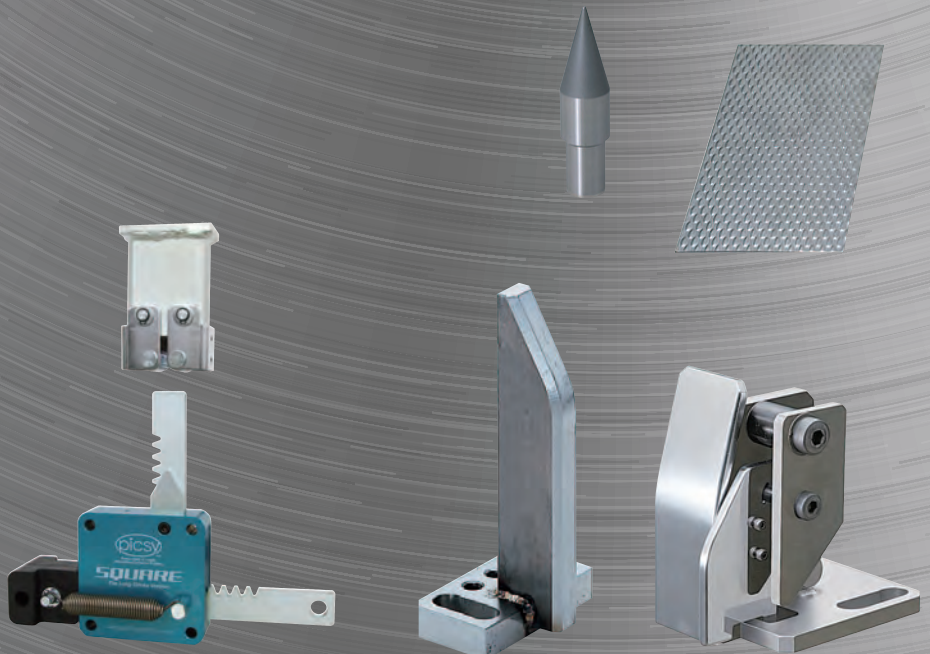


PRESS DIE COMPONENTS BY DAYTON PROGRESS



# LOCATING COMPONENTS

FOR PRESS DIES



a MISUMI Group Company

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Woodbridge, Ontario L4L 5W3 **Canada**

**DAYTON PROGRESS Corporation**  
500 Progress Road  
P.O. Box 39  
Dayton, OH 45449-0039 **USA**

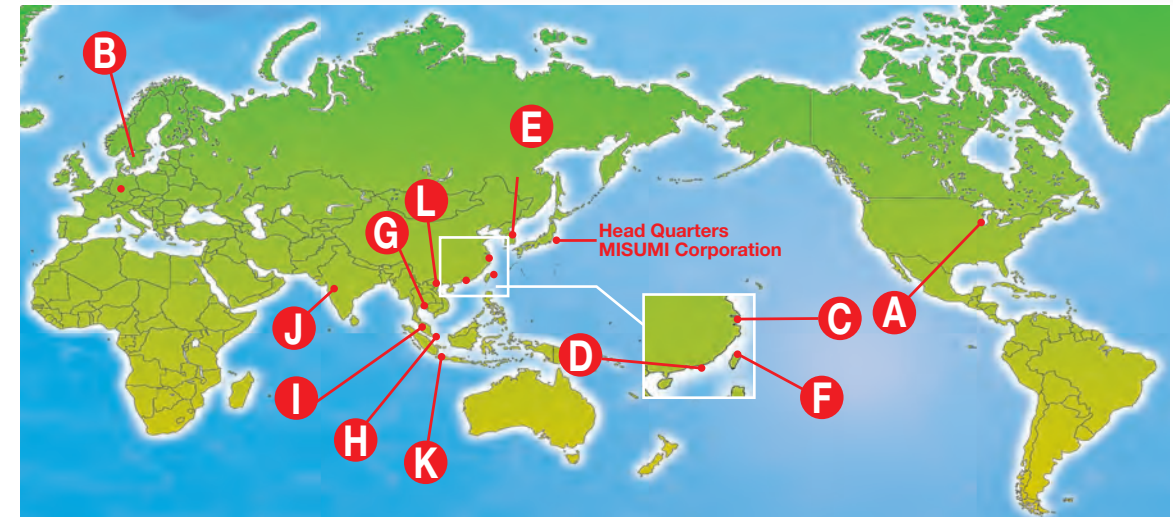
**DAYTON PROGRESS Detroit**  
34488 Doreka Dr.  
Fraser, MI 48026 **USA**

**DAYTON PROGRESS Portland**  
1314 Meridian St.  
Portland, IN 47371 **USA**

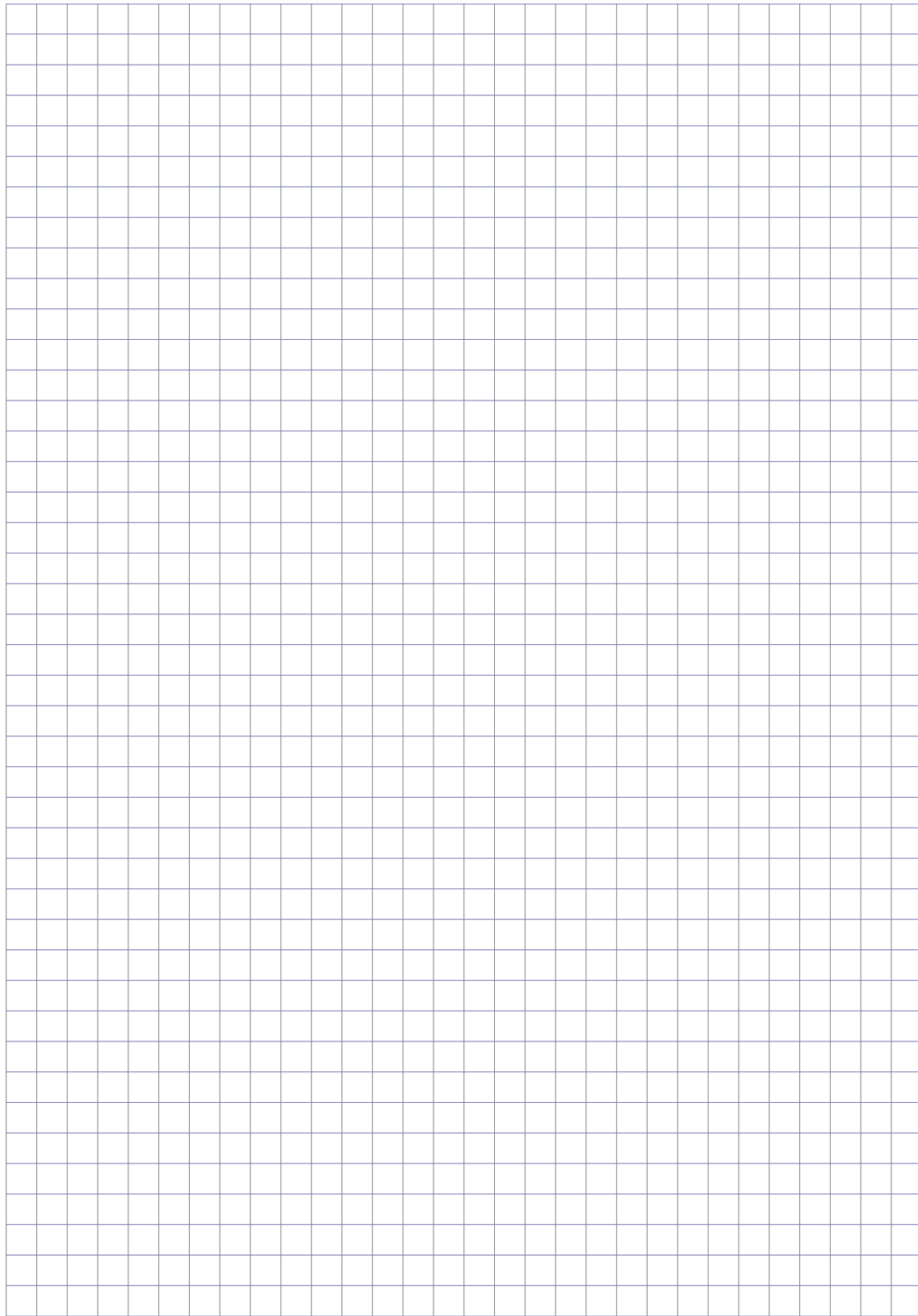
**DAYTON PROGRESS Mexico, S. de R.L. de C.V.**  
Access II Number 5, Warehouse 9  
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Querétaro, Qro. **Mexico** 76130



a MISUMI Group Company



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<b>A</b> MISUMI USA, Inc	Call: +1-847-843-9105 FAX: +1-847-843-9107	1717 Penny Lane, Suite 200 Schaumburg, Illinois 60173, U.S.A.	North America Central America South America Canada
<b>B</b> MISUMI Europa GmbH	Call: +49-(0)6196-7746-0 FAX: +49-(0)6196-7746-360	Katharina-Paulus-Strasse 6, 65824 Schwalbach, Germany	Central/Eastern Europe (CEE) Africa Turkey
<b>C</b> MISUMI (CHINA) PRECISION MACHINE- RY TRADING CO., LTD.	Call: +86-21-6391-7080 FAX: +86-21-6391-7602	10th floor, Tower 1, Kerry Enterprise Centre, 128 Tianmu Road West, Shanghai 200070	China
<b>D</b> MISUMI E.A. HK LTD.	Call: +852-8303-2781 FAX: +852-8303-2782	Unit 202 2/F, Malaysia Building, 50 Gloucester Road, Wanchai, Hong Kong	Hong Kong
<b>E</b> MISUMI KOREA CORP.	Call: +82-2-551-3611 FAX: +82-2-551-4811	3804 World Trade Center, 511, Yeongdong-daero, Kangnam-Gu, Seoul 135-729, Korea	Korea
<b>F</b> MISUMI TAIWAN CORP.	Call: +886-2-2570-3766 FAX: +886-2-2570-3767	9F-1, No. 126 Nanjing East Road, Sec. 4, Taipei 10595, Taiwan	Taiwan
<b>G</b> MISUMI (THAILAND) CO., LTD.	Call: +66-38-959-200 FAX: +66-38-959-202	300/24 Moo 1, Eastern Seaboard Industrial Estate, Soi 5, Tambol Tasith, Amphur Pluakdaeng, Rayong Province 21140, Thailand	Thailand
<b>H</b> MISUMI SOUTH EAST ASIA PTE. LTD.	Call: +65-6733-2711 FAX: +65-6733-0211	331 North Bridge Road, #05-03 Odeon Towers, Singapore 188720	Southeast Asia (excludes Thailand) Australia
<b>I</b> MISUMI MALAYSIA SDN. BHD.	Call: +60-3-7960-8499 FAX: +60-3-7960-7499	Unit 1206, 12th Floor Menara Amcorp No.18, Jalan Persiaran Barat 46050 Petaling Jaya, Selangor, Malaysia	Malaysia
<b>J</b> MISUMI INDIA Pvt. Ltd.	Call: +91-124-4688800 FAX: +91-124-4688811	Plot No. 241, Gate#3, Udyog Vihar, Phase-1, Sector 20, Gurgaon 122016, Haryana, India	India
<b>K</b> PT. MISUMI INDONESIA	Call: +62-21-5789-5837 FAX: +62-21-5789-5836	Menera Karya, LT. 28. Jl.H.R.Rasuna Said Kav 1-2, Kuningan, Jakarta Selatan, 12950, Indonesia	Indonesia
<b>L</b> MISUMI VIETNAM CO., LTD.	Call: +84-222-371-4065 FAX: +84-222-361-2555	Lot 15, Road TS 11, Tien Son Industrial-Zone, Tien Du District, Bac Ninh Province, Vietnam	Vietnam
HEAD QUARTERS MISUMI CORPORATION Press Die Components Division	Call: +81-3-5805-7240 FAX: +81-3-5805-7238	Iidabashi First Bldg., 5-1, Koraku 2-chome, Bunkyo-ku, Tokyo 112-8583, Japan	Japan



## LOCATING COMPONENTS FOR PRESS DIES

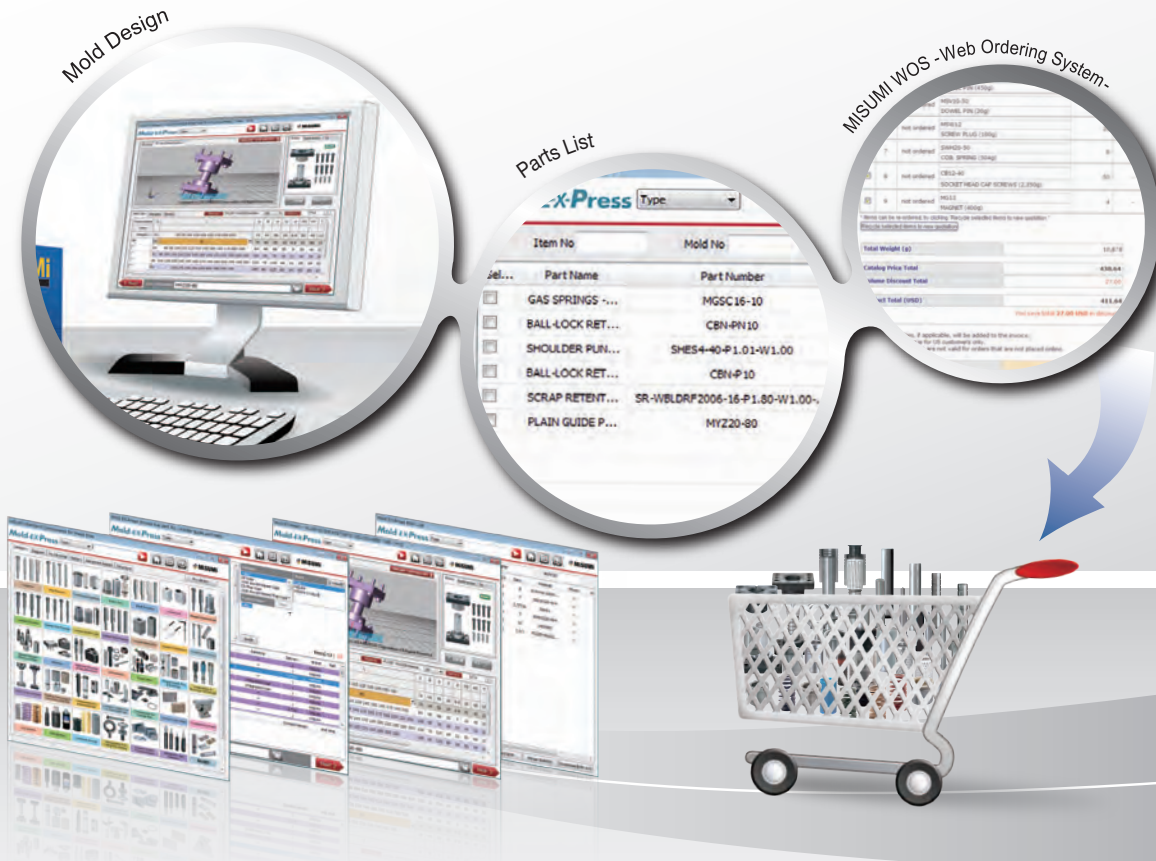
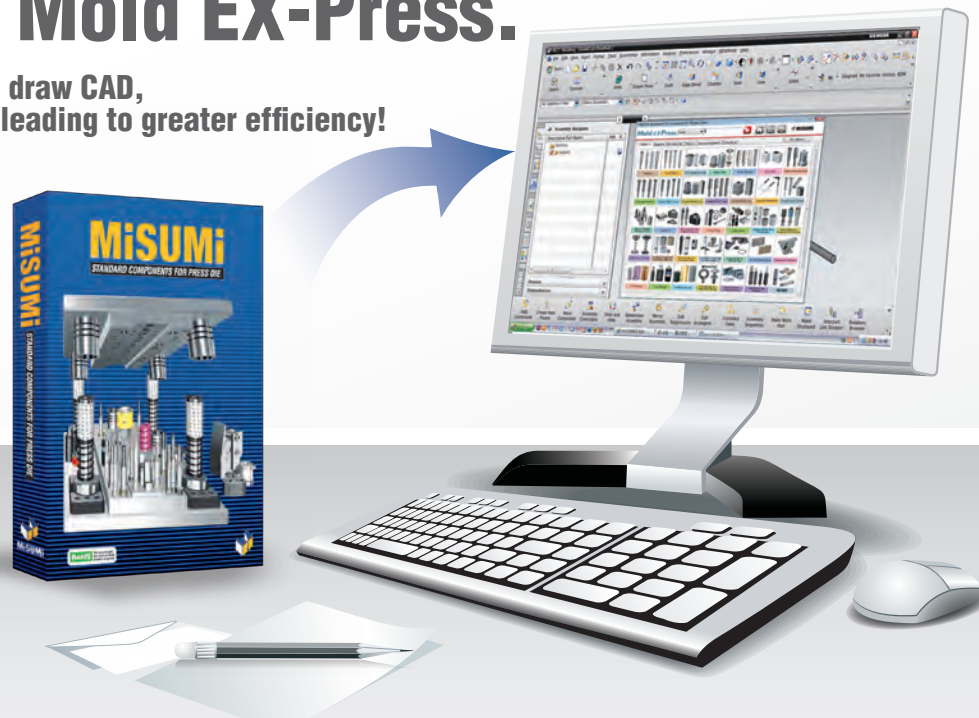
	Panel Input Detectors.....	4
	Rough Guides.....	5
	Nest Guides.....	6–9, 14
	Nest Guide Mounting Plates.....	10–11
	Nest Guide Blanks.....	13
	Pilot Punches.....	15
	Locating Pilot Pins.....	16–19
	Locating Pins.....	20
	Pre-Holding Push Pin Sets.....	21–25
	Push-Out Pins.....	26
	Drawing Jector Pins.....	27
	Spring Plungers.....	28–29
	Magnets.....	30
	Skid Brackets.....	32
	Carriers.....	34
	Embossed Shooter Plates.....	35
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	Picsy – for discharging scrap and manufactured parts.....	38–42



# Mold EX-Press

## Speed up your die design with MISUMI Mold EX-Press.

Quickly select parts, draw CAD, compile parts list - leading to greater efficiency!



### » Quick parts selection

Various options for searching parts with 3D model preview, allowing quick selection of required parts.

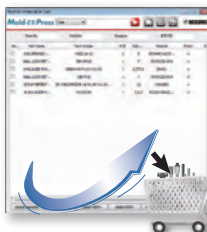
Search by category image, mold assembly diagram, keywords, part name directory in tree structure, etc. Real-time 3D preview of all parts, including alterations, enables prompt and accurate verification, without accessing to internal or external networks or CAD software. Many features in Mold EX-Press will realize standardization of internal design process.



### » Swift component drawings

Export CAD models in just 3 steps.

No need to switch among interfaces. Select parts directly from the CAD menus (AutoCAD). Export data in intermediary formats, such as IGES, STEP or SAT compatible to other 3D CAD softwares. 2D drawings in DWG format are also available. Easy drawings significantly reduce design time.



### » Instant orders

Automatically generated list of selected parts eliminates risk of errors when placing orders.

The compiled parts list is generated automatically simply by selecting the parts. Parts lists are reusable and re-editable. Mold EX-Press eliminates troublesome calculations to generate complicated part numbers with a lot of alteration.

No chances of ordering wrong numbers. No needs for reworking. Always a smooth design process.

Please contact us for the current Mold EX-Press version.

## MISUMI Mold EX-Press:

Quick parts selection, swift component drawings, instant offers and orders - perfectly combined with the MISUMI Web Ordering System.

# WEB ORDERING SYSTEM

<https://www.misumi-ec.com/de>




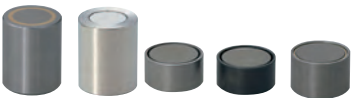



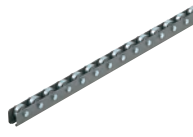
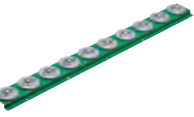

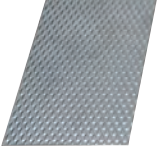




All MISUMI products available online.

Offers and orders automatically within 24h


- simple way of importing parts lists
- quick help with faulty product names
- repeat orders
- follow up your order status



		
<b>PANEL INPUT DETECTORS</b>	<b>ROUGH GUIDES</b>	<b>NEST GUIDES</b> —UPPER DIE RELIEF TYPE—
PACO□□	RG-R RG RG-L	NGUA NGUBRN NGUBLN
4	5	6
		
<b>NEST GUIDES</b> —REINFORCED TYPE—	<b>NEST GUIDES</b> —ECONOMY TYPE—	<b>NEST GUIDES</b> —CONFIGURABLE GUIDE SHAPE TYPE—
NGNA NGNR NGNBL	ENSTB ENSTR ENSTL	NGW NGWK NGWS
7	7	8
		
(WITH MOUNTING PLATES, CONFIGURABLE SHAPE) —REINFORCED TYPE—	(WITH MOUNTING PLATES, CONFIGURABLE LENGTH) —ECONOMY TYPE—	<b>NEST GUIDE BLANKS</b> —LONG TYPE—
NGNBA NGNBC	ENSTD	NBCL NBB NBBC
10	11	13
		
<b>NEST GUIDE MOUNTING PLATES</b>	<b>NEST GUIDES</b> —SURFACE SUPPORT TYPE—	<b>PILOT PUNCHES</b> —CONFIGURABLE TYPE—
TEA TEB TEC TEE TEL	NSTFA NSTFB	RTP T-RTP RTPE T-RTPE
13	14	15
		
<b>LOCATING PILOT PINS</b>	<b>LOCATING PILOT PINS</b>	<b>LOCATING PINS</b>
SKSTH SFSTH	PST PSTM	LPU LPL DLPA
18	19	20
		
<b>LOCATING PILOT PINS</b>	<b>LOCATING PILOT PINS</b>	<b>PUSHING PIN SETS</b>
SNST□ SDSTH SDKLH	PAPZ PAPZU	PSPH PSH
16	17	21
		
<b>PRE-HOLDING PUSH PIN SETS</b> —AIR TYPE—	<b>PUSHING PIN SETS</b>	<b>PUSH-OUT PINS</b>
PALZS PALZU PALZP	PAPZ PAEAS PAEAU	POP HPOP
24	25	26
		
<b>DRAWING JECTOR PINS</b>	<b>COVERS FOR DRAWING JECTOR PINS</b>	
DHPA	DHPF100	
27	27	

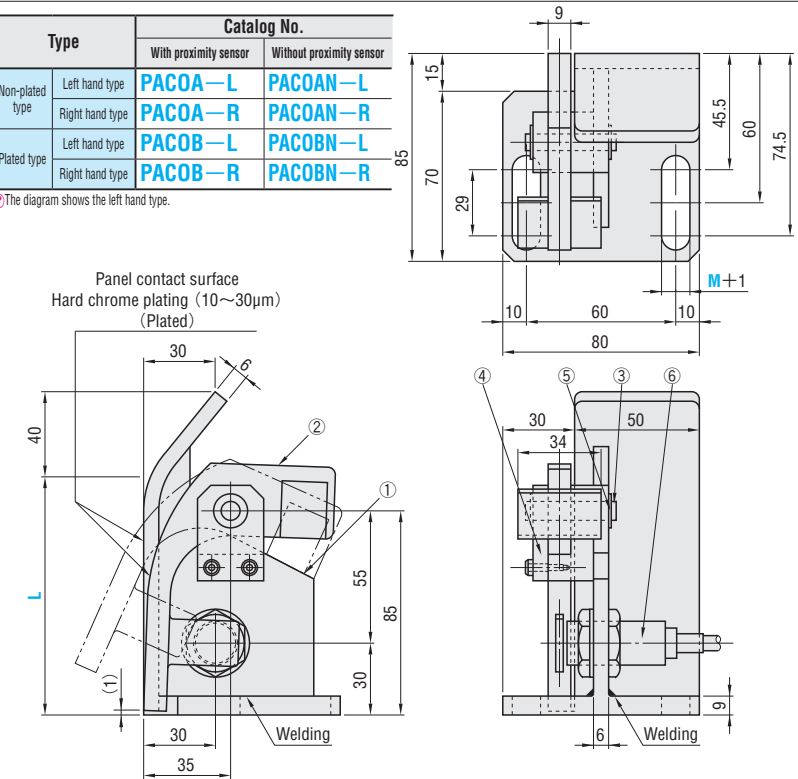
			
<b>SPRING PLUNGERS</b>	<b>SPRING PLUNGERS</b>	<b>SPRING PLUNGERS FOR</b> <b>SLANTED SURFACES</b>	<b>MAGNETS</b>
PJ□	PJLR PJHR	PJHRZ16F PJHZ	MG MGN HX HXH HXU HXMB
28	29	29	30
			
<b>SQUARE SKID BRACKETS</b>	<b>ROUND SKID BRACKETS</b>	<b>SKID BRACKETS WITH SLIDE</b> <b>ADJUSTMENT FUNCTION</b>	
STB STB-N STBY STBY-N	MRTB MRTB-N MRTBY MRTBY-N	SCTB SCTBY	
32	32	33	
			
<b>ROLLER CARRIERS</b>	<b>BALL CARRIERS</b>	<b>BALL CARRIERS</b>	<b>EMBOSSED SHOOTER PLATES</b>
CORO	GORO	GORON	EBSP
34	34	34	35
			
<b>CHAINS FOR SCRAP SHOOTERS</b>	<b>CHAINS, GENERAL PURPOSE</b>	<b>CHAIN JOINTS</b>	<b>PICSY SQUARE</b> — for discharging scrap and manufactured parts
SRT SRTN	CN	JT	PICSY — for discharging scrap and manufactured parts
36	36	36	38

**RoHS**



Type	Catalog No.	
	With proximity sensor	Without proximity sensor
Non-plated type	Left hand type	PACOA-L PACOAN-L
	Right hand type	PACOA-R PACOAN-R
Plated type	Left hand type	PACOB-L PACOBN-L
	Right hand type	PACOB-R PACOBN-R

① The diagram shows the left hand type.



Panel contact surface  
Hard chrome plating (10~30µm)  
(Plated)

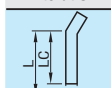
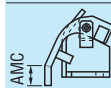
**Components**

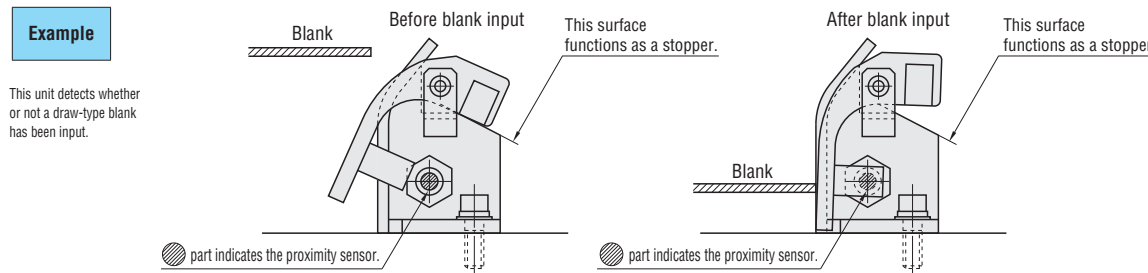
No.	Name	Quantity	M
①	Body of front gauge	1	SS400
②	Panel detection lever	1	SS400
③	Lever pin	1	S45C
④	Support plate	1	SS400
⑤	Snap ring (C type)	1	-
⑥	Proximity sensor (Cable length 5m)	1	Product of KEYENCE (2-wire type AC100V : EV-18M DC24V : EV-118M)

With proximity sensor (Components ①~⑥)				Without proximity sensor (Components ①~⑤)					
Catalog No.	Type	L	Electrode type	Mounting bolt hole M	Catalog No.	Type	L	Mounting bolt hole M	
Non-plated type	PACOA-L	75	100V AC	M10	Non-plated type	PACOAN-L	75	M10	
			24V DC						
Right hand type	PACOA-R	100	100V AC		M12	Right hand type	PACOAN-R		100
			24V DC						
Plated type	PACOB-L	150	100V AC	M12	Plated type	PACOBN-L	150		
			24V DC						


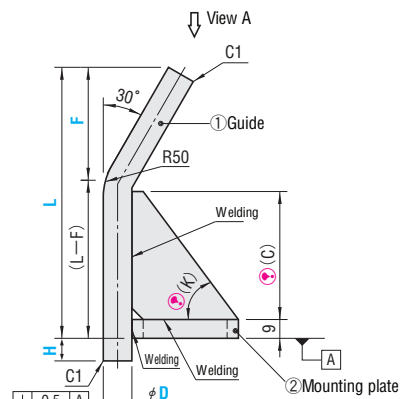
Catalog No.	L	Electrode type	M
PACOA-R	150	24V DC	M12
PACOBN-L	100	-	M10

Alterations	Catalog No.	L	Electrode type	M	(STC-LHC, etc.)
	PACOA-R	150	24V DC	M12	CLC

Alteration	Code	Specification
	LC	L dimension change 75 < LC < 150 5mm increments
	AMC	Arm length change 10 ≤ AMC ≤ 100 10mm increments



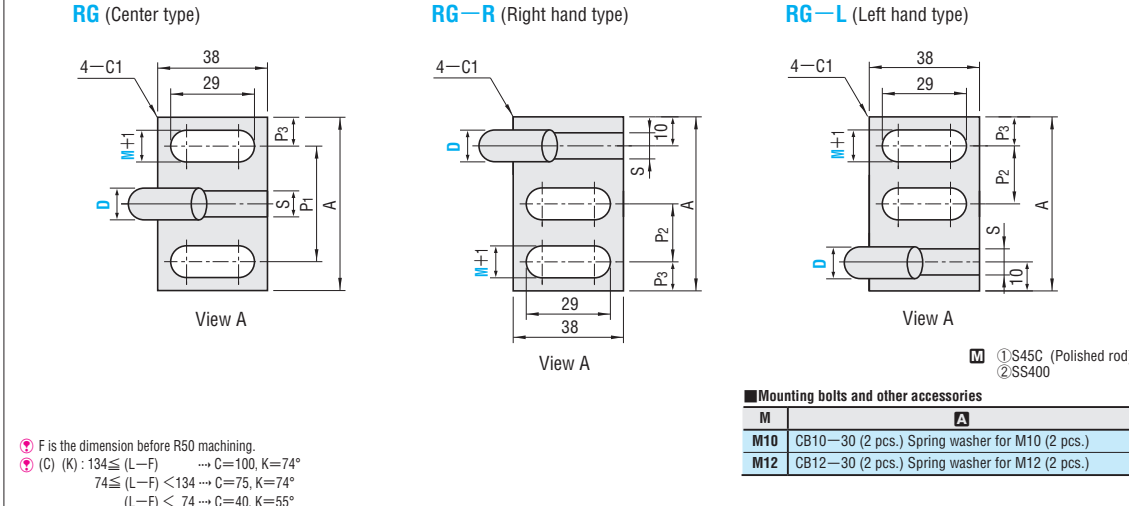
**RoHS**

**RG (Center type)**

**RG-R (Right hand type)**

**RG-L (Left hand type)**



① S45C (Polished rod)  
② SS400

**Mounting bolts and other accessories**

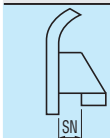
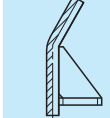
M	A
M10	CB10-30 (2 pcs.) Spring washer for M10 (2 pcs.)
M12	CB12-30 (2 pcs.) Spring washer for M12 (2 pcs.)

⊕ F is the dimension before R50 machining.  
⊕ (C) (K) : 134 ≤ (L-F) → C=100, K=74°  
74 ≤ (L-F) < 134 → C=75, K=74°  
(L-F) < 74 → C=40, K=55°


A	P <sub>1</sub> (RG)	P <sub>2</sub> (RG-R-L)	P <sub>3</sub>	S	Catalog No.		5mm increments			Mounting bolt hole M
					Type	D	L	F	H	
60	40	20	10	6	RG	8	60~300	10~50	0~80	M10
					RG-R	10				M12
					RG-L	12				M12
75	50	25	12.5	16	RG-L	16			M12	
						20			M12	

Catalog No.	L	F	H	M
RG 20	200	40	40	M12

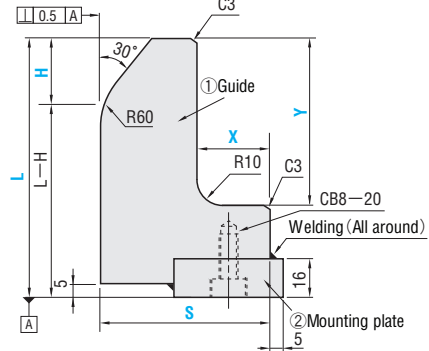
Alterations	Catalog No.	L	F	H	M	(SN-HTC)
	RG-L20	200	40	40	M12	SN50

Alteration	Code	Specification
	SN	① The guide is pushed forward. 5mm increments 0 ≤ SN ≤ 150
	HTC	① The guide is hardened. ~45HRC

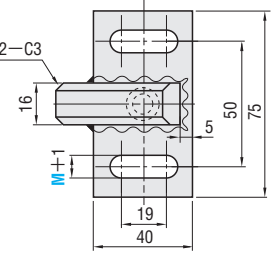




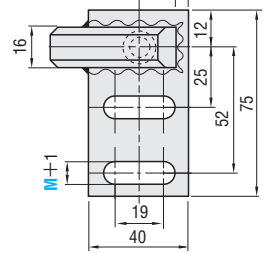
**RoHS**



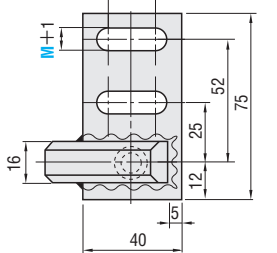
**NGUA**



**NGUBRN**



**NGUBLN**



Ⓜ H is the dimension prior to R60 and GRC machining.  
 Ⓜ The guide ① and the mounting plate ② are fastened by welding and bolting.  
 Ⓜ As the guide ① is made of S45C, it can be hardened by flame hardening or alteration HTC.





Mounting bolts and other accessories			
M	A	Mounting orientation	Catalog No.
M10	CB10-35 (2 pcs.) Spring washer for M10 (2 pcs.)	Center	NGUA
M12	CB12-35 (2 pcs.) Spring washer for M12 (2 pcs.)	Right hand type	NGUBRN
		Left hand type	NGUBRN


Ⓜ Alteration "WSS": Use this

Catalog No.	5mm increments				Mounting bolt hole M
	L	H	S	Y	
NGUA	75~100	20~40	50~100	20~70	M10
NGUBRN	105~150				M12
NGUBLN	155~200				M12

Catalog No. — L — H — S — X — Y — M  
 NGUA — 90 — 40 — S60 — X30 — Y40 — M10

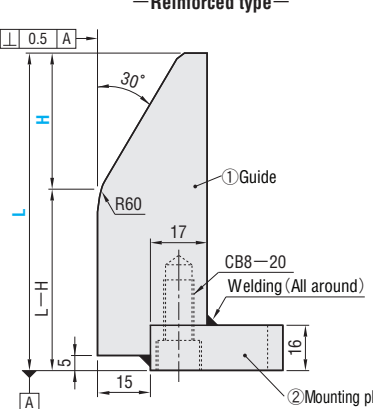
Alterations Catalog No. — L — H — S — X — Y — M — (HTC-GRC-WSS-ENT)  
 NGUBLN — 150 — 40 — S70 — X35 — Y85 — M12 — GRC20 — WSS

Alteration	Code	Specification
	HTC	① The guide is hardened. Ⓜ ~45HRC
	GRC	The corner R (R60) of the guide is reduced. R10~30 10mm increments
	WSS	Provided spring washers are changed to washers for oblong holes WSS (2 pcs.) Ⓜ Can be used for NGUA, NGUBRN, and NGUBLN only.
	ENT	The lower of a guide is extended

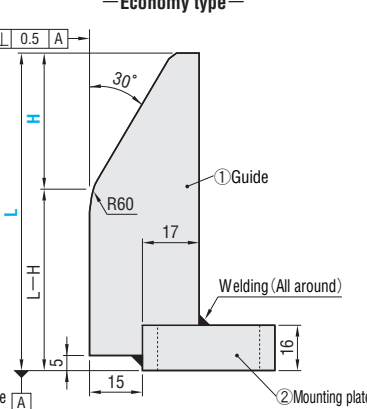


**RoHS**

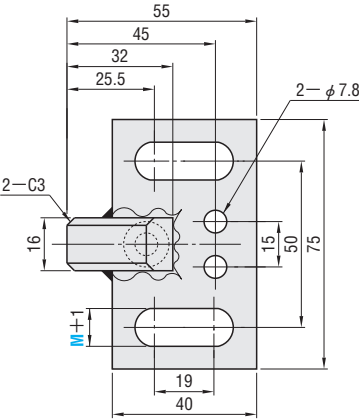
— Reinforced type —



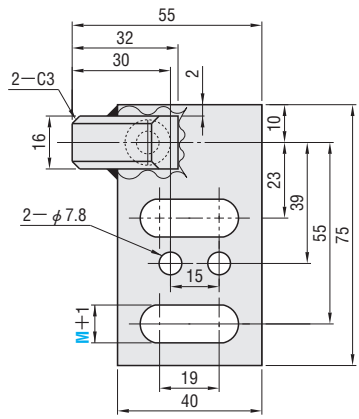
— Economy type —



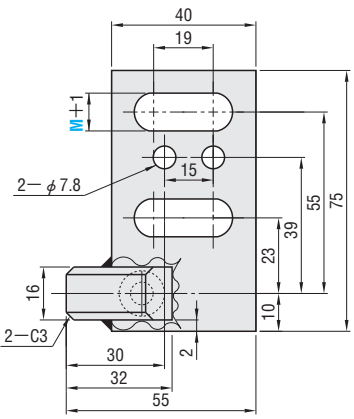
**NGNA ENSTB**



**NGNBR ENSTR**



**NGNBL ENSTL**



Ⓜ H is the dimension before R60 and GRC machining.

Mounting bolts and other accessories			
M	A	Type	Catalog No.
M10	CB10-35 (2 pcs.) Spring washer for M10 (2 pcs.)	Center	NGNA
M12	CB12-35 (2 pcs.) Spring washer for M12 (2 pcs.)	Right hand type	NGNBR
		Left hand type	NGNBL

Type	Mounting orientation	Catalog No.	Ⓜ
Reinforced type	Center	NGNA	① S45C
	Right hand type	NGNBR	② SS400
	Left hand type	NGNBL	② SS400

Type	Mounting orientation	Catalog No.	Ⓜ
Economy type	Center	ENSTB	① SS400
	Right hand type	ENSTR	② SS400
	Left hand type	ENSTL	② SS400

**Reinforced type**

Catalog No.	L 5mm increments	H 5mm increments	Mounting bolt hole M
NGNA	65~100	20~40	M10
NGNBR	105~150		
NGNBL	155~200		
	205~250		
	255~300		
	305~350		M12

Ⓜ The guide ① and the mounting plate ② are fastened by welding and bolting.  
 Ⓜ As the guide ① is made of S45C, it can be hardened by flame hardening or alteration HTC.





**Economy type**

Catalog No.	L 5mm increments	H 5mm increments	Mounting bolt hole M
ENSTB	65~100	20~40	M10
ENSTR	105~150		
ENSTL	155~200		

Ⓜ The guide ① and the mounting plate ② are fastened by welding only.

Catalog No. — L — H — M  
 NGNA — 185 — 30 — M12  
 ENSTB — 185 — 40 — M10

Alterations Catalog No. — L — H — M — (HTC-GRC-WSS-ENT)  
 NGNBL — 120 — 35 — M12 — HTC — WSS

Alteration	Code	Specification
	HTC	① The guide is hardened. Ⓜ ~45HRC Ⓜ Can be used for reinforced type only.
	GRC	The corner R (R60) of the guide is reduced. R10~30 10mm increments
	WSS	Provided spring washers are changed to washers for oblong holes WSS (2 pcs.)
	ENT	The lower of a guide is extended

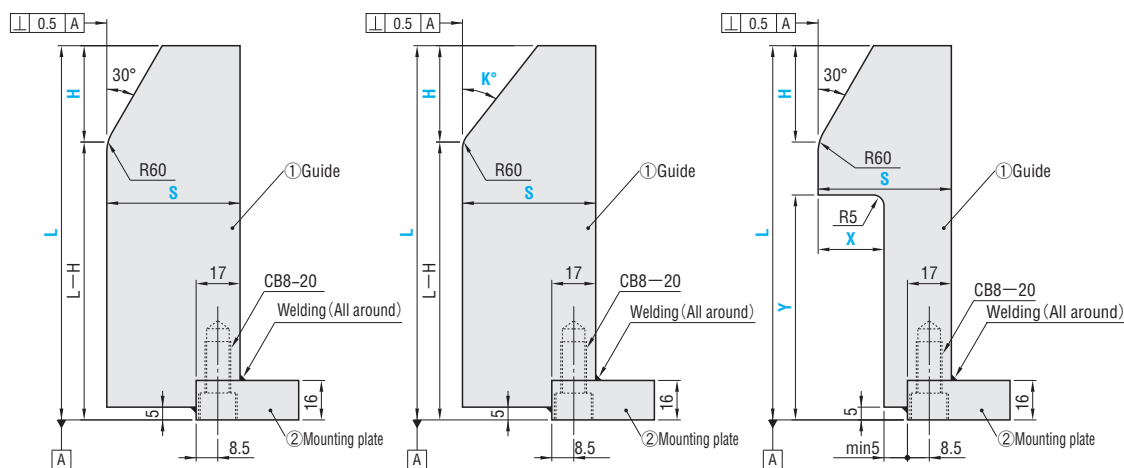
RoHS



Configurable guide width type  
NGW

Configurable insertion angle type  
NGWK

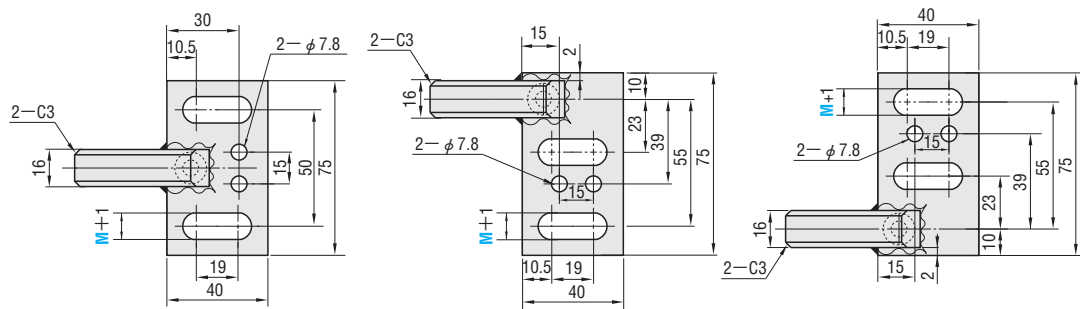
Notched guide type  
NGWS



A (Center type)

BR (Right hand type)

BL (Left hand type)



- H is the dimension prior to R60 and GRC machining.
- The guide ① and the mounting plate ② are fastened by welding and bolting.
- As the guide ① is made of S45C, it can be hardened by flame hardening or alteration HTC.

M ① S45C  
② SS400

Mounting bolts and other accessories

M	A
M10	CB10-35 (2 pcs.) Spring washer for M10 (2 pcs.)
M12	CB12-35 (2 pcs.) Spring washer for M12 (2 pcs.)

Configurable guide width type

Type	Catalog No. Mounting orientation	L	H	S	Mounting bolt hole M
		5mm increments	5mm increments	5mm increments	
NGW	A (Center type)	65~100	20~40	35~100	M10 M12
	BR (Right hand)	105~150			
	BL (Left hand)	155~200			

S ≥ 10 + H × tanK°

Configurable insertion angle type

Type	Catalog No. Mounting orientation	L	H	S	K	Mounting bolt hole M
		5mm increments	5mm increments	5mm increments	5° increments	
NGWK	A (Center type)	65~100	20~40	32 35~100	15 ≤ K ≤ 60	M10 M12
	BR (Right hand)	105~150				
	BL (Left hand)	155~200				

S ≥ 10 + H × tanK°

Notched guide type

Type	Catalog No. Mounting orientation	L	H	S	X	X	Mounting bolt hole M
		5mm increments	5mm increments	5mm increments	1mm increments	5mm increments	
NGWS	A (Center type)	65~100	20~40	32 35~100	X ≤ S - 22	Y ≤ L - H - 15	M10 M12
	BR (Right hand)	105~150					
	BL (Left hand)	155~200					

Catalog No.		L	H	S	K	X	Y	M
Configurable guide width type	NGW	A	100	40	S35			M10
Configurable insertion angle type	NGWK	A	200	40	S50	K45		M12
Notched guide type	NGWS	BL	200	40	S40	X10	Y100	M12

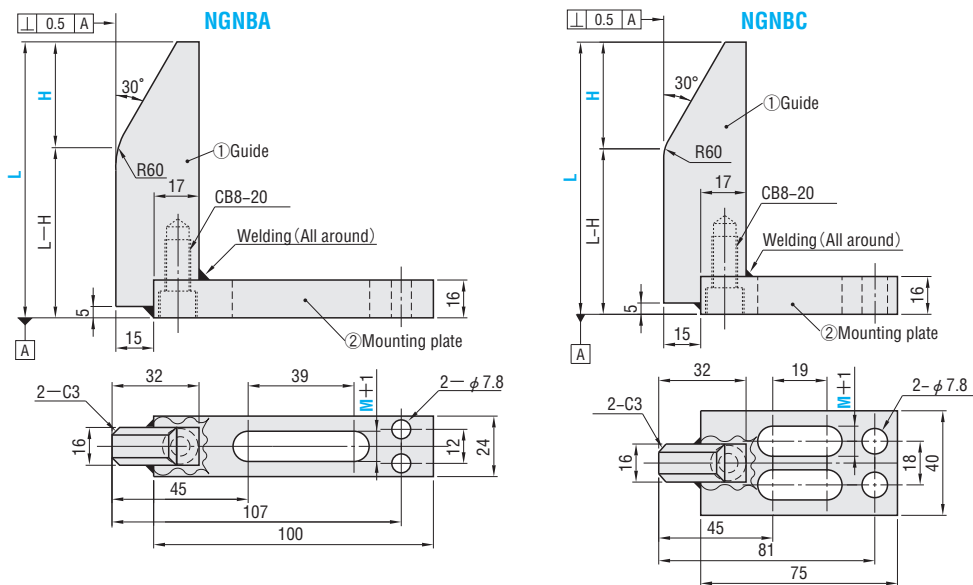
Alterations	Catalog No.							
	L	H	S	K	X	Y	M	(HTC-GRC-WSS)
	NGWBL	120	40	S35				M12 - HTC

Alteration	Code	Specification
	HTC	① The guide is hardened. ② ~45HRC
	GRC	The corner R (R60) of the guide is reduced. R10~30 10mm increments
	WSS	Provided spring washers are changed to washers for oblong holes WSS (2 pcs.)



# Nest Guides (with Mounting Plates, configurable Shape)

— Reinforced Type —



H is the dimension before R60 and GRC machining.

### Mounting bolts and other accessories

M	A
M10	CB10—35 (2 pcs.) Spring washer for M10 (2 pcs.)
M12	CB12—35 (2 pcs.) Spring washer for M12 (2 pcs.)

① S45C  
② SS400

Catalog No.	L 5mm increments	H 5mm increments	Mounting bolt hole M
NGNBA	65~100	20~40	M10
NGNBC	105~150		
	155~200		

M12 can be used for NGNBA only.

The guide ① and the mounting plate ② are fastened by welding and bolting.

As the guide ① is made of S45C, it can be hardened by flame hardening or alteration HTC.

Catalog No.	L	H	M
NGNBA	185	40	M10

Alterations	Catalog No.	L	H	M	(HTC-GRC-WSS)
	NGNBA	120	40	M12	HTC

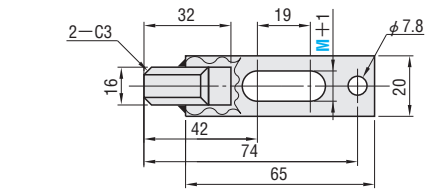
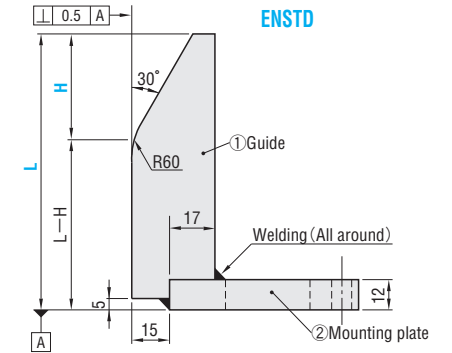
Alteration	Code	Specification
	HTC	① The guide is hardened. ② ~45HRC
	GRC	The corner R (R60) of the guide is reduced. R10~30 10mm increments
	WSS	Provided spring washers are changed to washers for oblong holes WSS (2 pcs.) ② Can be used for NGNBA only.

# Nest Guides (with Mounting Plates, configurable Shape)

— Economy Type —



RoHS



① ② SS400

### Mounting bolts and other accessories

M	A
M10	CB10—35 (2 pcs.) Spring washer for M10 (2 pcs.)
M12	CB12—35 (2 pcs.) Spring washer for M12 (2 pcs.)

H is the dimension before R60 and GRC machining.

Catalog No.	L 5mm increments	H 5mm increments	Mounting bolt hole M
ENSTD	65~100	20~40	M10
	105~150		
	155~200		

The guide ① and the mounting plate ② are fastened by welding only.


Catalog No.	L	H	M
ENSTA	185	40	M10

Alterations	Catalog No.	L	H	M	(GRC)
	ENSTD	185	40	M10	GRC20

Alteration	Code	Specification
	GRC	The corner R (R60) of the guide is reduced. R10~30 10mm increments

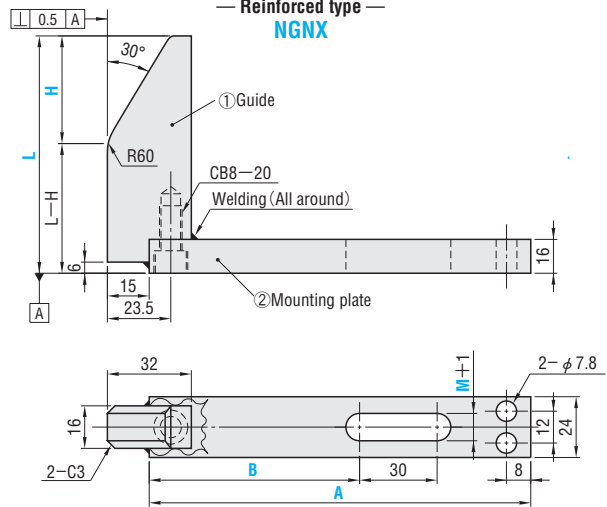
# Nest Guides (with Mounting Plates, configurable Length)

— Reinforced Type/Economy Type —



**RoHS**

— Reinforced type —  
**NGNX**



Type	Catalog No.	Material
Reinforced type	<b>NGNX</b>	①S45C ②SS400

**Mounting bolts and other accessories**




M	A
<b>M10</b>	CB10—35 (2 pcs.) Spring washer for M10 (2 pcs.)
<b>M12</b>	CB12—35 (2 pcs.) Spring washer for M12 (2 pcs.)

Ⓜ H is the dimension before R60 and GRC machining.

Catalog No.	L 5mm increments	H 5mm increments	A 10mm increments	B 5mm increments	Mounting bolt hole M
Reinforced type <b>NGNX</b>	65~100 105~150 155~200	20~40	100~200	35 ≤ B ≤ A - 50	M10 M12

Reinforced type **NGNX** Ⓜ The guide ① and the mounting plate ② are fastened by welding and bolting.  
Ⓜ As the guide ① is made of S45C, it can be hardened by flame hardening or alteration HTC.

**Catalog No.** — L — H — A — B — M  
**NGNX** — 150 — 40 — A150 — B80 — M12

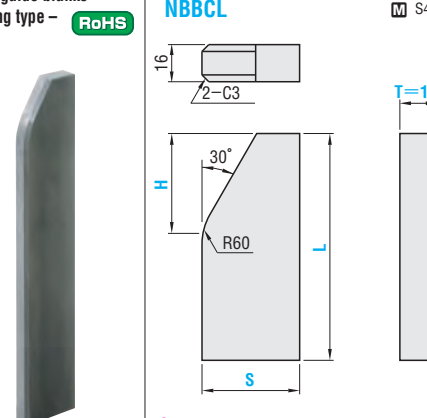
Alteration	Code	Specification
	<b>HTC</b>	① The guide is hardened. ② ~45HRC ③ Can be used for reinforced type only.
	<b>GRC</b>	The corner R (R60) of the guide is reduced. R10~30 10mm increments
	<b>WSS</b>	Provided spring washers are changed to washers for oblong holes WSS (2 pcs.)

**Alterations** **Catalog No.** — L — H — A — B — M — (HTC-GRC-WSS)  
**NGNX** — 150 — 40 — A150 — B80 — M12 — HTC

# Nest Guides Blanks / Mounting Plates for Nest Guides

**Nest guide blanks — Long type —** **RoHS**

**NBBCL** Ⓜ S45C



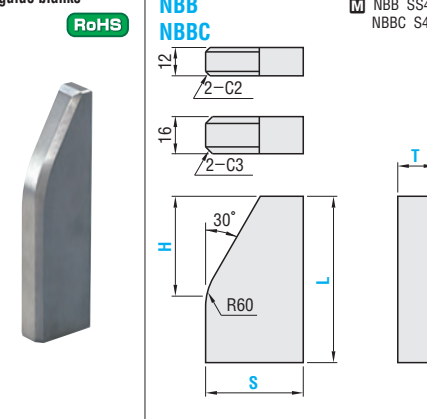
Ⓜ H is the dimension prior to R60 machining.

Catalog No.		S	L		H
Type	Thickness T		10mm increments		
<b>NBBCL</b>	16	50	200~250		20~60
			260~300		
			310~350		

**Catalog No.** — S — L — H  
**NBBCL16** — 50 — 300 — 30

**Nest guide blanks** **RoHS**

**NBB NBBC** Ⓜ NBB SS400  
NBBC S45C

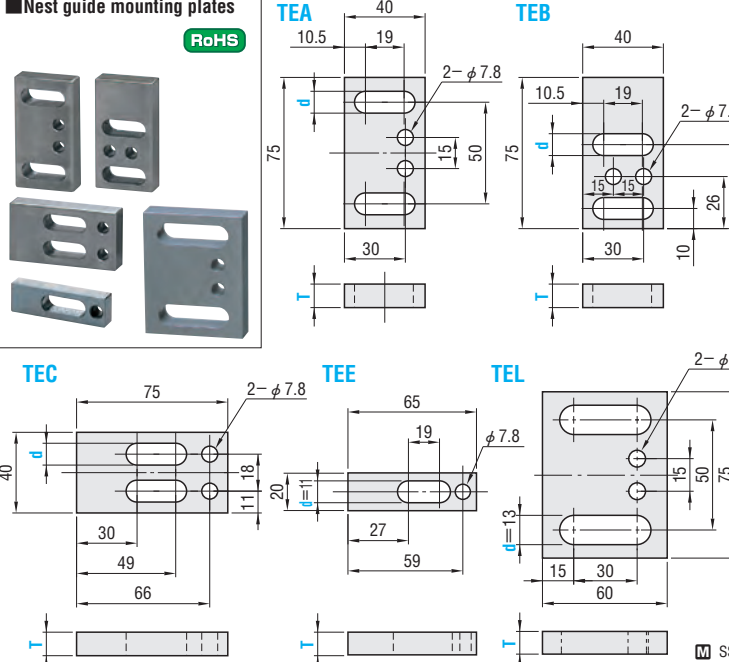


Ⓜ H is the dimension prior to R60 machining.

Catalog No.		S selection	L 5mm increments	H selection
Type	Thickness T			
<b>NBB</b>	12	32	65~200	30
	16	50		
	16	75		
<b>NBBC</b>	16	100		40

**Catalog No.** — S — L — H  
**NBB12** — 75 — 100 — 30

**Nest guide mounting plates** **RoHS**



Ⓜ SS400

Catalog No.		d
Type	Thickness T	
<b>TEA</b>	12	11
	16	13
* <b>TEC</b>	12	11
	16	13
<b>TEE</b>	12	11
<b>TEL</b>	16	13

※ d13 cannot be used for TEC.

**Catalog No.** — d  
**TEA12** — 13



**RoHS**

**NSTFA** (Non-plated)  
**NSTFB** (Plated)

Panel contact face  
Hard chrome plating (10~30 μm)  
(Plated)

Welding

Welding

9

40

R30

0.5 A

6 38 29 4 4-C1

50 10 9 40 60

16 25 34

M SS400

■ Mounting bolts and other accessories

M	A
M10	CB10—30 (2 pcs.) Spring washer for M10 (2 pcs.)
M12	CB12—30 (2 pcs.) Spring washer for M12 (2 pcs.)

Ⓛ, 40 is the dimension prior to R30 machining.

Catalog No.	L 5mm increments	Mounting bolt hole M
<b>NSTFA</b> (Non-plated)	75~100	M10
<b>NSTFB</b> (Plated)	105~150	M12

Catalog No.	L	M
<b>NSTFA</b>	100	M12

Type	Shank diameter D Tolerance	M H	Catalog No.	Shape
—Normal— <b>RoHS</b>	D <sub>ms</sub>	Equivalent to SKD11 60~63HRC	RTP	<b>RTP</b> <b>T—RTP</b> max35 13 D -0.01 -0.03 R10 R30 R≤0.5 D m5 A H 0.2 6 ±0.02 X t <sub>1</sub> (t <sub>1</sub> ≥ 6) 5 +0.03 +0.01 L ±0.5 B ±0.5 S P +0.01 0 Details of $\odot$ Details von $\odot$ Straight portion of B dimension min2 Cmin f S A f Cmin. 20° 2.624 5 30° 3.950 6 45° 5.967 8 Ⓢ is the dimension prior to R30 machining. Ⓢ If is a calculated value. For machining reasons, B dimension must be equal to or larger than S+Cmin. A MS6—25
—Dicoat® treatment— <b>RoHS</b>	D <sub>ms</sub>	Equivalent to SKD11 60~63HRC Surface 3000 HV	T—RTP	
—Normal— <b>RoHS</b>	D <sub>ms</sub>	Equivalent to SKD11 60~63HRC	RTPE	(Economy type) (Typ Economy) <b>RTPE</b> <b>T—RTPE</b> max35 13 D -0.01 -0.03 R10 R0.1~0.3 R≤0.5 D m5 A H 0.2 6 ±0.02 X t <sub>1</sub> (t <sub>1</sub> ≥ 6) 5 +0.03 +0.01 L ±0.5 B ±0.5 S P +0.01 0 Ⓢ is the dimension prior to R30 machining. Ⓢ If is a calculated value. For machining reasons, B dimension must be equal to or larger than S+Cmin. A MS6—25
—Dicoat® treatment— <b>RoHS</b>	D <sub>ms</sub>	Equivalent to SKD11 60~63HRC Surface 3000 HV	T—RTPE	

H	Catalog No.	1mm increments	0.01mm increments	1mm increments	1mm increments	A
	Type	D	L	min. P max.	B	S
13	<b>RTP</b> <b>T—RTP</b>	(10)	70~(200)	6.00~ 9.99	20~(100)	10~50 S ≤ B - Cmin.
16		13		6.00~ 12.99		
19		16		8.00~ 15.99		
23		20		11.00~ 19.99		
28		25		16.00~ 24.99		
35	(32)	18.00~ 31.99				

- Ⓢ The center hole remains at the tip end.
- Ⓢ Because the center hole is required, the flat surface on the end of the tip must be 2 mm or larger. P—2Stan (A/2) ≥ 2
- Ⓢ (L—35) ≥ B ≥ (S+Cmin.)
- Ⓢ D (10) (32) → Cannot be used for T—RTP.
- Ⓢ L (200) → For RTP with D10 and T—RTP, L must not exceed 150.
- Ⓢ B (100) → If D=10, B must not exceed 50.

H	Catalog No.	1mm increments	0.01mm increments	1mm increments	1mm increments
	Type	D	L	min. P max.	B
13	<b>RTPE</b> <b>T—RTPE</b>	(10)	70~150	6.00~ 9.99	10~50
16		13		6.00~ 12.99	
19		16		8.00~ 15.99	
23		20		11.00~ 19.99	
28		25		16.00~ 24.99	
35	(32)	18.00~ 31.99			

- Ⓢ (L—35) ≥ B ≥ (S+2) Ⓢ D (10) (32) → Cannot be used for T—RTPE.

Catalog No. — L — P — B — S — A — (HC-TC-LKC, etc.)

RTP 20 — 160 — P15.20 — B43 — S20 — A30 — HC22.0

RTPE 20 — 150 — P15.20 — B43 — S20 — A30 — HC22.0

T—RTP 20 — 120 — P15.20 — B43 — S20 — A30

Alterations

Catalog No.	L	P	B	S	A	(HC-TC-LKC, etc.)
RTP 20	160	P15.20	B43	S20	A30	HC22.0
RTPE 20	150	P15.20	B43	S20	A30	HC22.0

Alteration	Code	Specification
Alterations to head HC	HC	Head diameter change D ≤ HC < H 0.1mm increments
Alterations to head TC	TC	Head thickness change 2 ≤ TC < 5 0.1mm increments
Alterations to head KC	KC	Addition of single key flat to head
Full length LKC	LKC	Full length tolerance change L ± 0.5 → L ± 0.05 Ⓢ Cannot be used with Dicoat® treatment. Ⓢ If used with LKC, 0.1mm increments can be selected for L dimension. Ⓢ Shape of tip R remains unchanged.
Shank NDC	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0
Others TPC	TPC	Dowel pin change Provided MS6—25 is changed to MSTP6—25 (tapped type)

**Male thread type** RoHS

**SLTL** (Fixed P dimension)  
**SLTLH** (Configurable P and B dimensions)

Ⓜ SKS93  
Ⓜ 37~43HRC  
Ⓢ The tip shape of SLTL is as shown above.

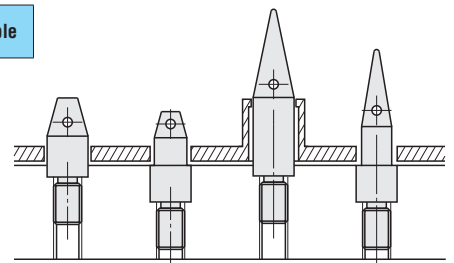
Ⓢ For SLTLH, (S) × 1.6 × P. Ⓢ1 SLTL6-SLTLH8→2 Ⓢ2 SLTL6-SLTLH8→2.5

M×P	F	S	Catalog No.		P	B
			Type	No.		
5×0.8	12	10	SLTL	6	5	10
6×1.0				8		
8×1.25	15	15	SLTL	10	10	15
10×1.5				12		
12×1.75				14		
16×2.0				15		
12×1.75	17	17	SLTL	16	20	25
16×2.0				20		

M×P	F	S	Catalog No.		P	B
			Type	No.		
5×0.8	12	10	SLTLH	8	6.00~8.00	5~50
6×1.0				10		
8×1.25	15	15	SLTLH	12	10.00~12.00	5~50
10×1.5				14		
12×1.75				16		
16×2.0				20		

Example



**Female thread type** RoHS

**SNST** (Fixed P dimension)  
**SNSTH** (Configurable P and B dimensions)

Ⓜ SKS3  
Ⓜ 60~63HRC

Ⓢ For (s), s ≈ 1.6 × P.

M×P	Catalog No.		P	B
	Type	No.		
4×0.7	SNST	6	10	15
5×0.8		8		
6×1.0		10	15	20
6×1.0	SNSTH	12	20	30
		13		
		15		
		16		
8×1.25	20	40	50	

M×P	Catalog No.		P	B
	Type	No.		
4×0.7	SNSTH	6	6.00~7.00	10.0~80.0
5×0.8		8		
6×1.0		10	8.01~10.00	
6×1.0	SNSTH	12	10.00~12.00	10.0~80.0
		13		
		15		
		16		
8×1.25	20	16.00~20.00		

**Small head female thread type** RoHS

**SDSTH** (Configurable P and B dimensions)

Ⓜ SKS3  
Ⓜ 60~63HRC

● Details of undercut

Dg6	M×P	L	S	Catalog No.		P	B
				Type	D		
8	5×0.8	15	8	SDSTH	8	6.00~7.00	3.0~20.0
10	6×1.0				10		
13	8×1.25	20	12	SDSTH	13	9.00~12.00	3.0~30.0
16	10×1.5				16		
20	10×1.5	24	20	20	15.00~18.00	3.0~50.0	

**Small head one-side flat type** RoHS

**SDKLH** (Configurable P and B dimensions)

Ⓜ SKS3  
Ⓜ 60~63HRC

● Details of undercut

※ SDKLH10 → φ 2.5

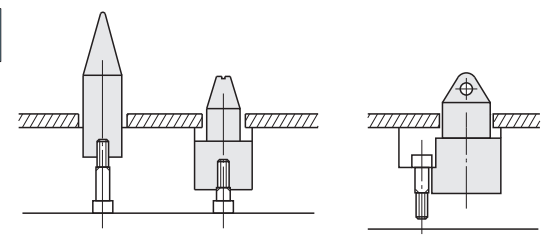
Dg6	Catalog No.		P	B
	Type	D		
10	SDKLH	10	6.00~7.00	3.0~30.0
13		13		
16		16	9.00~12.00	
20		20		
25		25		15.00~20.00

Catalog No. — P — B

SNST 8 — B10

SDSTH 13 — P11.48 — B28.0

Example



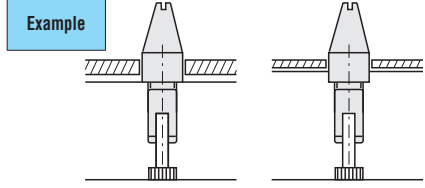


**Inlay female thread type** RoHS **SKSTH** (Configurable P and B dimensions)

Material: SKS3, 60~63HRC

D <sub>96</sub>	M	L	S	Catalog No.		P 0.01mm increments	B 0.1mm increments
				Type	No.		
5	-0.004 -0.012	3	12	(Configurable P and B dimensions) <b>SKSTH</b>	5	8.00 ~ 8.99	1.0 ~ 12.0
						9.00 ~ 10.00	1.0 ~ 12.0
6	-0.005 -0.014	4	15		6	10.00 ~ 10.99	1.0 ~ 15.0
						11.00 ~ 12.00	1.0 ~ 15.0
8	-0.005 -0.014	5	20		8	12.00 ~ 12.99	1.0 ~ 15.0
						13.00 ~ 16.00	1.0 ~ 20.0
10	-0.006 -0.017	6	25		10	14.00 ~ 14.99	1.0 ~ 20.0
						15.00 ~ 20.00	1.0 ~ 20.0
13	-0.006 -0.017	8	25		13	16.00 ~ 16.99	1.0 ~ 20.0
						17.00 ~ 20.00	1.0 ~ 20.0
16	-0.006 -0.017	8	25		16	18.00 ~ 20.00	1.0 ~ 20.0

Catalog No. — P — B  
SKSTH 8 — P12.80 — B3.5

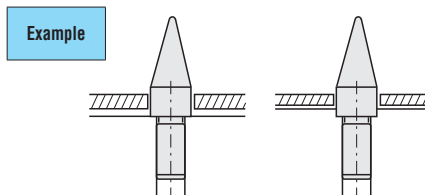


**Press-fit type** RoHS **SFSTH** (Configurable P and B dimensions)

Material: SKS3, 60~63HRC  
For (S), S ≈ 1.6 × P.

D <sub>m5</sub>	L	Catalog No.		P 0.01mm increments	B 0.1mm increments	
		Type	No.			
4	+0.012	(Configurable P and B dimensions) <b>SFSTH</b>	4	4.00 ~ 8.00	1.0 ~ 12.0	
5	+0.004		5	5.00 ~ 10.00	1.0 ~ 12.0	
6	+0.015		15	6	6.00 ~ 12.00	1.0 ~ 15.0
				8	8.00 ~ 14.00	1.0 ~ 15.0
10	+0.006		20	10	10.00 ~ 16.00	1.0 ~ 20.0
				13	13.00 ~ 18.00	1.0 ~ 20.0
13	+0.018		24	16	16.00 ~ 20.00	1.0 ~ 20.0

Catalog No. — P — B  
SFSTH 6 — P7.98 — B4.5

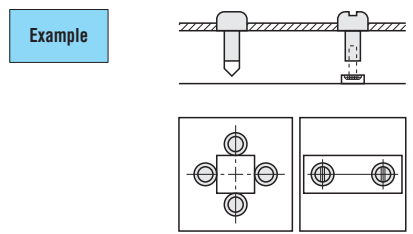


**PST** RoHS

Material: SKS3, 60~63HRC

B	S	Catalog No.		L	0.01mm increments min. P max.
		Type	D		
1	4	<b>PST</b>	1	12	1.50 ~ 3.00
			2	12	2.50 ~ 4.00
			3	12	4.00 ~ 6.00
2	7		4	15	5.00 ~ 7.00
			5	15	6.00 ~ 8.00
			6	15	7.00 ~ 9.00
3	9		8	15	9.00 ~ 13.00
			10	18	11.00 ~ 15.00

Catalog No. — L — P  
PST 5 — 15 — P7.20



**PSTM** RoHS

Material: SKS3, 60~63HRC

B	S	M	Catalog No.		L	0.01mm increments min. P max.
			Type	D		
2	7	3	<b>PSTM</b>	5	12	6.00 ~ 8.00
				6	15	7.00 ~ 9.00
3	9	8		15	9.00 ~ 13.00	
		10		18	11.00 ~ 15.00	

Alterations Catalog No. — L — P (PC) — (BC-PKC)  
PSTM 5 — 15 — P7.20 — BC3.5

Alteration	Code	Specification
	PC	Tip diameter change PC ≥ Pmin. -0.2 0.01mm increments
	BC	B dimension change 1 ≤ BC ≤ Bmax. 0.1mm increments * S dimension remains the same.
	PKC	Tip diameter tolerance change P +0.01 → +0.005 0 → 0

—Tapered type—

**RoHS**

**LPU**

④ S45C (Raw material)

—Stepped type—

**RoHS**

**LPL**

④ S45C  
⑤ 40~50HRC

—Straight type—

**RoHS**

**DLPA**

④ S45C  
⑤ 40~50HRC

D <sub>h7</sub>	ℓ	d	d <sub>1</sub>	H	Catalog No.		
					Type	D	
25	0 -0.021	12	9	14	11	LPU	25
							30
							32
32	0 -0.025	15	11	17.5	13	LPU	30
							35
							40
40	0 -0.025	18	14	20	15	LPU	35
							40
							40

D <sub>h7</sub>	D <sub>h7</sub>	L	B	d	d <sub>1</sub>	H	Catalog No.		
							Type	D	
20	0 -0.021	25	0 -0.021	40	20	9	14	11	20
									25
									32
25	0 -0.025	32	0 -0.025	50	25	11	17.5	12	25
									32
									40
32	0 -0.025	40	0 -0.025	70	35	11	17.5	24	32
									40
									40

D <sub>h7</sub>	L	R	d	d <sub>1</sub>	H	Catalog No.		
						Type	D	
20	0 -0.021	46	3	11	—	—	DLPA	20
								25
								32
25	0 -0.021	56	3	11	12	—	DLPA	25
								32
								40
32	0 -0.025	70	5	17.5	24	—	DLPA	32
								40
								40

④ D20 has a  $\phi 11$  through hole instead of a counterbore.

Catalog No.

LPL25

Alterations Catalog No. — (LC)

LPU25 — LC22

Alteration	Code	Specification
	LC	Full length change 1mm increments LPU=L-(ℓ+3) ≤ LC < L LPL=B+2 ≤ LC < Lmax. ④ Can be used for LPU and LPL only.

**RoHS**

**PAEZS** (Steel tip)  
**PAEZU** (Urethane tip)

① Case  
② Pushing pin  
③ Mounting flange  
④ Pushing pin length change  
⑤ Spherical surface machining to pushing pin tip  
⑥ Mounting flange change  
⑦ Mounting flange change

① ② ⑤ M SS400  
③ MDZB (Oil-free bushing)  
④ M SKD61+Nitriding  
⑤ 40~50HRC (Inside)  
900HV~(Surface)

⑥ M SWP—A  
⑦ MSWZSH  
⑧ M Urethane  
⑨ A90

① Case	② Pushing pin	③ Mounting flange	Free length	Spring constant	Initial load	Maximum load N	S		L	Catalog No.		ST	H 1mm increments										
							PAEZS	PAEZU		Type	P												
27.2	10	22	20	15	20	M6	9	70	52	40	11	39.2	50	0~95									
															175	0.32	7.8	110	120	190	13	100	0~170
															270	0.21	7.8	160	170	270	150	0~250	
34.0	10	26	25	20	25	M8	12	80	60	50	11	49.0	50	0~100									
															175	0.39	9.8	110	125	195	16	100	0~175
															270	0.26	9.8	160	175	275	150	0~255	
42.7	12	33	30	25	30	M10	15	90	70	60	13	58.8	50	0~110									
															175	0.48	9.8	110	130	205	20	150	0~260
															260	0.32	9.8	160	180	280	200	0~340	
															350	0.23	9.8	210	230	360	200	0~340	
															425	0.20	8.8	260	280	430	250	0~410	

Catalog No. — ST — H

PAEZS 20 — 100 — 150

Alterations Catalog No. — ST — H — (SC-SRC-TFC-TFS)

PAEZU 20 — 150 — 220 — SC130

Alteration	Code	Specification
	SC	④ Pushing pin length change 31 ≤ SC < S 1mm increments
	SRC	⑤ Spherical surface machining to pushing pin tip ④ Can be used for PAEZS only. Pin tip is machined to SR spherical surface.
	TFC	Mounting flange change Mounting flange is changed to round flange (for old PAP20) Flange thickness 15mm ④ Can be used for PAEZS20 and PAEZU20 only.
	TFS	Mounting flange change Mounting flange is changed to one-side bolted flange. Flange thickness 15mm

P	A	A <sub>1</sub>	A <sub>2</sub>	B	B <sub>1</sub>	d
13	60	20	25	38	20	11
16	70	25	30	50	24	11
20	88	30	40	60	30	13

# Pre-Holding Push Pin Sets

— Standard Type —

**RoHS**

**PAPZ** (Steel tip)  
**PAPZU** (Urethane tip)

① Case    ④ Pushing pin    ⑤ Mounting flange

② MS3-6 (P13 and P16 only)  
③ MDZB (Oil-free bushing)  
④ SKD61 + Nitriding  
⑤ 40~50HRC (Inside)  
⑥ SWP-A  
⑦ MSWZSH  
⑧ Urethane  
⑨ A90

① ② ⑤ SS400  
③ MDZB (Oil-free bushing)  
④ SKD61 + Nitriding  
⑤ 40~50HRC (Inside)  
⑥ SWP-A  
⑦ MSWZSH  
⑧ Urethane  
⑨ A90

\* Stroke ST is determined by the selection of L and FL.  
\* Stroke ST is determined by the selection of L and FL.

① Case				④ Pushing pin				⑤ Mounting flange				Catalog No.		Spring free length FL						
D	G	G1	ℓ	M	R	U	M1	ℓ1	A	A1	B	d	Type		P					
27.2	22	20	10	22	20	15	M6	9	70	52	40	11	PAPZ (Steel tip)	13	100	150~250	0 ≤ H ≤ L - 20	90		
															125			150		
															175			200		
															200			250		
															250					
34.0	27	25	10	26	25	20	M8	12	80	60	50	11		PAPZU (Urethane tip)	16	100	150~350	0 ≤ H ≤ L - 20	90	
																125			150	
																175			200	
																200			250	
																250			300	
42.7	32	30	12	33	30	25	M10	15	90	70	60	13				20	100	180~500	0 ≤ H ≤ L - 20	90
																	150			150
																	175			200
																	200			250
																	250			300
													300				350			
													350							
													400							
													425							
													450							
500																				

For PAPZU, select an appropriate size so that the urethane tip does not enter the bushing. S - ST > U

Catalog No. — S — L — H — FL  
PAPZ 16 — 150 — 220 — 190 — 200

**Features**  
- Because durability has been improved by adopting an oil-free bushing and a polished pin made of SKD61 (nitrided).

Alterations Catalog No. — S (SC) — L (LC) — H — FL — (SRC-TFC-TFS)  
PAPZ 16 — SC148 — 220 — 190 — 200 — SRC

Alteration	Code	Specification
	SC	④ Pushing pin length change 31 ≤ SC < S 1mm increments
	LC	① Case length change 75 ≤ LC < L 1mm increments
	SRC	④ Spherical surface machining to pushing pin tip Pin tip is machined to SR spherical surface.

Initial deflection  $f_1 = FL - (L - G - 4 - \ell)$   
Initial load  $P_1 = f_1 \times K$  (Spring constant)  
Maximum deflection  $f_{max} = FL \times 0.7$  (70% of maximum allowable deflection)  
Spring free length  $FL \geq f_{max} / 0.7 \geq (ST + f_1) / 0.7$

Alteration	Code	Specification
	TFC	Mounting flange change Mounting flange is changed to round flange (for old PAP20). Flange thickness 15mm Can be used for PAP20 and PAPZU20 only.
	TFS	Mounting flange change Mounting flange is changed to one-side bolted flange. Flange thickness 15mm

P	A	A1	A2	B	B1	d
13	60	20	25	38	20	11
16	70	25	30	50	24	11
20	88	30	40	60	30	13

### Selecting FL, L, and S

Consider a case in which pushing pin diameter P=13mm, pushing pin stroke ST=100mm, and spring initial deflection f1=25mm, (Maximum deflection fmax=100+25)

(1) Selecting free length FL  
 $FL \geq (ST + f_1) / 0.7$   
 $\geq (100 + 25) / 0.7$   
 $\geq 179\text{mm}$   
 Select FL200 from the table.

(2) Selecting case length L  
 $L \geq ST + (G + 4 + FL - f_{max} + \ell)$   
 $\geq 100 + (22 + 4 + 200 - 125 + 10)$   
 $\geq 211$   
 Select L=220mm.

(3) Selecting protruding length S of pushing pin  
 Select S=150 from the table.  
 $S_1 = S - ST = 150 - 100 = 50\text{mm}$

P — S — L — H — FL

Select PAPZ13-150-220-200-200.  
 In this case, the initial deflection, initial load, maximum load, and maximum stroke are the following.  
 Initial deflection  $f_1 = FL - (L - G - 4 - \ell)$  Initial load  $P_1 = K \times f_1 = 0.27[\text{N/mm}] \times 16[\text{mm}] = 4.3\text{N}$   
 $= 200 - (220 - 22 - 4 - 10) = 16\text{mm}$   
 Max. load  $P_e = K \times f_{max} = 0.27 \times (100 + 16) = 31[\text{N}]$   
 Max. stroke  $ST = L - (G + 4 + FL - FL \times 0.7 + \ell) = 220 - (22 + 4 + 200 - 140 + 10) = 124\text{mm}$

### Coil spring for PAPZ and PAPZU

**PAWP**

When installed  $f_1$   
 When pushed in  $f_{max} \geq ST + f_1$

Catalog No.  
PAWP 13-175

Spring constant K N/mm	Max. Deflection fmax.	Load N	Effective minimum length fe = FL - fmax.	Outer diameter d1	Inner diameter d2	Wire diameter	Catalog No.				
							Type No. — FL				
0.63	63	39.2	27	17	14.2	1.4	PAWP13- 90				
0.45	87.5		37.5				125				
0.37	105		45				150				
0.32	122.5		52.5				175				
0.27	140		60				200				
0.23	175	75	250								
0.80	63	49.0	27	20	17	1.5	PAWP16- 90				
0.55	87.5		37.5				125				
0.47	105		45				150				
0.39	122.5		52.5				175				
0.34	140		60				200				
0.28	175		75				250				
0.24	210		90				300				
0.20	245		105				350				
0.95	63		58.8				27	26	22	2.0	PAWP20- 90
0.57	105						45				150
0.48	123	53		175							
0.42	140	60		200							
0.33	175	75		250							
0.28	210	90		300							
0.24	245	105		350							
0.21	280	120		400							
0.20	298	128		425							
0.19	315	135		450							
0.17	350	150	500								



**RoHS**

**PALZS** (Steel tip)  
**PALZU** (Urethane tip)  
**PALZP** (Tip with pad)

**PALZS**  
Tip: Steel  
 2-φ13  
 φ42.7  
 φ5X25 Spring pin  
 R30  
 φ20  
 12  
 15  
 15  
 40  
 20  
 L  
 S  
 H  
 ST  
 70  
 60

**PALZU**  
Tip: Urethane  
 Lock groove  
 Spring pin  
 8.5  
 f  
 φ30  
 15  
 25  
 30  
 φ20.5  
 50

**PALZP**  
Tip: Pad  
 φ4 (Air hole)  
 φ54  
 15  
 15  
 57  
 35  
 92

**How to lock**  
 Insert the spring pin into the lock groove.

	PALZS	PALZU	PALZP
f	28.5	38.5	80.5

①②⑤ **SS400**  
 ③ MDZB (Oil-free bushing)  
 ④ SKD61+Nitriding  
 ⑥ 40~50HRC (Inside)  
 900HV (Surface)

⑥ **SWP-A**  
 ⑦ MSWZSH  
 ⑧ Urethane A90  
 ⑨ NBR (Rubber)

**RoHS**

**PAEAS** (Steel tip)  
**PAEAU** (Urethane tip)

**PAEAS**  
Tip: Steel  
 2-MS3-6  
 2-φd  
 D±0.05  
 M  
 15  
 15  
 5  
 10  
 L  
 H  
 S  
 ST  
 A  
 B

**PAEAU**  
Tip: Urethane  
 2-MS3-6  
 M1  
 φP1  
 5  
 U  
 U1  
 L  
 H  
 S  
 ST  
 φP1

①②⑤ **SS400**  
 ③ MDZB (Oil-free bushing)  
 ④ SKD61+Nitriding  
 ⑥ 40~50HRC (Inside)  
 900HV (Surface)  
 ⑥⑨ **Urethane A90**  
 ⑦ Air coupling KQ2S06-01S (product of SMC)

Spring constant N/mm	Initial load N	Maximum load N	S			L	Catalog No.		ST	H 1mm increments
			PALZS	PALZU	PALZP		Type	No.		
0.88	0	44.1	90	100	142	150	<b>PALZS</b> (Steel tip) <b>PALZU</b> (Urethane tip) <b>PALZP</b> (Tip with pad)	20	50	0~130
0.49	0	49.0	140	150	192	210			100	0~190
0.32	0	49.0	190	200	242	285			150	0~265
0.28	0	55.9	240	250	292	355			200	0~335
0.24	0	54.9	290	300	342	415			250	0~395

① Case	④ Pushing pin							⑤ Mounting flange			Pressing load N			S			L	Catalog No.		ST	H 1mm increments	
	D	M	G	R	U	U <sub>1</sub>	ℓ	M <sub>1</sub>	P <sub>1</sub>	A	A <sub>1</sub>	B	d	0.3MPa	0.4MPa	0.5MPa		PAEAS	PAEAU			Type
27.2	22	22	20	15	20	9	M6	13.5	70	52	40	11	41.2	54.9	66.7	60	70	100	<b>PAEAS</b> (Steel tip)	13	50	0~80
																110	120	150			100	0~130
																160	170	200			150	0~180
60	75	105	50	0~85																		
110	125	155	160	175	205	150	0~135															
34	26	27	25	20	25	12	M8	16.5	80	60	50	63.7	83.4	103	160	175	205	<b>PAEAU</b> (Urethane tip)	16	150	0~185	
															210	225	255			200	0~235	

Catalog No. — ST — H  
**PALZS 20** — 150 — 120

Alterations Catalog No. — ST — H — (SC-SRC-TFC-TFS-SFC)  
**PALZS 20** — 150 — 220 — SRC

- Features**
- Retracting the pin when moving the die or performing maintenance improves workability.
  - A pad type which is less likely to scratch the workpiece has been added to the specifications.
  - Because an oil-free bushing and a polished pin made of SKD61 (nitrided) are used.
- Precautions**
- Be careful not to move the pin in excess of the specified stroke. Doing so will damage the lock mechanism.
  - Lock mechanism will be damaged if it moves acting as lock.

Alteration	Code	Specification
	SC	④ Pushing pin length change Can be used for PALZS and PALZU only. 61 ≤ SC < S 1mm increments
	SRC	④ Spherical surface machining to pushing pin tip Can be used for PALZS only. Pin tip R is machined to SR spherical surface.
	TFC	Mounting flange change Mounting flange is changed to round flange Flange thickness 15mm
	TFS	Mounting flange change Mounting flange is changed to one-side bolted flange. Flange thickness 15mm
	SFC	Mounting flange change The flange diameter, width, and bolt pitch are changed.

\*The pressing load values are provided for reference only.

Catalog No. — ST — H  
**PAEAS 16** — 150 — 120

- Features:**  
 The air-driven mechanism provides the following advantages.
- Saves space.
    - Because no spring is used, the full length is short.
    - Because the pressing load is large, the diameter can be reduced by 1 rank relative to the spring type.
  - The pressing load can be easily adjusted by changing the air pressure.
  - Because an oil-free bushing and a polished pin made of SKD61 (nitrided) are used.
- Precautions**
- Use air tubes with an outer diameter 6 mm and inner diameter 4 mm.
  - Use dry compressed air.
  - It can be made to perform pressure regulation of air.

Alterations Catalog No. — ST — H — (SC-SRC-TFS-JLC)  
**PAEAS 16** — 150 — 120 — SRC

Alteration	Code	Specification
	SC	④ Pushing pin length change 31 ≤ SC < S 1mm increments
	SRC	④ Spherical surface machining to pushing pin tip Can be used for PAEAS only. Pin tip R is machined to SR spherical surface.
	TFS	Mounting flange change Mounting flange is changed to one-side bolted flange. Flange thickness 15mm
	JLC	The provided one-touch pipe coupling is changed to an L-shape (elbow) type.

**RoHS**

**PSPH (1②③④)**

**PSH (1)**

① S45C  
② 50HRC~ (Induction hardened on surface)  
③ Seamless steel pipe

Catalog No.		L	F	WP FL
Type	P			
PSPH (1②③④)	8	100 150 200	150 200 250 300	100
	10			125
	13			150
PSH (1)	16			200
				250
				300

**Alterations**

Catalog No. — L (LC) — F (FC) — FL

PSPH 10 — LC143 — FC193 — 200  
PSH 13 — LC143

① PSH		② (Spring case)				③ WP		④ MSW		
Pf6	H	D	M1×P	E	M2×P	a	d			
8	-0.013	13	21.7	22×1.5	35	16×1.5	7	14.3	WP 8	MSW16
10	-0.022	16	27.2	27×1.5	40	22×1.5	10	19.4	WP10	MSW22
13	-0.016	20	32	30×1.5	45	24×1.5			WP13	MSW24
16	-0.027	23	34	33×1.5	50	28×1.5	12	26.2	WP16	MSW28

Catalog No. — L — F — FL

PSPH 10 — 150 — 200 — 200  
PSH 13 — 200

Alteration	Code	Specification
	LC	Pushing pin ① length change 50 ≤ LC < L 1mm increments
	FC	Spring case ② full length change FCmin. ≤ FC < F 1mm increments

**Spring for pushing pin**

**RoHS**

FL	Tolerance
100	+10
125	0
150	0
175	+15
200	0
250	0
300	+25
500	-10

Catalog No. — ST — H

WP 13-150 — 150 — 120

d	D	Wire diameter	Solid height	N/mm	F=L×70%		Catalog No.		
					Fmm	N	Type	No.	FL
8.5 or more	11.5 or less	0.9	23	0.30	70	21.3	WP	8	100
			28	0.27	87.5	24.0			125
			33	0.23	105	23.7			150
			40	0.18	122.5	21.6			175
			46	0.16	140	22.0			200
			55	0.12	175	20.6			250
			71	0.10	210	20.6			300
			118	0.06	350	20.6			500
10.5 or more	13.5 or less	1.0	23	0.37	70	26.1	WP	10	100
			30	0.27	87.5	24.0			125
			35	0.24	105	24.7			150
			40	0.20	122.5	24.0			175
			45	0.18	140	24.7			200
			56	0.15	175	25.7			250
			64	0.12	210	24.7			300
			106	0.08	350	27.5			500
13.5 or more	17 or less	1.2	17	0.59	70	41.2	WP	13	100
			22	0.42	87.5	36.9			125
			26	0.31	105	33.0			150
			34	0.25	122.5	30.0			175
			37	0.23	140	31.6			200
			42	0.19	175	32.6			250
			53	0.15	210	30.9			300
			80	0.10	350	34.3			500
16.5 or more	21 or less	1.4	18.9	0.54	70	37.8	WP	16	100
			22.4	0.44	87.5	38.5			125
			25.9	0.37	105	38.9			150
			29.4	0.31	122.5	38.0			175
			33.6	0.27	140	37.8			200
			42	0.22	175	38.5			250
			46.2	0.19	210	39.9			300
			79.8	0.11	350	38.5			500

**Push-out pins**

**RoHS**

**POP** (Normal type)  
**HPOP** (Induction-hardened type)

Select the tip shape from the shapes shown in the figure below.

Type	M	σ
POP	S45C	20~25HRC
HPOP	S45C	50HRC~ (Induction hardened)

**Tip shapes**

**N** (No tip machining)  
**R** (Rounding)  
**U** (With urethane cap)

D	M	ℓ	t	d	A	B	E
8	3	5	3	7.5	5.5	2.5	6
10	4	6	3	9.5	7	3	7
13	5	7	4	12.5	8.5	4	9
16	6	8	4	15	10	5	10
20	8	10	5	19	13	6	13
25	10	12	5	24	16	8	15

Urethane cap and bolt are bonded by Loctite.

Bolt: S SCM435 ※Strength class 10.9  
Bright chromate  
Urethane: Shore A90 (Black)

H	T	Catalog No.		L	
		Type	Tip machining	D	10mm increments
18	8	POP	N	8	30~120
25				10	40~150
28				13	50~180
30				16	50~180
35	10	HPOP (Induction-hardened type)	U	20	50~200
40				25	50~200

**Example**

■ Screw plug (MSW) see Components  
■ Coil spring see main catalog

Catalog No. — L

Type Tip machining D L

POP R 16 — 100

**Alterations**

Catalog No. — L (LC)

POP R 16 — LC114

Alteration	Code	Specification
	LC	L dimension change Lmin. < LC < Lmax. 1mm increments

**Drawing jector pins**

**RoHS**

**DHPA**

S45C  
S5HRC~ (Induction hardened)

Catalog No.		D	L
Type	Typ		
DHPA		20	120
			170
			220
			200

**Covers for drawing jector pins**

**RoHS**

**DHPF100**

SS400

Catalog No. — L

DHPF100

Catalog No.	L
DHPA 20	120
DHPF 100	

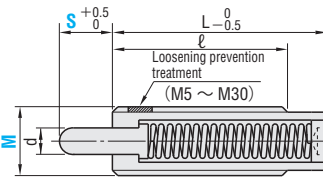
# Spring Plungers

Spring plungers  
—Steel type—

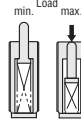
RoHS



Type	Main body			Pins			Spring	Service temp. range
	M	H	S	M	H	S		
For light load	PJL					Bright chrome plating	SWP-B	-30~80°C
For heavy load	PJH	S45C	29~35HRC	Black oxide (Fe3O4)	S45C	57~63HRC (Carburizing)		
For extremely heavy load	PJX			Nickel plating		Black oxide		



- ① Thread-locking adhesive is not applied on M3 and M4.
- ② Loosening prevention treatment involves fastening by means of an anaerobic adhesive that is sealed in microcapsules. It loses its effect once loosened. Therefore anaerobic adhesive must be applied to the threads again.
- ③ The adhesive is most effective if left on the part for 72 hours and more in 25°C. Note if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.



d	ℓ	L		B	Catalog No.								
		Light and heavy loads	Extremely heavy loads		For light load (PJL-NPJL)		For heavy load (PJH-NPJH)		For extremely heavy load (PJX-NPJX)		Type	M (Coarse thread)	S
					min.	max.	min.	max.	min.	max.			
1.1	10 (15)	10	15	0.9	0.49	1.0	0.78	2.9	2.2	4.5	3	* 1.5	
1.1	15 (20)	15	20	0.9	0.29	1.0	0.78	2.9	1.8	4.5	3	* 3	
1.6	15 (24)	15	24	1.3	1.0	2.0	2.9	8.8	5.2	13	4	* 2	
1.6	24	24	24	1.3	0.59	2.0	2.0	8.8	5.2	13	4	* 4	
2.0	20 (27)	20	27	1.5	2.0	9.8	4.9	19.6	9.1	24.5	5	* 3	
2.0	27 (39)	27	39	1.5	2.0	9.8	2.9	19.6	8.8	24.8	5	* 5	
2.5	25 (30)	25	30	2	5.9	9.8	7.8	29.4	14.2	39.5	6	* 3	
2.5	30 (36)	30	36	2	2.0	9.8	4.9	29.4	14.1	39.4	6	* 5	
2.5	30	39	—	2	1.4	9.8	5.0	28.0	—	—	10	—	
3.1	25 (27)	25	27	2.5	5.9	9.8	14.7	29.4	35.3	41.2	8	* 3	
3.1	27 (30)	27	35	2.5	2.9	9.8	7.8	29.4	14.7	41.2	8	* 5	
3.1	30	43	—	2.5	3.0	9.8	7.0	28.8	—	—	10	—	
3.8	30	30	35	3	5.9	14.7	8.8	49.0	15.7	62.8	10	* 5	
3.8	30	43	53	3	2.9	14.7	7.8	49.0	12.7	62.8	10	* 10	
3.8	30	58	—	3	2.9	14.7	6.2	48.7	—	—	15	—	
5.5	30 (35)	30	43	4	5.9	14.7	6.2	48.7	37.2	98.1	12	* 5	
5.5	35	43	58	4	2.9	19.6	7.8	49.0	14.7	98.1	12	* 10	
5.5	35	51	78	4	2.9	19.6	4.9	49.0	14.9	98.1	12	* 15	
5.5	35	78	—	4	3.5	19.6	6.9	49.0	—	—	20	—	
8	35	60	60	5	5.9	39.2	12.7	78.5	23.5	147.2	16	* 10	
8	35	60	70	5	3.9	39.2	12.7	78.5	21.6	147.2	16	* 15	
8	35	85	90	5	4.9	39.2	9.8	78.5	12.7	147.2	16	* 20	
8	35	125	125	5	2.9	39.2	6.9	78.5	19.6	147.2	16	* 30	
8	35	125	—	5	4.9	39.2	6.9	78.5	—	—	40	—	
8	35	155	—	5	19.6	49.0	29.4	78.5	—	—	50	—	
8	35	159	—	5	2.9	49.0	3.9	78.5	—	—	60	—	
8	35	185	—	5	3.4	49.0	5.5	78.5	—	—	70	—	
8	35	185	—	5	19.6	49.0	29.4	93.2	—	—	80	—	
10	45	60	80	6	12.7	78.5	24.5	147.1	12.7	245.3	20	* 15	
10	45	72	—	6	11.7	78.5	22.6	147.1	—	—	20	—	
10	45	96	—	6	11.7	78.5	22.6	147.1	—	—	30	—	
10	45	120	—	6	11.7	78.5	22.6	147.1	—	—	40	—	
10	45	60	84	10	19.6	98.1	44.1	196.1	—	—	7	—	
10	45	60	—	10	19.6	98.1	47.1	215.7	24.5	314.0	* 15	—	
10	45	75	—	10	17.7	98.1	44.1	215.7	—	—	20	—	
10	45	100	—	10	17.7	98.1	44.1	215.7	—	—	30	—	
10	45	124	—	10	17.7	98.1	44.1	215.7	—	—	40	—	
14	45	66	—	14	27.5	117.7	44.1	274.6	—	—	15	—	
14	45	78	—	14	27.5	117.7	53.0	274.6	—	—	20	—	
14	45	100	—	14	27.5	117.7	45.1	274.6	—	—	30	—	
14	45	123	—	14	27.5	117.7	47.1	274.6	—	—	40	—	

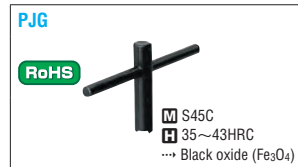
PJL  
PJH  
PJX  
(\* marks only)

① Values in parentheses for ℓ dimension are for extremely heavy load.

Catalog No.

PJL12-5

## Wrenches for spring plungers



M	Catalog No.
5-6	PJG1
8-10	PJG2
	PJG2A (For plungers with flanges)
12	PJG3
16	PJG4
20-24	PJG5
30	PJG6

Catalog No.

PJG1

Example

Spring plunger M3-M4 (Flat head screwdriver)



Spring plunger M5~M30 (Special wrench PJG)



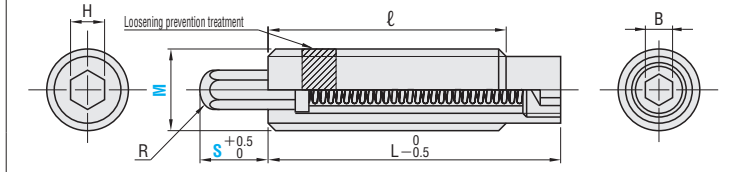
# Spring Plungers

— Hex Pin Type / Wrenches for Hex Pins / Type for Slanted Surfaces —

Hex pin type RoHS



Type	Main body			Pin			Spring	Service temp. range
	M	H	S	M	H	S		
For light load	PJLR					57~63HRC	SWP-B	-30~80°C
For heavy load	PJHR	S45C	29~35HRC	Fe304	S45C	Carburizing		



■ Features of PJLR and PJHR Because the pin shape is hexagonal, the pins can be installed using a wrench. No special wrench is required.

- ① Loosening prevention treatment involves fastening by means of an anaerobic adhesive that is sealed in microcapsules. It loses its effect once loosened. Therefore anaerobic adhesive must be applied to the threads again.
- ② The adhesive is most effective if left on the part for 72 hours and more in 25°C. Note if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

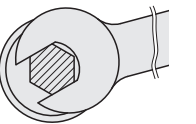
M×P (Coarse thread)	H	R	S	ℓ	L	B	PJLR		PJHR		Catalog No.	
							Load N		Load N		Type	M-S
							min.	max.	min.	max.		
10×1.5	4	1.9	5	30	30	3	5.9	14.7	8.8	49.0	PJLR	10-5
			10		43		2.9	14.7	7.8	49.0		10-10
			5		30		5.9	14.7	18.6	49.0		12-5
			10		43	4	2.9	19.6	7.8	49.0		12-10
			15		51		2.9	19.6	4.9	49.0		12-15
			10		60		5.9	39.2	12.7	78.5		16-10
			15		60		3.9	39.2	12.7	78.5		16-15
			20		85	5	4.9	39.2	9.8	78.5		16-20
			30		125		2.9	39.2	6.9	78.5		16-30
			50		155		19.6	49.0	29.4	78.5		16-50
			80		185		19.6	49.0	29.4	93.2		16-80
			7		60	10	19.6	98.1	44.1	196.1		24-7
			15		60		19.6	98.1	47.1	215.7		24-15
30×3.5	13	7.6	20	45	78	14	27.5	117.7	53.0	274.6		30-20

## PJLR-PJHR features

1. Because the pin shape is hexagonal, it can be installed using a socket wrench or spanner.
2. If spring damage causes the pin to become indented, a special wrench (PJRW) can be used to remove the pin. For M10-12-24, use a commercially-available wrench.

Catalog No.

PJHR 10-10

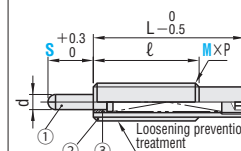


## Spring plungers for slanted surfaces

PJHZ (For slanted surfaces) RoHS



M×P (Coarse thread)	d	S	ℓ	L	B	Load W N		Catalog No.	
						min.	max.	Type Typ	M-S
10×1.5	4	10	30	43	3	7.8	49.0	PJHZ	10-10
12×1.75	5	15	35	43	4	7.8	49.0		12-10
12×1.75		15	35	51		4.9	49.0		12-15
16×2.0		10	35	60		12.7	78.5		16-10
16×2.0		15	35	60		12.7	78.5		16-15
16×2.0		20	35	85		9.8	78.5		16-20
16×2.0		30	35	125		6.9	78.5		16-30



- ① M S45C
- ② H 50HRC~Carburizing
- ③ Special bushing

Catalog No.

PJHZ 12-15

## PJHZ features

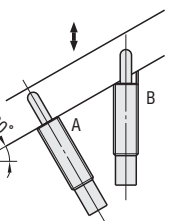
- ① The special structure improves resistance to wear and seizure, allowing use on slanted surfaces. (Conventional spring plungers should be used at 0° for oil-free types and 5° or less for lubricated types.)
- ② Can be used oil-free.
- ③ Angles of use: 0~30°

Test conditions

Press machine: 20-ton crank press  
Speed: 130SPM  
Slant angle: 30°  
Lubrication: Oil-free

Type	Lifetime	
	A	B
PJHZ16-30	Minimum 300,000 strokes	Minimum 300,000 strokes
PJH 16-30	Scuffing occurs at 17,000 strokes	Scuffing occurs at 50,000 strokes

Note: The test results are from the specific conditions listed above. The actual lifetime will vary depending on the conditions of use.





**RoHS** **MG**

① **M** SUM24L  
② **M** Alnico magnet  
③ **M** Brass (C3604BD) Heat resistance 80°C

L	M×P	* Adhesive force N	Surface magnetic flux density Gauss [G]	d1	d2	B	C	H	t	Catalog No.	
										Type	D
15	5×0.8	5.9	1100~1300	6	8	7	0.5	5	2.5	<b>MG</b>	10
15	5×0.8	11.8		8	10.5		1.0				13
20	6×1.0	15.7	10	13	10	1.5	6	3.5	16		
25	8×1.25	29.4	1200~1500	13	16	12	9	6.5	20		
30	8×1.25	44.1	1300~1700	15.5	18	13			25		
30	8×1.25	78.5	1400~1700	20	23.5	15			28		

⚠ Because magnets are easily broken, do not use any alterations for them.  
⚠ The end face is finished by grinding. \* Adhesive force: Refer to page at right (figure at bottom)

**RoHS** **MGN** (Strong, corrosion-resistant type)

① **M** SUM24L  
② **S** Electroless nickel plating  
③ **M** Neodymium magnet Heat resistance 80°C

L	M×P	* Adhesive force N	Surface magnetic flux density Gauss [G]	d1	B	C	l	Catalog No.	
								Type	D
10	3×0.5	2.9	3000~3200	4.0	2.0	0.3	6	<b>MGN</b>	6
		5.8	3500~3700	5.0					8
15	5×0.8	9.8	3400~3600	6.0	1.5	0.5	10		10
		15.6	3200~3400	7.0					13
20	6×1.0	36.2	3500~3700	9.5	2.0	1.0	12		16
25	8×1.25	58.8	3100~3300	12.5					16
30		8×1.25	112.7	3500~3700	16.5	3.0	1.5	18	25
	196.1		3300~3500	18.5	28				

⚠ Because magnets are easily broken, do not use any alterations for them.  
⚠ The magnetic surface is recessed by 0.1~0.3 from the case. \* Adhesive force: Refer to page at right (figure at bottom)

Catalog No.

MG 13  
HX 20

**RoHS** **HX**  
**HXH**

(For high-temperature use)

	HX	HXH
<b>M</b> ①	SUM24L	
②	Cobalt magnet	
<b>S</b>	—	Raydent treatment
Heat resistance	80°C	200°C

L	M×P	* Adhesive force N	Surface magnetic flux density Gauss [G]	d1	d2	B	H	Catalog No.		
								Type	D	
6	3×0.5	2.9	2100~2600	4	5	2.0	1.5	<b>HX</b> Heat resistance: 80°C	6	
		3.9	2200~2600	5.5	6.5				8	
8	4×0.7	9.8	2100~2300	7	8	1.5	1.1		10	
		29.4	2200~2400	9.5	11				13	
10	5×0.8	49.0	2200~2500	12.5	14	2.0	1.6		<b>HXH</b> Heat resistance: 200°C	16
13		88.3	2300~2600	16.5	18				20	
	6×1.0	127.5		21.5	23	3.0	2.6	25		

⚠ Because magnets are easily broken, do not use any alterations for them.  
⚠ The magnet and holder are fastened by an adhesive. ⚠ The magnetic surface is recessed by 0.1~0.3 from the case. \* Adhesive force: Refer to figure at bottom

**RoHS** **HXU**

① **M** SUM24L  
② **M** Cobalt magnet  
③ **M** Brass (C3604BD) Heat resistance 80°C

L	M×P	* Adhesive force N	Surface magnetic flux density Gauss [G]	d1	d2	B	H	Catalog No.	
								Type	D
8	3×0.5	3.9	2100~2600	4	5	2	1.6	<b>HXU</b>	6
		5.9	2400~2600	5	6				8
10	4×0.7	14.7	2700~2900	7	8	3	2.1		10
		34.3	2800~3100	9.5	11				13
13	5×0.8	58.8	2900~3300	12.5	14	4	3.1		16
		98.1	2900~3400	16.5	18				20
15	6×1.0	137.3		21.5	23	6	5.1	25	

⚠ Because magnets are easily broken, do not use any alterations for them.  
⚠ The magnet and holder are fastened by an adhesive. ⚠ The magnetic surface is recessed by 0.1~0.3 from the case. \* Adhesive force: Refer to figure at bottom

**RoHS** **HXMB**

① **M** Cobalt magnet Heat resistance 200°C

T	* Adhesive force N	Surface magnetic flux density Gauss [G]	Catalog No.	
			Type	D
2	1.0	2000~2100	<b>HXMB</b> Heat resistance: 200°C	3
	1.5			4
	3.9			5
1.5	6.9	2200~2400		7

⚠ Magnets are extremely brittle and easily broken. Always use sufficient care when handling them.  
⚠ Because the magnets are easily damaged, fasten them so that they do not protrude from the holder.  
⚠ Use adhesive to fasten the magnet in place. \* Adhesive force: Refer to page at right (figure at bottom)

\* "Adhesive force" indicates the ability to lift up SS400 material (plate thickness 10 mm, top surface polished)

N Adhesive force

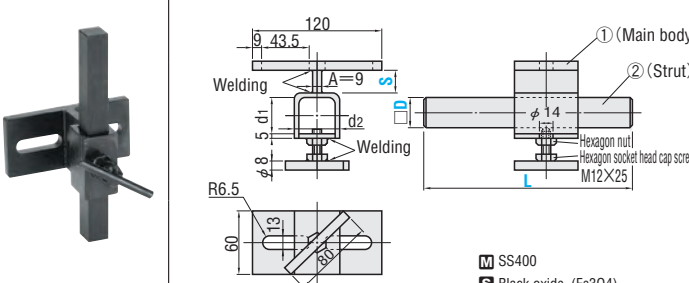
### Example

**Installation**  
After press-fitting, install as shown in the figure in order to prevent the magnet from falling off.

Hole machining (reference)	
DH7	
20	+0.021 0
25	
30	
35	+0.025 0
40	

Loctite application  
Set screw (Hexagon socket head cone point set screw or similar)

**RoHS** **STB** (1+2)  
**STB-N** (1 only)



① (Main body)  
② (Strut)

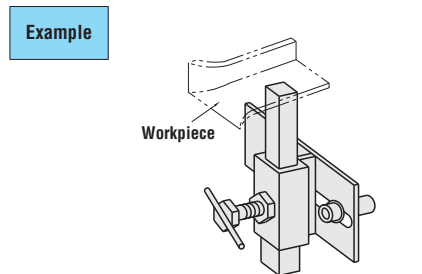
Welding  
Hexagon nut  
Hexagon socket head cap screw  
M12X25

SS400  
S Black oxide (Fe304)

d <sub>1</sub>	d <sub>2</sub>	Catalog No.		10mm increments		
		Type	D	L	S	
33	33	STB	20	100~300	0~150	
45	44	STB-N	32			
33	33	STBY	20			
45	44	STBY-N	32			

When S=10 only, then A=20 (D20) or A=32 (D32)

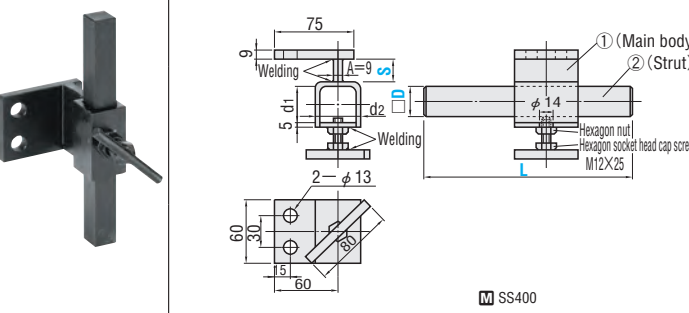
**Catalog No.** - L - S  
**STB 20** - 100 - 100  
**STB-N 32** - 40



e	d <sub>1</sub>	d <sub>2</sub>	Catalog No.		10mm increments		
			Type	D	L	S	
26.0	21	30	MRTB	20	100~300	0~150	
37.5	32	40	MRTB-N	30			
26.0	21	30	MRTBY	20			
37.5	32	40	MRTBY-N	30			

**Catalog No.** - L - S  
**MRTB 20** - 100 - 100  
**MRTB-N 30** - 40

**RoHS** **STBY** (1+2)  
**STBY-N** (1 only)

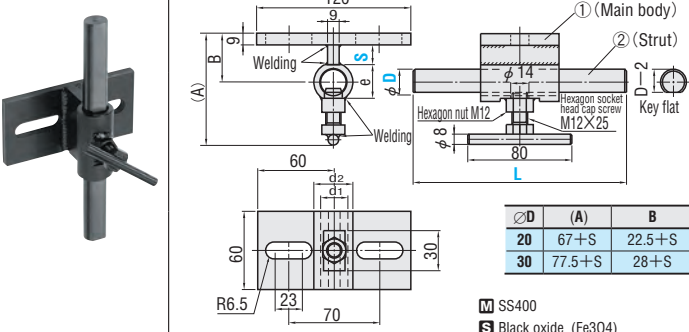


① (Main body)  
② (Strut)

Welding  
Hexagon nut  
Hexagon socket head cap screw  
M12X25

SS400  
S Black oxide (Fe304)

**RoHS** **MRTB** (1+2)  
**MRTB-N** (1 only)



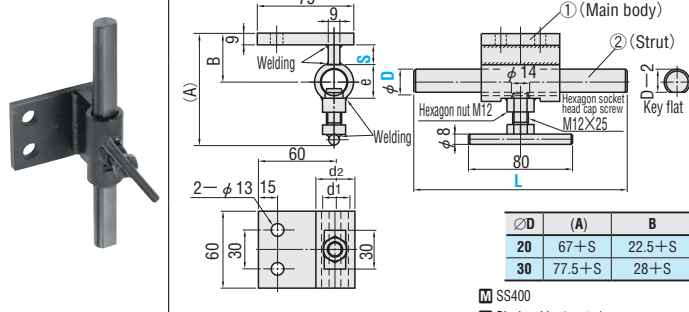
① (Main body)  
② (Strut)

Welding  
Hexagon nut M12  
Hexagon socket head cap screw  
M12X25  
Key flat

∅D	(A)	B
20	67+S	22.5+S
30	77.5+S	28+S

SS400  
S Black oxide (Fe304)

**RoHS** **MRTBY** (1+2)  
**MRTBY-N** (1 only)



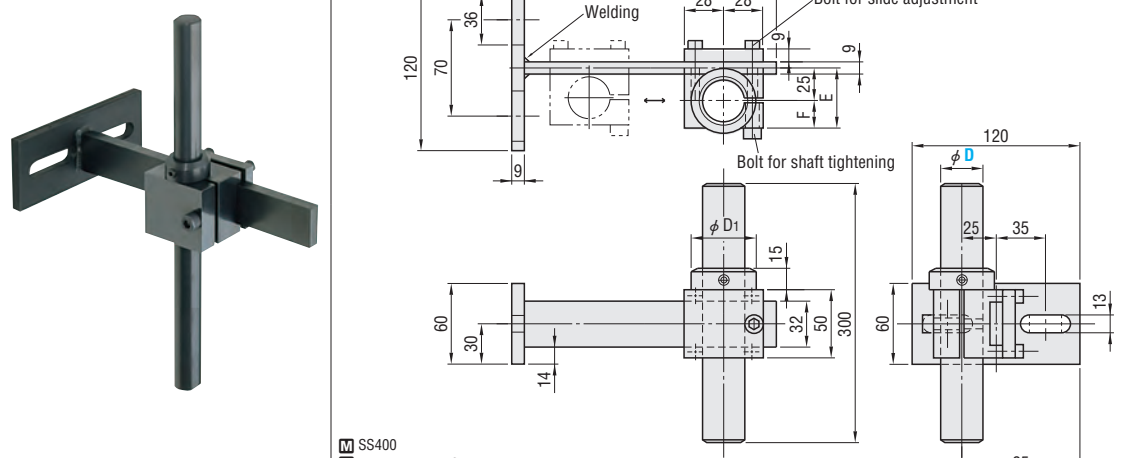
① (Main body)  
② (Strut)

Welding  
Hexagon nut M12  
Hexagon socket head cap screw  
M12X25  
Key flat

∅D	(A)	B
20	67+S	22.5+S
30	77.5+S	28+S

SS400  
S Black oxide (Fe304)

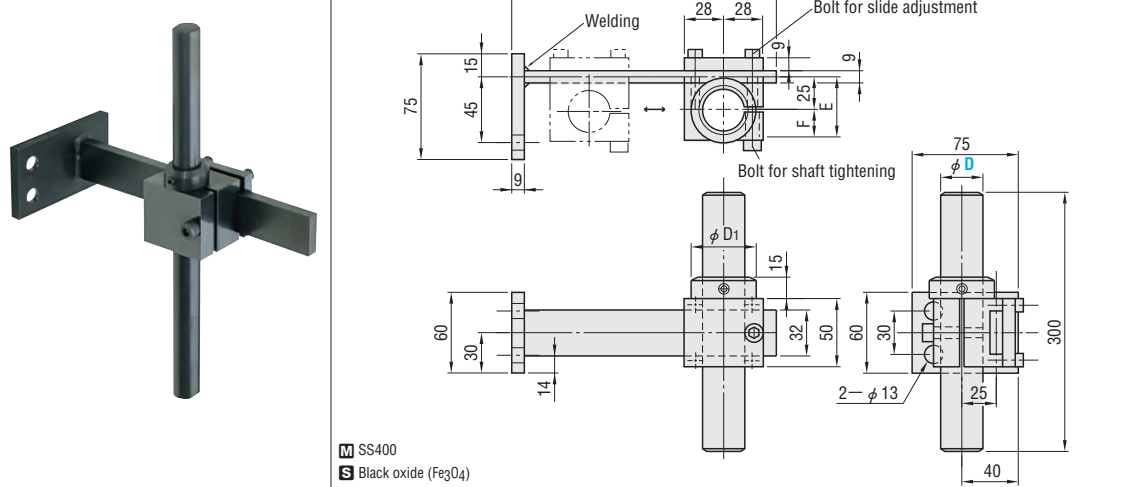
**RoHS** **SCTB**



Welding  
Bolt for slide adjustment  
Bolt for shaft tightening

SS400  
S Black oxide (Fe304)

**RoHS** **SCTBY**




Welding  
Bolt for slide adjustment  
Bolt for shaft tightening

SS400  
S Black oxide (Fe304)

E	F	D1	Catalog No.	
			Type	D
40	15	32	SCTB	20
45	20	46	SCTBY	30

**Catalog No.**  
**SCTB 30**

**Alterations** **Catalog No.** - (LC)  
**SCTB 20** - LC100

Alteration	Code	Specification
	LC	Reduction of L dimension 80 ≤ LC ≤ 235 5mm increments

**Roller carriers** RoHS **CORO**

① M SS400 H 55HRC~ (Carburizing)  
② M SPCC

⚠ (L) dimension is a value for reference only.  
⚠ Roller load resistance: 20kg/roller

L	Catalog No.	A	Number of rollers
(105)	<b>CORO</b>	3	3
(140)		4	4
(175)		5	5
(210)		6	6
(245)		7	7
(280)		8	8
(315)		9	9
(350)		10	10
(385)		11	11
(420)		12	12
(455)		13	13
(490)		14	14
(525)		15	15

L	Catalog No.	A	Number of rollers
(560)	<b>CORO</b>	16	16
(595)		17	17
(630)		18	18
(665)		19	19
(700)		20	20
(735)		21	21
(770)		22	22
(805)		23	23
(840)		24	24
(875)		25	25
(910)		26	26
(945)		27	27
(980)		28	28

**Ball carriers** RoHS **GORO**

① M SUJ2  
②③ M SPCC

⚠ (L) dimension is a value for reference only.  
⚠ Ball load resistance: 8kg/ball

L	Catalog No.	A	Number of balls
(200)	<b>GORO</b>	4	4
(300)		6	6
(400)		8	8
(500)		10	10
(600)		12	12
(700)		14	14
(800)		16	16
(900)		18	18
(1000)		20	20
(1100)		22	22
(1200)		24	24

**Catalog No.** — **A**

**CORO** — 10  
**GORO** — 8

**Ball carriers (individual part)** RoHS **GORON**

①② M SUJ2  
③ M SUS304  
④ M SPCC

Catalog No.	D	D <sub>1</sub>	L	L <sub>1</sub>	H	P	a	d	Load resistance N (kgf)	Weight (g)
<b>GORON</b>	41.3	24	10.2	(9.1)	4	30	3.5	15.875	78.4 (8)	45

**Catalog No.** **GORON**

**Example**

**CORO**  
**GORO**  
Material

**GORON**  
Conveyor bend point

**EBSP** RoHS

**Surface shape**

SUS304

Catalog No.	A	B
<b>EBSP</b>	500	1000
	1000	2000

**Catalog No.** — **A** — **B**

**EBSP** — 500 — 1000

**Example**

Scrap shooter (P.941)

Workpiece · Scrap  
Oil flow  
Convex shape

After cutting the plate to the required dimensions, attach it to the scrap shooter by welding or other means.

**Features**

- Because the contact area with scrap is small, this product is suitable for scrap shooters which can only be inclined at a small angle (minimum effective angle: 12 degrees).
- Prevents adhesion caused by lubricating oil.

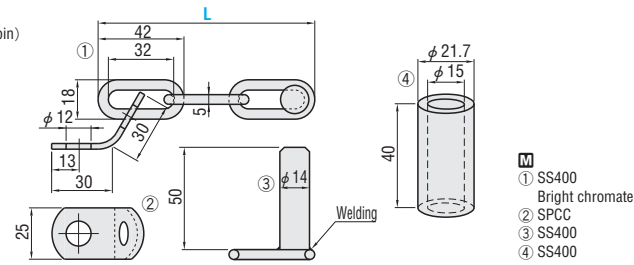
## Chains for scrap shooters

RoHS



### SRT SRTN

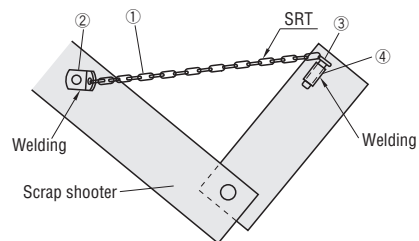
(No welding to ③ pin)



Catalog No.	L
SRT	200
SRTN	300
	400
	500

Catalog No.	L
SRT	300

### Example



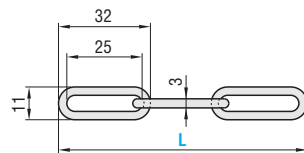
## Chains, general purpose

RoHS



### CN3

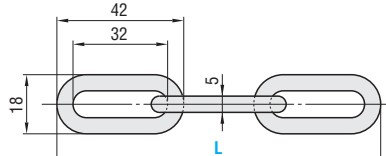
(Chain diameter =  $\phi$  3)



Withstand load : 100kg

### CN5

(Chain diameter =  $\phi$  5)



Withstand load : 200kg

SS400  
Bright chromate

Type	Catalog No.	
	No.	L
CN	3	100~1000
		1100~2000
	5	100~1000
		1100~2000

Catalog No.	L
CN 3	300

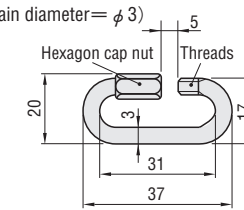
## Chain joints

RoHS



### JT3

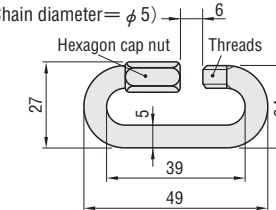
(Chain diameter =  $\phi$  3)



Withstand load : 50kg

### JT5

(Chain diameter =  $\phi$  5)



Withstand load : 100kg

SS400  
Bright chromate

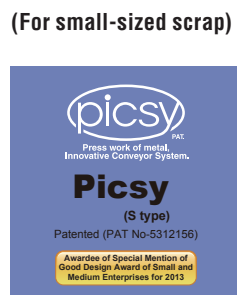
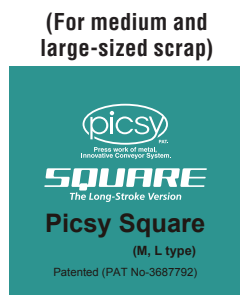
Catalog No.	
Type	No.
JT	3
	5

Catalog No.
JT 3



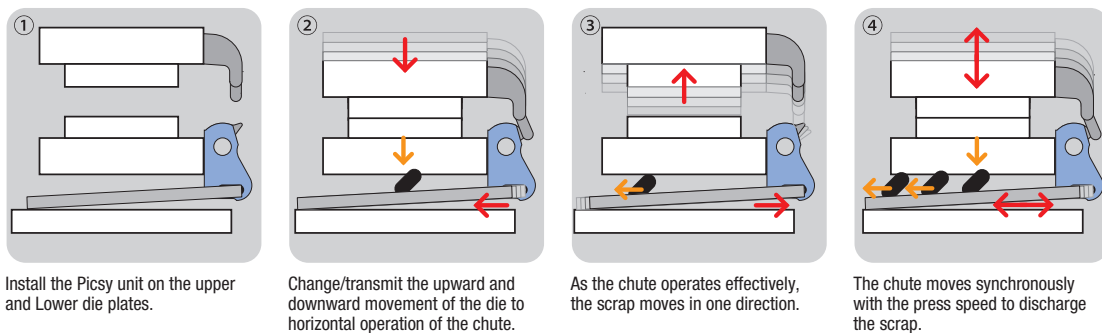
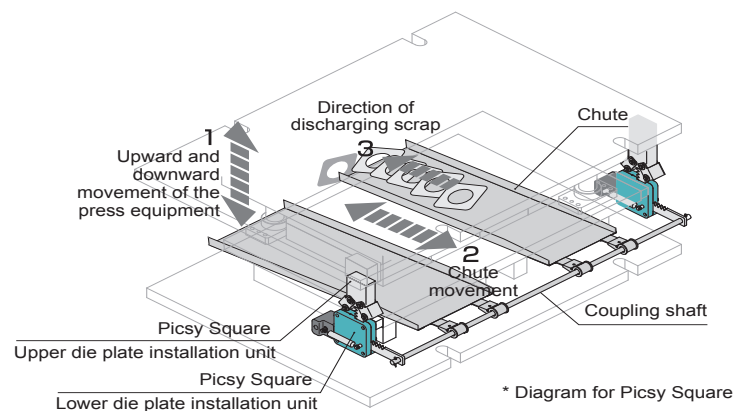
■ **About Picsy**

Picsy is a novelty on the European market. The abbreviation stands for P(ress work of metal) I(nnovation) C(onveyor) SY(stem). It is used where either scrap or manufactured parts need to be removed.



■ **Basic structure and discharge mechanism of 'Picsy' series**

Picsy discharges scrap/manufactured parts with a chute and a unit that converts the up-down movement of press to horizontal movement. It moves scrap/manufactured parts by using self-inertial motion in one direction on the chute. Discharge is possible even if the die has insufficient gradient.



■ **Scrap discharge problem**

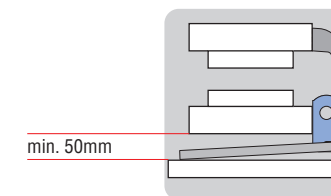
One of the permanent problems a press factory faces is how to transport scrap/manufactured parts. Sometimes conveyors and air blow is used for this procedure although these installations cause several problems (see next page). Picsy is a revolutionary product which solves these problems.





■ **Comparison: Air blow vs. Picsy**

Problem	Air blow	Picsy
Discharge situation	Scrap scatters in all directions	Scrap does not scatter
Effect on quality	Dents due to scrap blowup	Significant reduction in dents
Operation environment	Loud Oil scatters in the air	Silent No scattering of oil
Time for setup	Piping and chute setup takes significant time	Instant setup
Large-sized scrap	Discharge is not possible	Discharge is possible
Running cost	Additional cost for energy	No additional costs

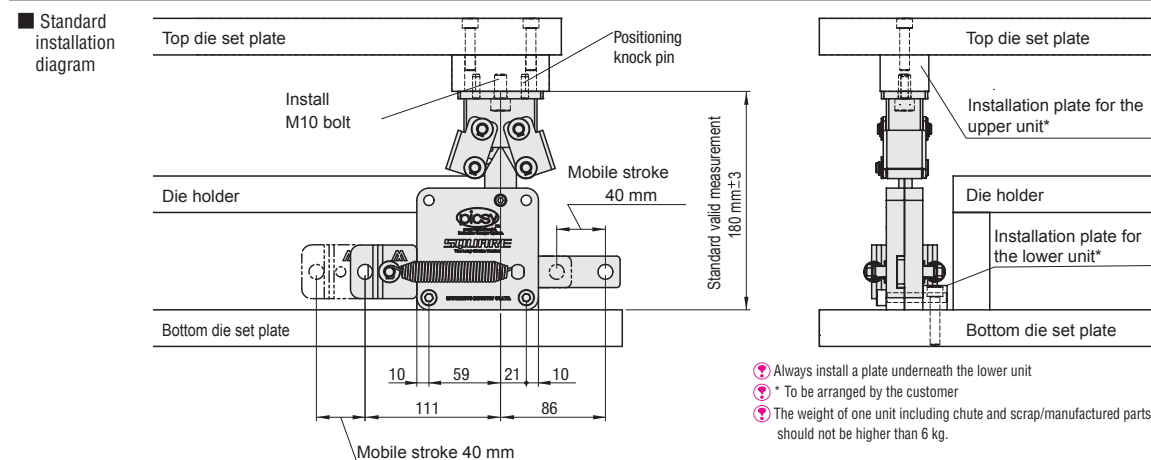
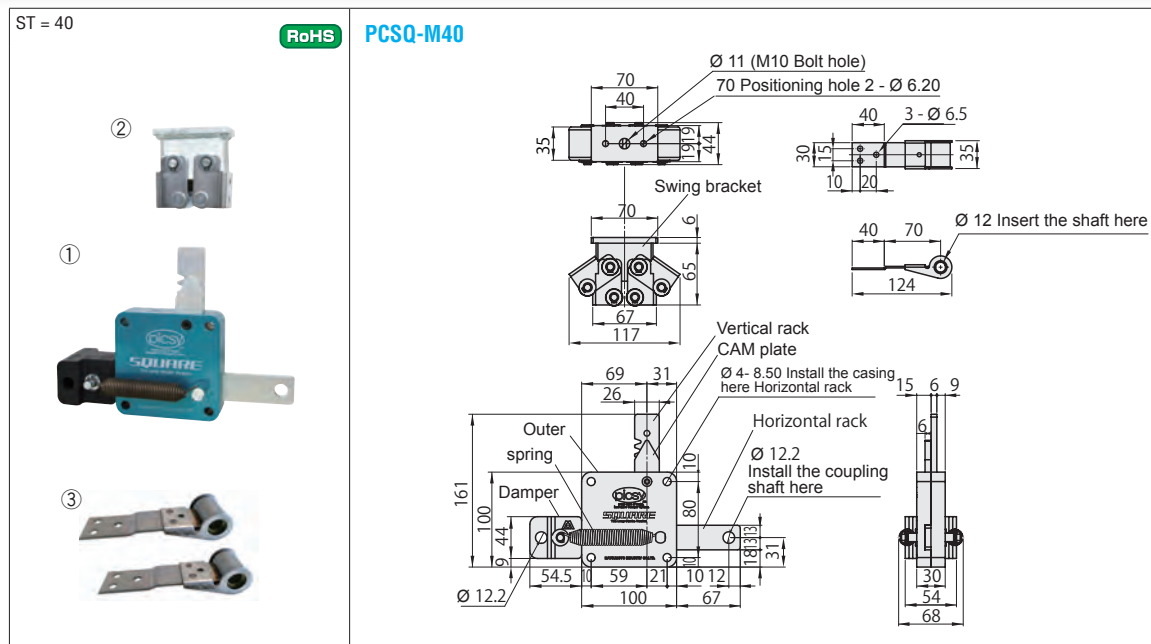
■ **Criteria for usage**

- SPM must be equal or less than 80 strokes
- Discharged parts must be flatter than the scrap chamber
- Not usable with a high amount of oil as parts could stick on the chute
- The scrap chamber should be minimum 50mm high
- The weight of one unit including chute and scrap/manufactured parts should not be higher than 6 kg



Version	L Type		M Type	S Type
Pictures of units used				
Stroke	70 mm	40 mm	23 mm	
	150 mm or more	less than 150 mm	less than 50 mm	
Seize of discharged parts				
Version	L Type	M Type		S Type

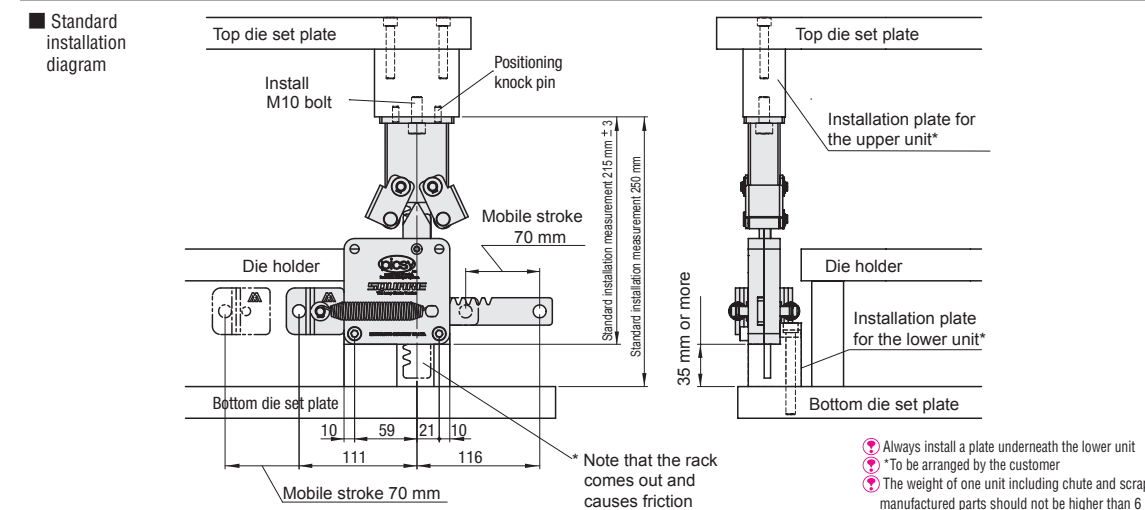
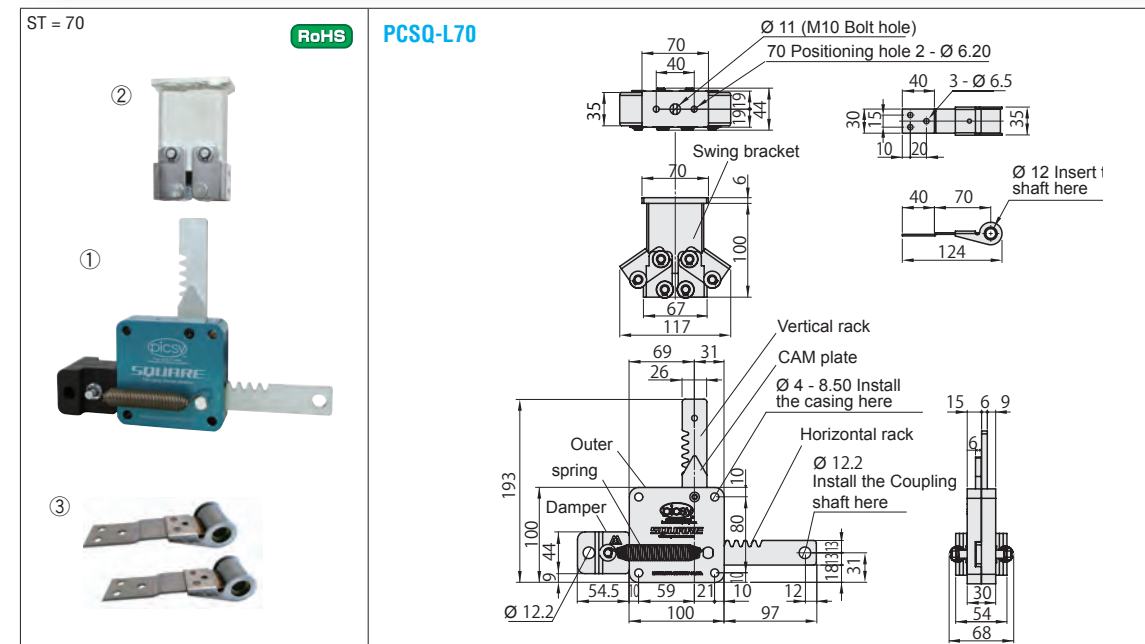
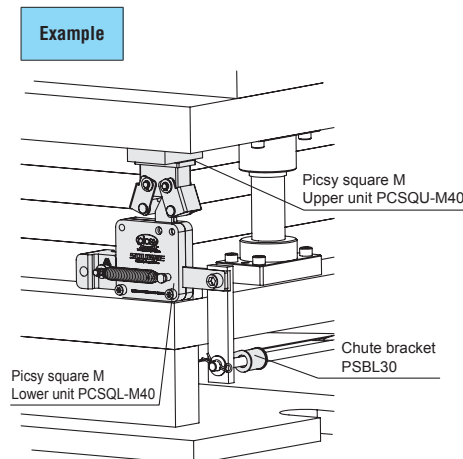
☞ Chute gradient of 5° and above is recommended. Discharge status differs depending on various conditions such as scrap and oil adhesion. Confirm smooth discharge and then only use this equipment. Do not use it if a fault is detected.



Parts name	Version	Accessories
Picsy square M Set of upper and lower units (1, 2, and 3)	PCSQ-M40	One hex bolt (M10 - 15) Two knock pins (Ø 6 - 20) Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8 - 50)
Picsy square M Upper unit (2)	PCSQU-M40	One hex bolt (M10 - 15) Two knock pins (Ø 6 - 20)
Picsy square M Lower unit (1)	PCSQL-M40	Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8 - 50)
Chute bracket (3)	PSBL30	—

Order amount = 1  
Two chute brackets (3) are sold when in a set, and one chute bracket is sold when sold separately.

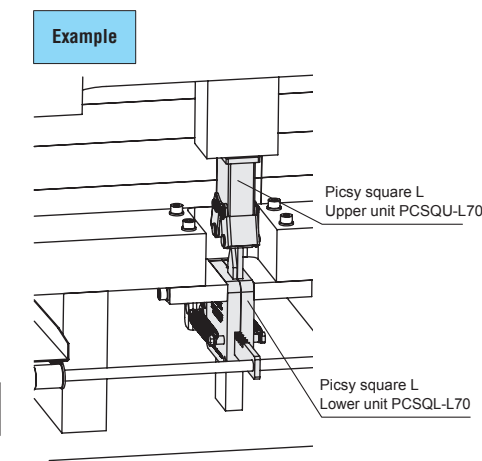
Catalog No.  
PCSQ-M40

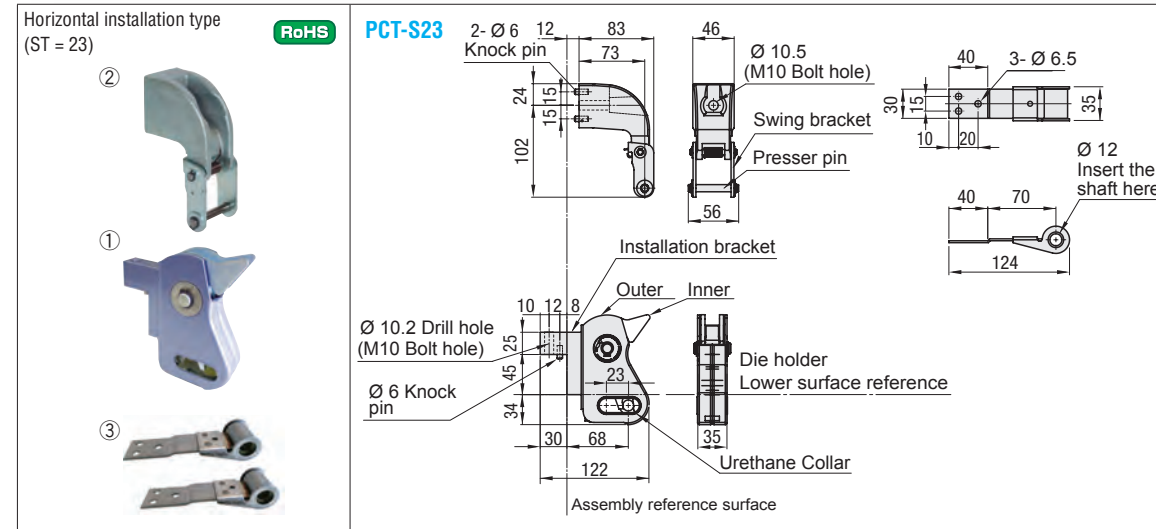
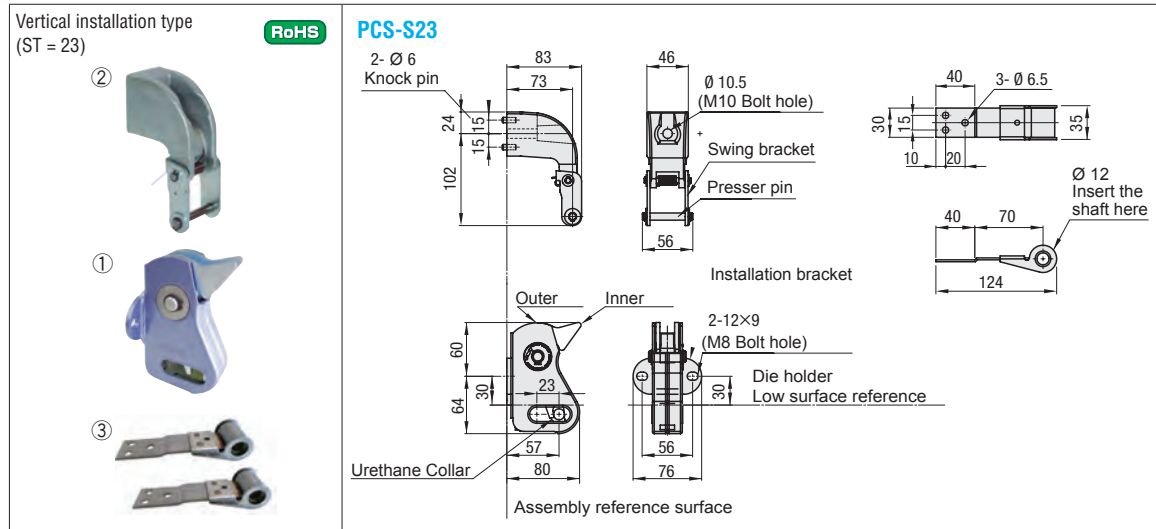


Parts name	Version	Accessories
Picsy square L Set of upper and lower units (1, 2, and 3)	PCSQ-L70	One hex bolt (M10 - 15) Two knock pins (Ø 6 - 20) Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8 - 50)
Picsy square L Upper unit (2)	PCSQU-L70	One hex bolt (M10 - 15) Two knock pins (Ø 6 - 20)
Picsy square L Lower unit (1)	PCSQL-L70	Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8 - 50)
Chute bracket (3)	PSBL30	—

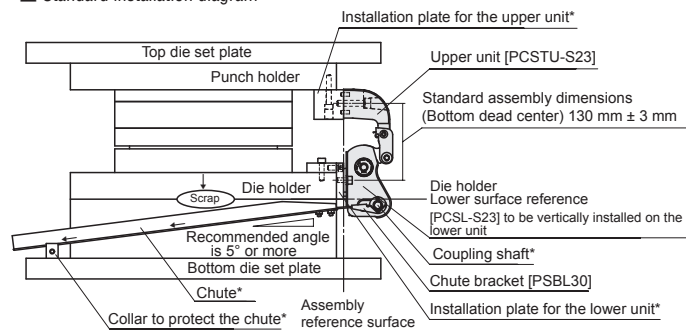
Order amount = 1  
Two chute brackets (3) are sold when in a set, and one chute bracket is sold when sold separately.

Catalog No.  
PCSQ-L70

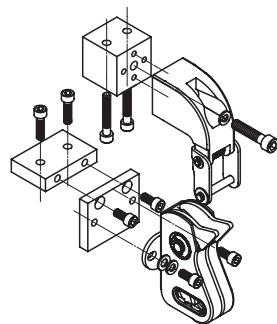




Standard installation diagram

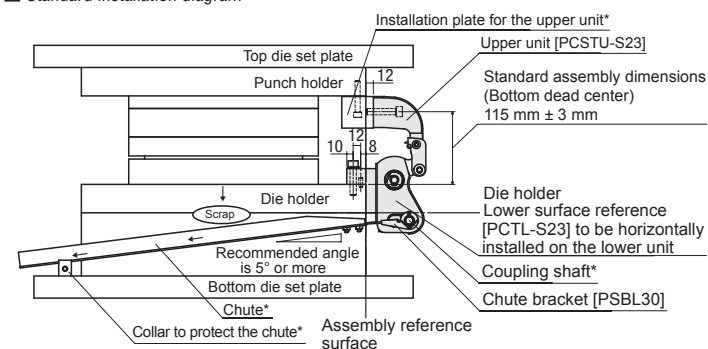


Installation structure

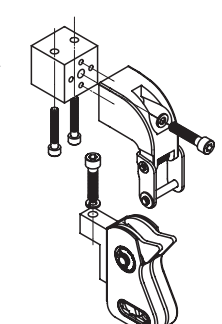


- \* To be arranged by the customer
- A rod can be used to support the chute; however, it is recommended that you use a rotating part such as collar to reduce the friction
- The weight of one unit including chute and scrap/manufactured parts should not be higher than 6 kg.

Standard installation diagram



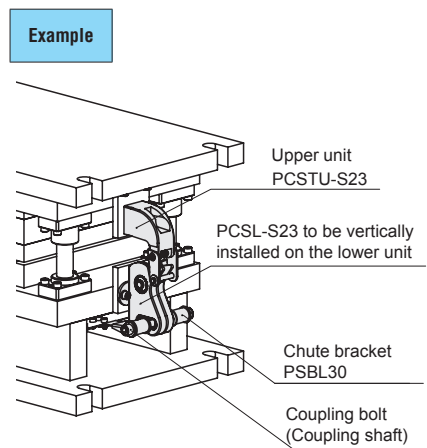
Installation structure



- \* To be arranged by the customer
- A rod can be used to support the chute; however, it is recommended that you use a rotating part such as collar to reduce the friction
- The weight of one unit including chute and scrap/manufactured parts should not be higher than 6 kg.

Parts name	Version	Accessories
Vertical installation type Set of upper and lower units (①, ②, and ③)	<b>PCS-S23</b>	One spring washer (for M10) One hex bolt (M10-50) Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8-18)
Vertical installation type Upper unit (②)	<b>PCSTU-S23</b>	One spring washer (for M10) One hex bolt (M10-50)
Vertical installation type Lower unit (①)	<b>PCSL-S23</b>	Two plain washers (for M8) Two spring washers (for M8) Two hex bolts (M8-18)
Chute bracket (③)	<b>PSBL30</b>	—

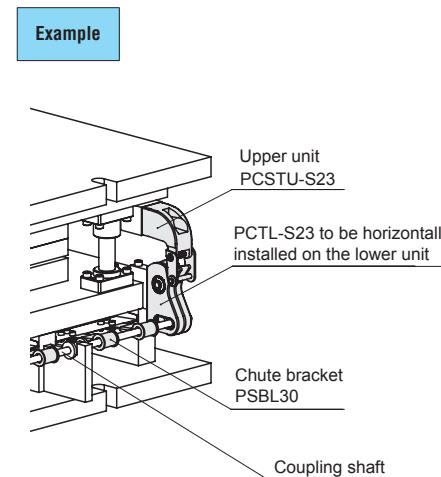
Order amount = 1  
Two chute brackets (③) are sold when in a set, and one chute bracket is sold when sold separately.



Catalog No.  
**PCS - S23**

Parts name	Version	Accessories
Horizontal installation type Set of upper and lower units (①, ②, and ③)	<b>PCT-S23</b>	One spring washer (for M10) One hex bolt (M10 - 50) One spring washer (for M10) One hex bolt (M10 - 45)
Horizontal installation type Upper unit (②)	<b>PCSTU-S23</b>	One spring washer (for M10) One hex bolt (M10 - 50)
Horizontal installation type Lower unit (①)	<b>PCTL-S23</b>	One spring washer (for M10) One hex bolt (M10 - 45)
Chute bracket (③)	<b>PSBL30</b>	—

Order amount = 1  
Two chute brackets (③) are sold when in a set, and one chute bracket is sold when sold separately.



Catalog No.  
**PCT - S23**



## Delivery time

— Order via Web Ordering System (WOS) —

Type	Delivery time via WOS		Type	Delivery time via WOS		Type	Delivery time via WOS	
	Workdays	Stock		Workdays	Stock		Workdays	Stock
TEA	5		K9111	7		SNSTH	7	
TEB	5		PST	7		PAEVS	9	
TEC	5		STB	7		PAPZU	9	
TED	7		STBY	7		STB-N	7	
TEE	5		MRTB	7		STBY-N	7	
TEL	5		MRTBY	7		MRTB-N	7	
LPL	7		SRT	6		MRTBY-N	7	
EBSP	7	*	SRTN	6		PAWP	7	
D-JP-H	5		CN	6		MGV	5	*
PJHR	5	*	JT	5		NGNBA	7	
PAEZY	9		RTP	7		NGWA	9	
PJH	5	*	RTPE	7		NGWBR	9	
PJL	5	*	HX	5	*	NGWBL	9	
PJX	5	*	HXH	5	*	NGWKA	9	
PJHZ	5	*	HXMB	5		NGWKBR	9	
SLPP	7		MGT	9		NGWKBL	9	
LPU	7		HXU	5	*	NGWSA	9	
DLPA	5		SCTB	7		NGWSBR	9	
NGNA	7		SCTBY	7		NGWSBL	9	
ENGA	11		SRSTA	12		NGNX	9	
ENGR	11		SRSTB	12		PACOAN-L	7	
ENGL	11		SRSTC	12		PACOAN-R	7	
NGNBL	7		SRSTD	12		PACOB-N-L	7	
NGNBR	7		SRSTJ	12		PACOB-N-R	7	
ENSTB	7		SRSTK	12		T-RTP	7	
ENSTR	7		HPOPV	7		T-RTPE	7	
ENSTL	7		HPOPR	7		PJLR	5	*
ENSTD	7		HPOPU	7		DHPA	9	
NSTFA	7		POPV	7		DHPF100	9	
NSTFB	7		POPR	7		PAEAS	9	
RG	7		POPU	7		PAEAU	9	
RG-R	7		CORO	7		PALZS	9	
RG-L	7		TEX	7		PALZP	9	
MG	5	*	NBB	7		PALZU	9	
WP	5		NBBC	7		GORO	7	
PAPZ	9		NBBCL	7		GORON	7	
PSC	5		SKSTH	7		PLG-S24	5	
PSH	7		SFSTH	7		PJRW	5	
PSPH	7		SDKL	7		NGUA	7	
HAIKI-D20HONTAI	5		SDKLH	7		NGUBRN	7	
HAIKI-D20KEISU	5		SDST	7		NGUBLN	7	
HAIKI-D20BANE	5		SDSTH	7		D-HP-A	9	
PACOA-L	7		SLTL	7				
PACOA-R	7		SLTLH	7				
PACOB-L	7		SLPSH	7				
PACOB-R	7		SNST	7				

\* Some types in stock - delivery in 2 days

The following extracts of the MISUMI main catalog are available:

**MISUMI**  
Components | Guiding Components



**MISUMI**  
Cam Unit



**MISUMI**  
ISO Coil Springs



**MISUMI**  
Guide and slide components according to VDI



**WEB ORDERING SYSTEM**

<https://www.misumi-ec.com>



[www.daytonprogress.de/en](http://www.daytonprogress.de/en) | [www.misumi-ec.com](http://www.misumi-ec.com)

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