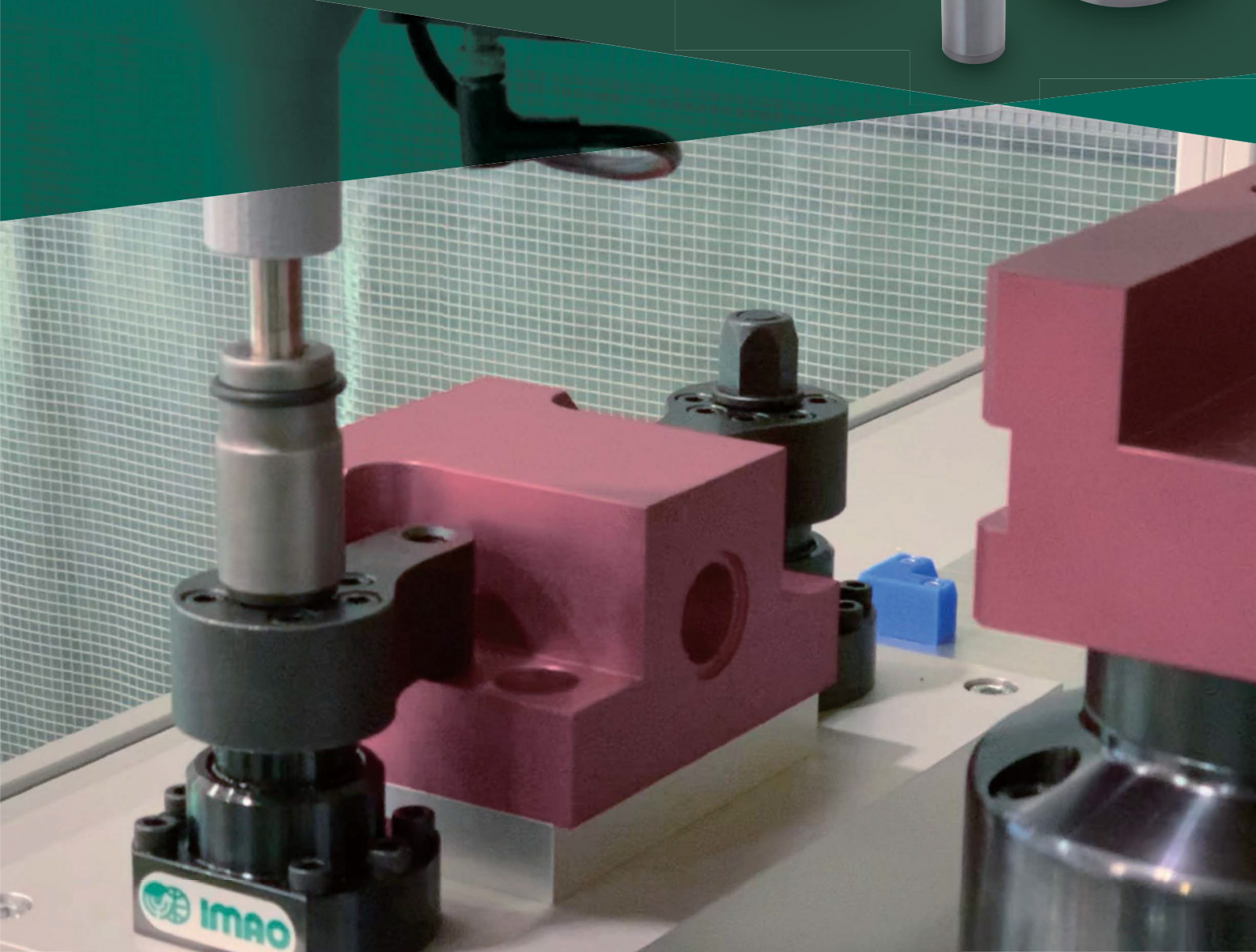
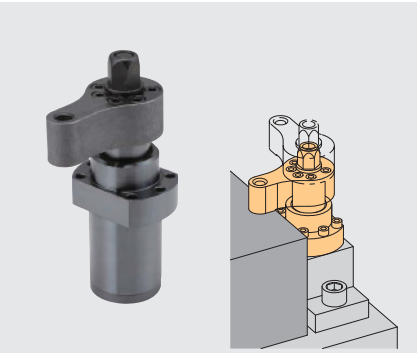
IMAO® fixtureworks®

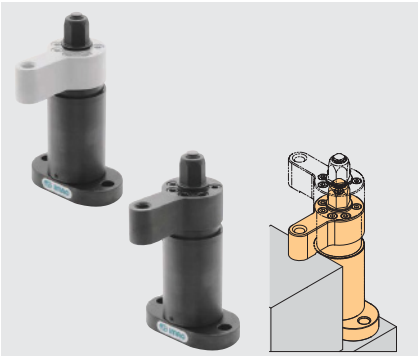
Nutrunner Clamps





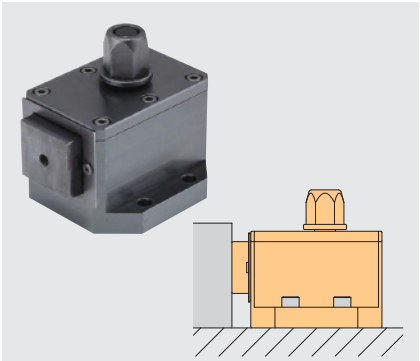
NUTRUNNER
SWING CLAMPS

Part No. PTSW3



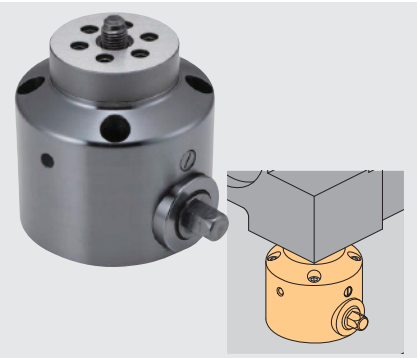
NUTRUNNER
SWING CLAMPS

Part No. PTSW2



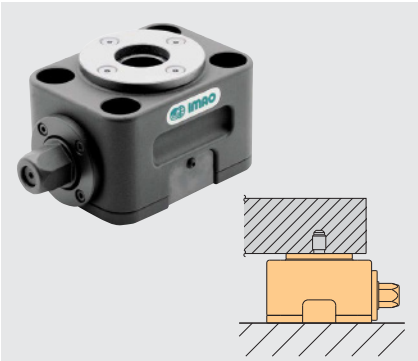
NUTRUNNER
SIDE CLAMPS

Part No. PTSC1



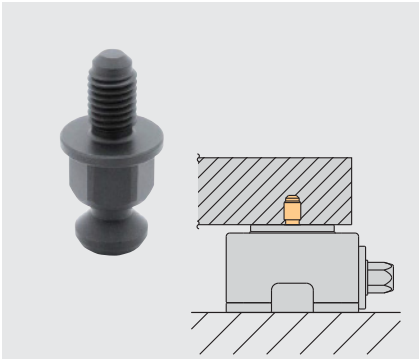
NUTRUNNER
PULL CLAMPS

Part No. PTPD1



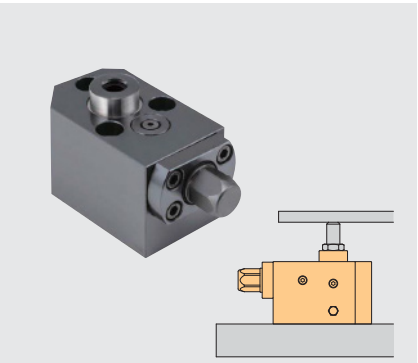
NUTRUNNER
PULL CLAMP

Part No. PTPD



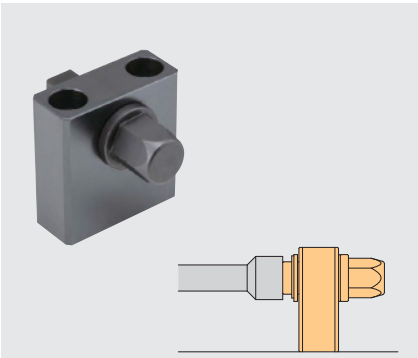
CLAMPING SCREWS

Part No. PTPD-M



NUTRUNNER
WORK SUPPORTS

Part No. PTNS1



EXTENSION UNITS

Part No. PTRC1

IMAO® fixtureworks®

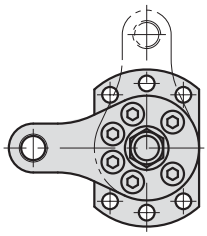
PTSW3 NUTRUNNER SWING CLAMPS

★Key Point

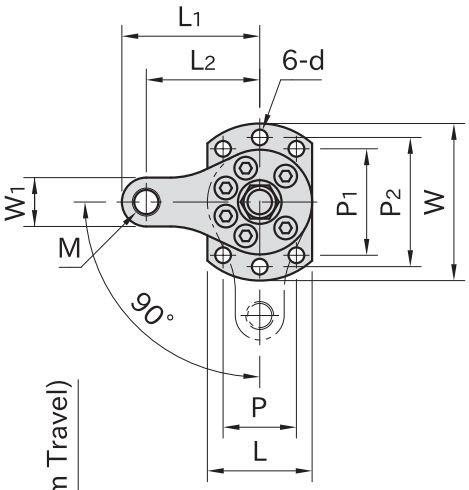
Excellent rigidity by embedding to the plate

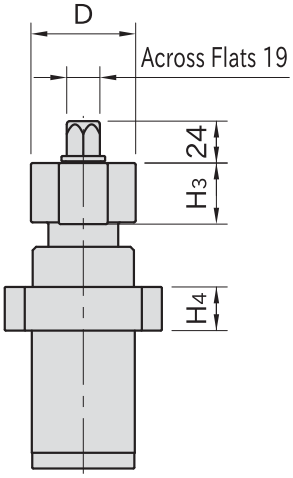
Body	Shaft	Hex. Head	Clamp Arm
S45C steel Black oxide finished	SCM440 steel Quenched and tempered Black oxide finished	SCM435 steel Quenched and tempered Black oxide finished	S45C steel Quenched and tempered Black oxide finished

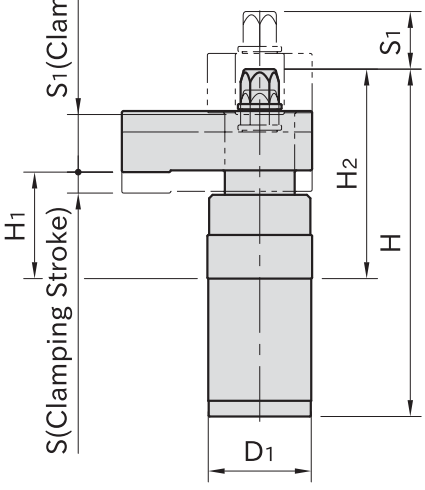
Counterclockwise Clamping



Clockwise Clamping







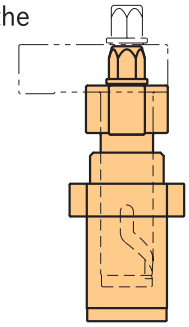
Part Number	Clamping Direction	H_1	S (Clamping Stroke)	S_1 (Clamp-Arm Travel)	M	L_2	L_1	W	L	D_1 $^{(-0.1)}_{(-0.3)}$	H_4	d	P
PTSW3-12R	CW	50	10	25	M12×1.75	55	66	70	50	49	20	6.6	38
PTSW3-12L	CCW												
PTSW3-16R	CW	61	12	33	M16×2	65	79	90	60	59	25	9	42
PTSW3-16L	CCW												

Part Number	P_1	P_2	D	H	H_2	W_1	H_3	Clamping Force (kN) *)	Allowable Tightening Torque (N·m) *)	Weight (kg)
PTSW3-12R	44	58	50	168	104	22	30	6	25	2.3
PTSW3-12L										
PTSW3-16R	61	74	60	199	120	28	35	10	35	4.1
PTSW3-16L										

*) To operate with an impact wrench, use less than 50% of the clamping force and allowable tightening torque.
Note: The clamp arm can be replaced with a custom one of your own design.
Contact us for the dimensions of its mounting section. Note that the clamping force with the custom clamp arm may increase or decrease from the values above.

Feature

The inside spiral groove allows the clamp arm to swing positively.



Note

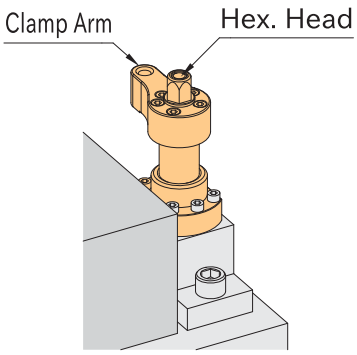
This clamp can be operated with an impact wrench. Use an impact wrench that can set the torque, as the clamp may be damaged if it is used with the tightening torque exceeding the allowable value for a long period of time.

How To Use

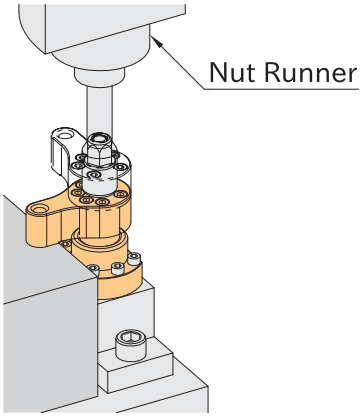
Ideal for use with a nut runner for automated production line.

Operation of CCW Type

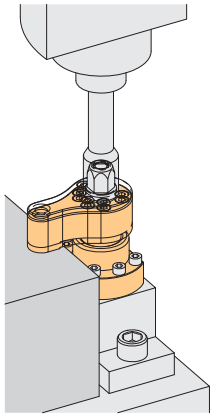
※The swing direction of CW type is opposite.



1. Unclamping
Load a workpiece.



2. Travelling
Turn the hex. head with the nut runner and the clamp arm swings to the clamping position.

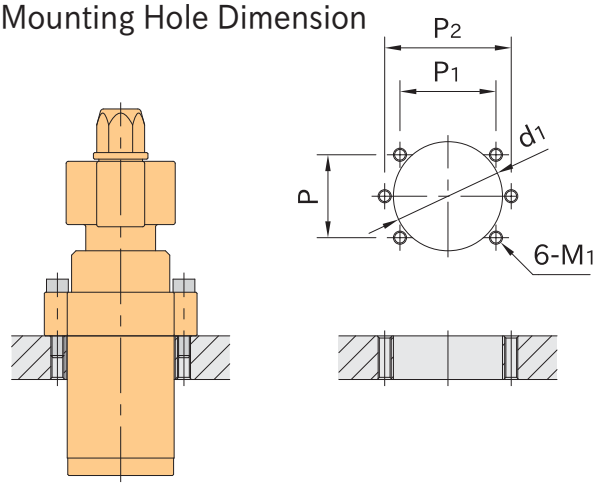


3. Clamping
The clamp arm moves down vertically for clamping. Secure clamping can be done in a few seconds with the nut runner.

Continuing on Next Page

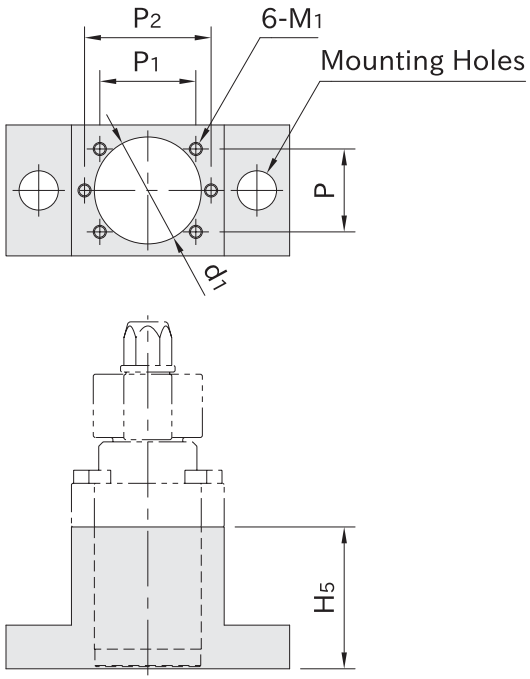
How To Install

Mounting Hole Dimension



Part Number	d_1 $(^{+0.1}_{0})$	M_1	P	P_1	P_2
PTSW3-12	49	M6×1	38	44	58
PTSW3-16	59	M8×1.25	42	61	74

Custom Holder Dimension



Part Number	d_1 $(^{+0.1}_{0})$	H_5	M_1	P	P_1	P_2
PTSW3-12	49	65 or more	M6×1	38	44	58
PTSW3-16	59	80 or more	M8×1.25	42	61	74

Recommended Screw Size for Custom Holder
- PTSW3-12 : 2 pcs. of M12
- PTSW3-16 : 2 pcs. of M16

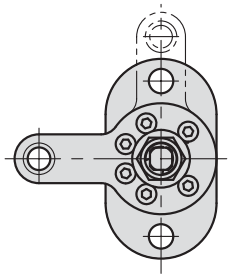
IMAO® fixtureworks®

PTSW2 NUTRUNNER SWING CLAMPS

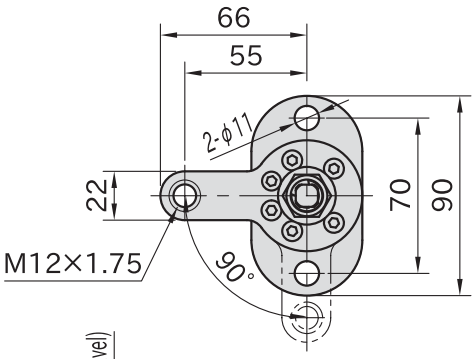
Without Clamp Arm

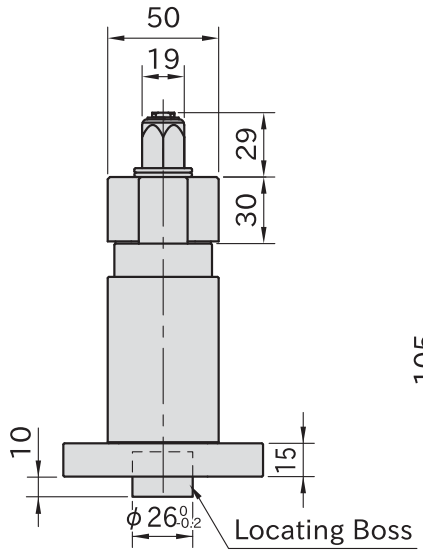
Body / Clamp-Arm Holder / Hex. Head	Clamp Arm
SCM440 steel Quenched and tempered Black oxide finish	S45C steel Quenched and tempered Black oxide finish

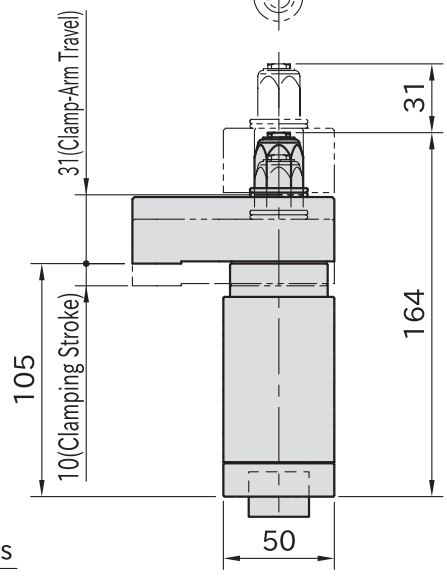
Counterclockwise Clamping



Clockwise Clamping

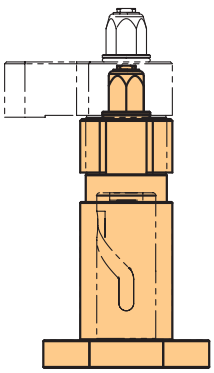






Feature

The inside spiral groove allows the clamp arm to swing positively.



■With Clamp Arm

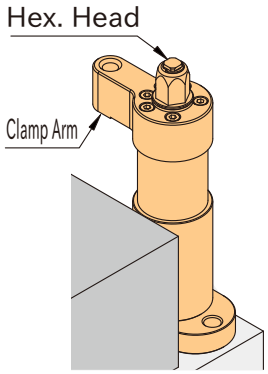
Part Number	Clamping Force (kN)	Allowable Tightening Torque (N·m)	Clamping Direction	Weight (kg)
PTSW2-12R	6	28	CW	2
PTSW2-12L			CCW	

■Without Clamp Arm

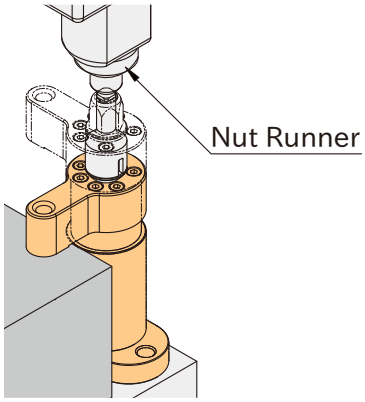
Part Number	Clamping Force (kN)	Allowable Tightening Torque (N·m)	Clamping Direction	Weight (kg)
PTSW2-12NR	6	28	CW	1.6
PTSW2-12NL			CCW	

Note: The clamp arm can be replaced with a custom one of your own design. Refer to the instruction on our website for the dimensions and details. Note that the clamping force with the custom clamp arm may increase or decrease from the values above.

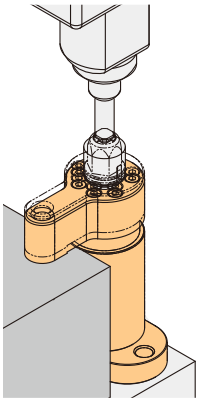
How To Use



1. Unclamping
Load a workpiece.



2. Travelling
Turn the hex. head with the nut runner and the clamp arm swings to the clamping position.

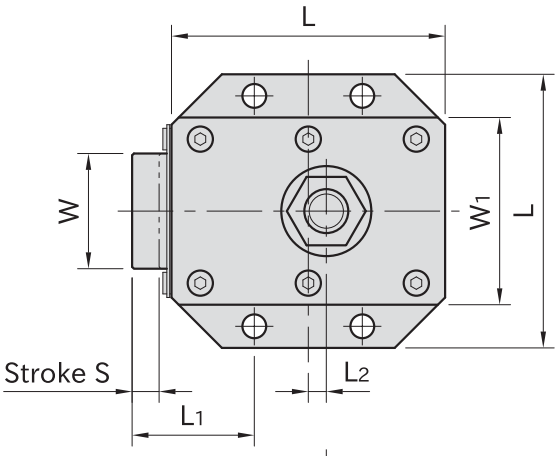


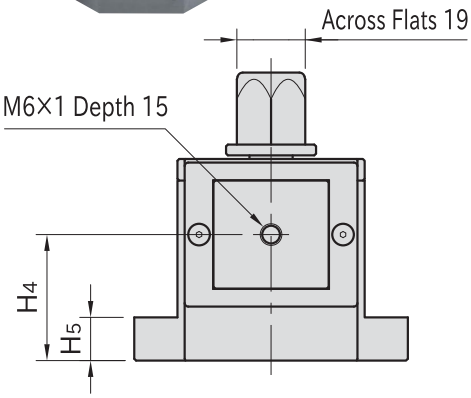
3. Clamping
The clamp arm moves down vertically for clamping. Secure clamping can be done in a few seconds with the nut runner.

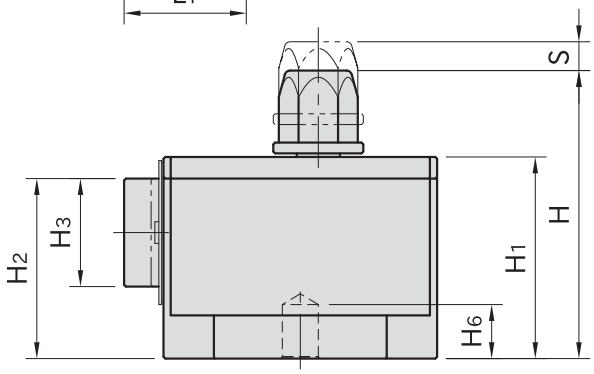
Note

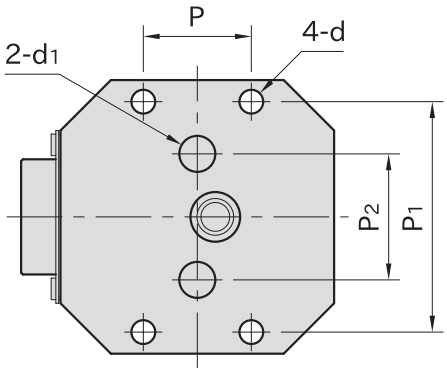
This clamp can be operated with an impact wrench. Use an impact wrench that can set the torque, as the clamp may be damaged if it is used with the tightening torque exceeding the allowable value for a long period of time.

PTSC1 NUTRUNNER SIDE CLAMPS









★Key Point

Easy operation with hex head on top

Body/Jaw/Wedge	Hex. Head/Clamping Screw	Cover Plate
SCM440 steel Quenched and tempered Black oxide finished	SCM435 steel Quenched and tempered Black oxide finished	S45C steel Quenched and tempered Black oxide finished

Part Number	S	W	H_2	H_3	H_4	L_1	L	H_5	d	P	P_1	H	H_1	W_1
PTSC1-12	8	32	50	30	35	34	76	12	6.6	30	64	80	56	52
PTSC1-16	11	42	65	40	45	44.5	100	15	9	40	85	97	73	68

Part Number	d_1	H_6	P_2	L_2	Clamping Force (kN) *)	Allowable Tightening Torque (N·m) *)	Weight (kg)
PTSC1-12	10	15	35	5	6	27	1.8
PTSC1-16	16	16	45	8	10	55	4

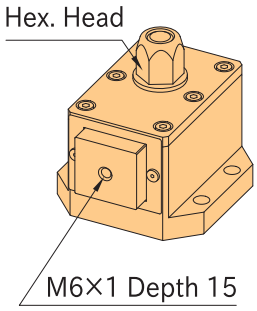
*) To operate with an impact wrench, use less than 50% of the clamping force and allowable tightening torque.

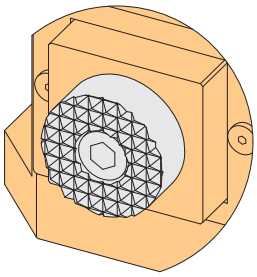
Supplied With

·PTSC1-12 : 2 of parallel pin ϕ10(h7)×30L
·PTSC1-16 : 2 of parallel pin ϕ16(h7)×30L

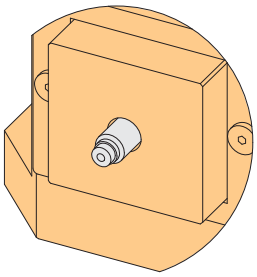
Feature

・Hex. head for operation is located on the top for easy access of nut runners.
・Grippers can be mounted in the M6 tapped hole on the jaw.

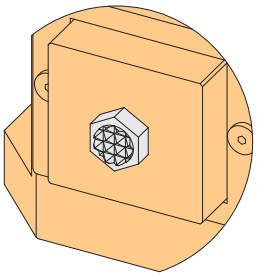




C'Bored Gripper



Screw Gripper



Hex. Head Gripper

Reference

The following grippers are applicable to this product.

■C'Bored Gripper
・HS-C ROUND GRIPPERS, C'Bored
・HS-C SQUARE GRIPPERS, C'Bored
■Screw Gripper
・PCS POINTED TIP SCREWS
・RCS ROUND TIP SCREWS
■Hex. Head Gripper
・CT ROUND GRIPPERS

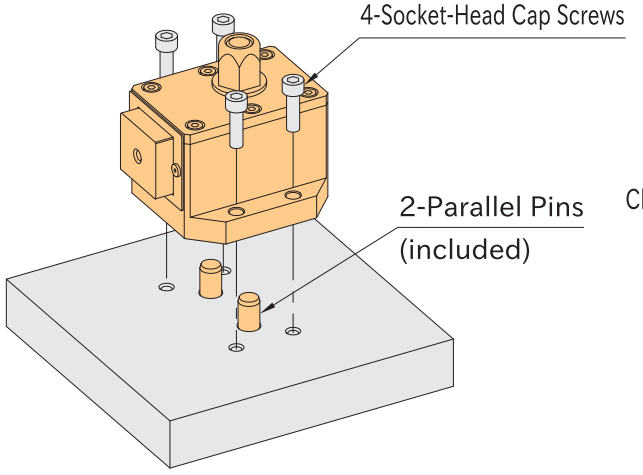
Note

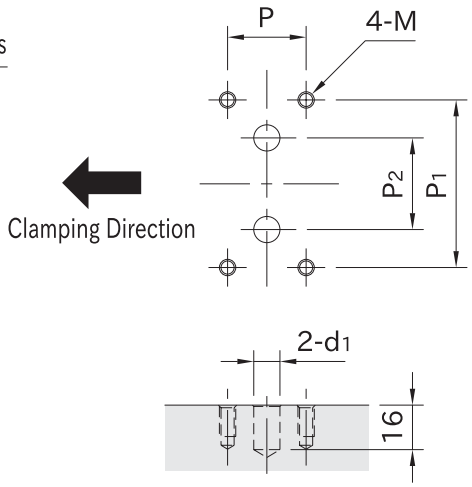
This clamp can be operated with an impact wrench. Use an impact wrench that can set the tightening torque.

How To Use

・Ideal for use with a nut runner for automated production line.
・This clamp can be also tightened manually.

Mounting Hole Dimension



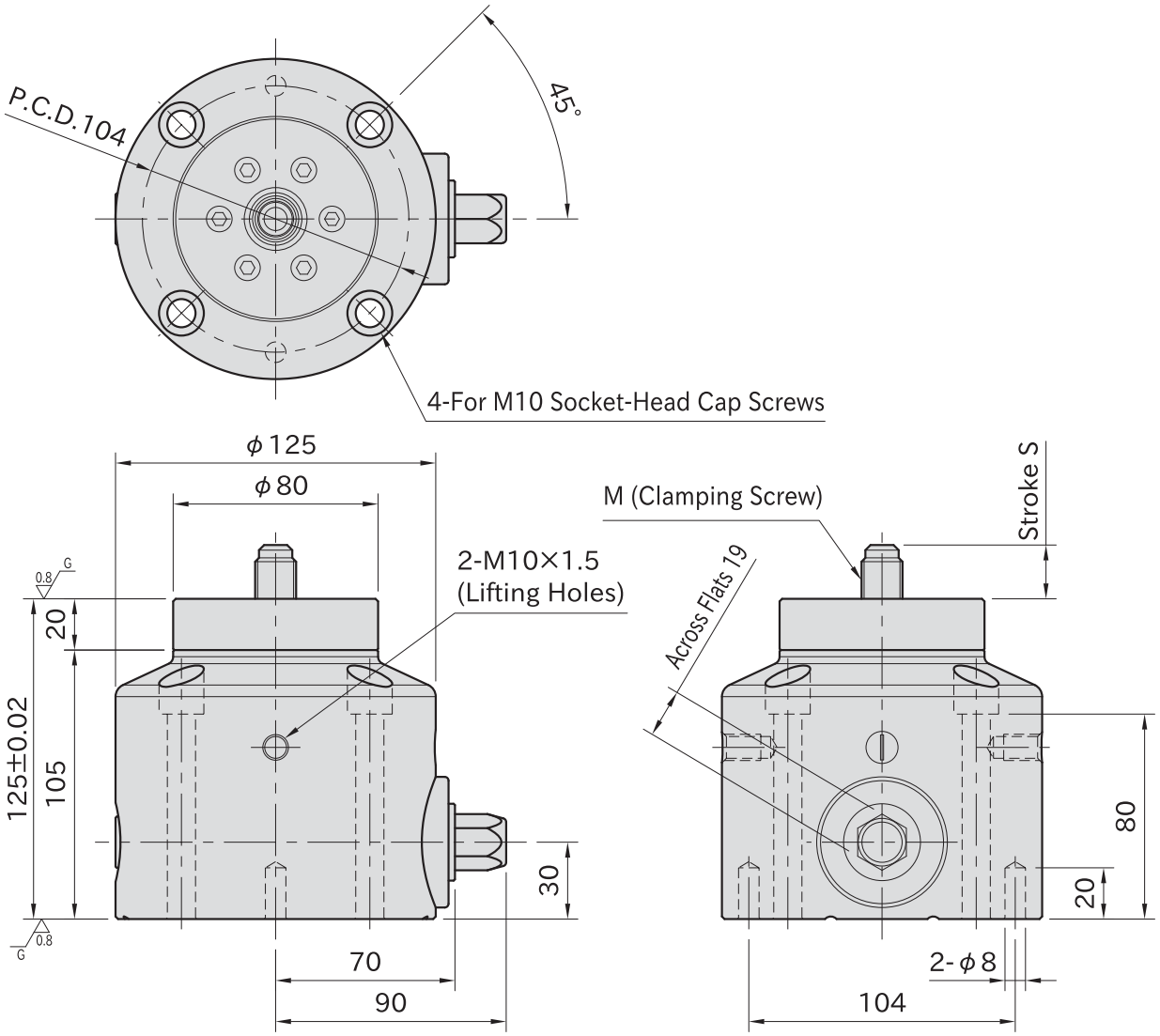


Part Number	M	P	P_1	d_1 $^{(+0.3)}_{(+0.1)}$	P_2 (±0.1)
PTSC1-12	M6×1	30	64	10	35
PTSC1-16	M8×1.25	40	85	16	45

PTPD1 NUTRUNNER PULL CLAMPS

★Key Point
No need for mounting clamping screws.

Body	Hex. Head	Riser	Clamping Screw
S45C steel Black oxide finished	SCM440 steel Induction hardened Black oxide finished	S45C steel Quenched and tempered HRC 39-45 Black oxide finished	SCM415 steel Carburized-hardened Black oxide finished



Part Number	M	S	Clamping Force (kN) *)	Allowable Tightening Torque (N·m) *)	Weight (kg)
PTPD1-12	M12×1.75	18	10	27	7.6
PTPD1-16	M16×2	21	15	45	

Supplied With
- 1 of plastic cap
- 2 of parallel pin φ8(h7)×40L

*) To operate with an impact wrench, use less than 50% of the clamping force and allowable tightening torque.

Feature

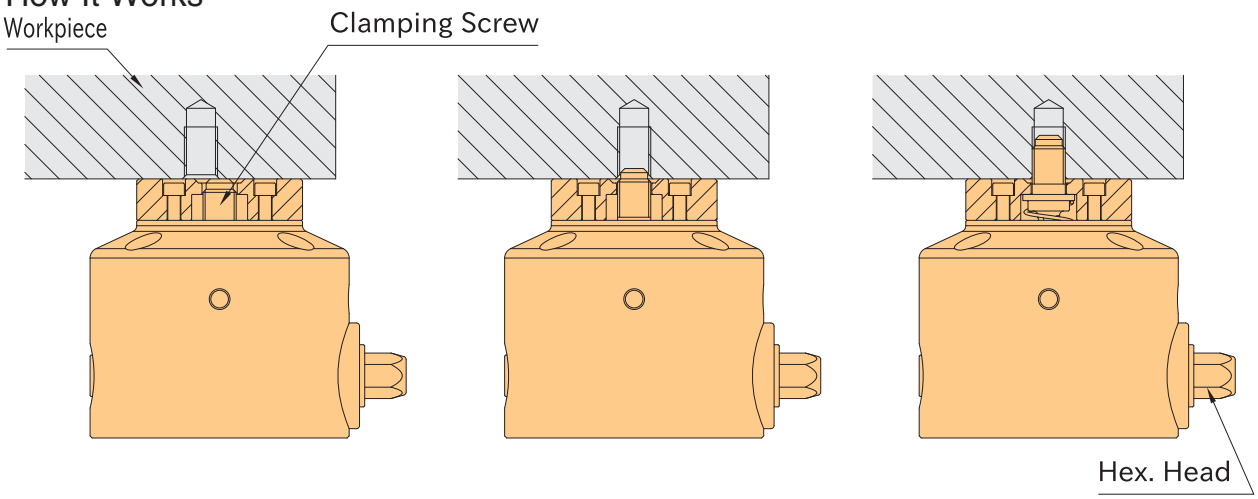
The clamping screw integrated with the body clamps the workpiece by pulling in the tapped hole on the workpiece.

Technical Information

The minimum rotations required for clamping/unclamping
- PTPD1-12 : 8 (Thread engagement length 14mm)
- PTPD1-16 : 8 (Thread engagement length 16mm)

Note: The number of rotations to be set on the nut runner should have a margin based on the minimum number of rotations above.

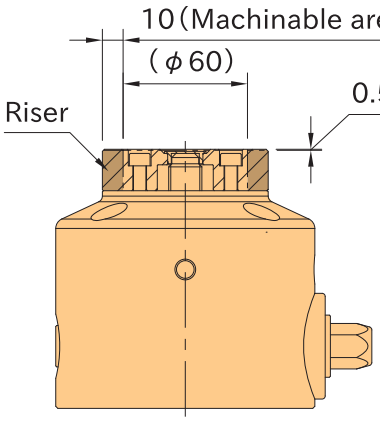
How It Works



1. Load the workpiece onto the clamp. The internal spring is compressed and the clamping screw retracts into the body.
2. Locate the workpiece in position. The clamping screw tip fits into the tapped hole by spring pressure.
3. Turning the hex. head rotates and thrusts the clamping screw. The workpiece is pulled down and clamped.

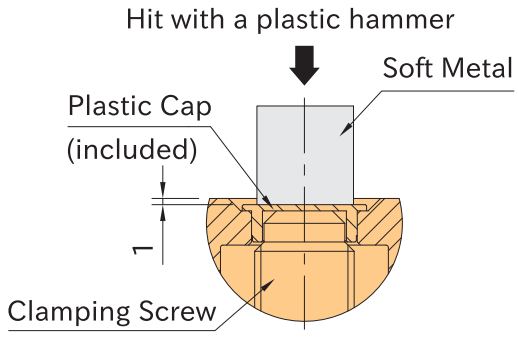
Riser Machining Dimension

- Machine the risers to align heights and prevent tool interference.
- For machining of the riser, attach the supplied plastic cap to prevent chips and dust from entering the body.



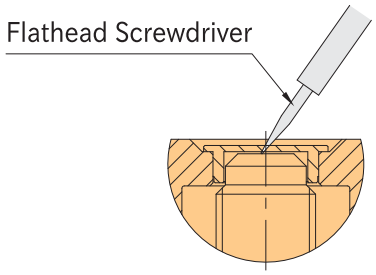
Note: Ensure that the plastic cap is fully inserted before machining the riser.

Attachment of Plastic Cap



- Put a plastic cap over the tip of the clamping screw, press it toward the riser, and hit it with a plastic hammer.
- Be sure to place a soft metal against the plastic cap and hammer it.

Removal of Plastic Cap



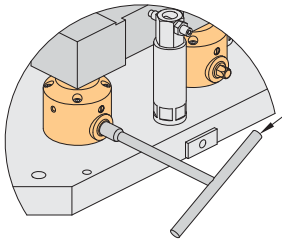
- Make a hole in the center of the plastic cap with a flathead screwdriver or other tool and insert the tip of the screwdriver in the hole to remove the cap.
- Alternatively, put the tip of the flathead screwdriver under the flange of the plastic cap and remove the cap.

Continuing on Next Page

How To Use

Application Example

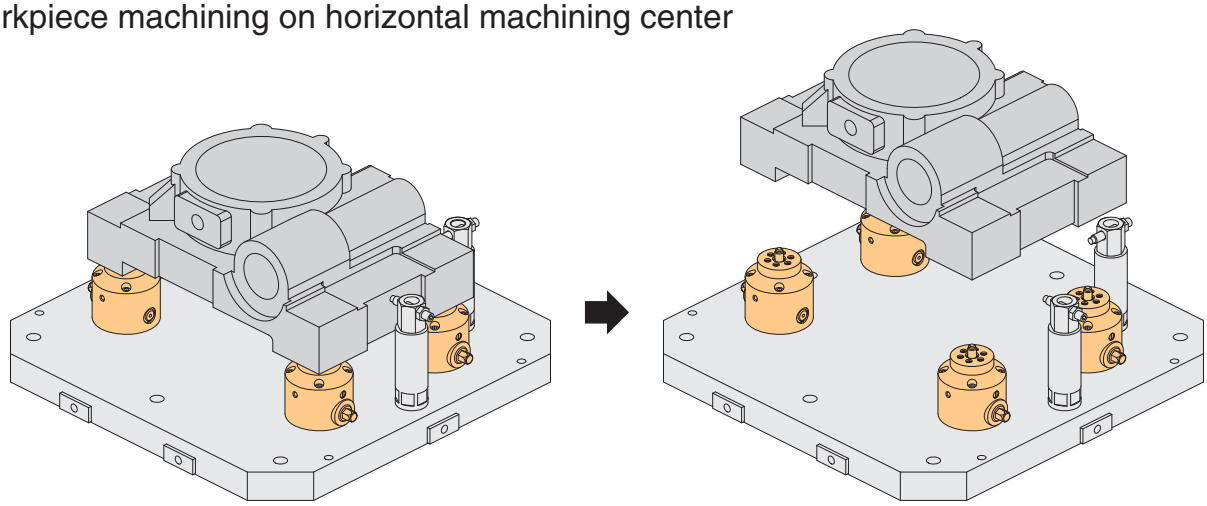
・Ideal for use with a nut runner for automated production line.
・This clamp can be also operated manually.
・Clamping/unclamping can be done simply by mounting a workpiece and turning the hex. head.



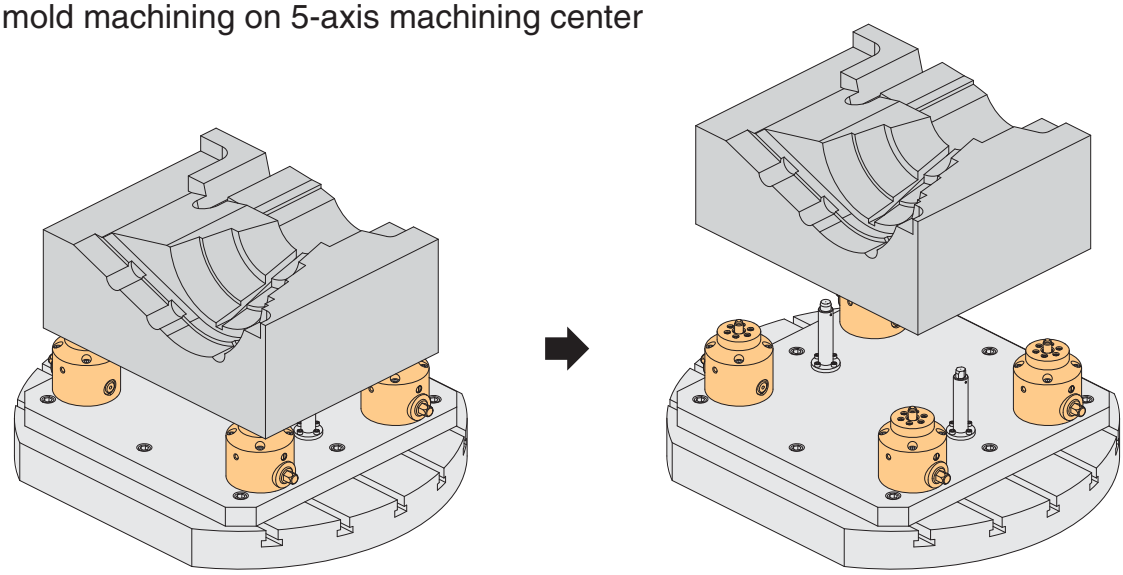
T-Handle Socket Wrench

This clamp can also be clamped/unclamped manually using a T-handle socket wrench.
For manual unclamping, turn the wrench until the clamp clicks, and the clamping screw releases a workpiece.

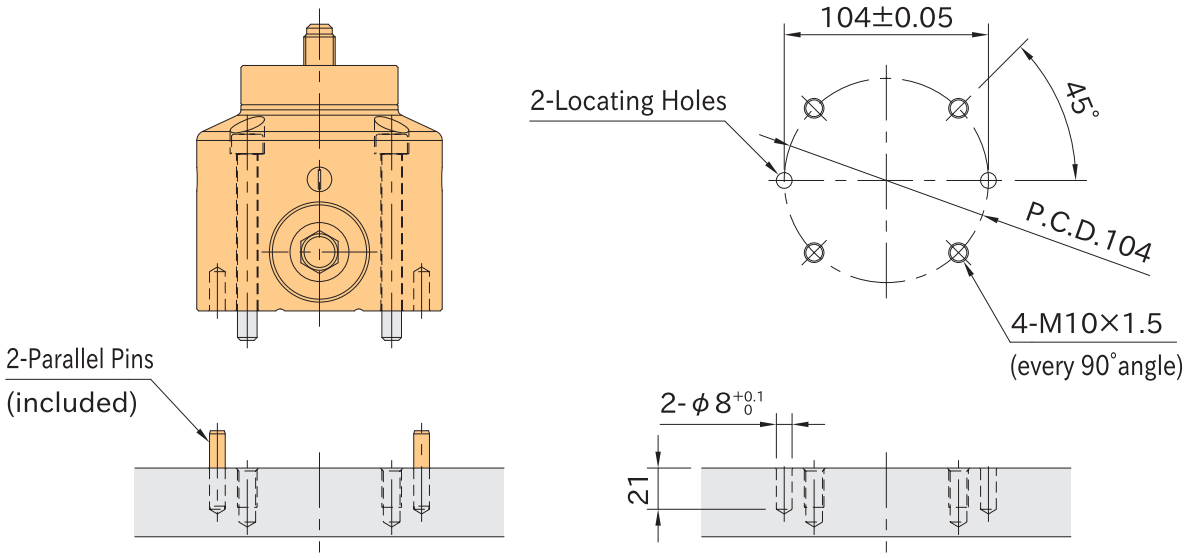
Workpiece machining on horizontal machining center



Die & mold machining on 5-axis machining center



Mounting Hole Dimension



・For using multiple pull clamps, the spacing tolerance of the central axes should be ±0.05.
・The spacing tolerance for tapped holes on a workpiece should be ±0.2.

Note

・This clamp can be operated with an impact wrench. Use an impact wrench that can set the tightening torque.
・Clamping screws are available as maintenance parts.

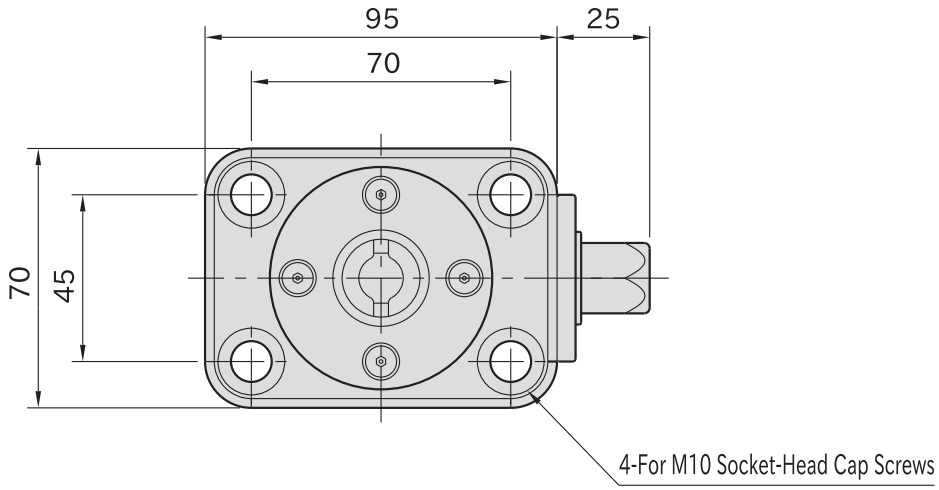
Reference

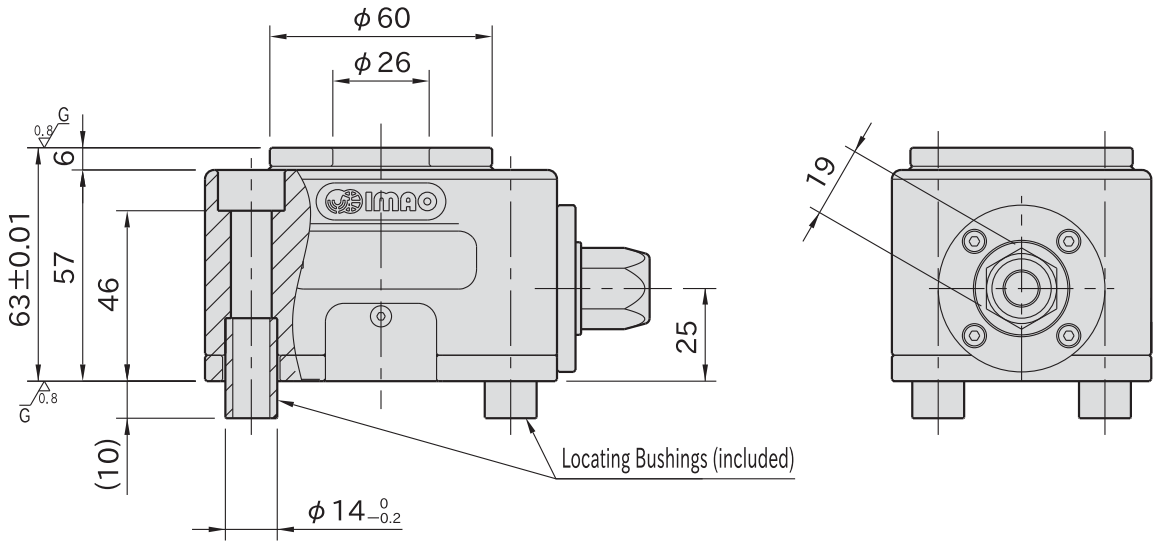
PTRC1 EXTENSION UNITS

PTPD NUTRUNNER PULL CLAMP

RoHS

Body	Contact Pad	Locating Bushing
S45C steel Black oxide finish	SCM440 steel Quenched and tempered Black oxide finish	SCM435 steel Quenched and tempered Black oxide finish





Part Number	Weight (kg)
PTPD12	2.3

Options of Operating Tool	Clamping Force (kN)	Allowable Tightening Torque(N·m)
Spanner or Socket Wrench	12	40
Nut Runner (for robotization)		
Impact Wrench	6	20

Note

This clamp can be operated with an impact wrench. Use an impact wrench that can set the torque, as the clamp may be damaged if it is used with the tightening torque exceeding the allowable value for a long period of time.

Related Product

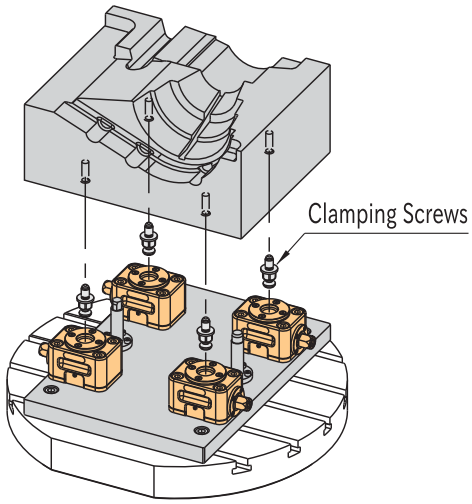
PTPD-M CLAMPING SCREWS
PTRC1 EXTENSION UNITS

Feature

Clamps the workpiece by pulling in the clamping screws mounted on the bottom of the workpiece.

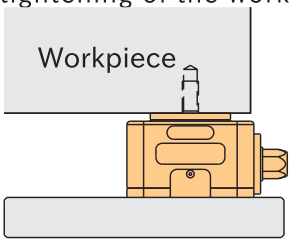
■How It Works

This clamp allows the workpiece to be machined from 5 sides.

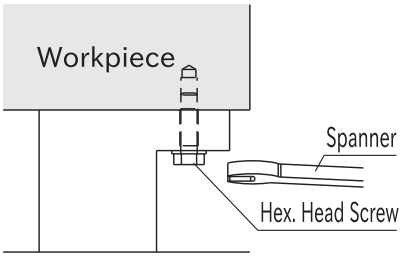


■How To Operate

Operation from the side with the hex head allows easy tightening of the workpiece.

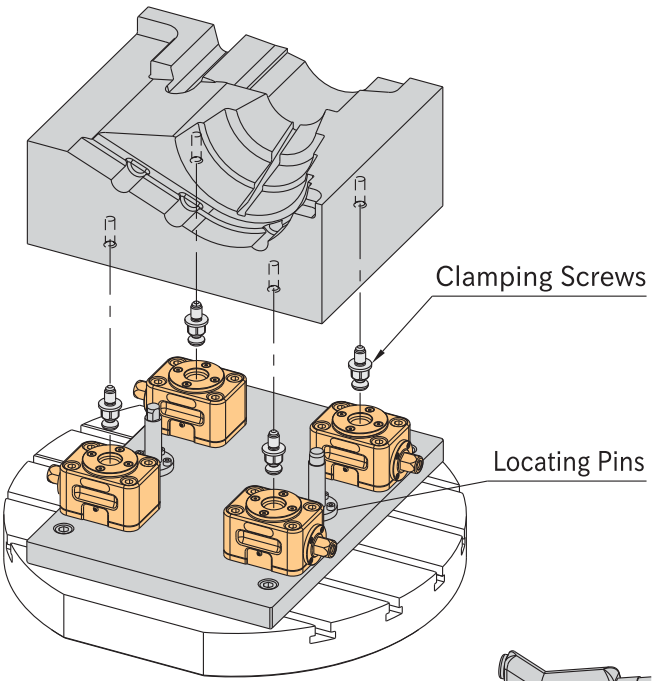


<Conventional Method>

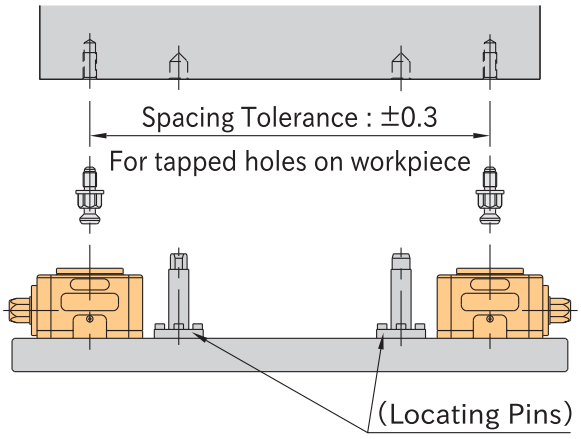


How To Use

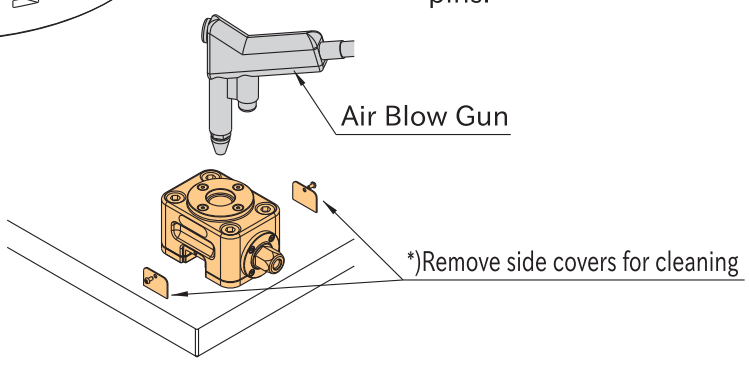
Ideal for use with a nut runner for automated production line, as well as for use with a power tool for easier operation. This clamp can be also tightened manually.



■Recommended Tolerance

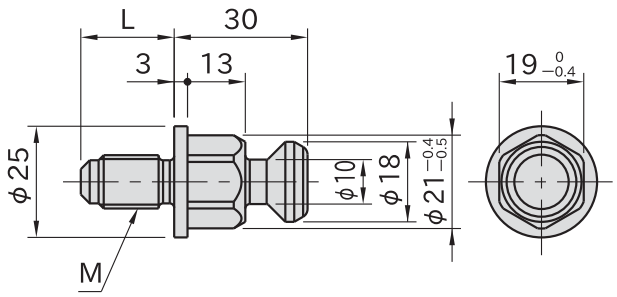


The locating repeatability of the Nutrunner Pull Clamp itself is +/- 0.3 mm.
For more accurate clamping, use locating pins.



*) To clean up chips and dust, remove the two side covers and blow air through the hole in the top.

PTPD-M CLAMPING SCREWS



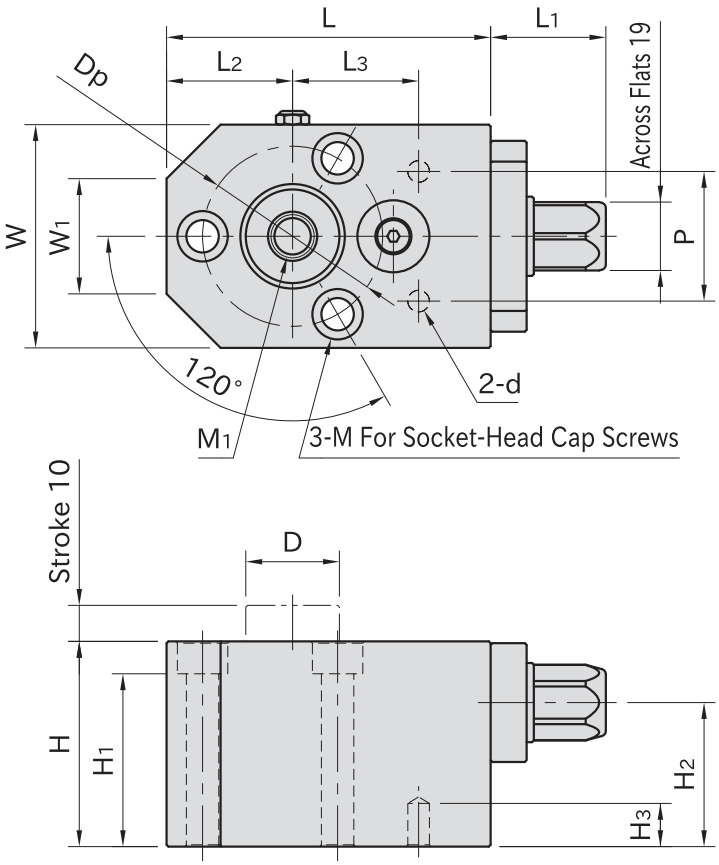
Body
SCM435 steel Quenched and tempered Black oxide finish

Part Number	M	L	Weight (g)	Proper Nutrunner Pull Clamp
PTPD12-M10	M10×1.5	18	69	PTPD12
PTPD12-M12	M12×1.75	21	75	
PTPD12-M16	M16×2	28	98	

IMAO® fixtureworks®

PTNS1 NUTRUNNER WORK SUPPORTS

RoHS



★Key Point

Prevent workpiece vibration and deflection.

Body	Hex. Head / Locking Shaft	Piston
S50C steel Black oxide finished	SCM435 steel Quenched and tempered Black oxide finished	SK95 steel Quenched and tempered Black oxide finished

Part Number	H	M_1	D	L	W	W_1	L_1	M	Dp	L_2	H_1	H_2	d
PTNS1-12	57	M12×1.75 Depth24	26	90	62	32	32	M 8	50	35	48	40	6
PTNS1-16	72	M16×2 Depth32	33	115	75	35	42	M10	60	42	61	50	8

Part Number	P	L_3	H_3	Allowable Tightening Torque (N·m) *)	Support Capacity (kN) *)	Piston Spring Force (N)	Weight (kg)
PTNS1-12	36	35	12	40	5	15~30	2.4
PTNS1-16	48	45	16	80	10	15~35	4.8

*) To operate with an impact wrench, use less than 50% of the allowable tightening torque and support capacity.

Supplied With

- PTNS1-12: 2 of parallel pin, φ6(h7)×20L
  1 of THP12 Protection Plugs For Tapped Holes
- PTNS1-16: 2 of parallel pin, φ8(h7)×25L
  1 of THP16 Protection Plugs For Tapped Holes

Reference

- THP12 THP16 PROTECTION PLUGS FOR TAPPED HOLES
- PTRC1 EXTENSION UNITS

Feature

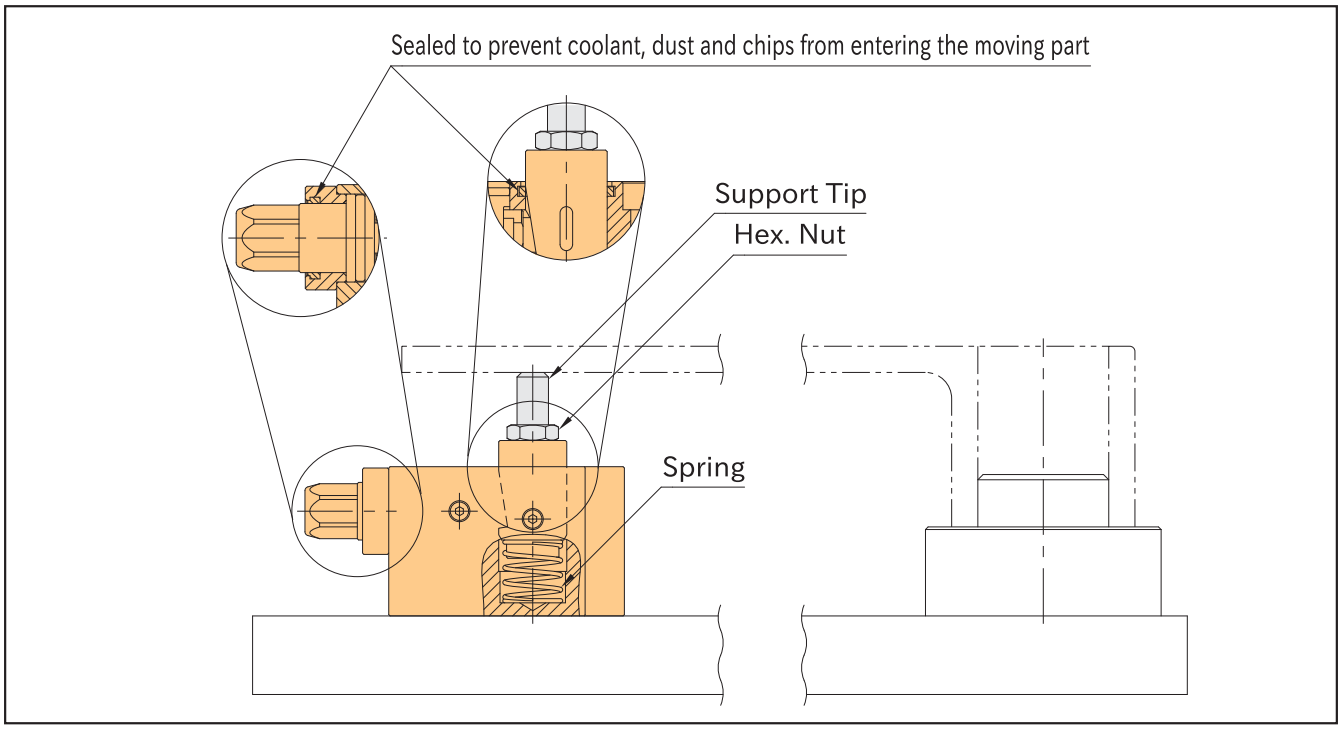
High support capacity allows heavy duty machining.

Note

- This work support can be operated with an impact wrench. Be sure to use an impact wrench that can set the torque.
- When attaching a support tip to the tapped hole of the piston, keep the piston tightened to prevent damage.

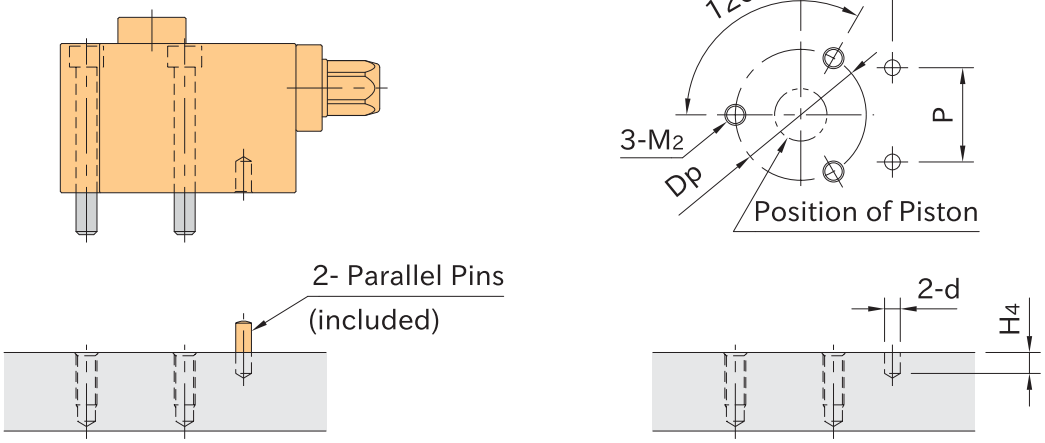
How To Use

- Ideal for use with a nut runner for automated production line.
- This work support can be also tightened manually.



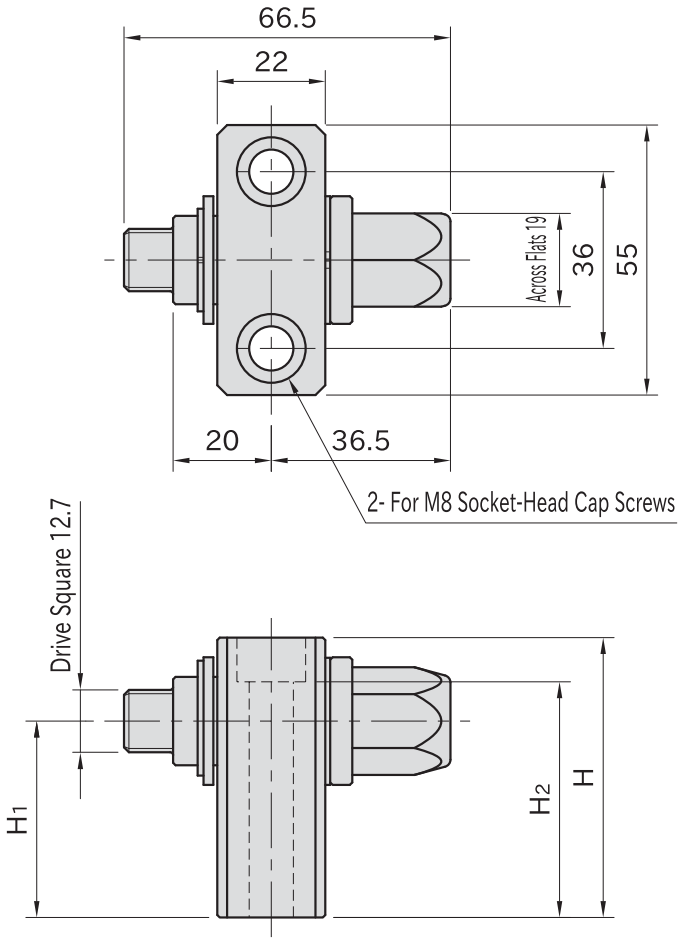
- Load a workpiece, and the piston lowers. Turn the hex. head to lock the piston.
- Prevent workpiece vibration and deflection.

Mounting Hole Dimension



Part Number	M_2	Dp	d $(^{+0.1}_{0})$	P (±0.05)	L_3 $(^{+0.1}_{0})$	H_4
PTNS1-12	M 8×1.25	50	6	36	35	9
PTNS1-16	M10×1.5	60	8	48	45	10

PTRC1 EXTENSION UNITS

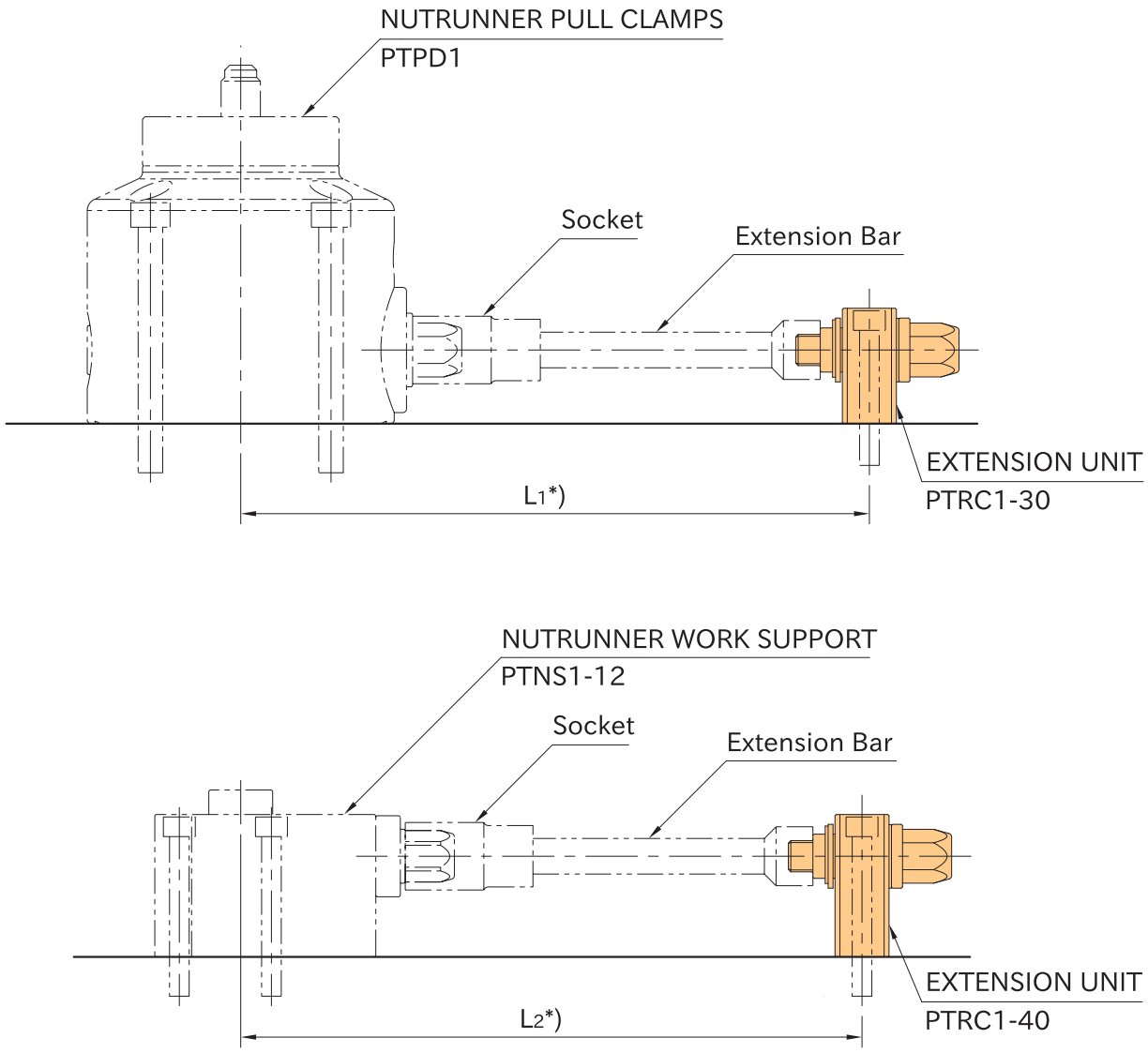


Body	Hex. Head
S45C steel Black oxide finished	SCM435 steel Quenched and tempered Black oxide finished

Part Number	H	H_1	H_2	Weight (g)	Proper Nutrunner Pull Clamps
PTRC1-25	42	25	33	450	PTPD12
PTRC1-30	47	30	38	480	PTPD1-12, PTPD1-16

Part Number	H	H_1	H_2	Weight (g)	Proper Nutrunner Work Supports
PTRC1-40	57	40	48	570	PTNS1-12
PTRC1-50	69	50	57	670	PTNS1-16

How To Use



*) L1 / L2 length varies depending on the socket and the extension bar used.

Suitable for operating Nutrunner Pull Clamps and Work Supports from a distance.

Note

・Socket and extension bar are not included.
・Applicable Socket and extension bar size
Socket : Drive Square 12.7 mm / Hex Hole 19 mm Across Flats
Extension Bar : Drive Square 12.7 mm

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