3461 9.48 0.3732 10.32 0.4061 12.67 0.4982 8.13 0.3201 8.80 0.3346 9.48 0.3732 10.32 0.4061 12.77 0.5004 0.10 0.3222 8.84 0.3449 9.52 0.3766 10.35 0.4071 12.77 0.5004 0.22 0.3228 8.87 0.3766 10.35 0.4071 12.76 0.5005 0.22 0.3228 8.89 0.3560 9.85 0.3776 10.43 0.402 12.76 0.5028 8.24 0.3244 8.94 0.3528 9.85 0.3776 10.43 0.414 12.20									12 63	0 4972	Llavy to and an a
8.00 0.3185 8.76 0.3445 9.46 0.3720 10.29 0.4051 12.66 0.4880 PNIot depending on its 8.11 0.3193 8.77 0.3457 9.47 0.3722 10.30 0.4055 12.66 0.4881 PNIot depending on its 8.12 0.3191 8.80 0.3465 9.44 0.3732 10.33 0.4067 12.68 0.4881 8.13 0.3211 8.80 0.3465 9.44 0.3736 10.33 0.4067 12.70 0.5004 8.14 0.3226 8.84 0.3446 9.55 0.3776 10.35 0.4075 12.77 0.5006 8.21 0.3226 8.86 0.3449 9.56 0.3766 10.38 0.4007 12.76 0.5006 8.22 0.3226 8.86 0.3469 9.56 0.3766 10.38 0.4007 12.76 0.5006 8.24 0.3260 9.56 0.3766 10.44 0.4012 12.76 0.5031 8.24 0.3262 8.58 0.3776 10.46 0.4118 14.20<											How to order a
2.36 0.746 0.740 10.23 0.401 1.252 0.4383 111 0.3137 6.75 0.3463 9.47 0.3702 10.33 0.4063 12.657 0.4983 121 0.3137 6.75 0.3464 9.47 0.33 0.4063 12.65 0.4983 131 0.3217 8.33 0.3466 9.51 0.3740 10.34 0.4071 12.70 0.6003 147 0.3217 8.34 0.3476 9.51 0.3740 10.35 0.4075 12.71 0.6004 1519 0.3224 8.56 0.3464 9.55 0.3764 10.33 0.4067 12.74 0.5012 1522 0.3226 8.88 0.3466 9.56 0.3776 10.33 0.4067 12.74 0.5024 1522 0.3226 8.88 0.3466 9.56 0.3776 10.42 0.4071 12.75 0.5024 1522 0.3226 8.89 0.3504 0.577 10.42 0.4102 12.75 0.5024 1523 0.3266 8.33<		0.3181		0.3445	9.44		10.28	0.4047			FIXED-TURNING®
8.10 0.3189 8.77 0.3453 9.46 0.3724 10.31 0.4055 12.66 0.4884 Pilot depending on Ls; 8.11 0.3187 8.79 0.3461 9.46 0.3722 10.31 0.4063 12.67 0.4884 Overall Length (OALS) 8.13 0.3217 8.83 0.3465 9.46 0.3724 10.33 0.4065 12.67 0.4884 Overall Length (OALS) 0.11 0.3476 9.51 0.3774 10.34 0.4075 12.71 0.5004 12 0.3227 8.84 0.3465 9.54 0.3764 10.35 0.4075 12.77 0.5004 12 0.3222 8.85 0.3376 10.37 0.4081 12.77 0.5024 12 0.3226 8.89 0.3504 9.58 0.3776 10.43 0.4106 12.77 0.5024 12.22 0.3226 8.89 0.3504 9.58 0.3776 10.42 0.4106 12.77 0.5024 12.23 0.3226 8.89 0.3526 0.3776 10.42 0.4111	8.09	0.3185	8.76	0.3449	9.45	0.3720	10.29	0.4051	12.65	0.4980	
3:1 0.3133 1.72 0.347 0.3728 10.32 0.4468 0.446 0.3728 10.33 0.4492 0.4492 8.13 0.3201 8.80 0.3466 9.49 0.3736 10.33 0.4067 12.68 0.4492 8.17 0.3221 8.83 0.3466 9.52 0.3744 10.34 0.4071 12.70 0.5000 8.17 0.3222 8.84 0.3460 9.52 0.3744 10.35 0.4075 12.71 0.5000 8.19 0.3222 8.86 0.3486 9.55 0.3760 10.38 0.4067 12.76 0.5024 8.21 0.3224 8.86 0.3766 10.38 0.4061 12.76 0.5024 8.22 0.3260 8.87 0.3760 10.38 0.4061 12.76 0.5024 8.23 0.3244 8.90 0.3504 9.56 0.3776 10.43 0.4106 12.78 0.5024 8.23 0.3244 8.90 0.3524 9.86 0.3785 10.42 0.4106 12.78 0.5024 <	8 10	0.3189			9.46				12.66	0.4984	Pilot depending on its
8.12 0.3197 8.79 0.3466 9.46 0.3732 10.32 0.4065 12.68 0.4996 8.17 0.3217 8.83 0.3466 9.49 0.3740 10.34 0.4071 12.70 0.500 8.17 0.3217 8.84 0.3466 9.52 0.3746 10.34 0.4075 12.71 0.500 8.19 0.3222 8.84 0.3464 9.52 0.3746 10.35 0.4075 12.77 0.5001 8.20 0.3222 8.87 0.3484 9.55 0.3766 10.38 0.4067 12.74 0.5012 8.21 0.3222 8.87 0.3482 9.55 0.3766 10.38 0.4067 12.78 0.5021 8.22 0.3224 8.80 0.3566 0.3772 10.42 0.4102 12.78 0.5021 8.24 0.3244 8.90 0.3560 9.57 0.436 0.4106 12.79 0.5021 8.24 0.3244 8.90 0.3561 9.57 0.387 10.43 0.4102 12.78 0.5021											
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9.50 0.3740 10.34 0.4071 12.70 0.5000 B.16 0.3220 B.84 0.3466 9.52 0.3746 10.35 0.4079 12.71 0.5000 B.19 0.3222 B.86 0.3464 9.52 0.3746 10.35 0.4079 12.74 0.5010 B.21 0.3222 B.87 0.3482 9.55 0.3766 10.38 0.4067 12.74 0.5010 B.22 0.3222 B.87 0.3482 9.55 0.3766 10.38 0.4067 12.74 0.5021 B.22 0.3224 B.89 0.3566 9.577 10.41 0.4084 12.76 0.5021 B.24 0.3224 B.90 0.3576 10.44 0.4114 12.21 0.522 B.24 0.3264 0.351 0.352 0.561 0.3778 10.46 0.4114 12.21 0.522 B.27 0.3264 0.350 0.3	8.12	0.3197	8.79	0.3461	9.48	0.3732	10.32	0.4063	12.68	0.4992	
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13.17 0.3217 0.833 0.3476 9.51 0.3324 10.35 0.4075 12.71 0.5004 8.18 0.3224 8.86 0.3464 9.52 0.3742 10.37 0.4079 12.73 0.5016 8.20 0.3222 8.86 0.3464 9.55 0.3760 10.38 0.4087 12.74 0.5016 8.21 0.3228 8.87 0.3482 9.56 0.3760 10.38 0.4087 12.77 0.5034 8.23 0.3246 8.89 0.3500 9.57 0.3768 10.44 0.4087 12.77 0.5034 8.24 0.3226 8.32 0.3516 9.61 0.3783 10.44 0.4110 12.80 0.5039 8.25 0.3226 8.33 0.3516 9.61 0.3783 10.44 0.4118 14.20 0.5591 8.31 0.3226 8.353 0.3524 9.66 0.3796 10.43 0.4118 14.20 0.5561 8.31 0.3227 8.353 9.366 0.3796 10.46 0.4316 14.20											OAL = 210mm(8.27'')
1:1 0.2310 0.33 0.3418 1.2.2 0.530 0.4013 1.2.22 0.500 1:1 0.2224 0.346 0.3464 9.53 0.3762 10.35 0.4013 1.2.72 0.501 0.222 0.356 0.3462 0.3762 10.35 0.4037 12.75 0.501 0.222 0.356 0.3462 5.56 0.3760 10.38 0.4081 12.76 0.501 0.232 0.3234 8.58 0.3500 5.76 0.3768 10.4081 12.77 0.503 0.242 0.3254 8.91 0.3504 9.58 0.3772 10.44 0.4081 12.77 0.503 2.46 0.3250 8.94 0.520 9.62 0.3781 10.46 0.4118 1.422 0.5594 3.30 0.3268 8.96 0.3238 9.64 0.3795 10.93 0.44114 1.422 0.5596 3.31 0.3272 8.98 0.3539 9.67 0.3817 10.426 0.4435 1.427 0.5616 3.31 0.3272 <							10.34	0.4071			STANDADDIENCTU
8.18 0.3220 8.84 0.3480 9.52 0.3768 10.37 0.4079 12.72 0.5008 8.20 0.3228 8.86 0.3484 9.54 0.376 10.38 0.4083 12.74 0.5016 8.21 0.3228 8.87 0.3492 9.55 0.376 10.38 0.4087 12.74 0.5016 8.22 0.3232 8.87 0.3492 9.55 0.376 10.38 0.4087 12.77 0.5028 8.24 0.3244 8.90 0.3504 9.58 0.3772 10.42 0.4106 12.78 0.5031 8.26 0.3260 8.94 0.3520 9.62 0.3781 10.44 0.4116 14.22 0.5598 8.30 0.3524 9.66 0.3781 10.48 0.4114 14.22 0.5598 8.31 0.3227 8.38 0.3539 9.66 0.3781 10.43 0.4331 14.24 0.5666 8.33 0.3283 9.00 0.3543 9.66 0.3815 11.00 0.4331 14.28 0.5622	8.17	0.3217	8.83	0.3476	9.51	0.3744	10.35	0.4075	12.71	0.5004	
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							12.57	0.4949			
8.70 9.36 0.3693 12.00 0.4000					10.06	0.3961					
	8.70	0.3425	9.30	0.3033				011000			



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)



the new standard in valve seat machining[™]





17

-NEVEN	(FIXED)	-TURNI ard in valve seat m	NG. OF	AMER RDER S	
A	MEASURING UNIT us			MM	
	Guide Diameter BEFORE REAMING:	Diameter	Tole	rance	
Angle between valve seat & gasket surface	Guide Diameter AFTER REAMING:	Diameter	Toler	ance*	H6 H7
	/ TERRE MINO.				
			D		D Tolerance
			Inch .1181 to	b + .00048 .23	62 to + .0006 937 + 0
D Overall length of profile to be			H7 3 to 6	+ 0.012 6 t + 0	o 10 + 0.015 + 0
profile to be machined			H6 Inch .1181 to .2362		62 to +.00036 937 + 0
			mm 3 to 6	+ 0.008 6 t + 0	o 10 + 0.009 + 0
E	Select Machine Mode CONTOUR-BB-CS	/ you will be using ™ CONTOUR-	this reamer on ·CS™ EPOC	: -CS™EI	POC-XL™
	This reamer will be us Guide reaming ONL			ng & valve sea	at machining
	Tip holder used:	T		45 50 55	60 OTHER
	Reaming of guide will	be done	A B		
	from the valve seat sid or from the back side		C D SS		
	cylinder head	abortor roomar	S S		
	and thus guarantying be	tter results).			
	Please, fill out table be	-	ic dimensions of		der head:
	Α	B		С	
	D	E		F	
	D	E		Г	
	G	Н		W	
·					
APPLICATION		RDERS CANNOT B IO RETURN, EXCH			ESSED.
Make:	Company:				
Model	Contact:				
	Address:				
Engine Type:					
Year:	Country: Tel:				
Guide Material:	Fax: Email:				

FIXED-TURNING.

E.

th∉ new standard in valve seat machining™!

> Machine 100% of the cylinder heads to PERFECTION!

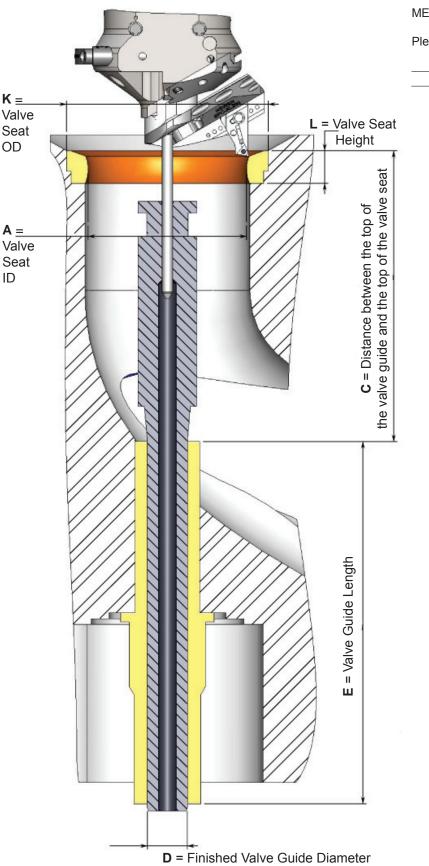




VENEN

FALSE GUIDE DATA ORDER SHEET

the new standard in valve seat machining™



-NEVEN

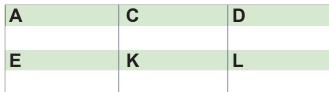
MEASURING UNIT used to fill out form: INCH MM

Please, Select Machine Model:

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

Maximum Dimension Minimum Dimension

DIMENSIONS REQUIRED:

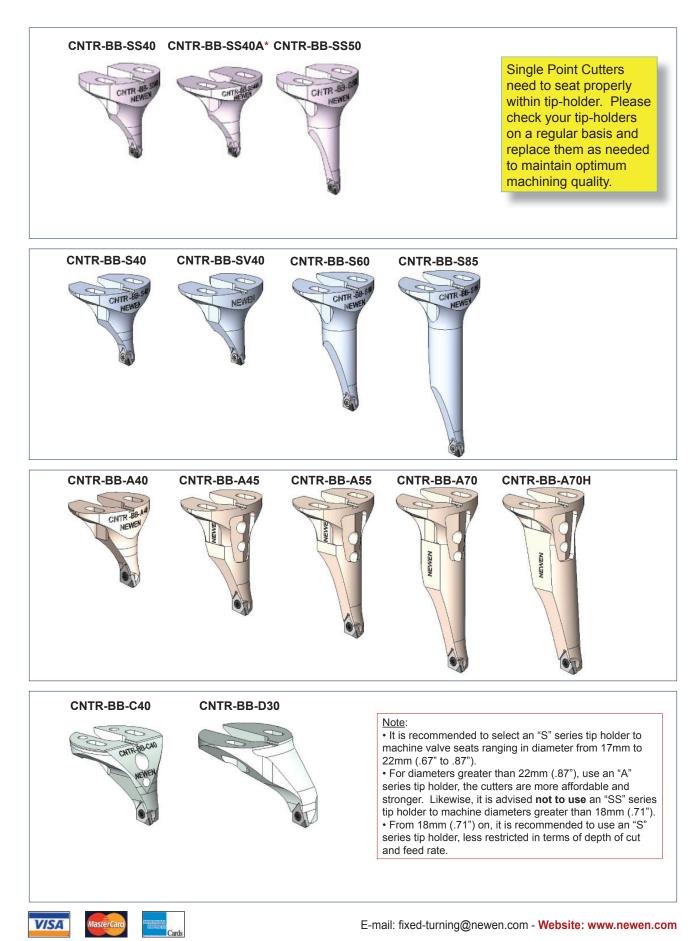


ENGINE APPLICATION								
Make:								
Model								
Engine Type:								
Year:								
N.B.: CUSTOM ORDERS CANNOT BE CANCELLED ONCE								

N.B.: CUSTOM ORDERS CANNOT BE CANCELLED ONCE PROCESSED. SALE IS FINAL: NO RETURN, EXCHANGE OR REFUND. Company: Contact: Address: Country: Tel: Fax: Email:



CONTOUR[™] FAMILY TIP HOLDERS 2-Axis FIXED-TURNING® Machines: CONTOUR-BB[™], CONTOUR-BB-CS[™], CONTOUR[™], CONTOUR-CS[™]



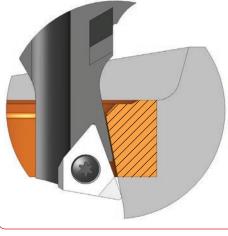


CONTOUR™ FAMILY TIP HOLDERS

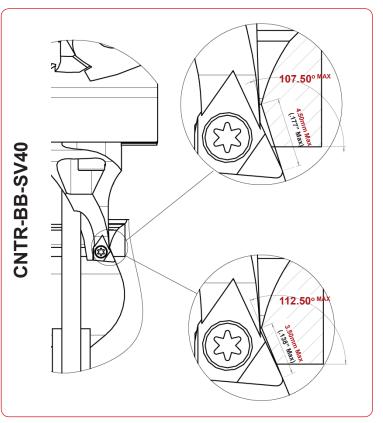
2-Axis FIXED-TURNING® Machines: CONTOUR-BB[™], CONTOUR-BB-CS[™], CONTOUR[™], CONTOUR-CS[™]

NEWEN	PILOT DIAMETER (Reference for Tip-Holder	MACHINING CAPACITY		TIP-HOLDER	стоск	GENERAL APPLICATIONS		
REFERENCE	Machining Capacity)	Minimum Diameter	Maximum Diameter	OAL				
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 <i>hemispherical</i> 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, \emptyset < 100mm (3.94")		

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

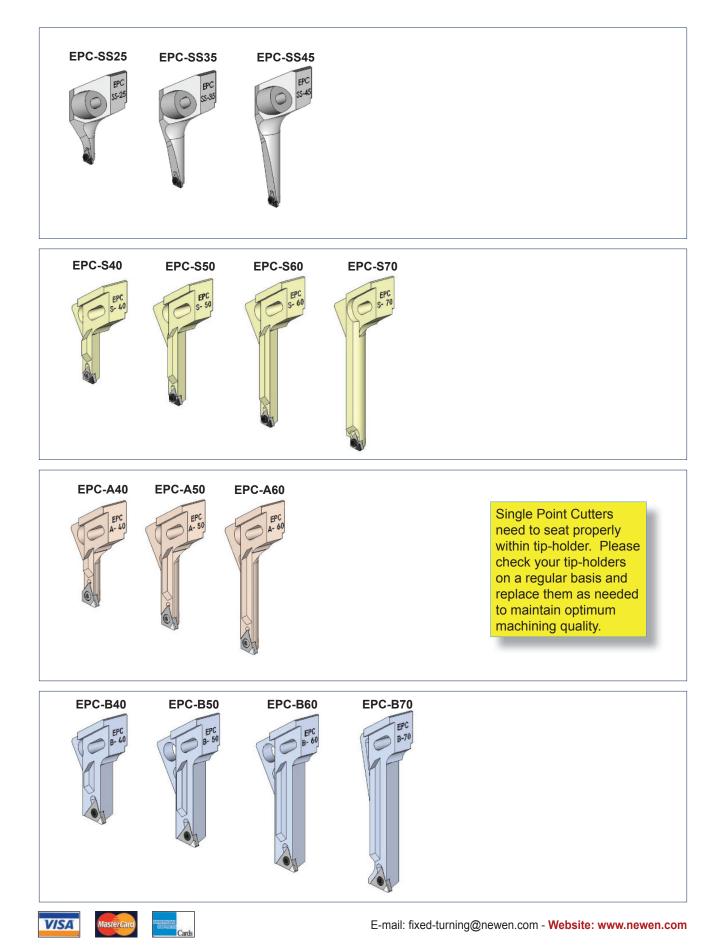








EPOC[™] FAMILY TIP HOLDERS 3-Axis FIXED-TURNING® Machines: EPOC[™], EPOC-CS[™], EPOC-XL[™]





NEWEN	PILOT DIAMETER (Reference for Tip-Holder	MACHINING CAPACITY		TIP-HOLDER	стоск	GENERAL APPLICATIONS		
REFERENCE	Machining Capacity)	Minimum Diameter	Maximum Diameter	OAL				
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		
EPC-SS45	4mm (.1575")	13.4mm (.53")	60.3mm (2.37")	45mm (1.77")	YES	head valve seats, from Ø14mm (.55")		
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		
EPC-S60	5mm (.1968")	17.1mm (.67")	65.3mm (2.57")	60mm (2.36")	YES	head valve seats, from Ø17mm (.67")		
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	runing - Cars		
EPC-B40	9.52mm (.375")	35mm (1.38")	75.7mm (2.98")	40mm (1.58")	YES			
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	Industrial Engine Cylinder Heads		
					_			
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.



the new standard in valve seat machining[™]



EPOC[™] FAMILY TIP HOLDERS 3-Axis FIXED-TURNING® Machines: EPOC[™], EPOC-CS[™], EPOC-XL[™]









NEWEN	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)	MACHINING CAPACITY		TIP-HOLDER	стоск	GENERAL APPLICATIONS		
REFERENCE		Minimum Diameter	Maximum Diameter	OAL				
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 EPC-E40	9.52mm (.375") 9.52mm (.375")		104.7mm (4.12") 125.4mm (4.94")	40mm (1.58") 40mm (1.58")	YES YES	Industrial Engine Cylinder Heads		

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.



the new standard in valve seat machining[™]



EPOC-XL[™]

3-Axis FIXED-TURNING® Machines Carriage Extensions & Respective Counterweights









EPOC-XL[™]

3-Axis FIXED-TURNING® Machines Carriage Extensions & Respective Counterweights

NEWEN	PILOT DIAMETER (Reference for Tip-Holder Machining Capacity)		TIP-HOLDER	стоск			
REFERENCE		EPC-XL90		EPC-XL135	EPC-XL200	OAL	
		Minimum Diameter	Maximum Diameter	Maximum Diameter	Maximum Diameter		
EPC-SS25	4mm (.1575")	13.4mm (.53")	60.2mm (2.37")			25mm (.984")	YES
EPC-SS35	4mm (.1575")	13.4mm (.53")	60.2mm (2.37")	N/A	N/A	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")			40mm (1.58")	YES
EPC-S50	5mm (.1968")	17.1mm (.67")	62.2mm (2.45")	N/A	N/A	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")			40mm (1.58")	YES
EPC-A50	6mm (.2362")	21.5mm (.85")	68.6mm (2.70")	N/A	N/A	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*

CNTR-BB-THLS

2-Axis FIXED-TURNING® machines

CONTOUR-BB-CS[™], CONTOUR[™], CONTOUR-CS[™])

tip holder lock screw (CONTOUR-BB™,

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-BBTM, CONTOUR-BB-CSTM, CONTOURTM, CONTOUR-CSTM, EPOCTM, EPOC-CSTM & EPOC-XLTM) tip holder series S & SS (set of 5).



T8 torx L-key.



■ 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

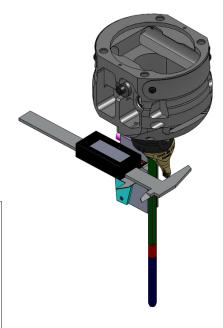


CNTR734

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).



NWN101
 T8 x 60 Torx driver.
 NWN102
 T6 x 50 Torx driver.



***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.



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

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