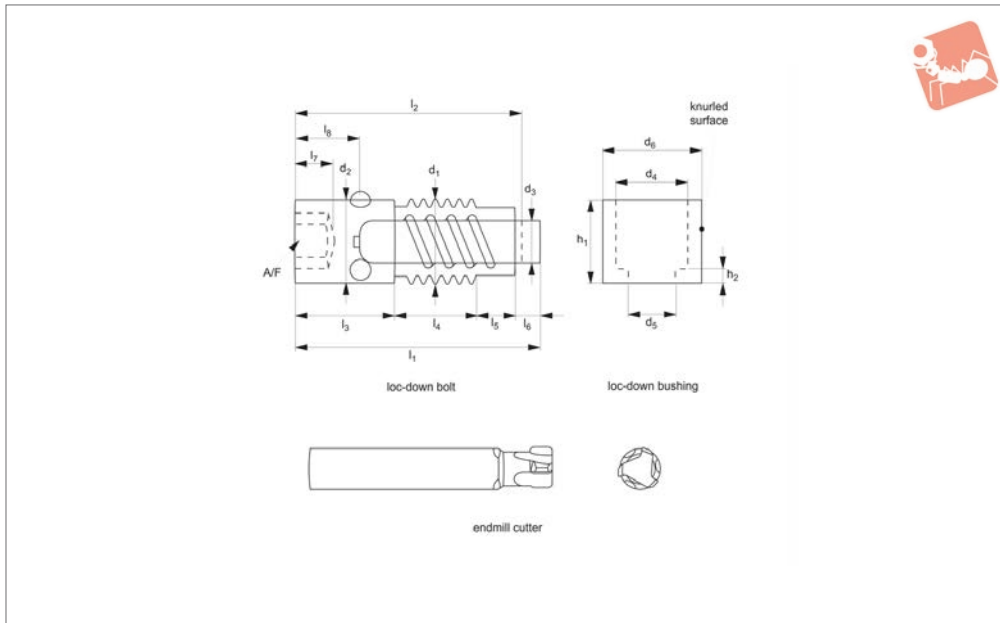




# Expanding Loc-Down Bolts for quick component clamping



## Pull Back Inserts



# 12098

PULL BACK INSERTS

### Material

Bolt: stainless steel, heat treated  
 Bushings: alloy steel (4140), Rc 58-60, black oxide finish  
 Endmill cutter: stainless steel, heat treated  
 Install tool: stainless steel, heat treated

### Max torque:

With bushing 20 Nm.  
 Alu/brass (without bush) 20 Nm.  
 Mild steel/ stainless steel 27Nm.  
 Metals HRc 45 20Nm.  
 See technical pages.

### ability to 0,01mm.

Time saving solution, removing the need for traditional bolts whilst reducing tooling interference from traditional clamping methods.  
 Ideal for high speed machining of components.

### Technical Notes

\*\*Please note: max. clamping force is typically 0,33kN. force for every 1 Nm. of torque, and is dependent upon workpiece material.

### Tips

Ideal low cost quick component and fixture change. Use in conjunction with location pins 36340 and drill bushes 30800 for fast and accurate positioning. Provides repea-

### Important Notes

See installation guidance sheet for correct installation procedure.

Order No.	Type	Size	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	h <sub>1</sub>	Weight g
12098.W0010	Loc-down bolt	M10	M10x1,5	9.9	5.0	-	-	-	-	16
12098.W0012	Loc-down bolt	M12	M12x1,75	12.6	7.9	-	-	-	-	27
12098.W0016	Loc-down bolt	M16	M16x2	15.9	9.8	-	-	-	-	58
12098.W0110	Loc-down bushing	M10	-	-	-	13.2	10.2	18.0	10.0	10
12098.W0112	Loc-down bushing	M12	-	-	-	16.3	13.0	22.0	9.7	14
12098.W0116	Loc-down bushing	M16	-	-	-	20.7	16.1	26.9	14.1	30
12098.W0510	Endmill cutter	M10	-	-	-	-	-	-	-	-
12098.W0512	Endmill cutter	for M12, M16	-	-	-	-	-	-	-	-
12098.W0535	Bushing install tool	for M10 to M16	-	-	-	-	-	-	-	159

Order No.	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	A/F
12098.W0010	-	42.8	40.2	14.1	18.7	5.3	4.6	6.3	10.5	5
12098.W0012	-	43.8	38.5	15.8	16.0	6.3	5.7	6.8	12.3	6
12098.W0016	-	56.4	50.0	21.3	22.7	6.0	6.3	8.5	15.9	8
12098.W0110	2.9	-	-	-	-	-	-	-	-	-
12098.W0112	1.6	-	-	-	-	-	-	-	-	-
12098.W0116	3.6	-	-	-	-	-	-	-	-	-
12098.W0510	-	-	-	-	-	-	-	-	-	-
12098.W0512	-	-	-	-	-	-	-	-	-	-
12098.W0535	-	-	-	-	-	-	-	-	-	-



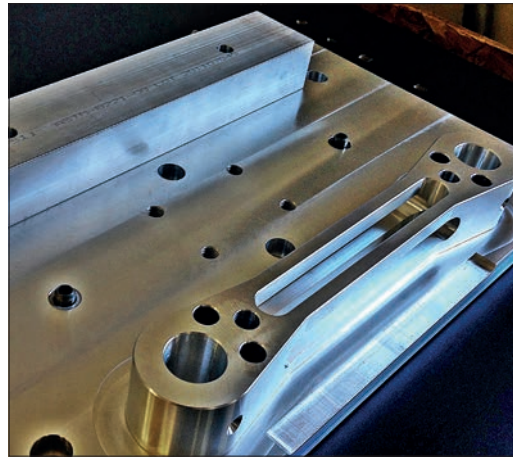
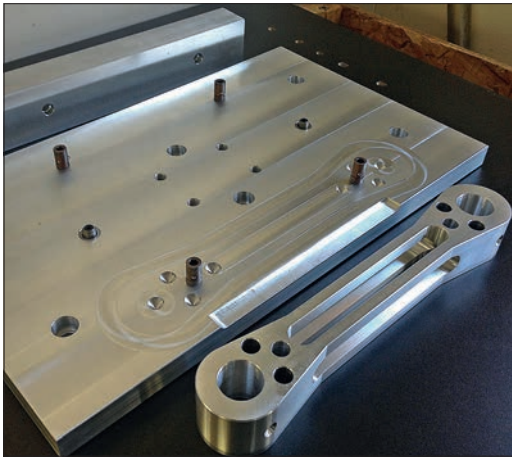
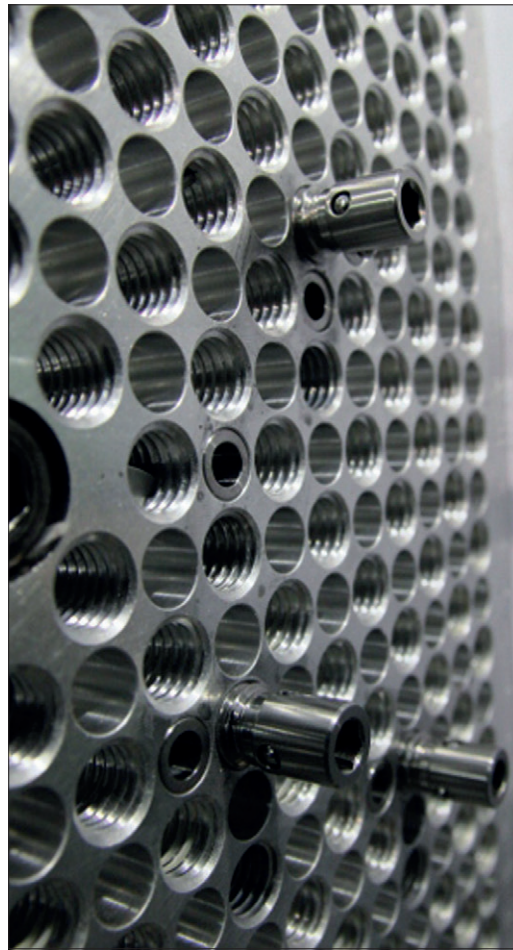
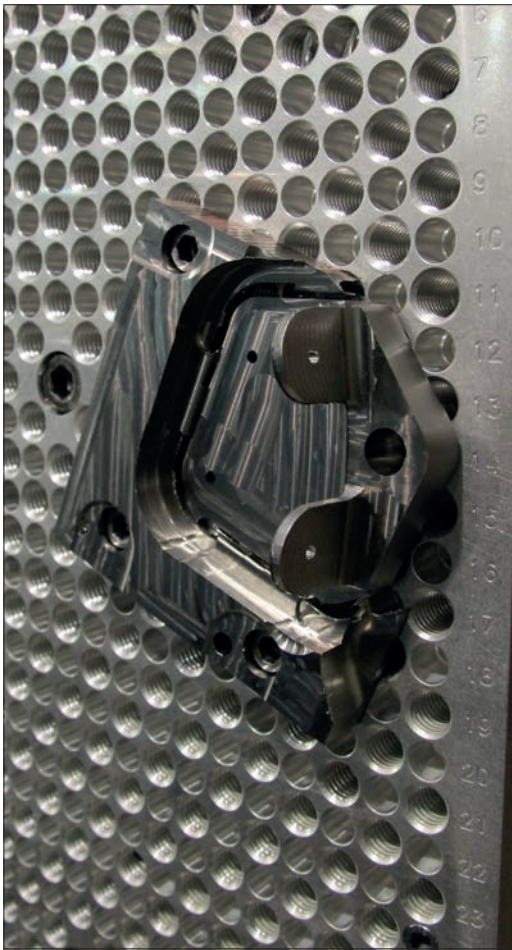


# Expanding Loc-Down Bolt applications



12098

Clamping & Height Setting



PULL-BACK INSERTS

ov-W12098-A-T-expanding-loc-down-bolt-b-rmh - Updated - 24-10-2022



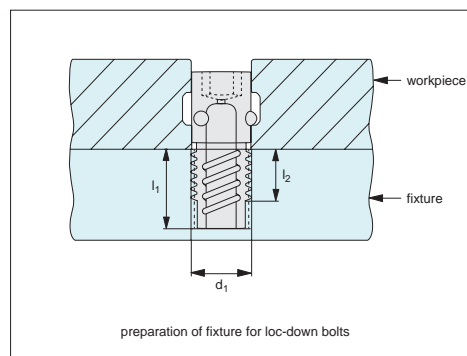
## Installation Guidance

### Preparation of Fixture

1. Drill and tap blind hole to thread  $d_1$  depth of  $l_1$ .
2. Thread must be to a minimum depth  $l_2$  and a blind hole.
3. Blind hole must be flat to ensure proper actuation of bolt.

#### Preparation of Fixture

Loc-down Bolt	Size	$d_1$	$l_1$	$l_2$ min.
12098.W0010	M10	M10 x 1,5	22	18
12098.W0012	M12	M10 x 1,75	22	18
12098.W0016	M16	M10 x 2	27	22



### Preparation of Workpiece Option 1

without bushing direct into workpiece.

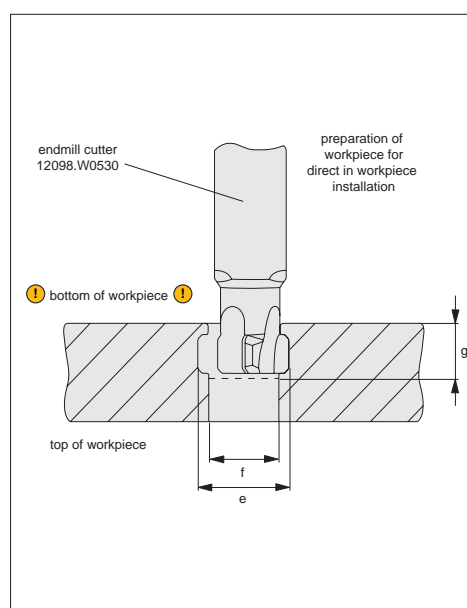
1. Drill through hole, dimension 'f'.
2. Using endmill cutter, (please order separately), touch off on bottom of workpiece and drop tool to dimension 'g'. Now cut a groove to diameter 'e'. Please refer to table of endmill cutter starting feeds and speeds for different materials.
3. Countersink 0.8mm x 90°. See "direct workpiece without bushing preparation" chart below.

#### Preparation of Workpiece Option 1

Loc-down Bolt	Size	$h_3$	$w_1$	$d_7$
12098.W0010	M10	12,5 - 12,7	9,9	11,43
12098.W0012	M12	15,9 - 16,0	13,0	11,73
12098.W0016	M16	20,6 - 20,9	16,5	15,09

#### Endmill Cutter Starting Feeds and Speeds

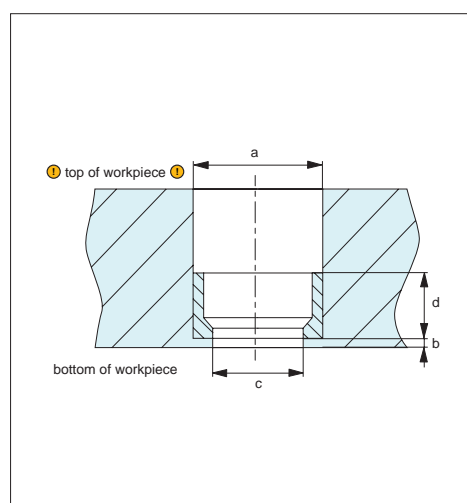
Material	Feed	Speed
Aluminium	25 IPM	3,000 rpm/1 radial pass
Hard metals	1 IPM	1,200 rpm/3 equal radial passes



### Preparation of Workpiece Option 2

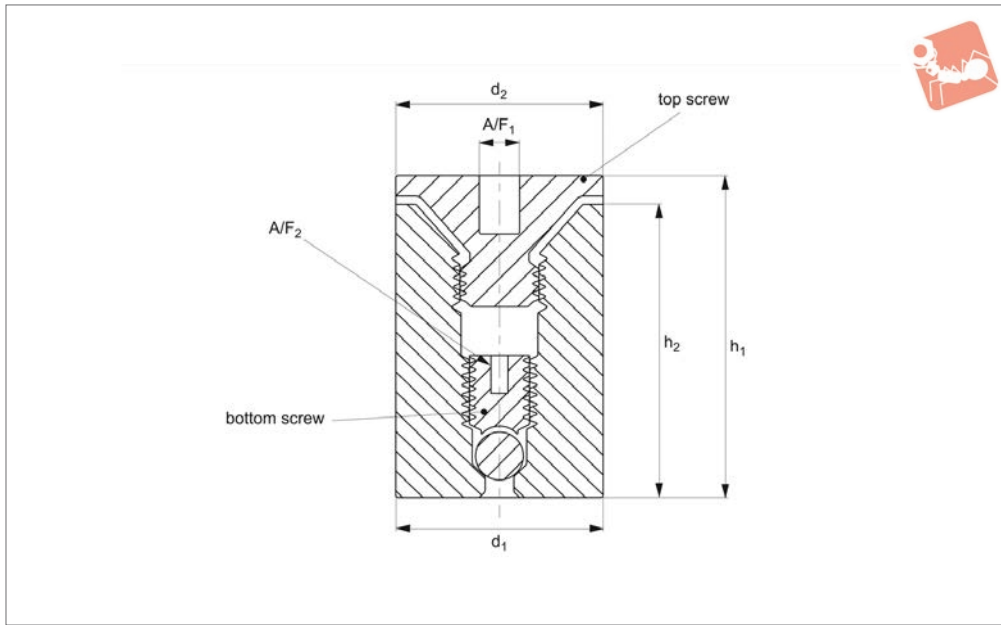
with loc-down bushing (especially for soft materials).

1. Drill through workpiece to dimension 'c'. Deep countersink hole of diameter "a", leaving material on bottom of thickness 'b' (i.e. mounting) surface of workpiece.
2. Install loc-down bushing (please order separately), ensuring bottom of bushing is flush with base of counter sink hole.
3. On deep holes, consider counter bore for dimension "a" for easier bushing installation.
4. This is a press fit installation, metal is displaced. The OD of the bushing is knurled, to aid in retention, and minimize bushing and part distortion. Using bushing installation tool 12098.W0535 (order separately) provides properly seated bushing installation, without damage to the bushing.



#### Preparation of Workpiece Option 2

Loc-down Bolt	Size	Loc-down Bushing	Endmill Cutter	$d_7$	$h_5$	$d_9$	$h_4$
12098.W0010	M10	12098.W0110	12098.W0510	18,00/18,02	2,0	10,3/10,5	10,0
12098.W0012	M12	12098.W0112	12098.W0512	22,00/22,03	2,0	13,0/13,5	9,7
12098.W0016	M16	12098.W0112	12098.W0516	27,00/27,03	2,5	16,3/16,6	14,0



### 12099

PULL BACK INSERTS

#### Material

Steel (SNM20), heat-treated, quenched and tempered.

0,013.

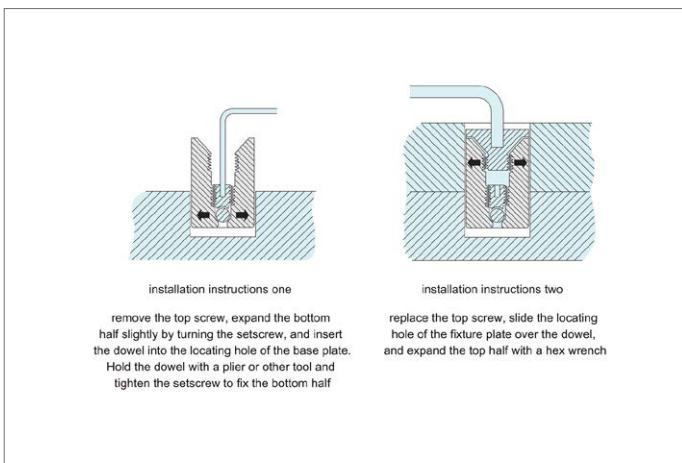
#### Tips

These dowels are designed just for locating and are unsuitable for applications where high shear stress is generated.

#### Technical Notes

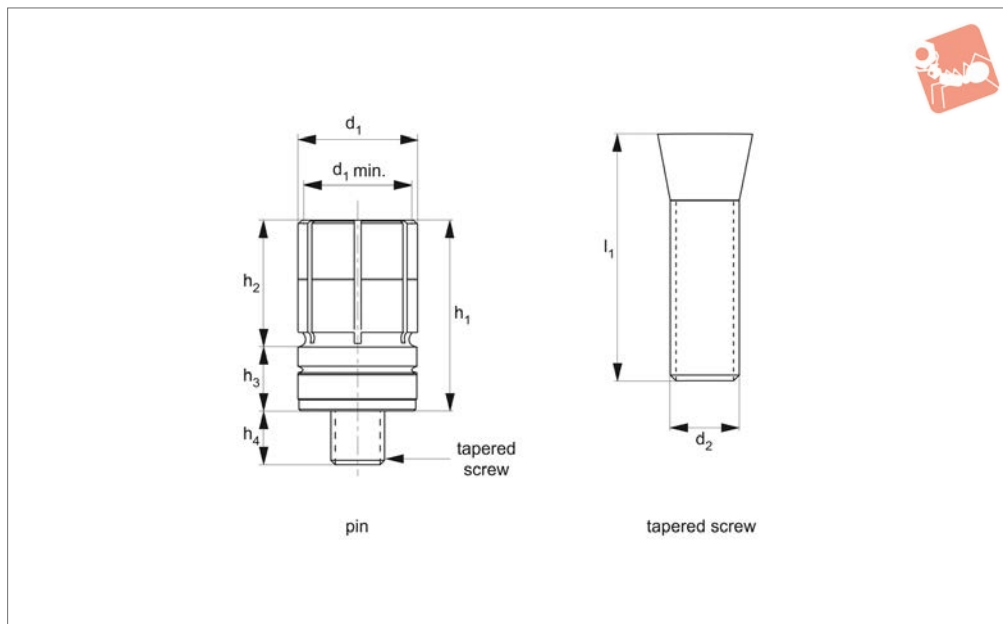
Self-centering and repeatable to within +/-

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	A/F <sub>1</sub>	A/F <sub>2</sub>	Screw torque bottom screw Nm max.	Screw torque top screw Nm max.	Recommended hole dia. +0.025	Weight g
12099.W0010	10	9.9	20	17.6	4	3	2.2	2.2	10	11
12099.W0012	12	11.9	25	22.6	5	4	2.2	2.2	12	18
12099.W0014	14	13.9	28	24.9	5	4	3.5	4.5	14	28
12099.W0016	16	15.9	32	29.7	6	5	3.5	5.7	16	41
12099.W0020	20	19.9	38	35.4	8	6	4.5	5.7	20	76





## 12058



### Material

Stainless steel (17-4PH) or steel (12L14). Pin and screw supplied together. Replacement pins can be ordered separately, see parts 12058.W5030-W5060. Supplied as one pin and one tapered screw.

### Technical Notes

XYZ Xpansion pins provide a cost-effective workholding solution for tombstones, grid and fixture plates, enabling full tool access to the work surface with no external clamping interference.

Unique design provides accurate location and repeatability with high holding forces to secure parts on an internal diameter.

Press-fit XYZ Xpansion pins are for installation into a precision bored hole, with a centred threaded hole to receive tapered screw.

Easy to use installation/removal tool available, please order separately.

### Tips

Designed for applications requiring quick set-up on secondary operation, water jetting or even non-machining applications where discrete location and clamping of parts is required.

### Important Notes

Clamping of component achieved via tight-

tening of tapered screw to expand the XYZ pin collet; expansion of 0,7mm is possible. The top of the pin has been slightly tapered to maximise line contact in the mounting bore and to provide adequate clearance during workpiece loading and unloading. If recessing pin into a fixture at a depth below the collet slits, be sure to provide sufficient clearance to allow for expansion of clamp (approx. 0,7mm).

**d<sub>1 min.</sub>** is the minimum diameter to which the pin can be machined down.

The tapered screws listed on the data table are for replacement purposes.

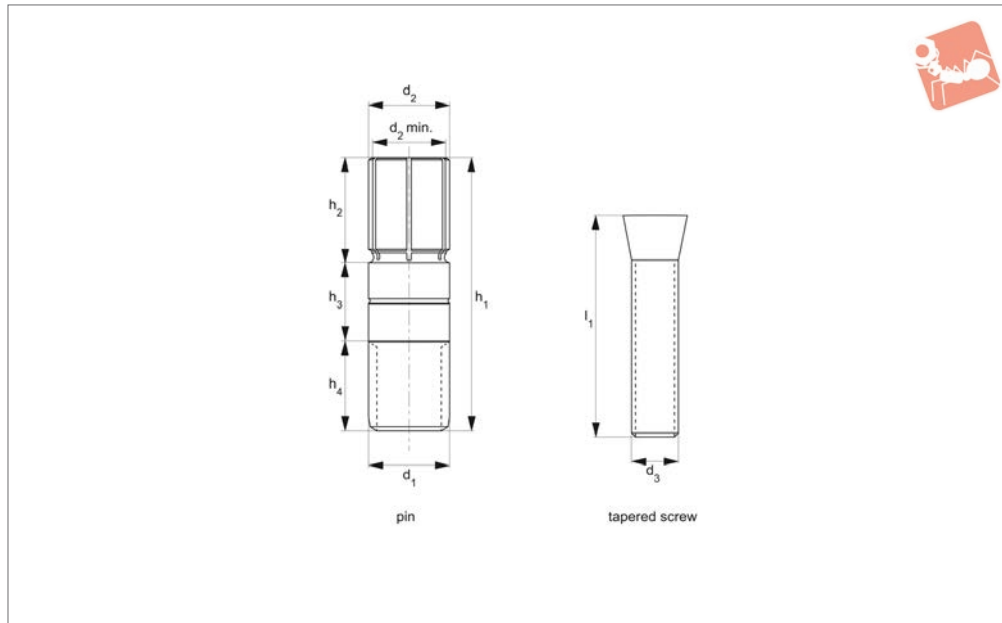
Order No.	Type	Material	For pin dia.	$l_1$	$d_1$ +0.00 -0.025	$d_1$ min.	$d_2$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
12058.W0030	Pin	17-4PH	-	16	6	5.5	-	13	7.0	5.8	7.3	2.7
12058.W0040	Pin	17-4PH	-	22	10	7.5	-	19	12.7	6.4	8.4	9.5
12058.W0050	Pin	17-4PH	-	22	12	10.5	-	19	12.7	6.4	11.1	17
12058.W0060	Pin	17-4PH	-	22	16	12.0	-	19	12.7	6.4	13.0	27
12058.W0130	Pin	12L14	-	16	6	5.5	-	13	7.0	5.8	7.3	2.7
12058.W0140	Pin	12L14	-	22	10	7.5	-	19	12.7	6.4	8.4	9.5
12058.W0150	Pin	12L14	-	22	12	10.5	-	19	12.7	6.4	11.1	17.2
12058.W0160	Pin	12L14	-	22	16	12.0	-	19	12.7	6.4	13.0	27.2
12058.W5030	Tapered Screw	-	-	-	-	-	M 3x0,5	-	-	-	-	-
12058.W5040	Tapered Screw	-	-	-	-	-	M 4x0,7	-	-	-	-	4.5
12058.W5050	Tapered Screw	-	-	-	-	-	M 6x1,0	-	-	-	-	-
12058.W5060	Tapered Screw	-	-	-	-	-	M 8x1,25	-	-	-	-	13.6
12058.W6030	Inst. Tool	-	6	-	-	-	-	-	-	-	-	-
12058.W6040	Inst. Tool	-	10	-	-	-	-	-	-	-	-	-
12058.W6050	Inst. Tool	-	12	-	-	-	-	-	-	-	-	-
12058.W6060	Inst. Tool	-	16	-	-	-	-	-	-	-	-	63.5



# XYZ Xpansion Pins threaded installation



## Pull Back Inserts



12059

PULL BACK INSERTS

### Material

Stainless steel (17-4PH, AISI 630) or steel (12L14). Pin and screw supplied together. Replacement pins can be ordered separately, see parts 12059.W5010-12059.W5020. Supplied as one pin and one tapered screw.

### Technical Notes

XYZ Xpansion pins provide a cost-effective workholding solution for tombstones, grid and fixture plates, enabling full tool access to the work surface with no external clamping interference. Unique design provides accurate location and repeatability with high holding forces to secure parts on an internal diameter. Threaded XYZ Xpansion pins are installed

via a drilled and reamed hole for precise location, or set in a hardened drill bush for additional fixture strength and wear resistance.  $d_2$  tolerance  $+0.00/-0.025$ .

### Tips

Designed for applications requiring quick set-up on secondary operation, water jetting or even non machining applications where discrete location and clamping of parts is required.

### Important Notes

Clamping of component achieved via tightening of tapered screw to expand the XYZ pin collet; expansion of 0,7mm is possible. The top of the pin has been slightly tapered to maximise line contact in the routing

bore and to provide adequate clearance during loading and unloading of workpieces.

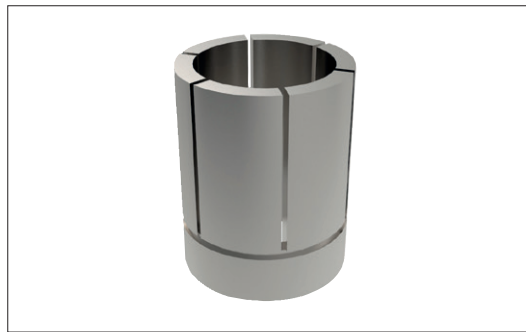
If installing pin in a precision bore, drill and ream the hole over the nominal diameter  $d_2$  by minimum  $+0,003$  to  $+0,013$  mm.

If recessing pin into a fixture at a depth below the collet slits, be sure to provide sufficient clearance to allow for expansion of clamp (approx. 0,7mm).

$d_2$  min. \* is the minimum diameter to which the pin can be machined down.

The tapered screws listed on the data table are for replacement purposes.

Order No.	Type	$l_1$	$d_1$	$d_2$ $+0.00 -0.025$	$d_2$ min.*	$d_3$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
12059.W0050	Pin	-	M12x1,75	12	10.5	-	40	15	12	13	34
12059.W0060	Pin	-	M16x2,00	16	12.0	-	45	16	16	13	59
12059.W5010	Tapered Screw	30	-	-	-	M 6x1,00	-	-	-	-	9.1
12059.W5020	Tapered Screw	30	-	-	-	M 8x1,25	-	-	-	-	14



Expansion pins are the ideal solution for securing parts on the inside diameter on tombstones, grid and fixture plates.

The unique design achieves accurate location, repeatability and high holding forces for securing parts and provide discrete workholding and full accessibility to the work surface with no external clamping interference.

Location accuracy is achieved through the close tolerance between the Xpansion pin's locating diameter and busing internal diameter. The top of the pins have a slight taper to maximise line contact in the bore, and to provide clearance during loading and unloading.

Pins expand up to 0.7mm, with the pin's diameter machinable to your specific application.

Ideal for quick set-up on secondary operation, water jetting operations, or even applications outside of a machining centre.

Available in long threaded version, or shorter press fit model. Serrated and smooth finish in both M12 and M16 threads.

Easy to Install



Design simple fixture plate with Xpansion pins located to suit your component, the same hole spacing will be used in the workpiece/raw stock for mounting bolt holes.



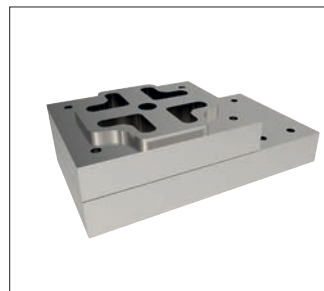
Install the Xpansion pin into the fixture plate.



Install the Xpansion pin's tapered drive screw into fixture plate.



Load workpiece raw stock onto Xpansion pins and tighten tapered drive screws to clamp.



Run first operation – note the clear tooling path possible with no noticeable external clamping interference.

- Flip the part and locate on the same Xpansion pins for operation two.
- Xpansion pins provide a quick, accurate and low cost fixture solution.

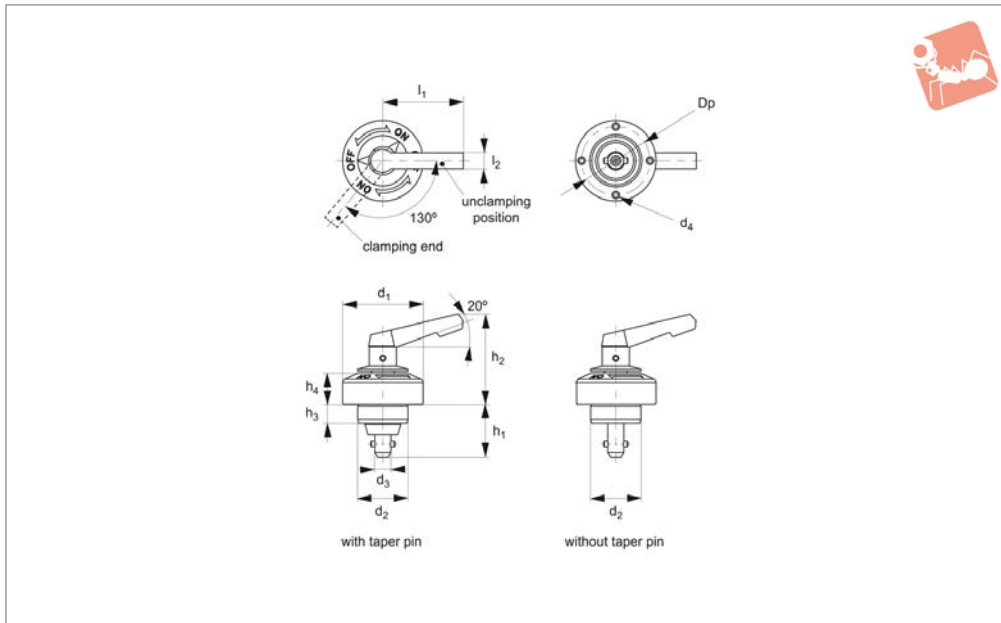




# One-Touch Flex Locator Clampers



## Pull Back Inserts



**12085.1**

PULL BACK INSERTS

### Material

Body/shank: steel (SCM440), black oxide finish.

Tapered pin: steel (SCM440), nitrocarburised.

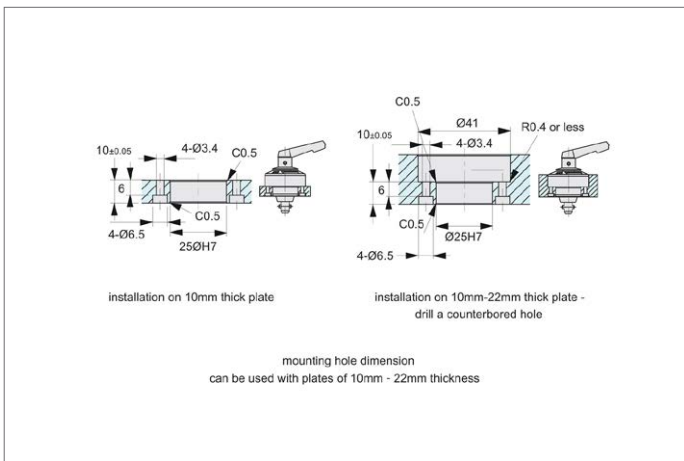
Handle: die-cast zinc (ZDC1), silver-grey painted.

Pin: stainless steel (AISI 303, 1.4305).

### Technical Notes

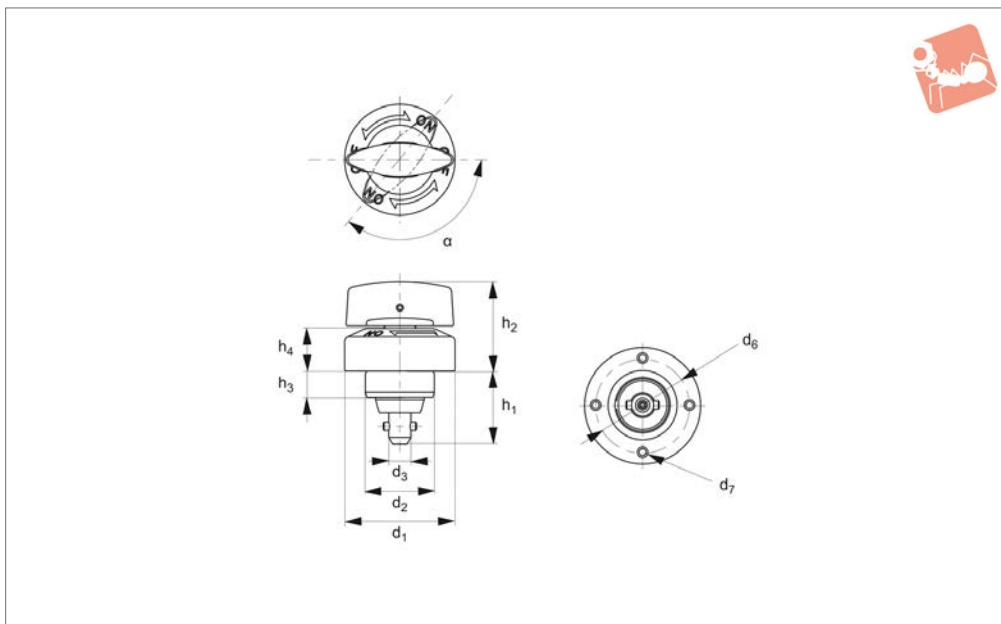
The lifting force is the power of the inner spring of the body to push up the moveable tapered pin.

Order No.	Tapered pin	Size	Clamping force N	$l_1$	$l_2$	Dp	$d_1$	$d_2$ tol. G6	$d_3$	$d_4$	$h_1$	$h_2$	$h_3$	$h_4$	Lifting force N	Weight g
<b>12085.W0008</b>	With	8	600	40	8	34	40	25	8	M 3x0,5	26	45	9,5	15,5	100	220
<b>12085.W0108</b>	Without	8	700	40	8	34	40	25	8	M 3x0,5	26	45	9,5	15,5		215





12085.2



**Material**

Body/shank: steel (AISI 4140, 42CrMo4), black oxide finish.

Tapered pin: steel (AISI 4140, 42CrMo4), nitrocarburised.

Knob: stainless steel (AISI 304, 1.4308).

Pin: stainless steel (AISI 303, 1.4305).

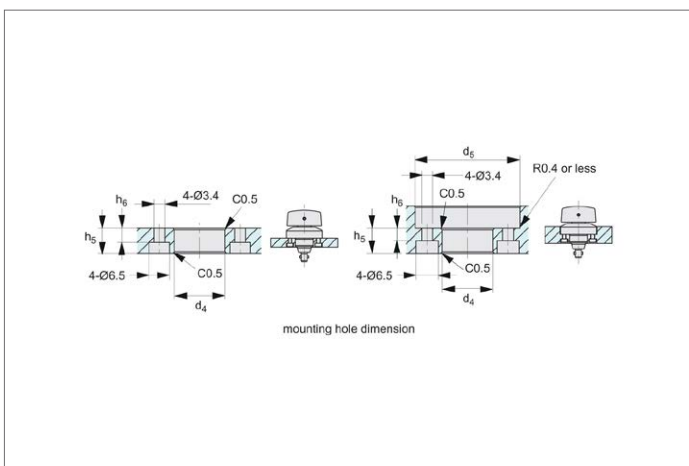
**Technical Notes**

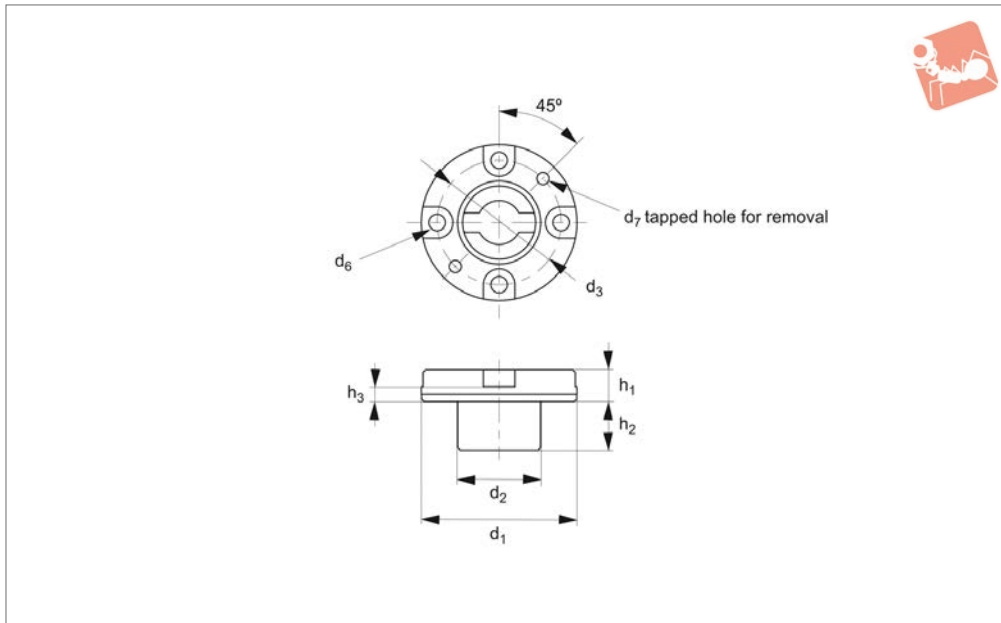
The lifting force is the power of the inner spring of the body to push up the moveable tapered pin.

**Tips**

Flex locator bushing: for .W0206, see part no. 12085.W0506. For .W0208, see part no. 12085.W0508.

Order No.	Size	Clamping force N	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	Lifting force N	α	Weight g
12085.W0206	6	350	32	16	5.5	16	33	25.5	M 3x0,5	22	27	7.5	12.0	8	4	30	120°	96
12085.W0208	8	600	40	25	8.0	25	41	34.0	-	26	32	9.5	15.5	10	6	100	130°	211





**12085.3**

PULL BACK INSERTS

### Material

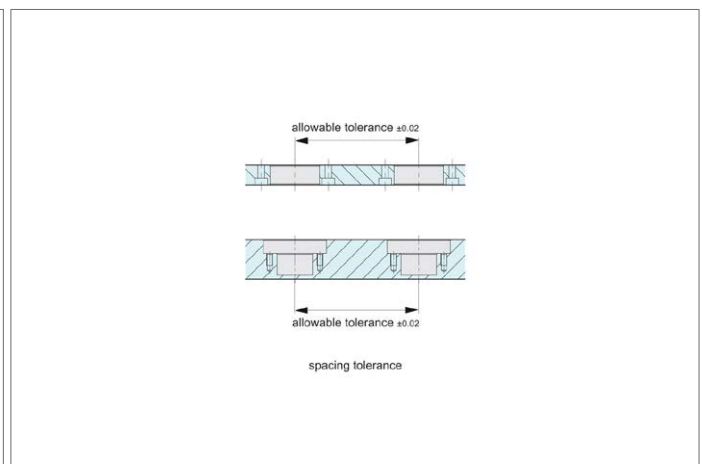
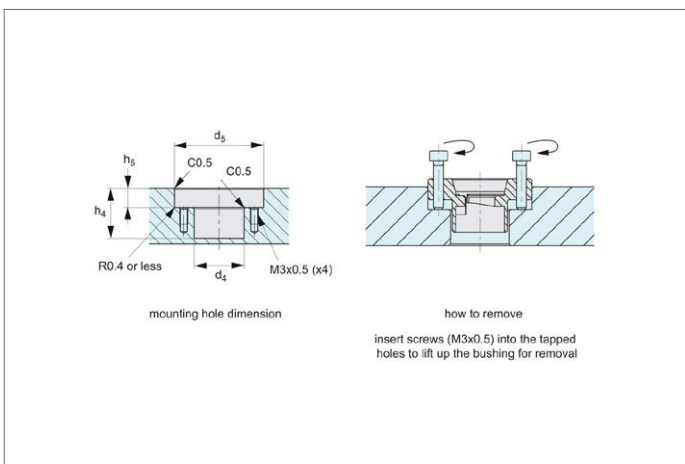
Stainless steel (AISI 304, 1.4301).

no. 12108. Use plates to avoid any deformation to workpiece during clamping.

### Technical Notes

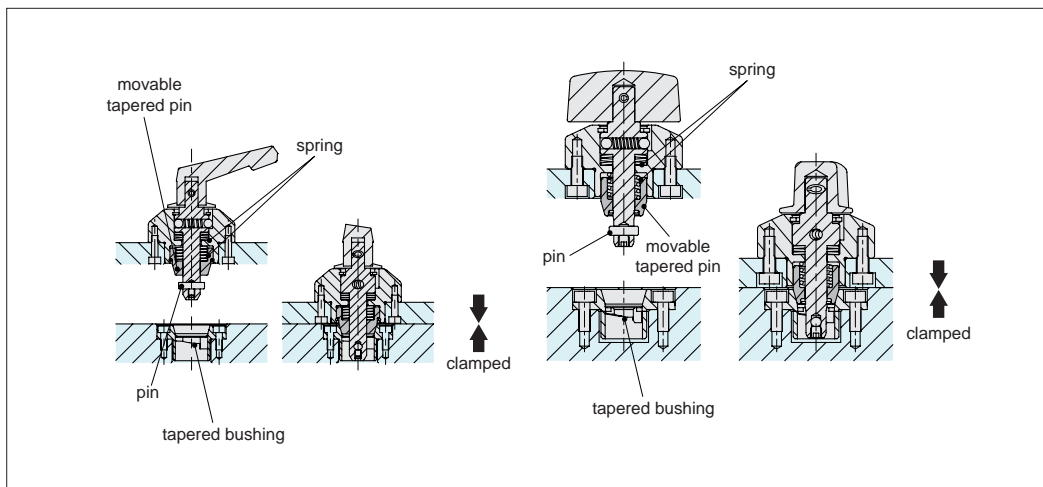
Clamping plates for spiral cam clamp, part

Order No.	Size	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	Weight g
12085.W0506	6	28	12.5	21.5	13.5	28	3.4	M 3x0,5	5.5	8	2	15	6	20
12085.W0508	8	32	17	25.5	18.0	32	3.4	M 3x0,5	6.5	10	3	18	7	32



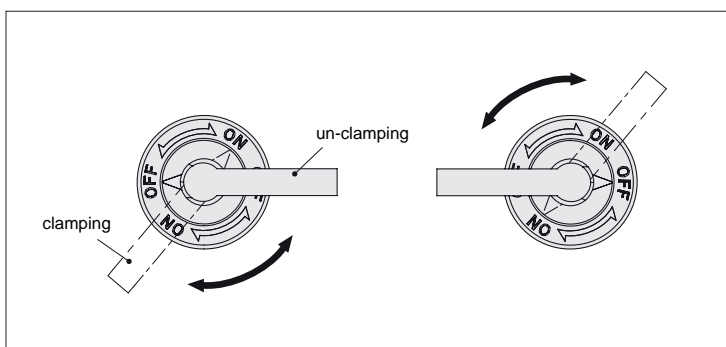


## Feature



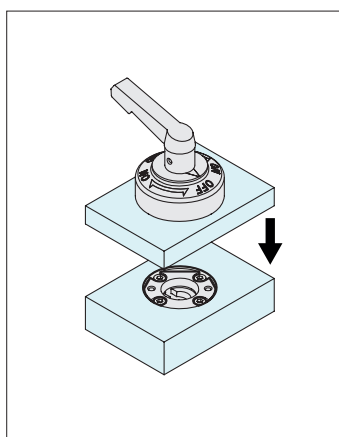
- The plates are located by fitting the tapered pin and the tapered bushing.
- The pin contacts the cam surface inside the bushing, and it compresses the inner spring, then the plates are clamped.

Note: 12085.W0108 does not have locating function.



Two clamping and unclamping positions of handle can be chosen for 12085.W0008/W0108

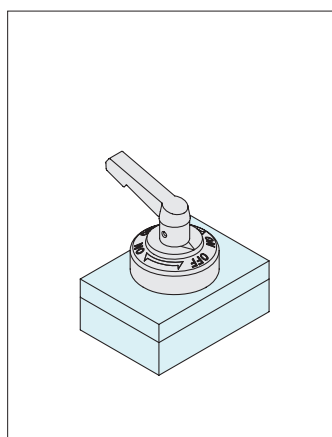
## How to Operate



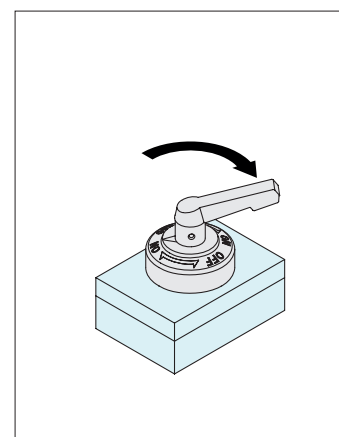
1. Ensure the handle is positioned at 'OFF' mark.

\*Follow back these steps for unclamping

\*Same operation for knob style.



2. Insert the clammer to the bushing.



3. Turn the handle to 'ON' mark for clamping.



# One Touch Flex Locator Clampers

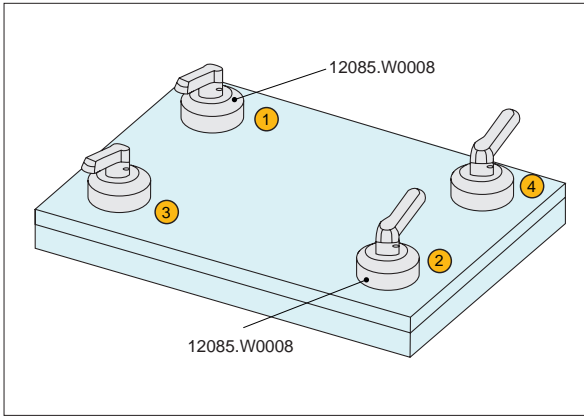
how to use



## 12085

Clamping & Height Setting

### Tightening Order



Ensure the handle is positioned at 'OFF' mark and lift down the fixture plate.

Turn the handle and clamp in order of

① - ② - ③ - ④

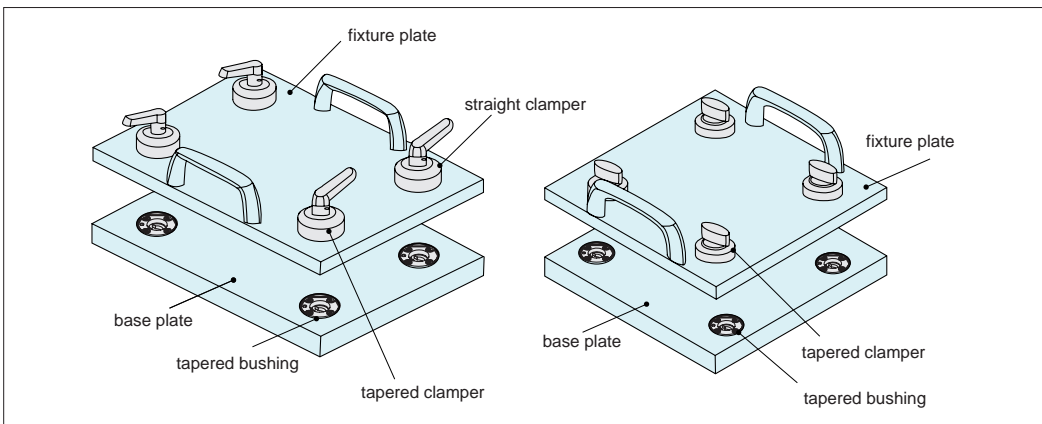
\*For unclamping, ensure the handle is positioned at 'OFF' mark and disassemble the fixture plate.

If the handles are not tightened in the correct order, the locating repeatability may exceed 10 µm.

### How to Use

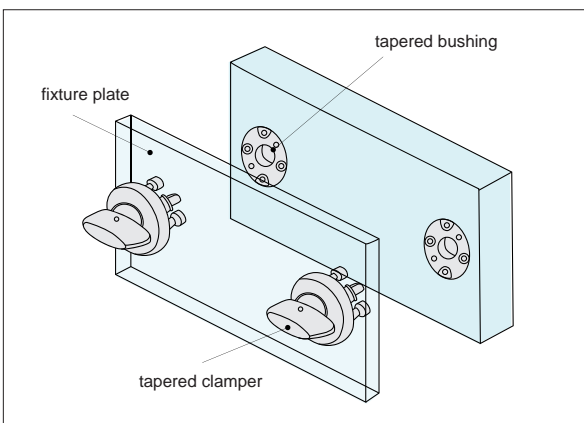
#### Horizontal Assembly of Fixture Plate

Note: Ensure not to lift the fixture plate up and down with gripping the handle of the clampers.



#### Vertical Assembly of Fixture Plate

Note: Locating repeatability is 10 µm.



Clamp and Bush Combination		Max. Loading Capacity (N)
12085.W0206	Ø6	120
12085.W0008	Ø8	400
12085.W0108	Ø8	400
12085.W0208	Ø8	400

Note: The maximum load is the entire sum of the load of fixture plates, fixtures and workpieces.

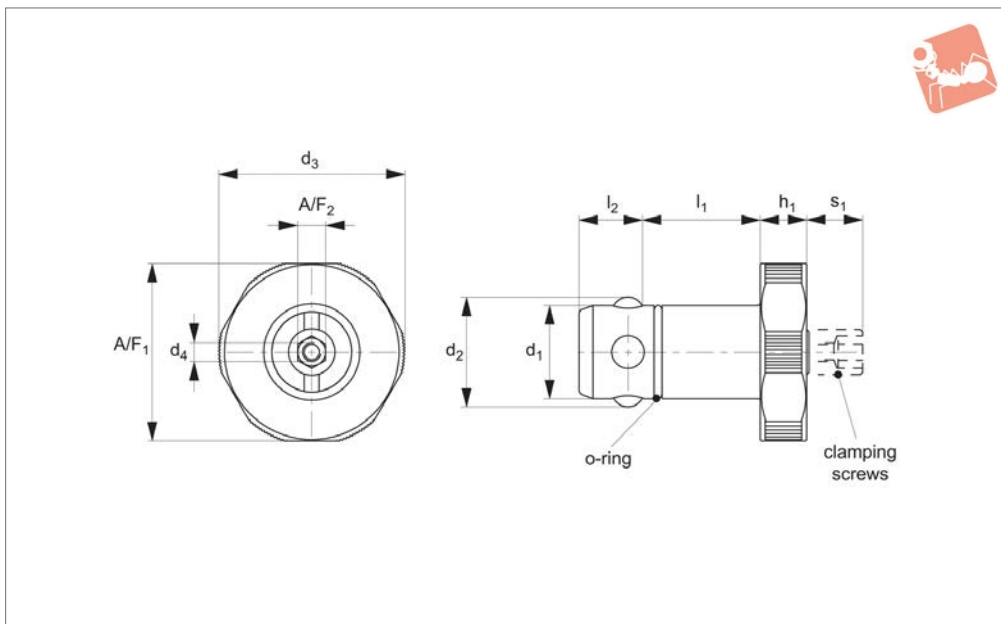
The maximum loading capacity shown is the value when two sets of tapered clamping and tapered bushing are used.

PULL BACK INSERTS

ov-W12085.1-A-T-W12085.3-A-T-how-to-use-one-touch-flex-locators-b-rmh - Updated -24-10-2022



## 12090



### Material

Steel version: heat treated steel, tempered and blackened.

Stainless steel version: precipitation hardened stainless steel (17-4PH, AISI 630).

### Technical Notes

By tightening the clamping screw, the

positioning clamping pin is centered and clamped via the four balls, into the locating bush.

The clamping screw can be operated manually via a removable handle or hex. key.

### Tips

For removable handle see part no. 12091.

### Important Notes

The positioning clamping pin allows fast clamping, fastening, adjusting, changing and securing of workpieces, plates, fixture systems etc.

Order No.	Material	$l_1$ +0.6	$l_2$ $\pm 1$	$d_1$ -0.02 - 0.05	$d_2$	$d_3$	$d_4$	For clamping plate thickness $\pm 0.05$	$h_1$	Holding force kN	Stroke $s_1$ max.	A/F <sub>1</sub>	A/F <sub>2</sub>	Weight g
12090.W0016	Steel	25	13,6	16	18,7	32	M 4	20	10	5	9	30	6	105
12090.W0018	Steel	30	13,6	16	18,7	32	M 4	25	10	5	9	30	6	115
12090.W0020	Steel	25	13,6	20	23,6	40	M 4	20	10	6	9	38	6	170
12090.W0022	Steel	30	13,6	20	23,6	40	M 4	25	10	6	9	38	6	185
12090.W0025	Steel	25	18,6	25	29,0	45	M 4	20	10	8	9	43	10	255
12090.W0027	Steel	30	18,6	25	29,0	45	M 4	25	10	8	9	43	10	275
12090.W0030	Steel	25	18,6	30	34,6	55	M 4	20	10	10	9	53	10	375
12090.W0032	Steel	30	18,6	30	34,6	55	M 4	25	10	10	9	53	10	400
12090.W0116	Stainless Steel	25	13,6	16	18,7	32	M 4	20	10	5	9	30	6	105
12090.W0118	Stainless Steel	30	13,6	16	18,7	32	M 4	25	10	5	9	30	6	115
12090.W0120	Stainless Steel	25	13,6	20	23,6	40	M 4	20	10	6	9	38	6	170
12090.W0122	Stainless Steel	30	13,6	20	23,6	40	M 4	25	10	6	9	38	6	185
12090.W0125	Stainless Steel	25	18,6	25	29,0	45	M 4	20	10	8	9	43	10	255
12090.W0127	Stainless Steel	30	18,6	25	29,0	45	M 4	25	10	8	9	43	10	275
12090.W0130	Stainless Steel	25	18,6	30	34,6	55	M 4	20	10	10	9	53	10	375
12090.W0132	Stainless Steel	30	18,6	30	34,6	55	M 4	25	10	10	9	53	10	400

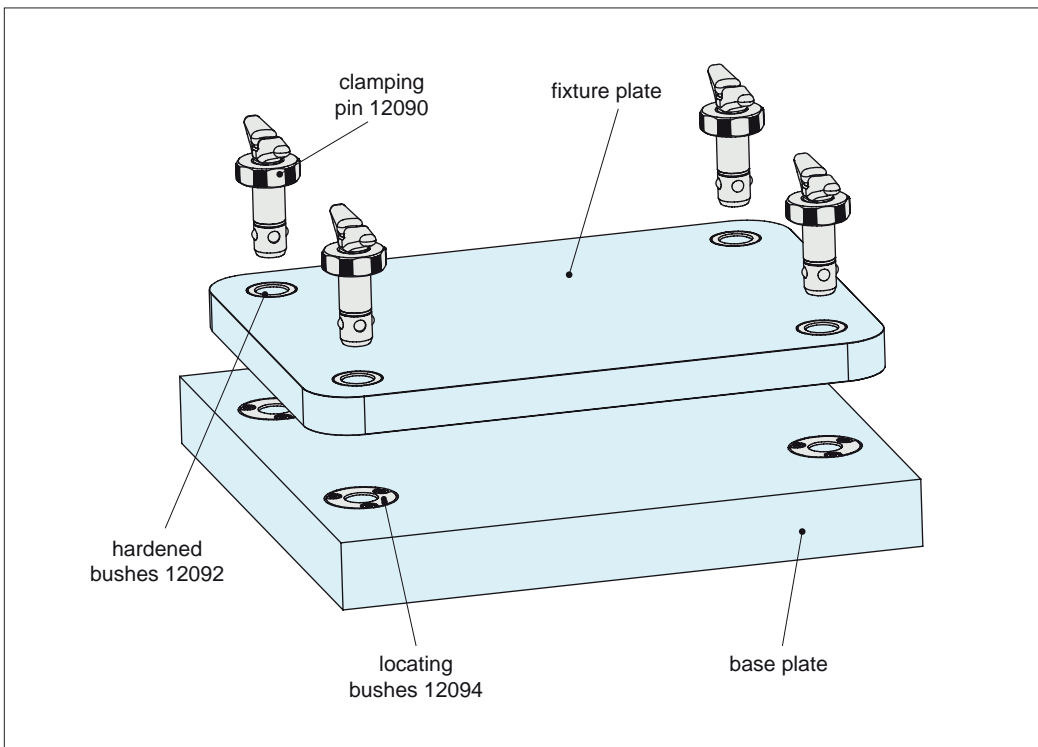
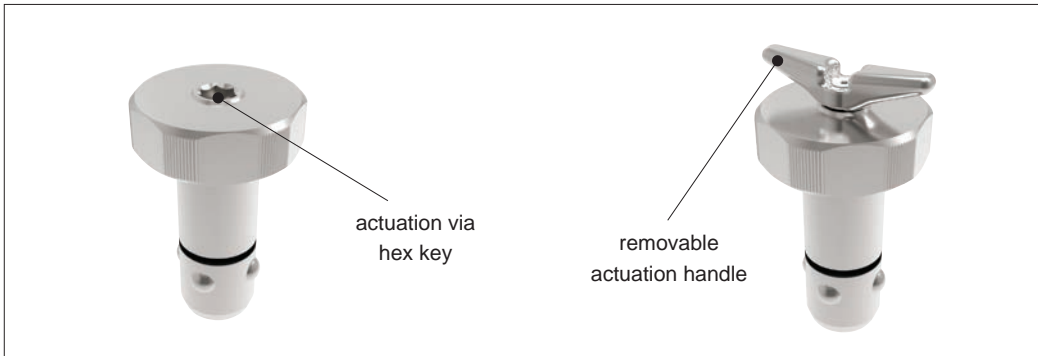


By tightening the clamping screws, the positioning clamping pin is centered and clamped with four balls in the locating bush. The clamping screw can be operated manually via a removable handle or via a hex. key.

### Advantages

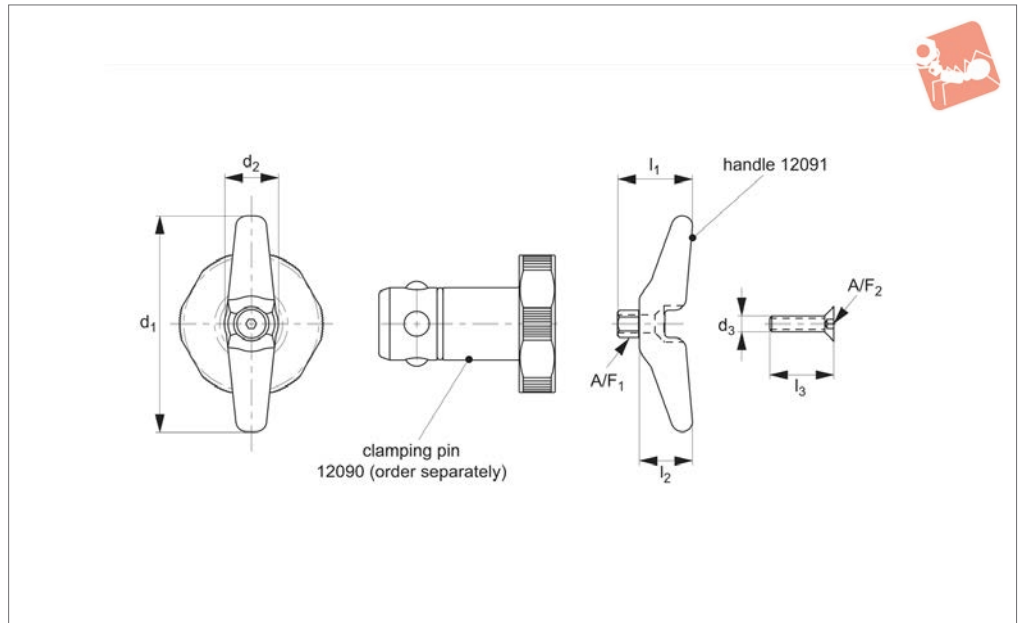
### Overview

- Advantages of initial spring tension:
  - Abrasion resistant.
  - Clamping ball and location hole are protected from overload.
  - No seizing of the pin through overloading.
  - Reduces vibration during machining.
  - Eliminates unintentional unlocking of the system (e.g. due to system vibration).
- High repeatability of  $\pm 0.03\text{mm}$ .
- Simple installing /uninstalling using a spanner faces and knurling.
- Low construction height.
- Operation via hex. key or optional handle.





**12091**



**Material**

Stainless steel.

**Technical Notes**

The handle enables easy and fast operation

of the positioning clamping pin. The handle is tightened to the positioning clamping pin with the M4 screw included in the delivery.

Order No.	For pin dia.	$l_1$	$l_2$	$l_3$	$d_1$	$d_2$	$d_3$	$A/F_1$	$A/F_2$	Weight g
<b>12091.W0900</b>	16/20	20	15	16	60	15	M 4	6	3	45
<b>12091.W0902</b>	25/30	25	20	20	80	15	M 4	10	3	80

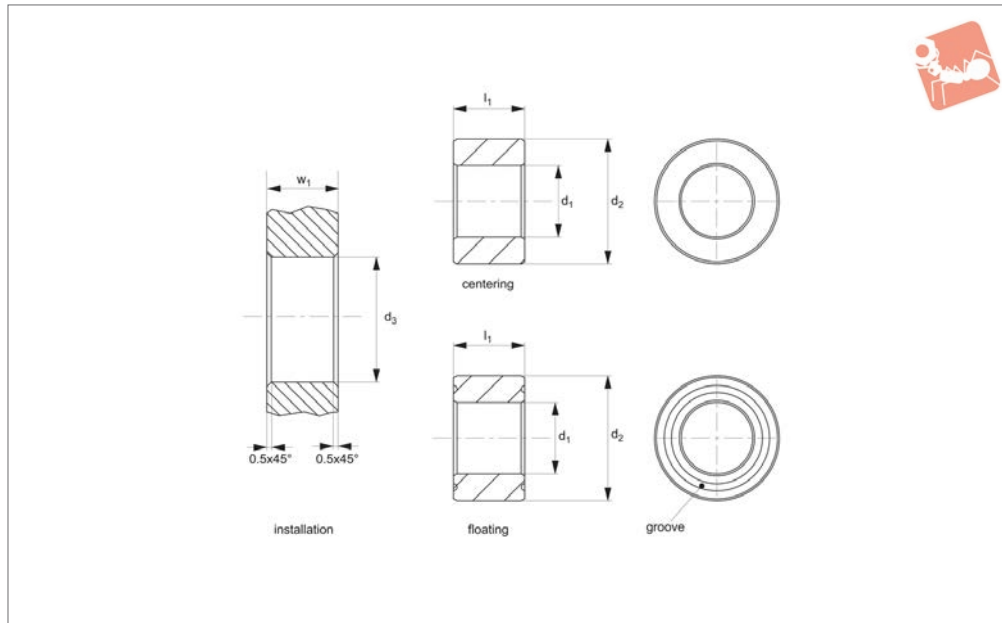




# Bushings for positioning clamping pins 12090



# Pull Back Inserts



**12092**

PULL BACK INSERTS

### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: hardened stainless

steel (AISI 440B, 1.4112).

### Technical Notes

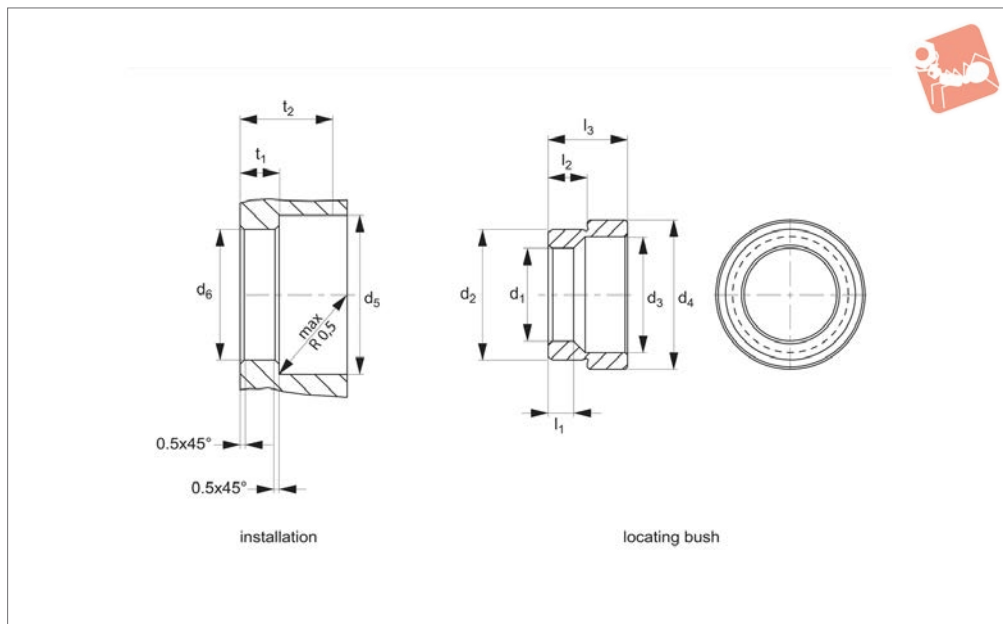
Mount two centering and two floating

bushings into the mounting plate to achieve optimal repeatability. The floating bush has a groove which serves as a differentiation mark.

Order No.	Type	Material	$l_1$ -0.25 -0.5	$d_1$ tol. F6	$d_1$ +0.2	$d_2$ tol. n6	$w_1$ $\pm 0.05$	$d_3$ tol. H7	Weight g
12092.W0702	Centering	Steel	20	16	-	25	20	25	45
12092.W0704	Centering	Steel	25	16	-	25	20	25	55
12092.W0706	Centering	Steel	20	20	-	35	20	25	100
12092.W0708	Centering	Steel	25	20	-	35	20	25	125
12092.W0710	Centering	Steel	20	25	-	35	20	25	75
12092.W0712	Centering	Steel	25	25	-	35	20	25	95
12092.W0714	Centering	Steel	20	30	-	45	20	25	140
12092.W0716	Centering	Steel	25	30	-	45	20	25	175
12092.W0732	Floating	Steel	20	-	16.8	25	20	25	42
12092.W0734	Floating	Steel	25	-	16.8	25	20	25	52
12092.W0736	Floating	Steel	20	-	20.8	35	20	25	95
12092.W0738	Floating	Steel	25	-	20.8	35	20	25	120
12092.W0740	Floating	Steel	20	-	25.8	35	20	25	70
12092.W0742	Floating	Steel	25	-	25.8	35	20	25	85
12092.W0744	Floating	Steel	20	-	30.8	45	20	25	135
12092.W0746	Floating	Steel	25	-	30.8	45	20	25	165
12092.W0802	Centering	Stainless Steel	20	16	-	25	20	25	45
12092.W0804	Centering	Stainless Steel	25	16	-	25	20	25	55
12092.W0806	Centering	Stainless Steel	20	20	-	35	20	25	100
12092.W0808	Centering	Stainless Steel	25	20	-	35	20	25	125
12092.W0810	Centering	Stainless Steel	20	25	-	35	20	25	75
12092.W0812	Centering	Stainless Steel	25	25	-	35	20	25	95
12092.W0814	Centering	Stainless Steel	20	30	-	45	20	25	140
12092.W0816	Centering	Stainless Steel	25	30	-	45	20	25	175
12092.W0832	Floating	Stainless Steel	20	-	16.8	25	20	25	42
12092.W0834	Floating	Stainless Steel	25	-	16.8	25	20	25	52
12092.W0836	Floating	Stainless Steel	20	-	20.8	35	20	25	95
12092.W0838	Floating	Stainless Steel	25	-	20.8	35	20	25	120
12092.W0840	Floating	Stainless Steel	20	-	25.8	35	20	25	70
12092.W0842	Floating	Stainless Steel	25	-	25.8	35	20	25	85
12092.W0844	Floating	Stainless Steel	20	-	30.8	45	20	25	135
12092.W0846	Floating	Stainless Steel	25	-	30.8	45	20	25	165



## 12093



### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: hardened stainless

steel (AISI 440B, 1.4112).

### Technical Notes

The press fit locating bush for positioning

clamping pins are inserted in the machine table or the base plate with light pressure.

Order No.	Material	$l_1$	$l_2$	$l_3$	$d_1$ tol. F6	$d_2$ $\pm 0.01$	$d_3$	$d_4$	$d_5$ +1	$d_6$ tol. H7	$t_1$ $\pm 0.025$	$t_2$ min.	Weight g
12093.W0762	Steel	5.3	6.9	12.1	16	22	20	28.6	31	22	7.3	22	25
12093.W0764	Steel	5.3	8.4	17.1	20	28	25	32.2	34	28	8.8	22	40
12093.W0766	Steel	5.3	10.2	21.0	25	35	31	40.2	42	35	10.6	28	80
12093.W0768	Steel	5.3	10.6	21.8	30	42	37	48.2	50	42	11.0	28	115
12093.W0862	Stainless Steel	5.3	6.9	12.1	16	22	20	28.6	31	22	7.3	22	25
12093.W0864	Stainless Steel	5.3	8.4	17.1	20	28	25	32.2	34	28	8.8	22	40
12093.W0866	Stainless Steel	5.3	10.2	21.0	25	35	31	40.2	42	35	11.0	28	80
12093.W0868	Stainless Steel	5.3	10.6	21.8	30	42	37	48.2	50	42	11.0	28	115

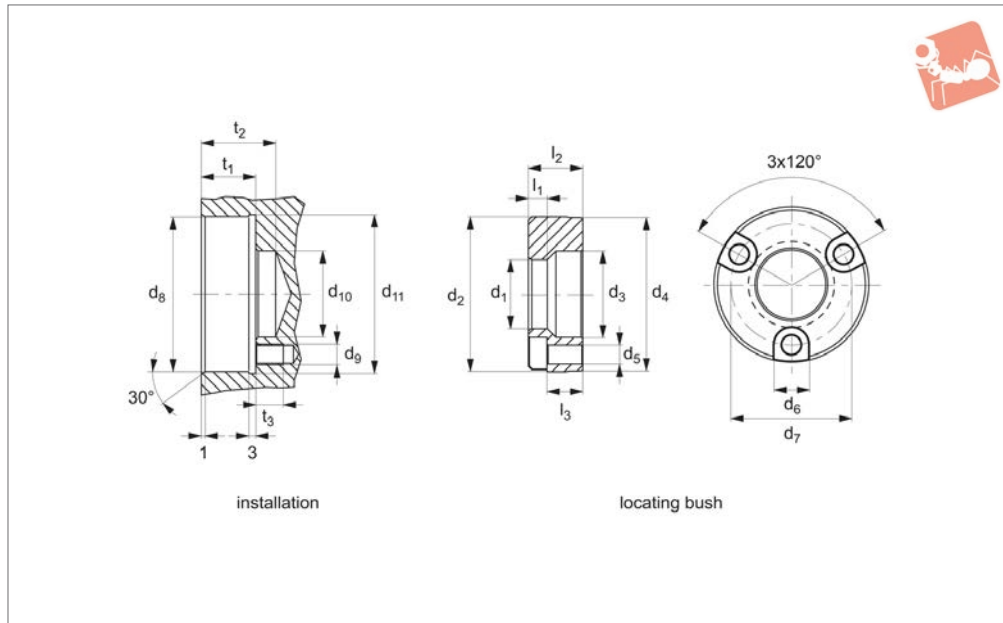


# Locating Bushings

for positioning clamping pins 12090 - screw fit



## Pull Back Inserts



**12094**

PULL BACK INSERTS

### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: precipitation-hardened stainless steel (17-4 PH, AISI

630, 1.4542).

### Technical Notes

The screw fit locating bushings for positioning clamping pins are inserted in the

machine table or in the base plate and are screwed on.

### Important Notes

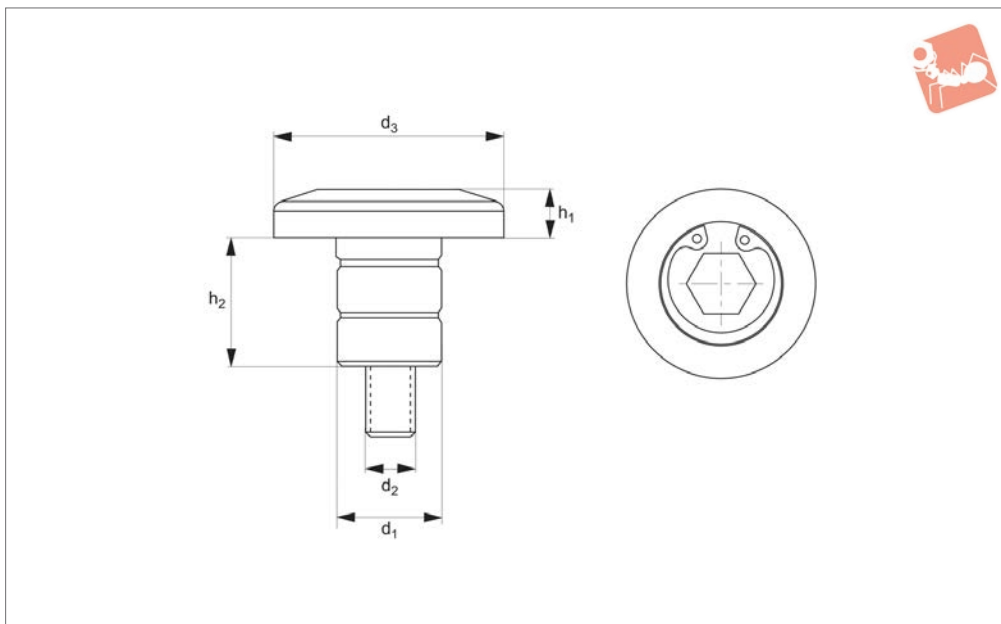
Supplied with mounting screws.

Order No.	Material	$l_1$	$l_2$	$l_3$ ≈	$d_1$ tol. F6 +0.01	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$d_8$ tol. H7	$d_9$	$d_{10}$ +1	$d_{11}$	$t_1$ ±0.02	$t_2$	$t_3$	Weight g
<b>12094.W0782</b>	Steel	5,3	11,6	7,0	16	37	20	36,5	4,5	8	29	37	M 4	20	38,5	11,9	22	12	70
<b>12094.W0784</b>	Steel	5,3	15,8	10,0	20	45	25	44,5	5,5	10	35	45	M 5	25	46,5	16,2	22	12	130
<b>12094.W0786</b>	Steel	5,3	19,9	13,5	25	55	31	54,5	6,6	11	42	55	M 6	31	56,5	20,3	28	14	245
<b>12094.W0788</b>	Steel	5,3	21,8	15,0	30	60	37	59,5	6,6	11	48	60	M 6	37	61,5	22,2	28	14	195
<b>12094.W0882</b>	Stainless Steel	5,3	11,6	7,0	16	37	20	36,5	4,5	8	29	37	M 4	20	38,5	11,9	22	12	70
<b>12094.W0884</b>	Stainless Steel	5,3	15,8	10,0	20	45	25	44,5	5,5	10	35	45	M 5	25	46,5	16,2	22	12	130
<b>12094.W0886</b>	Stainless Steel	5,3	19,9	13,5	25	55	31	54,5	6,6	11	42	55	M 6	31	56,5	20,3	28	14	245
<b>12094.W0888</b>	Stainless Steel	5,3	21,8	15,0	30	60	37	59,5	6,6	11	48	60	M 6	37	61,5	22,2	28	14	195





## 12095.1



### Material

Heat-treated steel, alloy with black oxide finish. High tensile strength (180 000+ PSI or 1241 MPa) and hardness (46 HRC).

### Technical Notes

Easy locating - installs and locks in

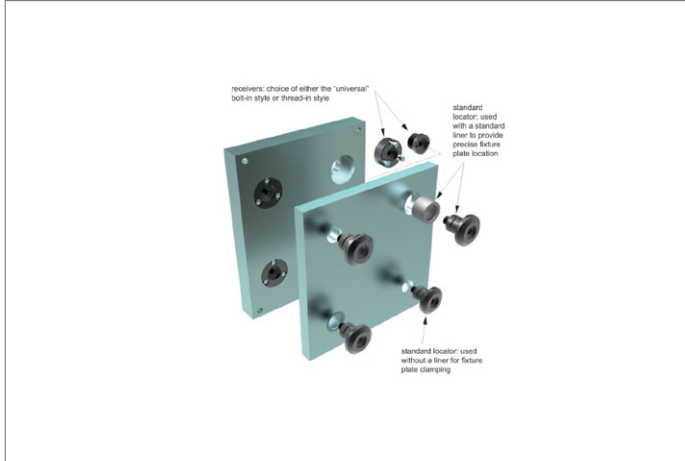
seconds, offers  $\pm .0004$ " repeatability.

### Tips

The exclusive self-extracting mechanism eliminates the need for prying, pounding or using jack screws to separate fixture and base plates. It enables the locator unit to

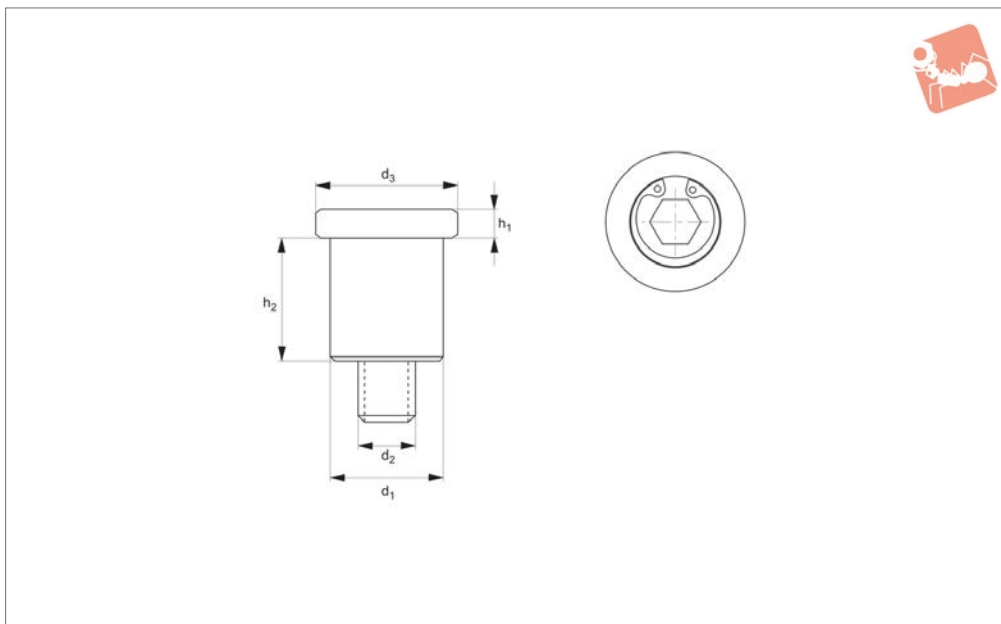
be easily removed from counterbored installations.

Order No.	Fixture plate thickness inch $\pm 0.005$	d <sub>1</sub> mm	d <sub>2</sub> UNF-2B	d <sub>3</sub> inch	h <sub>1</sub> inch	h <sub>2</sub> inch	Hold down force lb max.	Tightening torque ft-lb max.
12095.W0131	0.50	13	1/4"-20	1.00	0.25	0.78	2964	13
12095.W0132	0.75	13	1/4"-20	1.00	0.25	1.03	2964	13
12095.W0161	0.50	16	5/16"-18	1.38	0.31	0.78	5385	26
12095.W0162	0.75	16	5/16"-18	1.38	0.31	1.03	5385	26
12095.W0163	1.00	16	5/16"-18	1.38	0.31	1.28	5385	26
12095.W0201	0.75	20	3/8"-16	1.63	0.38	1.07	8107	46
12095.W0202	1.00	20	3/8"-16	1.63	0.38	1.32	8107	46
12095.W0203	1.50	20	3/8"-16	1.63	0.38	1.82	8107	46
12095.W0204	2.00	20	3/8"-16	1.63	0.38	2.32	8107	46
12095.W0251	0.75	25	1/2"-13	1.80	0.41	1.07	14709	113
12095.W0252	1.00	25	1/2"-13	1.80	0.41	1.32	14709	113
12095.W0254	1.50	25	1/2"-13	1.80	0.41	1.82	14709	113
12095.W0255	2.00	25	1/2"-13	1.80	0.41	2.32	14709	113
12095.W0301	0.75	30	1/2"-13	2.13	0.50	1.15	22623	213
12095.W0302	1.00	30	5/8"-11	2.13	0.50	1.40	22623	213
12095.W0303	1.50	30	5/8"-11	2.13	0.50	1.90	22623	213
12095.W0304	2.00	30	5/8"-11	2.13	0.50	2.40	22623	213
12095.W0351	0.75	35	3/4"-10	2.25	0.50	1.15	31572	375
12095.W0352	1.00	35	3/4"-10	2.25	0.50	1.40	31572	375
12095.W0353	1.50	35	3/4"-10	2.25	0.50	1.90	31572	375
12095.W0534	2.00	35	3/4"-10	2.25	0.50	2.40	31572	375
12095.W0501	0.75	50	1-8	3.00	0.69	1.27	46958	781
12095.W0502	1.00	50	1-8	3.00	0.69	1.52	46958	781
12095.W0503	1.50	50	1-8	3.00	0.69	2.02	46958	781
12095.W0504	2.00	50	1-8	3.00	0.69	2.52	46958	781





**12095.2**



**Material**

Steel, heat-treated alloy, black oxide finish.  
Tensile strength 180,000+ PSI or 1241 MPa.  
Hardness 46 HRC.

**Technical Notes**

Easy locating - installs and locks in

seconds.

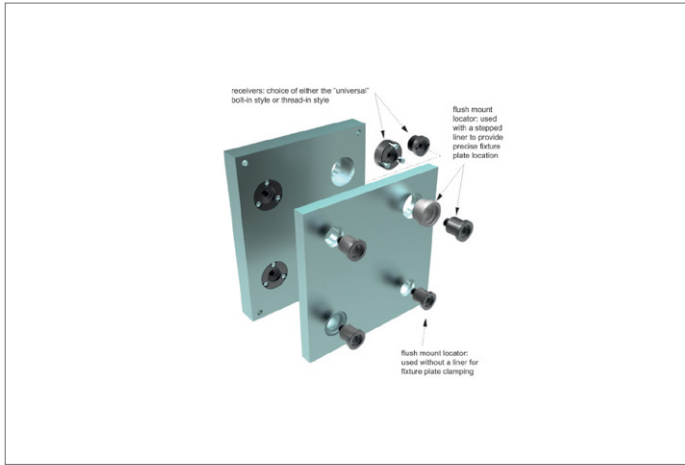
Offers ±0,0004" repeatability.

**Tips**

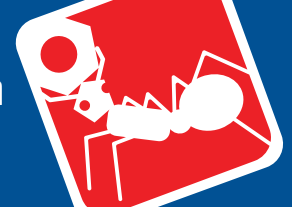
The exclusive self-extracting mechanism eliminates the need for prying, pounding or using jack screws to separate fixture and base plates. It enables the locator unit to be easily removed from counterbored

installations.

Order No.	Fixture plate thickness ±0.005
12095.W2131	0.50
12095.W2132	0.75
12095.W2161	0.50
12095.W2162	0.75
12095.W2163	1.00
12095.W2201	0.75
12095.W2202	1.00
12095.W2203	1.50
12095.W2204	2.00
12095.W2251	0.75
12095.W2252	1.00
12095.W2254	1.50
12095.W2255	2.00
12095.W2301	0.75
12095.W2302	1.00
12095.W2303	1.50
12095.W2304	2.00
12095.W2352	1.00
12095.W2353	1.50
12095.W2354	2.00
12095.W2503	1.50
12095.W2504	2.00



PULL BACK INSERTS



## Quick and Easy to Use with Every Load

### System Overview

The Wixroyd Precision Locating & Mounting System consists of locators, receivers and bushings for a wide range of tooling, fixturing, workholding, production, welding and assembly applications. They offer the ability to make fast, accurate set-up changes which enables significant improvements in machining productivity, throughput rates, quality and reduced operating costs.

Wixroyd has solved the typical problems associated with precision attachment and removal of fixture plates, tooling and accessories. The Wixroyd system eliminates the need to pry, pound and use jack screws to separate the fixture plate from the sub-plate or machine table. The Wixroyd system uses a threaded fastening device to mechanically extract the precision locator from its receiver, allowing easy separation of fixture plates, tooling and accessories. Unlike competitive ball locking products, the Wixroyd system does not require expensive "repair kits" since there are no rubber o-rings to break nor ball bearings to fall out or fracture.

### Usage

- Place fixture plate over sub-plate or machine table containing the Wixroyd receivers.
- Insert two Wixroyd precision locators through holes lined with hardened bushings and into the receivers.
- Insert two remaining locators into unlined holes and tighten to draw each locator to the desired torque.
- Total time require to unload existing fixture plates and load a new fixture plate is typically under 2 minutes.

### System Features

- Self- extracting – unique design enables easy and quick "self-extract" from tooling, fixturing etc. There is no binding or other issues to delay removal time or compromise accuracy of the locking system.
- Precise locating – repeatability of +/- 0.0004"
- High clamping strength – over 45,000 lbs
- Easy Installation – easily installed in a wide range of applications using standard tooling and machining practices.
- Compact – requires minimal space in tooling and fixture applications. Both standard and compact/flush mounting options.
- Can be retro-fitted with existing competitive ball lock type systems.

### Product Range



**12095.W0131 to .W0504** -  
Locator unit - standard



**12095.W2131 to .W2504** -  
Locator unit - compact



**12097.W0131 to .W0501** -  
Face mount receivers  
- standard



**12097.W2131 to .W2501** -  
Face mount compact  
receivers - compact



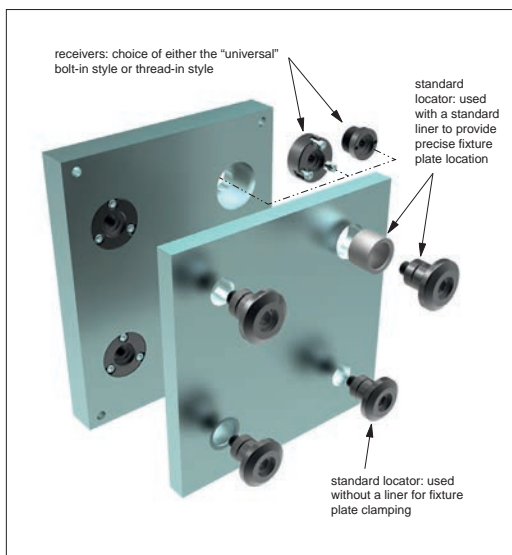


## Precision Locating and Mounting System

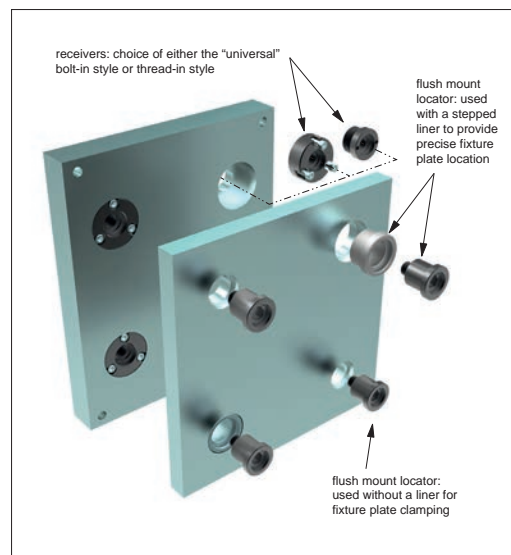
- Q. What is the Wixroyd Precision Locating & Mounting System?**  
 A. It is a means of locating and locking two flat surfaces together. These surfaces are most commonly a fixture plate and sub-plates, however, they are also used in many other applications because of their holding strength and accuracy.
- Q. How does it locate the fixture plate?**  
 A. The Wixroyd system locates with receivers in the base plate, liner bushings in the sub-plate and locator/fasteners locking the two surfaces together.
- Q. How many locators are needed to locate and fasten the fixture plate?**  
 A. Two locators with liner bushings are required to accurately position and two locators without liner bushings to fasten only.
- Q. How does it fasten?**  
 A. Locators use standard threads to hold the two surfaces together. By tightening the locators into the receivers very high holding forces can be achieved.
- Q. Can the Wixroyd system be mounted so the work pieces mounting surface is free from any interference?**  
 A. Yes, our compact of flush locators allow the head to lie flush with the fixture plate surface.
- Q. Can the system be used in high temperature applications?**  
 A. Yes, because all parts are made from heat treated alloy steel, temperatures up to +500F are not a problem. The user should account for thermal expansion of the fixture plates and bases that could affect tolerances.
- Q. Can Fixture plates be mounted in both the horizontal and vertical positions with the Wixroyd system?**  
 A. Yes, in vertical mounting applications Wixroyd offer optional docking hardware to “hang” the fixture plate from the tooling column before fastening the surfaces together.
- Q. Can a current ball locking type system be retrofit to work with the Wixroyd system?**  
 A. Yes, the universal bolt-in receiver will fit directly into the pocket that holds ball locking type receivers. Also, the Wixroyd system locators will fit the existing holes and liners of a fixture plate set up for ball locking systems.

## FAQs

PULL BACK INSERTS



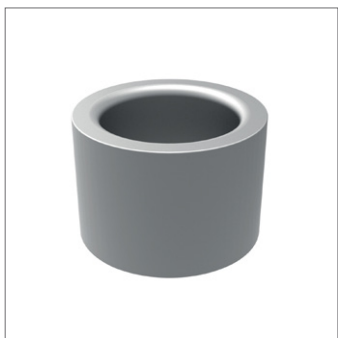
Standard locators



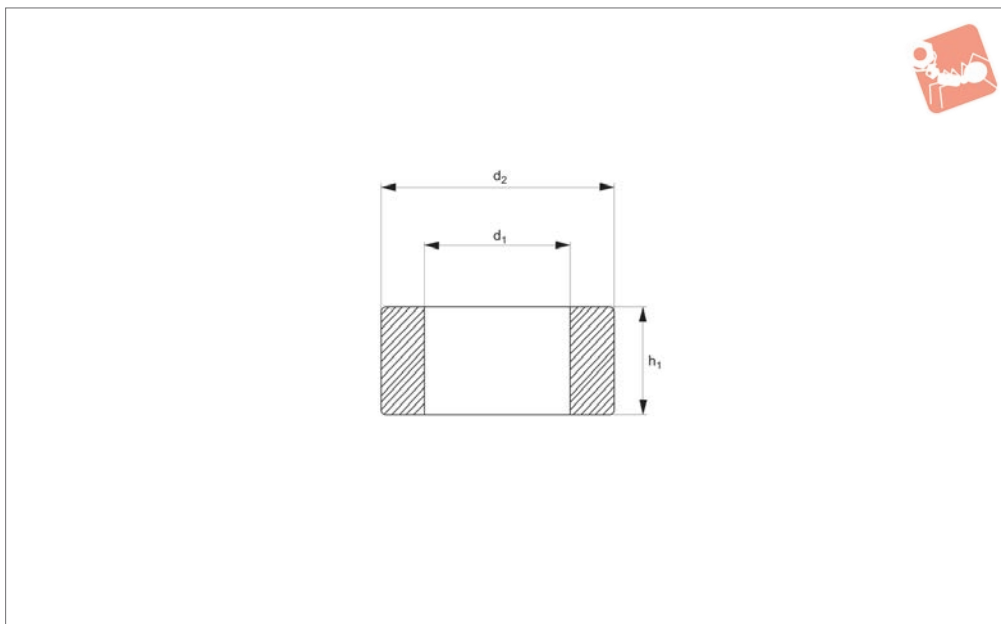
Flush mount locators

## Applications

ov-W12095.1-A-T-W12097.2-A-T-precision-locating-mounting-system-faqs-rmh - Updated -24-10-2022



**12096.1**



### Material

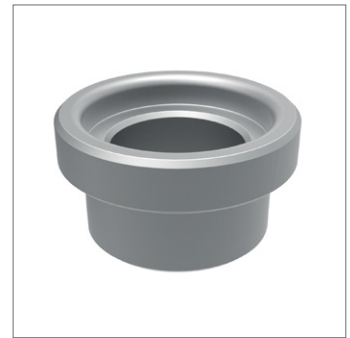
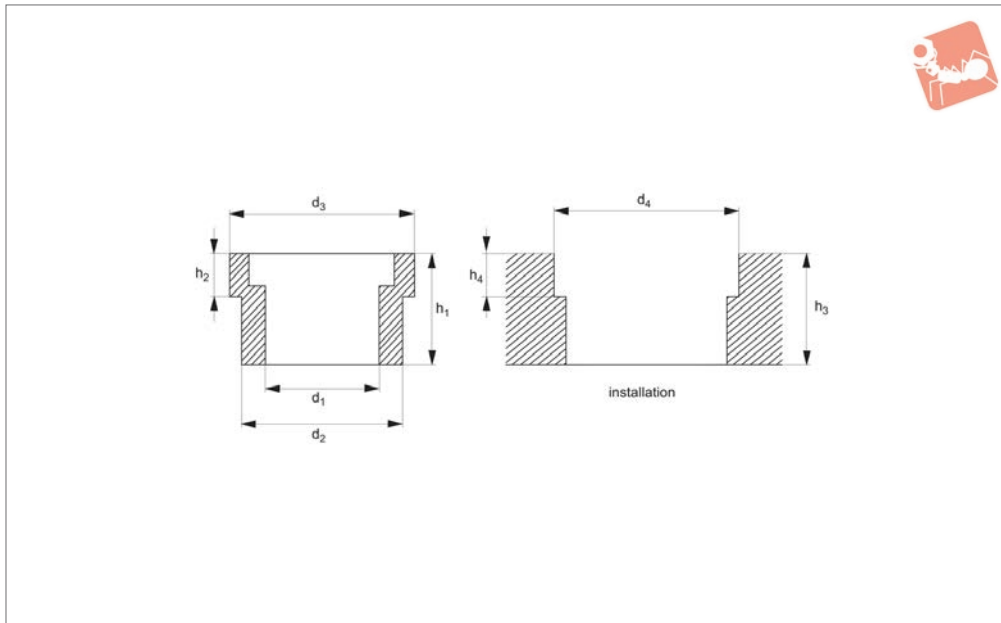
Alloy steel, hardness 62+ HRc.

the integrated locator unit system (part no. 12095), achieving precise and accurate machining results.

### Technical Notes

Liner bushings are a critical component of

Order No.	Fixture plate thickness inch ±0.005	d <sub>1</sub> mm	d <sub>2</sub> inch +0.0000 -0.0004	h <sub>1</sub> inch
12096.W0131	0.50	13	0.7518	0.45
12096.W0132	0.75	13	0.7518	0.70
12096.W0161	0.50	16	1.0018	0.45
12096.W0162	0.75	16	1.0018	0.70
12096.W0164	1.00	16	1.0018	0.95
12096.W0201	0.75	20	1.1270	0.70
12096.W0202	1.00	20	1.1270	0.95
12096.W0203	1.50	20	1.1270	1.45
12096.W0204	2.00	20	1.1270	1.95
12096.W0251	0.75	25	1.3772	0.70
12096.W0252	1.00	25	1.3772	0.95
12096.W0253	1.50	25	1.3772	1.45
12096.W0254	2.00	25	1.3772	1.95
12096.W0301	0.75	30	1.7523	0.70
12096.W0302	1.00	30	1.7523	0.95
12096.W0303	1.50	30	1.7523	1.45
12096.W0305	2.00	30	1.7523	1.95
12096.W0351	0.75	35	1.7523	0.70
12096.W0352	1.00	35	1.7523	0.95
12096.W0353	1.50	35	1.7523	1.45
12096.W0354	2.00	35	1.7523	1.95
12096.W0501	0.75	50	2.5025	0.70
12096.W0502	1.00	50	2.5025	0.95
12096.W0503	1.50	50	2.5025	1.45
12096.W0504	2.00	50	2.5025	1.95



### 12096.2

PULL BACK INSERTS

#### Material

Alloy steel, hardness 62+ HRC.

#### Technical Notes

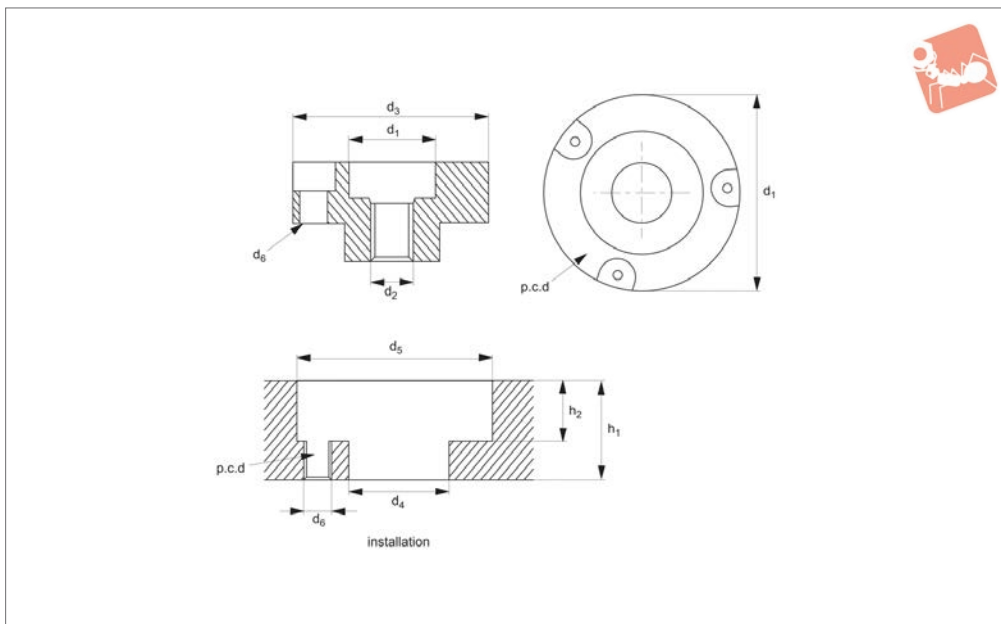
Liner bushings are a critical component of

the integrated locator unit system (part no. 12095), achieving precise and accurate machining results.

Order No.	d <sub>1</sub> mm	d <sub>2</sub> inch +0.0000 -0.0004	d <sub>3</sub> inch	d <sub>4</sub> plate c'bore dia. inch ±0.005	Fixture plate thickness h <sub>3</sub> inch ±0.005	h <sub>1</sub> inch	h <sub>2</sub> inch	h <sub>4</sub> plate c'bore depth inch +0.010 -0.005
12096.W2131	13	0.7518	0.92	0.94	0.50	0.45	0.22	0.23
12096.W2132	13	0.7518	0.92	0.94	0.75	0.70	0.22	0.23
12096.W2161	16	1.0018	1.23	1.25	0.50	0.45	0.31	0.33
12096.W2162	16	1.0018	1.23	1.25	0.75	0.70	0.31	0.33
12096.W2163	16	1.0018	1.23	1.25	1.00	0.95	0.31	0.33
12096.W2201	20	1.1270	1.36	1.38	0.75	0.70	0.38	0.39
12096.W2202	20	1.1270	1.36	1.38	1.00	0.95	0.38	0.39
12096.W2203	20	1.1270	1.36	1.38	1.50	1.45	0.38	0.39
12096.W2204	20	1.1270	1.36	1.38	2.00	1.95	0.38	0.39
12096.W2251	25	1.3772	1.61	1.63	0.75	0.70	0.38	0.39
12096.W2252	25	1.3772	1.61	1.63	1.00	0.95	0.38	0.39
12096.W2253	25	1.3772	1.61	1.63	1.50	1.45	0.38	0.39
12096.W2254	25	1.3772	1.61	1.63	2.00	1.95	0.38	0.39
12096.W2301	30	1.7523	1.98	2.00	0.75	0.70	0.38	0.39
12096.W2302	30	1.7523	1.98	2.00	1.00	0.95	0.38	0.39
12096.W2303	30	1.7523	1.98	2.00	1.50	1.45	0.38	0.39
12096.W2304	30	1.7523	1.98	2.00	2.00	1.95	0.38	0.39
12096.W2352	35	1.7523	1.98	2.00	1.00	0.95	0.45	0.47
12096.W2353	35	1.7523	1.98	2.00	1.50	1.45	0.45	0.47
12096.W2354	35	1.7523	1.98	2.00	2.00	1.95	0.45	0.47
12096.W2503	50	2.5025	3.00	3.02	1.50	1.45	0.70	0.72
12096.W2504	50	2.5025	3.00	3.02	2.00	1.95	0.70	0.72



## 12097.1



### Material

Heat-treated steel alloy with black oxide finish. High tensile strength (180 000 PSI or 1241 MPa) and hardness (50-52 HRC).

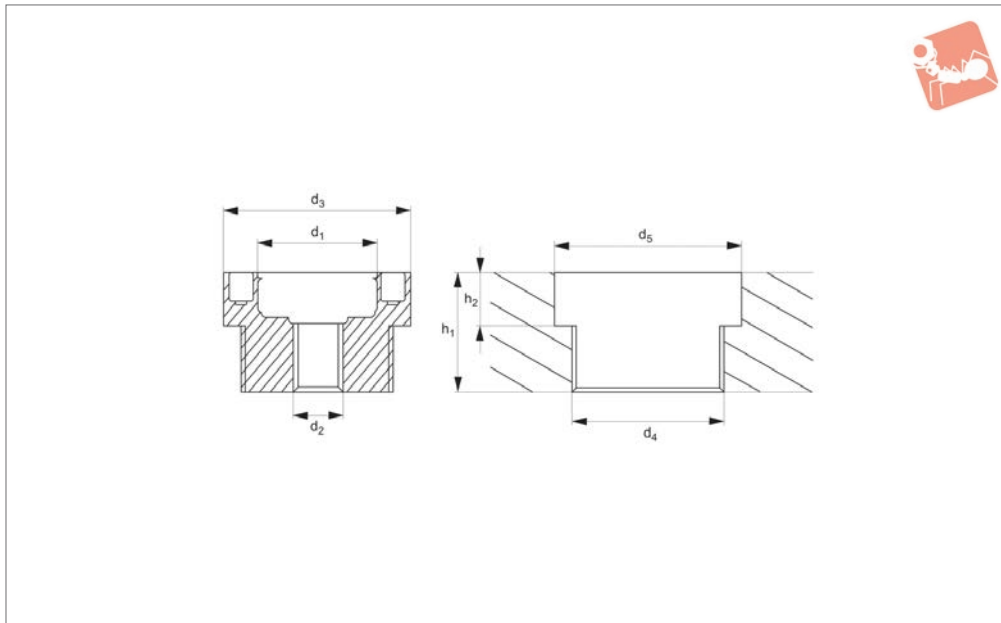
### Technical Notes

Precision machined to  $\pm 0.0002$ " tol. Repea-

tability of ,0004" or better.

Standard face mount design. This receiver is interchangeable with competitive face mount designs providing an advanced retrofit option. For customers with existing investments in another system.

Order No.	$d_2$ UNF-2B	$d_3$ inch +0.0000 -0.0004	$d_4$ inch	$d_5$ inch +0.0004 -0.0000	$d_6$ inch	For shank dia $d_1$ mm	$h_1$ inch min.	$h_2$ inch +0.010 -0.005	p.c.d inch
12097.W0131	1/4-20	1.3750	11/16	1.3754	#8-32 x 1/2	13	3/4	0.469	0.984
12097.W0161	5/16-18	1.4370	13/16	1.4374	#8-32 x 1/2	16	3/4	0.469	1.125
12097.W0201	3/8-16	1.6873	13/16	1.6877	#10-32 x 3/4	20	1	0.637	1.362
12097.W0251	1/2-13	2.0623	1	2.0627	1/4-28 x 7/8	25	1-1/4	0.799	1.644
12097.W0301	5/8-11	2.2654	1-3/16	2.2658	1/4-28 x 1	30	1-3/8	0.871	1.875
12097.W0351	3/4-10	2.6873	1-9/16	2.6877	5/16-24 x 1	35	1-1/2	0.904	2.178
12097.W0501	1-8	3.4998	2-5-32	3.5002	3/8-24 x 1-1/4	50	2	1.239	2.916



## 12097.2

PULL BACK INSERTS

### Material

Heat-treated steel alloy with black oxide finish. High tensile strength (180 000 PSI or 1241 MPa) and hardness (50-52 HRC).

### Technical Notes

Precision machined to  $\pm 0,0002''$  tol. Repeatability of ,0004'' or better. Compact face mount design optimises

subplate space, is easier to install, stronger and less expensive than standard face mount receivers.

Order No.	d <sub>1</sub> mm +0.010 -0.000	d <sub>2</sub> inch	d <sub>3</sub> inch	d <sub>4</sub> UNF-2B	d <sub>5</sub> inch +0.0004 -0.0000	h <sub>1</sub> inch min.	h <sub>2</sub> inch +0.010 -0.005
12097.W2131	13	1/4-20	0.9500	3/4-16	0.9504	3/4	,300
12097.W2161	16	5/16-18	1.0625	7/8-14	1.0629	3/4	,300
12097.W2201	20	3/8-16	1.2750	1-12	1.2754	1	,390
12097.W2251	25	1/2-13	1.5000	1-1/4-12	1.5004	1	,390
12097.W2301	30	5/8-11	1.8125	1-1/2-12	1.8129	1-1/4	,505
12097.W2351	35	3/4-10	2.1250	1-1/2-12	2.1254	1-5/16	,630
12097.W2501	50	1-8	2.7500	2-12	2.7504	1-3/4	,765