ASV/B
ASV/BL

Boring machine for valve seats and guides

A Company
of ThyssenKrupp

BERCO S.p.A.

The machine and its components

Fig. 1
Removing worn valve seat ring and chambering for new ring

Reconditioning and filling of valve seats on the head are processes which are continually more requested in internal combustion engine repair and service, both in terms of quality and quantity. It is thus very advantageous for the mechanic to have a fast and precise tool which can guarantee both a fast turnover and high quality results.
The new Berco **ASV/B - ASV/BL** valve seat and guide boring heads are fully equipped to meet this need; in particular, the adoption of several innovations has enabled us to simplify and greatly increase the precision of valve seat machining operations.
The new **ASV/B** and **ASV/BL**, compared with the previous model, have been updated in the following essential areas:

- Increased shank diameter for improved rigidity
- Transverse head travel increased to 100 mm
- Electric motor power increased to provide safe machining up to seat diameter 130 mm
- Introduction of a micrometer spindle advance for improved precision in machining valve seats.

Furthermore, the setting of the head, which was already simple and effective with the universal tool on the previous ASV/A, has been improved with greater working space.
The two lateral supports can be moved freely over the entire bench surface and lock/release with pneumatic brackets.
The two upper sections, to which the workpiece is referenced and locked, rotate through 360° around the horizontal axis; this, combined with the option to incline the boring machine head by ± 15°, makes it possible to machine both valve and valve guide seats with inclined axes in both the transverse and longitudinal orientations.
Alignment of valve guide/spindle axis: this is particularly precise and sensitive due to the specially designed timing and sequencing of the passage from floating on the air cushion and pneumatic locking of the boring unit.
Engagement/disengagement of tool heads in the conical holder of the spindle shaft: quick and secure operation due to the use of an elastic pneumatic clamp, with single button operation.
Balancing of the spindle shaft/tool head assembly: variable as a function of weight, controlled by a pneumatic cylinder with integral pressure valve.
The major characteristics of the ASV/B - ASV/BL also include:

- continuously adjustable spindle speed allows easy and precise selection of operating parameters for all applications
- simultaneous boring of the three corners of the valve seat with forming insert. Along with provided standard models (table A), special inserts are available for the shape and size of the valve seats being reconditioned
- srapid pre-regulation, off the machine, of the insert holders (for both boring and chambering) using supplied equipment
- fixed spindle pilots. Along with provided standard models (table C), a complete range of sizes is available on request
- special heads, tools and pilots available on request for special applications.

Standard outfit

- Lighting equipment
- Universal head setting, with pneumatic locking of the supports (Fig. 4)
- Set of head locking brackets, complete with: four sets of brackets, four sets of bolts, two sets of spacers and four quick locking washers (Fig. 4)
- Micrometer advance (ASV/BL)
- Spindle for boring valve seats, chapter 28-55, complete with conical chuck, excluding insert holders
- Spindle for boring valve seats, chapter 16-32, excluding insert holders
- 22 insert holders for valve seat boring, with insert locking bolts and wrench
- 8 standard inserts for valve seat boring
- Chambering spindle
- 3 pairs of insert holders for chambering, complete with inserts, insert locking bolts and two wrenches
- 12 spindle pilots (table C)
- Tool pre-regulation device for valve seat boring (Fig.5)

Fig. 2

- Tool pre-regulation device for chambering (Fig. 5)
- Bubble level and support
- Internal tool board (Fig. 11)
- 2 valve guide hole brushes
- Set of wrenches.

N.B. For the spindle, insert holder and insert sizes and capacities, whether standard or special supply, see tables A and B.

Fig. 3

Fig. 4

Fig. 5

Fig. 2
Boring valve seat on head with inclined valve axes

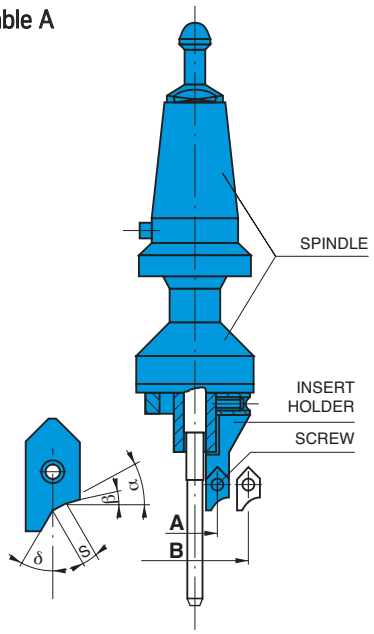
Fig. 3
Valve seat alignment checker

Fig. 4
Example of locking, on universal setting device, of a head with opposing parallel planes with inclined valve axes

Fig. 5
Devices for presetting shaped inserts for valve seat reboring and counterboring insert holders.

Tool selection guide

Table A



Spindles, insert holders,
inserts for valve seat boring

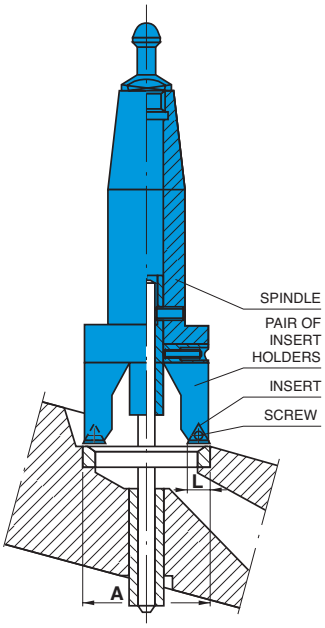
*** Special inserts available on request**
Parts on a blue background are special supply.
Parts on a white background are standard outfit.

SPINDLE DRAWING N° A00A34644 - A00A34581B									
INSERT HOLDER DRAWING N°	A ø		B ø		INSERT HOLDER DRAWING N°	A ø		B ø	
	mm	in	mm	in		mm	in	mm	in
A00A34639*	15	5/8"	21	53/64"	A00A34593A	52	2 3/64"	75	2 61/64"
A00A34641	20	23/32"	32	1 17/64"	-	-	-	-	-
A00A34591B	28	1 7/64"	55	2 11/64"	-	-	-	-	-

SPINDLE DRAWING N° A00A34623				
INSERT HOLDER DRAWING N°	A ø		B ø	
	mm	in	mm	in
A00A34630	75	2 31/64"	125	4 59/64"

INSERTS							
INSERT DRAWING N°	S		α°	β°	δ°	SCREW DRAWING N°	WRENCH DRAWING N°
	mm	in					
U091A15000	1.5	.0590"	30	15	30	U900202400	U900990030
U091A20000	2	.0785"	30	15	30	U900202400	U900990030
U091A25000	2.5	.0984"	30	15	30	U900202400	U900990030
U091B15000	1.5	.0590"	45	25	30	U900202400	U900990030
U091B20000	2	.0785"	45	25	30	U900202400	U900990030
U091B25000	2.5	.0984"	45	25	30	U900202400	U900990030
U091SE7000	7	.275"	30	-	-	U900202400	U900990030
U091SI7000	7	.275"	45	-	-	U900202400	U900990030

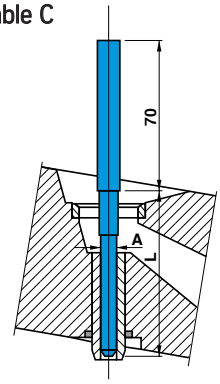
Table B



Spindles, insert holders,
inserts for chambering

PAIR OF INSERT HOLDERS			SPINDLES			INSERT	SCREW	WRENCH
			A00A34567	A00A34572	A00A34623			
H mm	DRAWING N°	L mm in	A ø mm/in	A ø mm/in	A ø mm/in	DRAWING N°	DRAWING N°	DRAWING N°
46	A00A34585	5	20–30	-	-	BRAZED PLATE	-	-
1 13/16"		.197"	51/64"-13/16"	-	-			
46	A00A34561	9	28-38	-	-	U003101050	U00202070	U900990000
1 13/16"		.354"	1 7/64"-1 1/2"	-	-			
45	A00A34564	11	36-50	-	-	U003158000	U00202530	U900990010
1 49/64"		.433"	1 27/64"-1 31/32"	-	-			
50	A00A34569	11	48-60	48-70	-	U003158000	U00202530	U900990010
1 31/32"		.433"	1 57/64"-1 23/64"	1 57/64"-2 3/4"	-			
50	A00A34574	11	-	65-85	75-130	U003158000	U00202530	U900990010
1 31/32"		.433"	-	1 5/16"-3 23/64"	2 61/64"-5 1/8"			
61	A00A34611	9	28-38	-	-	U003101050	U00202070	-
2 31/32"		.354"	1 7/64"-1 1/2"	-	-			
60	A00A34613	11	36-50	-	-	U003158000	U00202530	-
2 23/64"		.433"	1 27/64"-1 31/32"	-	-			

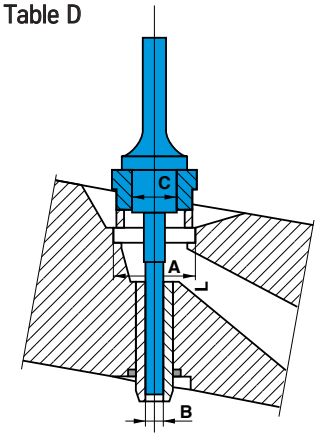
Table C



Spindle pilots

PILOT	A ø		L		PILOT	A ø		L	
DRAWING N°	mm	in	mm	in	DRAWING N°	mm	in	mm	in
A06A34700	6.00	.2362"	80	$3^{5}/_{32}$"	**A08A34700**	8.00	.3150"	100	$3^{15}/_{16}$"
A06A34701	6.01	.2366"	80	$3^{5}/_{32}$"	**A08A34701**	8.01	.3153"	100	$3^{15}/_{16}$"
A06A34702	6.02	.2370"	80	$3^{5}/_{32}$"	**A08A34702**	8.02	.3157"	100	$3^{15}/_{16}$"
A07A34700	7.00	.2756"	100	$3^{15}/_{16}$"	**A09A34700**	9.00	.3543"	100	$3^{15}/_{16}$"
A07A34701	7.01	.2760"	100	$3^{15}/_{16}$"	**A09A34701**	9.01	.3547"	100	$3^{15}/_{16}$"
A07A34702	7.02	.2764"	100	$3^{15}/_{16}$"	**A09A34702**	9.02	.3551"	100	$3^{15}/_{16}$"

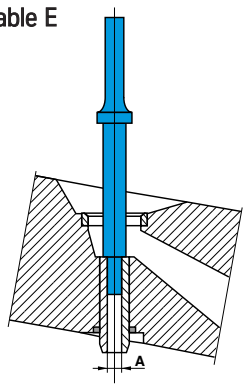
Table D



Valve seat
mounting rings and drifts

RINGS			**C** dia.		DRIFTS		
DRAWING N°	Valve seat **A** dia.				DRAWING N°	Guide **B** dia.	
	mm	in	mm	in		mm	in
A00A13541	23,5-27	$^{59}/_{64}$"-$1^{1}/_{16}$"	19	$^{3}/_{4}$"	**A00A13818**	5,5	$^{7}/_{32}$"
A00A13659	27,5-31,5	$1^{5}/_{64}$"-$1^{16}/_{64}$"	19	$^{3}/_{4}$"	**A00A13813**	6	$^{15}/_{64}$"
A00A13660	32-38	$1^{1}/_{4}$-$1^{1}/_{2}$"	19	$^{3}/_{4}$"	**A00A13812**	6,5	$^{17}/_{64}$"
A00A13661	38,5-44	$1^{33}/_{64}$-$1^{47}/_{64}$"	19	$^{3}/_{4}$"	**A00A13543**	7	$^{9}/_{32}$"
A00A13662	44,5-50	$1^{3}/_{4}$-$1^{31}/_{32}$"	19	$^{3}/_{4}$"	**A00A13667**	8	$^{5}/_{16}$"
A00A13663	51-57	2-$2^{15}/_{64}$"	19	$^{3}/_{4}$"	**A00A13668**	9	$^{11}/_{32}$"
A00A13664	57,5-63	$2^{17}/_{64}$-$2^{43}/_{64}$"	19	$^{3}/_{4}$"	**A00A13669**	9,5	$^{3}/_{8}$"
A00A13665	64-68	$2^{33}/_{64}$-$2^{43}/_{64}$"	19	$^{3}/_{4}$"	**A00A13670**	11	$^{7}/_{16}$"
A00A13666	70-75	$2^{3}/_{4}$-$2^{61}/_{64}$"	19	$^{3}/_{4}$"	**A00A13671**	12	$^{15}/_{32}$"
-	-	-	19	$^{3}/_{4}$"	**A00A13672**	12,5	$^{0}/_{2}$"
-	-	-	19	$^{3}/_{4}$"	**A00A13673**	13	$^{33}/_{64}$"
-	-	-	19	$^{3}/_{4}$"	**A00A13674**	14	$^{9}/_{16}$"
-	-	-	-	-	**A00A13675**	15	$^{19}/_{32}$"
-	-	-	-	-	**A00A13676**	16	$^{5}/_{8}$"
-	-	-	-	-	**A00A13677**	17	$^{43}/_{64}$"

Table E



Drifts for extracting/
mounting valve guides

DRIFTS	Valve guide **A** dia.		DRIFTS	Valve guide **A** dia.	
DRAWING N°	mm	in	DRAWING N°	mm	in
A00A13819	5,5	$^{7}/_{32}$"	**A00A13682**	12	$^{15}/_{32}$"
A00A13814	6	$^{15}/_{64}$"	**A00A13683**	13	$^{33}/_{64}$"
A00A13806	6,5	$^{17}/_{64}$"	**A00A136834**	14	$^{9}/_{16}$"
A00A13542	7	$^{9}/_{32}$"	**A00A13685**	15	$^{19}/_{32}$"
A00A13678	8	$^{5}/_{16}$"	**A00A13686**	16	$^{5}/_{8}$"
A00A13679	9,5	$^{11}/_{32}$"	**A00A13687**	17	$^{43}/_{64}$"
A00A13680	9,5	$^{3}/_{8}$"			
A00A13681	10	$^{13}/_{32}$"			
A00A13544	11	$^{7}/_{16}$"			

Extra outfit

Fig. 6

Fig. 7

Fig. 8

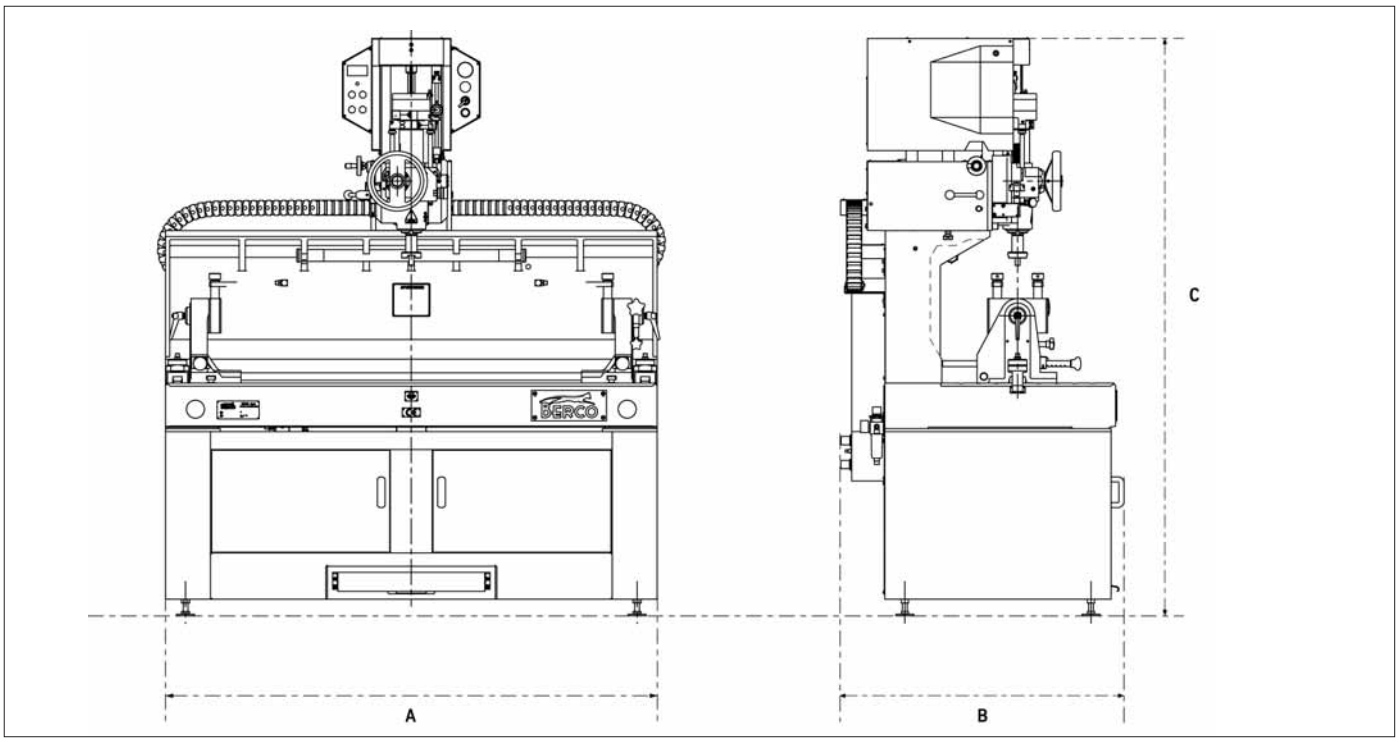
- **A01A34554**
  Quick locking conical chuck
- **A00A34587**
  Conical chuck
- **A00A34593A**
  CInsert holder for valve seat boring, capacity 50-75 mm (2”-3”), excluding insert
- **A00A34639**
  Insert holder for valve seat boring, capacity 16-21 mm ($^{5}/_{8}$”-$^{13}/_{16}$”), excluding insert
- **A00A34585**
  Pair of chambering insert holders, capacity 20-30 mm ($^{51}/_{64}$”- 1.$^{3}/_{16}$”), with braised plates
- **A00A34572**
  Chambering spindle, capacity 48-85 mm (1.$^{57}/_{64}$”-3.$^{23}/_{64}$”) excluding insert holders
- **A00A34574**
  Pair of chambering insert holders, for spindle A00A34572, capacity 65-85 mm (2.$^{5}/_{16}$”-3.$^{23}/_{64}$”), complete with inserts
- **A00A34623**
  Spindle for boring and counterboring, capacity 75-130 mm (3”-5.$^{1}/_{8}$”)
- **A00A34630**
  Insert holder for valve seat boring, capacity 75-125 mm (2$^{61}/_{64}$”-4$^{56}/_{64}$”)
- **A00A34578**
  Spindle with 12 mm (.472”) diameter hole, for boring tools with cylindrical shank (boring tools excluded)
- **A00A34600**
  Spindle for tools with Morse 3 taper
- **A00A34400**
  Tool shelf, LH
- **A00A34401**
  Tool shelf, RH
- **A00A34850**
  Dressing tool complete with diamond wheel (Fig. 6)
- **V11A34002**
  Device with dial gauge for checking valve seat depth
- **V11A34004**
  Digital device for checking valve seat depth
- **V11A34012**
  Micrometer spindle advance (ASV/B)
- **P01A13520**
  Valve seat alignment checker, complete with mm dial gauge (Fig. 3)
- **A00A34576**
  Tool holder spindle, capacity 3-16 mm ($^{1}/_{8}$” - $^{5}/_{8}$”)
- **A00A13540**
  Pneumatic driver for mounting/removing valve guides and mounting valve seats
- **A00A13694**
  Boring unit valve seat alignment/centring device
- Valve seat mounting rings (see table D)
- Valve seat mounting ring guide punches (see table D)
- Valve guide mounting/removal punches (see table E)
- Spindle pilots, on request with diameters 3.5-22.5 mm (1/8”-7/8”) in steps of 0.01 (.0004”)
- **A00A34529**
  Electronic level
- **A00A34611**
  Pair of chambering insert holders, capacity 28-38 mm ($^{17}/_{64}$”-$^{11}/_{2}$”)
- **A00A34613**
  Pair of chambering insert holders, capacity 36-50 mm ($^{127}/_{64}$”-$^{131}/_{32}$”).

Fig. 6
Dressing device

Fig. 7
LH tool shelf, for storing:
- **valve seat centring checker**
- **tool pre-regulation devices**
- **bubble level support**
- **complete set of valve guide punches and punches/rings for mounting valve seats**
- **pneumatic driver**

Fig. 8
Tool shelf, RH:
designed to store all spindles and insert holders, both standard and special supply, as well as a large number of pilots

Technical data



	ASV/B	ASV/BL
Working capacity		
Max. head length	mm 1025 (40”)	mm 1270 (50”)
Valve seat boring:		
Min. internal diameter	16 (5/8”)	
Max. external diameter	mm 125 (5”)	
Chambering for restoring valve seat rings:		
Min. diameter	mm 20 (25/32”)	
Max. diameter	mm 130 (5.1/8”)	
Speeds		
Spindle speed (continuously variable)	5–400	
Max. spindle shaft travel	mm 215 (8.1/2”)	
Max. spindle travel (transverse)	mm 100 (4”)	
Advance per spindle rotation	mm 51,8 (2.1/32”)	
Micrometric advance per rotation	mm 1 (0,04”)	
Geometric features		
Max. spindle inclination (in both directions)	15°~	
Max. height of spindle nose	mm 510 (20”)	
Motor rating		
Electric motor power	kw 1,1 (1,5 HP)	
Pneumatic circuit		
Air pressure	6 (85 lbf/in2)	
Dimensions and weights		
Length (A)	mm 1340 (53”)	mm 1640 (64.1/2”)
Width (B)	mm 942 (37”)	
Height (C)	mm 1930 (76”)	
Approximate weight, without packaging	kg 800 (1760 lb)	kg 900 (1980 lb)
Approximate weight, with maritime packaging	kg 975 (2145 lb)	kg 1100 (2420 lb)

Dimensions, weights and construction are not binding and may be modified. Motor power ratings refer to 50 Hz power supply

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