Pal fix

Manual clamp

model CPK

Locate ring
model CPK-N

Locate base
model CPK-A

Super-compact locating device makes you utilize a working space to the full.

**Pal fix
locate ring**

Page →66

Pal coupler   socket
(blow air & coolant)
Orifice ø6 & metal seal

Page →88

Pal coupler   socket
(clamping hydraulics & air)
Orifice ø4 & soft seal

Page →86

**Pal fix
locate ring**

Page →66

**Pal fix
locate base**

Page →66

Pal coupler   plug
(blow air & coolant)
Orifice ø6 & metal seal

Page →88

Pal coupler   plug
(clamping hydraulics & air)
Orifice ø4 & soft seal
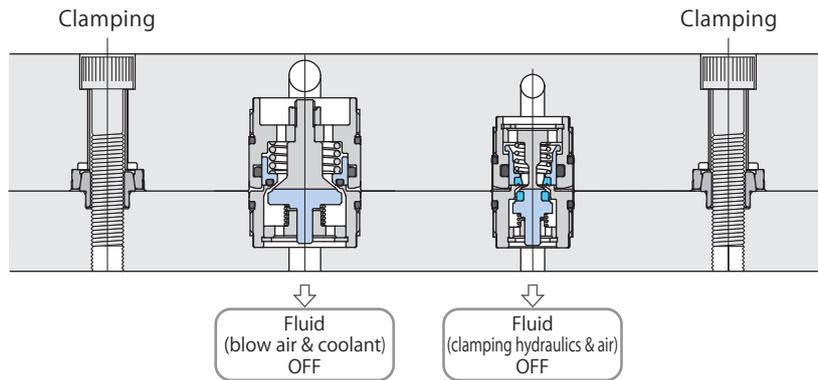
Page →86

**Pal fix
locate base**

Page →66

It is a taper cone model with dual surface contact to position high-accuracy.

Pallet change and coupler disconnected

Separation

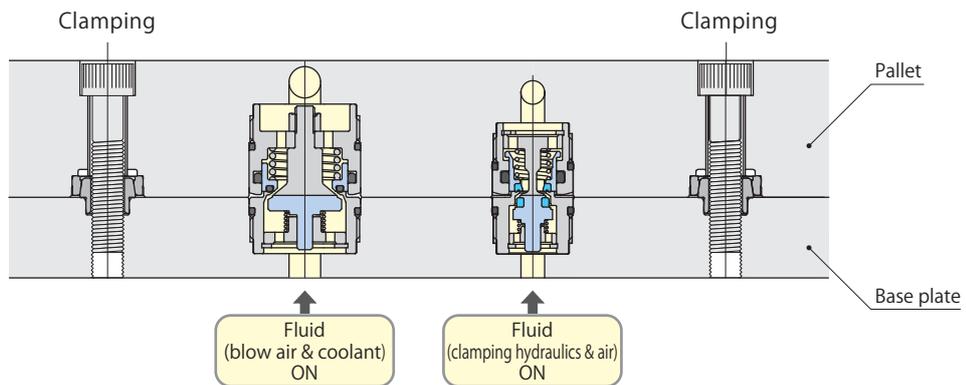Pal coupler socket
(blow air & coolant)
Page →88

Pal coupler socket
(clamping hydraulics & air)
Page →86

Separation

Pal fix
locate ring
Page →66

Pal fix
locate base
Page →66

Pal coupler plug
(blow air & coolant)
Page →88

Fluid
(blow air & coolant)
OFF

Fluid
(clamping hydraulics & air)
OFF

Pal coupler plug
(clamping hydraulics & air)
Page →86
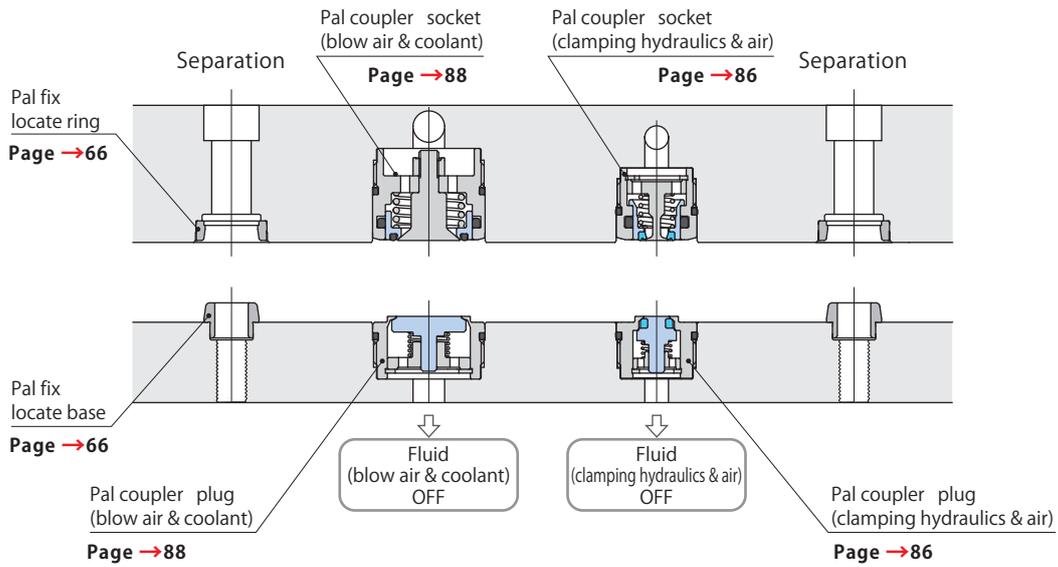
Pallet clamped and coupler connected

Clamping

Clamping

Fluid
(blow air & coolant)
OFF

Fluid
(clamping hydraulics & air)
OFF

Precise positioning can be made by simply tightening the screws, and couplers can be connected at the same time.

Pallet clamped and circuit pressurized

Clamping

Clamping

Pallet

Base plate

Fluid
(blow air & coolant)
ON

Fluid
(clamping hydraulics & air)
ON

Pal fix

CPK
Manual clamp

Pallet setting

● Bring pallet above the base plate. Lower it slowly after positioning.
Pallet is centered along the tapered surface of the locate base.

Tapered surface

Pallet

Locate ring

Space

Base plate
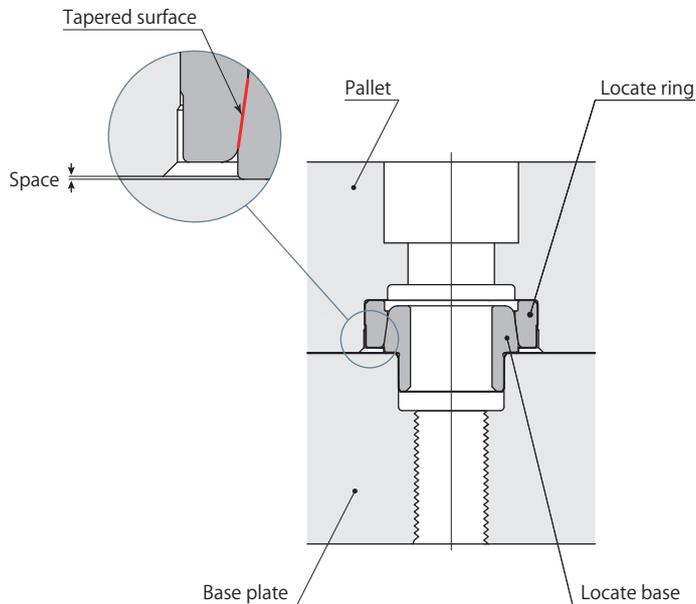
Locate base

XYZ positioning (dual surface positioning)

● Tapered surface of locate ring is expanded and deformed in radial direction by the locate base to firmly position X axis and Y axis.
Pallet is attached to seating surface of base plate and positions Z axis. The positioning of X, Y and Z axes by tapered surface and seating surface completes the XYZ positioning (dual surface positioning).
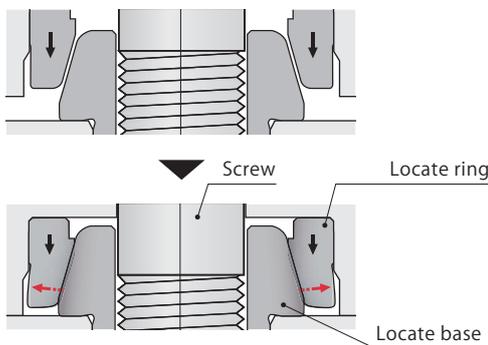
Tapered surface

Pallet

Locate ring

Seating surface

Base plate

Locate base

Pal fix

CPK
Manual clamp
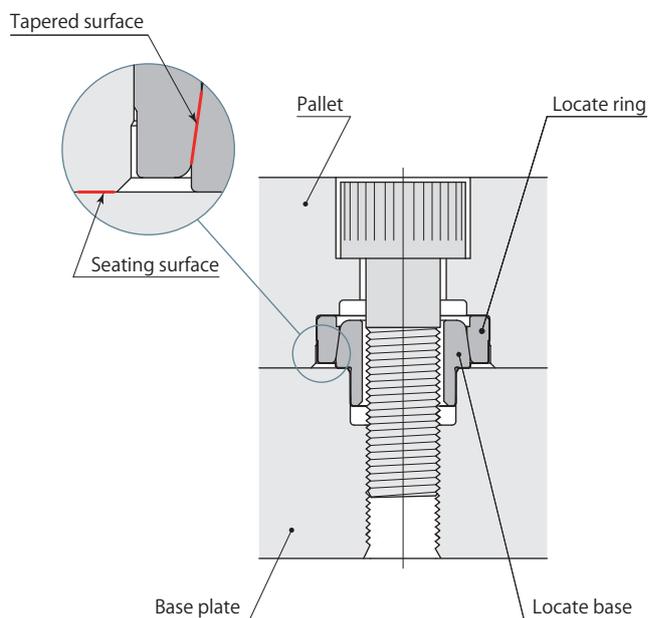
Realizing high-accuracy positioning

● In the case of ordinary positioning pin, it is common knowledge that the clearance is provided between the pin and the hole to allow the dimensional tolerance between the two pins, and to facilitate the positioning operation, however there is a risk of impairing the positioning repeatability depending on the volume of clearance so that the positioning re-adjustment must be done when re-setting the objects.
Pal fix can exert 3μm of repeatability and requires no re-adjustment after setting the objects.

Pal fix
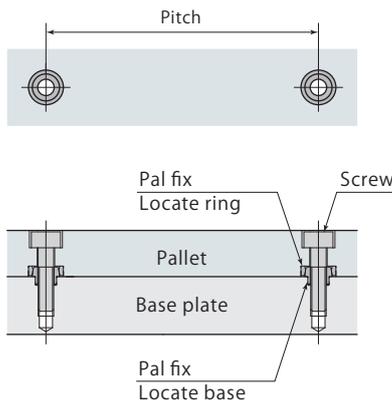
Locate ring
Tapered surface
Seating surface
Locate base

Positioning pin

Clearance
Positioning pin
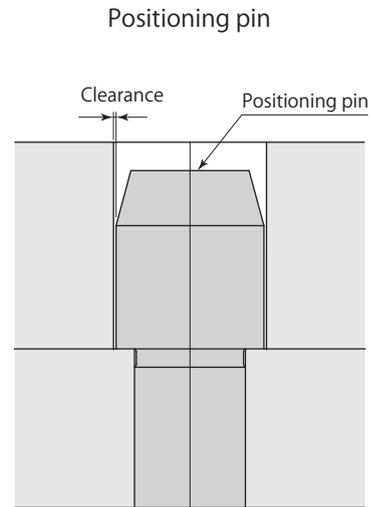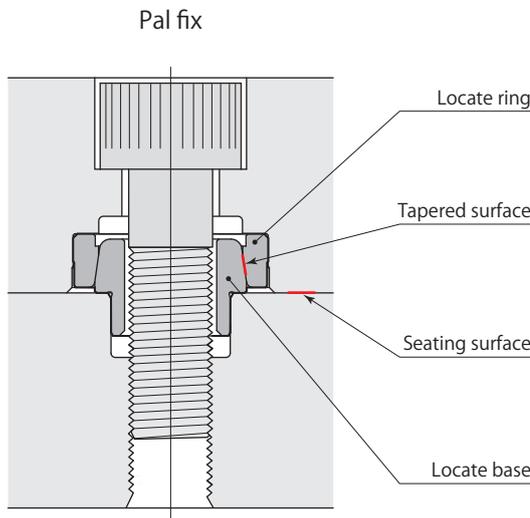
Taper cone makes attaching / detaching easy

Screw
Locate ring
Locate base

By means of elastic deformation

Positioning repeatability : **Within 3μm**
Pitch tolerance allowance : **±0.02mm**

Round

Clearance
Positioning repeatability
Datum
Clearance Small

Diamond

Clearance
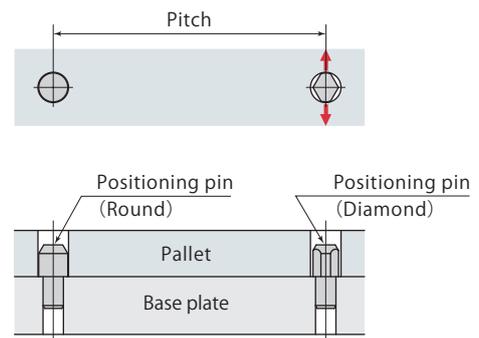Positioning repeatability
Revolution restrict
Clearance Large
Allow pitch tolerance

The positioning repeatability spoils when providing a large clearance.
A small clearance impairs the operability.

Pal fix only keeps pitch accuracy.

Pitch

Pal fix
Locate ring
Screw
Pallet
Base plate
Pal fix
Locate base

The diamond pin must be mounted perpendicularly toward round pin in addition to keeping the pitch accuracy between the two.

Pitch

Positioning pin（Round）
Positioning pin（Diamond）
Pallet
Base plate

Combination of round and diamond pin

Pal fix

model CPK   PAT.

Locate ring
model CPK-N

Locate base
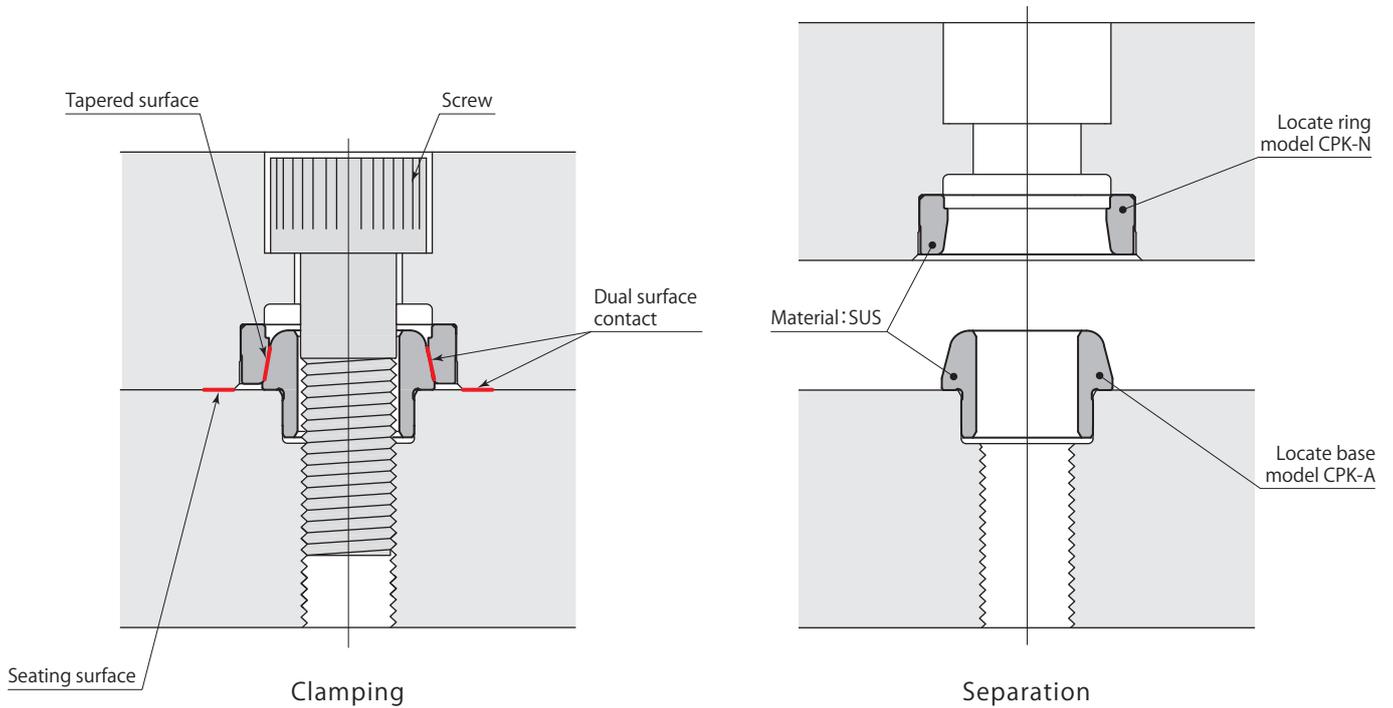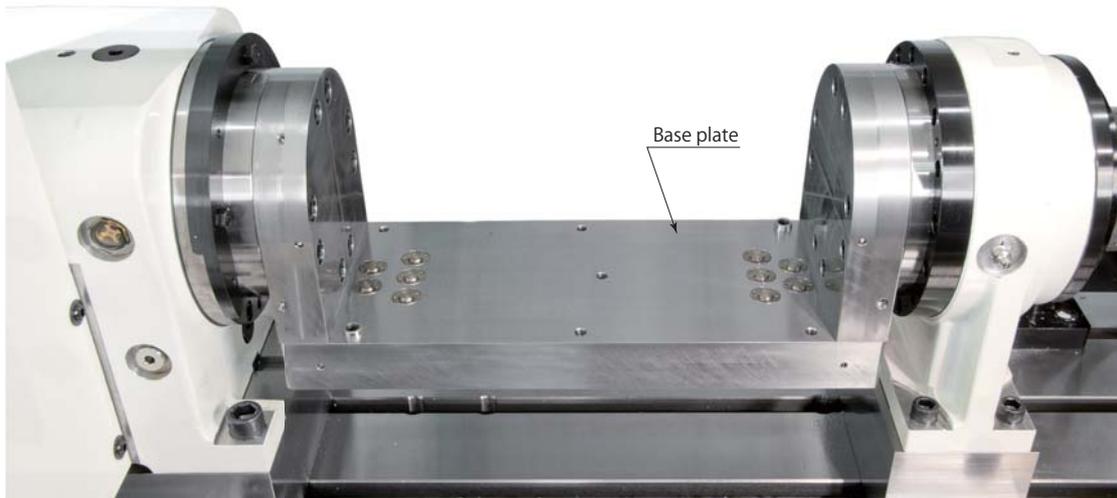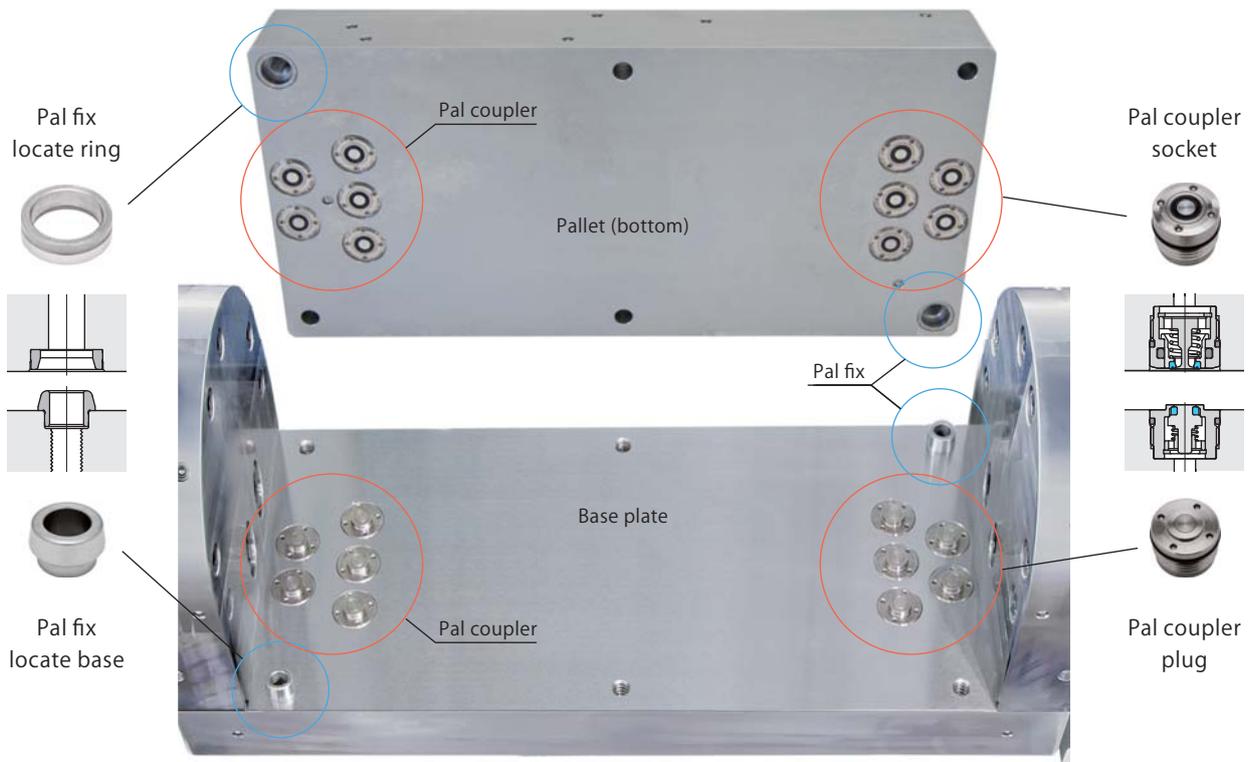model CPK-A

The dual surface contact taper cone combines high precision machining (repeatability: 3 μ m*) and makes attaching or detaching easy.

∗：Repeatability dependent on mounting orientation and mass (weight)

Tapered surface

Screw

Dual surface contact

Locate ring
model CPK-N

Material：SUS

Seating surface

Locate base
model CPK-A

Clamping

Separation

Pal fix

CPK
Manual clamp

Usage example

Pal fix
locate ring

Pal coupler

Pallet (bottom)

Pal coupler
socket

Pal fix

Pal fix
locate base

Base plate

Pal coupler

Pal coupler
plug

Workpiece

Work lift cylinder
model **CNB**

Expansion clamp
model **CGC**

Pallet

Base plate

Pal fix

CPK
Manual clamp

Compacting

Pal fix
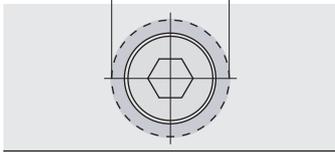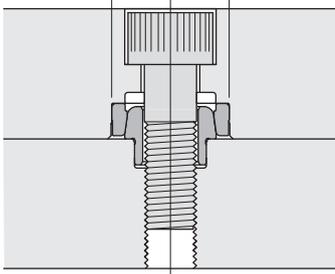
Positioning pin

Space (small)

Space (big)

Space (small)
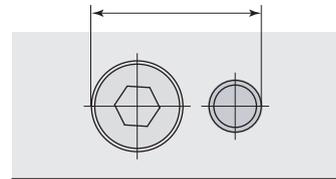
Space (big)
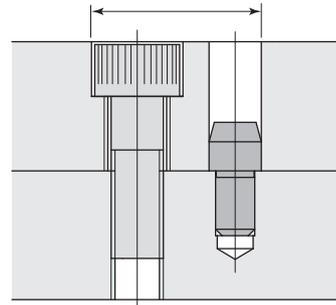
Easy attaching and detaching

Pal fix
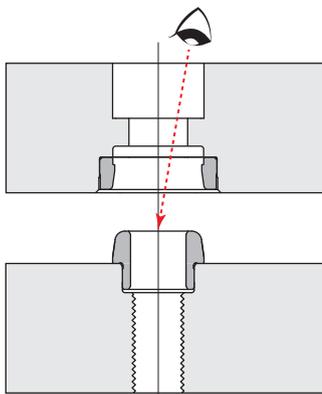
Positioning pin

● Visual attaching and detaching.

● With no visual, it is difficult to detach and attach. Seating surface will also be damaged.

● Prevents intrusion of chips and foreign substances.
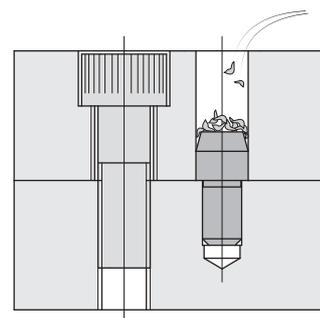
● Chips accumulate and are trapped, becoming difficult to remove.

Pal fix

CPK
Manual clamp

Specifications

Size

06
08
10
12
16

A : Locate base

CPK —

N : Locate ring

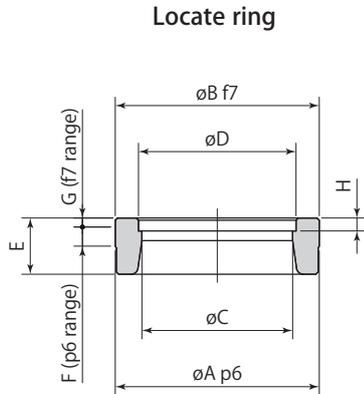| Model				CPK-□06	CPK-□08	CPK-□10	CPK-□12	CPK-□16
Max. allowable load*1	Repeatability 3μm	Horizontal mounting	kN	0.85	1.0	1.2	1.5	2.0
		Vertical mounting	kN	0.17	0.2	0.25	0.3	0.4
	Repeatability 5μm	Horizontal mounting	kN	2.5	3.0	3.7	4.5	6.0
		Vertical mounting	kN	0.5	0.6	0.75	0.9	1.2
Min. clamping force*2			kN	7.5	9.0	12.5	15.5	21.5
Max. allowable eccentricity for pallet changing			mm	±0.5	±0.5	±0.5	±0.5	±1.0
Mass	Locate base		g	3.0	5.0	7.0	10.0	21.0
	Locate ring		g	3.0	4.0	7.0	11.0	22.0

＊1：This is maximum allowable load of pallet, regardless of how many Pal fix are used.

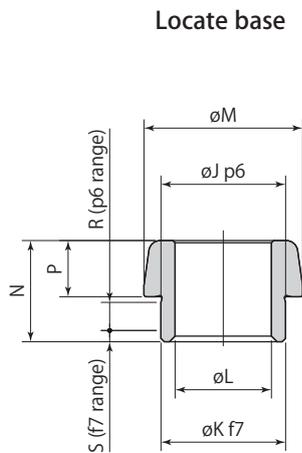＊2：Indicates necessary force to position one pair of locate base and locate ring.

model
CPK-N06

model
CPK-N08

model
CPK-N10

model
CPK-N12

model
CPK-N16

model
CPK-A06

model
CPK-A08

model
CPK-A10

model
CPK-A12

model
CPK-A16

Scale 1:1

Dimensions

Locate ring

mm

Model	CPK-N06	CPK-N08	CPK-N10	CPK-N12	CPK-N16
øA	15 $^{+0.029}_{+0.018}$	18 $^{+0.029}_{+0.018}$	22 $^{+0.035}_{+0.022}$	25 $^{+0.035}_{+0.022}$	32 $^{+0.042}_{+0.026}$
øB	15 $^{-0.016}_{-0.034}$	18 $^{-0.016}_{-0.034}$	22 $^{-0.020}_{-0.041}$	25 $^{-0.020}_{-0.041}$	32 $^{-0.025}_{-0.050}$
øC	10.9	13.3	16.1	18.4	24
øD	11.4	13.9	16.9	19.4	25.2
E	4.5	5	6	7	9
F	1.7	1.7	1.7	1.7	2
G	0.8	0.8	1	1.3	2
H	1.15	1.15	1.15	1.15	1.35

Locate base

mm

Model	CPK-A06	CPK-A08	CPK-A10	CPK-A12	CPK-A16
øJ	9 $^{+0.024}_{+0.015}$	11 $^{+0.029}_{+0.018}$	14 $^{+0.029}_{+0.018}$	16 $^{+0.029}_{+0.018}$	21 $^{+0.035}_{+0.022}$
øK	9 $^{-0.013}_{-0.028}$	11 $^{-0.016}_{-0.034}$	14 $^{-0.016}_{-0.034}$	16 $^{-0.016}_{-0.034}$	21 $^{-0.020}_{-0.041}$
øL	6.5	8.5	11	13	17
øM	11.5	14	17	19.5	25.5
N	8.5	9	10	11.5	13.5
P	4.5	5	6	7	9
R	2.5	2.5	2.5	3	3
S	1	1	1	1	1

Mounting details

Locate ring mounting details

Rz: ISO4287(1997)

mm
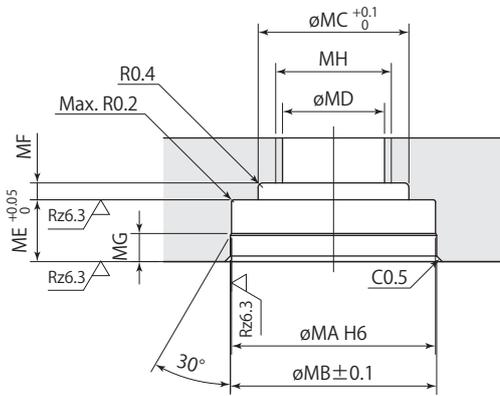
Model	CPK-N06	CPK-N08	CPK-N10	CPK-N12	CPK-N16
øMA	$15 ^{+0.011}_{0}$	$18 ^{+0.011}_{0}$	$22 ^{+0.013}_{0}$	$25 ^{+0.013}_{0}$	$32 ^{+0.016}_{0}$
øMB	15.2	18.2	22.2	25.2	32.2
øMC	11.6	14.2	17.5	20.0	25.8
øMD	6.8	9	11	14	18
ME	5	5.5	6.5	7.5	9.5
MF	1.5	1.5	2	2	2
MG	2	2.5	3.5	4	5
MH*	M8	M10	M12	M16	M20

∗：Thread MH is provided to mount model CPK-N.
　Refer to **page →73** for mounting method.
● Refer to **page →72** for mounting pitch tolerance.
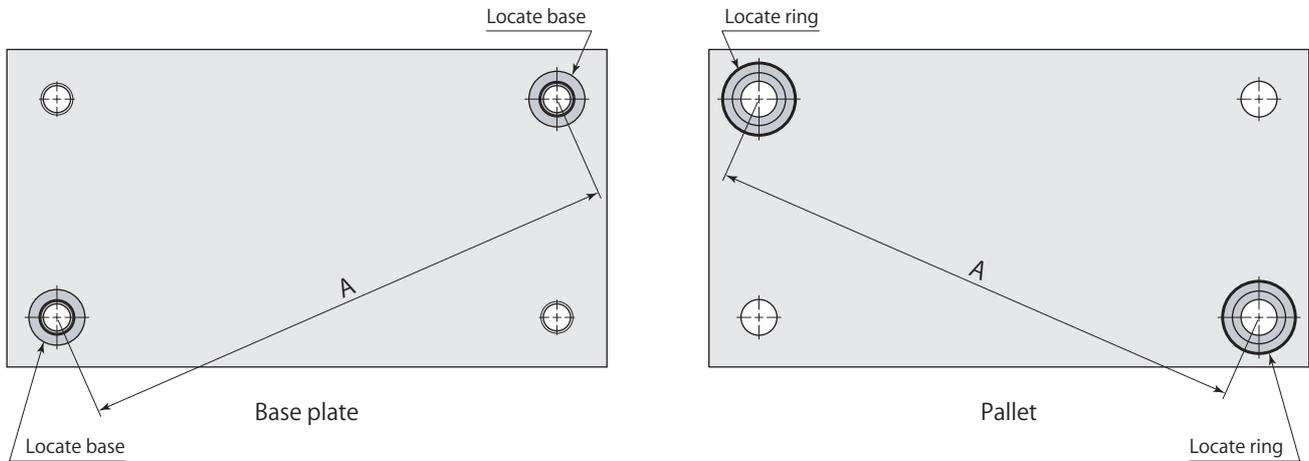
Locate base mounting details

Rz: ISO4287(1997)

mm
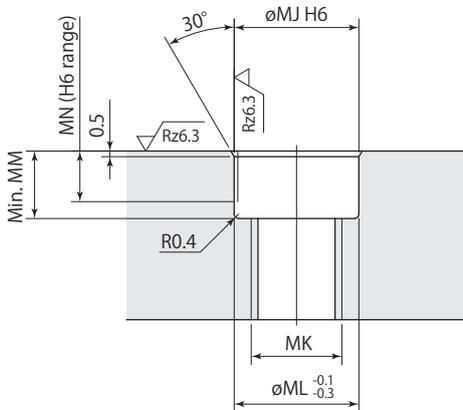
Model	CPK-A06	CPK-A08	CPK-A10	CPK-A12	CPK-A16
øMJ	$9 ^{+0.009}_{0}$	$11 ^{+0.011}_{0}$	$14 ^{+0.011}_{0}$	$16 ^{+0.011}_{0}$	$21 ^{+0.013}_{0}$
MK	M6	M8	M10	M12	M16
øML	9	11	14	16	21
MM	5.5	6	6	7	7
MN	4.5	4.5	4.5	5	5

● Refer to **page →72** for mounting pitch tolerance.

Pal fix

CPK
Manual clamp

Mounting pitch tolerance

Locate base

Locate ring

A

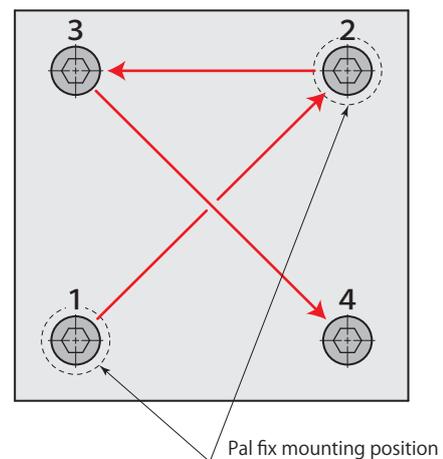Base plate

Locate base

Locate ring

A

Pallet

Locate ring
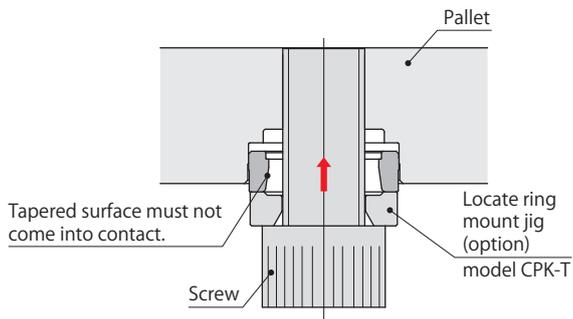
Pitch tolerance of A dimension	±0.02 mm

Tightening turn for screws

① Tighten the screw up by hand until the seating surface of screw holding to other.

② Tighten the screws tentatively in order as shown in the diagram on the right with a minimum force. (**page →69**)

③ Tighten all of the screws again in order shown in the diagram.

● Make sure to tighten all screws evenly. Make sure not to give extra force only one or two screws on the same side. (e.c. : 1 and 3 on the right drawing.)
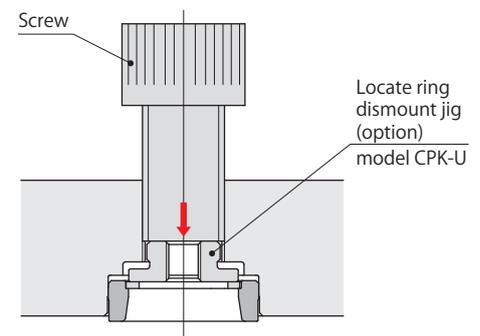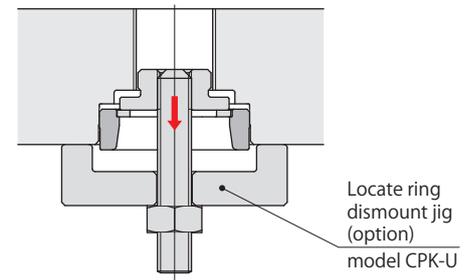
Tightening turn for screws

3　2

1　4

Pal fix mounting position
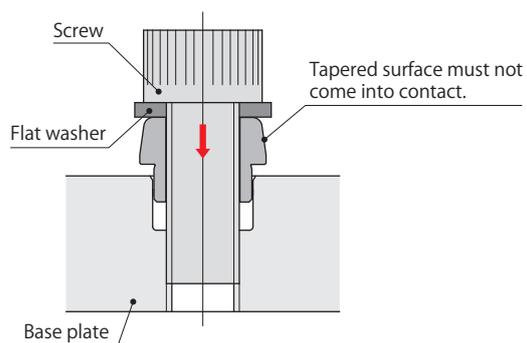
Mounting of locate ring

Pallet

Tapered surface must not come into contact.

Locate ring mount jig (option) model CPK-T

Screw

● Press a locate ring in the hole keeping it upright.

Dismounting of locate ring

Locate ring dismount jig (option) model CPK-U

Screw

Locate ring dismount jig (option) model CPK-U

● The ring can be removed by a screw.

Mounting of locate base

Screw

Flat washer

Tapered surface must not come into contact.

Base plate

● Press a locate base in the hole keeping it upright. Be sure to use a flat washer to protect the locate base from damage.

Dismounting of locate base

Locate base dismount jig (option) model CPK-R
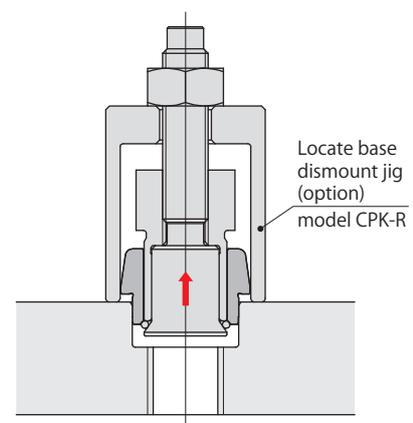
● Ask Pascal in the use of dismount jig of locate ring and locate base.

Pal fix

CPK Manual clamp

Size

| 06 |
| 08 |
| 10 |
| 12 |
| 16 |

CPK −

T : Locate ring mount jig

U : Locate ring dismount jig

Locate ring mount jig

Pallet
TD
Locate ring model CPK-N
TC
Locate ring mount jig model CPK-T
øTB
øTA

Locate ring dismount jig
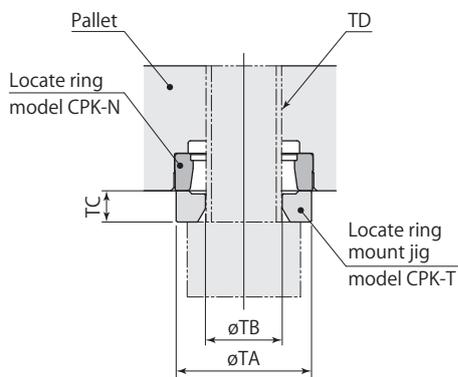
øUA
øUB
Pallet
Snap ring UL
Locate ring model CPK-N
UF
UG
UE
UH
Locate ring dismount jig model CPK-U
øUC
UD
UJ
UK
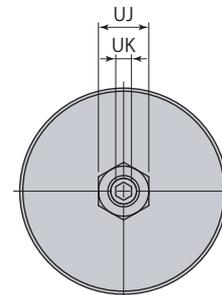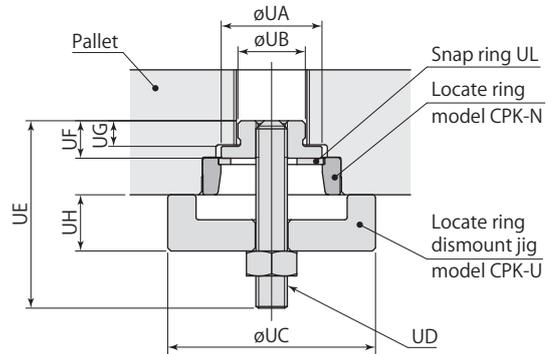
mm

Locate ring mount jig	CPK-T06	CPK-T08	CPK-T10	CPK-T12	CPK-T16
Locate ring dismount jig	CPK-U06	CPK-U08	CPK-U10	CPK-U12	CPK-U16
øTA	14.5	17.5	21.5	24.5	31.5
øTB	8.2	10.2	12.2	16.2	20.2
TC	4	4	5	5	6
TD	M8	M10	M12	M16	M20
øUA	10.8	13.2	16	18.3	23.9
øUB	6.5	8.7	10.7	13.7	17.7
øUC	25	27	33	35	43
UD	M4×0.7	M4×0.7	M5×0.8	M5×0.8	M6×1.0
UE	25	25	30	30	40
UF	5.5	5.5	6	6.5	9
UG	4.1	4.1	4.1	4.6	7.1
UH	8	8	9	9.5	11.5
UJ (nut width across flats)	7	7	8	8	10
UK (hex socket)	2	2	2.5	2.5	3
UL*	RTW-11	RTW-13	RTW-16	RTW-18	RTW-24
Locate ring	CPK-N06	CPK-N08	CPK-N10	CPK-N12	CPK-N16

＊：Snap ring is made by Ochiai Corporation.

Pal fix

CPK Manual clamp

Size

06

08

10

12

16

CPK — R : Locate base dismount jig

Locate base dismount jig

Minus groove
RG

CPK-R06 only

RE
RF
Hex socket
RG

øRC

RD

RA
RB

Locate base dismount jig
model CPK-R

Locate base
model CPK-A

Base plate

Pal fix

CPK
Manual clamp
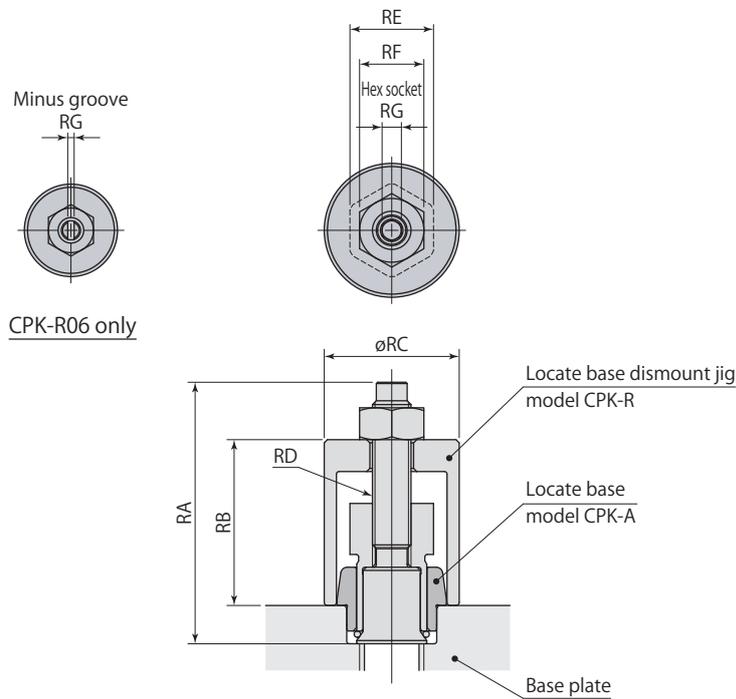
mm

| Locate base dismount jig	CPK-R06	CPK-R08	CPK-R10	CPK-R12	CPK-R16
RA	33	36.5	41	43.5	55.5
RB	20.5	22.5	26	27.5	37
øRC	14.5	17	21	24	31
RD	M4×0.7	M5×0.8	M6×1.0	M6×1.0	M8×1.25
RE (hex width across flats)	10	10	13	17	22
RF (nut width across flats)	7	8	10	10	13
RG	1	2.5	3	3	4
Locate base	CPK-A06	CPK-A08	CPK-A10	CPK-A12	CPK-A16

Clamping

● Put the screws through Pal fix and tighten it.
 Failure of the instruction may cause impair the repeatability.
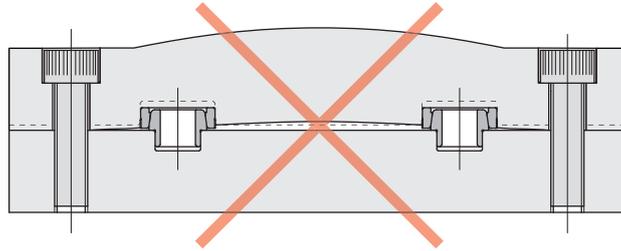
Mounting

● Make sure if locate base, locate ring are securely pressed into the end of the mounting hole.
  Insufficient press-fit may cause mis-seating and excessive deformation, which results in breakage.

Insufficient press-fit of locate base

Faulty seating   Space ✕

Insufficient press-fit of locate ring

Faulty seating   Space ✕
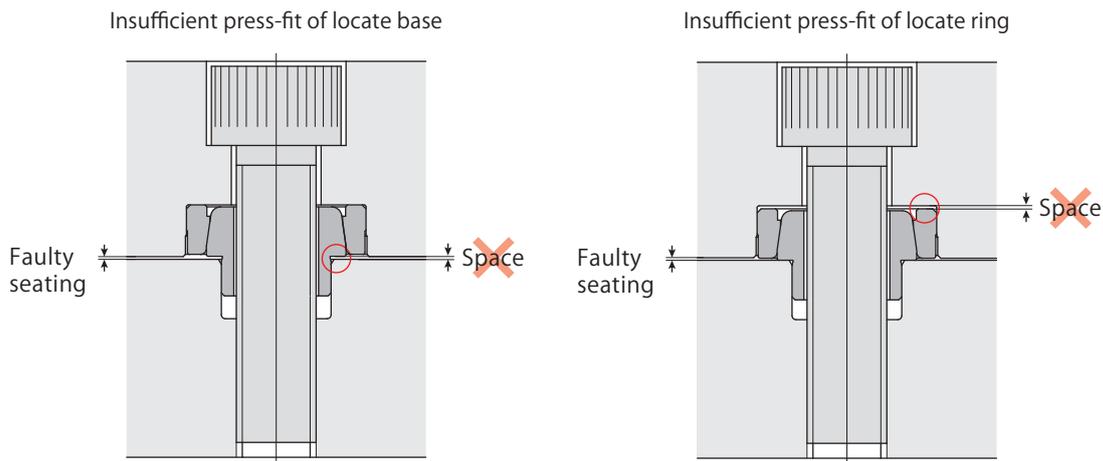
Defining fastening power

● Define the fastening power based on the load from the side.
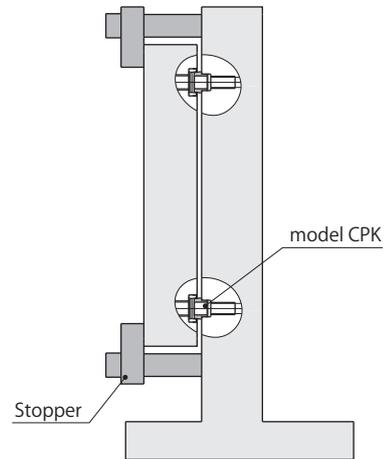 There is a risk of damage when the load is applied to Pal fix.
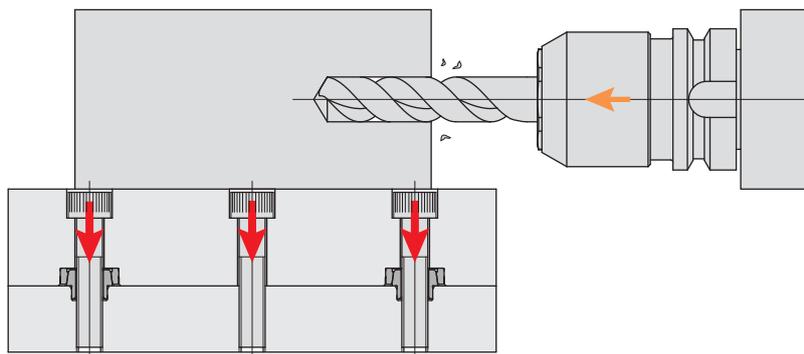
Reactive force of coupler

● Reactive force is generated when Pal couplers are used. The fastening power should be determined considering the reactive force of the coupler.
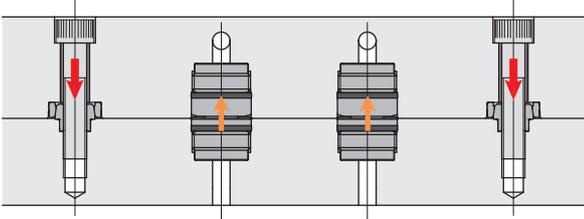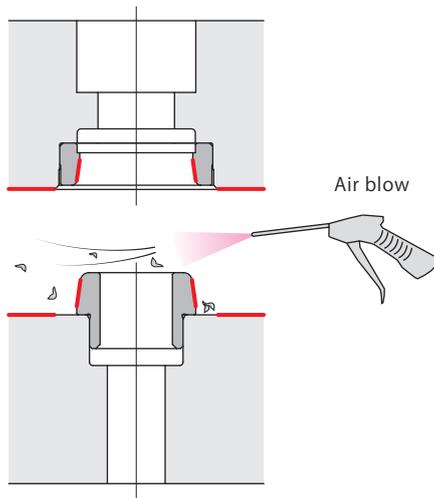
Fall protection

● The mechanical stopper must be provided to avoid pallet falling when changing the pallet.

model CPK

Stopper

Cleaning

● Keep the seating and tapered surface clean.

Air blow

Max. allowable eccentricity

● Keep allowable eccentricity when loading or unloading the pallet.
(Refer to **page →69** for max. allowable eccentricity.)

Pal fix

CPK
Manual clamp