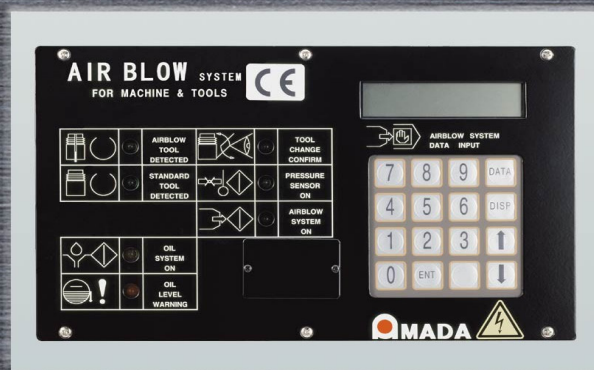


NCT Punching Tool Catalogue

Long: thick turret (03)



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■Applicable machine models

- Amada long type tool
EM, EML, AC, APELIO, LIBRA, COMA, PEGA(H), OCTO(H), VELAI(H),
LYRA, ARIES(H), SPINGAR, EUROPE AND ARCADE

·Use Amada's genuine tool on Amada machines.

·Amada is unable to guarantee maintenance for any trouble resulting from use of other tool.

Web site information

<http://www.ai-link.ne.jp/kanademo/public_sptoolnavi/pub_top.html>

Your order desk & Tool hotline

Punch body replacement and height adjustment become so easy by new spring assy mechanisms. Tooling cost is dramatically reduced by spring assy + guide combination and by the grind length increase.

--Tooling recommended for EM & AC series machine--

NEX Spring assy

For long tooling A(1/2") and B(1 1/4")

Max thickness 6.0mm !

※Mild steel · aluminum max 6.0mm .
Stainless steel max 3.0mm.



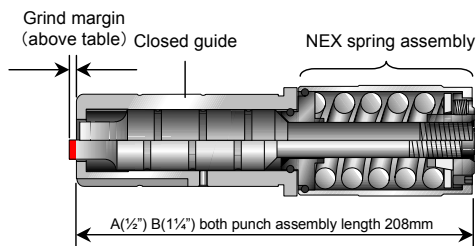
NEX spring assembly can be used for both air-blow and original style punch body.

Grinding amount increased to a maximum of 5.0mm

The grinding amount of the punch is increased to a maximum of 5.0mm. This means that original style punch can now be reground and reused.

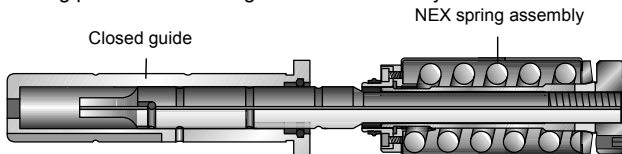
Regrinding value ※2 (Recommendation : 2.0mm)	Thickness	A(1/2")	B(1 1/4")
	less than 3.2t	5.0mm	5.0mm
	4.5t	3.5mm	5.0mm
	6.0t	2.0mm	4.0mm

※ Not applicable to narrow type and command for bottom position control at 2.5 mm. No tool accuracy is guaranteed more than 2mm reground.
※ When the punch body is ground by 5mm, its punch size becomes about 0.03mm smaller by punch back taper.



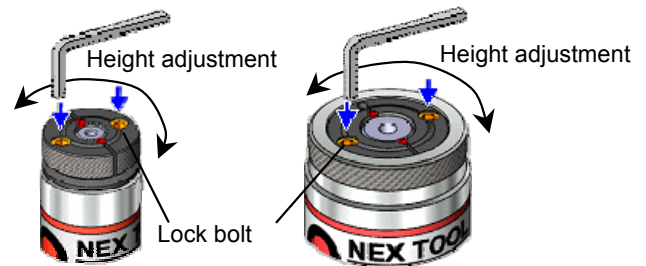
Conventional punch bodies can also be utilized

NEX spring assembly is common to all punches the same size. The existing punch bodies and guides can be directly used as well.



Maintenance time reduced to 1/3

Height adjustment and punch body change can be performed simply by loosening the lock bolt and turning the punch body. Use of QS pliers enables easier removal and installation of stripper plate by "one-touch", and reduces maintenance times up to 1/3 ※. (※ by our data)



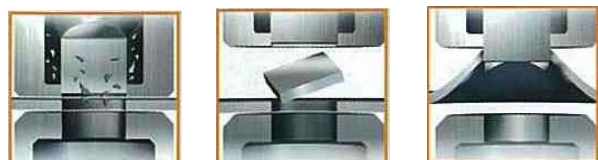
One-piece spring assembly keeps the height constant

The punch head and spring unit are combined into one structure to keep the overall punch assembly height unchanged despite height adjustment.

Optimum benefits of air-blow tooling displayed

The air-blow system supplies the air-blow tooling with air and an oil mist to prevent deposition, slug pulling and to facilitate maintenance.

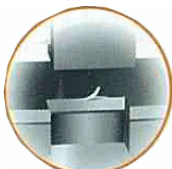
Benefit of air-blow tooling



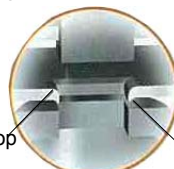
Prevention of entry of foreign body

Reduction of slug pulling

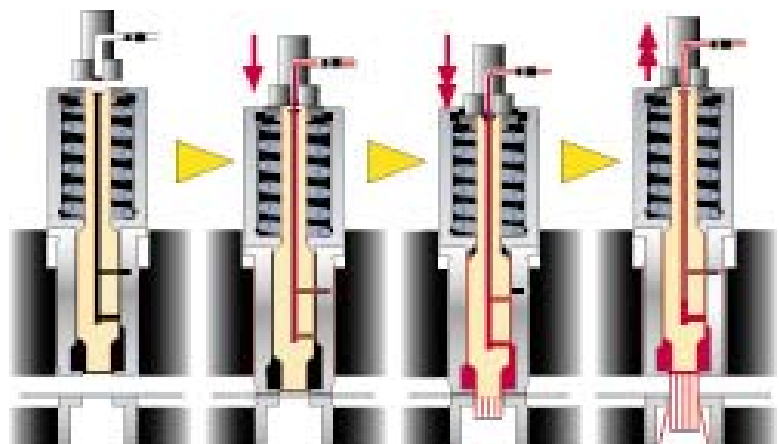
Reduction of strip failures



Reduction of fine needle pulling



Droop
Retain hole accuracy



Top dead center

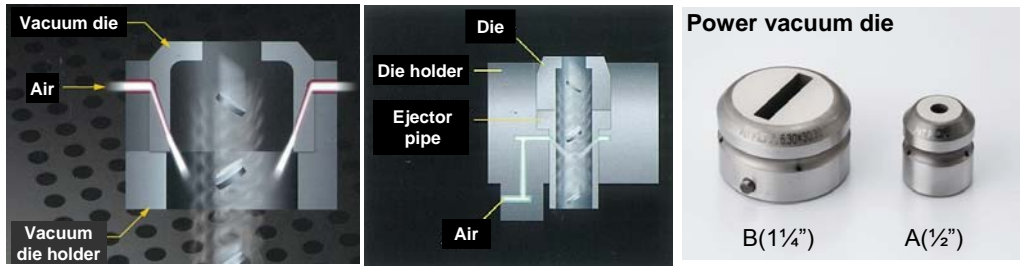
Contact of guide with material

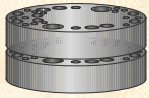
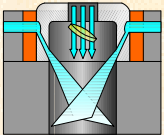
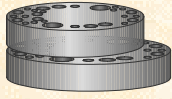
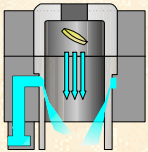
Punching

Rise of tooling

Power Vacuum Die : standard die for EM & AC for A(1/2") & B(1 1/4")

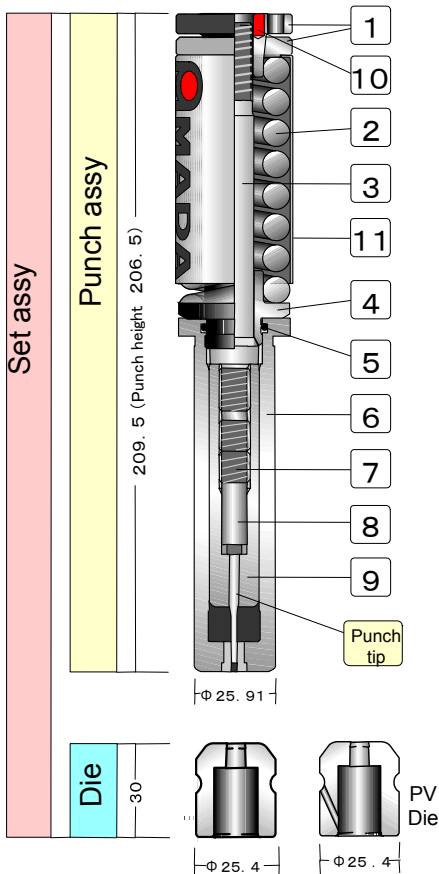
Vacuum suction unit by air jet flowing downwards in the die preventing slug-pulling



Tooling size	Specification	Vacuum unit	Turret size	Air flow line
A (1/2")	Power vacuum die (PV)	Power vacuum (PV) Die has a small pin holes aiming toward downward, and this creates maximum vacuum effect.	Same diameter turret 	
B (1 1/4")		Air jet vacuum (AJV) Slug vacuum system by strong jet air projected toward downward under the die.	Z turret 	

- ※1. Power vacuum die cannot be applied on PKK die and back tapered die, because of less effectiveness of slug-pulling prevention.
- ※2. Z turret uses AJV system, air projected position is different from power vacuum system. (See upper drawing)
- ※3. Power vacuum system works A(1/2") and B(1 1/4") on the same diameter turret. (except auto index station)

A 1/2" Size Round (Φ0.8~Φ1.5mm) Tip type Original style



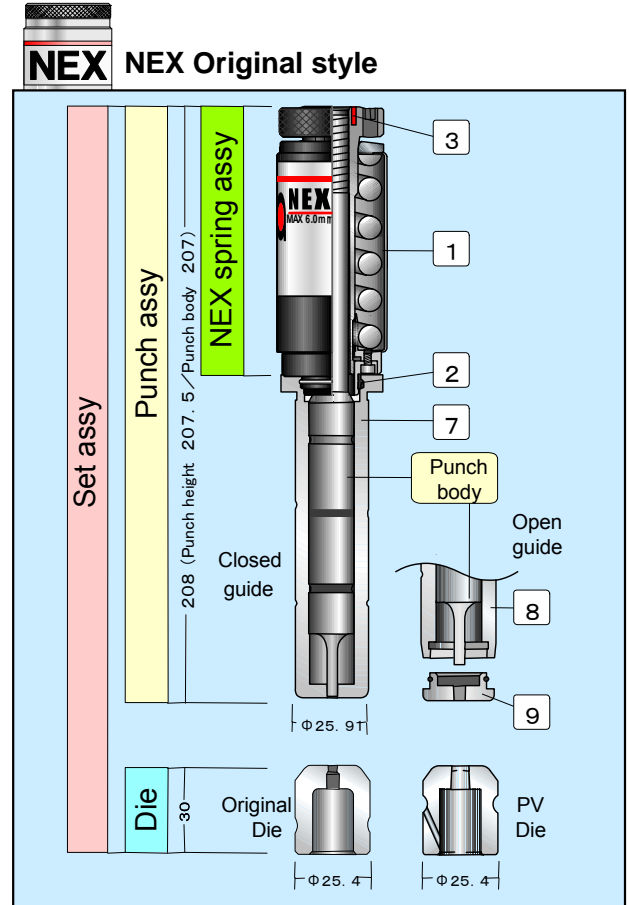
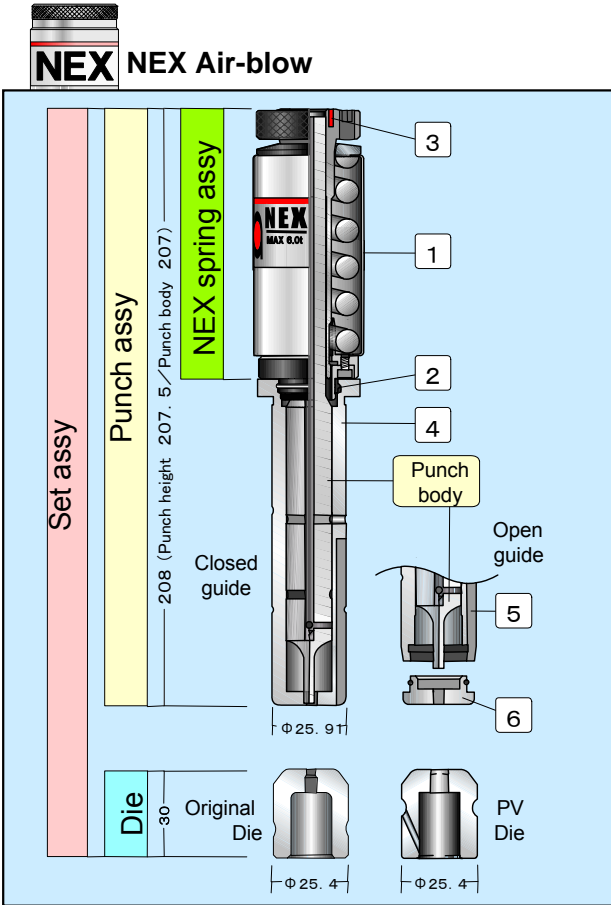
Tooling selection and code

Description	Punch	Die		Code No.
	Punch material	Die grade	Die material	
Set assy	SKH	Original	SKD	311110
Punch assy	SKH			111110
Punch tip	SKH			411110
Die		PV	SKH	261V20
		Original	SKH	261020
			SKD	211020

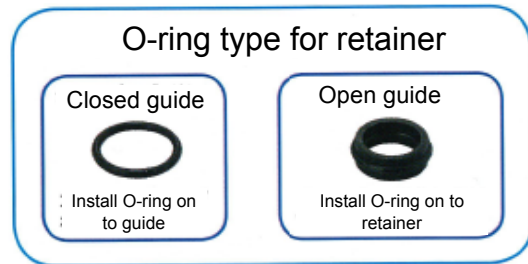
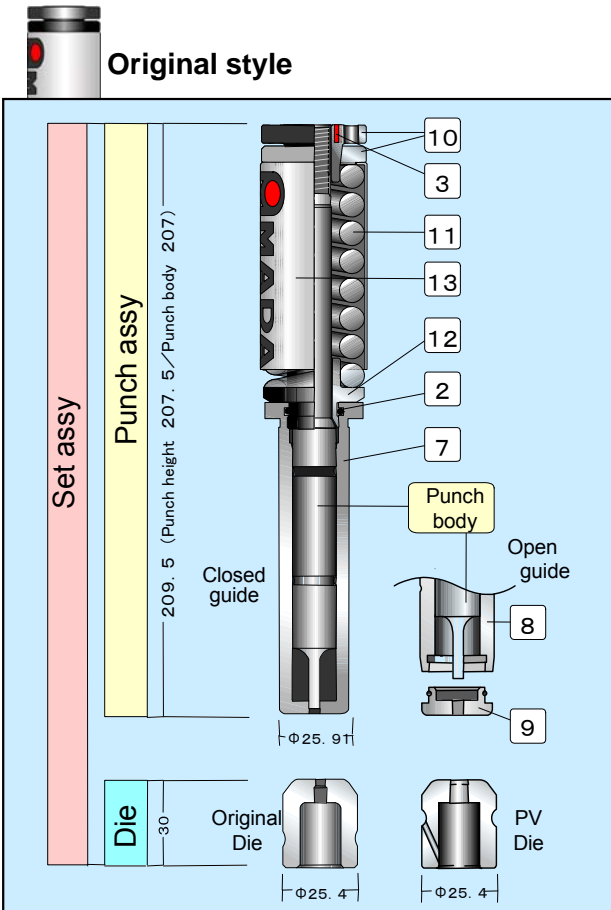
Component parts list

No.	Description	Code No.
1	Double punch head	901400
2	Stripping spring	901300
3	Punch driver	901520
4	Retainer collar	901200
5	O-ring	910060
6	Closed guide with bush & O-ring	901510
7	Lock screw (M10x10)	998600
8	Straight pin	901550
9	Punch body	901530
10	Urethane tube (10pcs.)	-
11	Spring cover (5pcs.)	926220

A 1/2" Size Round ($\Phi 1.51 \sim \Phi 3.2\text{mm}$)



※Closed guide is recommended for EM machine.



■ Tooling selection and code

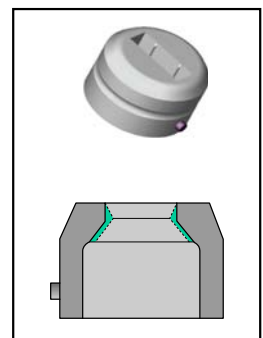
(Code No.)

Description	Punch	Die		NEX Air-blow		NEX Original style		Original style	
	Punch material	Die grade	Die material	Closed guide	Open guide	Closed guide	Open guide	Closed guide	Open guide
Set assy	APH	PV	SKH	36HV20	36HZ20	36XV20	36XZ20		
		Original	SKH	36HY20	36HX20	36XY20	36XX20	36X020	36X720
			SKD	31HY20	31HX20	31XY20	31XX20	31X020	31X720
	SKH-F	PV	SKH	36GV20	36GZ20	366V20	366Z20		
		Original	SKH	36GY20	36GX20	366Y20	366X20	366020	366720
			SKD	31GY20	31GX20	316Y20	316X20	316020	316720
	SKH	PV	SKH	36FV20	36FZ20	362V20	362Z20		
		Original	SKH	36FY20	36FX20	362Y20	362X20	362020	362720
			SKD	31FY20	31FX20	312Y20	312X20	312020	312720
	SKD	Original	SKH			361Y20	361X20	361020	361720
			SKD			311Y20	311X20	311020	311720
	Punch assy	APH			11HY20	11HX20	11XY20	11XX20	11X020
SKH-F				11GY20	11GX20	116Y20	116X20	116020	116720
SKH				11FY20	11FX20	112Y20	112X20	112020	112720
SKD						111Y20	111X20	111020	111720
Punch body	APH			41H020	41H020	41X020	41X020	41X020	41X020
	SKH-F			41G020	41G020	416020	416020	416020	416020
	SKH			41F020	41F020	412020	412020	412020	412020
	SKD					411020	411020	411020	411020
Die		Original	SKH	261020	261020	261020	261020	261020	261020
			SKD	211020	211020	211020	211020	211020	211020
		PV	SKH	261V20	261V20	261V20	261V20		
		PKK die (Φ2.0mm or more)	SKH	261420	261420	261420	261420	261420	261420
SKD	211420		211420	211420	211420	211420	211420		

■ Component parts list

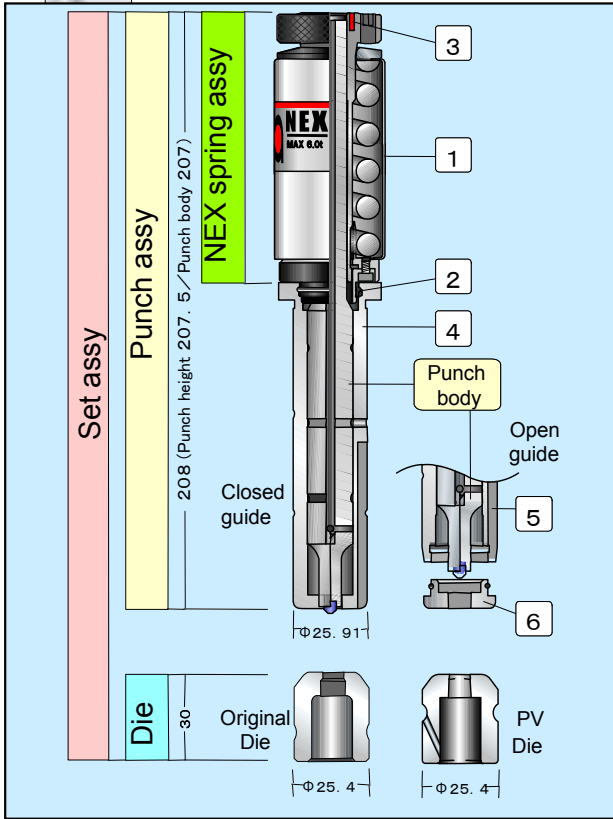
Fig.No.	Description	Code No.	
1	NEX spring assy	980000	
2	O-ring	Closed guide	910060
		Open guide	910150
3	Urethane tube (10pcs.)	-	
4	Closed guide (AB)	51F020	
5	Open guide (AB)	51F320	
6	QM stripper plate (AB)	51F730	
5 6	Open guide (AB) & QM stripper plate (AB)	81F630	
7	Closed guide (Original style)	511020	
8	Open guide (Original style)	511320	
9	QM stripper plate (Original style)	511730	
8 9	Open guide (Original) & QM stripper plate (Original)	811630	
10	Double punch head	901400	
11	Stripping spring	901300	
12	Retainer collar	901200	
13	Spring cover (5pcs.)	926220	
14	QS pliers	911910	

PKK die

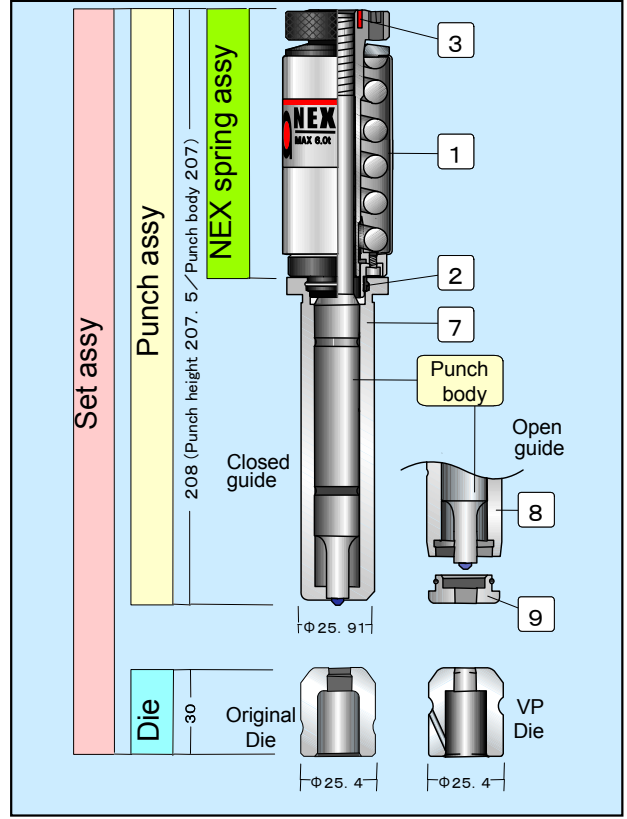


A 1/2" Size Round ($\Phi 3.21 \sim \Phi 12.7\text{mm}$)

NEX NEX Air-blow



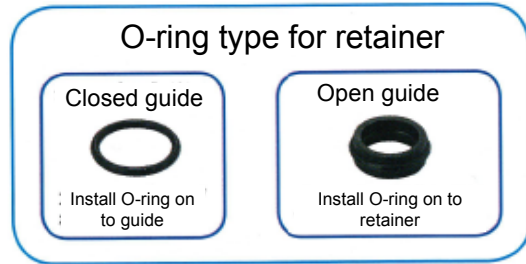
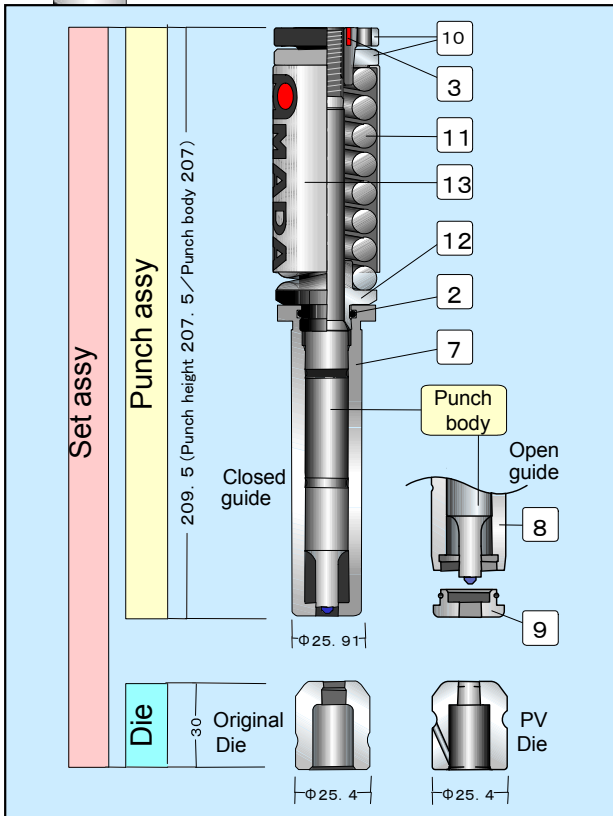
NEX NEX Original style



※Closed guide is recommended for EM machine.
 ※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a center hole.

※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a slug ejector.

Original style



※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a slug ejector.

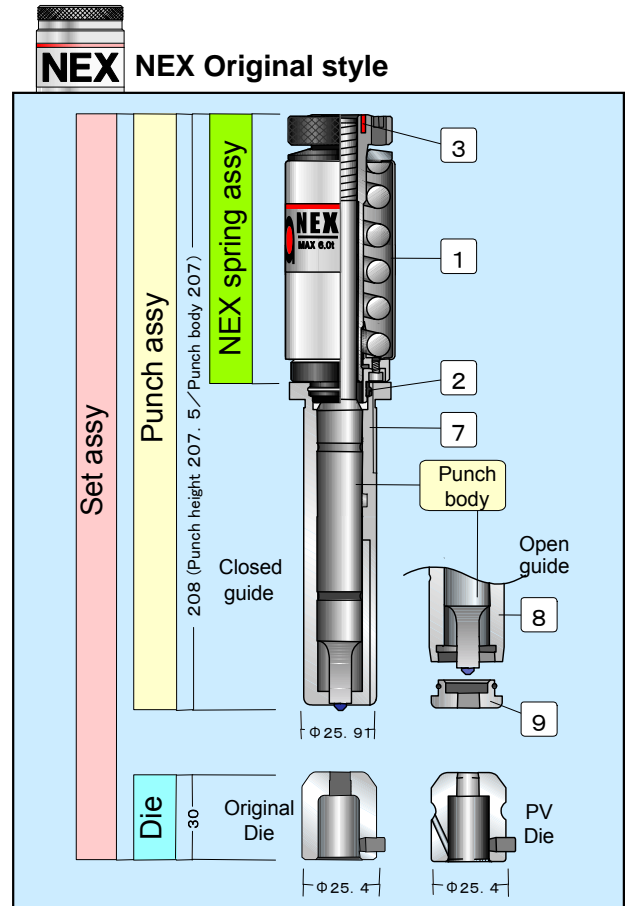
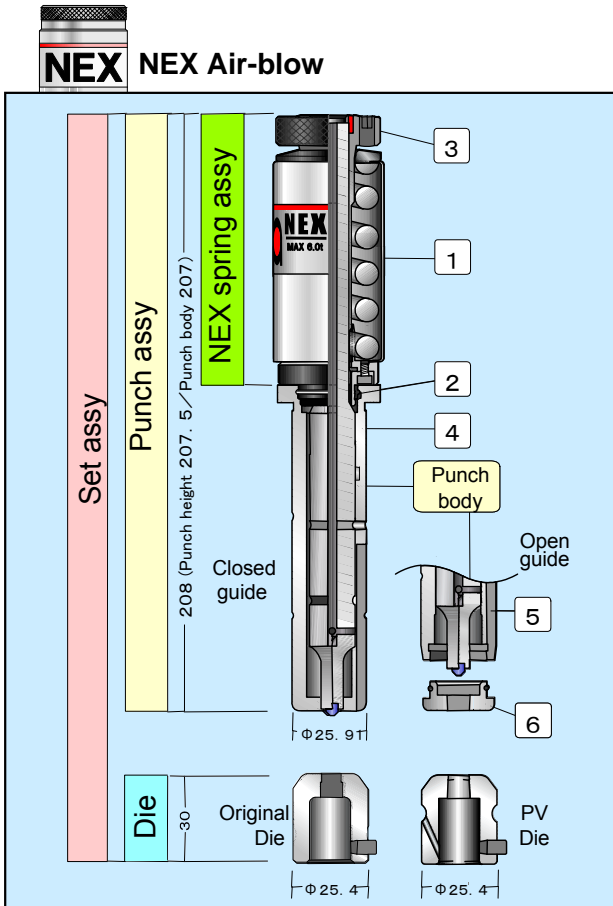
■ Tooling selection and code

(Code No.)

Description	Punch	Die		NEX Air-blow		NEX Original style		Original style	
	Punch material	Die grade	Die material	Closed guide	Open guide	Closed guide	Open guide	Closed guide	Open guide
Set assy	APH	PV	SKH	36HV30	36HZ30	36XV30	36XZ30		
		Original	SKH	36HY30	36HX30	36XY30	36XX30	36X030	36X630
			SKD	31HY30	31HX30	31XY30	31XX30	31X030	31X630
	SKH-F	PV	SKH	36GV30	36GZ30	366V30	366Z30		
		Original	SKH	36GY30	36GX30	366Y30	366X30	366030	366630
			SKD	31GY30	31GX30	316Y30	316X30	316030	316630
	SKH	PV	SKH	36FV30	36FZ30	362V30	362Z30		
		Original	SKH	36FY30	36FX30	362Y30	362X30	362030	362630
			SKD	31FY30	31FX30	312Y30	312X30	312030	312630
	SKD	Original	SKH			361Y30	361X30	361030	361630
			SKD			311Y30	311X30	311030	311630
	Punch assy	APH			11HY30	11HX30	11XY30	11XX30	11X030
SKH-F				11GY30	11GX30	116Y30	116X30	116030	116630
SKH				11FY30	11FX30	112Y30	112X30	112030	112630
SKD						111Y30	111X30	111030	111630
Punch body	APH			41H030	41H030	41X030	41X030	41X030	41X030
	SKH-F			41G030	41G030	416030	416030	416030	416030
	SKH			41F030	41F030	412030	412030	412030	412030
	SKD					411030	411030	411030	411030
Die		Original	SKH	261020	261020	261020	261020	261020	261020
			SKD	211020	211020	211020	211020	211020	211020
		PV	SKH	261V20	261V20	261V20	261V20		
		PKK die (Φ2.0mm or more)	SKH	261420	261420	261420	261420	261420	261420
			SKD	211420	211420	211420	211420	211420	211420

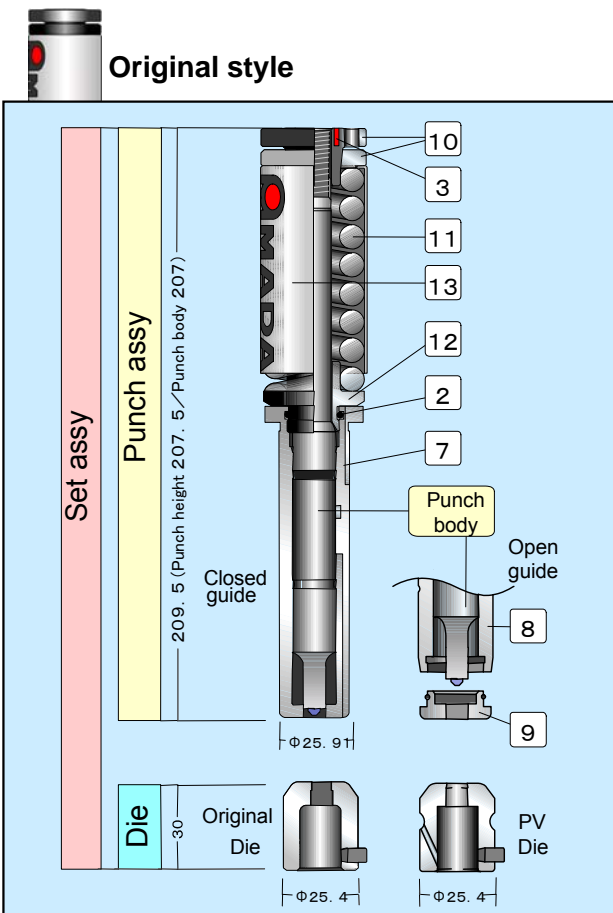
■ Component parts list

Fig.No.	Description	Code No.	
1	NEX spring assy	980000	
2	O-ring	Closed guide	910060
		Open guide	910150
3	Urethane tube (10pcs.)	-	
4	Closed guide (AB)	51F020	
5	Open guide (AB)	51F320	
6	QM stripper plate (AB)	51F730	
5 6	Open guide (AB) & QM stripper plate (AB)	81F630	
7	Closed guide (Original style)	511020	
8	Open guide (Original style)	511320	
9	QM stripper plate (Original style)	511730	
8 9	Open guide (Original) & QM stripper plate (Original)	811630	
10	Double punch head	901400	
11	Stripping spring	901300	
12	Retainer collar	901200	
13	Spring cover (5pcs.)	926220	
14	QS pliers	911910	



※Closed guide is recommended for EM machine.
 ※Punch bigger than $\Phi 6.0$ mm diameter has a center hole.

※Punch bigger than $\Phi 6.0$ mm diameter has a slug ejector.



※Punch bigger than $\Phi 6.0$ mm diameter has a slug ejector.

■ Tooling selection and code

(Code No.)

Description	Punch	Die		NEX Air-blow		NEX Original style		Original style	
	Punch material	Die grade	Die material	Closed guide	Open guide	Closed guide	Open guide	Closed guide	Open guide
Set assy	APH	PV	SKH	37HV20	32HZ20	37XV20	37XZ20		
		Original	SKH	37HY20	37HX20	37XY20	37XX20	37X020	37X720
			SKD	32HY20	32HX20	32XY20	32XX20	32X020	32X720
	SKH-F	PV	SKH	37GV20	32GZ20	376V20	376Z20		
		Original	SKH	37GY20	37GX20	376Y20	376X20	376020	376630
			SKD	32GY20	32GX20	326Y20	326X20	326020	326630
	SKH	PV	SKH	37FV20	32FZ20	372V20	372Z20		
		Original	SKH	37FY20	37FX20	372Y20	372X20	372020	372630
			SKD	32FY20	32FX20	322Y20	322X20	322020	322630
	SKD	Original	SKH			371Y20	371X20	371020	371630
			SKD			321Y20	321X20	321020	321630
	Punch assy	APH			12HY20	12HX20	12XY20	12XX20	12X020
SKH-F				12GY20	12GX20	126Y20	126X20	126020	126630
SKH				12FY20	12FX20	122Y20	122X20	122020	122630
SKD						121Y20	121X20	121020	121630
Punch body	APH			42H020	42H020	42X020	42X020	42X020	42X020
	SKH-F			42G020	42G020	426020	426020	426020	426020
	SKH			42F020	42F020	422020	422020	422020	422020
	SKD					421020	421020	421020	421020
Die		Original	SKH	271020	271020	271020	271020	271020	271020
			SKD	221020	221020	221020	221020	221020	221020
		PV	SKH	271V20	271V20	271V20	271V20		
		PKK die (Φ2.0mm or more)	SKH	271420	271420	271420	271420	271420	271420
SKD	221420		221420	221420	221420	221420	221420		

■ Component parts list

Fig.No.	Description	Code No.	
1	NEX spring assy	980000	
2	O-ring	Closed guide	910060
		Open guide	910150
3	Urethane tube (10pcs.)	-	
4	Closed guide (AB)	52F020	
5	Open guide (AB)	52F320	
6	QM stripper plate (AB)	52F730	
5 6	Open guide (AB) & QM stripper plate (AB)	82F630	
7	Closed guide (Original style)	521020	
8	Open guide (Original style)	521320	
9	QM stripper plate (Original style)	521820	
8 9	Open guide (Original) & QM stripper plate (Original)	821630	
10	Double punch head	901400	
11	Stripping spring	901300	
12	Retainer collar	901200	
13	Spring cover (5pcs.)	926220	
14	QS pliers	911910	

■ Option Additional work plus narrow type need additional charge.

	Item	Set Assy	Punch Assy	Punch body	Stripper & Guide	Die
Additional	4 corner radii					
	Additional key angle					
	Shear angle (2°)					
Narrow (less than 2mm)						

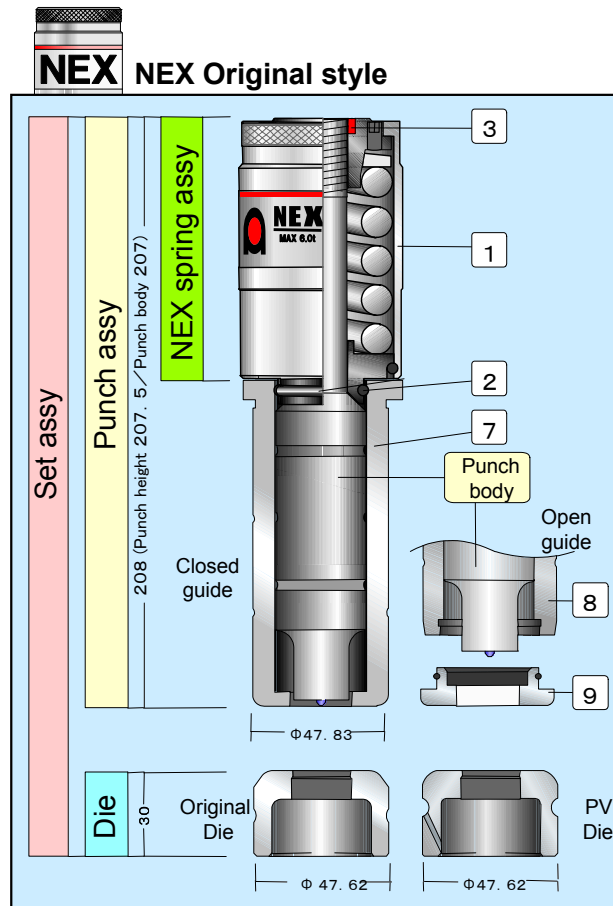
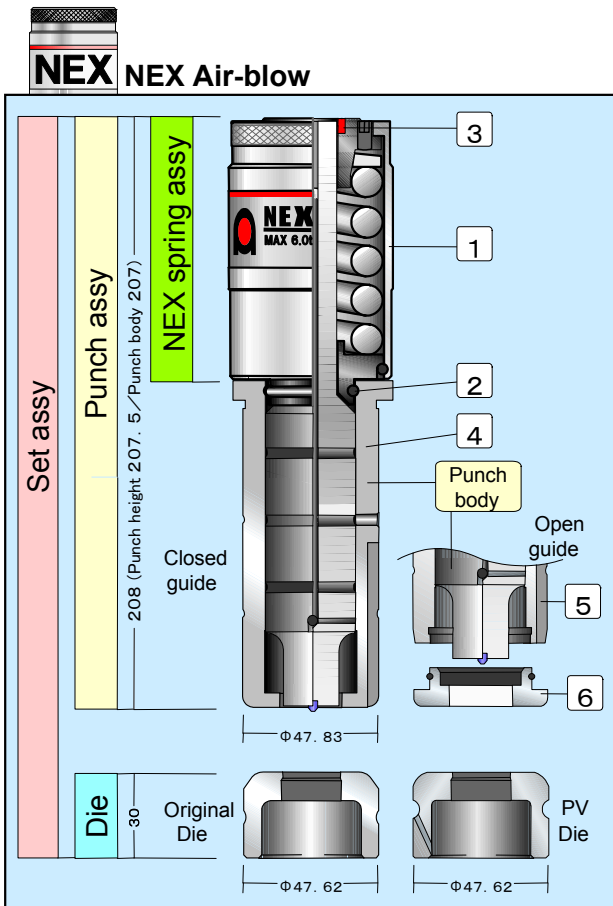
※Shear angle reduces the punch tonnage and noise.

A 1 1/4"

Size

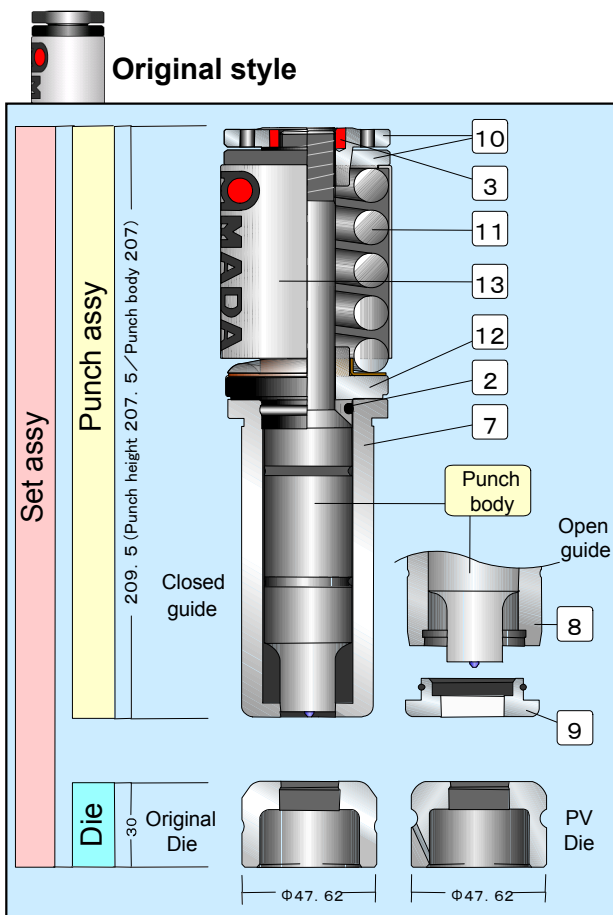
Round

Air-blow: $\Phi 12.71 \sim \Phi 30.0\text{mm}$
Original style: $\Phi 12.71 \sim \Phi 31.7\text{mm}$



※Closed guide is recommended for EM machine.
※Punch body has a slug ejector.

※Punch body has a slug ejector.



※Punch body has a slug ejector.

■ Tooling selection and code

(Code No.)

Description	Punch	Die		NEX Air-blow		NEX Original style		Original style	
	Punch material	Die grade	Die material	Closed guide	Open guide	Closed guide	Open guide	Closed guide	Open guide
Set assy	APH	PV	SKH	36HV40	36HZ40	36XV40	36XZ40		
		Original	SKH	36HY40	36HX40	36XY40	36XX40	36X040	36X640
			SKD	31HY40	31HX40	31XY40	31XX40	31X040	31X640
	SKH-F	PV	SKH	36GV40	36GZ40	366V40	366Z40		
		Original	SKH	36GY40	36GX40	366Y40	366X40	366040	366640
			SKD	31GY40	31GX40	316Y40	316X40	316040	316640
	SKH	PV	SKH	36FV40	36FZ40	362V40	362Z40		
		Original	SKH	36FY40	36FX40	362Y40	362X40	362040	362640
			SKD	31FY40	31FX40	312Y40	312X40	312040	312640
	SKD	Original	SKH			361Y40	361X40	361040	361640
SKD					311Y40	311X40	311040	311640	
Punch assy	APH			11HY40	11HX40	11XY40	11XX40	11X040	11X640
	SKH-F			11GY40	11GX40	116Y40	116X40	116040	116640
	SKH			11FY40	11FX40	112Y40	112X40	112040	112640
	SKD					111Y40	111X40	111040	111640
Punch body	APH			41H040	41H040	41X040	41X040	41X040	41X040
	SKH-F			41G040	41G040	416040	416040	416040	416040
	SKH			41F040	41F040	412040	412040	412040	412040
	SKD					411040	411040	411040	411040
Die		Original	SKH	261040	261040	261040	261040	261040	261040
			SKD	211040	211040	211040	211040	211040	211040
		PV	SKH	261V40	261V40	261V40	261V40		
		PKK die (Φ2.0mm or more)	SKH	261440	261440	261440	261440	261440	261440
SKD	211440		211440	211440	211440	211440	211440		

■ Component tooling list

Fig No.	Description	Code No.
1	NEX spring assy	981000
2	O-ring	910080
3	Urethane tube (10pcs.)	-
4	Closed guide (AB)	51F040
5	Opne guide (AB)	51F440
6	QM stripper plate (AB)	51F740
5 6	Open guide (AB) & QM stripper plate (AB)	81F640
7	Closed guide (Original style)	511040
8	Open guide (Original style)	511340
9	QM stripper plate (Original style)	511740
8 9	Open guide (Original) & QM stripper plate (Original)	811640
10	Double punch head	901430
11	Stripping spring	901310
12	Retainer collar	901210
13	Spring cover (5pcs.)	926240
14	QS pliers	911910

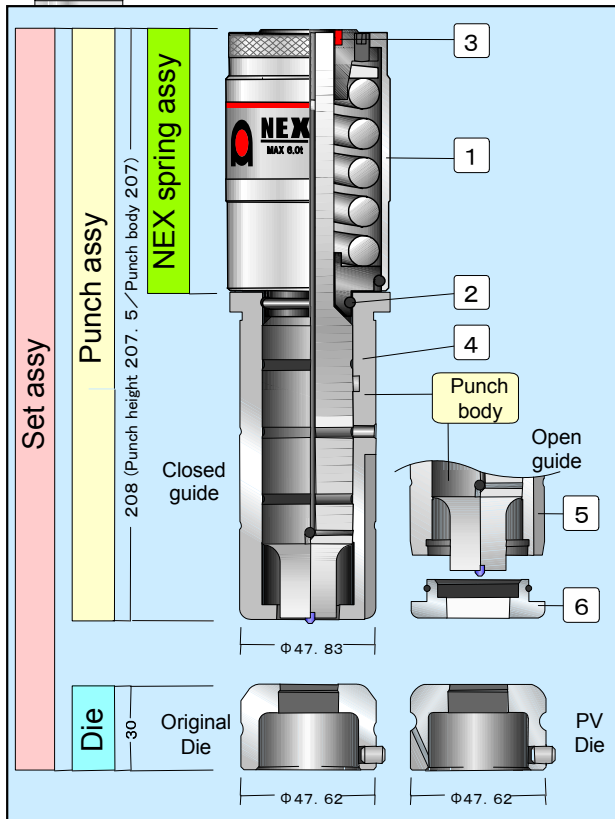
B 1 1/4"

Size

Shape

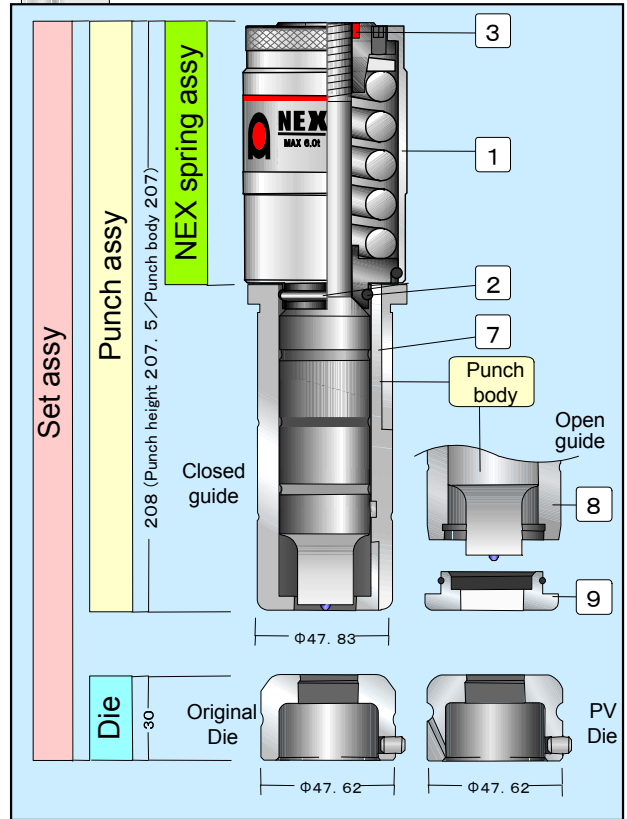
Air-blow: Inscribed $\Phi 30.0\text{mm}$ (Rectangle less $10\text{mm} \times 30\text{mm}$)
Original style: $\Phi 31.7\text{mm}$

NEX NEX Air-blow



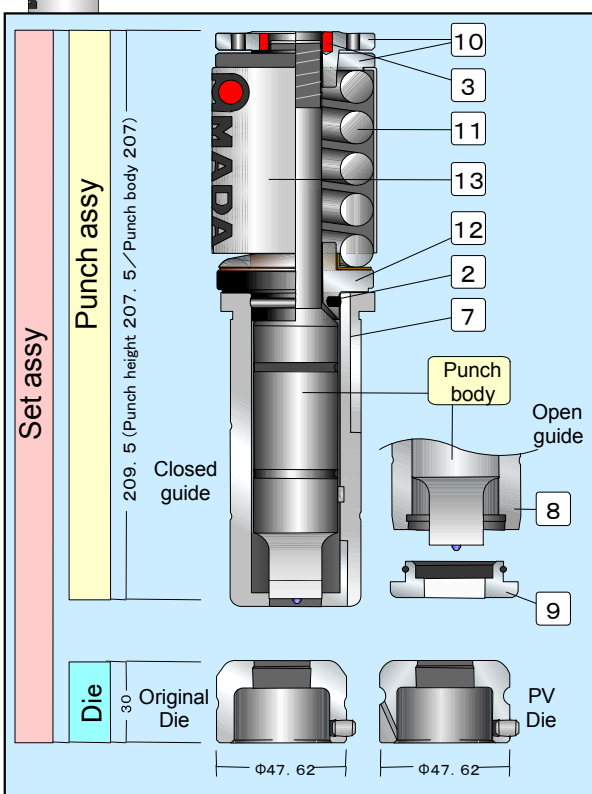
※Closed guide is recommended for EM machine.
※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a slug ejector.

NEX NEX Original style



※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a slug ejector.

Original style



※Punch bigger than $\Phi 6.0\text{mm}$ diameter has a slug ejector.



■ Tooling selection and code

(Code No.)

Description	Punch	Die		NEX Air-blow		NEX Original style		Original style	
	Punch material	Die grade	Die material	Closed guide	Open guide	Closed guide	Open guide	Closed guide	Open guide
Set assy	APH	PV	SKH	37HV40	37HZ40	37XV40	37XZ40		
		Original	SKH	37HY40	37HX40	37XY40	37XX40	37X040	37X640
			SKD	32HY40	32HX40	32XY40	32XX40	32X040	32X640
	SKH-F	PV	SKH	37GV40	37GZ40	376V40	376Z40		
		Original	SKH	37GY40	37GX40	376Y40	376X40	376040	376640
			SKD	32GY40	32GX40	326Y40	326X40	326040	326640
	SKH	PV	SKH	37FV40	37FZ40	372V40	372Z40		
		Original	SKH	37FY40	37FX40	372Y40	372X40	372040	372640
			SKD	32FY40	32FX40	322Y40	322X40	322040	322640
	SKD	Original	SKH			371Y40	371X40	371040	371640
SKD					321Y40	321X40	321040	321640	
Punch assy	APH			12HY40	12HX40	12XY40	12XX40	12X040	12X640
	SKH-F			12GY40	12GX40	126Y40	126X40	126040	126640
	SKH			12FY40	12FX40	122X40	122X40	122040	122640
	SKD					121Y40	121X40	121040	121640
Punch body	APH			42H040	42H040	42X040	42X040	42X040	42X040
	SKH-F			42G040	42G040	426040	426040	426040	426040
	SKH			42F040	42F040	422040	422040	422040	422040
	SKD					421040	421040	421040	421040
Die		Original	SKH	271040	271040	271040	271040	271040	271040
			SKD	221040	221040	221040	221040	221040	221040
		PV	SKH	271V40	271V40	271V40	271V40		
		PKK die (Φ2.0mm or more)	SKH	271440	271440	271440	271440	271440	271440
SKD	221440		221440	221440	221440	221440	221440		

■ Component parts list

Fig No.	Description	Code No.
1	NEX spring assy	981000
2	O-ring	910080
3	Urethane tube (10pcs.)	-
4	Closed guide (AB)	52F040
5	Open guide (AB)	52F440
6	QM stripper plate (AB)	52F840
5 6	Open guide (AB) & QM Stripper plate (AB)	82F640
7	Closed guide (Original style)	521040
8	Open guide (Original style)	521340
9	QM stripper plate (Original style)	521640
8 9	Open guide (Original) & QM stripper plate (Original)	821640
10	Double punch head	901430
11	Stripping spring	901310
12	Retainer collar	901210
13	Spring collar (5pcs.)	926240
14	QS pliers	911910

■ Option

Additional work plus narrow type need additional charge.

	Item	Set assy	Punch assy	Punch body	Stripper & Guide	Die
Additional	4 corner radii					
	Additional key angle					
	Shear angle (2°)					
	Narrow (less than 2mm)					

※Shear angle reduces the punch tonnage and noise.

C 2" D 3½" E 4½" Large station Alpha guide series

Realize the time reduction for tooling maintenance!
 The tooling cost of large-size punches is sharply reduced.
 The punch tip can be more easily changed and adjusted.
 Air-blow effect is substantially improved.

— Tooling recommended for EM machines series —

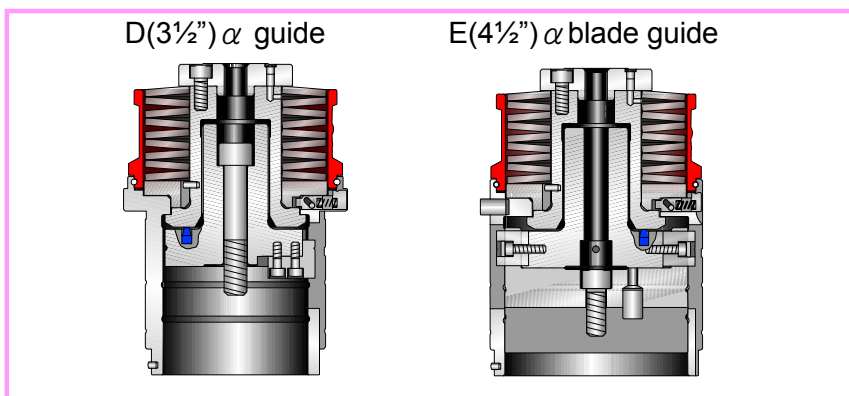
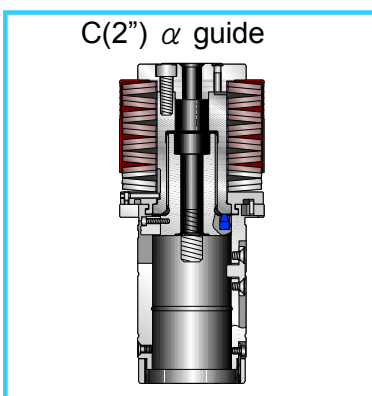


α (Alpha) guides α (Alpha) blade guides

For long tooling D (3½"), and E (4½")

α (Alpha) guides

For long tooling C (2")



► Tooling cost reduction

α guide and α blade guide*1 have a dual structure, the punch driver can slide internally and make easy height adjustment without shim. Therefore maximum tool grinding value become 2.5 times longer to maximum 5mm (recommended value is 2mm) *2.
 (Thickness 3.3 to 6.0mm remains 2.0mm)

Combination use of α blade guide and α blade punch reduce the tooling cost for rectangle and obround shape punch body.

*1. α blade guide accepts rectangle and obround shape only.
 *2. Refer the table for regrinding value. (Punch for A size 5mm.)

Size	Guide type	Thickness	Max regrinding	After regrinding punch length
D(3½")	Original style · α solid stripper	less than 3.2mm	5mm	79.0mm
		3.3~6.0mm	2mm	82.0mm
E(4½")	Original style · α solid stripper	less than 3.2mm	5mm	80.0mm
		3.3~6.0mm	2mm	83.0mm
	Original style · α sheet saver stripper	less than 3.2mm	5mm	80.0mm

► One touch punch height adjustment

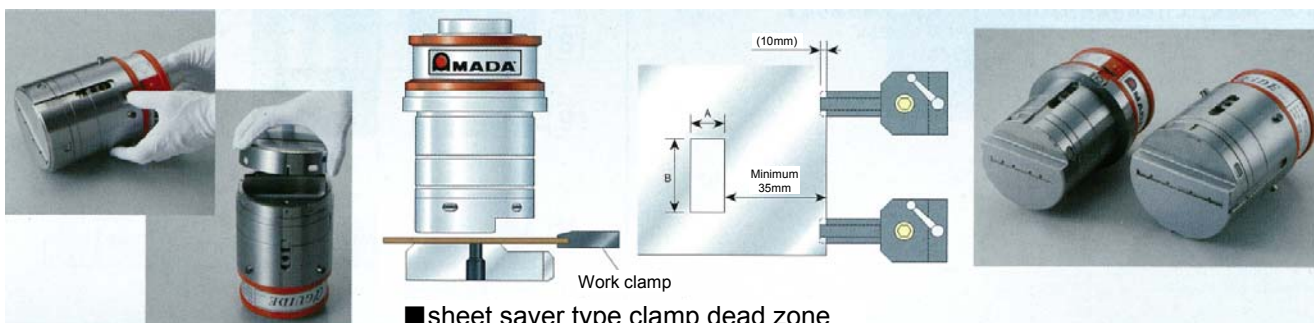
Easy adjustment by pushing the adjustment button and rotating the punch head. No additional hand tools are required.

► Easy stripper plate replacement

Stripper plates can be easily removed without the need for hand tools.

α guide can be altered to sheet saver by stripper change.

Note) Torques wrench is needed for the removal of Z style stripper from α guide adapter.

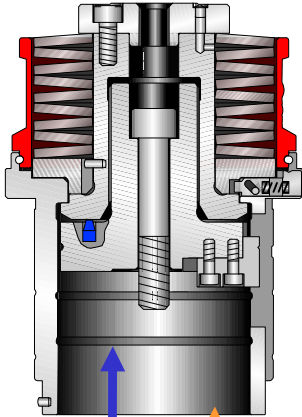


■ sheet saver type clamp dead zone

α guide combination

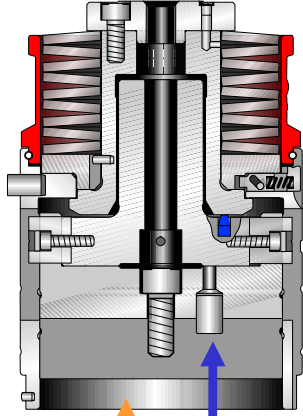
α guide

Punch body and punch tip can be loaded.



α blade guide

Specified guide for α blade punch.



Air-blow punch

M14 bolt

Punch holder

Punch body

Punch tip

Original style punch

M12 bolt + collar

Punch holder

Punch body

Punch tip

α blade punch

Punch type	α blade punch			
Tool size	D(3½")		E(4½")	
A size	1.5~18mm			
B size (Max)	85mm		110mm	
Max diagonal	Air-blow	Original style	Air-blow	Original style
	Φ85.6mm	Φ88.9mm	Φ110.5mm	Φ114.0mm

※Max dimension is A size B size diagonal.
 ※ α blade punch is deferent from the tip type punch for large size.
 α blade punch is only loaded on α blade guide.
 ※Jig is required for punch tip regrinding on TOGU III.

α guide adapter

Z style air-blow stripper

Original style stripper

Current stripper plate can be used.

α sheet saver stripper
(Air-blow or Original style)

※This is for specified α guide only.

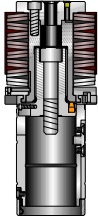
Material utilization ratio increases

α solid stripper
(Air-blow or Original style)

Easy replacement of stripper.
Can be used for cluster punch.

NO.1

α guide



NO.2

Air-blow guide



NO.3

Original style guide



■ List of C(2") guide assy

Guide type	Description	No.	Code
Alpha guide	Alpha guide assy	1	90743E
Air-blow guide	Air-blow guide assy	2	900190
Original style guide	Original style guide assy	3	900120

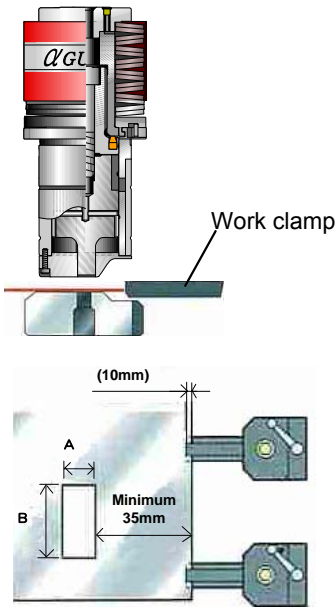
■ Large station guide list : α guide · α blade guide · Air-blow & Original style guide

α guide	No. 1	No. 2
α blade guide	No. 3	No. 4
Air-blow guide, Original style guide	No. 5	No. 6

■ Large station guide list : D(3 1/2")

Guide type	Description	No.	Code
Alpha guide	Alpha guide assy without adapter	1	90713E
	Alpha guide assy with adapter	2	90719E
	Alpha guide adapter		907170
Alpha blade guide	Alpha blade guide assy without adapter	3	90715E
	Alpha blade guide assy with adapter	4	90721E
Air-blow guide	Air-blow guide assy	5	900190
Original style guide	Original style guide assy	6	900130

C 2" D 3½" E 4½" Size Sheet saver guide, stripper & die



Large Station Size Sheet Saver Guide, Stripper plate & Die

Tool size	Description	Code
C(2")	Alpha sheet saver guide assy	90744E
	Original style sheet saver stripper plate	-
	Air-blow sheet saver stripper plate	-
	Sheet saver die	-
D(3½")	Alpha blade guide assy	90713E
	Original style sheet saver stripper plate	520180
	Air-blow sheet saver stripper plate	52F180
	Sheet saver die	220080
E(4½")	Alpha blade guide assy	90714E
	Original style sheet saver stripper plate	520190
	Air-blow sheet saver stripper plate	52F190
	Sheet saver die	220090

Thick Turret E 4½" Size Large station guides

Large station guide list : α guide · α blade guide · Air-blow & Original style guide

α guide	No. 1	No. 2
α blade guide	No. 3	No. 4
Air-blow guide, Original style guide	No. 5	No. 6

Large station guide list : E(4½")

Guide type	Description	No.	Code
Alpha guide	Alpha guide assy without adapter	1	90714E
	Alpha guide assy with adapter	2	90720E
	Alpha guide adapter		907180
Alpha blade guide	Alpha blade guide assy without adapter	3	90716E
	Alpha blade guide assy with adapter	4	90722E
Air-blow guide	Air-blow guide assy	5	900200
Original style guide	Original style guide assy	6	900140

Thick Turret C 2" Size Punch-Die

Shape	Round	
	Air-blow	Original style
Tool type		
Max size	Φ30.01~Φ47mm	Φ31.71~ Φ 50.8mm
Structure		

Tooling selection and code

(Code No.)

Description	Punch	Die		Round		Shape	
	Punch material	Die grade	Die material	Air-blow	Original	Air-blow	Original
Set assy	APH	Original	SKD	31HZ60	31X060	32HZ60	32X060
	SKH-F	Original	SKD	31GZ60	316060	32GZ60	326060
	SKH	Original	SKD	31FZ60	312060	32FZ60	322060
	SKD	Original	SKD		311060		321060
Punch assy	APH			11HZ60	11X060	12HZ60	12X060
	SKH-F			11GZ60	116060	12GZ60	126060
	SKH			11FZ60	112060	12FZ60	122060
	SKD				111060		121060
Punch body	APH			41H060	41X060	42H060	42X060
	SKH-F			41G060	416060	42G060	426060
	SKH			41F060	412060	42F060	422060
	SKD				411060		421060
Stripper plate	Z style air-blow stripper plate			51FZ60	511060	52FZ60	521060
	Sheet saver					-	-
Die		Original	SKH	215060	215060	225060	225060
			SKD	211060	211060	221060	221060
		PKK die Round Φ2.0mm or more Shape 2.0mm width or more	SKH	215460	215460	225460	225460
			SKD	211460	211460	221460	221460
	Sheet saver die	SKH			-	-	



Shape	
Air-blow	Original style
Inscribed 47mm diagonal Rectangle less 10mm × less 50mm	Inscribed 50.8mm
Sheet saver stripper plate	Sheet saver die

■ Option Additional work plus narrow type need additional charge.

	Item	Set assy	Punch assy	Punch body	Die
Additional	4 corner radii				
	Additional key angle				
	Shear angle (2°)				
Narrow (less than 3mm)					

※1. Punch regrinding value is expanded to max 5mm by using α guide.

※2. Slug ejector can be installed for the punch body bigger than $\Phi 6.0\text{mm}$ or A size 6.0mm as standard.

※3. Shear angle works for tonnage reduction and nose reduction.

Thick Turret

D 3 1/2" Size

Large station Punch · Die

■ Solid type punch

Type	Round		Shape	
Tool type	Air-blow	Original style	Air-blow	Original style
Max size	Φ47.01~Φ85.6mm	Φ50.81~88.9mm	Inscribed 85.6mm	Inscribed 88.9mm
Structure				
α guide stripper type	Air-blow round solid stripper 		α guide adapter <small>(Z style stripper separate be available)</small> 	α sheet saver stripper Sheet saver die

■ Tooling selection and code

(Code No.)

Description	Punch	Die		Round		Shape	
	Punch material	Die grade	Die material	Air-blow	Original	Air-blow	Original
Set assy	SKH-F	Original	SKD	31GZ80	316080	32GZ80	326080
	SKH	Original	SKD	31FZ80	312080	32FZ80	322080
	SKD	Original	SKD		311080		321080
Punch assy	SKH-F			11GZ80	116080	12GZ80	126080
	SKH			11FZ80	112080	12FZ80	122080
	SKD				111080		121080
Punch body	SKH-F			41G080	416080	42G080	426080
	SKH			41F080	412080	42F080	422080
	SKD				411080		421080
Stripper plate	Z style air-blow stripper plate			51FZ80	511080	52FZ80	521080
	α guide adapter <small>(Z style air-blow stripper plate is not included)</small>			907170	907170	907170	907170
	α guide solid stripper			51F480	511480	52F480	521480
	α guide sheet saver stripper					52F280	520280
Die		Original	SKH	215080	215080	225080	225080
			SKD	211080	211080	221080	221080
		PKK die <small>Round Φ2.0mm or more Shape 2.0mm width or more</small>	SKH	215480	215480	225480	225480
			SKD	211480	211480	221480	221480
		Sheet saver die	SKH			220080	220080

■ Option

Additional work plus narrow type need additional charge.

Item	Set assy	Punch assy	Punch body	Die
Additional 4 corner radii				
Additional key angle				
Shear angle (2°)				
Narrow (less than 3mm)				

※Shear angle reduces the punch tonnage and noise.

■ Tip type punch & α blade punch

Type	Rectangle Shape only		
Tool type	Air-blow	Original style	Air-blow · Original (for α blade guide)
Max size	Rectangle less 10mm X less 85mm		Rectangle less 10 X less 85
Structure			
α guide stripper type			

■ Tooling selection and code

(Code No.)

Description	Punch	Die		Tip type (Round)		α blade punch (Shape)	
	Punch material	Die grade	Die material	Air-blow	Original	Air-blow	Original
Set Assy	APH	Original	SKD	32HY80			
	SKH	Original	SKD	32FY80			
Punch Assy	APH			12HY80	12X280		
	SKH			12FY80	122280		
	SKD				121280		
Punch body Assy	APH			72H280	72X280		
	SKH			72F280	722280		
	SKD				721280		
Punch holder				72F380	721380		
Punch tip α blade punch	APH			42X280	42X280	42X480	42X480
	SKH			422280	422280	422480	422480
	SKD				421280		
Stripper plate	Z style air-blow stripper plate			52FZ80	521080	52FZ80	521080
	α guide adapter (Z style air-blow stripper plate is not included)			907170	907170	907170	907170
	α guide solid stripper			52F480	521480	52F480	521480
	α guide sheet saver stripper			52F280	520280	52F280	520280
Die	Original		SKH	225080	225080	225080	225080
			SKD	221080	221080	221080	221080
	PKK die Shape 2.0mm width or more		SKH	225480	225480	225480	225480
			SKD	221480	221480	221480	221480
	Sheet saver die		SKH	220080	220080	220080	220080

Thick Turret E 4 1/2" Size Large station Punch · Die

■ Solid type punch

Type	Round		Shape	
Tool type	Air-blow	Original style	Air-blow	Original style
Max size	Φ85.61~Φ110.5mm	Φ88.91~114.0mm	Inscribed 110.5mm	Inscribed 114.0mm
Structure				
α guide stripper type	Air-blow round solid stripper α guide adapter		α sheet saver stripper α air-blow shape solid stripper α guide adapter Sheet saver die	

■ Tooling selection and code

(Code No.)

Description	Punch	Die		Round		Shape	
	Punch material	Die grade	Die material	Air-blow	Original	Air-blow	Original
Set assy	SKH-F	Original	SKD	31GZ90	316090	32GZ90	326090
	SKH	Original	SKD	31FZ90	312090	32FZ90	322090
	SKD	Original	SKD		311090		321090
Punch assy	SKH-F			11GZ90	116090	12GZ90	126090
	SKH			11FZ90	112090	12FZ90	122090
	SKD				111090		121090
Punch body	SKH-F			41G090	416090	42G090	426090
	SKH			41F090	412090	42F090	422090
	SKD				411090		421090
Stripper plate	Z style air-blow stripper plate			51FZ90	511090	52FZ90	521090
	α guide adapter (Z style air-blow stripper plate is not included)			907180	907180	907180	907180
	α guide solid stripper			51F490	511490	52F490	521490
	α guide sheet saver stripper					52F290	520290
Die	Original	SKH	215090	215090	225090	225090	
		SKD	211090	211090	221090	221090	
		PKK die Round Φ2.0mm or more Shape 2.0mm width or more	SKH	215490	215490	225490	225490
			SKD	211490	211490	221490	221490
	Sheet saver die	SKH			220090	220090	

■ Option Additional work plus narrow type need additional charge.

Item	Set assy	Punch assy	Punch body	Die
Additional 4 corner radii				
Additional key angle				
Narrow (less than 3mm)				

※Shear angle reduces the punch tonnage and noise.

■ Tip type punch & α blade punch

Type	Rectangle Shape only		
Tool type	Air-blow	Original	Air-blow · Original (for α blade guide)
Max size	Rectangle less 10mm X less 110mm		Rectangle less 10 X less 110
Structure			
α guide stripper type			

■ Tooling selection and code

(Code No.)

Description	Punch	Die		Tip type (Shape)		α blade punch (Shape)	
	Punch material	Die grade	Die material	Air-blow	Original	Air-blow	Original
Set assy	APH	Original	SKD	32HY90			
	SKH	Original	SKD	32FY90			
Punch assy	APH			12HY90	12X290		
	SKH			12FY90	122290		
	SKD				121290		
Punch body assy	APH			72H290	72X290		
	SKH			72F290	722290		
	SKD				721290		
Punch holder				72F390	721390		
Punch tip α blade punch	APH			42X290	42X290	42X490	42X490
	SKH			422290	422290	422490	422490
	SKD				421290		
Stripper plate	Z style air-blow stripper plate			52FZ90	521090	52FZ90	521090
	α guide adapter (Z style air-blow stripper plate is not included)			907180	907180	907180	907180
	α guide solid stripper			52F490	521490	52F490	521490
	α guide sheet saver stripper			52F290	520290	52F290	520290
Die		Original	SKH	225090	225090	225090	225090
			SKD	221090	221090	221090	221090
		PKK die Shape 2.0mm width or more	SKH	225490	225490	225490	225490
			SKD	221490	221490	221490	221490
	Sheet saver die	SKH	220090	220090	220090	220090	

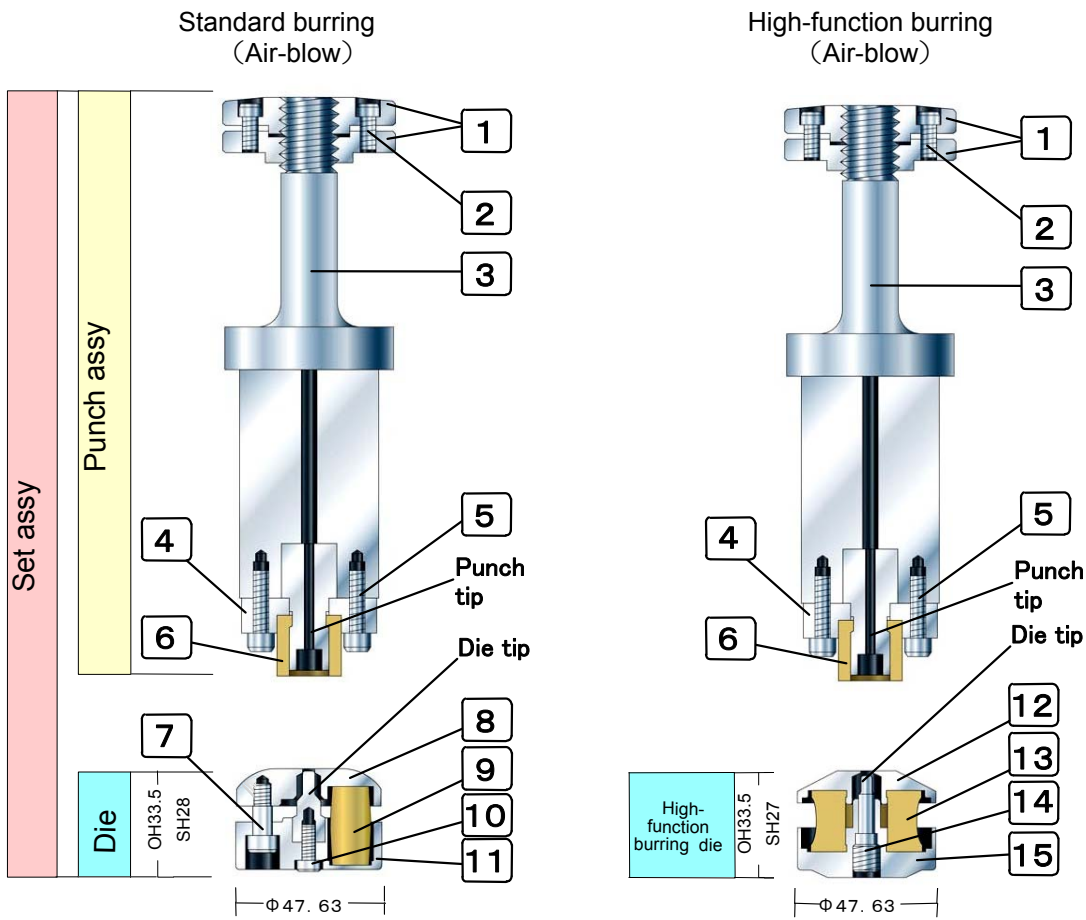
- ※1. α guide adapter is specified for Z style stripper plate.
- ※2. α air-blow shape round solid stripper is for α guide stripper.
- ※3. α air-blow sheet saver stripper is for sheet saver die stripper.

B 1 1/4" Size

Size

Upform burring

Two operation type
M2.6~M6: for forming taps & cutting taps



Pre-pierced hole diameters for Tap burring tooling (Reference)

Unit:mm

Tap type	Material		M2.5	M2.6	M3	M4	M5	M6	M8	
Forming tap	Mild steel Aluminum	Burring tip diameter	Φ2.28	Φ2.37	Φ2.75	Φ3.65	Φ4.6	Φ5.50	Φ6.70	
		t	(Multi tap:Φ2.30)	(Multi tap:Φ2.40)				(Multi tap:Φ5.55)	(Multi tap:Φ7.40)	
		Pre-pierced hole diameter	0.8	Φ1.3	Φ1.3	Φ1.3	Φ2.0			
			1.0	Φ1.3	Φ1.3	Φ1.3	Φ2.0	Φ2.4		
			1.2			Φ1.6	Φ2.0	Φ2.4	Φ3.2	
	1.5					Φ2.4	Φ3.0			
	Stainless steel 304 430	Burring tip diameter			Φ2.75	Φ3.65	Φ4.6			
		t								
		Pre-pierced hole diameter	0.8			(Φ1.5)	Φ2.5			
			1.0				Φ2.5	Φ3.0		
1.2					(Φ1.8)	Φ2.5	Φ3.0			
1.6					Φ2.4	Φ3.0				
Cutting tap	Mild steel Aluminum	Burring tip diameter	Φ2.10	Φ2.21	Φ2.57	Φ3.40	Φ4.30	Φ5.10	Φ6.70	
		t		(Multi tap:Φ2.20)					(Multi tap:Φ6.90)	
		Pre-pierced hole diameter	0.8		Φ1.3	Φ1.3	Φ2.0			
			1.0		Φ1.3	Φ1.3	Φ2.0	Φ2.3		
			1.2		Φ1.3	Φ1.6	Φ2.0	Φ2.3	Φ3.0	
			1.5		Φ1.6	Φ1.6	Φ2.3	Φ2.8	Φ3.0	
			1.6		Φ1.6	Φ1.6	Φ2.3	Φ2.8	Φ3.0	
			2.0				Φ2.3	Φ2.8	Φ3.8	
	2.3(excluding AL)					Φ2.5	Φ3.0	Φ3.8		
	Stainless steel 304 430	0.6		Φ1.3	Φ1.3					
		0.8		(Φ1.3)	(Φ1.3)	Φ2.0				
		1.0		(Φ1.3)	(Φ1.6)	Φ2.0	Φ2.3	Φ3.0		
		1.2			(Φ1.8)	(Φ2.0)	(Φ2.3)	Φ3.0		
1.6										

- Amada's standard burring tools for pre pierced holes meet Amada's specifications.
- The ΦA value (burring inner diameter) in the tables above are Amada's standard dimensions. Tools for other dimensions are ordered as special.
- The pre-pierced hole diameter is the reference diameter of the hole to be pre-pierced in the first of the two burring operations. The forming height=H varies with this pre-pierced hole diameter.
- This table is applicable to Multi tap on the turret punch press (cutting and forming tap).

■ Tooling selection and code

(Code No.)

Tooling code	Specification		Air-blow			Original style		
	Type		Standard	High-function		Standard	High-function	
	Material		Mild steel		Stainless steel	Mild steel		Stainless steel
	Set assy		-	-	-	301000	305000	305100
	Punch assy		-	-	-	101000	101000	105100
	Punch tip		902020	902020	905020	902020	902020	905020
Die assy		201000	205000	205100	201000	205000	205100	
Die tip		902220	405000	405100	902220	405000	405100	

Item	Component	No.	Description						
	Punch assy	1	Double punch head	-	-	-	901010	901010	901010
		2	Cap screw (4-M5 X 14)	997710	997710	997710	997710	997710	997710
		3	Punch body	-	-	-	902000	902000	902000
		4	Punch plate	902030	902030	902030	902030	902030	902030
		5	Cap screw (4-M6 X 20)	998900	998900	998900	998900	998900	998900
		6	Urethane spring (Φ20 X 22L)	902040	902040	902040	902040	902040	902040
	Die assy	7	Stripper bolt (3pcs.)	902070			902070		
		8	Ejector plate	902060			902060		
		9	Urethane spring (3pcs.)	998500			998500		
		10	Cap screw (M5 X 12)	901970			901970		
		11	Die block	902210			902210		
	High-function burring die	12	Ejector plate		995090	905090		905090	905090
		13	Urethane spring		905080	905080		905080	905080
		14	Set screw (M10 X 10)		905110	905110		905110	905110
15		Die block		905100	905100		905100	905100	

■ Specification

Type	Standard burring	High-function burring	
		Mild steel and Aluminum	Stainless steel
Specification	Standard・Air-blow		
Material	Mild steel and Aluminum	Mild steel and Aluminum	Stainless steel
Max thickness	2.3t	2.3t	1.2t
Tap size	M2.6~M6		

※Specified tool is applied to PDC series.

※Ensure pre pierce hole is sharp before use.

※Use each tool only for its intended material type and thickness.

※High-function burring die has increased stripping force compared with conventional burring tools.

※Chrome plating reduces marking on the backside of the material when traversing. (Option)

※Punch tip is common for Standard and Air-blow.

■ Burring minimum pitch

Unit:mm

Up or Down form	Minimum pitch	Calculation
Upform Burring		$P = 10 + 1.2 \frac{\Phi A + t}{2}$

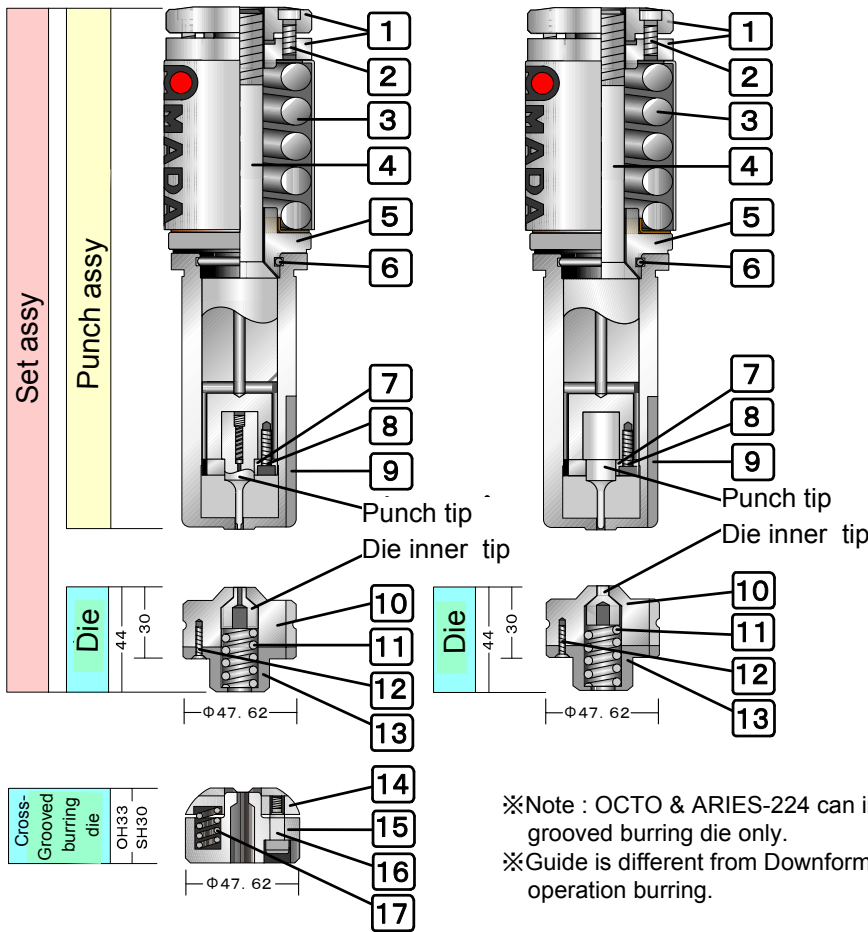
■ Burring pre-pierced hole diameter and tip diameter calculation (Material : Mild steel, Aluminum)

Operation	Upform two-operation Burring tool	Calculation
First operation		Pre-pierced hole diameter = (0.56~0.59) ΦA
Second operation		ΦC = ΦA + 1.3 t

Upform burring tool : two-process type only.

One-operation burring
(Air-blow)

Two-operation burring
(Air-blow)



※Note : OCTO & ARIES-224 can install cross-grooved burring die only.
 ※Guide is different from Downform one-operation burring.

Pre-pierced hole diameters for Tap burring tool (Reference)

Unit:mm

Tap type	Material		M2.5	M2.6	M3	M4	M5	M6	M8	
Forming tap	Mild steel Aluminum	Burring tip diameter ΦA	Φ2.28 (Multi tap:Φ2.30)	Φ2.37 (Multi tap:Φ2.40)	Φ2.75	Φ3.65	Φ4.6	Φ5.50 (Multi tap:5.55)	Multi tap: Φ7.40	
		Material thickness	Pre-pierced hole diameter	0.8	Φ1.3	Φ1.3	Φ1.3	Φ2.0		
				1.0	Φ1.3	Φ1.3	Φ1.3	Φ2.0		
				1.2			Φ1.6	Φ2.0	Φ2.4	
				1.5				Φ2.4	Φ3.0	Φ3.2
				1.6				Φ2.4	Φ3.0	
	Stainless steel 304 Stainless steel 430	Burring tip diameter ΦA				Φ2.75	Φ3.65	Φ4.60		
		Material thickness	Pre-pierced hole diameter	0.8			(Φ1.5)	Φ2.5		
				1.0			(Φ1.8)	Φ2.5	Φ3.0	
				1.2				Φ2.5	Φ3.0	
Cutting tap	Mild steel Aluminum	Burring tip diameter ΦA	Φ2.10	Φ2.21 (Multi tap:Φ2.20)	Φ2.57	Φ3.40	Φ4.30	Φ5.10	Φ6.70 (Multi tap:Φ6.90)	
		Material thickness	Pre-pierced hole diameter	0.8		Φ1.3	Φ1.3	Φ2.0		
				1.0		Φ1.3	Φ1.3	Φ2.0	Φ2.3	
				1.2		Φ1.3	Φ1.6	Φ2.0	Φ2.3	Φ3.0
				1.5		Φ1.6	Φ1.6	Φ2.3	Φ2.8	Φ3.0
				1.6		Φ1.6	Φ1.6	Φ2.3	Φ2.8	Φ3.0
				2.0				Φ2.3	Φ2.8	Φ3.8
				2.3(Excluding AL)				Φ2.5	Φ3.0	Φ3.8
	Stainless steel 304 Stainless steel 430	Pre-pierced hole diameter	0.6		Φ1.3	Φ1.3				
			0.8		(Φ1.3)	(Φ1.3)	Φ2.0			
			1.0		(Φ1.3)	(Φ1.6)	Φ2.0	Φ2.3	Φ3.0	
			1.2			(Φ1.8)	(Φ2.0)	(Φ2.3)	Φ3.0	

- Amada's standard burring tools for pre pierced holes meet Amada's specifications.
- The ΦA value (burring inner diameter) in the tables above are Amada's standard dimensions. Tools for other dimensions are ordered as special.
- The pre-pierced hole diameter is the reference diameter of the hole to be pre-pierced in the first of the two burring operations. The forming height=H changes with this pre-pierced hole diameter.
- This table is applicable to Multi tap on the turret punch press (cutting and forming tap).

Tooling selection and code

(Code No.)

Tooling code	Specification		Air-blow			Original style		
	Type		1-ope.burring	2-operation burring		1-ope.burring	2-operation burring	
	Material		Mild steel		Stainless steel	Mild steel		
	Set assy		-	-	-	301100	-	-
	Punch assy		-	-	-	101100	-	-
	Punch tip		902120	-	-	902120	-	-
	Die assy		201200	-	-	201200	-	-
Die inner tip		903010	-	-	903010	-	-	

Item	Component	No.	Description						
	Punch assy	1	Double punch head	-	-	-	901010	901010	901010
		2	Cap screw (4-M5 X 12)	997710	997710	997710	997710	997710	997710
		3	Stripping spring	901410	901410	901410	901410	901410	901410
		4	Punch body	-	-	-	902010	902010	902010
		5	Retainer collar	901210	901210	901210	901210	901210	901210
		6	O-ring (Closed guide, Open guide)	910080	910080	910080	910080	910080	910080
		7	Punch plate	-	-	-	901960	901960	901960
		8	Cap screw (3-M4 X 12)	901940	901940	901940	901940	901940	901940
		9	Burring guide	-	-	-	501100	-	-
	Die assy	10	Die block	901920	-	-	901920	-	-
		11	Spring (Φ2 X Φ15 X 31L)	902910	902910	-	902910	902910	-
		12	Flush screw (3-M3 X 10)	901990	901990	901990	901990	901990	901990
13		Die plate	901980	901980	901980	901980	901980	901980	

Specifications

Type	One-operation burring	Two-operation burring	
	Mild steel·Aluminum		Stainless steel
Specification	Standard·Air-blow		
Material	Mild steel·Aluminum	Mild steel·Aluminum	Stainless steel
Max thickness	2.3t	2.3t	1.2t
Tap size	M2.6~M6		

- ※Specified tool is applied to PDC series.
- ※Two-operation type performs higher precision burring.
- ※ Use each tool only for its intended material type and thickness.
- ※The ejector pin of the punch tip is attached to M3 and larger burring tools.
- ※Ensure pre pierce hole is sharp before use
- ※Chrome plating reduces marking on the backside of the material when traversing. (Option)
- ※Punch tip is common for Standard and Air-blow.

Burring size

Up or Down form	Minimum pitch	Burring size
Downform burring		$P = 11.75 + 1.2 \frac{\Phi A + t}{2}$

Burring pre-pierced hole diameter and tip diameter calculation (Material : Mild steel, Aluminum)

	Downform one-operation burring tool	Downform two-operation burring tool	
		Calculation	Calculation
First operation		$\Phi C = \Phi A + 1.3t$	 Pre-pierced hole diameter $= (0.56 \sim 0.59) \Phi A$
Second operation			$\Phi C = \Phi A + 1.3t$

※Standard downform burring tool is one-operation type. But if two-process type for downform burring is used, burring finish shape becomes much better.

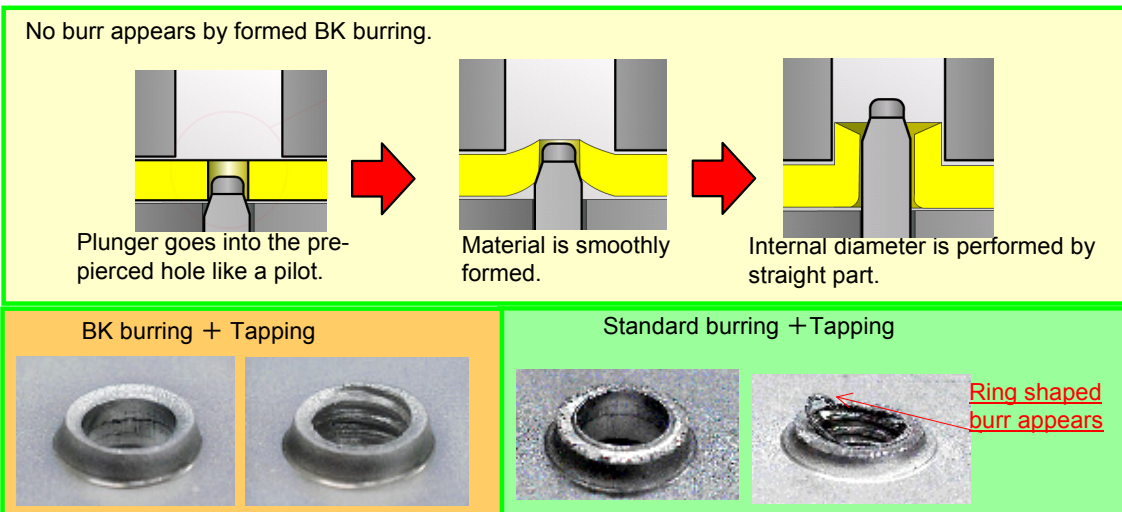
Component parts list for Cross-grooved burring die

No.	Description	Code No.
	Cross-grooved burring set assy	301400
	Cross-grooved burring set assy	101400
	Punch tip	902120
	Cross-grooved burring die assy	201300
9	Cross-grooved burring guide	501400
14	Ejector plate	902920
15	Die body	902940
16	Stripper bolt (3pcs.)	902930
17	Spring	902950

- ※Note : OCTO & ARIES-224 can install cross-grooved burring die only.
- ※Guide is different from Downform one-operation burring.

B 1 1/4" Size BK burring tool

Burring tool without tapped swarf (Ring shaped burr)



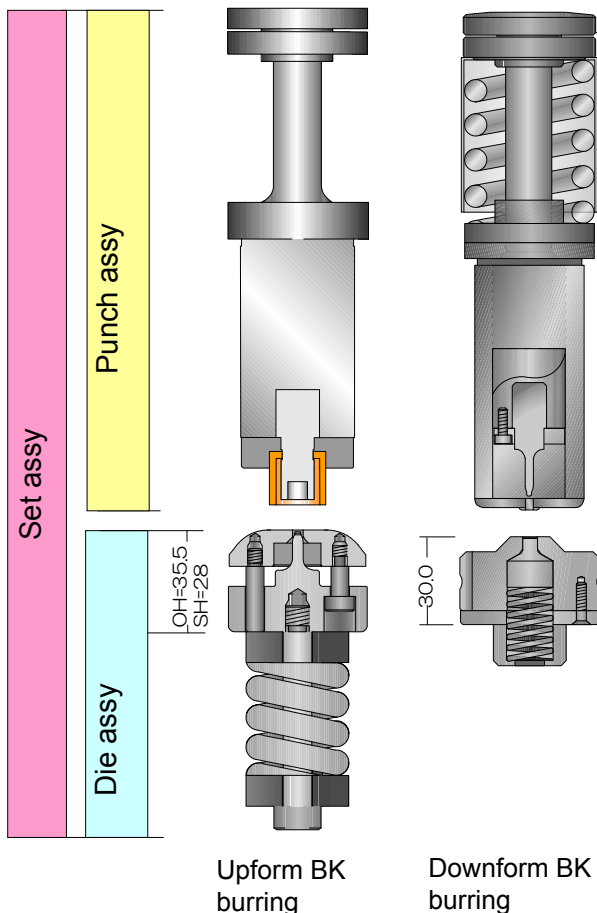
■ Specification

	Upform BK burring	Downform BK burring
Operation	Two-operation	
Material	Mild steel and Aluminum (Stainless steel need consultant)	
Thickness	0.8t~1.6t	0.8t~2.3t

■ BK burring pre-pierced hole inner diameter (Mild steel · Aluminum) Unit:mm

Tap type	Tap size	M2.6	M3	M4	M5	M6
Forming tap	Br inner diameter	Φ2.37	Φ2.75	Φ3.65	Φ4.60	Φ5.50
	Pre-pierced hole diameter	Φ1.3	Φ1.6	Φ2.0	Φ2.5	Φ3.0
Cutting type	Br inner diameter	Φ2.21	Φ2.57	Φ3.40	Φ4.30	Φ5.10
	Pre-pierced hole diameter	Φ1.3	Φ1.6	Φ2.0	Φ2.5	Φ3.0

- ※1. Upform die height of BK burring has 2mm higher than Standard burring die because of larger shoulder radius, so pay attention for backside marking or deformation of the material.
- ※2. BK burring has only two-operation type. Pre-pierced hole diameter is specified by AMADA.
- ※3. Burring height cannot be altered because of fixed pre-pierced hole diameter.
- ※4. Upper table shows pre-pierced hole diameter for two-operation BK burring. (fixed size for all material thickness.)
- ※5. M6 tapping tool is for Φ5.55.



■ Tooling selection and code

Type	Description	Code No.
Upform	Set Assy	-
	Punch Assy	-
	Die Assy	-
Downform	Set Assy	-
	Punch Assy	-
	Die Assy	-

■ Request for Air-blow

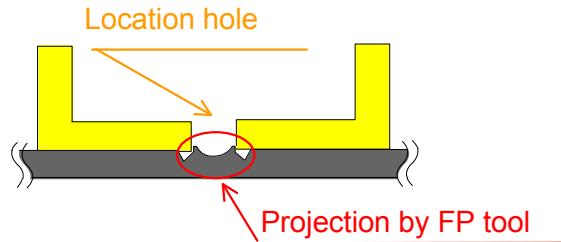
When Air-blow is needed, add on extra charge as below.

Type	Description	Code No.
Upform	Set Assy	-
	Punch Assy	-
	Die Assy	-
Downform	Set Assy	-
	Punch Assy	-
	Die Assy	-

B 1 1/4" Size FP (Flat Positioning) tool

Time saving for locating parts !

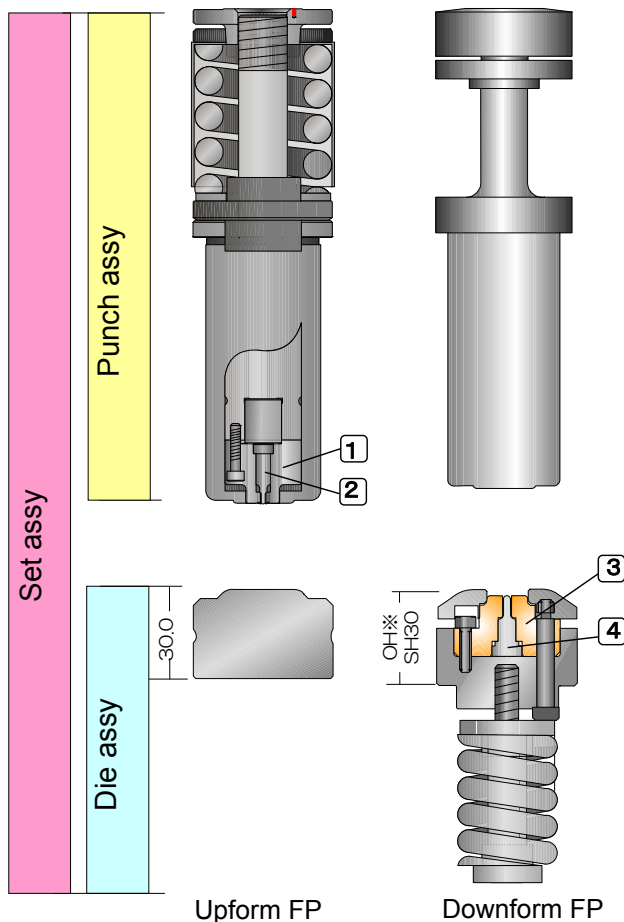
Conventional parts location method by half shear punch needed additional surface finish for concaved surface repair. This FP tool avoids surface finish process because no concaved mark appears.



Specifications

	Upform FP tool	Downform FP tool
Tool type	Long (PDC, P&F) • Short	
Tool size	B(1 1/4")	
Process	Upform (appears on the face)	Downform (appears on the backside)
Projection size ^(※1)	Φ1.9~Φ4.0 (Specified projection size)	
Projection height	0.2~0.4 (varies by machine, material thickness and material type)	
Thickness ^(※2)	0.8t (1.0t common), 1.0t (1.2t common), 1.6t (specified), 2.0t (2.3t common)	
Material	Mild steel (not applicable for more than 441kN / mm ² tensile strength)	
Minimum pitch	15mm	17mm

- ※1. Projection size is determined by specified size, if different size is required, die tip or punch tip must be replaced. (additional parts are needed to replace.)
- ※2. Common type has different projection height by material thickness.
- ※3. Smaller unevenness may remain on rear side of the material projected by FP tool (less than ±0.02mm).
- ※4. Not applicable for stainless steel and Aluminum protected by vinyl sheet.



Tooling selection and code

Type	Description	Code No.
Upform	Set Assy	-
	Punch Assy	-
	Die Assy	-
	1 Punch tip	-
	2 Ejector tip	-
Downform	Down form set Assy	-
	Punch Assy	-
	Die Assy	-
	Die tip	-
	Inner ejector	-
	3 Die tip	-
4 Inner ejector	-	

※NOTE: Overall die height

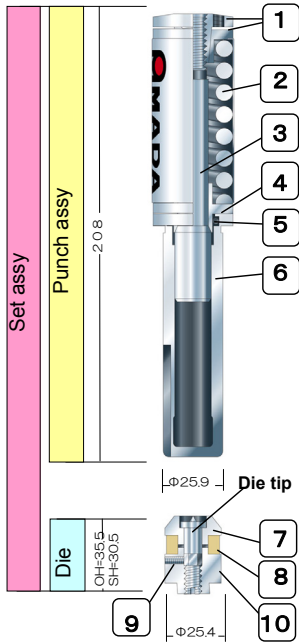
OH=31mm Thickness 0.8mm ~ 1.6mm

OH=32.2mm Thickness 2.0mm ~ 2.3mm

A 1 1/2" Size

Upform center punch

(Maximum material thickness 3.2mm)
Material thickness non-adjustment type
(fine adjustment possible)



Component tooling list

Description	Code No.
Set Assy	381110
Punch Assy	181110
Die Assy	281010
Die tip	918210

Component parts list

No.	Description/Specification	Code No.
1	Double punch head	901400
2	Stripping spring	901300
3	Punch body	918310
4	Retainer collar	901200
5	O-ring (Closed guide)	910060
6	Punch guide	581010
7	Ejector plate	918320
8	Urethane spring	918720
9	Lock screw (2-M4X4)	918340
10	Die holder	918330

No dry-run ! (No material punch) : No material punch damages the guide and die tip.

※1. The maximum material thickness is 3.2mm.

※2. The point angle is 90°.

※3. Be aware of the marking – The die tip contacts on the backside of material because of the material weight of large sheet such as 3.2mm thick 4'×8'.

To avoid this use the tool size B(1 1/4") (special tool).

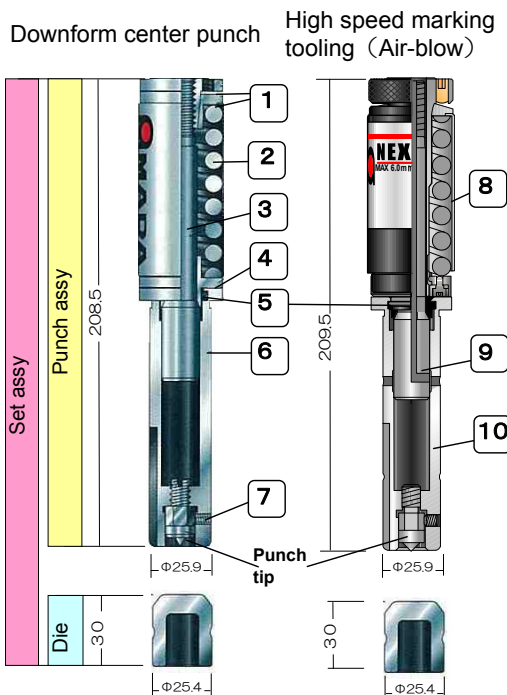
※4. Wider use of this tool to cover different thickness requires the adjustment of die tip projection height.

A 1 1/2" Size

Downform center punch High speed marking tool

(Maximum material thickness 6.0 t)
Material thickness non-adjustment type
(fine adjustment possible)

For EM machine series



Tooling selection and code

(Code No.)

	Description	
	Upform center punch	High speed marking
Set Assy	381100	-
Punch Assy	181100	-
Punch tip	918110	918110
Die	281000	281000

No dry-run! (No material punch) : No material punch damages the guide and die tip.

※1. The maximum material thickness is 6.0mm.

※2. The point angle is 90°.

※3. Wider use of this tool to cover different thickness requires the adjustment of punch projection height.

Component parts list

No.	Description/Specification	Code No.	
1	Double punch head	901400	
2	Stripping spring	901300	
3	Punch body	918410	
4	Retainer collar	901200	
5	O-ring	Closed guide (Downform center punch)	910060
		Open guide (High-speed marking)	910150
6	Punch guide (Downform center punch)	918420	
7	Lock screw (M5X6)	999960	
8	NEX spring Assy	980000	
9	Punch body (High speed marking)	501100	
10	Punch guide (High speed marking)	901920	



High speed marking tool

Improve the post-punching process drastically

Indication for part's name, lot number, bending line, and welding position on the component.

※1. Only applicable for downform type.

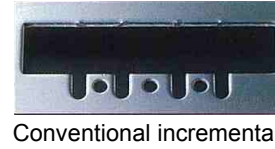
※2. Recommended for EM, EML and AC.

Specifications

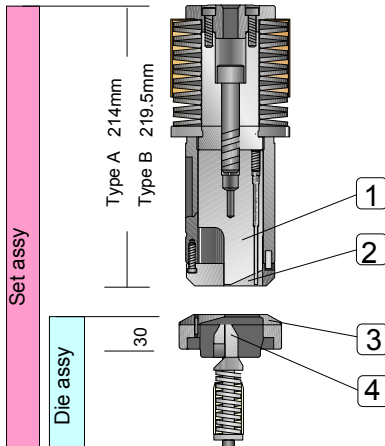
Tool type	Air-blow
Tool size	A(1 1/2")
Process speed	Maximum 1800min ⁻¹ {hpm}

Parts can be punched with high quality edges and without tooling overlap marks on NCT.

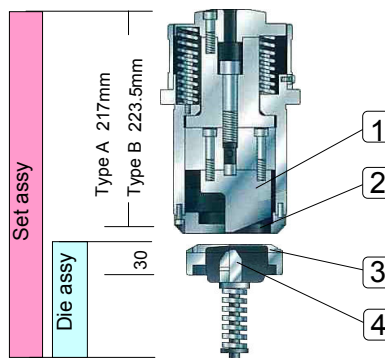
- No accumulation of work-in-process. Smooth transfer to next process.
- Clean punched edge. Added value of parts (high-quality processing) .
- Manual labour reduction for joint mark filing.
- AI station (option) enables to slot at any direction.
- Sheet saver type improves the material utilization (D(3½"), E(4½")).



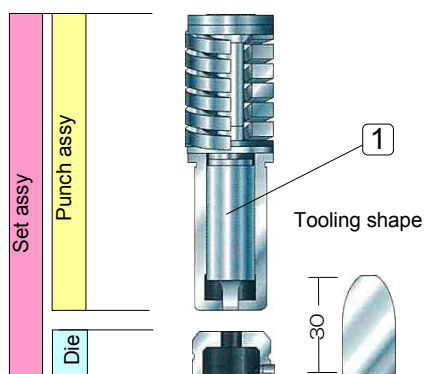
C(2")



D(3½"), E(4½") Punch and Die height are same



Terminating tooling



Specifications

Tool name	Slotting tool III Type A (Other than EM) · B (EM)		
Tooling size	C(2")	D(3½")	E(4½")
Maximum feed pitch	15mm	1.6mm < t : 20mm t ≤ 1.6mm : 25mm	1.6mm < t : 30mm t ≤ 1.6mm : 35mm
Cut width	6~10mm		
Maximum material thickness	Mild steel : 1.6mm	Mild steel : 2.3mm	
	Stainless steel : 1.5mm	Stainless steel : 1.5mm (2.0mm for APH punch tip (option))	
	Aluminum : 1.5mm	Aluminum : 3.0mm	

Component tooling list of C(2") station slotting tool III

Description	Material	Type A Other than EM	Type B EM
Set assy (including guide assy)		-	-
Die assy		-	-
1 Punch tip (APH)	Mild steel Stainless steel Aluminum	-	-
2 Stripper plate		-	-
3 Die plate		-	-
4 Die tip (APH)		-	-

Component tooling list of D(3½") and E(4½") station slotting tool III

Description	Material	D(3½")	E(4½")
Set assy (including guide assy)		-	-
Die assy		-	-
1 Punch tip (APH)	Mild steel Stainless steel Aluminum	-	-
2 Stripper plate		-	-
3 Die plate		-	-
4 Die tip (APH)		-	-

List of Terminating tool for slotting

Description	Original style	Air-blow
Set assy	-	-
Punch assy	-	-
Die	-	-
1 Punch body	-	-

Notes

- ※ Some processing methods (e.g., window shape punch out) may produce tool overlap marks in several positions.
- ※ These tools are of the air-blow specification. Air-blow unit is essential on the machine.
- ※ These tools cannot be used on the VIPROS-500kN {50 tonf} .
- ※ The end-point tool is required for mechanical presses.
- ※ Cannot be automatically changed on the VIPROS-ZPDC1.
- ※ The optional AP100 program software is required.
- ※ Contact AMADA for further question and operational note.



NCT Tapping tools have advanced further

- Coordinates are programmed to eliminate the "missed tapped hole" problem. Avoiding miss tapping by program coordination.
- Different M size holes can be tapped on a single machine.
- Chipless forming taps.

Tapping of hole in flat sheet



Tapping of chamfered hole



Tapping of burred hole



Specifications

Tooling size		Long tooling (type H)				C (2")	
Tool type		Ball screw type				Roller screw type	
Tapping oil Tank capacity		Standard		PDC		Standard	
Lead of main shaft		3mm / revolution				4mm / revolution	
Guaranteed hit number for main shaft		about 300,000 hits				about 500,000 hits	
Tapping die (Common Flat sheet, Upform & Downform burring)		Hole diameter = $\Phi 8.5$ M2.5(M2.6) · M3 · M4 · M5				Hole diameter = $\Phi 10$ M5 · M6	
Cartridge type	Screw size	M2.5 ^{※3} (M2.6)	M3	M4	M5	M5	M6
	Pitch	0.45mm	0.5mm	0.7mm	0.8mm	0.8mm	1.0mm
Tap to use		AMADA recommendation, Specified tap for tapping tool (forming tap)					
Between punch and die	EM · VIPROS III	13mm (Feed clearance 25mm)					
	Others	8mm (Feed clearance 20mm)					
Tap breakage prevention mechanism		Yes (Safety mechanism against missing pre-pierced hole)					
Change method		One-touch method					
Applied material		Mild steel ^{※1} · Aluminium (Hardness: less than HV120) Stainless steel 204 · 430 (EM · VIPROS series limited for size of M3 · M4 · M5) ^{※2}					
Applied material thickness		0.8 ~ 3.2mm (Limited to tap size and material type)					
Safety clamp distance		Y co-ordinate: more than 120mm (distance not going into the turret)					
Tapping oil		AMADA tapping oil AM557 (non-chlorine based)					

※1. Specify material specification for the several type of material. Hardness and strength may differ by material manufacture of hot rolled sheet and surface finish sheet other than mild steel, aluminum.

M5 on PEGA cannot be used for Hot rolled material or material harder than HV120. If required for this application, choose main shaft roller screw type holder.

※2. Specified Stainless parameter and Stainless steel tap are required for stainless steel tapping on EM and VIPROS only. For this application specified pre-pierced hole size is required. (Stainless tap is a special tool.)

※3. Tap cartridge for M2.5 and M2.6 is common.

※4. Continues tapping results in the high temperature. Rest the machine for 10 minutes during the refuel the oil for continuous tapping.

Applicable machine models

Tool type	Ball screw type	
	Roller screw type	PDC
Applicable machine models	Standard	PDC
· PEGA · COMA · ARIES245	○	○
· EM · ACUTE · VIPROS III · VIPROS-K · VIPROS-Q · VIPROS-Z · VIPROS-255 · VIPROS-50	○	○
· EM-Z · PDC · VIPROS III · PDC · VIPROS-Z · NT · PDC	×	○

※1. Use of other than specification or on no applicable machine lead to main shaft break or poor tapping quality. Follow the instruction of applicable machine table.

※2. Machine option interfere the tapping work.

※3. Contact AMADA when special tapping application is needed.

Tap selection

Screw size	M2.5	M2.6	M3	M4	M5	M6
Pitch	0.45	0.45	0.5	0.7	0.8	1.0
Standard tap	Maximum material thickness					
	2.0					
Tap replacement hits	EM · VIPROS series					
	28,000					
Plated tap ^(※1)	COMA · PEGA series					
	7,000					
Maximum material thickness	2.0					
	2.0					
Applicable tap size	2.3					
	3.2					
Stainless tap ^(※2)	3.2					
	3.2					
Tap replacement hits (EM · VIPROS series only)	×					
	○					
Maximum material thickness	×					
	○					
Tap replacement hits	○					
	×					
Maximum material thickness	1.5					
	2.0					
Tap replacement hits (EM · VIPROS series only)	3.0					
	×					

※1. Layer film : 5 ~ 10 μ m

※2. Specified Stainless parameter and Stainless steel tap are required for stainless steel tapping on EM and VIPROS only. For this application specified pre-pierced hole size is required. (Stainless tap is a special tool.)

No applicable machine

- Combination machine (EML · APELIO series)
 - : There is the risk of catching fire from tapping oil through laser beam.
- PEGA king · ATC-PEGA · PEGA-S · ARIES-245 II
- ARIES-224AIS · ARIES-2210AIS · ARIES-224NT
- ARIES-2210NT
 - : No correspondence for press speed to the tap main shaft, and shorter tap life
- OCTO
 - : Different turret structure.

■ Pre-pierced hole diameter (Reference)

Unit:mm

Application	Material	Tap type	Tap size		M2.5	M2.6	M3	M4	M5	M6	Dimension	
			Max thickness	Pre-pierced hole diameter								
Flat plate	Mild steel	Standard tap	2.0	Pre-pierced hole diameter	Φ2.27	Φ2.37						
			2.3									
		3.2			Φ2.75	Φ3.65	Φ4.60	Φ5.55				
		3.2										
	Plated tap	2.3		Φ2.77	Φ3.68	Φ4.64						
		3.2										
Stainless steel 304 Stainless steel 430	Stainless steel tap	Pre-pierced hole diameter	1.5		Φ2.70							
			2.0			Φ3.60						
			3.0				Φ4.55					
Minimum pitch between tap holes					20.0		20.5	21.0	21.5			
Chamfered	Mild steel	Standard tap	Finish size ΦA				Φ2.75	Φ3.65	Φ4.60			
			Thickness				Φ4.00	Φ5.20	Φ6.20			
			1.6	Pre-pierced hole diameter			Φ2.90	Φ3.90	Φ4.95			
			2.0				Φ2.87	Φ3.87	Φ4.91			
			2.3				Φ2.85	Φ3.80	Φ4.80			
			3.2									
	Finish size ΦA				Φ2.70	Φ3.60	Φ4.55					
	Thickness				Φ4.00	Φ5.20	Φ6.20					
	Stainless steel 304	Stainless steel tap	Pre-pierced hole diameter	1.5								
				2.0			Φ3.65	Φ4.65				
				2.5				Φ4.60				
	Stainless steel 430	Stainless steel tap	Pre-pierced hole diameter	3.0				Φ4.55				
1.5					Φ3.00							
2.0						Φ3.80	Φ4.80					
			2.5				Φ4.75					
			3.0				Φ4.75					
Burring	Mild steel Aluminum	Standard tap	Burring tip diameter ΦA		Φ2.27	Φ2.37	Φ2.75	Φ3.65	Φ4.60	Φ5.55		
			Thickness									
			0.8	Pre-pierced hole diameter			Φ1.3	Φ1.3	Φ1.3	Φ2.00		
			1.0				Φ1.3	Φ1.3	Φ1.3	Φ2.00		Φ2.40
	1.2					Φ1.60	Φ2.00	Φ2.40	Φ3.20			
	1.6						Φ2.40	Φ3.00	Φ3.20			
	Stainless steel 304 Stainless steel 430	Stainless steel tap	Burring tip diameter ΦA				Φ2.75	Φ3.65	Φ4.60			
			Thickness				Φ2.70	Φ3.60	Φ4.55			
				0.8	Pre-pierced hole diameter			Φ1.50	Φ2.50			
				1.0				Φ1.50	Φ2.50	Φ3.00		
			1.2				Φ1.80	Φ2.50	Φ3.00			
Maximum burring height=H					2.0		2.3		3.2			
Minimum pitch between Upform and Downform burring taps					20		21	22	23	24		

※1. Pre-pierce hole diameter, Chamfered diameter and Burring diameter ΦA are so important for the tap finish. Too small size gives excessive torque to main shaft and result in the shaft break.

※2. Slightly smaller size is chosen for the flat plate of stainless steel because of work elongation.

※3. Avoid additional work around the formed tap area where material deformation is made. Be careful for smallest pitch between the taps.

※4. Burring pre-pierced hole is for your guidance.

※5. Slightly bigger burring tip is required for stainless steel, because burring diameter ΦA will shrink after being punched.

※6. Surface decollated finish steel or Hot rolled plate has bigger surface hardness and this result in shorter tap life and main shaft damage. therefore pay attention for the surface hardness : less than HV120 is required.

※7. Tapping tool requires precise pre-pierced hole diameter, even 0.05mm different size leads to tool damage or poor quality of product.

※8. In above table chamfering tool is specific tool for each material thickness. (Please look at page 35 & 36 for both-sided chamfering tool)

■ Component tooling list of Tapping tool set assy

Description	Size	Q'ty	Code No.	Remarks
Tapping tool set assy	M2. 5~M5	1 set	642100	Tapping tool (Punch holder) 1pc. Tap cartridge (with Adjustment jig) 1pc. Tap (Standard or Plated type) 10pcs.
Tapping tool set assy P.D.C	M2. 5~M5	1 set	643100	Tapping downform burring common die (Φ8.5) 1pc.
Tapping tool set assy (Roller screw type)	M5, M6	1 set	645000	Tapping tool (Punch holder) 1pc. Tap cartridge (with Adjustment jig) 1pc.
Tapping tool set assy P.D.C (Roller screw type)	M5, M6	1 set	647000	Tap (Standard or Plated type) 10pcs. Tapping downform burring common die (Φ10) 1pc.

■ List of Consumable parts for Tapping tool

Description	Size	Q'ty	Code No.	Remarks
Tapping tool III (Punch holder)	M2. 5~M5	1	642000	Ball screw type (M2. 5~M5)
Tapping tool III P.D.C (Punch holder)	M2. 5~M5	1	644000	Ball screw type (M2. 5~M5)
Tapping tool III (Punch holder)	M5, M6	1	646000	Roller screw type (M5, M6)
Tapping tool III P.D.C (Punch holder)	M5, M6	1	648000	Roller screw type (M5, M6)
Tap cartridge	M2. 5 (M2. 6)	1	-	M2. 5 (M2. 6) Tap common
	M3	1	632000	
	M4	1		
	M5	1		
	M6	1		
Tapping downform burring common die (Φ8.5mm)	M2. 5~M5	1	622000	Ball screw type (M2. 5~M5)
Tapping downform burring common die (Φ10mm)	M5, M6	1	-	Roller screw type (M5, M6)
Tapping tool Standard tap (OSG)	M2. 5	10	612000	Forming tap
	M2. 6	10		
	M3	10		
	M4	10		
	M5	10		
	M6	10		
Tapping tool Plated tap (OSG)	M3	10	615110	Slightly bigger tap because of plating
	M4	10		
	M5	10		
	M6	10		
Tapping tool Stainless steel tap (OSG)	M3	10	612200	EM·ACUTE·VIPROS series only
	M4	10		
	M5	10		
Maintenance kit		1 set	625560	Piston oiler (Lubrication) Piston oiler (Air drain) Tapping oil AM557 (4L) Oil jug Grease gun Lubrication grease SRL (400g) Lubrication oil #32 (4L)

■ List of tapping oils

Description	Size	Q'ty	Code No.
Tapping oil AM558 (Non-chlorine-based)	20L	1 can	94013E
	4L	1 can	94012E
AMADA grease SRL	400g	1	616050



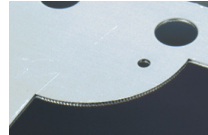
No special tool is required !

Same quality as laser beam for special and radius shape !

Nibbling pitch is less than material thickness. This avoids the filing finish work and special shaped tooling. Production time is greatly reduced by higher hit rate even if hit number is increased.



Contact AMADA for further application.



■ Specifications

Tooling size		A(1/2")
Punch assy		Air-blow (Switch on Air-blow unit)
Die assy		Power vacuum
Punch tip type		APH, Carbide (No grinding available)
Diameter of punch tip		Φ2.0
Die tip type	APH	use for APH or Carbide punch tip : regrind 0.5mm (MAX)
	Carbide	use for Carbide punch tip : regrind 0.5mm (MAX)
Maximum thickness (Punch tip)	APH	Mild steel 1.6t, Stainless steel 1.0t, Not applicable for Aluminum
	Carbide	Mild steel 2.3t, Not applicable for Stainless steel and Aluminum

※1. Die cannot be replaced by customer. (Press insert) If necessary contact AMADA.

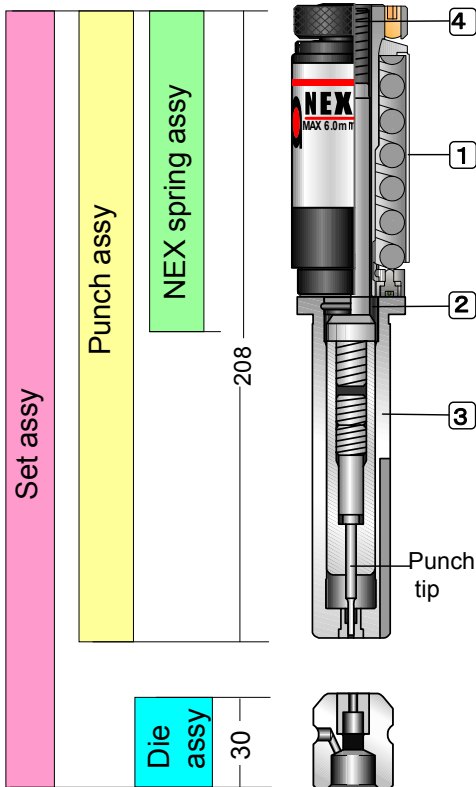
※2. Contouring tool is specified by material type and thickness, use appropriate punch tip and die when material is changed.

Contouring kit is recommended for various types of application.

■ Combination of selection and caution lower case for Contouring tool

	0.8t	1.0t	1.2t	1.6t	2.3t
Mild steel	0.15	0.15	0.15	0.2	0.3
Stainless steel	0.15	0.15			

1. Use this contouring tool with Power vacuum unit or Air jet vacuum unit.
Be sure to activate Power vacuum unit of same diameter turret or Air jet vacuum unit of Z turret.
2. Use the punch mode "NEX tool punching mode" (M696).
(M696 default set at 2.5mm as bottom position, so alter the value as 1.0mm.)
M500 (Bottom position 2.5mm) has a risk of tooling damage for 2.3mm material thickness.



■ Tooling selection and code

Description / Material	Code No.
Set Assy (Carbide punch, Carbide die Assy)	35K220
Set Assy (APH punch, SKH die Assy)	35X220
Carbide punch Assy	15K220
APH punch Assy	15X220
Carbide punch tip	45K220
APH punch tip	45X220
Contouring carbide die Assy	25K020
Contouring SKH die Assy	25I020

■ Component parts list

No.	Description / Material	Code No.
1	NEX spring Assy (with O-ring)	980000
2	O-ring (Open guide)	910150
3	Contouring guide Assy (with bush)	551020
4	Urethane tube (10pcs.)	-

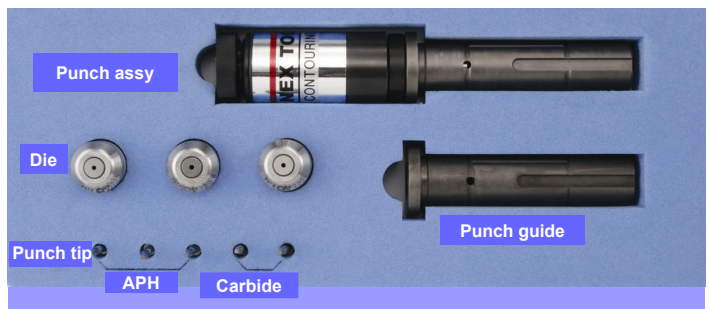
※O-ring for Contouring tool is same as open guide.



■ Contents of Contouring tool kit

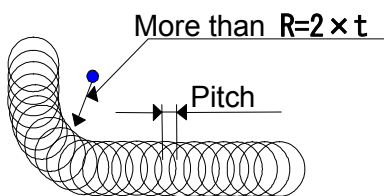
Description	Q'ty	Code No.
Contouring tool kit		37E030
Punch Assy	1	
Carbide punch tip (Φ2)	2	
APH punch tip (Φ2)	4	
Spare guide	1	
CL 0.15 die Assy (SKH)	1	
CL 0.2 die Assy (SKH)	1	
CL 0.3 die Assy (Carbide)	1	

Contouring tool kit

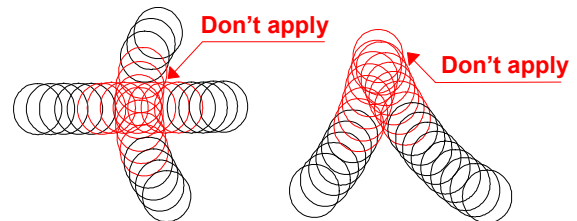


3. When using the contouring tool pay your attention for the following cases.

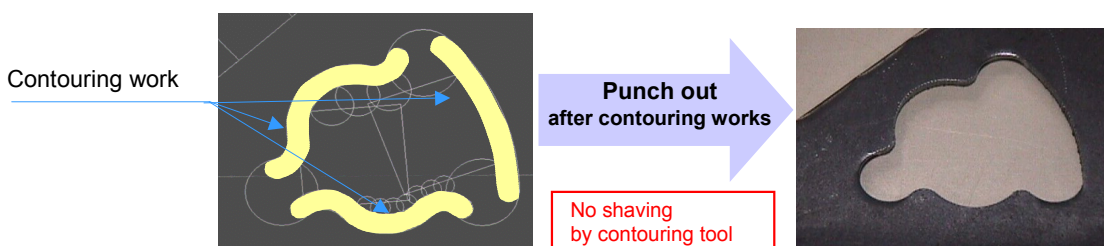
1) Minimum pitch for contouring tool is 0.5mm. Set the Radius size more than twice of material thickness. (When the values smaller than above the tool life become shorter.)



2) Do not use the contouring tool for the case below. (Red colour area is the clinical for the tool.)



3) Give the priority to the contouring tool before normal punch. (like a case of yellow colour below). (Finish the contouring works prior to punch out the material because punch tip receive off load from the pre-punched hole.)



Deburring tool

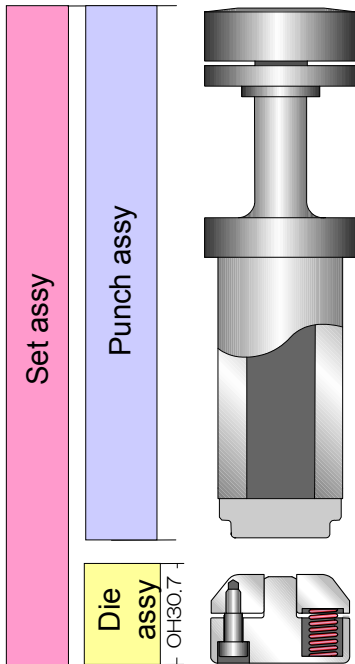
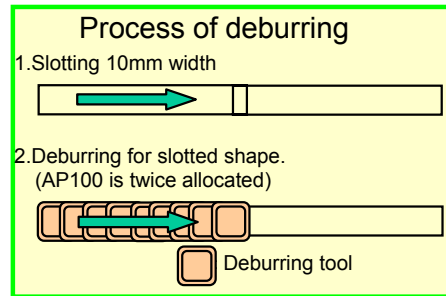
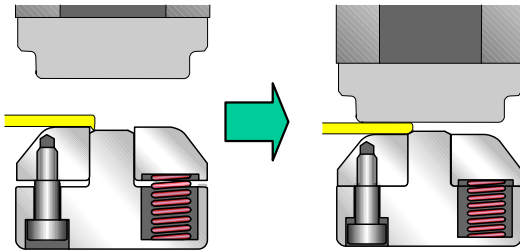
For EM series

Awkward and time consuming operation becomes easier by Deburring tool automatically and speedy

Burr appeared on the backside is chamfered by this deburring tool after punching.



■ Mechanism of deburring tool



■ Specification

Thickness	0.5t~3.2t
Material	Mild steel, Stainless steel, Aluminium

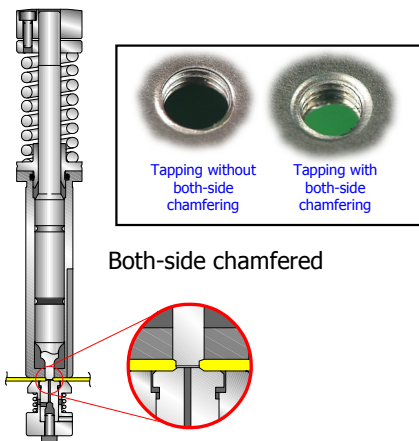
	Size	Shape
Tool	A(1/2")	Φ2, SQ5
	B(1 1/4")	RE5 X 20
		RE6 X 20
		RE10 X 20
		SQ10
	SQ6	

■ Tooling selection and code

Description	Code No.
A(1/2") Upform set (Round)	-
A(1/2") Upform set assy (Shape)	-
B(1 1/4") Upform set assy (Round)	-
B(1 1/4") Upform set assy (Shape)	-

- ※1. Recommended for EM and VIPROS series. (Work time takes longer by other machine.)
- ※2. Deburring tool performs as forming tool for the burr. (Burr cannot be eliminated completely.)
- ※3. Quality of deburring is influenced by thickness or strength of frame.
- ※4. Specify the tool for PDC.

Both-side chamfered tool for tapping tool



■ Effects

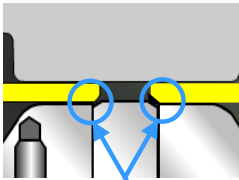
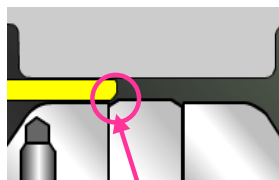
- No necessity for the pitch attention.
- Good tapping performance for the closer to the edge.
- No gap exists between the tapped sheets bolted by screw.
- ※ Attention for the weakening of the tightening torque for chamfered tapping.

■ List of both-side chamfered tool (M3~M5)

Description	A(1/2")	B(1 1/4")
Set assy	-	-
Punch assy	-	-
Die	-	-

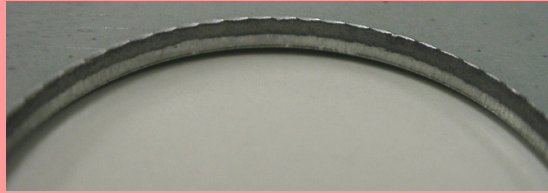
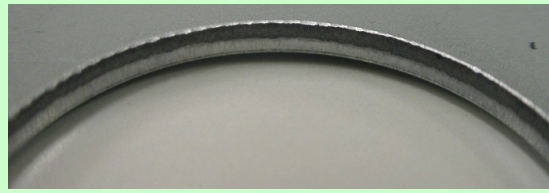


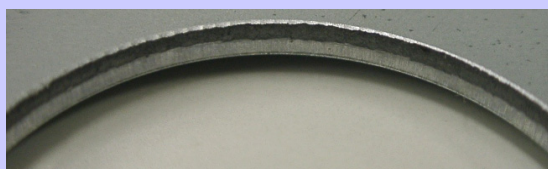

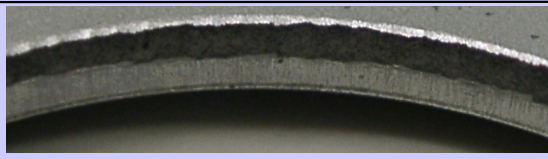

※For this tool order as special tool.

Explanation of deburring process

Type	No deburring	Same width Deburring	One side Deburring
Explanation		<p>Burr is deformed by deburring tool on both-side at same time.</p>  <p>Deburring both-side by one process.</p>	<p>Formed burr may appear from along the punched side if deburred too much.</p>  <p>Deburring one-side</p>

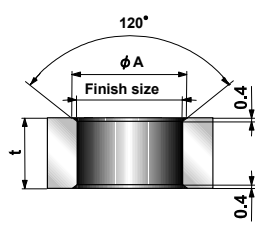
Recommended pitch for deburring tool $\Phi 2.0\text{mm}$: $0.5\text{mm} \sim 1.0\text{mm}$
 The bigger pitch is the quicker process but deburring becomes rough.
 (Burr disappears) . . . **See the picture below.**

Material : Mild steel 1.6t
 Tool : Deburring tool : $\Phi 2.0$
 Punched tool : $\Phi 20.0$ CL0.3

Pitch	Pitch 1.0mm	Pitch 0.7mm
Picture		
Magnified		
Pitch	Pitch 0.5mm	Without deburring
Picture		
Magnified		

Pre-pierced hole diameter of Both-side chamfered tool for tapping tool (Reference)

Unit:mm

Application	Material	Tap type	Screw size	M3	M4	M5	Dimension
Chamfered	Mild steel	Standard tap	Finish size	$\Phi 2.75$	$\Phi 3.65$	$\Phi 4.60$	
			Thickness	$\Phi 4.00$	$\Phi 5.20$	$\Phi 6.20$	
			1.6	$\Phi 2.90$			
			2.0	$\Phi 2.87$	$\Phi 3.90$	$\Phi 4.95$	
			2.3	$\Phi 2.85$	$\Phi 3.87$	$\Phi 4.91$	
			3.2	$\Phi 3.80$	$\Phi 4.80$		
	Stainless steel 304	Stainless steel tap	Finish size	$\Phi 2.70$	$\Phi 3.60$	$\Phi 4.55$	
			Thickness	$\Phi 4.00$	$\Phi 5.20$	$\Phi 6.20$	
			1.5	$\Phi 2.85$			
			2.0		$\Phi 3.65$	$\Phi 4.65$	
			2.5			$\Phi 4.60$	
			3.0			$\Phi 4.55$	
Stainless steel 430		Finish size	$\Phi 3.00$				
		Thickness		$\Phi 3.80$	$\Phi 4.80$		
		1.5			$\Phi 4.75$		
		2.0			$\Phi 4.75$		
		2.5					
		3.0					

EM·VIPROS series only

Endless burring

Tool size	B(1 1/4") special tool	
Max. thickness	Mild steel & AL	1.6mm
Max. height H	5.0mm	
Min. corner R	15mm radius	
Form feed pitch	1.0mm	

Endless offset

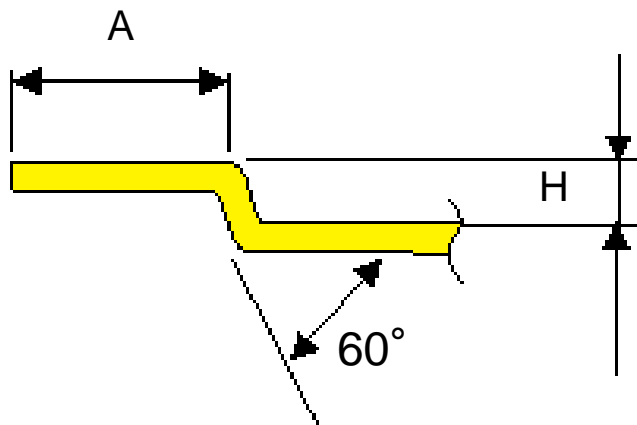
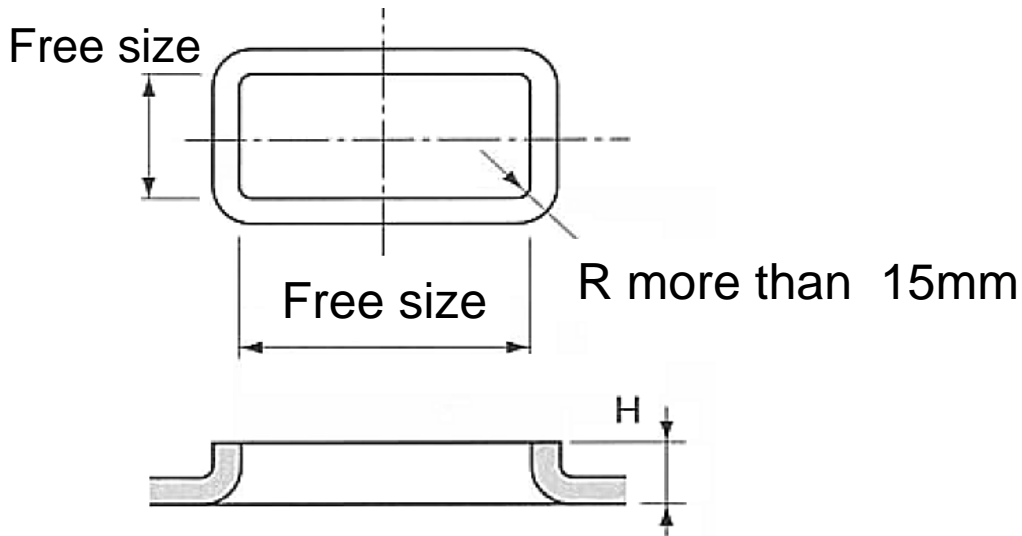
Tool size	B(1 1/4") special tool	
Applicable thickness t	Mild steel, AL & Stainless steel	Min. 0.5mm Max. 1.6mm
Max. A	15mm	
Max. height H & angle	3.5mm at max. 60° *90° when offset value equals to material thickness t.	
Min. corner	15mm radius	

Endless beading

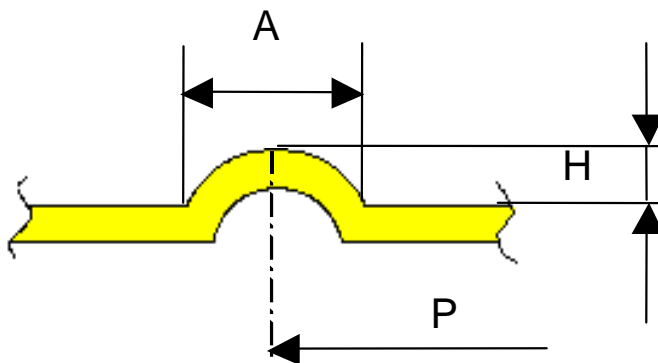
Tool size	B(1 1/4") special tool	
Max. thickness	Mild steel & AL	1.6mm
	Stainless steel	1.2mm
Max. A	10mm	
Max. height H	A x 1/3mm	
Min. P	30mm	

High-height forming is possible, such as endless offset and endless burring to any desired length.

Contact Amada for other than specification below.

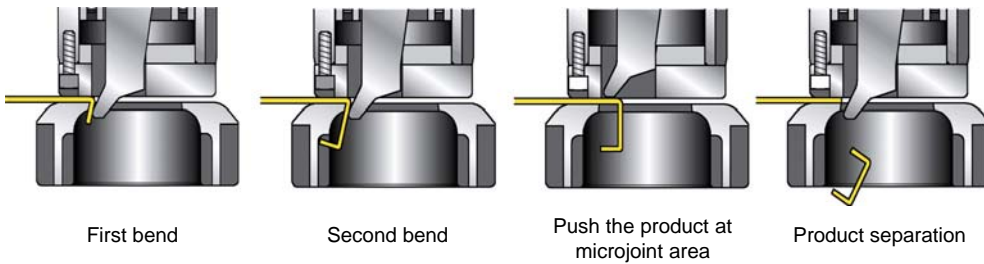
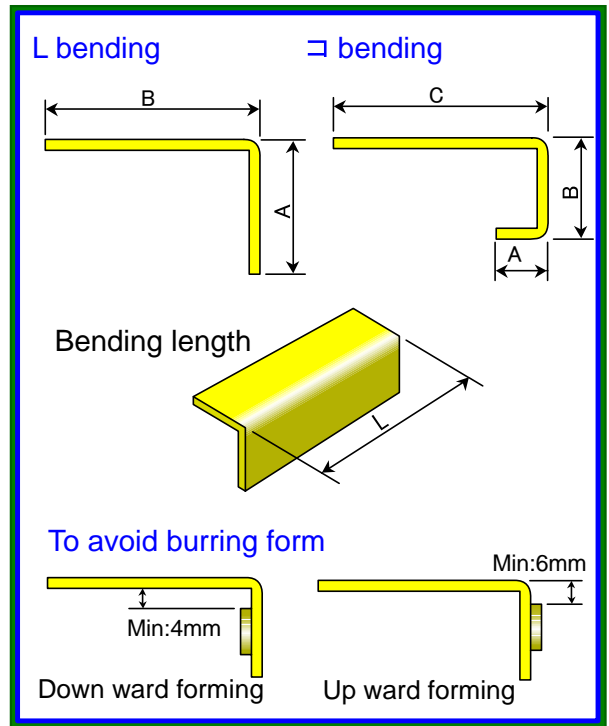
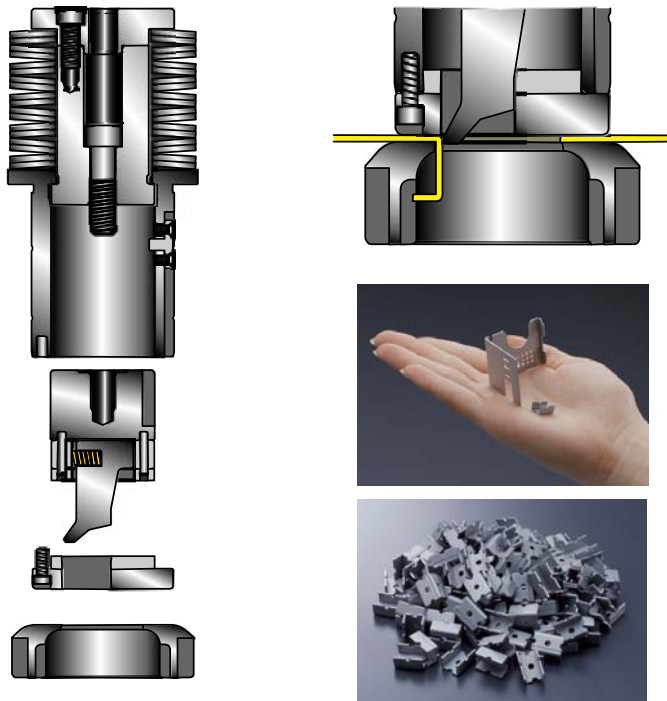


Max A = 15mm
Max H = 3.5mm



Max A = 10mm
Max H = $A \times 1/3$ mm
Min. P = 30mm

Small bent parts can be completed within NCT process.



Tool size	2"			
bending direction	Down ward			
Bending accuracy	±30'			
thickness(die 4 sides)	0.5	0.8	1.0·1.2	1.5·1.6
material	SPC·AL·SUS			
Max bending length	L=30			
Punch tip width	10, 15, 20, 25, 30			
applicable work size	$\sqrt{(A^2 + B^2 + L^2)} < 52$ Either A or C, the longer one will be chosen on U bending			
Bending flange length	Min		Max	
L bending (A)	2.0 and 3 x t		35.0	
L bending (B)	5.0		35.0	
U bending (A)	2.0 and 3 x t		7.0 (B-2t ≥ 7) 5.0 (B-2t < 7)	
U bending (B)	3.5+t		35.0	
U bending (C)	5.0		35.0	

D 3 1/2"**E 4 1/2"**

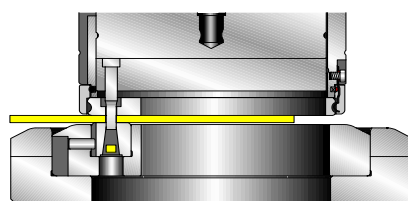
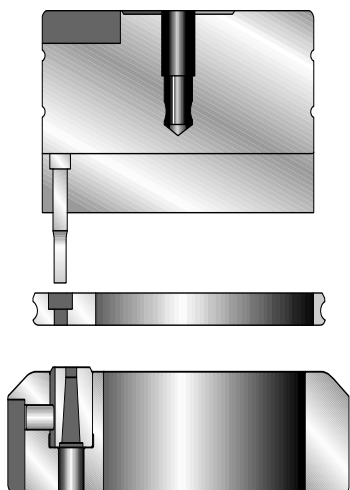
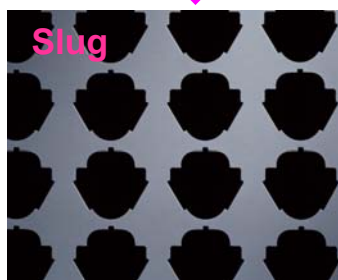
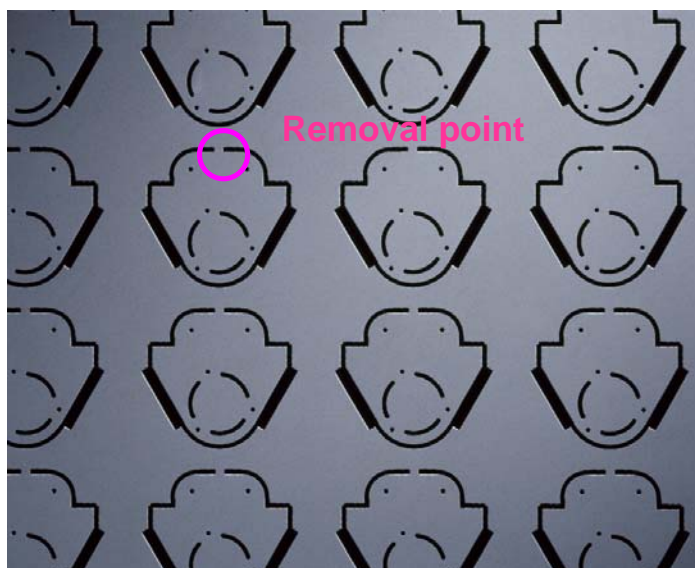
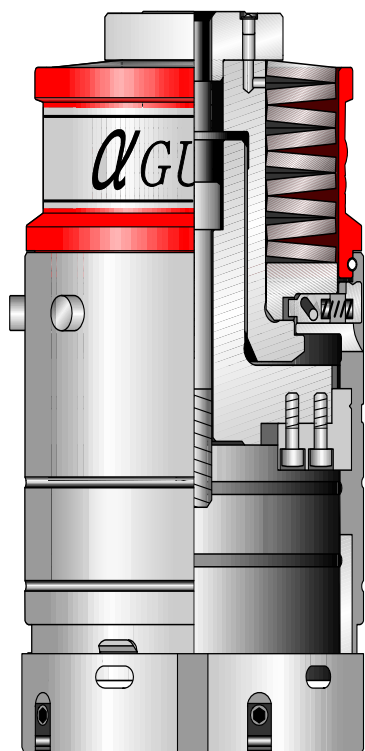
Size

Work chute tool**special****Micro-joint separation and sorting of small parts can be performed**

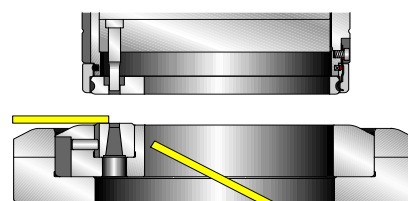
The microjoint breaking of small parts (about 65mm square), manually done in the past, can be now performed within the NC turret punch press. The ejected parts can be separated from the slugs by the work selector function.



Tool size	D(3 1/2")	E(4 1/2")
Max. size of components	Max.65 SQ	Max.85 SQ
Joint cut tool	5mm SQ	5mm SQ



5mm SQ punch separates the components



Slug Component

A 1/2" Size Downform countersink tool set

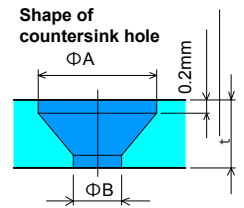


Benefits

- The punch height can be adjusted by one touch.
- The punch tip can be changed with a single wrench.

Specifications

- Tooling size : A(1/2")
- Processing direction : Downform
- Die : A to J (10pcs.)
- Punch tip : M2, M2.5, M2.6, M3, M4, M5, M6
- Material thickness : 1.0 to 3.2mm (Mild steel)
(Holes in vinyl-covered aluminum cannot be countersunk)
- ※ Each countersink hole size requires its own pre-piercing tooling.



Downform countersink tool set

Description	Code No.
Downform countersink tool set	36E030

[Reference data] Punch tip and die selection table

Mild steel

Unit : mm

M2X0.4(ΦA=4.3)				M2.5X0.45(ΦA=5.3)				M2.6X0.45(A=5.5)				M3X0.5(A=6.4)				M4X0.7(ΦA=8.6)				M5X0.8(ΦA=10.6)				M6X1.0(ΦA=12.8)			
t	Die	ΦB	Pd	t	Die	ΦB	Pd	t	Die	ΦB	Pd	t	Die	ΦB	Pd	t	Die	ΦB	Pd	t	Die	ΦB	Pd	t	Die	ΦB	Pd
1.0	B	3.2	3.5	1.0	E	4.2	4.5	1.0	E	4.4	4.7	1.0	F	5.5	5.7												
1.2	A	3.2	3.5	1.2	D	4.2	4.5	1.2	D	4.4	4.7	1.2	F	5.1	5.5	1.2	H	7.2	7.5								
1.5	A	2.6	3.0	1.5	B	3.6	4.0	1.5	C	3.8	4.2	1.5	E	4.6	5.0	1.5	G	6.8	7.2	1.5	I	9.1	9.5				
1.6	A	2.6	3.0	1.6	B	3.6	4.0	1.6	B	3.8	4.2	1.6	E	4.6	5.0	1.6	G	6.8	7.2	1.6	I	9.1	9.5				
2.0	A	2.6	3.0	2.0	A	3.2	3.8	2.0	B	3.4	4.0	2.0	C	4.0	4.8	2.0	G	6.7	7.2	2.0	I	8.8	9.3	2.0	J	10.6	11.0
2.3	A	2.6	3.0	2.3	A	3.3	3.8	2.3	B	3.5	4.0	2.3	C	4.2	4.8	2.3	F	5.7	6.5	2.3	H	7.9	8.5	2.3	J	10.6	11.0
												2.5	C	4.1	4.7	2.5	E	5.6	6.4	2.5	G	7.8	8.4	2.5	J	10.4	10.8
												3.0	C	3.7	4.5	3.0	E	4.8	5.7	3.0	G	7.0	8.0	3.0	I	9.4	10.0
												3.2	C	3.7	4.5	3.2	E	4.8	5.7	3.2	F	7.0	8.0	3.2	I	9.4	10.0

※Pd : Pre-pierced hole diameter.

※ΦB and pre-pierced hole diameter are reference dimensions.

B 1 1/4" Size Burring tool set

Air-blow tooling

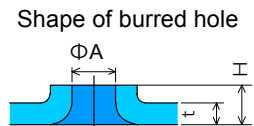


Benefits

- The punch height can be adjusted by one touch.
- The punch tip can be changed by one touch.
- The die tip can be changed easily.

Specifications

- Tooling size : B(1 1/4") (common for long, air-blow, and standard specifications)
- Processing direction : Upform
- Applicable thread size (for cutting tap) : M2.6, M3, M4, M5, M6
- Die height : 33.5mm
- Material Thickness : 0.8~2.3mm (Mild steel, Aluminium)
- ※ Each size tool is required for pre-pierced hole.



Burring tool set

Description	Code No.
Burring tool set (forming tap)	-
Burring tool set (cutting tap)	37E040

[Reference data] Punch tip selection table Mild steel · Aluminium (for Forming taps · Cutting taps)

Unit : mm

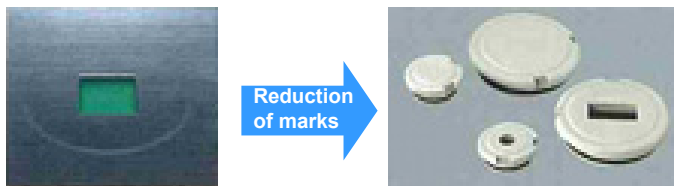
Type	M size	t	ΦA	0.8			1.0			1.2			1.6(AL1.5)			2.0			2.3(Not for AL)		
				Punch tip hole dia.	Reference value Pd	Reference value H	Punch tip hole dia.	Reference value Pd	Reference value H	Punch tip hole dia.	Reference value Pd	Reference value H	Punch tip hole dia.	Reference value Pd	Reference value H	Punch tip hole dia.	Reference value Pd	Reference value H			
Forming tap	M2.6	2.37	3.7	1.3	1.5	3.9	1.3	1.8	4.2	1.3	2.0	4.5	1.6	2.2							
	M3	2.75	3.9	1.3	1.7	4.2	1.3	2.0	4.5	1.6	2.1	5.0	1.6	2.4							
	M4	3.65	4.8	2.0	1.8	5.0	2.0	2.1	5.3	2.0	2.3	6.0	2.4	2.6	6.3	2.4	3.1	6.3	2.8	3.3	
	M5	4.60				6.0	2.4	2.4	6.3	2.4	2.6	6.8	3.0	2.9	7.3	3.0	3.3	7.3	3.2	3.6	
	M6	5.55							7.3	3.2	2.7	7.8	3.2	3.2	8.4	4.0	3.3	8.4	4.0	3.5	
Cutting tap	M2.6	2.21	3.3	1.3	1.5	3.6	1.3	1.8	3.6	1.3	2.0	3.6	1.6	2.2							
	M3	2.57	3.6	1.3	1.7	4.0	1.3	2.0	4.0	1.6	2.0	4.0	1.6	2.4							
	M4	3.40	4.8	2.0	1.8	4.8	2.0	2.0	4.8	2.0	2.2	5.1	2.3	2.5	5.1	2.3	3.0	5.1	2.5	3.2	
	M5	4.30				6.0	2.3	2.3	6.0	2.3	2.5	6.3	2.8	2.8	6.6	2.8	3.2	6.6	3.0	3.5	
	M6	5.10							7.0	3.0	2.6	7.2	3.0	3.1	7.4	3.8	3.2	7.4	3.8	3.4	

※Pd : Pre-pierced hole diameter

※Pre-pierced hole diameter and burred hole height H are reference value. Burred hole height H decreases with increasing pre-pierced hole diameter and increase with decreasing pre-pierced hole diameter. The bigger size for pre-pierced hole diameter is, the lower the height is. The smaller size for pre-pierced hole diameter is, the higher the height is.

QS stripper QS stripper air-blow hole machining jig

Long A(1/2") and B(1/4")



Reduction of marks



QS stripper air-blow hole machining jig

The QS stripper is used in place of the QM stripper (made of metal) for materials likely to be dented, such as aluminium and decorative sheets. Made of plastic, it is effective in reducing dents.

List of QS stripper

Description	Code No.
A(1/2") QS stripper (12 in pack)	911620
B(1/4") QS stripper (12 in pack)	911640
QS stripper air-blow hole machining jig	911920

Brush die

A(1/2") to E(4 1/2")



Dummy dies with brushes that can be inserted in die stations of respective sizes in the lower turret.

- Pass line : About 2mm above normal pass line
- Maximum material thickness : 3.2mm (Mild steel)

List of brush die

	Description	Code No.	
		Hard	Soft
A(1/2")	Brush die assy	80EF30	80EG30
	Brush only	90EF30	90EG30
B(1/4")	Brush die assy	80EF40	80EG40
	Brush only	90EF40	90EG40
C(2")	Brush die assy	80EF60	80EG60
	Brush only (set as 5pcs.)	90EF60	90EG60
D(3 1/2") (Specify your dimensions)	Brush die assy	80EF80	80EG80
	Brush only	90EF80	90EG80
E(4 1/2") (Specify your dimensions)	Brush die assy	80EF90	80EG90
	Brush only	90EF90	90EG90

Felt (FS oil)

A(1/2") to E(4 1/2")



Felt impregnated with lubricating oil (FS oil). It is installed in the bottom of a punch guide (or in the upper part of a stripper plate).

It is effective in reducing the punching resistance of the punch edge, preventing the temperature rise, and preventing the entry of foreign body like metal powder. It also helps to extend the life of the punch.

- ※ Be sure to use the high-load oil FS.
- ※ Change the felt when the punch is reground.

List of felt

Description	Code No.
FS oil (1L)	940500
A(1/2") Felt (set of 10)	940020
B(1/4") Felt (set of 10)	940040
C(2") Felt (set of 10)	940060
D(3 1/2") Felt (set of 10)	940080
E(4 1/2") Felt (set of 10)	940090

Roller die and flat die

Long A(1/2") to E(4 1/2")



Free roller bearing dies and flat dummy dies that can be installed in die stations in the lower turret. They can be installed in unused die stations to prevent an extremely thin sheet from drooping, to protect the bottom surface of the sheet against scratch, or to prevent jamming during downform forming.

List of roller die and flat die

Tooling size	Code No.	
	Roller die	Flat die
A(1/2")	89EK30	29EJ30
B(1/4")	89EK40	29EJ40
C(2")	-	29EJ60
D(3 1/2")	-	29EJ80
E(4 1/2")	-	29EJ90

Conversion sleeve

Long

A (1/2") → B(1/4")



If a turret station is not available for a particular size of tooling, a special sleeve can be installed in a one-size larger turret station as adapter for the tooling.
(The sleeve shown in the photo is used to install a A(1/2") tool in a B(1/4") station.)

※ These special sleeves cannot be used in triple holder, and OCTO and APELIO II 200kN{20tonf}.

- Specifications**
- Station size : B(1/4")
 - Tooling size : A(1/2")
 - Press capacity : Tonnage for A(1/2")

List of special sleeve

Description	Code No.
Punch and die set	913500
Punch sleeve	913600
Die sleeve	913700

Belleville spring

Standard B(1/4")



Belleville springs have larger holding and stripping forces than coil springs. When a heavy-gauge sheet is punched, a Strip-miss phenomenon may occur.

Belleville springs are effective in preventing the jamming phenomenon. When you use belleville springs for a punch, change the punch head and retainer collar for those compatible with the belleville springs.

※ "Weak spring" is also available for reducing the marking of light-gauge aluminium sheets.

List of Belleville spring & other springs

Description	Code No.
B(1/4") Belleville spring assy (including belleville retainer)	942140
B(1/4") Retainer assy (including head)	942040
B(1/4") Belleville spring (15 required for assy)	942240
A(1/2") Std Al weak type spring	99E030
B(1/4") Std Al weak type spring	99E040
C(2") Std Al weak type spring including head	99E060
D(3 1/2") Std Al weak type spring including head	99E080
E(4 1/2") Std Al weak type spring including head	99E090

- ※ The punch head and the upper and lower retainers are available as unit.
- ※ The guide and punch shown in the photo above are not included.

Shim keepers

A(1/2") and B(4 1/2")

The Shim keeper is used to secure shims to the bottom of a reground die. Fitted with an appropriate height of shims, the shim keepers can be installed in the turret, removed from the turret, or stored on a shelf.



Specifications

Size	Maximum die hole diameter	
A(1/2")	Inscribed Φ11	
B(1 1/4")	Inscribed Φ31	
Size	Except Rectangle	Rectangle
C(2")	Diagonal Φ47.5	B size max 50mm
D(3 1/2")	Diagonal Φ77.5	B size max 85mm
E(4 1/2")	Diagonal Φ97.5	B size max 110mm

List of shim keepers

Description	Code No.
A(1/2") Shim keeper set as pack of 5 Contents : (Shim keeper 0.5mm + Spacer 0.2mm, 0.4mm) × 5	911100
A(1/2") Shim keeper as pack of 5 Contents : Shim keeper 0.5mm × 5	911200
B(1 1/4") Shim keeper set as pack of 5 Contents : (Shim keeper 0.5mm + Spacer 0.2mm, 0.4mm) × 5	913300
B(1 1/4") Shim keeper as pack of 5 Contents : Shim keeper 0.5mm × 5	913400
C(2") Shim keeper set Contents : (Shim keeper 0.5mm + Spacer 0.2mm, 0.4mm) × 2	914100
D(3 1/2") Shim keeper set Contents : (Shim keeper 0.5mm + Spacer 0.2mm, 0.4mm) × 2	915100
E(4 1/2") Shim keeper set Contents : (Shim keeper 0.5mm + Spacer 0.2mm, 0.4mm) × 2	916100

- ※1. Apply the glue to the nail of shim keeper when Shim keeper is used on PDC machine or PV die to avoid the fall or the rotation of shim keeper from the die.
- ※2. Do not use Large size shim keeper on the PDC machine because shim keeper may drop from the die during the auto change.

Head seals

A(1/2") and B(1 1/4")

A head seal has the shape and size of a punch, type of steel and other information written on itself and is applied to the head of the punch. It allows the type of each punch stored in the turret or rack to be known at a glance.



Contents of head seal set

Number of seals	41 seals for A(1/2") size and 41 seals for B(1 1/4") size, or 82 seals per sheet by 7 sheets = 574 seals
[Sheets of plain seals]	Yellow(round) 1, red(square) 1, blue(abround) 1, green(rectangle) 1, orange(others) 1, or total of 5 sheets
[Sheets of printed seals]	Yellow(round), Φ1.6 to Φ8.5(0.1 increments), Φ9.0 to Φ31.5(0.5 increments), or total of 2 sheets
Oil-based marker	1

List of head seals

Description	Code No.
Head seal (7 sheets and marker)	911300

- ※Head seals cannot be used on machines equipped with a Type II air-blow system. (whether or not a punch is an air-blow tool is identified according to the colour of its head).

Shims

A(1/2") to E(4 1/2")

Shims are available for A(1/2") to E(4 1/2") dies and C(2") to (4 1/2") punches. They are used to adjust the height of reground tools and the forming of parts.



List of shims

Die shim	Code No.
A(1/2")	911000
B(1 1/4")	913000
C(2")	914000
D(3 1/2")	915000
E(4 1/2")	916000

※Thickness :0.4mm, 0.6mm, 0.8mm and 1.0mm.

Punch shim	Code No.
C(2")	914400
D(3 1/2")	915500
E(4 1/2")	916600

※Thickness :0.4mm, 0.6mm, 0.8mm, 1.0mm, 1.2mm, 1.6mm and 2.0mm

Slug ejectors

A(1/2") to E(4 1/2")

The slug ejector is plastic part attached to the punch tip to prevent slug pulling.



List of slug ejectors

Description	ΦA(mm)	H(mm)	Code No.
No. 1 (set of 30)	3.3	6.5	910010
No. 2 (set of 30)	6.3	10	910020
No. 3 (set of 30)	10.3	16	910030

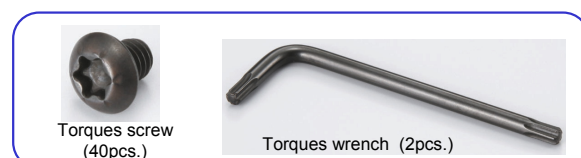
Torques screw

A(1/2") to E(4 1/2")

The torques screws are used to fasten the stripper plate of standard guides.

List of torques screw

Description	Code No.
Long M4 SK03 (set of 40 screws and 2 wrenches)	998750
Short M3 SK17 (set of 40 screws and 2 wrenches)	998650
Short M4 SK17 (set of 40 screws and 2 wrenches)	998750



Punch gripper

A(1/2") and B(1 1/4")

The punch gripper is used to securely fix a punch without damaging it when adjusting the height of the punch, for example. Simply insert the punch in the punch gripper, and set the punch gripper in a vice.



■ List of punch gripper

Description	Code No.
Long punch gripper	-
Short punch gripper	-

QS pliers

(for QS stripper)

The QS pliers are a convenient dedicated tool for removing a guide from a spring unit and for removing a QS stripper (made of plastic) or QM stripper (made of metal) from the guide.

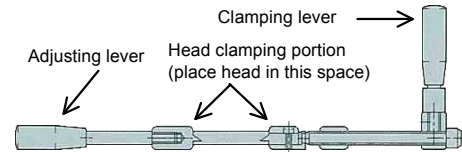
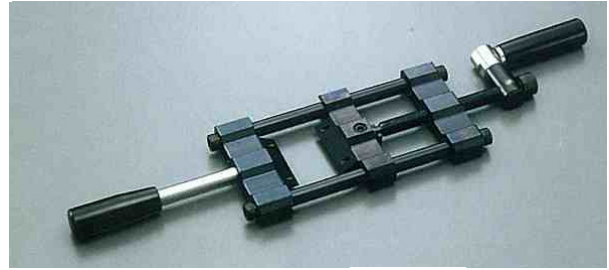


■ List of QS pliers

Description	Code No.
QS pliers	911910

Head adjusting jig

This jig can simply adjust the height of a double punch head. Hold and clamp the head with the jig to move away the tapered portion of punch. Turn the entire head to adjust the punch height.



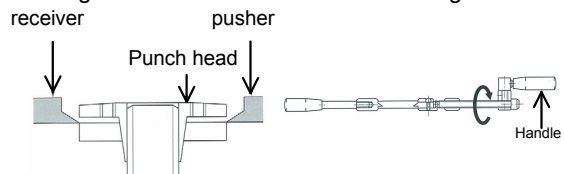
■ List of head adjusting jig

Description	Code No.
Head adjusting jig	913800

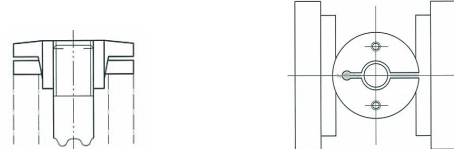
■ Method of height adjustment by head adjusting jig

1. Set the tool on assembly jig or vice after removing guide.

2. Insert the receiver and pusher of jig into the head by aiming the slit of double head and rotating the handle.

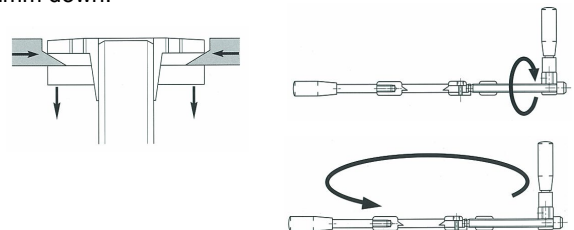


Note : In the type of slit method head, set the jig at 90° angle to the slit.



3. Widen the gap of double head by rotating the jig handle. Torque is needed to widen the double head, so straighten the handle to rotate.

Double head can be adjusted freely by rotating the head adjusting jig after confirming that lower head is 1mm ~ 2mm down.



4. Use this jig for punch body replacement.

Step : Install the 1)retainer, 2)Spring and 3)Head on to punch body.

Then tighten the head by hand.

After that follow the above procedure to 2,3 by using head assemble jig. Finally miner turning is done for punch assembly.

Punch height Long --- 207.5mm (A(1/2"), B(1 1/4"))
 Short --- 139.7mm (A(1/2"), B(1 1/4"))

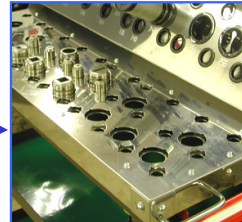
Quick table

Tool change time reduction !

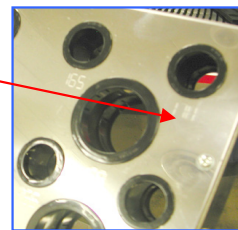
Tool change can be performed efficiently by placing the necessary tool for the next set up on quick table from the tool rack.



Punch and die panels to avoid miss combination. →

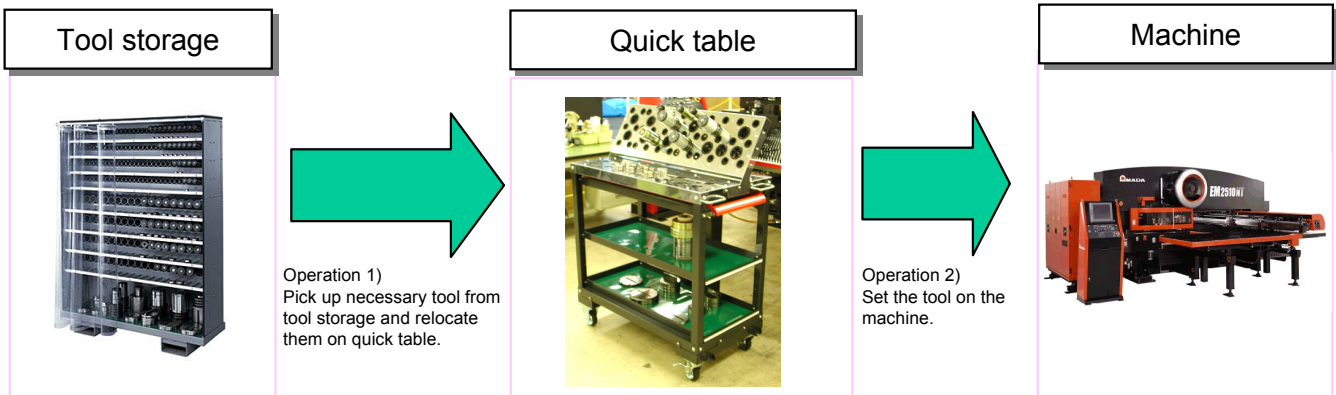


Station numbers to avoid miss install on to turrets. →



Shelves for large station.

■ Use of Quick table



■ Specifications

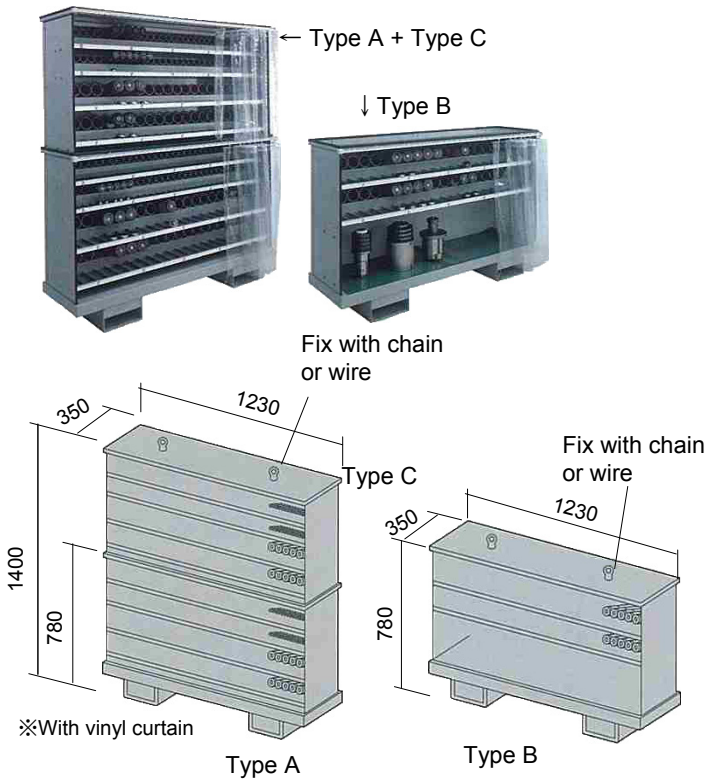
	Tool size	
Tool numbers to store (Total 50 tool)	A(1/2")	B(1 1/4")
	36 tool	14 tool
Size	Width 925mm × Depth 500mm × Height 1230mm	
Max loading weight	200 Kg	
Station numbers	58 station (Except C(2"), D(3 1/2"), E(4 1/2"))	

- ※1. Station number differs by machine.
- ※2. Pay attention for the tooling weight balance when loading the tool.
- ※3. Some forming die cannot be placed on the shelves.
- ※4. When moving quick table to other place, handle carefully.
- ※5. Clean the shelves regularly and remove the slugs.

■ List of Quick table

Description	Code No.
Quick table	959000

System rack



List of system rack

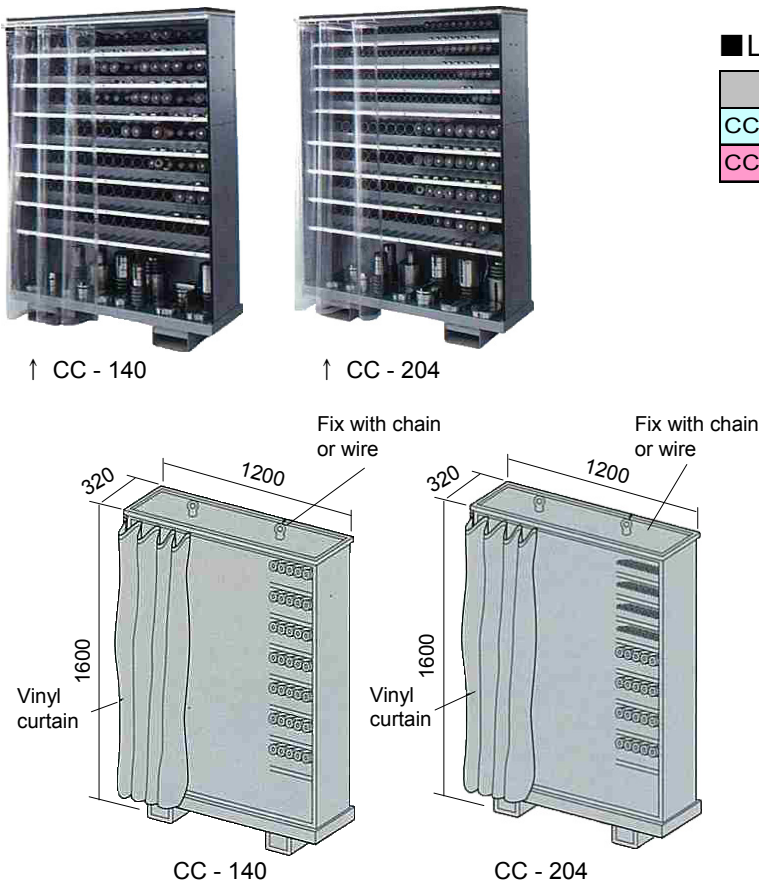
Description	Code No.
Type A (lower)	959010
Type B (lower)	959020
Type C (upper)	959030
Type A + Type C	959040
Type B + Type C	959050

Specifications

Type A	Tooling size	No. of punch	No. of die
Tiers 3 & 4	A(1/2")	31 × 2 = 62	31 × 2 × 3 = 186
Tiers 1 & 2	B(1/4")	20 × 2 = 40	20 × 2 × 3 = 120
Type B	Tooling size	No. of punch	No. of die
Tiers 2 & 3	B(1/4")	20 × 2 = 40	20 × 2 × 3 = 120
Tiers 1	C(2") to E(4 1/2")	1 tier (free)	
Type C	Tooling size	No. of punch	No. of die
Tiers 3 & 4	A(1/2")	31 × 2 = 62	31 × 2 × 3 = 186
Tiers 1 & 2	B(1/4")	20 × 2 = 40	20 × 2 × 3 = 120

- ※Weight is 92 kg for Type A, 80 kg for Type B, and 72 kg for Type C.
- ※When you move a system rack, do not store tools in it.
- ※Use a forklift truck to move the system rack.
- ※The top hooks are provided for fixing the system rack. (Never use them for lifting the system rack.)
- ※Install the system rack on a flat floor.

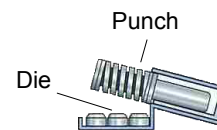
Compact cabinet



List of compact cabinet

Description	Code No.
CC-140	956000
CC-204	957000

[Tooling storing method]



Specifications

CC-140	Tooling size	No. of punch	No. of die
Tiers 2~8	B(1/4")	20 × 7 = 140	20 × 7 × 3 = 420
Tier 1	C(2") to E(4 1/2")	1 tier (free)	
CC-204	Tooling size	No. of punch	No. of die
Tiers 6~9	A(1/2")	31 × 4 = 124	31 × 4 × 3 = 372
Tiers 2~5	B(1/4")	20 × 4 = 80	20 × 4 × 3 = 240
Tier 1	C(2") to E(4 1/2")	1 tier (free)	

- ※Weight is 150 kg for both CC-140, CC-204.
- ※When you move a rack, do not store tools in it.
- ※Use a forklift truck to move the system rack.
- ※The top hooks are provided for fixing the system rack. (Never use them for lifting the system rack.)
- ※Install the system rack on a flat floor.

Automatic tool grinding machine TOGU III

Small to large NCT tools of any shapes can be automatically ground, so that sharp edges can always produce the high quality components.

Grinding feed by a high-performance AC servo motor can effortlessly grind even small-diameter punches at high speed and with high accuracy without breaking them. Grinding of almost any tool can be completed in a matter of a few minutes, including setup.

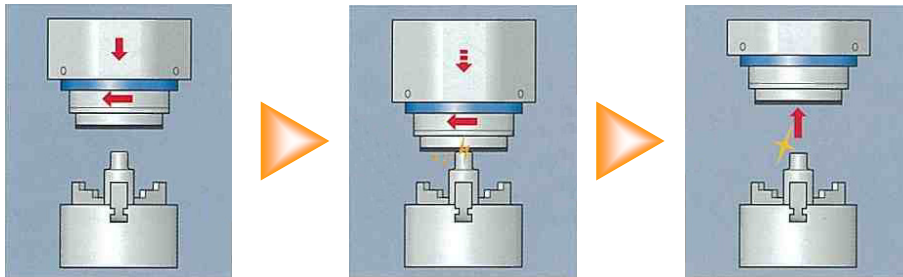
- Automatic detection of grinding position by contact of conductive wheel.
- Setting of grinding amount in 0.01mm increments by digital switch.
- Rotating beacon light tower for seeing operating condition at glance.
- Large front door for ease of setting.

Automatic operation cycle of TOGU III

Set the grinding amount, and press the start button. The grinding wheel starts rotating and lowers at middle speed until it touches the tooling.

When the grinding wheel (conductive wheel) contacts the tooling, an electrical signal flows to detect the grinding position. The grinding operation is then started.

The grinding wheel grinds the tooling to the amount digitally set from the contact position. When it completes the finish grinding of the tooling, the grinding wheel rises at high speed and stops at the upper end.



A(1/2") to E(4 1/2") die

Special jig is used to grind small-diameter die



A(1/2") to B(1 1/4") punch

Punch need not be disassembled, and guide alone is removed



C(2") to E(4 1/2") punch

Roof top shape (with shear angle) can also be ground





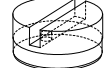

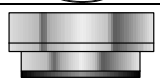




■ Specifications

Grinding wheel	CBN Φ135mm
Maximum tooling diameter	Φ160mm
Minimum diameter to grind	Φ1.51 (guarantee)
Maximum grinding amount	0.99mm
Maximum height	150mm (When E(4 1/2") Shear angle device is used)
Minimum height	Scroll chuck height
Supply voltage	3 Phase AC200V (50 / 60 Hz)
Electric power consumption	2.5 kVA
Air supply	1700L / min (at 0.5MPa)
Machine dimensions	830 W × 1863 H × 800 D mm
Mass of machine	480 Kg (excluding transformer)

- ※1. A transformer is separately required where supply voltage is other than AC200 / 220V.
- ※2. Prepare power cable and air hose (3/8") to the machine.
- ※3. Standard accessory are filter (2pcs. for 1 change) and Grinding wheel. Jigs are Optional.

■ List of accessories jigs (With machine)

Description	Code No.	
Die jig for A(1/2") and B(1 1/4") station (Long and Short common)	86200007 (Parts code)	
C(2") shear-angles punch body sleeve (Long and Short common)	86200005 (Parts code)	
D(3 1/2") shear-angled punch body sleeve (Long and Short common)	86200009 (Parts code)	
E(4 1/2") shear-angled punch body jig (Long)	86200008 (Parts code)	
Jig for alpha blade punch (D(3 1/2") and E(4 1/2") common)	TG3520 (Tooling code)	
Short A(1/2") and B(1 1/4") punch body spacer	86000018 (Parts code)	
Grinding wheel	86279819 (Parts code)	
Dresser	86279884 (Parts code)	Dresser → 
Dresser holder	86091856 (Parts code)	Dresser holder → 
Filter (2pcs. as a pair)	86279844 (Parts code)	

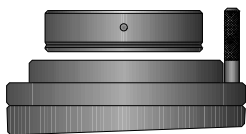
※Order the jig as machine parts except jig for α blade guide.

■ Coolant Togu grinding oil (AMADA special oil)

■ Jig combination for shear angle on punch body

Ex1. C(2") shear-angled punch

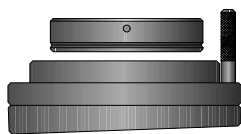
C(2") shear-angled punch body sleeve



E(4 1/2") shear-angled punch body jig

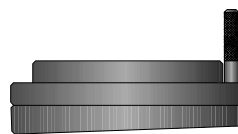
Ex2. D(3 1/2") shear-angled punch

D(3 1/2") shear-angled punch body sleeve



E(4 1/2") shear-angled punch body jig

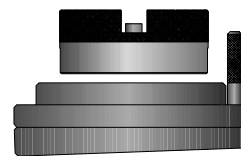
Ex3. E(4 1/2") shear-angled punch



E(4 1/2") shear-angled punch body jig

Ex4. D(3 1/2"), E(4 1/2") alpha blade punch

alpha blade punch jig



E(4 1/2") shear-angled punch body jig

■ Required space for TOGU III installation



Air-blow system V·EX

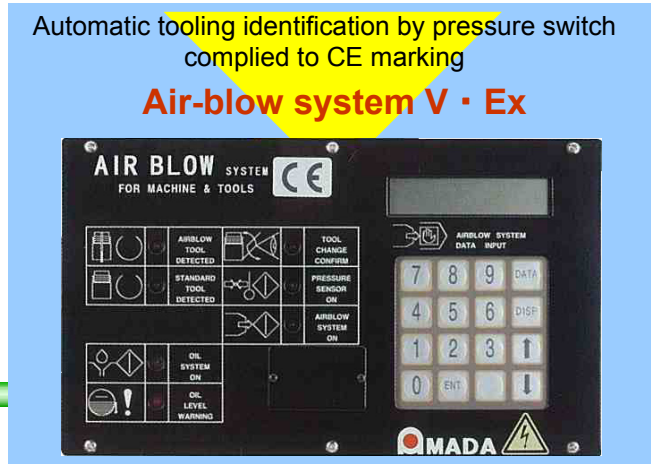
Each time the NCT hits the tooling, the air-blow system automatically cleans and lubricates the tooling to prevent any punching problems.

The air-blow system injects air into the tooling as the NCT (NCT turret punch press) punches the material. It also delivers an oil mist in any desired cycle to suit the processing condition of the material. The air-blow system ejects slugs and foreign body, efficiently cools and lubricates the turret bore and tooling, prevents problems, and greatly improves tooling life and part quality.

● **Operation mode (Air-blow ON · OFF) is selected as bellow.**

1. **Auto mode** : Actuate air-blow unit automatically by sensing air pressure to the air-blow type tool.
2. **M code mode** : Actuate air-blow unit by M code in the NC program.

- **Settable for discharge cycle**
- **Oil discharge adjustable to optimum amount**
- **Low oil warning lamp installed**



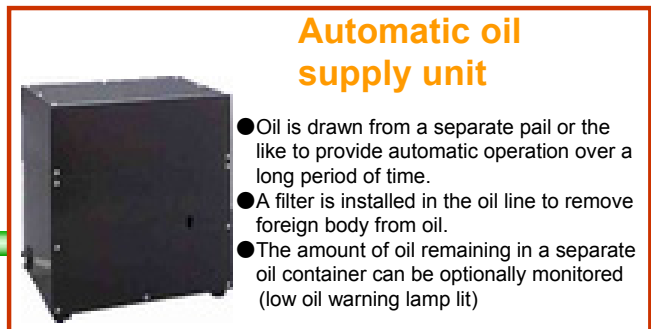
Automatic tooling identification by pressure switch complied to CE marking

Air-blow system V · Ex



Oil tank unit

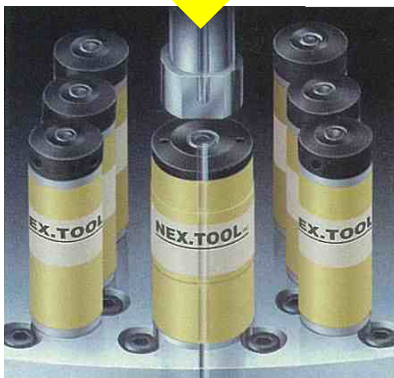
Solenoid unit



Automatic oil supply unit

- Oil is drawn from a separate pail or the like to provide automatic operation over a long period of time.
- A filter is installed in the oil line to remove foreign body from oil.
- The amount of oil remaining in a separate oil container can be optionally monitored (low oil warning lamp lit)

Striker



■ Benefits of air-blow system

Prevention of contamination with foreign body

→ Increase in tooling life by more than 2.5 times longer
Protection for Galling

Reduction of slug pulling
Reduction of strip failures
Reduction of fine needle pulling
Maintenance of hole accuracy (Reduction of droop and burrs)

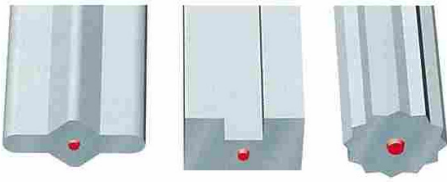
→ Improvement in productivity
Reduction of rejected parts

■ List of air-blow oil

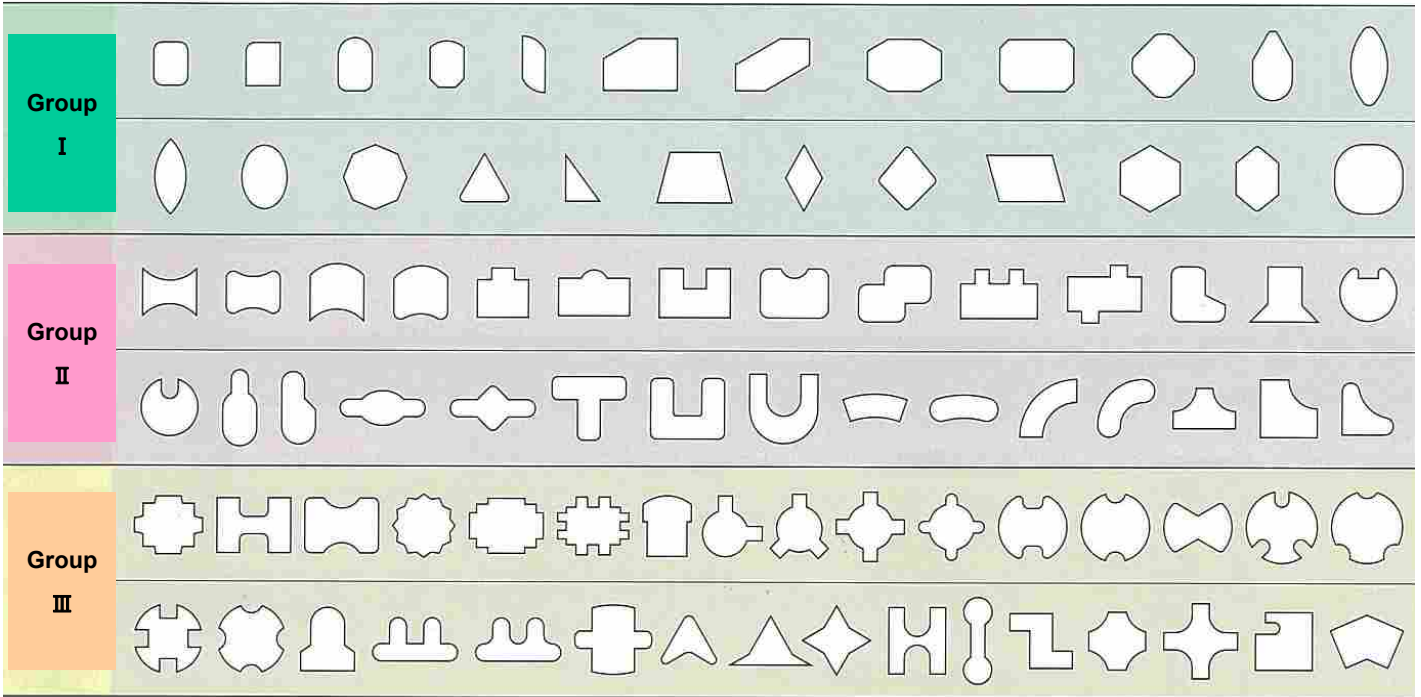
Description	Code No.
Air-blow oil, machining, 32C ※ ¹ (20L· Pail)	999610
Air-blow oil, machining, 32C ※ ¹ (4L can)	999640
Air-blow oil, drying, 18C ※ ² (20L· pail)	999620
Air-blow oil, drying, 18C ※ ² (4L can)	999630
Air-blow oil, noncombustible AML-46 ※ ³ (20L· pail)	999670
Air-blow oil, noncombustible AML-46 ※ ³ (4L can)	999680

※1. Base Mechanical oil #32 improved lubrication and cutting performance.
 ※2. Higher viscosity than mechanical oil #32 and easy disappear by heat.
 ※3. Developed oil for laser machine, high non-flammable avoiding the fire catch.

Special shape tooling (Semi-standard tooling)



- A component that is produced by the combination of standard shape tools can be produced by a single special shape tool in shorter time and with higher accuracy.
- If you find in the figures below a shape similar to that of your part, specify your dimensions of the shape.
- When you place an order, attach drawings as much as possible to prevent errors.
- Be sure to specify the key location (processing direction).
- Shear proof (Punch with heel) is recommended for edge notching.



■ Semi-standard tool list

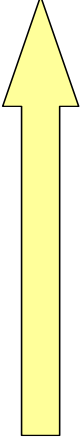
Tool type	Size	Group	Set assy SKD	Air-blow Set assy SKH	Punch body SKD	Air-blow Punch body SKH	Die
Thick Turret (03)	A (1/2")	Group I	-	-	-	-	-
		Group II	-	-	-	-	-
		Group III	-	-	-	-	-
	B (1 1/4")	Group I	-	-	-	-	-
		Group II	-	-	-	-	-
		Group III	-	-	-	-	-
	C (2")	Group I	-	-	-	-	-
		Group II	-	-	-	-	-
		Group III	-	-	-	-	-
	D (3 1/2")	Group I	-	-	-	-	-
		Group II	-	-	-	-	-
		Group III	-	-	-	-	-
E (4 1/2")	Group I	-	-	-	-	-	
	Group II	-	-	-	-	-	
	Group III	-	-	-	-	-	

※When required shape is not found in the table, contact AMADA.

※Power vacuum die may not be available by the shape.

■ Punching tool steel type and features

Table1.Comparison of tool steel

Steel type		Material to be punched			Durability
		Mild steel	Stainless steel	Aluminum	
APH	Max. material thickness (Recommended)	less than 6.0mm adhesive wear resistance	less than 3.0mm adhesive wear resistance	less than 6.0mm adhesive wear resistance	long life 
	Hardness	Body material : HRc 65 (HV830) Coated surface : HV3000 up to 3500			
	Feature	Amada's original powder metallurgy gives uniform grain structure. It provides high hardness, toughness, impact strength and wear resistance. Low friction coefficient provides trouble free productivity through longer punch life.			
SKH-F	Max. material thickness (Recommended)	less than 4.5mm adhesive wear resistance	less than 3.0mm adhesive wear resistance	less than 4.5mm adhesive wear resistance	
	Hardness	Surface hardness HV900 up to 1000			
	Feature	Nitrided (named as F-deal) high speed steel. Its surface has much abrasive-wear resistance than SKD and SKH. Suitable to notch and slot adhesive wear materials like aluminum & heavy duty plate.			
SKH	Max. material thickness (Recommended)	less than 4.5mm	less than 3.0mm	less than 4.5mm	
	Hardness	HRc 63 (HV770)			
	Feature	High speed tool steel. Higher hardness & toughness with abrasive wear resistance. Much durable than SKD for slotting and notching.			
SKD	Max. material thickness (Recommended)	less than 2.3mm	suitable for less hit number and single punching	less than 2.3mm	Low cost
	Hardness	HRc 60 (HV700)			
	Feature	Most popular alloyed tool steel. Suitable for single punching at low cost.			

Cautions and instructions about tooling



WARNING

Before you use tooling, carefully read the operator's manual of the machine, and tooling as specified in the manual.

Unless you observe the cautions described below, the tooling or parts may break, resulting in the risk of personal injury.

1. Use Amada genuine tooling on Amada turret punch press (NCT). Use of other than AMADA made, leads to tool and machine trouble.
2. Before the start of the day's work, be sure to check the tooling. If the tooling is chipped, cracked, deformed, or abnormally worn, do not use it.
3. The tools described in this brochure are manufactured for use on a numerically controlled turret punch press (NCT). Never use them for any other purposes.
4. Never modify or machine the tooling by yourself. Such modification or machining is very dangerous.
5. Do not use the tooling in excess of their maximum allowable tonnage (see the first below) . Otherwise the tooling may break.

■ Maximum allowable tonnage & tool punch size

(Punch tonnage equivalent · maximum diameter of punch that can be used)

	Tool size	A (1/2")				B (1 1/4")			
	Type	Original style		Air-blow		Original style		Air-blow	
	Maximum allowable tonnage	60 kN (6 tonf)		45 kN (4.5 tonf)		170 kN (17 tonf)		160 kN (16 tonf)	
	Material	Mild steel	Stainless steel	Mild steel	Stainless steel	Mild steel	Stainless steel	Mild steel	Stainless steel
Material Thickness (mm)	1.0	Φ12.7	Φ12.7	Φ12.7	Φ12.7	Φ31.7	Φ31.7	Φ30.0	Φ30.0
	2.0	Φ12.7	Φ12.7	Φ12.7	Φ11.5	Φ31.7	Φ31.7	Φ30.0	Φ30.0
	3.0	Φ12.7	Φ10.5	Φ12.0	Φ8.0	Φ31.7	Φ30.0	Φ30.0	Φ28.0
	4.0	Φ11.5	Φ8.0	Φ9.0	NG	Φ31.7	Φ22.5	Φ30.0	Φ25.0
	5.0	Φ9.5	NG	Φ7.0	NG	Φ27.0	Φ18.0	Φ25.5	Φ17.0
	6.0	Φ8.0	NG	NG	NG	Φ23.0	Φ15.0	Φ21.0	Φ14.0

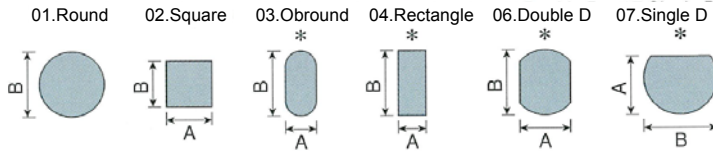
※1. () shows reference value.

※2. All calculation is based up on shear strength Mild steel :400N / mm² stainless steel : 600N / mm².

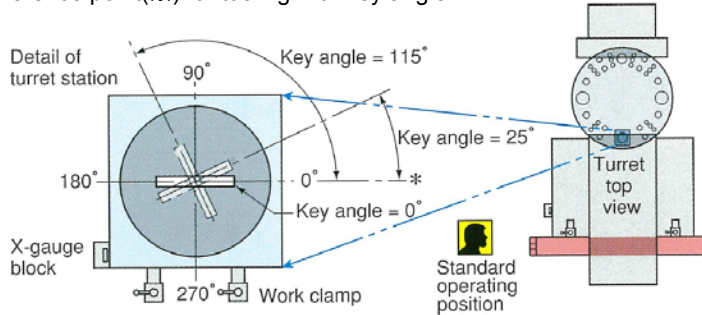
■ Shape, size, and key angle

● Shape reference point(※) of standard tooling

Dimension A = Short-side dimension Dimension B = Long-side dimension



● Reference point(※) for tooling with key angle



■ Table of recommended die clearance (reference values)

NCT drive type	Material type / Material thickness	0.8	1.0	1.5	2.0	2.5	3.0	3.2	3.5	4.0	4.5	5.0	5.5	6.0
Hydraulic	Cold-rolled mild steel	0.15~0.20	0.20~0.25	0.30~0.38	0.40~0.50	0.50~0.63	0.60~0.75	0.64~0.80	0.70~0.88	0.80~1.00	0.90~1.13	1.00~1.25	1.10~1.38	1.20~1.50
	Aluminium	0.15~0.16	0.15~0.20	0.23~0.30	0.30~0.40	0.38~0.50	0.45~0.60	0.48~0.64	0.53~0.70	0.60~0.80	0.68~0.90	0.75~1.00	0.83~1.10	0.90~1.20
	Stainless steel	0.20~0.24	0.25~0.30	0.38~0.45	0.50~0.60	0.63~0.75	0.75~0.90	0.80~0.96	0.88~1.05	1.00~1.20	1.13~1.35	-	-	-
Mechanical	Cold-rolled mild steel	0.15	0.15~0.18	0.18~0.27	0.24~0.36	0.30~0.45	0.36~0.54	0.38~0.58	0.42~0.63	0.48~0.72	0.54~0.81	0.60~0.90	0.66~0.99	0.72~1.08
	Aluminium	0.15	0.15~0.16	0.15~0.24	0.20~0.32	0.25~0.40	0.30~0.48	0.32~0.51	0.35~0.56	0.40~0.64	0.45~0.72	0.50~0.80	0.55~0.88	0.60~0.96
	Stainless steel	0.15~0.18	0.15~0.22	0.21~0.33	0.28~0.44	0.35~0.55	0.42~0.66	0.45~0.70	0.49~0.77	0.56~0.88	0.63~0.99	-	-	-

- Definition of AC servo motor NCT and hydraulic NCT is that the machine of which stroke of striker can be controlled by parameter.
- Definition of Mechanical NCT is that the machine like PEGA, COMA, ARIES of which stroke of striker is fixed.
- The values of tooling clearance in the table above are those of two-side clearance. The punch-to-die clearance (one-side clearance) is a half of the corresponding value in the table.

■ Punching force calculation method

$$P = A \times \tau \times t \div 1000$$

P → Punching force (kN)
 A → Cut contour length (mm)
 τ → Tensile strength (N / mm²)
 t → Material thickness (mm)

Material type	Tensile strength τ [N/mm ²]
Mild steel	400
Aluminium	200
Stainless steel	600

● Tonnage calculation examples

Ex1. Mild steel 2.3t Φ 23.5

$$\text{Required tonnage} = \frac{\Phi 23.5 \times 3.14 \times 400 \times 2.3}{1000} = 67.9 \text{ kN}$$

EX2. Aluminium 1.5t RE 10×50

$$\text{Required tonnage} = \frac{(10 + 10 + 50 + 50) \times 200 \times 1.5}{1000} = 36 \text{ kN}$$

EX3. Aluminium 1.5t Obround 10×50

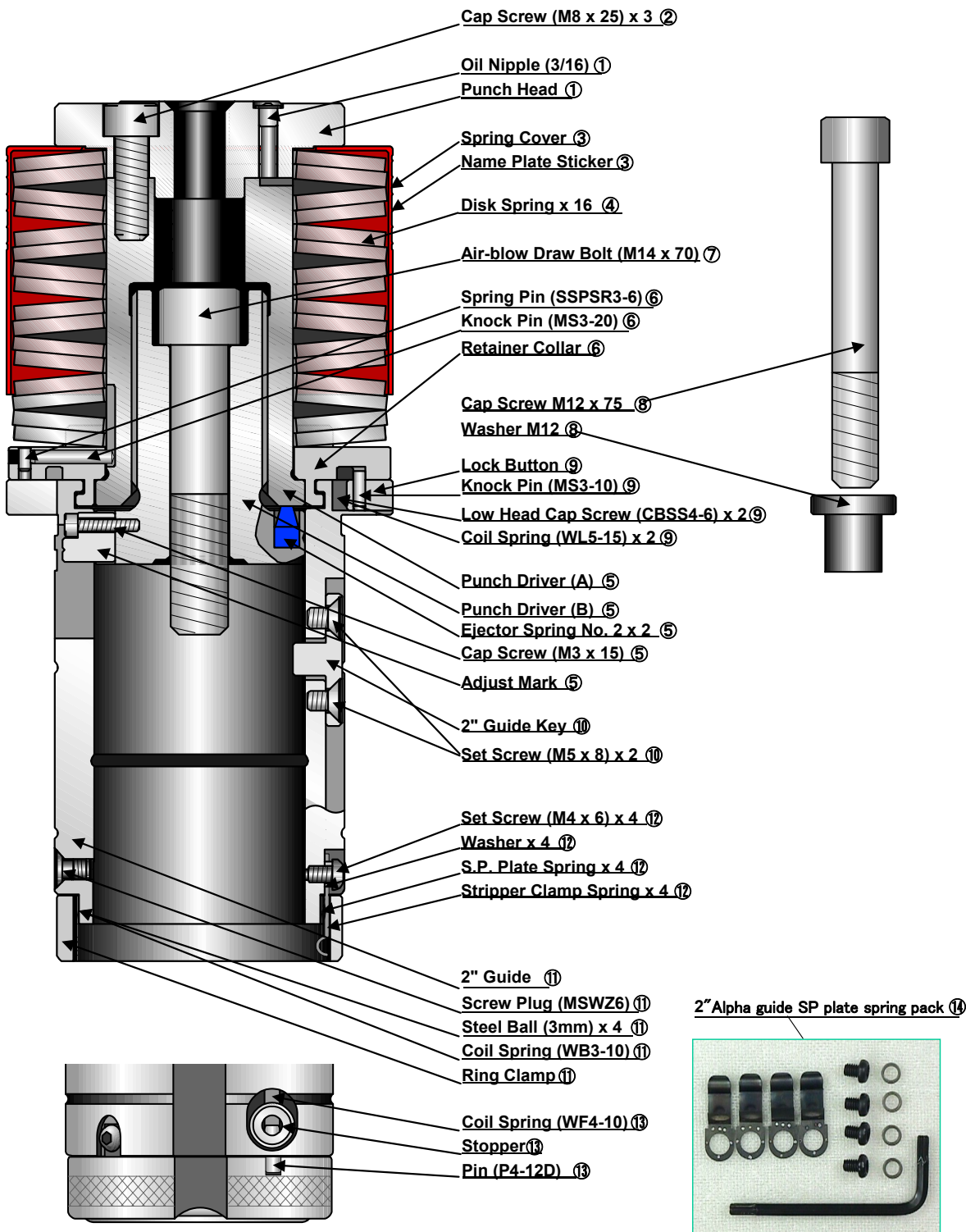
$$\text{Required tonnage} = \frac{(\{3.14 \times \Phi 10\} + \{40 + 50\}) \times 200 \times 1.5}{1000} = 33.4 \text{ kN}$$

■ Minimum punchable hole diameter

Attention : minimum diameter size has a smaller proof tonnage on the punch edge and lead to the punch break.

Material type	Guarantee
Mild steel	$t \times 1.0$
Aluminium	$t \times 1.0$
Stainless steel	$t \times 2.0$

C 2" Alpha Guide assy



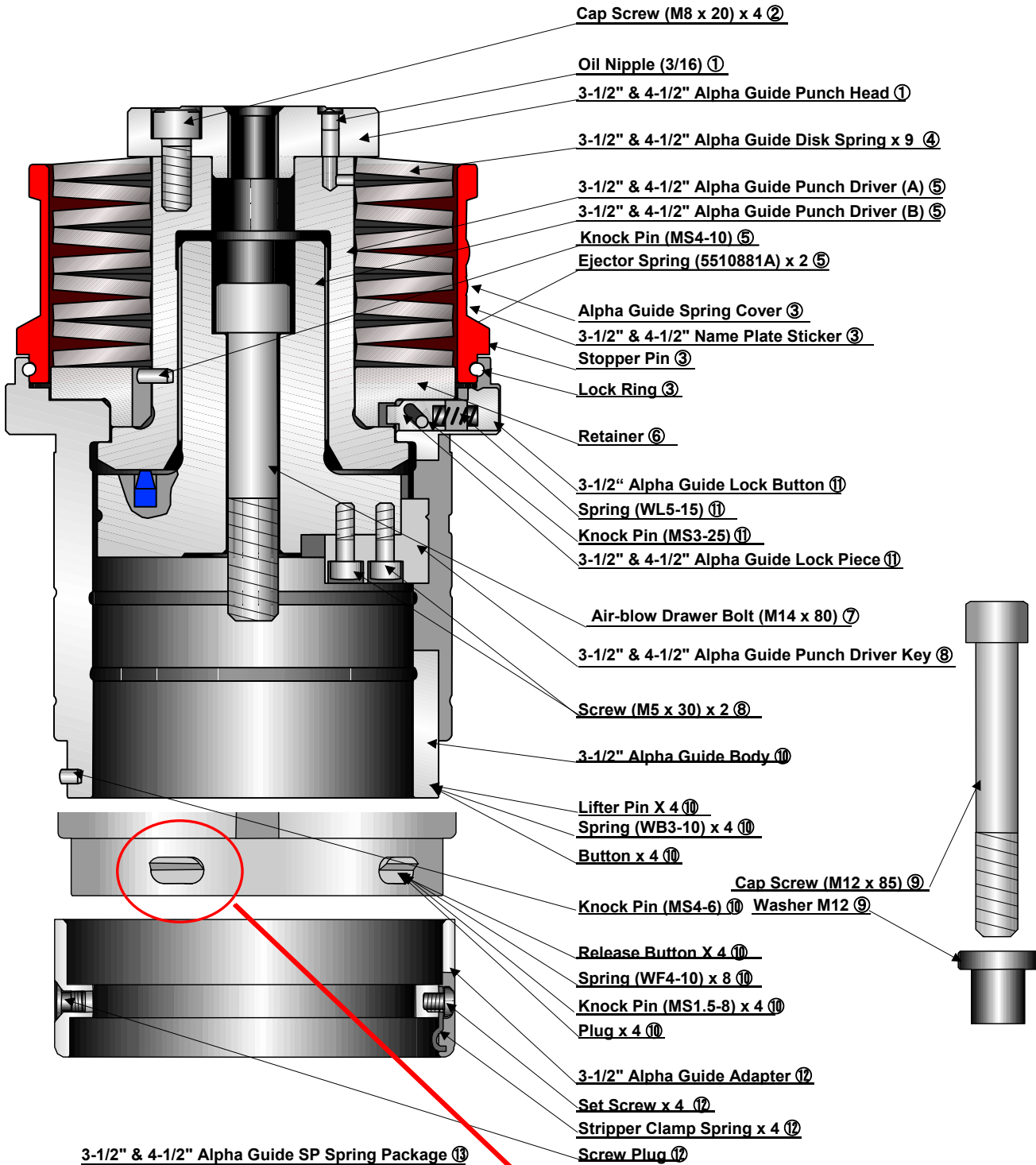
C 2" Alpha Guide assy

Part No.	Description	DWG No.	Code No.	Q'ty
	2" Alpha Guide assy with cap screw set #8	5808803	90743E	1

2" Alpha Guide Parts

1	Punch Head set		907460	1
	Punch Head	5808808		1
	Oil Nipple	3/16		1
2	Cap Screw	M8X25	907470	3
3	Spring Cover set		907480	1
	Spring Cover	5808814		1
	Name Plate Sticker	5808815		1
4	Disk Spring	5808092	907490	16
5	Punch Driver set		907500	1
	Punch Driver (A)	5808805		1
	Punch Driver (B)	5808806		1
	Adjust Mark	5808810		1
	Cap Screw M3 x 15	M3X15		1
	Ejector Spring No. 2	5510881 A		2
6	Retainer Collar set		907510	1
	Retainer Collar	5808807		1
	Knock Pin	MS3-20		1
	Spring Pin	SSPSR3-6		1
7	Air-blow Draw Bolt (M14 x 70)	5522712	907520	1
1~8	2" Alpha Guide Spring Unit		907540	1
9	Lock Button set		907550	1
	Lock Button	5808812		1
	Knock Pin	MS3-10		1
	Coil Spring	WL5-15		2
	Low Head Cap Screw	CBSS4-6		2
10	2" Guide Key set		907560	1
	2" Guide Key	5808613		1
	Set Screw (M5 x 8)	M5X8		2
11	2" Guide Body set		907570	1
	2" Guide Body	5808804		1
	Ring Clamp	5808809		1
	Steel Ball (3mm)			4
	Knock Pin	MS3-6		1
	Coil Spring	WB3-10		1
	Screw Plug	MSWZ6		2
12	Stripper Clamp Spring set		907450	1
	Stripper Clamp Spring	5808813		4
	SP Plate Spring	5808816		4
	Washer	5808306 A		4
	Set Screw (M4 x 6)	M4X6		4
13	Stopper set		907590	1
	Stopper	5808811		1
	Coil Spring	WF4-10		1
	Pin	P4-12D		1
9~13	2" Alpha Guide Guide Unit		907600	1
14	2" Guide assy SP Plate Spring Package		907450	1

D 3 1/2" Alpha Guide assy



3-1/2" & 4-1/2" Alpha Guide SP Spring Package ⑬



Details of Lock & Release button



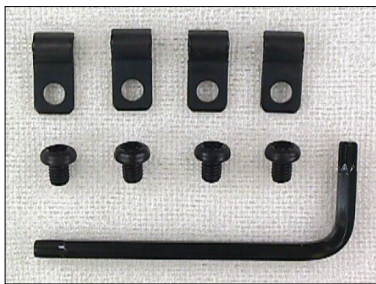
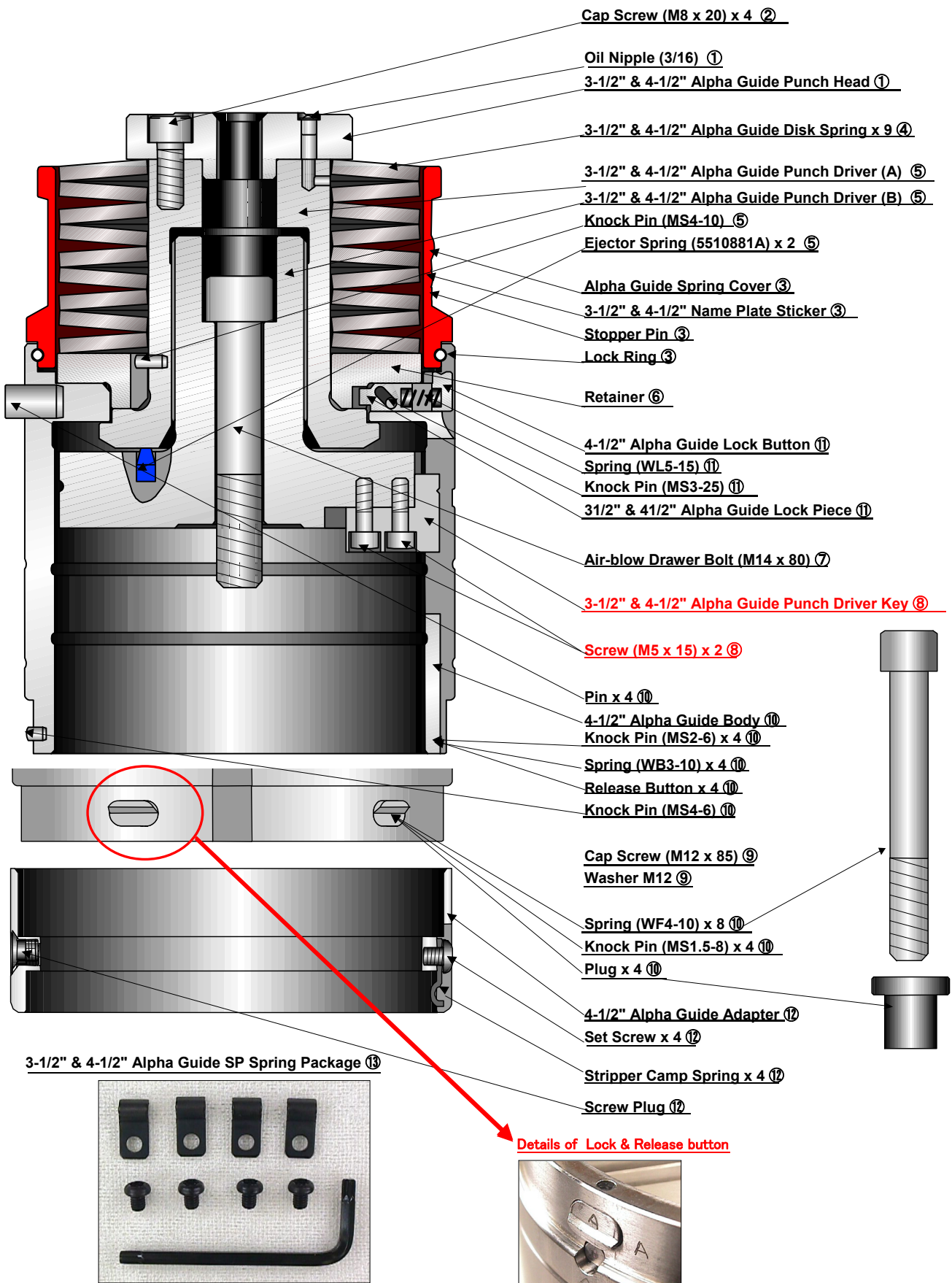
D 3½" Alpha Guide assy

Part No.	Description	DWG No.	Code No.	Q'ty
	3-1/2" Alpha Guide assy with adapter #12 + cap screw se #9		90719E	1
	3-1/2" Alpha Guide assy + cap screw set #9 (without adapter)	5808711 K	90713E	1

3-1/2" Alpha Guide Parts

1	3-1/2" & 4-1/2" Alpha Guide Punch Head set		907630	1
	3-1/2" & 4-1/2" Alpha Guide Punch Head	5808715 A		1
	Oil Nipple	3/16		1
2	Cap Screw (M8 x 20)	M8X20	907640	4
3	3-1/2" & 4-1/2" Alpha Guide Spring Cover set		907650	1
	Alpha Guide Spring Cover	5808717		1
	Stopper Pin	5808724		1
	Lock Ring	5808725		1
	3-1/2" & 4-1/2" Alpha Guide Name Plate Sticker	5808832		1
4	3-1/2" & 4-1/2" Alpha Guide Disk Spring	5808718	907660	9
5	3-1/2" Alpha Guide Punch Driver set		907670	1
	3-1/2" & 4-1/2" Alpha Guide Punch Driver (A)	5808713		1
	Knock Pin	MS4-10		1
	3-1/2" Alpha Guide Punch Driver (B)	5808888		1
	Ejector Spring	5510881 A		2
6	Retainer	5808716	907680	1
7	Air-blow Drawer Bolt (M14 x 80)	5808732	907690	1
8	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key with screws		908700	1
	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key	5808879		1
	Cap Screw (M5 x 30)	M5X15		2
9	Cap Screw set		907740	1
	Cap Screw (M12 x 85)	M12X85		1
	Washer M12	5808723		1
10	3-1/2" Alpha Guide Body set		907750	1
	3-1/2" Alpha Guide Body	5808712		1
	Knok Pin	MS4-6		1
	Button	5808828		4
	Release Button	5808829		8
	Spring	WF4-10		4
	Spring	WB3-10		4
	Knoc Pin	MS1.5-8		4
	Knock Pin	MS2-6		4
	Plug	5808731		4
11	3-1/2" Alpha Guide Lock Button set		907760	1
	3-1/2" & 4-1/2" Alpha Guide Lock Piece	5808830		1
	3-1/2" Alpha Guide Lock Button	5808831		1
	Spring	WL5-15		1
	Knock Pin	MS3-25		1
12	3-1/2" Alpha Guide Adapter set		907170	1
	3-1/2" Alpha Guide Adapter	5808727		1
	Stripper Clamp Spring	5808730		4
	Set Screw	5526780		4
	Screw Plug	MSWZ6		2
13	3-1/2" Alpha Guide SP Spring Package		907780	1

E 4 1/2" Alpha Guide assy



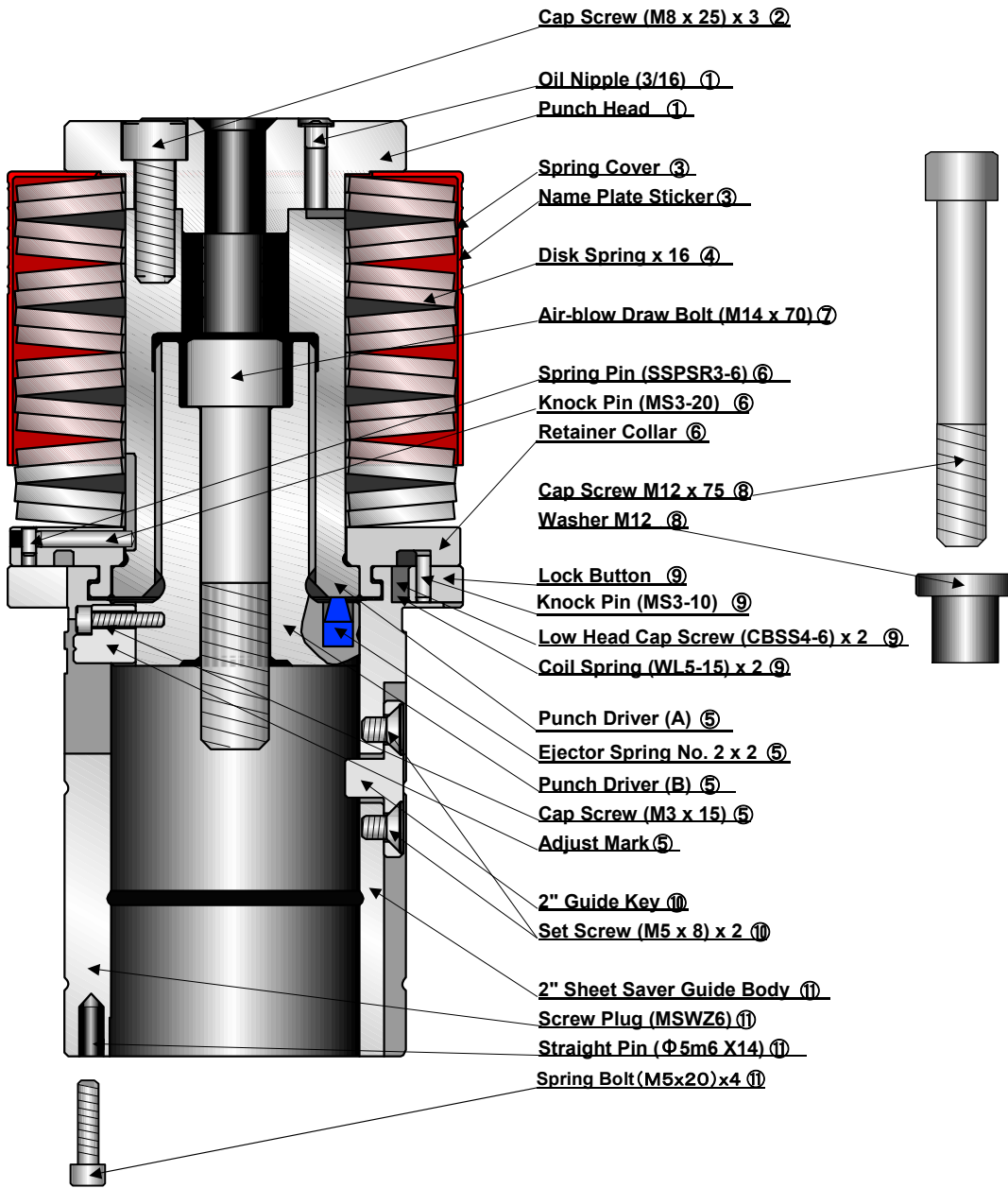
E 4½" Alpha Guide assy

Part No.	Description	DWG No.	Code No.	Qty
	4-1/2" Alpha Guide assy with adapter #12 + cap screw set #9		90720E	1
	4-1/2" Alpha Guide assy + cap screw set #9 (without adapter)	5808740 K	90714E	1

4-1/2" Alpha Guide Parts

1	3-1/2" & 4-1/2" Alpha Guide Punch Head set		907630	1
	3-1/2" & 4-1/2" Alpha Guide Punch Head	5808715 A		1
	Oil Nipple	3/16		1
2	Cap Screw (M8 x 20)	M8X20	907640	4
3	3-1/2" & 4-1/2" Alpha Guide Spring Cover set		907650	1
	Alpha Guide Spring Cover	5808717		1
	Stopper Pin	5808724		1
	Lock Ring	5808725		1
	3-1/2" & 4-1/2" Alpha Guide Name Plate Sticker	5808832		1
4	3-1/2" & 4-1/2" Alpha Guide Disk Spring	5808718	907660	9
5	4-1/2" Alpha Guide Punch Driver set		907800	1
	3-1/2" & 4-1/2" Alpha Guide Punch Driver (A)	5808713		1
	Knock Pin	MS4-10		1
	4-1/2" Alpha Guide Punch Driver (B)	5808890		1
	Ejector Spring	5510881 A		2
6	Retainer	5808716	907680	1
7	Air-blow Drawer Bolt (M14 x 80)	5808732	907690	1
8	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key with screws		908700	1
	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key	5808879		1
	Cap Screw (M5 x 15)	M5X15		2
9	Cap Screw set		907740	1
	Cap Screw (M12 x 85)	M12X85		1
	Washer M12	5808723		1
10	4-1/2" Alpha Guide Body set		907810	1
	4-1/2" Alpha Guide Body	5808800 A		1
	Pin	5501067 A		1
	Knock Pin	MS4-6		1
	Button	5808828		4
	Release Button	5808829		8
	Spring	WF4-10		4
	Spring	WB3-10		4
	Knock Pin	MS1.5-8		4
	Knock Pin	MS2-6		4
	Plug	5808731		4
11	4-1/2" Alpha Guide Lock Button set		907820	1
	3-1/2" & 4-1/2" Alpha Guide Lock Piece	5808830		1
	4-1/2" Alpha Guide Lock Button	5808832		1
	Spring	WL5-15		1
	Knock Pin	MS3-25		1
12	4-1/2" Alpha Guide Adapter set		907180	1
	4-1/2" Alpha Guide Adapter	5808727		1
	Stripper Clamp Spring	5808730		4
	Set Screw	5526780		4
	Screw Plug	MSWZ6		2
13	3-1/2" & 4-1/2" Alpha Guide SP Spring Package		907780	1

C 2" Alpha Sheet Saver Guide assy



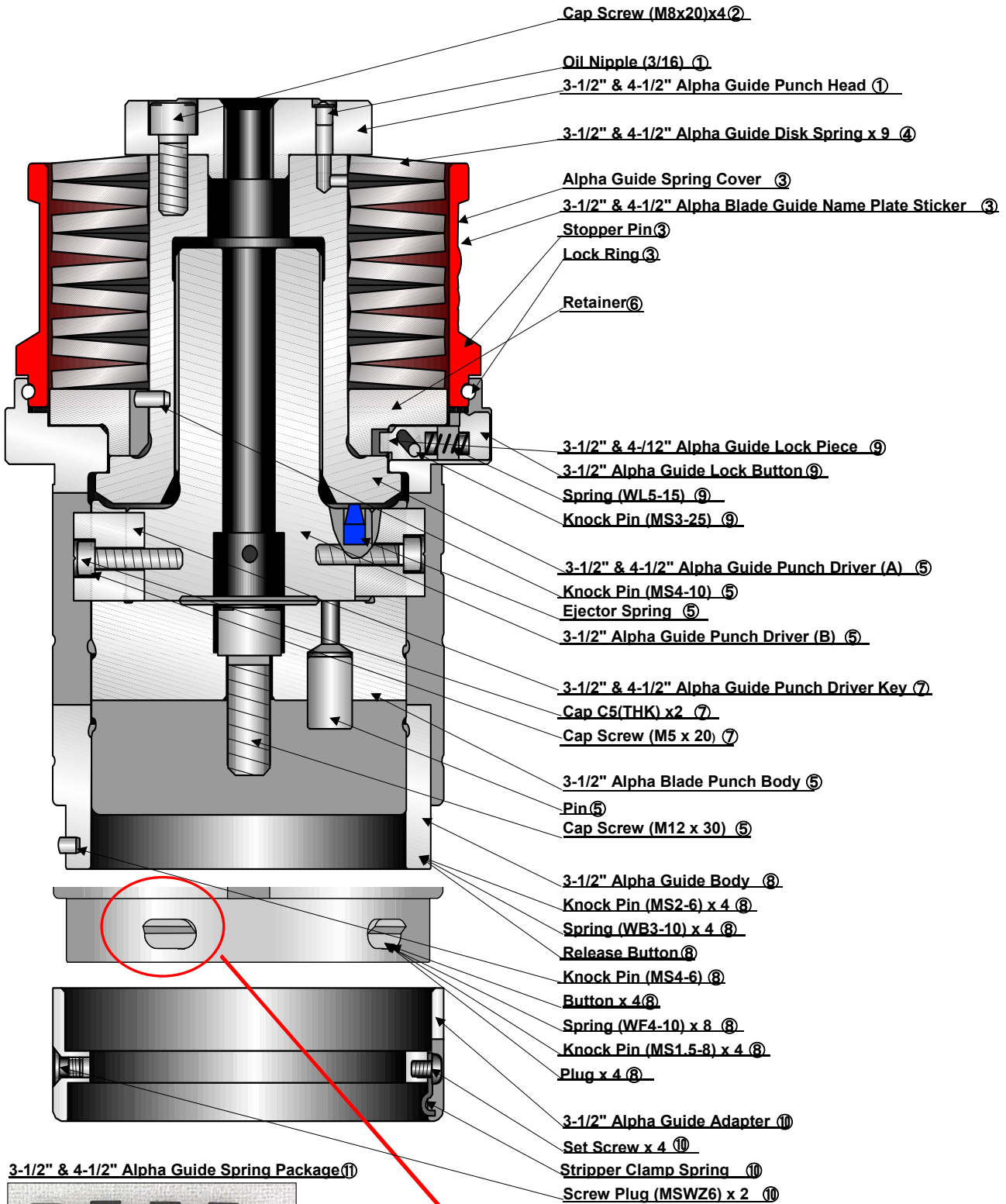
C 2" Alpha Sheet Saver Guide assy

Part No.	Description	DWG No.	Code No.	Q'ty
	2" Alpha Sheet saver Guide assy + capscrew set #8	5808817	90744E	1

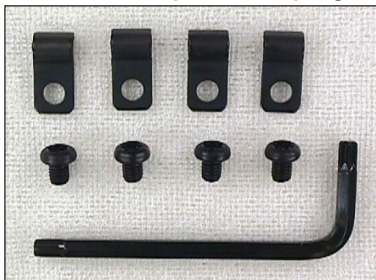
2" Alpha Sheet Saver Guide Parts

1	Punch Head set		907460	1
	Punch Head	5808808		1
	Oil Nipple	3/16		1
2	Cap Screw	M8X25	907470	3
3	Spring Cover set		907480	1
	Spring Cover set	5808814		1
	Name Plate Sticker	5808815		1
4	Disk Spring	5808092	907490	16
5	Punch Driver set		907500	1
	Punch Driver (A)	5808805		1
	Punch Driver (B)	5808806		1
	Adjust Mark	5808810		1
	Cap Screw M3 x 15	M3X15		1
	Ejector Spring No. 2	5510881 A		2
6	Retainer Collar set		907510	1
	Retainer Collar set	5808807		1
	Knock Pin	MS3-20		1
	Spring Pin	SSPSR3-6		1
7	Air-blow Draw Bolt (M14 x 70)	5522712	907520	1
8	Cap Screw set		907530	1
	Cap Screw M12 x 75	M12X75		1
	Washer M12	5808723		1
1-8	2" Alpha Guide Spring Unit		907540	1
9	Lock Button set		907550	1
	Lock Button	5808812		1
	Knock Pin	MS3-10		1
	Coil Spring	WL5-15		2
	Low Head Cap Screw	CBSS4-6		2
10	Guide Key set		907560	1
	2" Guide Key	5808613	908430	1
	Set Screw (M5 x 8)	M5X8	999300	2
11	2" Alpha Sheet Saver Guide Body set		907610	1
	2" Alpha Sheet Saver Guide Body	5808818		1
	Straight Pin (φ5m6X14L)			1
	Spring Bolt (M5 X 20)			4
	Screw Plug	MSWZ6		2

D 3 1/2" Alpha Blade Guide assy



3-1/2" & 4-1/2" Alpha Guide Spring Package ⑩



Details of Lock & Release button



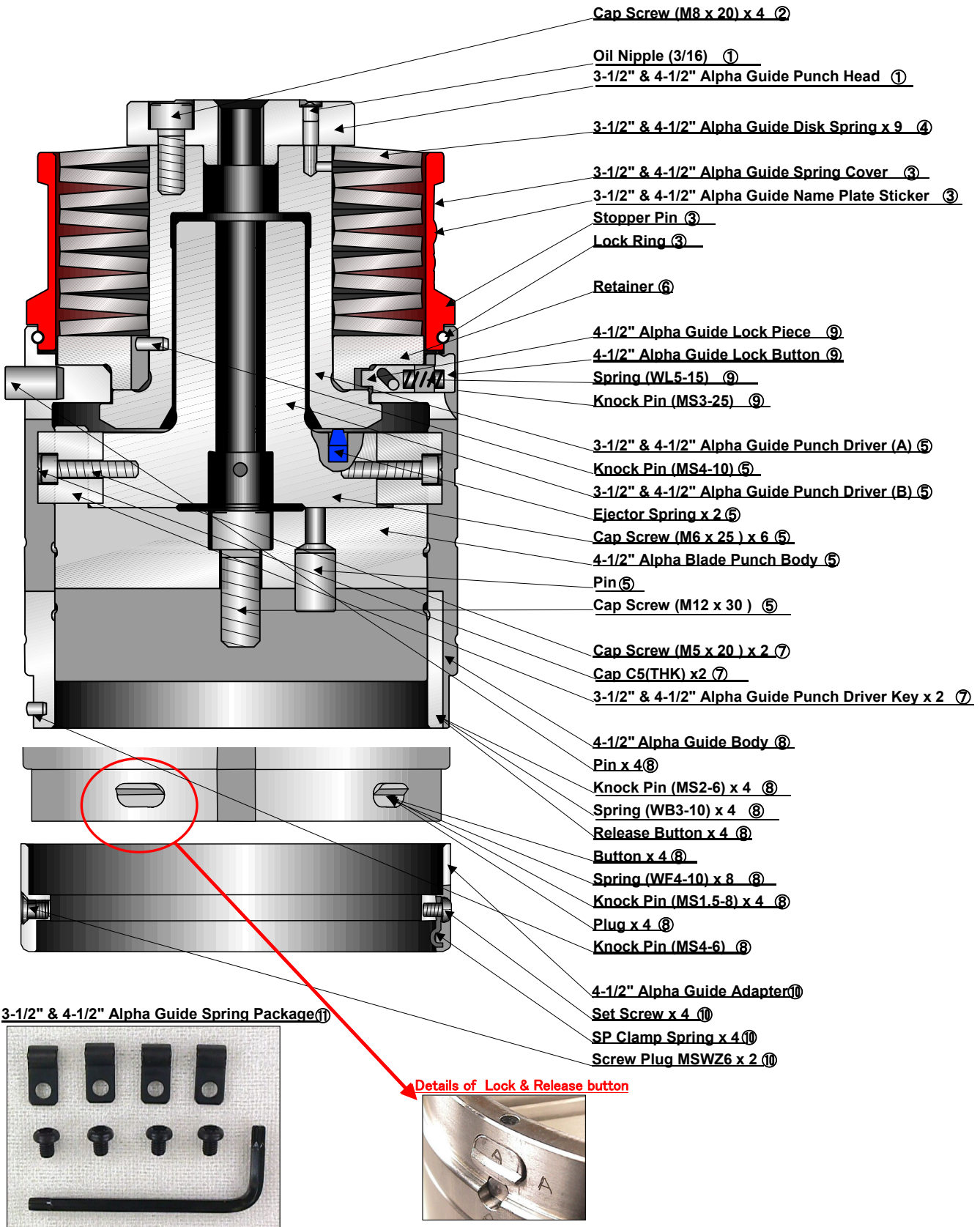
D 3 1/2" Alpha Blade Guide assy

Part No.	Description	DWG No.	Code No.	Q'ty
	3-1/2" Alpha Blade Guide assy with adapter		90721E	1
	3-1/2" Alpha Blade Guide assy (without adapter)	5808735 F	90715E	1

3-1/2" Alpha Blade Guide Parts

1	3-1/2" & 4-1/2" Alpha Guide Punch Head set		907630	1
	3-1/2" & 4-1/2" Alpha Guide Punch Head	5808715 A		1
	Oil Nipple	3/16		1
2	Cap Screw (M8 x 20)	M8X20	907640	4
3	3-1/2" & 4-1/2" Alpha Guide Spring Cover set		907650	1
	Alpha Guide Spring Cover	5808717		1
	Stopper Pin	5808724		1
	Lock Ring	5808725		1
	3-1/2" & 4-1/2" Alpha Blade Guide Name Plate Sticker	5808833		1
4	3-1/2" & 4-1/2" Alpha Guide Disk Spring	5808718	907660	9
5	3-1/2" Alpha Blade Punch Body set		907770	1
	3-1/2" Alpha Blade Punch Body	5808737 A		1
	Pin	5546205 B		1
	Cap Screw (M12 x 30)	M12 x 30		1
	Cap Screw (M6 x 25)	M6 x 25		4
	3-1/2" & 4-1/2" Alpha Guide Punch Driver (A)	5808713		1
	Knock Pin	MS4-10		1
	3-1/2" Alpha Guide Punch Driver (B)	5808736 A		1
	Ejector Spring	5510881 A		2
6	Retainer	5808716	907680	1
7	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key set with screw & cap		908720	2
	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key	5808876		2
	Cap Screw (M5 x 20)	M5X20		2
	Cap	C5 (THK)		2
8	3-1/2" Alpha Guide Body set		907750	1
	3-1/2" Alpha Guide Body	5808712		1
	Knock Pin	MS4-6		1
	Button	5808828		4
	Release Button	5808829		8
	Spring	WF4-10		4
	Spring	WB3-10		4
	Knock Pin	MS1.5-8		4
	Knock Pin	MS2-6		4
	Plug	5808731		4
9	3-1/2" Alpha Guide Lock Button set		907760	1
	3-1/2" & 4-1/2" Alpha Guide Lock Piece	5808830		1
	3-1/2" Alpha Guide Lock Button	5808730		1
	Spring	WL5-15		1
	Knock Pin	MS3-25		1
10	3-1/2" Alpha Guide Adapter set		907170	1
	3-1/2" Alpha Guide Adapter	5808727		1
	Stripper Clamp Spring	5808730		4
	Set Screw	5526780		4
	Screw Plug	MSWZ6		2
11	3-1/2" Alpha Guide SP Spring Package		907780	1

E 4 1/2" Alpha Blade Guide assy



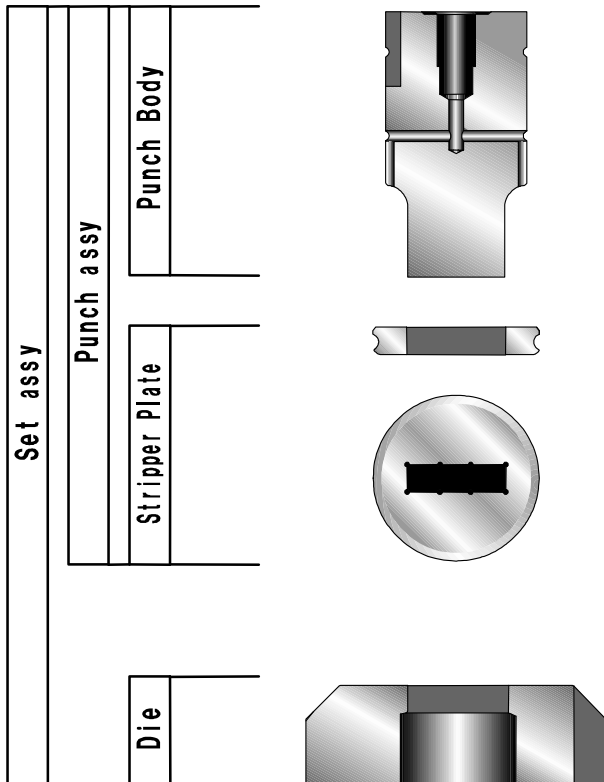
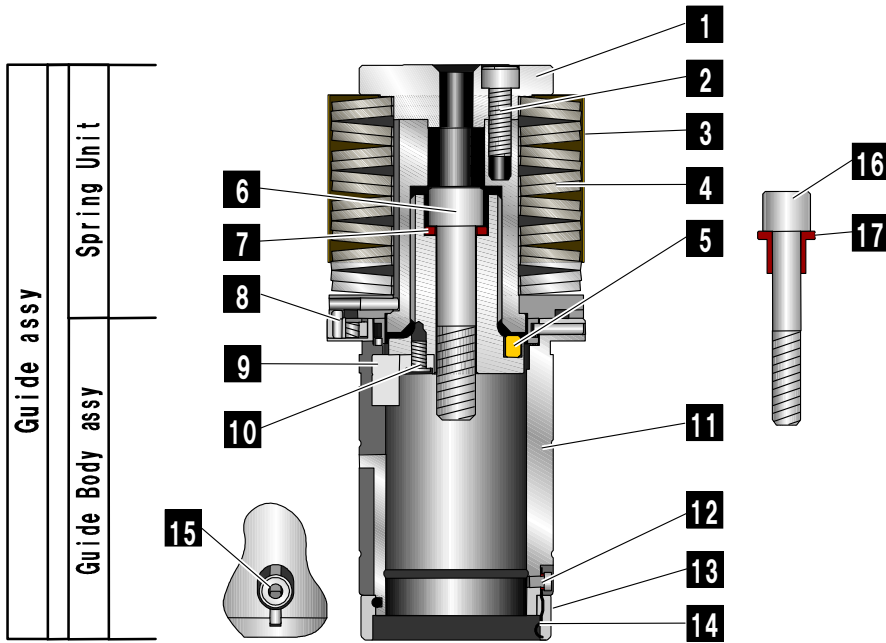
E 4½" Alpha Blade Guide assy

Part No.	Description	DWG No.	Code No.	Q'ty
	4-1/2" Alpha Blade Guide assy with adapter		90722E	1
	4-1/2" Alpha Blade Guide assy (without adapter)	580736 F	90716E	1

4-1/2" Alpha Blade Guide Parts

1	3-1/2" & 4-1/2" Alpha Guide Punch Head set		907630	1
	3-1/2" & 4-1/2" Alpha Guide Punch Head	5808715 A		1
	Oil Nipple	3/16		1
2	Cap Screw (M8 x 20)	M8X20	907640	4
3	3-1/2" & 4-1/2" Alpha Guide Spring Cover set		907650	1
	Alpha Guide Spring Cover	5808717		1
	Stopper Pin	5808724		1
	Lock Ring	5808725		1
	3-1/2" & 4-1/2" Alpha Blade Guide Name Plate Sticker	5808833		1
4	3-1/2" & 4-1/2" Alpha Guide Disk Spring	5808718	907660	9
5	4-1/2" Alpha Blade Punch Body set		907830	1
	4-1/2" Alpha Blade Punch Body	5808748 B		1
	Pin	5546205 B		1
	Cap Screw (M12 x 30)	M12 x 30		1
	Cap Screw (M6 x 25)	M6 x 25		4
	3-1/2" & 4-1/2" Alpha Guide Punch Driver (A)	5808713		1
	Knock Pin	MS4-10		1
	3-1/2" Alpha Guide Punch Driver (B)	5808747 A		1
	Ejector Spring	5510881 A		2
6	Retainer	5808716	907680	1
7	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key set with screw+cap		908720	2
	3-1/2" & 4-1/2" Alpha Guide Punch Driver Key	5808876		2
	Cap Screw (M5 x 20)	M5X20		2
	Cap	C5 (THK)		2
8	4-1/2" Alpha Guide Body set		907810	1
	4-1/2" Alpha Guide Body	5808800 A		1
	Knock Pin	MS4-6		1
	Button	5808828		4
	Release Button	5808829		8
	Spring	WF4-10		4
	Spring	WB3-10		4
	Knock Pin	MS1.5-8		4
	Knock Pin	MS2-6		4
	Plug	5808731		4
9	4-1/2" Alpha Guide Lock Button set		907820	1
	3-1/2" & 4-1/2" Alpha Guide Lock Piece	5808830		1
	4-1/2" Alpha Guide Lock Button	5808831		1
	Spring	WL5-15		1
	Knock Pin	MS3-25		1
10	4-1/2" Alpha Guide Adapter set		907180	1
	4-1/2" Alpha Guide Adapter	5808744		1
	Stripper Clamp Spring	5808730		4
	Set Screw	5526780		4
	Screw Plug	MSWZ6		2
11	4-1/2" Alpha Guide SP Spring Package		907780	1

C 2" Thick turret Z Style Guide Parts List



	Part and Unit Name	Code No.
	2" Z Style Guide Assy (with Wrench)	900500
	2" Z Style Guide Spring Unit	906000
	2" Z Style Guide Body Assy	906030
①	Punch Head	906060
②	Socket Head Cap Screw (3-M8×25)	999600
③	Spring Cover	906080
④	Disk Spring (2x8=16)	906090
⑤	Urethane Stopper	906270
⑥	Air-Blow Draw Bolt (M14×70)	906300
⑦	M 14 Washer	906310
⑧	Adjust Button Unit	906350
⑨	Key	906460
⑩	Low Head Cap Screw (M5x10)	905680
⑪	Guide Body	900900
⑫,⑭	SP Spring Pack	906920
⑬	Stripper Clamp Ring	906580
⑮	Lock Button Unit	906620

Standard Parts and Wrench

⑯	Socket Head Cap Screw (M12×70)	999900
⑰	M12 Collar	906670

Wrench set	906700
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2" Z Style Round

Z Style Air-Blow Round Set	31FZ60
Z Style Air-Blow Round Punch Assy	11FZ60
Air-Blow Round Punch Body	41F060
Z Style Air-Blow Round Stripper Plate	51FZ60
Round Die	211060

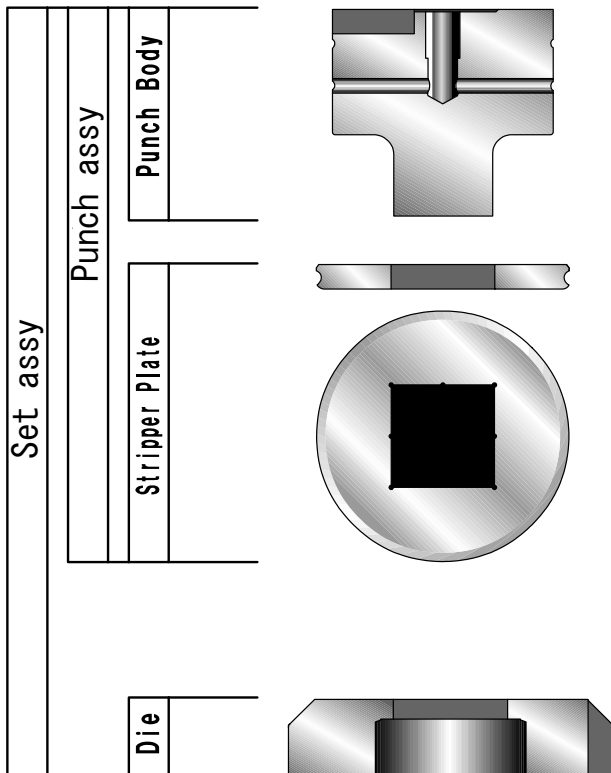
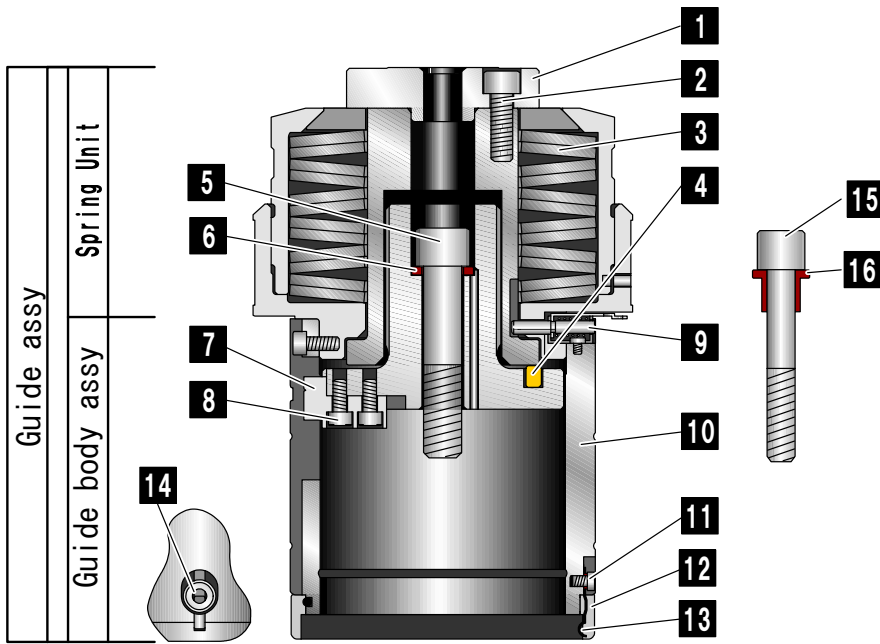
2" Z Style Shape

Z Style Air-Blow Shaped Set	32FZ60
Z Style Air-Blow Shaped Punch Assy	12FZ60
Air-Blow Shaped Punch Body	42F060
Z Style Air-Blow Shaped Stripper Plate	52FZ60
Shaped Die	221060

C 2" Z Style Guide assy

No.	Description	DWG No.	Code No.	Q'ty
	2" Z Guide assy			
	2" Z Style Guide assy (with wrench)		900500	1
	2" Z Style Guide assy (without wrench)	5808300	900530	1
	2" Z Style Guide Spring Unit		906000	1
	2" Z Style Guide Body assy		906030	1
	2" Z Guide assy parts			
1	2" Z Style Guide Punch Head	5808321	906060	1
2	Socket Head Cap Screw M8x25	M8 x 25	999600	3
3	2" Z Style Guide Spring Cover	5808322	906080	1
	Z Tooling Sticker		906170	1
4	2" Z Style Guide Disk Spring	5808092	906090	16
	2" Z Style Guide Punch Driver Set		906190	1
	2" Z Style Guide Outer Punch Driver	5808086 A	906220	1
	2" Z Style Guide Inner Punch Driver	5808302	906240	1
5	Urethane Stopper	5808100	906270	2
	Retainer Collar	5808088 B	906280	1
	Spring Role Pin 4x14	SP4-14	906290	1
6	Air-Blow Draw Bolt M14x70	5808120 A	906300	1
7	M14 Washer	5808304	906310	1
	Air-Blow Draw Bolt M14x70 (with washer)		906320	1
8	Adjust Button Unit		906350	1
	Locate Pin	5808089	906360	1
	Push Button	5808323	906370	1
	Coil Spring	WL5 x 15	906380	2
	Low Head Cap Screw M4x6	CBSS4-6	906390	2
9	2" Z Style Guide Key	5808307	906460	1
10	Low Head Cap Screw (M5x10)		905680	1
11	2" Z Style Guide Body (with pin)	5808301	900900	1
	Spring Roll Pin 4x18	SP4-18	906490	3
	Ball Bearing 3.5	φ3.5	906500	3
	Pedestal Ring	5808309	906510	3
12	SP Spring Pack			1
	Low Head Cap Screw M4x5	5808315	906920	3
	M4 Washer	5808306		3
14	Stripper Clamp Spring	5808308		3
13	2" Z Style Guide Stripper Clamp Ring	5808303	906580	1
15	Lock Button Unit		906620	1
	Stopper Button	5808310	906630	1
	Coil Spring	WF4-10	906640	1
	Stopper Pin	P4-12D	906650	1
	Standard Accessories			
	Socket Head Cap Screw M12x70 (with washer)		906660	1
16	Socket Head Cap Screw M12x70		999900	1
17	M12 Adapter Collar	5808305	906670	1
	Z Style Guide Standard Wrench Set		906700	1
	M10 Hexagon Key Wrench		906710	1
	M6 Hexagon Key Wrench		906720	1
	M4 Hexagon Key Wrench		906730	1
	M3 Hexagon Key Wrench		906740	1
	M2.5 Hexagon Key Wrench		906750	1
	M2 Hexagon Key Wrench		906760	1

D 3 1/2" Thick turret Z Style Guide Parts List



	Part and Unit Name	Code No.
	3-1/2" Z Style Guide assy	900510
	3-1/2" Z Style Guide Spring Unit	906010
	3-1/2" Z Style Guide Body assy	906040
①	Punch Head	906070
②	Socket Head Cap Screw (4—M8×25)	999600
③	Disk Spring (2x5=10)	906180
④	Urethane Stopper	906270
⑤	Air-Blow Draw Bolt (M14×70)	901900
⑥	M 14 washer	906310
⑦	Key	906330
⑧	Socket Head Cap Screw (2—M5×12)	906340
⑨	Adjust Lever Unit	906400
⑩	Guide Body	900910
⑪,⑬	SP Spring Pack	906960
⑫	Stripper Clamp Ring	906590
⑭	Lock Button Unit	906620

Standard parts and wrench

⑮	Socket Head Cap Screw (M12×70)	999900
⑯	M12 Washer	906670

Wrench Set	906700
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3-1/2" Z Style Round

Z Style Air-Blow Round Set	31FZ80
Z Style Air-Blow Round Punch assy	11FZ80
Air-Blow Round Punch Body	41F080
Z Style Air-Blow Round Stripper Plate	51FZ80
Round Die	211080

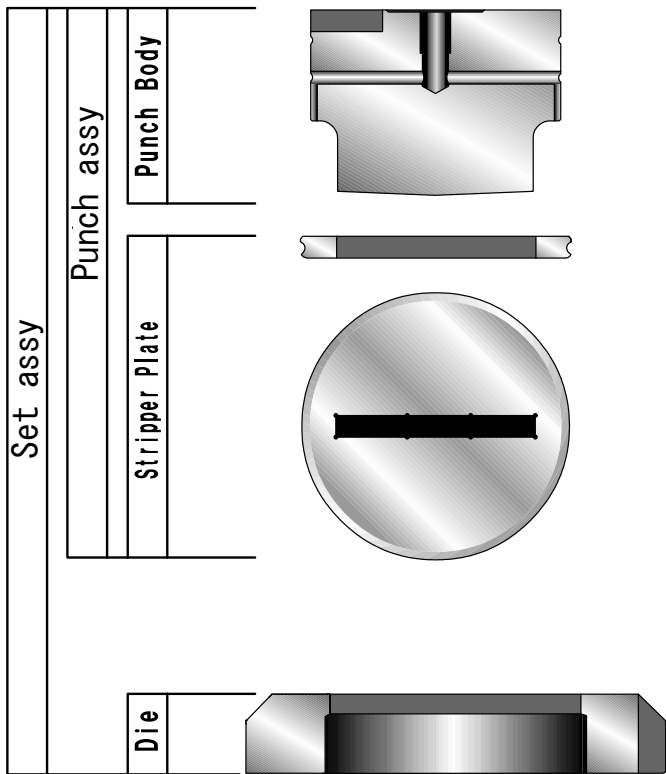
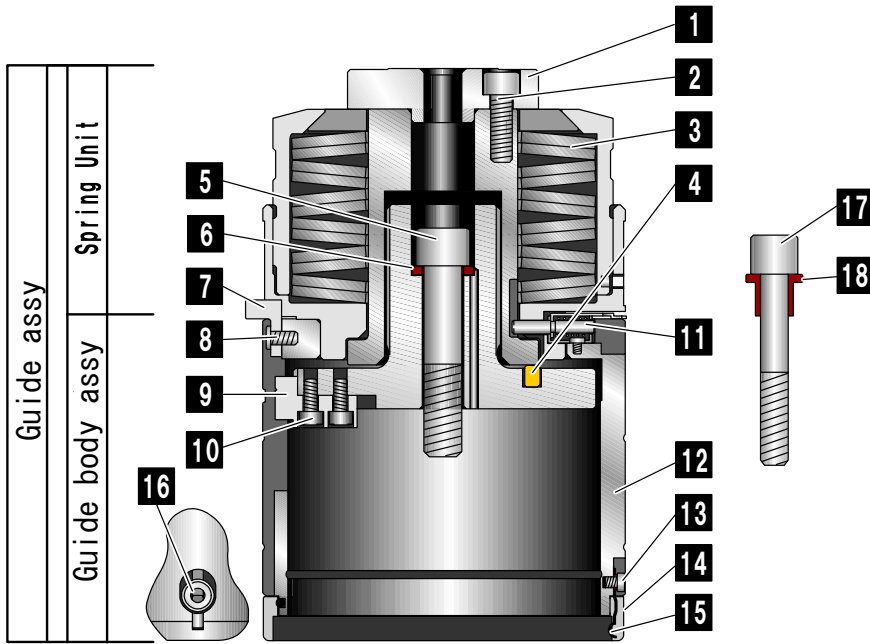
3-1/2" Z Style Shape

Z Style Air-Blow Shaped Set	32FZ80
Z Style Air-Blow Shaped Punch assy	12FZ80
Air-Blow Shaped Punch Body	42F080
Z Style Air-Blow Shaped Stripper Plate	52FZ80
Shaped Die	221080

D 3½" Z Style Guide assy

No.	Description	DWG No.	Code No.	Q'ty
	3-1/2" Z Style Guide assy			
	3-1/2" Z Style Guide assy (with Wrench)		900510	1
	3-1/2" Z Style Guide assy	5808317	900540	1
	3-1/2" Z Style Guide Spring Unit		906010	1
	3-1/2" Z Style Guide Body assy		906040	1
	3-1/2" Z Style Guide assy parts			
1	3-1/2" 4-1/2" Z Style Guide Punch Head	5808068	906070	1
2	Socket Head Cap Screw M8x25		999600	4
	Spring Retainer Collar	5808047	906100	1
	3-1/2" Z Style Guide Spring Cover Set	M8 x 25	906110	1
	3-1/2" 4-1/2" Z Style Guide Upper Spring Cover	5808042 B	906130	1
	3-1/2" Z Style Guide Lower Spring Cover	5808041 B	906140	1
	Set Screw M5x8 (Dog point)	M5 x 8	906160	1
	Z Tooling Sticker		906170	1
3	3-1/2" 4-1/2" Z Style Guide Disk Spring	5808565	906180	10
	3-1/2" Z Style Guide Punch Driver Set		906200	1
	3-1/2" Z Style Guide Outer Punch Driver	5808044	906230	1
	3-1/2" Z Style Guide Inner Punch Driver	5808320	906250	1
4	Urethane Stopper	5808100	906270	2
5	Air-Blow Draw Bolt M14x70	5522712	901900	1
6	M14 Washer	5808304	906310	1
7	3-1/2" 4-1/2" Z Style Guide Punch Driver Key	5808099 A	906330	1
8	Socket Head Cap Screw M5x12	M5 x 12	906340	2
9	Adjust Lever Unit		906400	1
	Bracket Type I	5808038 A	906410	1
	Bracket Type II	5808039 B	906420	1
	Lock Pin	5808040 A	906430	1
	Coil Spring	WF6-20	906440	1
	Locating Bolt	MSWG3-4	906450	1
10	3-1/2" Z Style Guide Body (with Screw M5x12)		900910	1
	3-1/2" Z Style Guide Body	5808318	900930	1
	M5 Washer	5808348	906520	3
	Socket Head Cap Screw M5x12	M5 x 12	906530	3
	Ball Bearing 3.5	φ3.5	906500	6
	Pedestal Ring	5808309	906510	6
11	SP Spring Pack			1
	Low Head Cap Screw M4x5	5808315	906960	3
	M4 Washer	5808306		3
13	Stripper Clamp Spring	5808308		3
12	3-1/2" Z Style Guide Stripper Clamp Ring	5808319	906590	1
14	Lock Button Unit		906620	1
	Stopper Button	5808310	906630	1
	Coil Spring	WF4-10	906640	1
	Stopper Pin	P4-12D	906650	1
	Standard Accessories			
	Socket Head Cap Screw M12x70 (with washer)		906660	1
15	Socket Head Cap Screw M12x70		999900	1
16	M12 Adapter Collar	5808305	906670	1
	Z Style Guide Standard Tool Set		906700	1
	M10 Hexagon Key Wrench		906710	1
	M6 Hexagon Key Wrench		906720	1
	M4 Hexagon Key Wrench		906730	1
	M3 Hexagon Key Wrench		906740	1
	M2.5 Hexagon Key Wrench		906750	1
	M2 Hexagon Key Wrench		906760	1
	Spacer	5808409	906770	1
	Spring assy Jig	5808410	906780	1

E 4½" Thick turret Z Style Guide Parts List



	Part and Unit Name	Code No.
	4-1/2" Z Style Guide Assy	900520
	4-1/2" Z Style Guide Spring Unit	906020
	4-1/2" Z Style Guide Body Assy	906050
①	Punch Head	906070
②	Socket Head Cap Screw (4 – M8x25)	999600
③	Disk Spring (2x5=10)	906180
④	Urethane Stopper	906270
⑤	Air-Blow Draw Bolt (M14x70)	901900
⑥	M14 Washer	906310
⑦	Lifter Pin	906470
⑧	Countersunk flat head screw (M5x12)	905670
⑨	Punch Driver Key	906330
⑩	Socket Head Cap Screw (2-M5x12)	906340
⑪	Adjust Lever Unit	906400
⑫	Guide Body	900920
⑬,⑮	SP Spring Pack	906960
⑭	Stripper Clamp Ring	906600
⑯	Lock Button Unit	906620

Standard parts and Wrench

⑰	Socket Head Cap Screw (M12 x 70)	999900
⑱	M12 Collar	906670

Wrench Set	906700
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4-1/2" Z Style Round

Z Style Air-Blow Round Set	31FZ90
Z Style Air-Blow Round Punch Assy	11FZ90
Air-Blow Round Punch Body	41F090
Z Style Air-Blow Round Stripper Plate	51FZ90
Round Die	211090

4-1/2" Z Style Shape

Z Style Air-Blow Shaped Set	32FZ90
Z Style Air-Blow Shaped Punch Assy	11FZ90
Air-Blow Shaped Punch Body	42F090
Z Style Air-Blow Shaped Stripper Plate	52FZ90
Shaped Die	221090

E 4½" Z Style Guide assy

No.	Description	DWG No.	Code No.	Q'ty
	4-1/2" Z Style Guide assy			
	4-1/2" Z Style Guide assy (with Wrench)		900520	1
	4-1/2" Z Style Guide assy	5808311	900550	1
	4-1/2" Z Style Guide Spring Unit		906020	1
	4-1/2" Z Style Guide Body assy		906050	1
	4-1/2" Z Style Guide assy parts			
1	3-1/2" 4-1/2" Z Style Guide Punch Head	5808068	906070	1
2	Socket Head Cap Screw M8x25	M8 x 25	999600	4
	Spring Retainer Collar	5808047	906100	1
	4-1/2" Z Style Guide Spring Cover Set		906120	1
	3-1/2" 4-1/2" Z Style Guide Upper Spring Cover	5808042 B	906130	1
	4-1/2" Z Style Guide Lower Spring Cover	5808324	906150	1
	Set Screw M5x8 (Dog point)	M5 x 8	906160	1
	Z Tooling Sticker		906170	1
3	3-1/2" 4-1/2" Z Style Guide Disk Spring	5808565	906180	10
	4-1/2" Z Style Guide Punch Driver Set		906210	1
	3-1/2" 4-1/2" Z Style Guide Outer Punch Driver	5808044	906230	1
	4-1/2" Z Style Guide Inner Punch Driver	5808313	906260	1
4	Urethane Stopper	5808100	906270	2
5	Air-Blow Draw Bolt M14x70	5522712	901900	1
6	M14 Washer	5808304	906310	1
9	3-1/2" 4-1/2" Z Style Guide Punch Driver Key	5808099 A	906330	1
10	Socket Head Cap Screw M5x12	M5 x 12	906340	2
11	Adjust Lever Unit		906400	1
	Bracket Type I	5808038 A	906410	1
	Bracket Type II	5808039 B	906420	1
	Lock Pin	5808040 A	906430	1
	Coil Spring	WF6-20	906440	1
	Locating Bolt	MSWG3-4	906450	1
7	Lifter Pin	5808051	906470	8
8	Countersunk flat head screw (M5x12)		905670	4
12	4-1/2" Z Style Guide Body (with Screw M5x20)		900920	1
	4-1/2" Z Style Guide Body	5808312	900940	1
	Socket Head Cap Screw M5x20	M5 x 20	906540	4
	Ball Bearing 3.5	φ3.5	906500	6
	Pedestal Ring	5808309	906510	6
13	SP Spring Pack			3
	Low Head Cap Screw M4x5	808315	906960	3
	M4 Washer	808306		3
15	Stripper Clamp Spring	5808308		3
14	4-1/2" Z Style Guide Stripper Clamp Ring	5808314	906600	1
16	Lock Button Unit		906620	1
	Stopper Button	5808310	906630	1
	Coil Spring	WF4-10	906640	1
	Stopper Pin	P4-12D	906650	1
	Standard Accessories			
	Socket Head Cap Screw M12x70 (with washer)		906660	1
17	Socket Head Cap Screw M12x70		999900	1
18	M12 Adapter Collar	5808305	906670	1
	Z Style Guide Standard Tool Set		906700	1
	M10 Hexagon Key Wrench		906710	1
	M6 Hexagon Key Wrench		906720	1
	M4 Hexagon Key Wrench		906730	1
	M3 Hexagon Key Wrench		906740	1
	M2.5 Hexagon Key Wrench		906750	1
	M2 Hexagon Key Wrench		906760	1
	Spacer	5808409	906770	1
	Spring assy Jig	5808410	906780	1

