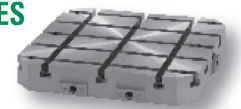
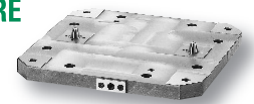
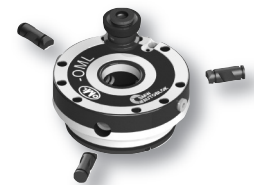
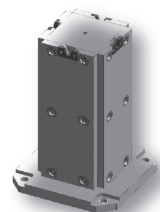
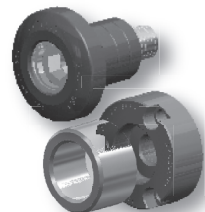
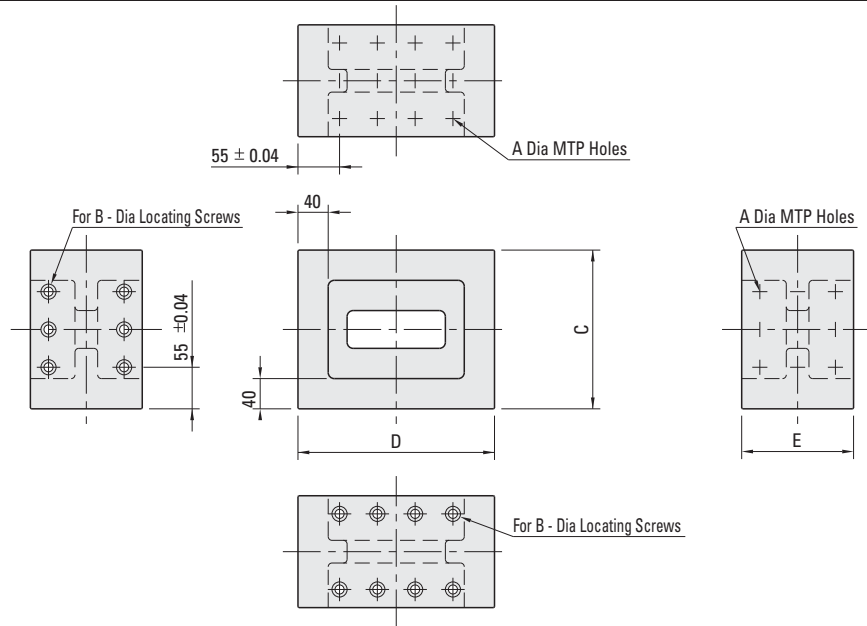


**GRID PLATES
& BLOCKS****BLANK
FIXTURE
BLOCKS****T-SLOT
PLATES
& BLOCKS****FLEX
FIXTURE
PLATES****FLEX
LOCATORS****APS****MODLOC
TOOLING
COLUMNS****SPEEDLOC
PRECISION
LOCATORS****fxw****PRECISION TOOLING PLATES,
BLOCKS & LOCATORS**

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RISER BLOCKS

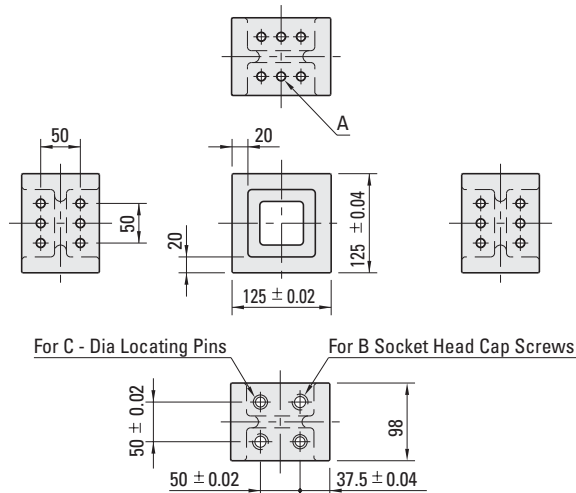
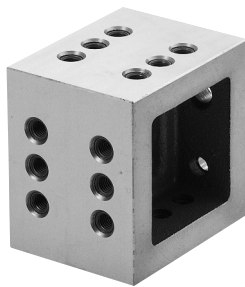


The body is made from FC300 cast iron – annealed and precision ground. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs. Locate on tooling plate or block using BJ700 locating screws. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	B mm	+/- .02 C mm	+/- .02 D mm	E mm	No. of MTP Holes	No. of Mounting Holes	Use Locating Screw
BJ090-1621-12	12	M12X1.75	12	160	210	148	15	10	BJ700-12065
BJ090-2126-12	12	M12X1.75	12	210	260	148	21	14	BJ700-12065
BJ090-1621-16	16	M16X2	16	160	210	148	15	10	BJ700-16075
BJ090-2126-16	16	M16X2	16	210	260	148	21	14	BJ700-16075

See page 561 for F7 tolerance specifications.

COMPACT RISER BLOCKS



The body is made from FC300 cast iron – annealed and precision ground. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. Hole spacing is 50mm +/-0.02.

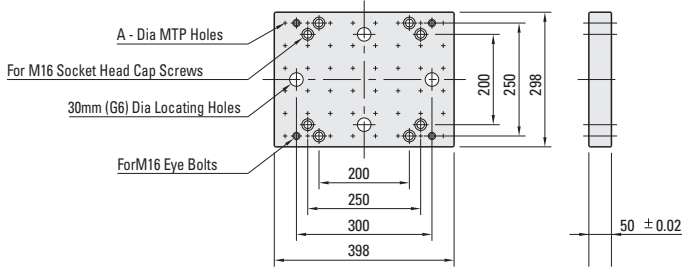
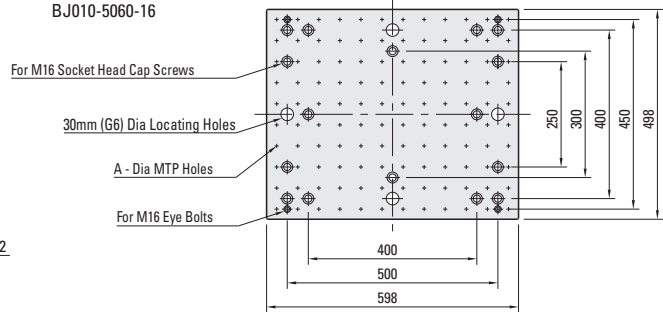
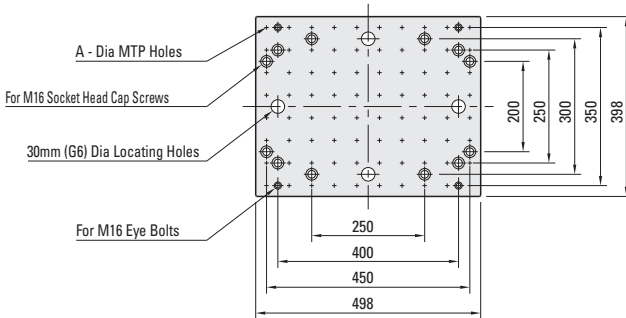
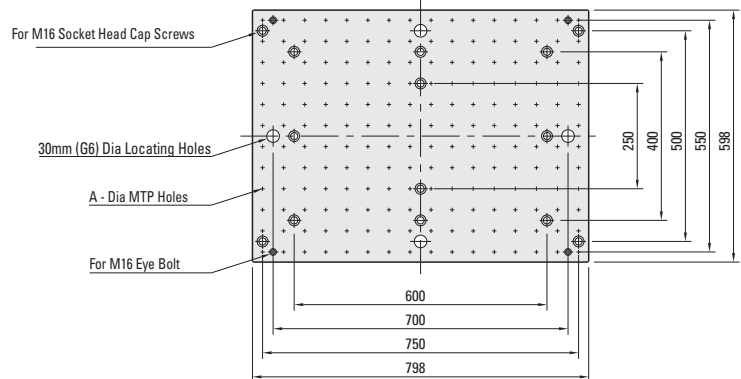
Part #	A Thread mm	B mm	(F7) C mm
BJ091-12125	M12X1.75	M12	12
BJ091-16125	M16X2	M16	16

See page 561 for F7 tolerance specifications.

RECTANGULAR GRID PLATES



BJ010-3040-12

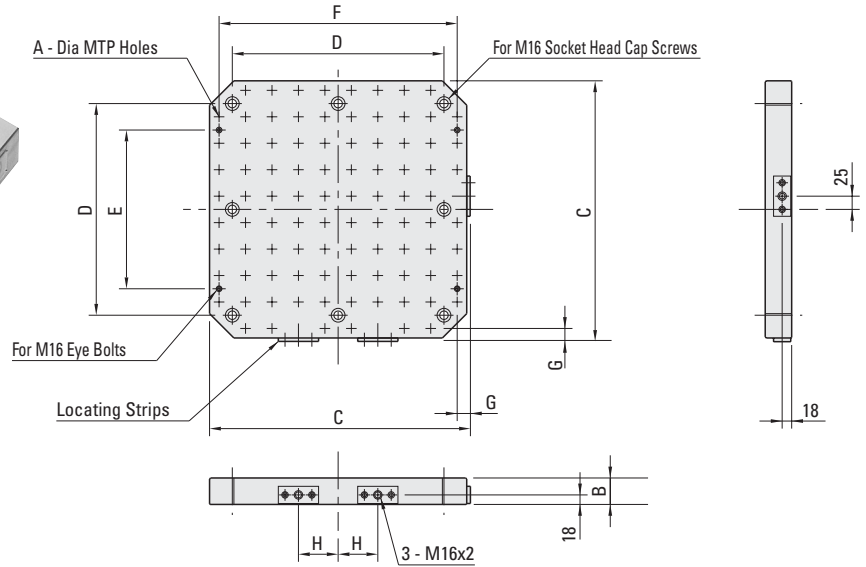

 BJ010-5060-12
 BJ010-5060-16

 BJ010-4050-12
 BJ010-4050-16

 BJ010-6080-12
 BJ010-6080-16


The body is made from FC250 cast iron – annealed and precision ground. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs and eyebolts. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	No. of MTP Holes	No. of Mounting Holes
BJ010-3040-12	12	M12X1.75	48	8
BJ010-4050-12	12	M12X1.75	80	12
BJ010-4050-16	16	M16X2	80	12
BJ010-5060-12	12	M12X1.75	120	16
BJ010-5060-16	16	M16X2	120	16
BJ010-6080-12	12	M12X1.75	192	14
BJ010-6080-16	16	M16X2	192	14

See page 561 for F7 and G6 tolerance specifications.

SQUARE GRID PLATES

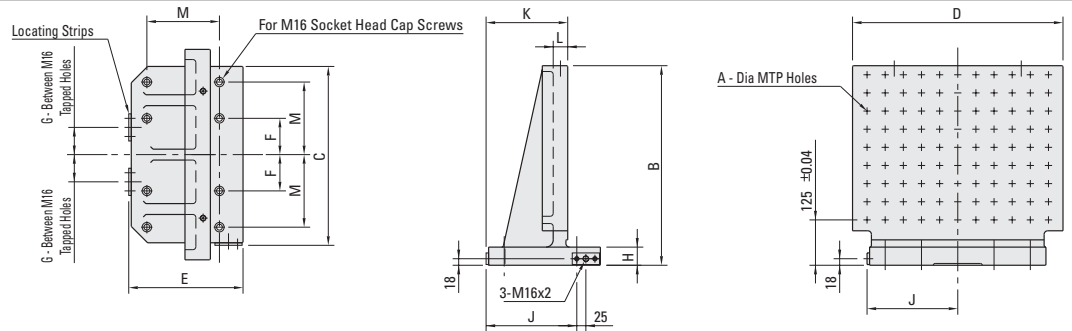


The body is made from FC250 cast iron – annealed and precision ground. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs and eyebolts. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	+/-0.02 B mm	C mm	D mm	E mm	F mm	+/-0.04 G mm	H mm	Number of MTP Holes	Number of Mounting Holes
BJ040-4040-12	12	M12X1.75	50	393	320	200	350	25	55	59	4
BJ040-4040-16	16	M16X2	50	393	320	200	350	25	55	59	4
BJ040-5050-12	12	M12X1.75	50	493	400	300	450	25	75	93	8
BJ040-5050-16	16	M16X2	50	493	400	300	450	25	75	93	8
BJ040-6363-12	12	M12X1.75	50	623	500	400	550	40	100	139	8
BJ040-6363-16	16	M16X2	50	623	500	400	550	40	100	139	8
BJ040-8080-12	12	M12X1.75	60	793	640	500	750	25	135	237	8
BJ040-8080-16	16	M16X2	60	793	640	500	750	25	135	237	8

See page 561 for F7 tolerance specifications.

ANGLE GRID PLATES

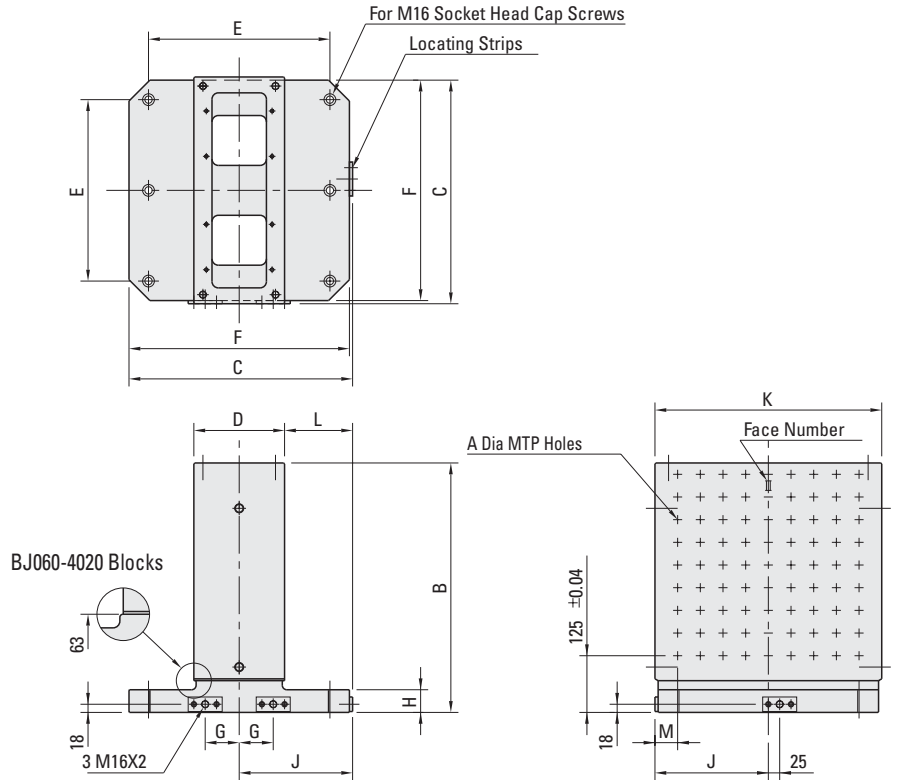
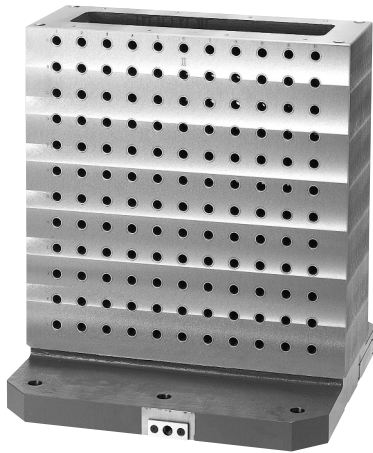


The body is made from FC300 cast iron – annealed and precision machined. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs and eyebolts. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	+/-0.04 J mm	+/-0.04 K mm	L mm	M mm	Number of MTP Holes	No. of Mounting Holes
BJ050-4101-12	12	M12X1.75	450	393	470	265	-	55	45	200	175	40	160	63	4
BJ050-4101-16	16	M16X2	450	393	470	265	-	55	45	200	175	40	160	63	4
BJ050-5101-12	12	M12X1.75	550	493	580	315	100	75	50	250	225	40	200	99	8
BJ050-5101-16	16	M16X2	550	493	580	315	100	75	50	250	225	40	200	99	8
BJ050-6101-12	12	M12X1.75	700	623	760	380	125	100	55	315	265	50	250	180	8
BJ050-6101-16	16	M16X2	700	623	760	380	125	100	55	315	265	50	250	180	8
BJ050-8101-12	12	M12X1.75	800	793	900	465	160	135	60	400	350	50	320	238	8
BJ050-8101-16	16	M16X2	800	793	900	465	160	135	60	400	350	50	320	238	8

See page 561 for F7 tolerance specifications.

TWO-SIDED GRID BLOCKS

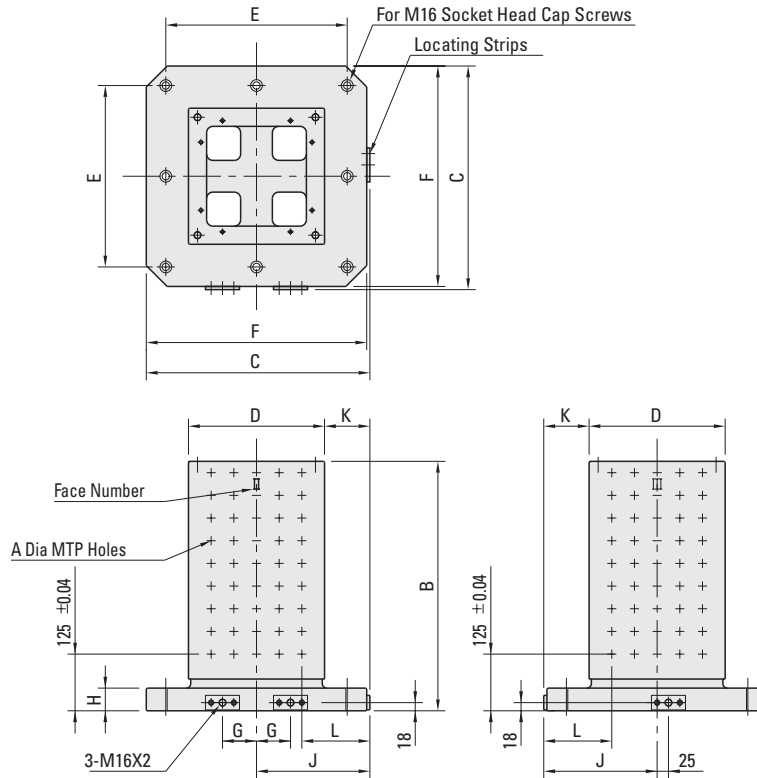
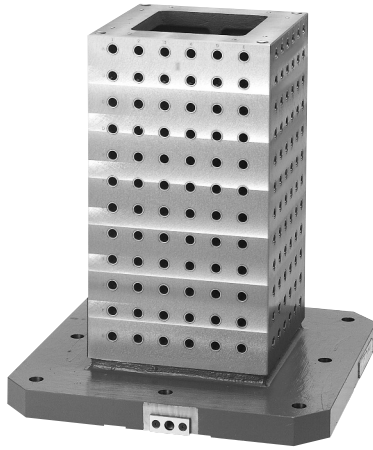


The body is made from FC300 cast iron – annealed and precision machined. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs and eyebolts. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	B mm	C mm	+/-0.04 D mm	E mm	F mm	G mm	H mm	J mm	K mm	+/-0.04 L mm	+/-0.04 M mm	Number of MTP Holes	No. of Mounting Holes
BJ060-4015-12	12	M12X1.75	450	393	150	320	386	55	50	200	400	125	50	98	4
BJ060-4015-16	16	M16X2	450	393	150	320	386	55	50	200	400	125	50	98	4
BJ060-5020-12	12	M12X1.75	550	493	200	400	486	75	50	250	500	150	50	162	6
BJ060-5020-16	16	M16X2	550	493	200	400	486	75	50	250	500	150	50	162	6
BJ060-6325-12	12	M12X1.75	700	623	250	500	616	100	55	315	630	190	65	264	6
BJ060-6325-16	16	M16X2	700	623	250	500	616	100	55	315	630	190	65	264	6
BJ060-8030-12	12	M12X1.75	800	793	300	640	786	135	60	400	800	250	50	420	6
BJ060-8030-16	16	M16X2	800	793	300	640	786	135	60	400	800	250	50	420	6
BJ061-4015-12	12	M12X1.75	550	393	150	320	386	55	50	200	400	125	50	126	4
BJ061-4015-16	16	M16X2	550	393	150	320	386	55	50	200	400	125	50	126	4
BJ061-5020-12	12	M12X1.75	650	493	200	400	486	75	50	250	500	150	50	198	6
BJ061-5020-16	16	M16X2	650	493	200	400	486	75	50	250	500	150	50	198	6
BJ061-6325-12	12	M12X1.75	800	623	250	500	616	100	55	315	630	190	65	308	6
BJ061-6325-16	16	M16X2	800	623	250	500	616	100	55	315	630	190	65	308	6

See page 561 for F7 tolerance specifications.

FOUR-SIDED GRID BLOCKS



The body is made from FC300 cast iron – annealed and precision machined. The alignment bushings are made from SUJ2 steel. The thread inserts are made from SAE-1045 alloy steel and heat treated. MTP hole spacing is 50mm +/-0.02. Includes protection plugs and eyebolts. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

Part #	(F7) A mm	A Thread mm	B mm	C mm	+/-0.04 D mm	E mm	F mm	G mm	H mm	J mm	+/-0.04 K mm	+/-0.04 L mm	Number of MTP Holes	No. of Mounting Holes
BJ070-4025-12	12	M12X1.75	450	393	250	320	386	55	50	200	75	125	112	4
BJ070-4025-16	16	M16X2	450	393	250	320	386	55	50	200	75	125	112	4
BJ070-5030-12	12	M12X1.75	550	493	300	400	486	75	50	250	100	150	180	8
BJ070-5030-16	16	M16X2	550	493	300	400	486	75	50	250	100	150	180	8
BJ070-6335-12	12	M12X1.75	700	623	350	500	616	100	55	315	140	190	288	8
BJ070-6335-16	16	M16X2	700	623	350	500	616	100	55	315	140	190	288	8
BJ070-8050-12	12	M12X1.75	800	793	500	640	786	135	60	400	150	200	504	8
BJ070-8050-16	16	M16X2	800	793	500	640	786	135	60	400	150	200	504	8
BJ071-4025-12	12	M12X1.75	550	393	250	320	386	55	50	200	75	125	144	4
BJ071-4025-16	16	M16X2	550	393	250	320	386	55	50	200	75	125	144	4
BJ071-5030-12	12	M12X1.75	650	493	300	400	486	75	50	250	100	150	220	8
BJ071-5030-16	16	M16X2	650	493	300	400	486	75	50	250	100	150	220	8
BJ071-6335-12	12	M12X1.75	800	623	350	500	616	100	55	315	140	190	336	8
BJ071-6335-16	16	M16X2	800	623	350	500	616	100	55	315	140	190	336	8

See page 561 for F7 tolerance specifications.

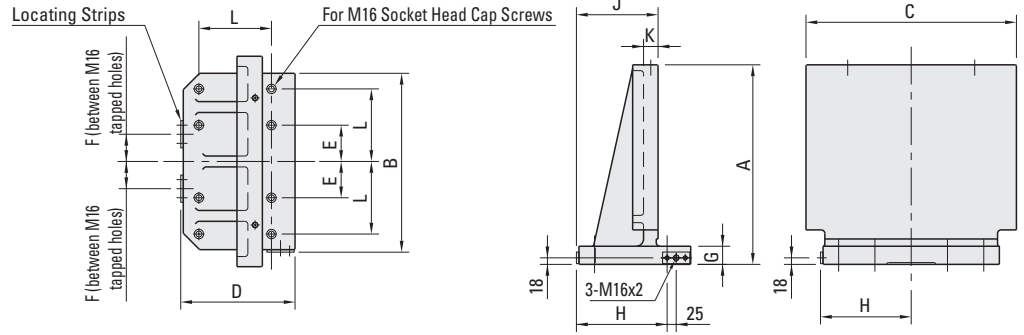
METAL PROTECTION PLUGS



Used to keep chips and dirt out of unused MTP holes. Made from zinc die cast.

Part #	Thread
BJ770-12001	M12
BJ770-16001	M16

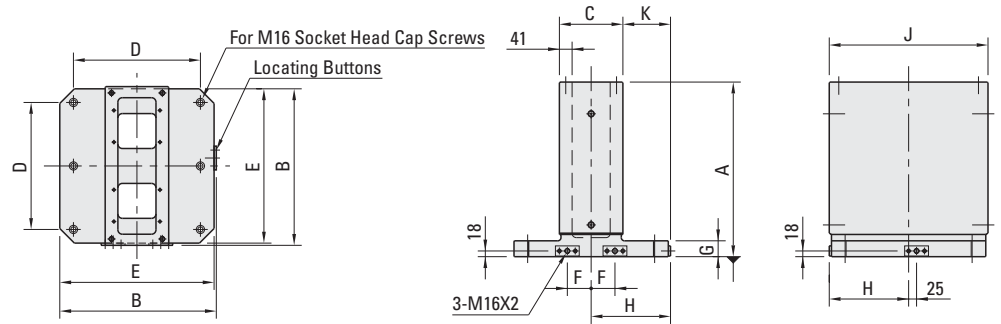
BLANK ANGLE BLOCKS



The body is made from FC300 cast iron – annealed and semi-finish machined.

Part #	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	+/-2 J mm	K mm	L mm	No. of Mounting Holes
BJ050-4101-00	450	393	470	265	-	55	45	200	176	40	160	4
BJ050-5101-00	550	493	580	315	100	75	50	250	226	40	200	8
BJ050-6101-00	700	623	760	380	125	100	55	315	266	50	250	8
BJ050-8101-00	800	793	900	465	160	135	60	400	351	50	320	8

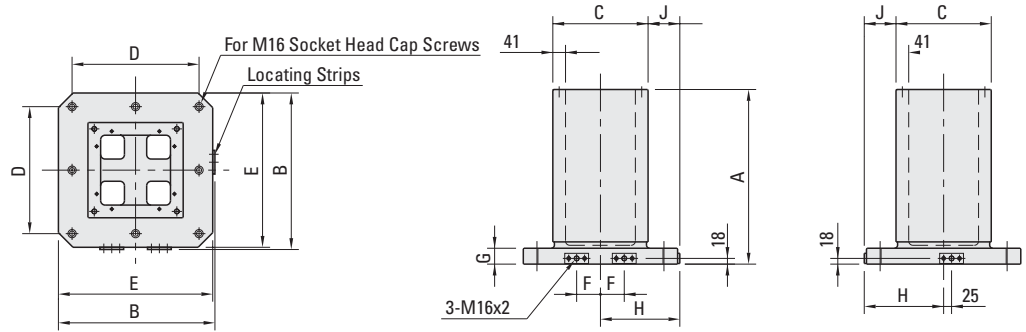
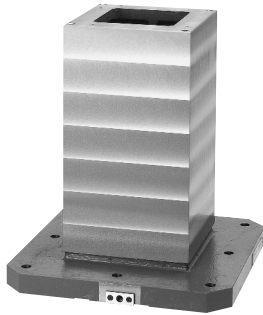
BLANK TWO-SIDED BLOCKS



The body is made from FC300 cast iron – annealed and semi-finish machined.

Part #	A mm	B mm	+/-2 C mm	D mm	E mm	F mm	G mm	H mm	J mm	+/-2 K mm	No. of Mounting Holes
BJ060-4015-00	450	393	151	320	386	55	50	200	400	124.5	4
BJ060-5020-00	550	493	201	400	486	75	50	250	500	149.5	6
BJ060-6325-00	700	623	251	500	616	100	55	315	630	189.5	6
BJ060-8030-00	800	793	301	640	786	135	60	400	800	249.5	6
BJ061-4015-00	550	393	151	320	386	55	50	200	400	124.5	4
BJ061-5020-00	650	493	201	400	486	75	50	250	500	149.5	6
BJ061-6325-00	800	623	251	500	616	100	55	315	630	189.5	6

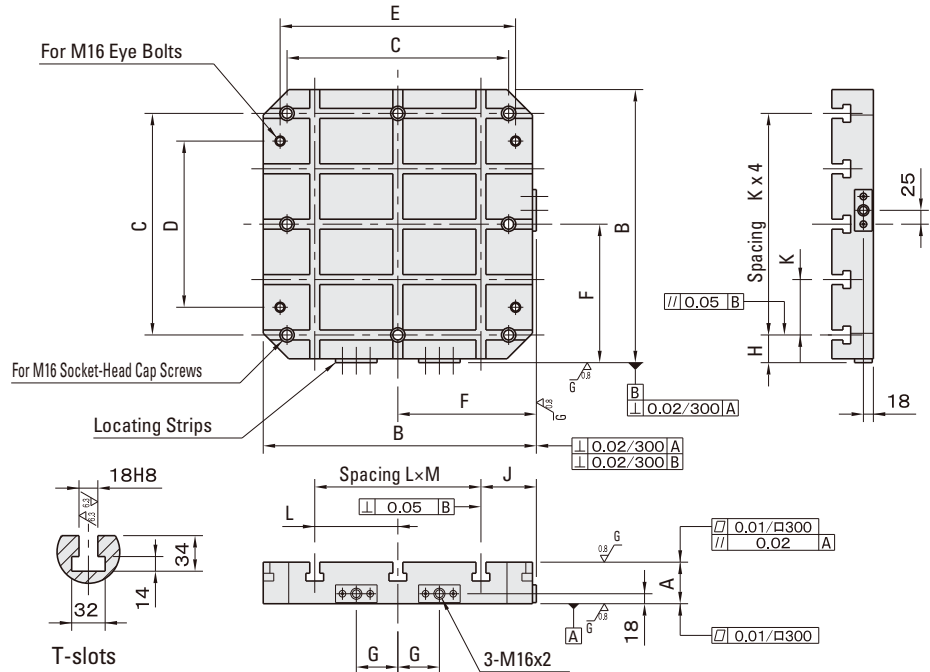
BLANK FOUR-SIDED BLOCKS



The body is made from FC300 cast iron – annealed and semi-finish machined.

Part #	A mm	B mm	+/-2 C mm	D mm	E mm	F mm	G mm	H mm	+/-2 J mm	No. of Mounting Holes
BJ070-4025-00	450	393	251	320	386	55	50	200	74.5	4
BJ070-5030-00	550	493	301	400	486	75	50	250	99.5	8
BJ070-6335-00	700	623	351	500	616	100	55	315	139.5	8
BJ070-8050-00	800	793	501	640	786	135	60	400	149.5	8
BJ071-4025-00	550	393	251	320	386	55	50	200	74.5	4
BJ071-5030-00	650	493	301	400	486	75	50	250	99.5	8
BJ071-6335-00	800	623	351	500	616	100	55	315	139.5	8

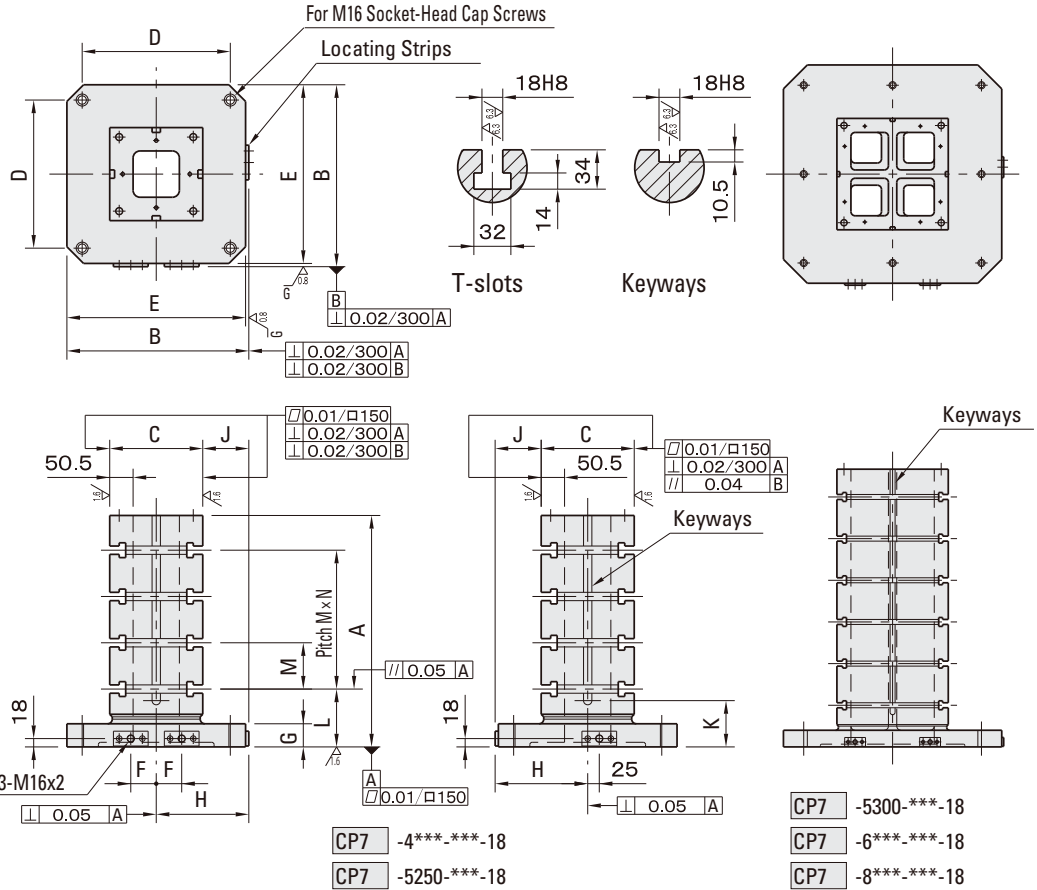
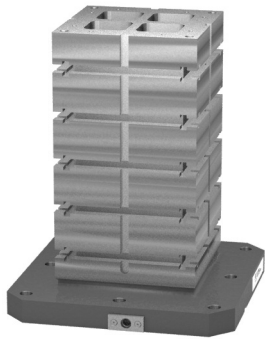
SQUARE T-SLOT PLATES



The body is made from FC250 cast iron – annealed and precision ground. Eye bolts included.

Part #	Pallet Size mm	+/-0.02 A mm	B mm	C mm	D mm	E mm	F mm	G mm	+/-0.04 H mm	+/-0.04 J mm	+/-0.04 K mm	+/-0.04 L mm	M mm	# of Mounting Holes
CP4-4040-080-18	400	75	393	320	250	250	200	55	40	40	80	80	4	4
CP4-4040-081-18	400	75	393	320	250	340	200	55	40	75	80	125	2	4
CP4-5050-100-18	500	75	493	400	300	325	250	75	50	50	100	100	4	8
CP4-5050-101-18	500	75	493	400	300	425	250	75	50	100	100	150	2	8
CP4-6363-121-18	630	75	623	500	400	575	315	100	65	65	125	125	4	8
CP4-6363-122-18	630	75	623	500	400	550	315	100	65	115	125	200	2	8
CP4-8080-161-18	800	80	793	640	500	725	400	135	80	80	160	160	4	8
CP4-8080-162-18	800	80	793	640	500	725	400	135	80	150	160	250	2	8

FOUR-SIDED T-SLOT BLOCKS



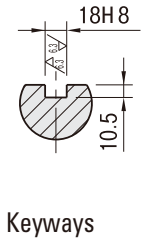
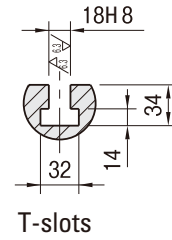
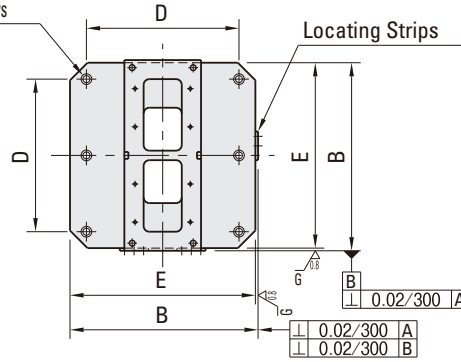
The body is made from FC300 cast iron – annealed and precision machined. Each face is machined with 0.5mm deep finishing allowance for extra face finish to your specifications. Eye bolts included. Custom configurations are available.

Part #	Pallet Size mm	A mm	B mm	+/-0.2 C mm	D mm	E mm	F mm	G mm	+/-0.05 H mm	+/-0.2 J mm	K mm	+/-0.05 L mm	+/-0.04 M mm	N	# of Mounting Holes
CP7-4200-500-18	400	500	393	201	320	386	55	50	200	99.5	100	125	100	3	4
CP7-4250-500-18	400	500	393	251	320	386	55	50	200	74.5	100	125	100	3	4
CP7-4200-600-18	400	600	393	201	320	386	55	50	200	99.5	100	125	100	4	4
CP7-4250-600-18	400	600	393	251	320	386	55	50	200	74.5	100	125	100	4	4
CP7-5250-600-18	500	600	493	251	400	486	75	50	250	124.5	100	125	100	4	8
CP7-5300-600-18	500	600	493	301	400	486	75	50	250	99.5	100	125	100	4	8
CP7-5250-700-18	500	700	493	251	400	486	75	50	250	124.5	100	125	100	5	8
CP7-5300-700-18	500	700	493	301	400	486	75	50	250	99.5	100	125	100	5	8
CP7-6300-725-18	630	725	623	301	500	616	100	55	315	164.5	125	150	125	4	8
CP7-6400-725-18	630	725	623	401	500	616	100	55	315	114.5	125	150	125	4	8
CP7-6300-850-18	630	850	623	301	500	616	100	55	315	164.5	125	150	125	5	8
CP7-6400-850-18	630	850	623	401	500	616	100	55	315	114.5	125	150	125	5	8
CP7-8400-100-18	800	1000	793	401	640	786	135	60	400	199.5	125	150	150	5	8
CP7-8500-100-18	800	1000	793	501	640	786	135	60	400	149.5	125	150	150	5	8
CP7-8400-115-18	800	1150	793	401	640	786	135	60	400	199.5	125	150	150	6	8
CP7-8500-115-18	800	1150	793	501	640	786	135	60	400	149.5	125	150	150	6	8

TWO-SIDED T-SLOT BLOCKS

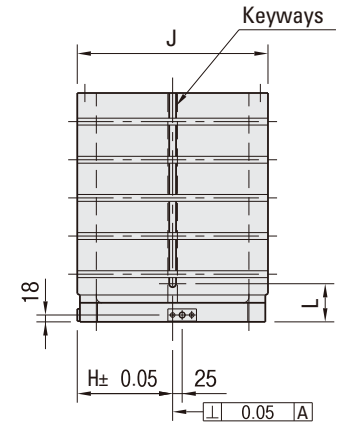
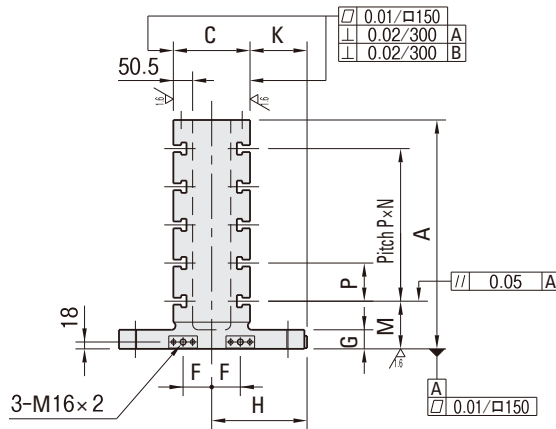


For M16 Socket-Head Cap Screws



T-slots

Keyways



The body is made from FC300 cast iron – annealed and precision machined. Each face is machined with 0.5mm deep finishing allowance for extra face finish to your specifications. Eye bolts included. Custom configurations are available.

Part #	Pallet Size mm	A mm	B mm	+/-0.2 C mm	D mm	E mm	F mm	G mm	H mm	J mm	+/-0.2 K mm	L mm	+/-0.05 M mm	N	+/-0.04 P mm	# of Mounting Holes
CP6-4150-500-18	400	500	393	171	320	386	55	50	200	400	114.5	100	125	3	100	4
CP6-4200-500-18	400	500	393	201	320	386	55	50	200	400	99.5	100	125	3	100	4
CP6-4150-600-18	400	600	393	171	320	386	55	50	200	400	114.5	100	125	4	100	4
CP6-4200-600-18	400	600	393	201	320	386	55	50	200	400	99.5	100	125	4	100	4
CP6-5200-600-18	500	600	493	201	400	486	75	50	250	500	149.5	100	125	4	100	6
CP6-5250-600-18	500	600	493	251	400	486	75	50	250	500	124.5	100	125	4	100	6
CP6-5200-700-18	500	700	493	201	400	486	75	50	250	500	149.5	100	125	5	100	6
CP6-5250-700-18	500	700	493	251	400	486	75	50	250	500	124.5	100	125	5	100	6
CP6-6250-725-18	630	725	623	251	500	616	100	55	315	630	189.5	125	150	4	125	6
CP6-6300-725-18	630	725	623	301	500	616	100	55	315	630	164.5	125	150	4	125	6
CP6-6250-850-18	630	850	623	251	500	616	100	55	315	630	189.5	125	150	5	125	6
CP6-6300-850-18	630	850	623	301	500	616	100	55	315	630	164.5	125	150	5	125	6
CP6-8300-100-18	800	1000	793	301	640	786	135	60	400	800	249.5	125	150	5	150	6
CP6-8350-100-18	800	1000	793	351	640	786	135	60	400	800	224.5	125	150	5	150	6
CP6-8300-115-18	800	1150	793	301	640	786	135	60	400	800	249.5	125	150	6	150	6
CP6-8350-115-18	800	1150	793	351	640	786	135	60	400	800	224.5	125	150	6	150	6

FLEX FIXTURING SYSTEM

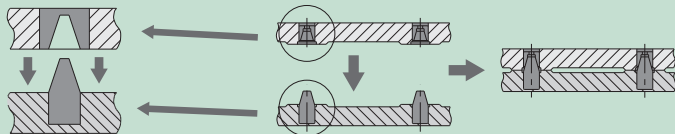
The Flex (Flexible) Quick Change Fixturing System consists of a base plate that can be used with both the fixture plates and angle plates.

Together this system allows for:

- Fast and Accurate Fixture Changes
- Mounting the Same Fixture on Different Machines
- Machining from Five Sides on One Fixture
- Quick Fixture Setup

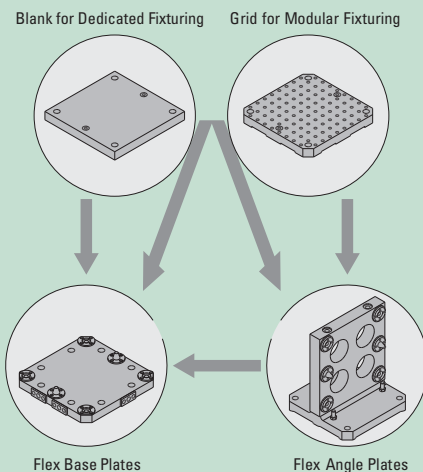
Repeatability

The two tapered pins on the base plate mate with receiver bushings on the fixture plates or angle plates for highly accurate locating repeatability.



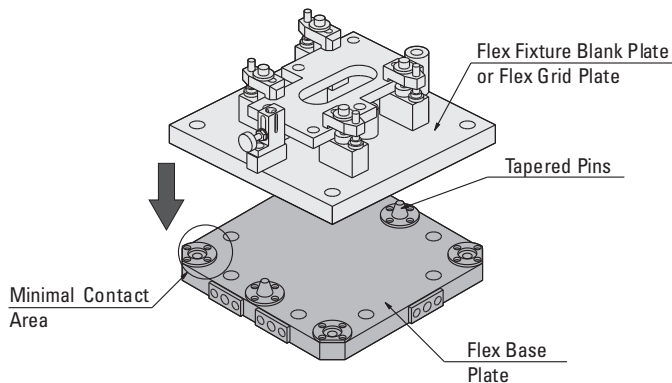
Flexibility

This system can be used in various configurations to mount the Flex Fixture Plates as shown below.



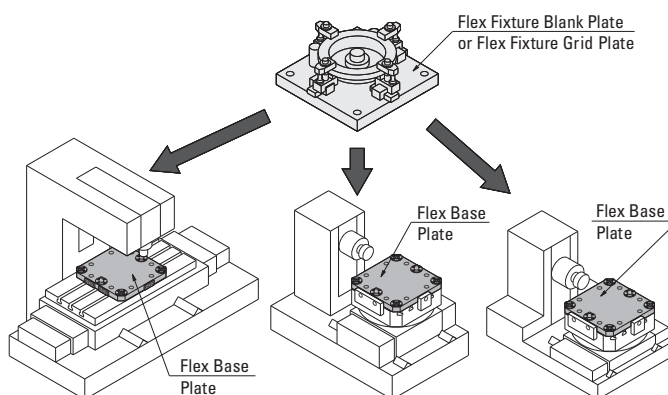
Fast and Accurate Fixture Changes

The two tapered pins allow simply locating a Flex Fixture Plate or Flex Angle Plate on a Flex Base Plate. These plates sit on the Flex Base Plate with minimal contact area which allows for easy and accurate fixture changes.



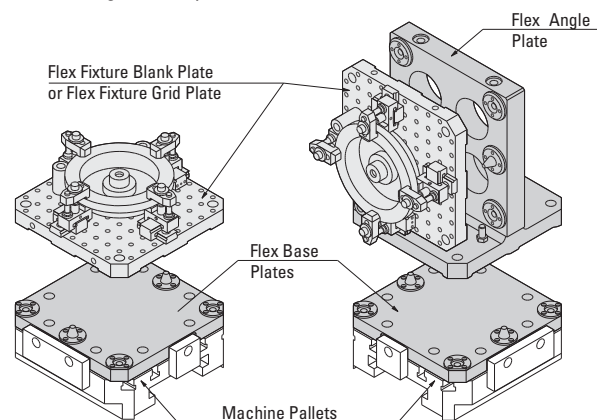
Mounting the Same Fixture on Different Machines

Once a Flex Base Plate is installed on different machines, the same fixture can then be easily and accurately mounted on any of those machines.



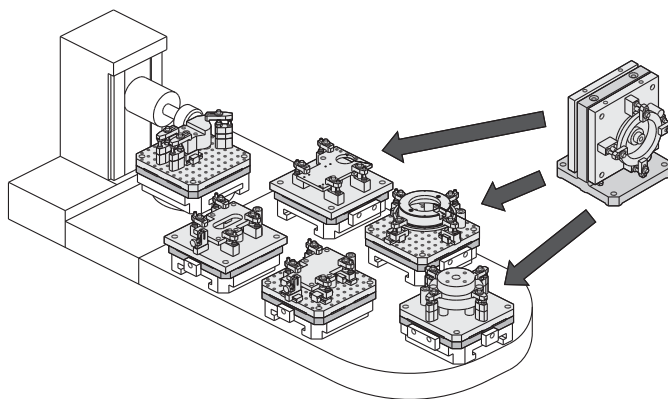
Machining from Five Sides on One Fixture

Using a Flex Angle Plate with a Flex Base Plate allows mounting the same fixture horizontally and vertically on the same pallet for machining from five sides. Centering is not required when a fixture is turned over.

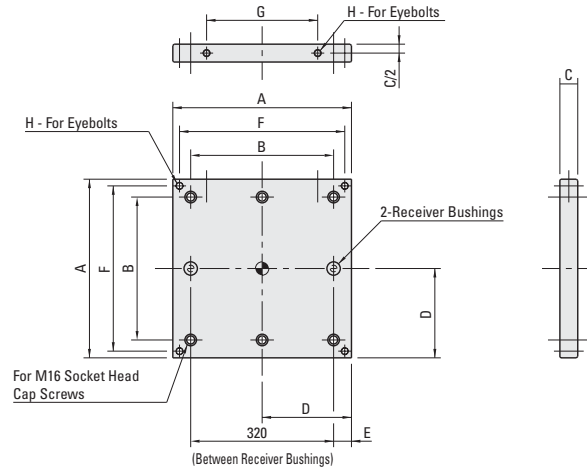


Quick Fixture Setup

Because there is no need for fixture centering, fixtures can be set up quicker with excellent repeatability.



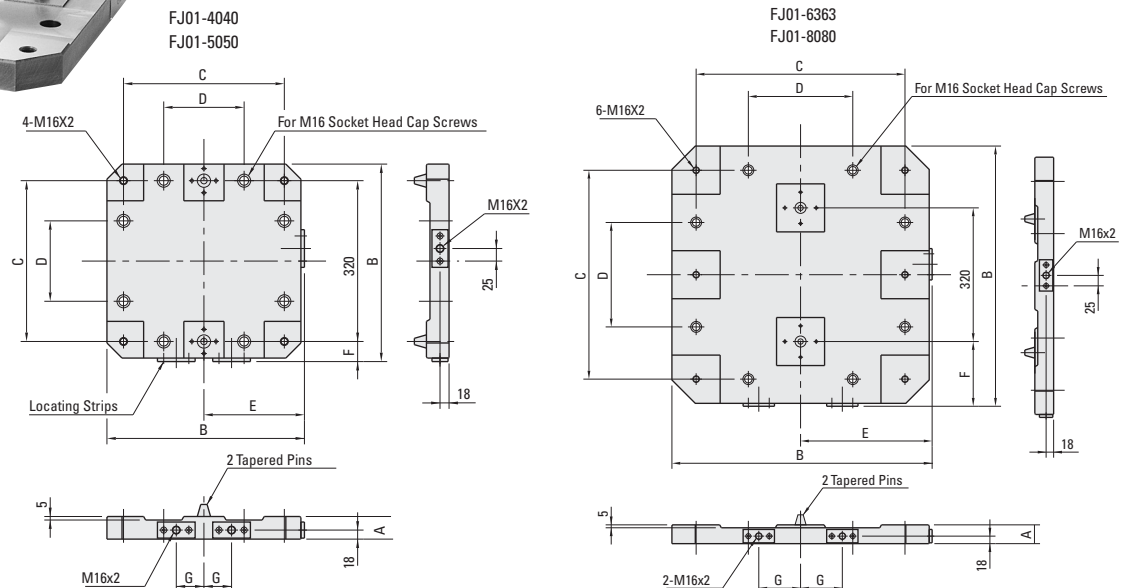
FLEX BLANK FIXTURE PLATES



Designed for dedicated fixturing that mounts on Flex Base Plates and Flex Angle Plates. Machining references are provided for better machining. The body is made from S50C steel – precision ground. The tapered pins and receiver bushings are made from SAE-1045 alloy steel, precision ground and heat treated. Eyebolts included. It is recommended that the user does not grind the bottom of these plates to preserve the accurate fit of its receiver bushings with the tapered pins of the sub-plate.

Part #	A mm	B mm	+0.30/+0.15 C mm	+/-0.1 D mm	E mm	F mm	G mm	H mm	No. of Mounting Holes
FJ12-4040-00	400	320	40	200	40	370	280	M12X1.75	4
FJ12-5050-00	500	400	40	250	90	460	350	M12X1.75	4
FJ12-6363-00	630	500	40	315	155	540	460	M16X2	6
FJ12-8080-00	800	640	45	400	240	680	570	M16X2	6

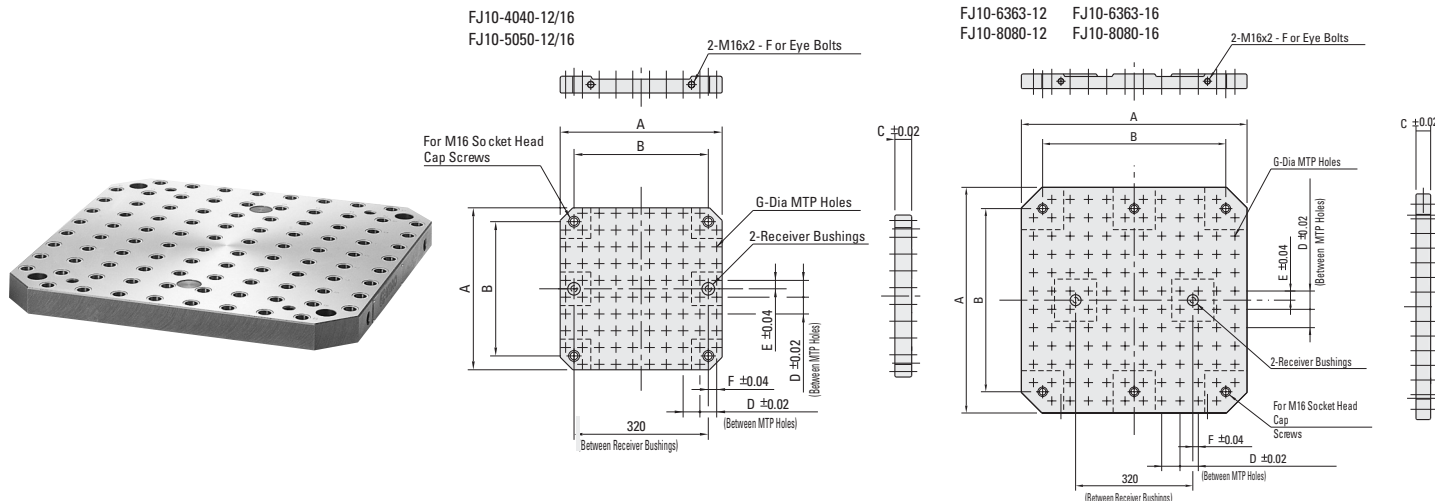
FLEX BASE PLATES



These Flex Base Plates are designed to mount on the machining center pallet to JIS B 6337 standards. Manufactured from FC250 cast iron – annealed and precision ground. The tapered pins are made from SAE-1095 alloy steel, heat treated and precision ground. Eyebolts are included.

Part #	+/-0.02 A mm	B mm	C mm	D mm	+/-0.04 E mm	+/-0.04 F mm	G mm	No. of Mounting Holes
FJ01-4040N	40	393	320	160	200	40	55	8
FJ01-5050N	40	493	400	200	250	90	75	8
FJ01-6363N	40	623	500	250	315	155	100	8
FJ01-8080N	45	793	640	320	400	240	135	8

FLEX GRID FIXTURE PLATES



Mounts on Flex Base Plates and Flex Angle Plates. The body is made from FC250 cast iron – annealed and precision ground. The tapered pins and receiver bushings are made from SAE-1045 alloy steel, precision ground and heat treated with black oxide finish. Protection plugs and eyebolts are included. MTP hole spacing is +/- .02mm. Each MTP hole is lettered and numbered for addressing holes. See page 561 for MTP hole construction.

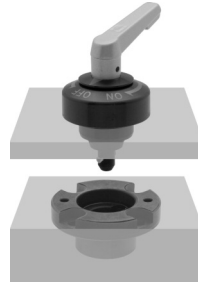
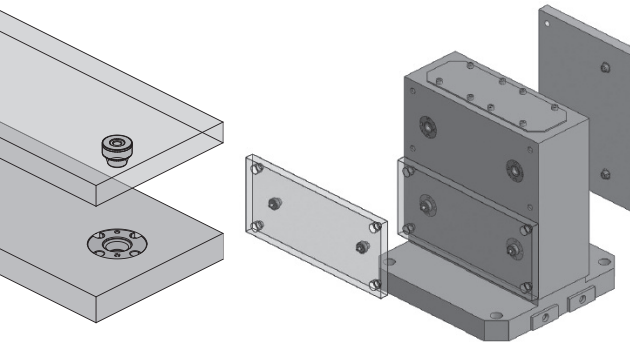
Part #	A mm	B mm	C mm	D mm	E mm	F mm	(F7) G mm	Threads G mm	No. of MTP Holes	No. of Mounting Holes
FJ10-4040-12	386	320	40	50	25	15	12	M12X1.75	60	4
FJ10-4040-16	386	320	40	50	25	15	16	M16X2	60	4
FJ10-5050-12	486	400	40	50	25	15	12	M12X1.75	96	4
FJ10-5050-16	486	400	40	50	25	15	16	M16X2	96	4
FJ10-6363-12	616	500	40	50	25	15	12	M12X1.75	140	6
FJ10-6363-16	616	500	40	50	25	15	16	M16X2	140	6
FJ10-8080-12	786	640	45	50	25	15	12	M12X1.75	240	6
FJ10-8080-16	786	640	45	50	25	15	16	M16X2	240	6

See page 561 for F7 tolerance specifications.

FLEX LOCATORS

The Flex Locators consists of taper pins and receiver bushings. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning with repeatability of .01mm. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. The bushings are spring loaded to make removing the fixture plate quick and easy.

Flex Locators



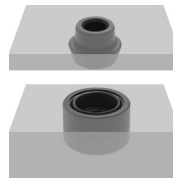
ONE TOUCH FLEX LOCATORS

Quick changeover without the use of tools.

**LOCATING REPEATABILITY
10 MICRONS.**

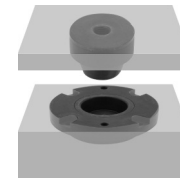
**TAPERED DESIGN
FOR EFFICIENT LOCATING.**

COMPACT, COST-EFFECTIVE DESIGN.



THROUGH STYLE

Press fit receiver bushing. Space-saving design.



BLIND STYLE

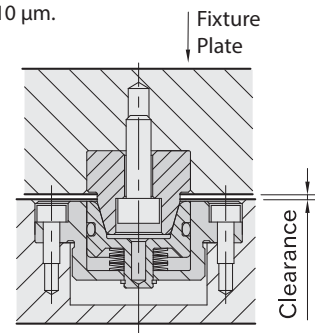
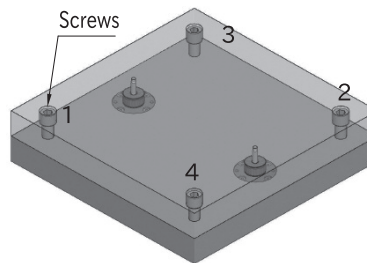
Easy mounting of receiver with bushing and screws.

Tightening Order of Screws

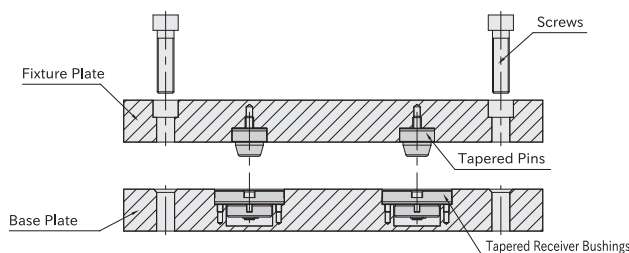
1. Make sure the plates are in contact with each other. (The spring force of the receiver bushing may push the fixture plate upward)
 2. Tighten screws to about 50% of final tightening in order 1-2-3-4.
 3. Tighten screws to final tightening in order 1-2-3-4.
- Note: If screws are not tightened in correct order the locating repeatability may exceed 10 μm .

Part #	Max Loading Capacity Lbs.
25050	270
38070	450
56095	495

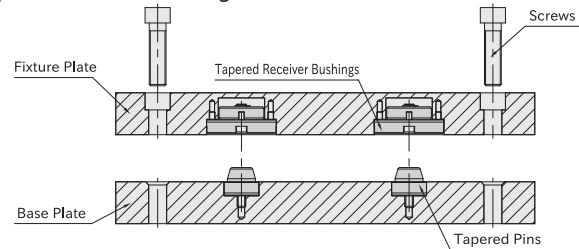
The maximum load shown is when using two sets of tapered pins & receiver bushings and includes the fixture plate, fixtures and workpieces. If the total load exceeds the capacity, the locating repeatability may exceed .01mm.



Tapered Receiver Bushings - Base Plate Mount

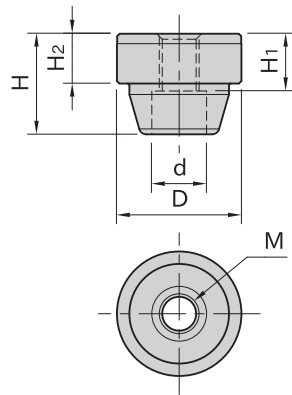


Tapered Receiver Bushings - Fixture Plate Mount

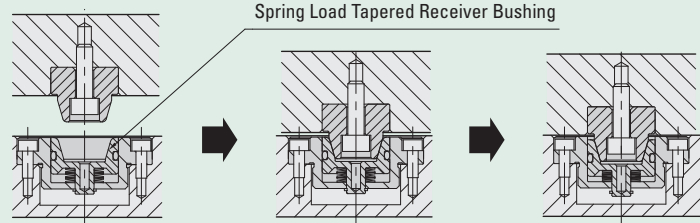


FLEX LOCATORS - BLIND STYLE

Pins | CP720



How To Use



The spring loaded tapered receiver bushing is pushed up by the inner spring.

When the fixture plate is lowered, the tapered pin contacts with the tapered receiver bushing.

The spring loaded tapered receiver bushing retracts and the fixture plate contacts with the base plate.

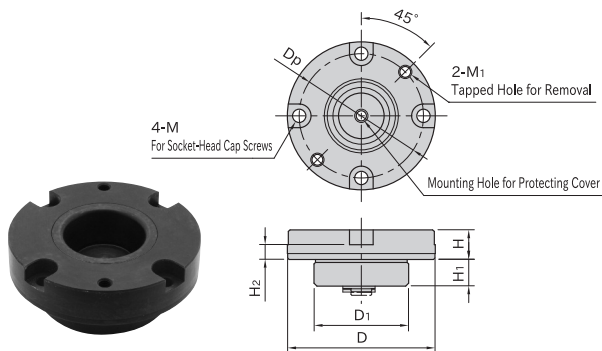
The flex locator pins are used with the flex receiver bushings. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. Made from SAE-4140 alloy steel, nitrocarburized treated.

Part #	(g6) D mm	d mm	H mm	H1 mm	H2 mm	M mm	Use Receiver Bushing	Use Protective Cover*
CP720-25050	25	11	20	11.5	10	M8X1.25 (6.8)	CP725-25050	CP725-25050P
CP720-38070	38	14	29.5	18	15	M10X1.5 (8.5)	CP725-38070	CP725-38070P
CP720-56095	56	20	43.5	28.5	22	M16X2 (14)	CP725-56095	CP725-56095P

See page 561 for g6 and H7 tolerance specifications.

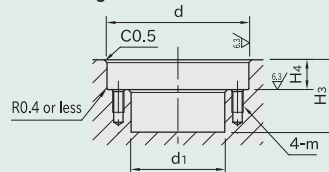
*Mounted in the receiver bushings to keep out dirt and contaminants while bushings are not in use. For complete information, search for the part number at www.fixtureworks.net.

Bushings | CP725



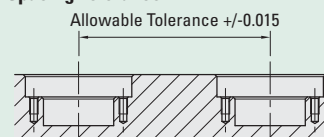
How To Install

Mounting Hole Dimensions

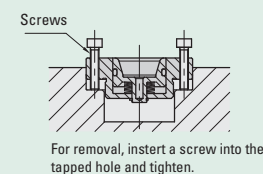


Part Number	d (H7)	H4 (±0.05)	d1	H3	m
CP725-25050	50	10.5	33	24	M4X0.7
CP725-38070	70	15.5	49	35	M5X0.8
CP725-56095	95	22.5	71	51	M6X1

Spacing Tolerance



How to Remove



The flex locator bushings are used with the flex locating pins. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. The bushings are spring loaded to make removing the fixture plate quick and easy. Made from SAE-4140 alloy steel, nitrocarburized treated.

Part #	(g6) D mm	D1 mm	Dp mm	H mm	H1 mm	H2 mm	M mm	M1 mm	Lifting Force Lbs.*	Use Locator Pin	Use Protective Cover**
CP725-25050	50	32	42	10	9	5	M4	M4X0.7	40	CP720-25050	CP725-25050P
CP725-38070	70	48	60	15	14	9	M5	M5X0.8	90	CP720-38070	CP725-38070P
CP725-56095	95	70	84	22	21	15	M6	M6X1	155	CP720-56095	CP725-56095P

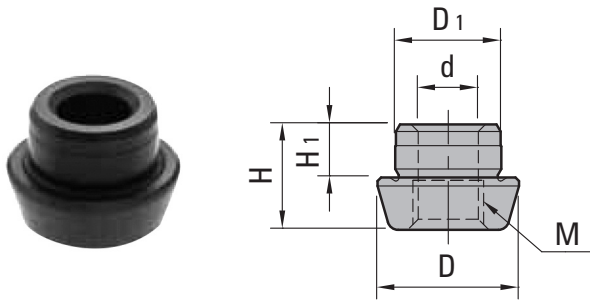
* Spring force to push up the tapered bushing.

**Mounted in the receiver bushings to keep out dirt and contaminants while bushings are not in use. For complete information, search for the part number at www.fixtureworks.net.

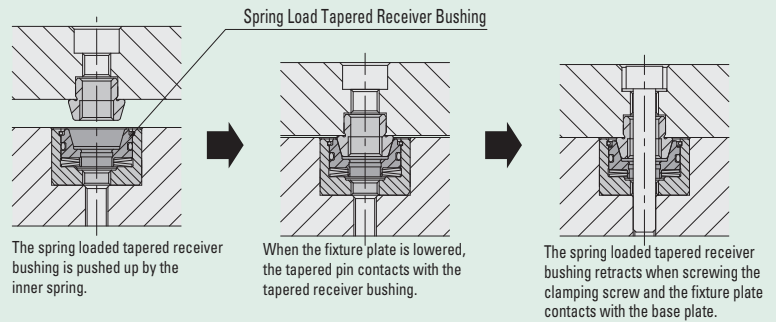
See page 561 for g6 and H7 tolerance specifications.

FLEX LOCATORS - THROUGH STYLE

Pins | CP721



How To Use



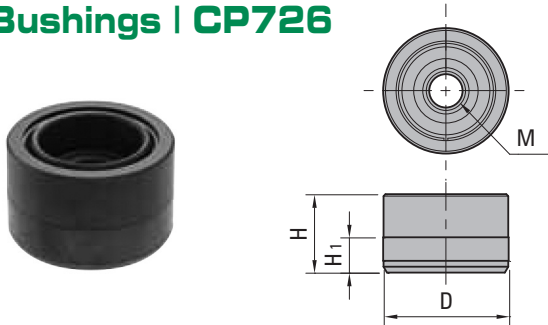
The flex locator pins are used with the flex receiver bushings. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning. Pin and bushing flex locators can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. Through-style locator pins engage with the through-style bushings by screwing down the single clamping screw through the pin and bushing. This retracts the spring-loaded receiver bushing allowing the fixture plate to contact the base plate. Made from SAE-4140 alloy steel, nitrocarburized treated.

Part #	D mm	(p6) D1 mm	d mm	H mm	H1 mm	M mm	Use Receiver Bushing	Use Protective Cover *
CP721-12025	15	12	8.5	10	4.5	M10X1.5 Depth 3.5	CP726-12025	CP726-12025P
CP721-15032	20	15	10.2	15	7.5	M12X1.75 Depth 4.5	CP726-15032	CP726-15032P
CP721-20045	30	20	14	20	10	M16X2 Depth 5.5	CP726-20045	CP726-20045P

See page 561 for p6 tolerance specifications.

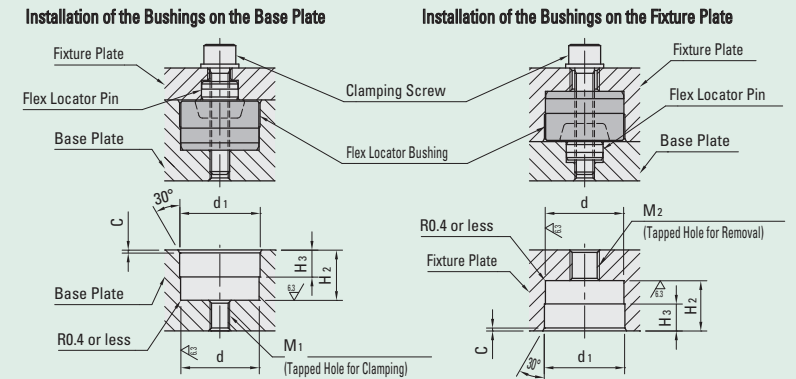
* Mounted in the receiver bushings to keep out debris while bushings are not in use. For complete information, search for the part number at www.fixtureworks.net.

Bushings | CP726

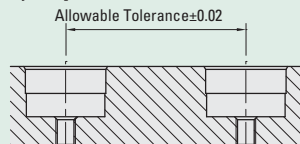


The flex locator pins are used with the flex receiver bushings. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning. Pin and bushing flex locators can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. Through-style locator pins engage with the through-style bushings by screwing down the single clamping screw through the pin and bushing. This retracts the spring-loaded receiver bushing allowing the fixture plate to contact the base plate. Made from SAE-4140 alloy steel, nitrocarburized treated.

How To Install



Spacing Tolerance



Part Number	d (H6)	H ₂ (+0.05)	d ₁	H ₃	C	M ₁	M ₂
CP726-12025	25	16.5	25.2	8	1	M 6 × 1	M10 × 1.5
CP726-15032	32	20.5	32.2	11	1.2	M 8 × 1.25	M12 × 1.75
CP726-20045	45	26.5	45.2	15	1.5	M12 × 1.75	M16 × 2

Part #	D mm	H mm	H1 mm	M mm	Lifting Force Lbs.*	Use Locator Pin	Use Protective Cover **
CP726-12025	25 (+0.028) (+0.018)	16	8	M8X1.25 (6.8)	121	CP721-12025	CP726-12025P
CP726-15032	32 (+0.031) (+0.021)	20	9	M10X1.5 (8.5)	135	CP721-15032	CP726-15032P
CP726-20045	45 (+0.031) (+0.021)	26	11	M14X1.5(12.5)	175	CP721-20045	CP726-20045P

*Spring force to push up the tapered bushing

** Mounted in the receiver bushings to keep out debris while bushings are not in use. For complete information, search for the part number at www.fixtureworks.net.

FLEX LOCATORS

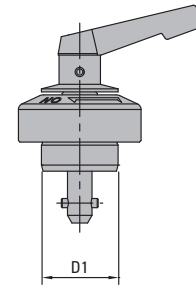
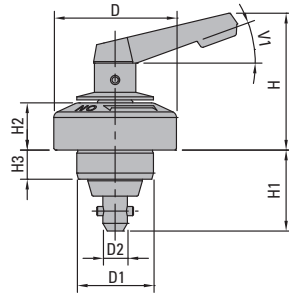
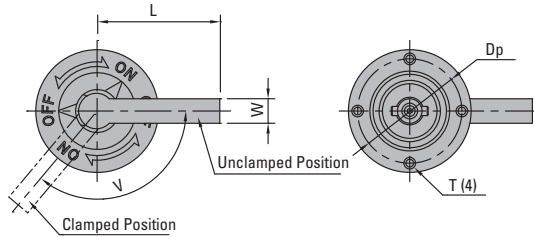
Fasteners | CP722



CP722-0840R-06



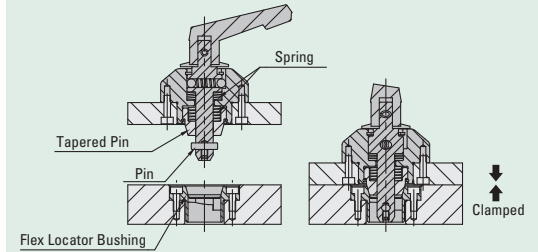
CP722-0840R-06N



CP722-0840R-06

CP722-0840R-06N

How To Use



These flex locator fasteners are used with the flex receiver bushings. In combination, these parts are designed to secure fixture bases and plates with highly accurate locating and positioning without the use of tools. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. The body and shank are made from SCM440 steel with a black oxide finish. The tapered pin is made from SCM440 steel with a nitrocarburized finish. The handle is made from die-cast zinc with a silver-gray painted finish. The pin is made from SUS303 stainless steel with a natural finish. For complete installation and technical information, search for the part number at www.fixtureworks.net.

Part #	Style	T mm	D mm	D1* mm	D2 mm	Dp mm	L mm	W mm	H mm	H1 mm	H2 mm	H3 mm	V degrees	V1 degrees	Clamping Force Lbs	Lifting Force** Lbs	Use with Bushing
CP722-0840R-06	with tapered pin	M3X0.5	40	25	8	34	40	8	45	26	15.5	9.5	130	20	134	22	CP727-0840R
CP722-0840R-06N	without tapered pin	M3X0.5	40	25	8	34	40	8	45	26	15.5	9.5	130	20	157	—	CP727-0840R

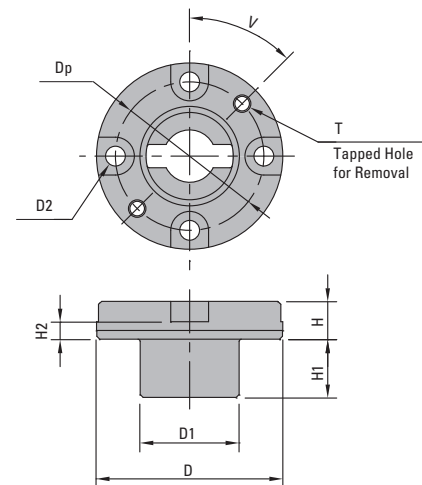
* For CP722-0840R-06, g6 tolerance. For CP722-0840R-06N, -0.05/-0.15 tolerance.

** The lifting force is the power of the inner spring to push up the movable tapered pin.

Bushings | CP727



These flex locator bushings are used with the flex locator fasteners. In combination, these parts are designed to be mounted on fixture bases and plates to allow for highly accurate locating and positioning. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. The bushings are spring loaded to make removing the fixture plate quick and easy. Made from SCM440 steel, nitrocarburized treated. For complete installation and technical information, search for the part number at www.fixtureworks.net.

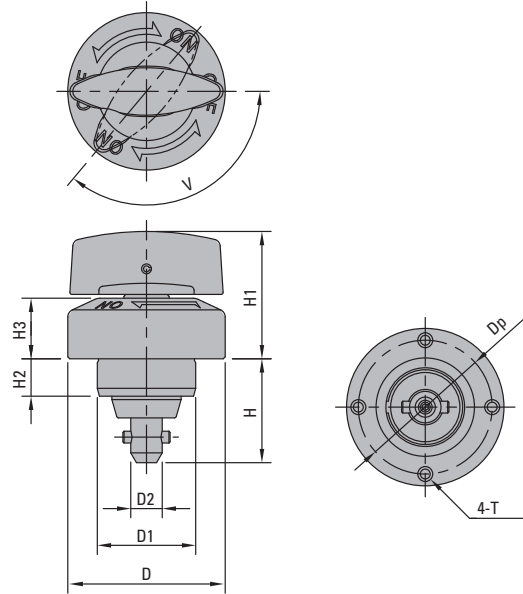


Part #	T mm	D mm (g6)	D1 mm	D2 mm	Dp mm	H mm	H1 mm	H2 mm	V degrees	Use with Locators
CP727-0632R	M3X0.5	28	12.5	3.4	21.5	5.5	8	2	45	CP727-0840R-06, CP727-0840R-06N
CP727-0840R	M3X0.5	32	17	3.4	25.5	6.5	10	3	45	CP727-0840R-06, CP727-0840R-06N

See page 561 for g6 tolerance specifications.

FLEX LOCATORS

Fasteners | CP723



These flex locator fasteners are used with the flex receiver bushings. In combination, these parts are designed to secure fixture bases and plates with highly accurate locating and positioning without the use of tools. They can be used on a wide variety of fixturing and allow for precise repeatability when mounting. This allows a fixture plate to be mounted on different bases very accurately when moving to a new machine or different operation. They can be used in both vertical and horizontal applications. The body and shank are made from SCM440 steel with a black oxide finish. The tapered pin is made from SCM440 steel with a nitrocarburized finish. The knob is made from SCS13 with a natural finish. The pin is made from SUS303 stainless steel with a natural finish. For complete installation and technical information, search for the part number at www.fixtureworks.net.

Part #	D mm	^{g6} D1 mm	D2 mm	Dp mm	H mm	H1 mm	H2 mm	H3 mm	V degrees	Clamping Force Lbs	Lifting Force* Lbs	Use with Bushing
CP723-0632R-04	32	16	5.5	25.5	22	27	7.5	12	130	78.6	6.7	CP727-0632R
CP723-0840R-06	40	25	8	34	26	32	9.5	15.5	130	134.8	22.4	CP727-0840R

See page 561 for g6 tolerance specifications.

* The lifting force is the power of the inner spring to push up the movable tapered pin.

FLEX LOCATORS

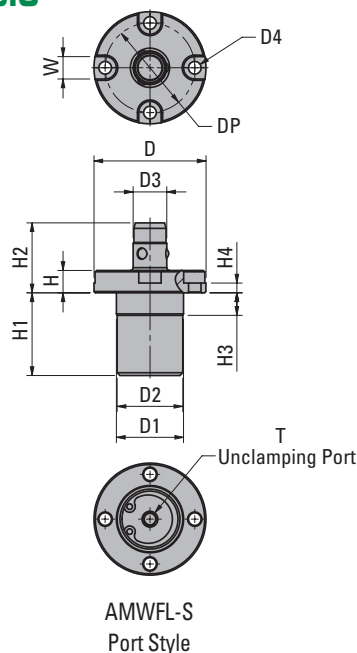
Pins | Pneumatic



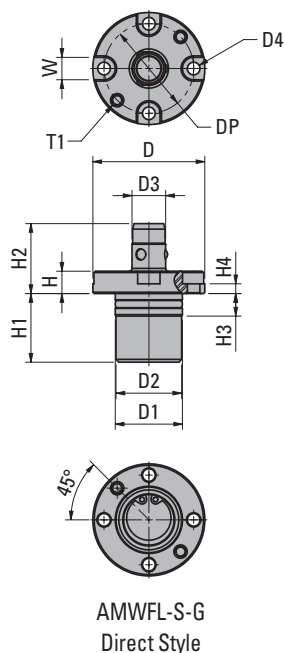
AMWFL-S
Port Style



AMWFL-S-G
Direct Style

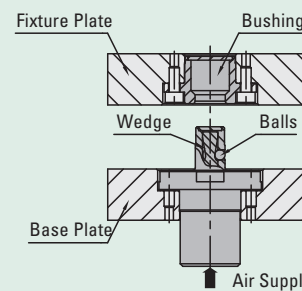


AMWFL-S
Port Style

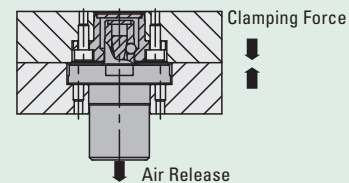


AMWFL-S-G
Direct Style

How To Use



Supply air for unclamping. The wedge is driven upward to release the balls.



Release air pressure for clamping. Remains clamped without air supply.

These pneumatic flex locator pins are used with flex locator receptacles for locating and fastening in a wide range of tooling, fixturing and assembly operations. The bushing is centered and clamped when the three balls are pushed out for high locating repeatability. When air pressure is applied, the balls retract into the pin, allowing the pin to be released from the receptacle. The port style features an unclamping port. Locating repeatability is ± 10 micrometers. The body is made from S45C steel with an electroless nickel plated finish. The balls are made from SUS440C stainless steel. The coiled spring is made from SUS304WPB stainless steel. For complete technical information, search for the part number at www.fixtureworks.net.

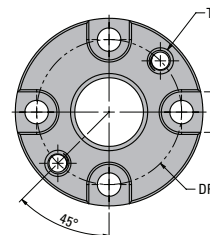
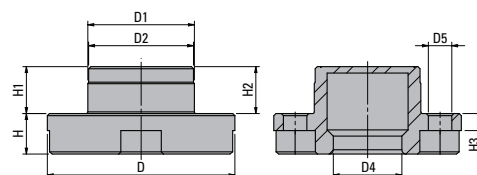
Part #	T Port	T1	D mm	g6 D1 mm	D2 mm	h8 D3 mm	D4 mm	Dp mm	W mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	Air Pressure psi	Clamping Force Lbs.	Use with Receptacle
AMWF18L-4S	M5X0.8	-	40	24	23.4	12	4.5	32	8	8	29.5	25	8	3.5	72.5	56	AMWF18-BU
AMWF26L-4S	M5X0.8	-	51	32	31.4	16	5.5	41	9.5	9.5	31.7	28.5	8.5	4	72.5	78	AMWF26-BU
AMWF18L-4S-G	-	M4X0.7	40	24	23.4	12	4.5	32	8	8	24.5	25	8	3.5	72.5	56	AMWF18-BU
AMWF26L-4S-G	-	M5X0.8	51	32	31.4	16	5.5	41	9.5	9.5	25.5	28.5	8.5	4	72.5	78	AMWF26-BU

See page 561 for g6 tolerance specifications.

Bushings | Pneumatic



These flex locator receptacles are used with the pneumatic flex locator pins for locating and fastening in a wide range of tooling, fixturing and assembly operations. When air pressure is applied, the balls retract into the pin, allowing the pin to be released from the receptacle. Locating repeatability is ± 10 micrometers. The body is made from S45C steel with an electroless nickel plated finish. For complete technical information, search for the part number at www.fixtureworks.net.



Part #	T mm	D mm	g6 D1 mm	D2 mm	D3 mm	E7 D4 mm	D5 mm	Dp mm	H mm	H1 mm	H2 mm	H3 mm	Use with Pin
AMWF18-BU	M4X0.7	36	20	19.6	8	12.1	4.5	28	8	10.5	7.5	3.5	AMWF18
AMWF26-BU	M5X0.8	44	25	24.6	9.5	16.1	5.5	34	9.5	11	7	4	AMWF26

See page 561 for g6 tolerance specifications.



APS ZERO-POINT LOCATING SYSTEM

The Pneumatic Zero-Point System of Choice

Designed to reduce your setup times and increased productivity, APS (Automatic Positioning System) is a universal connection between the machine tool, the clamping device and/or the workpiece that allows both positioning and clamping in one operation. Used with clamping pins that are mounted to a plate or a workpiece, the APS modules use oiled compressed air (6 BAR-85 psi) for unlocking and spring force for clamping. No compressed air is required in the locked condition. Positioning and clamping in one operation with repeatability accuracy of 5 microns (.0002")

**Complete Module
Plate Units Available!**

**Columns, interface
plates, and fittings
available!**

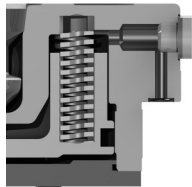


Designed by SMW-Autoblok,
a leading manufacturer of
workholding equipment.



Maximum Accuracy

Maximum accuracy of the tapered coupling between the pin and the module. Tapered pin for self-centering.

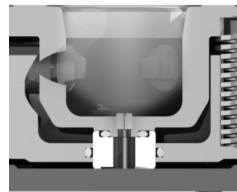


Turbo Function

The Turbo function is always integrated in APS PREMIUM modules. Turbo is the function by means of which the compressed air increases the clamping force applied by the springs (2,698 lbs.) until reaching the "PULL DOWN" clamping force of 6,744 lbs.



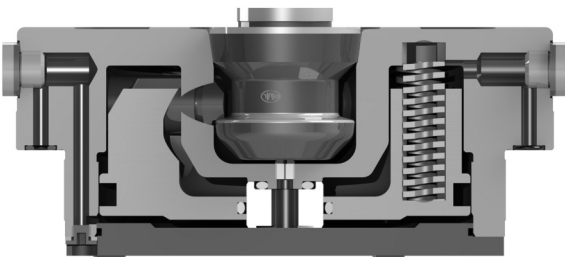
**Automatic
Cleaning Function
(APS Premium)**



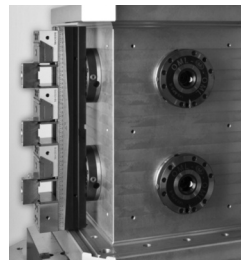
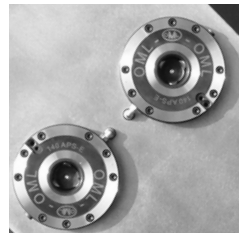
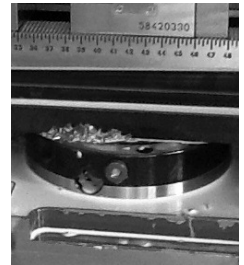
Maximum Rigidity

Monolithic piston with inclined planes. Jaws with double inclined plane which generates the "PULL DOWN" effect.

Clamping & Positioning in One Operation



- Air is applied to open the module to receive the pin.
- When the air is released, the jaws are forced outward by the springs and slide up the inclined plane on the pin, causing a pull down effect.
- With the air supply disconnected, the piston is kept in the lower position by the pre-loaded springs. The clamping force is 1,686 lbs.
- When air is applied to the Turbo port, the pull-down force increases to 5,845 lbs. as the air pressure increasing the extension of the springs and the jaws force the pins down even more.
- The air applied to the Turbo port will be discharged automatically with the module is unclamped.

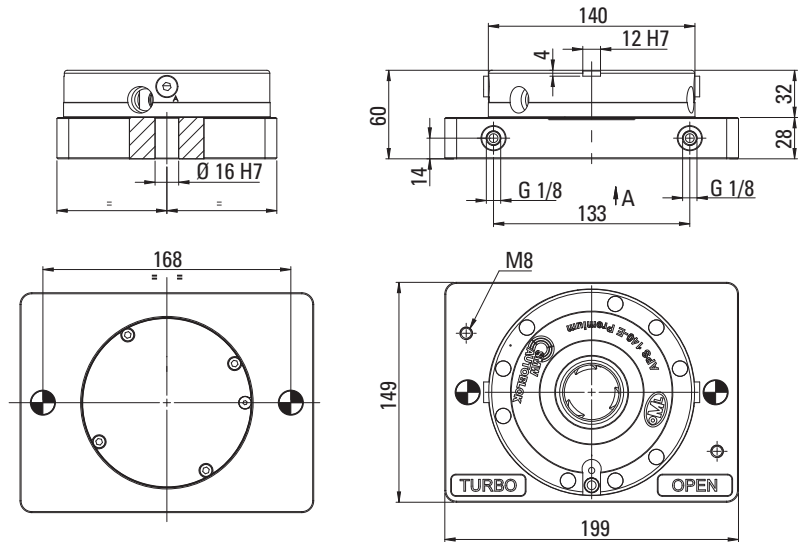


APS Modules

Part #	Module Type	Number of Jaws	Turbo	Anti Rotation Key	Automatic Cleaning Function	Automatic Pallet Change (APC)	Pull Down Force (Lbs.)
F646-162120	APS 100 E Premium	2	•	•	•	•	3,372
F646-162180	APS 100 E Basic	2	•	-	-	-	3,372
F646-162300	APS 140 E Premium	3	•	•	•	•	6,744
F646-162380	APS 140 E Premium Light	3	•	-	•	-	6,744
F646-162800	APS 140 E Premium Inox SS	3	•	•	•	•	6,744
F646-162400	APS 140 I Premium	3	•	•	•	•	6,744
F646-162500	APS 140 E Basic	2	-	-	-	-	2,698
F646-162610	APS 190 E Premium	3	•	•	•	•	10,116

APS ZERO-POINT LOCATING SYSTEM

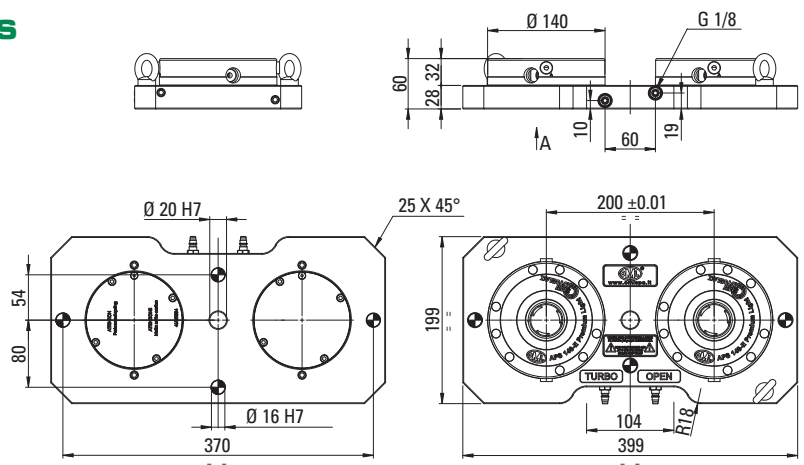
Plate Units | APS 140 | 1 Module



Pre-assembled clamping unit includes rectangular plate and one Premium APS 140-E module.

Part #	Type
F646-168260	Premium

Plate Units | APS 140 | 2 Modules



Pre-assembled clamping unit includes rectangular plate and two APS 140-E modules. Select Premium Light or Basic module configurations.

Part #	Type
F646-168270	Premium Light
F646-168275	Basic



APS ZERO-POINT LOCATING SYSTEM

Plate Units | APS 140 | 4 Modules | Vertical

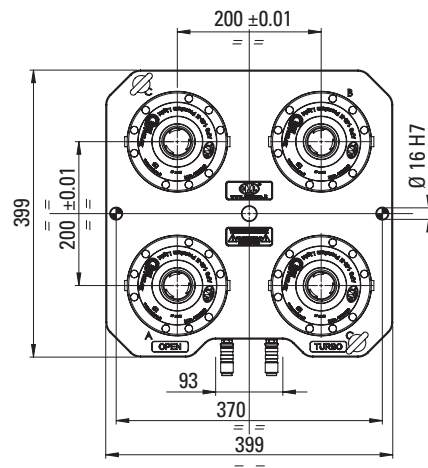
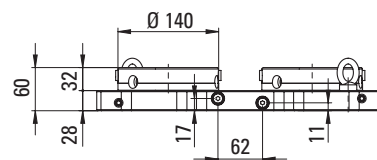
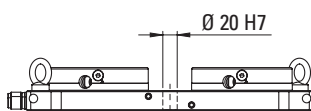
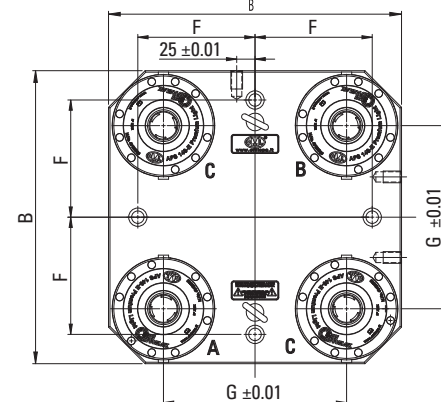
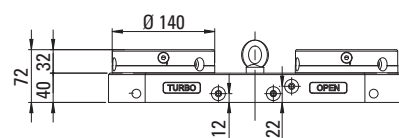
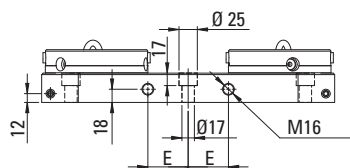
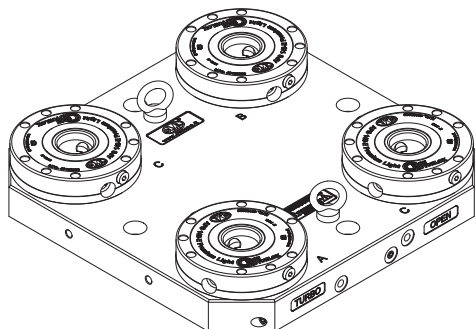


Plate with four APS 140-E modules for vertical machining. Select Premium Light or Basic module configurations.

Part #	Module Type
F646-168210	APS Premium Light
F646-168215	APS Basic

Plate Units | APS 140 | 4 Modules | Horizontal

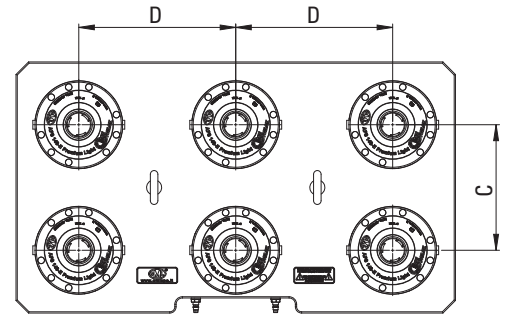
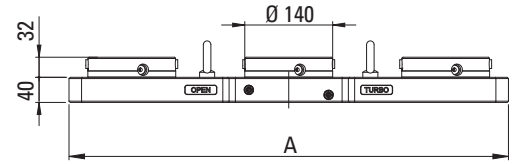
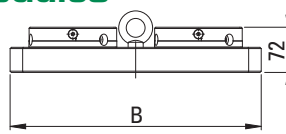
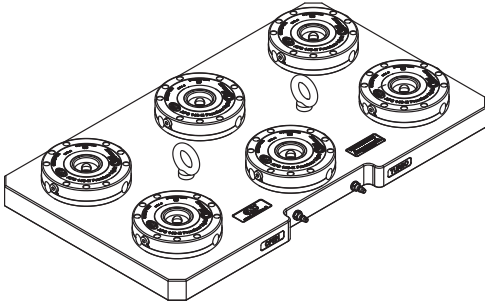


Pre-assembled clamping unit includes square plate and four APS 140-E modules. For use on horizontal machining centers. Select Premium Light or Basic module configurations.

Part #	B mm	E mm	F mm	G mm	Type
F646-167040	400	55	160	250	Premium Light
F646-167045	400	55	160	250	Basic
F646-167050	500	75	200	300	Premium Light
F646-167055	500	75	200	300	Basic
F646-167060	630	100	250	420	Premium Light
F646-167065	630	100	250	420	Basic

APS ZERO-POINT LOCATING SYSTEM

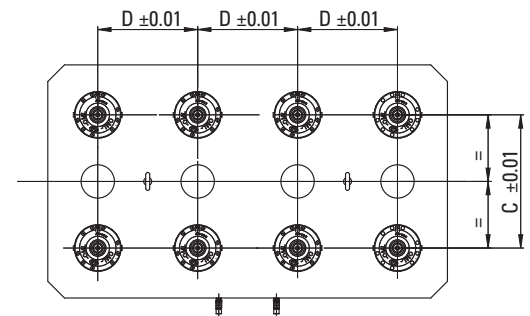
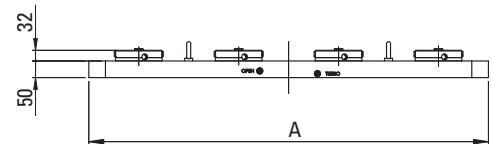
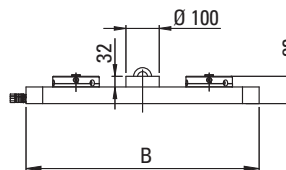
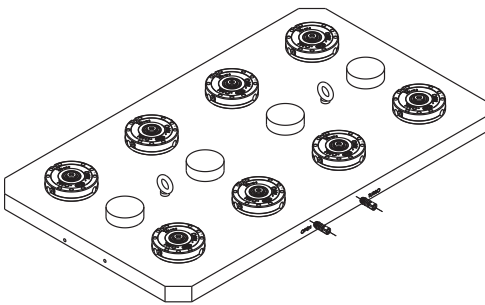
Plate Units | APS 140 | 6 Modules



Pre-assembled clamping unit includes rectangular plate and six APS 140-E modules. Select Premium Light or Basic module configurations.

Part #	A mm	B mm	C mm	D mm	Type
F646-168110	600	400	200	200	Premium Light
F646-168115	600	400	200	200	Basic
F646-168120	700	400	200	250	Premium Light
F646-168125	700	400	200	250	Basic
F646-168130	800	400	300	300	Premium Light
F646-168135	800	400	300	300	Basic

Plate Units | APS 140 | 8/10 Modules



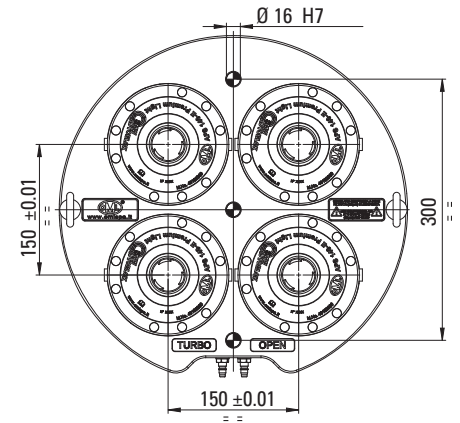
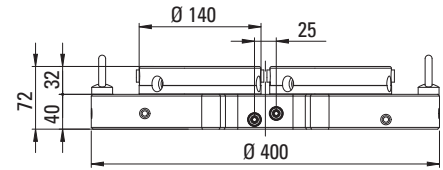
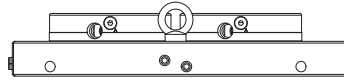
Pre-assembled clamping unit includes rectangular plate eight or ten APS 140-E modules. Select Premium Light or Basic module configurations.

Part #	A mm	B mm	C mm	D mm	Qty of Modules	Type
F646-168140	1000	500	250	250	8	Premium Light
F646-168145	1000	500	250	250	8	Basic
F646-168150	1200	700	400	300	8	Premium Light
F646-168155	1200	700	400	300	8	Basic
F646-168160	1400	700	400	300	10	Premium Light
F646-168165	1400	700	400	300	10	Basic



APS ZERO-POINT LOCATING SYSTEM

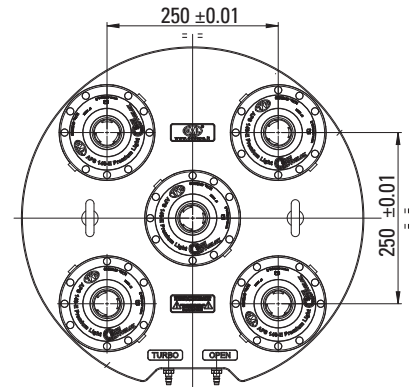
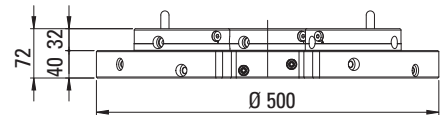
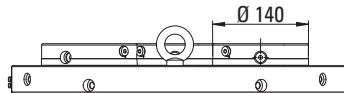
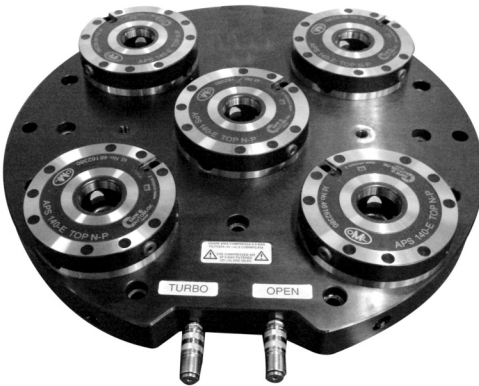
Plate Units | APS 140 | 4 Modules | Round



Pre-assembled clamping unit includes round plate and four APS 140-E modules. Select Premium Light or Basic module configurations.

Part #	Type
F646-168020	Premium Light
F646-168025	Basic

Plate Units | APS 140 | 5 Modules | Round

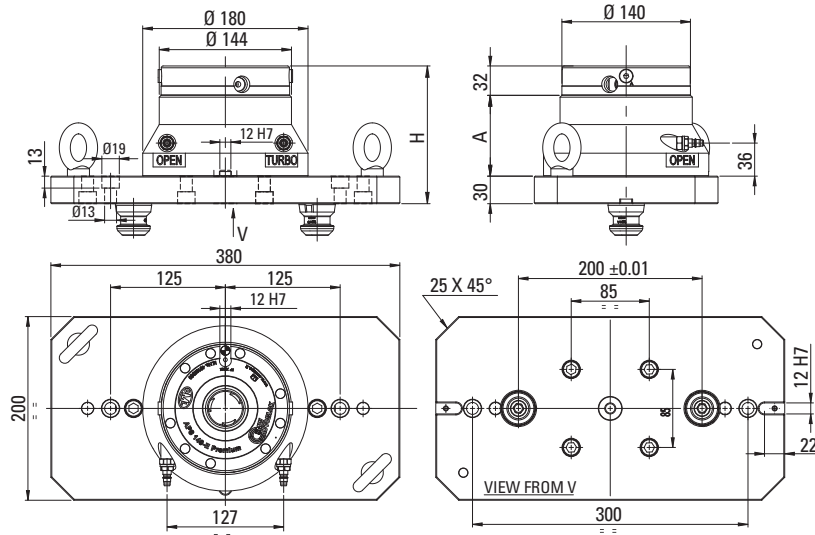


Pre-assembled clamping unit includes round plate and five APS 140-E modules. Select Premium Light or Basic module configurations.

Part #	Type
F646-168030	Premium Light
F646-168035	Basic

APS ZERO-POINT LOCATING SYSTEM

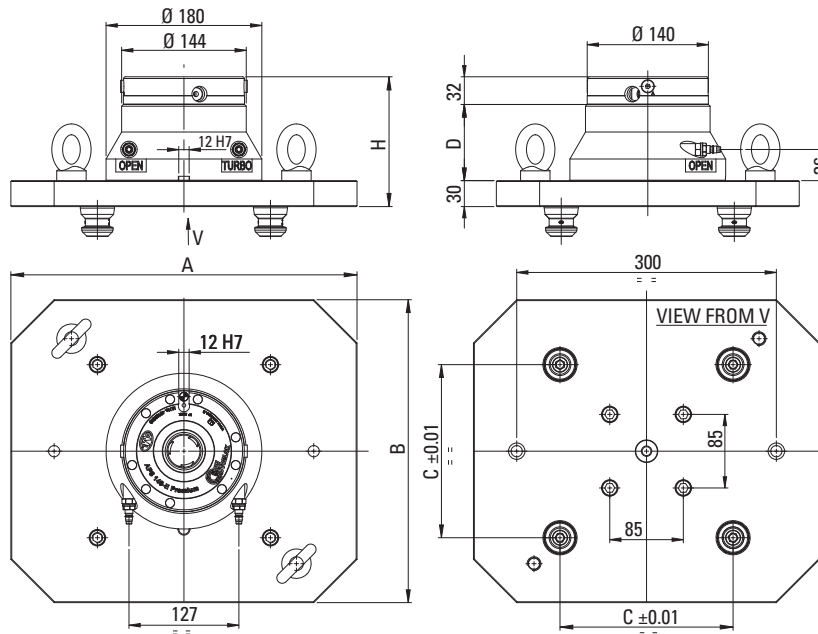
Plate Units | APS 140 | 1 Module | 5-Axis | 2-Mod Adapt



Pre-assembled clamping unit includes rectangular plate and one Premium APS 140-E module for 5-axis machine tool. Plate is adaptable for two-module use.

Part #	A mm	H mm	Type
F646-167810	88	150	Premium
F646-167820	148	210	Premium

Plate Units | APS 140 | 1 Module | 5-Axis | 4-Mod Adapt



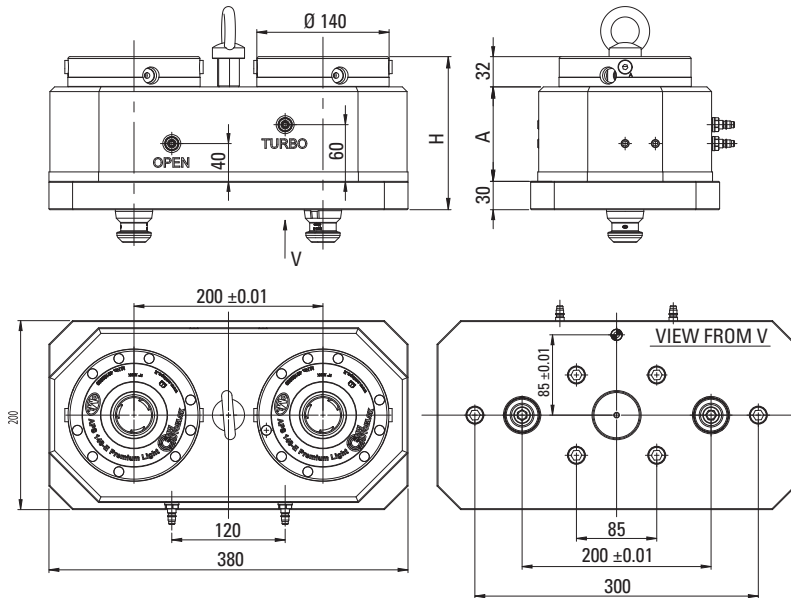
Pre-assembled clamping unit includes rectangular plate and one Premium APS 140-E module for 5-axis machine tool. Plate is adaptable for four-module use.

Part #	A mm	B mm	C mm	D mm	H mm	Type
F646-167830	400	350	200	88	150	Premium
F646-167840	400	350	200	148	210	Premium
F646-167850	500	450	300	88	150	Premium
F646-167860	500	450	300	300	210	Premium



APS ZERO-POINT LOCATING SYSTEM

Plate Units | APS 140 | 2 Modules | 5-Axis | 2-Mod Adapt

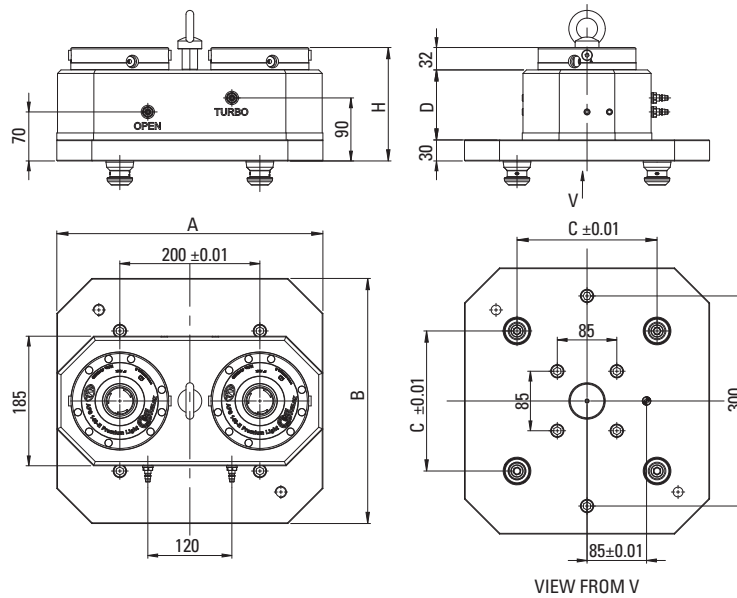


Pre-assembled clamping unit includes rectangular plate and two Premium APS 140-E modules for 5-axis machine tool. Adaptation for plates at two modules.

Part #	A mm	H mm	Type
F646-167910	100	162	Premium Light
F646-167915	100	162	Basic
F646-167920	200	262	Premium Light
F646-167925	200	262	Basic

APS ZERO-POINT LOCATING SYSTEM

Plate Units | APS 140 | 2 Modules | 5-Axis | 4-Mod Adapt



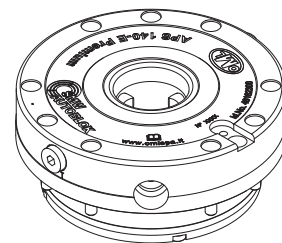
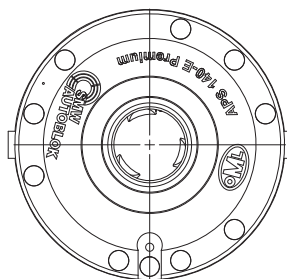
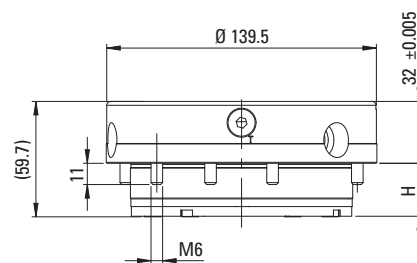
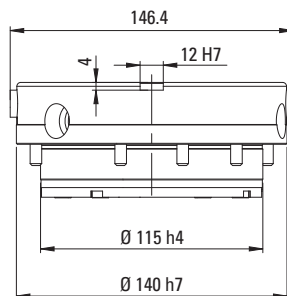
Pre-assembled clamping unit includes rectangular plate and two Premium APS 140-E modules for 5-axis machine tool. Plate is adaptable for four-module use.

Part #	A mm	B mm	C mm	D mm	H mm	Type
F646-167930	400	350	200	100	162	Premium Light
F646-167935	400	350	200	100	162	Basic
F646-167940	400	350	200	200	262	Premium Light
F656-167945	400	350	200	200	262	Basic
F646-167950	500	450	300	100	162	Premium Light
F646-167955	500	450	300	100	162	Basic
F646-167960	500	450	300	200	262	Premium Light
F646-167965	500	450	300	200	262	Basic



APS ZERO-POINT LOCATING SYSTEM

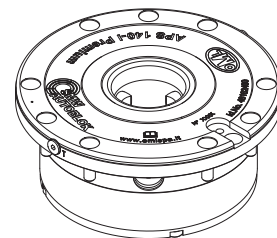
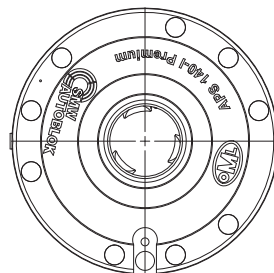
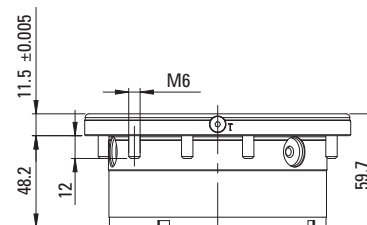
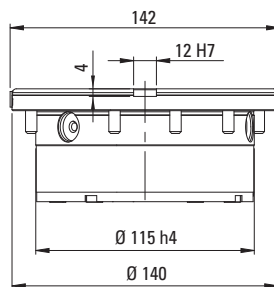
Modules | 140-E | Premium



APS 140-E Premium modules provide the highest range of features in the APS line including anti-rotating protection, automatic cleaning, 3-jaw clamping and the Turbo function. Fully sealed, protective coating. Select steel or Inox stainless steel versions.

Part #	H mm	Pull Down Force w/ Turbo Function Lbs.	Holding Force M10/M12/M16 Lbs.	Unlocking Pressure Bar	Repeatability mm	APS-140 Type
F646-162300	27.4	6744	7,868 / 11,240 / 16,861	6	<0.005	Premium
F646-162800	27.7	6744	7,868 / 11,240 / 16,861	6	<0.005	Premium Inox Stainless

Modules | 140-I | Premium

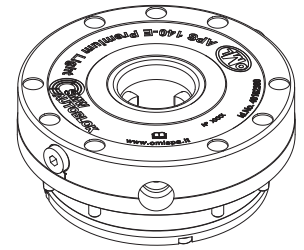
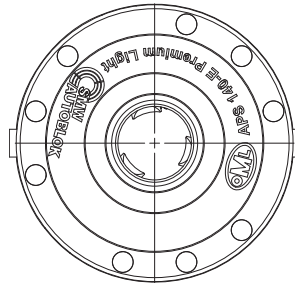
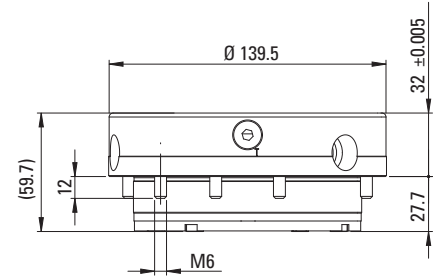
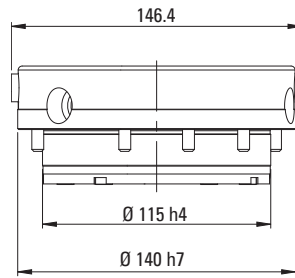


The 140-I Premium module features an even more compact design for extra low installations. Features include anti-rotating protection, automatic cleaning, 3-jaw clamping and the Turbo function. Fully sealed, protective coating.

Part #	Pull Down Force w/ Turbo Function Lbs.	Holding Force M10/M12/M16 Lbs.	Unlocking Pressure Bar	Repeatability mm	APS-140 Type
F646-162400	6744	7,868 / 11,240 / 16,861	6	<0.005	Premium

APS ZERO-POINT LOCATING SYSTEM

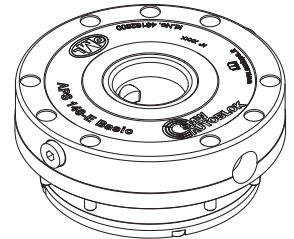
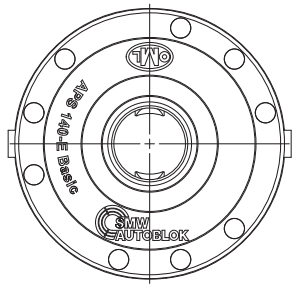
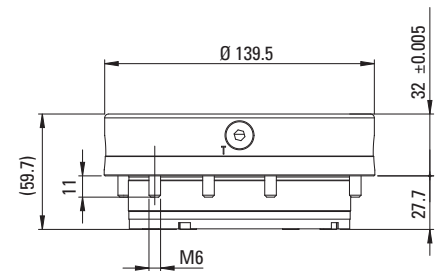
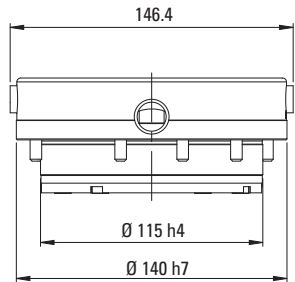
Modules | 140 | Premium Light



APS 140-E Premium Light module features 3-jaw clamping, air cleaning and the Turbo function. Fully sealed, protective coating.

Part #	Pull Down Force w/ Turbo Function Lbs.	Holding Force M10/M12/M16 Lbs.	Unlocking Pressure Bar	Repeatability mm	APS-140 Type
F646-162380	6744	7,868 / 11,240 / 16,861	6	<0.005	Premium Light

Modules | 140 | Basic



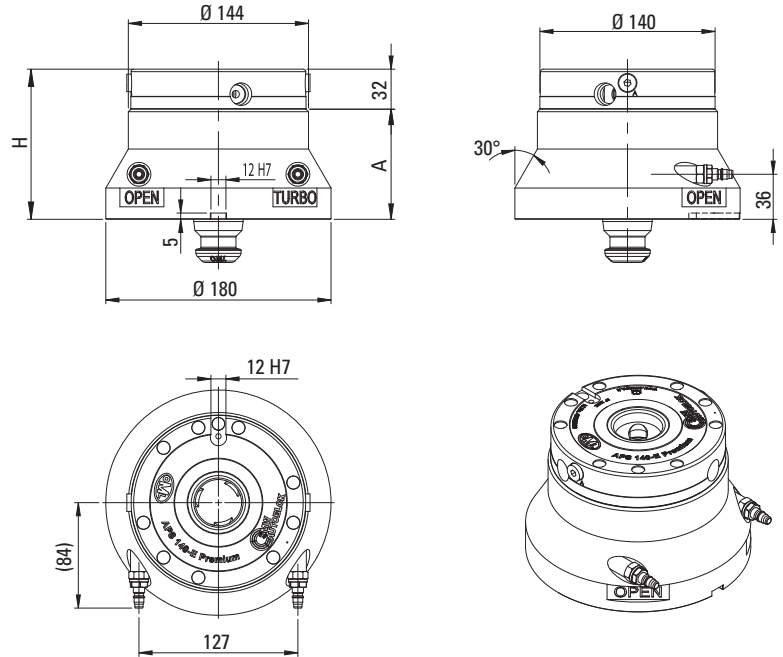
APS 140-E Basic module features 2-jaw clamping and the Turbo function. Fully sealed, protective coating.

Part #	Pull Down Force w/ Turbo Function Lbs.	Holding Force M10/M12/M16 Lbs.	Unlocking Pressure Bar	Repeatability mm	APS-140 Type
F646-162500	2698	7,868 / 11,240 / 16,861	6	<0.005	Basic



APS ZERO-POINT LOCATING SYSTEM

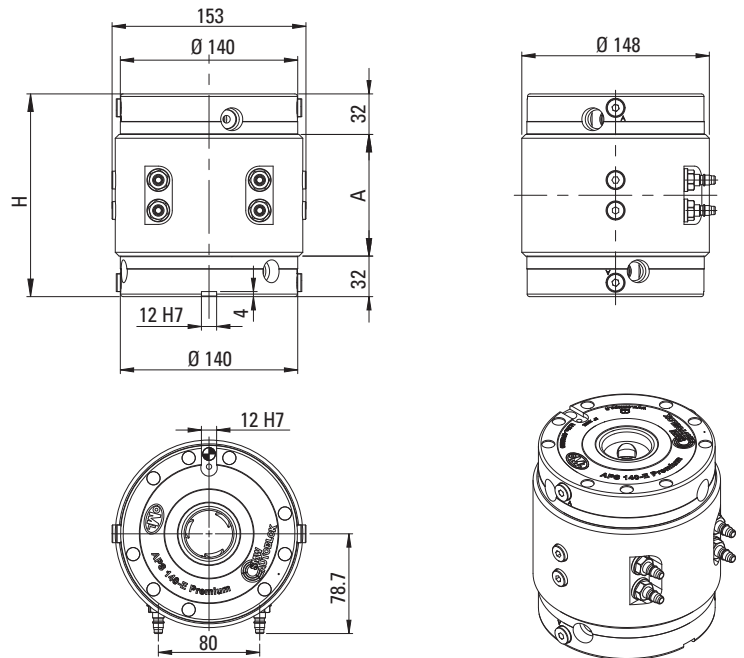
Riser | APS 140 | 5-Axis



APS 140-E riser includes one Premium APS 140-E module. Attach the riser onto a separate APS module with a Type A pin to raise your clamping height off worktable or plate for 5-axis machine tooling. Select from two Riser unit heights.

Part #	A mm	H mm	APS-140 Type
F646-167819	88	120	Premium
F646-167829	148	180	Premium

Combi Unit | APS 140



APS 140 Combi clamping unit is equipped with two APS 140-E Premium clamping modules. Select from two Combi unit heights.

Part #	A mm	H mm	APS-140 Type
F646-168350	56	120	Premium
F646-168310	96	160	Premium

APS ZERO-POINT LOCATING SYSTEM

Clamping Pins | APS 140 | A - B - C



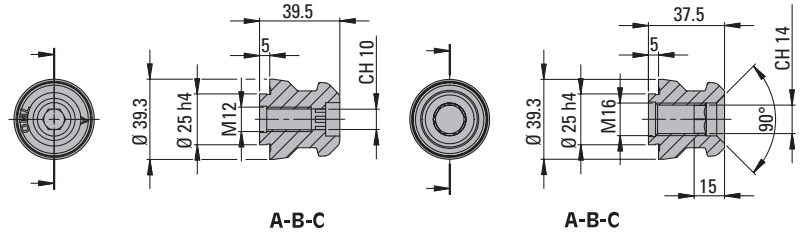
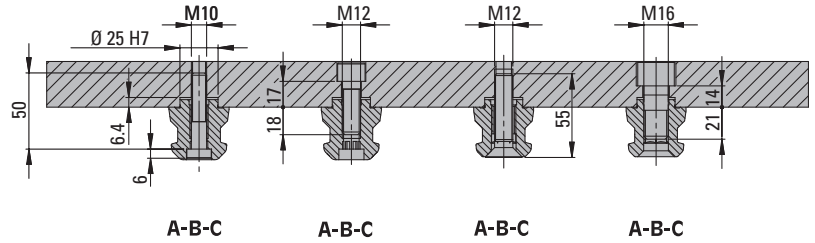
A - Centering Pin



B - Positioning Pin



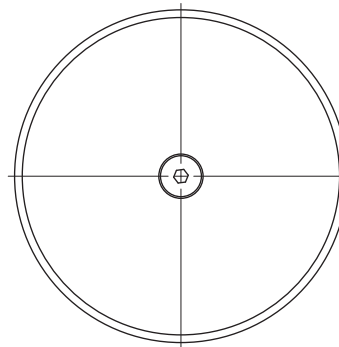
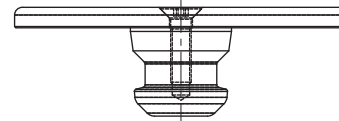
C - Clamping Pin



APS 140 Clamping Pins for positioning and clamping on the APS 140 system. Wear resistant due to an extra hard protective coating. Large entry radii of the clamping pins for easy and safe loading.

Part #	Pin Type	Pin Use	Centering Tolerance mm	Holding Force Lbs.	Size
F646-162355	A	Centering and Clamping	-	11,240	M12
F646-162356	B	Reference and Clamping	-	11,240	M12
F646-162357	C	Clamping only	±0.05	11,240	M12
F646-162455	A	Centering and Clamping	-	16,861	M16
F646-162456	B	Reference and Clamping	-	16,861	M16
F646-162457	C	Clamping only	±0.05	16,861	M16

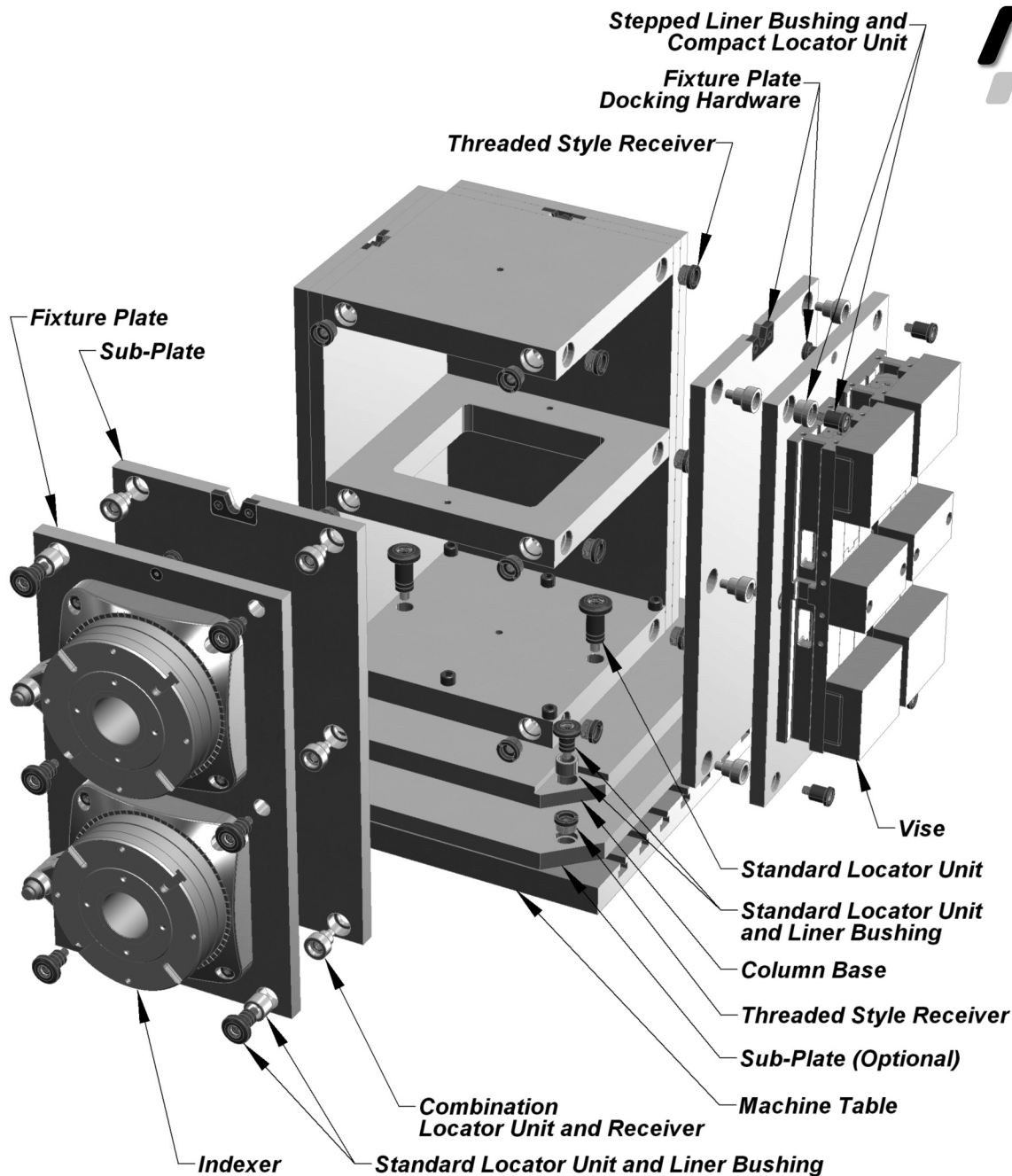
Module Protection Cover | APS140



This protective cover fits on any APS 140 clamping module.

Part #	Type
F646-162325	APS 140

MODULAR TOOLING COLUMNS

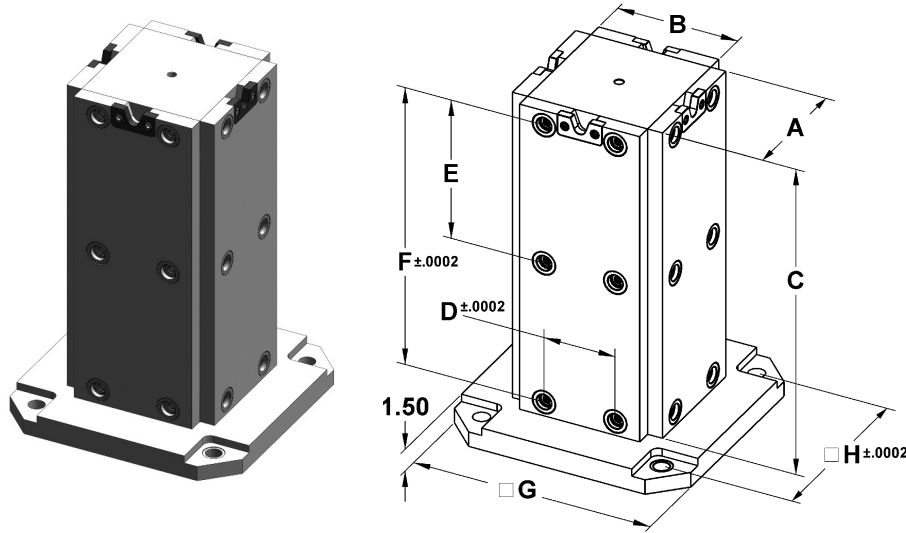


The ModLoc Modular Tooling Columns feature a unique design that consists of structural support brackets and sub-plates to form a tooling column that is as rigid and strong as traditional cast tombstones. These tooling columns are easily adapted to a variety of setups to help maximize the use of machining center's functional envelope. Because they are modular in design they permit flexible configurations that fully utilize the speed and accuracy of the SpeedLoc precision mounting and locating system.

The open architecture allows these columns to easily accommodate hydraulic and electrical systems inside the column. This design also reduces the overall weight of the columns. All the tooling columns are supplied with four aluminum or steel sub-plates. Each sub-plate comes with six SpeedLoc receivers for fast and accurate fastening of fixture plates to the sub-plates. The supplied sub-plates are available in MIC-6 aluminum or A36 steel. When assembled the ModLoc columns are square within .001" or less per foot (top to bottom and across a face). The part numbers on the following page are supplied with docking plate hardware (MPDH-10001) on each of the four column faces. Tooling columns without docking plates are available by request. Bases are configurable in steel or aluminum.

Part numbers on the following page ending with SL are supplied with four base mounting holes as shown on the drawing. Two holes are supplied with precision liners to be used with the SpeedLoc mounting system. Part numbers ending with XX designate user specified base mounting hole spacing. The following pages show just some of the sizes and options available. Fixtureworks can assist you to customize any of these products to meet your exact needs.

MODULAR TOOLING SQUARE COLUMNS



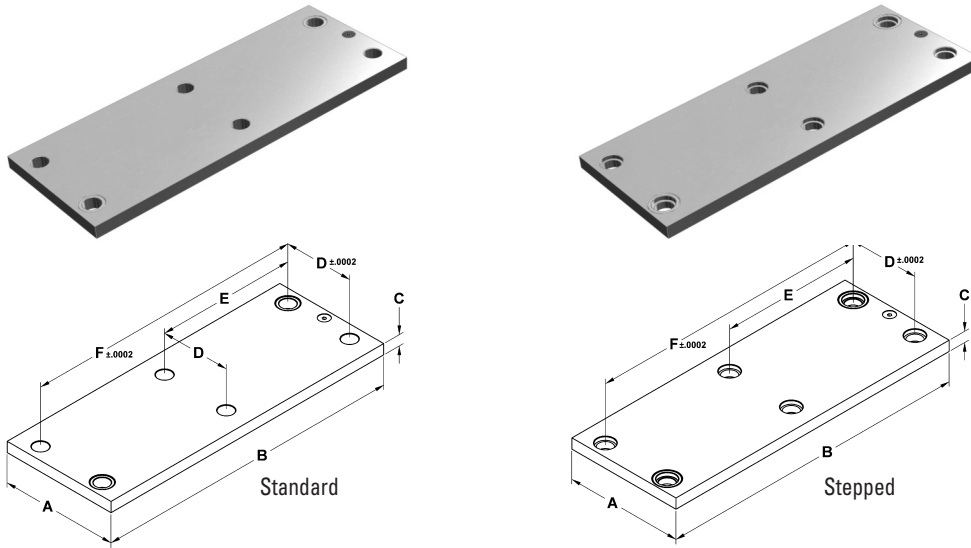
Aluminum

Part #	Face Size A	Face Size B	Height C	Hole Spacing D	Hole Spacing E	Hole Spacing F	Base Size G mm	Hole Spacing H	Receiver Size mm	Weight Lbs.
MPCA-080821-400SL	8.00	8.00	21.00	4.75	9.50	19.05	400	12.00	25	145
MPCA-080821-400XX	8.00	8.00	21.00	4.75	9.50	19.05	400	—	25	145
MPCA-080821-500SL	8.00	8.00	21.00	4.75	9.50	19.05	500	16.00	25	165
MPCA-080821-500XX	8.00	8.00	21.00	4.75	9.50	19.05	500	—	25	165
MPCA-080821-630SL	8.00	8.00	21.00	4.75	9.50	19.05	630	20.00	25	215
MPCA-080821-630XX	8.00	8.00	21.00	4.75	9.50	19.05	630	—	25	215
MPCA-101024-400SL	10.00	10.00	24.00	6.75	11.00	22.05	400	12.00	25	195
MPCA-101024-400XX	10.00	10.00	24.00	6.75	11.00	22.05	400	—	25	195
MPCA-101024-500SL	10.00	10.00	24.00	6.75	11.00	22.05	500	16.00	25	215
MPCA-101024-500XX	10.00	10.00	24.00	6.75	11.00	22.05	500	—	25	215
MPCA-101024-630SL	10.00	10.00	24.00	6.75	11.00	22.05	630	20.00	25	265
MPCA-101024-630XX	10.00	10.00	24.00	6.75	11.00	22.05	630	—	25	265
MPCA-121224-500SL	12.00	12.00	24.00	8.75	11.00	22.05	500	16.00	25	250
MPCA-121224-500XX	12.00	12.00	24.00	8.75	11.00	22.05	500	—	25	250
MPCA-121224-630SL	12.00	12.00	24.00	8.75	11.00	22.05	630	20.00	25	280
MPCA-121224-630XX	12.00	12.00	24.00	8.75	11.00	22.05	630	—	25	280
MPCA-161628-630SL	16.00	16.00	28.00	12.75	13.00	26.05	630	20.00	25	425
MPCA-161628-630XX	16.00	16.00	28.00	12.75	13.00	26.05	630	—	25	425

Steel

Part #	Face Size A	Face Size B	Height C	Hole Spacing D	Hole Spacing E	Hole Spacing F	Base Size G mm	Hole Spacing H	Receiver Size mm	Weight Lbs.
MPCS-080821-400SL	8.00	8.00	21.00	4.75	9.50	19.05	400	12.00	25	385
MPCS-080821-400XX	8.00	8.00	21.00	4.75	9.50	19.05	400	—	25	385
MPCS-080821-500SL	8.00	8.00	21.00	4.75	9.50	19.05	500	16.00	25	440
MPCS-080821-500XX	8.00	8.00	21.00	4.75	9.50	19.05	500	—	25	440
MPCS-080821-630SL	8.00	8.00	21.00	4.75	9.50	19.05	630	20.00	25	535
MPCS-080821-630XX	8.00	8.00	21.00	4.75	9.50	19.05	630	—	25	535
MPCS-101024-400SL	10.00	10.00	24.00	6.75	11.00	22.05	400	12.00	25	515
MPCS-101024-400XX	10.00	10.00	24.00	6.75	11.00	22.05	400	—	25	515
MPCS-101024-500SL	10.00	10.00	24.00	6.75	11.00	22.05	500	16.00	25	575
MPCS-101024-500XX	10.00	10.00	24.00	6.75	11.00	22.05	500	—	25	575
MPCS-101024-630SL	10.00	10.00	24.00	6.75	11.00	22.05	630	20.00	25	670
MPCS-101024-630XX	10.00	10.00	24.00	6.75	11.00	22.05	630	—	25	670
MPCS-121224-500SL	12.00	12.00	24.00	8.75	11.00	22.05	500	16.00	25	685
MPCS-121224-500XX	12.00	12.00	24.00	8.75	11.00	22.05	500	—	25	685
MPCS-121224-630SL	12.00	12.00	24.00	8.75	11.00	22.05	630	20.00	25	780
MPCS-121224-630XX	12.00	12.00	24.00	8.75	11.00	22.05	630	—	25	780
MPCS-161628-630SL	16.00	16.00	28.00	12.75	13.00	26.05	630	20.00	25	1,135
MPCS-161628-630XX	16.00	16.00	28.00	12.75	13.00	26.05	630	—	25	1,135

MODULAR TOOLING COLUMN FIXTURE PLATES



These pre-machined fixture plates allow for fast and accurate fixture assembly and setup using SpeedLoc locators. They are designed for precise fit with the ModLoc tooling columns and will also work with any machine configuration requiring a fixture plate. Each plate includes six pre-drilled holes for locating and fastening with the SpeedLoc locators to the ModLoc tooling column sub-plates (Two holes are lined with bushings for precise locating). The fixture plates are available with either standard or stepped liners. Thickness tolerance is a minimum $\pm .005$ ". The aluminum sub-plates are made from MIC-6 aluminum. The steel sub-plates are made from A36 steel. These fixture plates can be supplied with positioning studs installed for use with the docking hardware. The parts below show just some of the sizes and options available. Fixtureworks can assist you to customize any of these products to meet your exact needs.

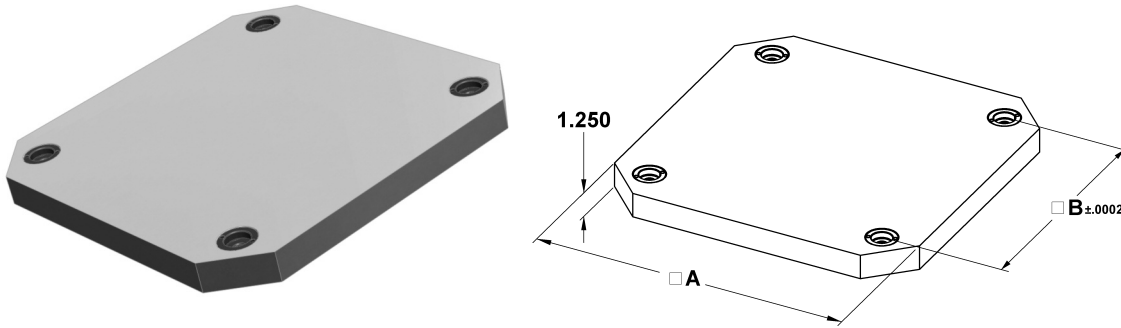
Aluminum

Standard Liner Part #	Stepped Liner Part #	Width A	Length B	Thickness C	Hole Spacing D	Hole Spacing E	Hole Spacing F	Liner Size mm	Weight Lbs.
MPFPA-0821075-SL	MPFPA-0821075-CH	8.00	21.00	.75	4.75	9.50	19.05	25	12
MPFPA-0821100-SL	MPFPA-0821100-CH	8.00	21.00	1.00	4.75	9.50	19.05	25	16
MPFPA-1024075-SL	MPFPA-1024075-CH	10.00	24.00	.75	6.75	11.00	22.05	25	17
MPFPA-1024100-SL	MPFPA-1024100-CH	10.00	24.00	1.00	6.75	11.00	22.05	25	23
MPFPA-1224075-SL	MPFPA-1224075-CH	12.00	24.00	.75	8.75	11.00	22.05	25	21
MPFPA-1224100-SL	MPFPA-1224100-CH	12.00	24.00	1.00	8.75	11.00	22.05	25	27
MPFPA-1628075-SL	MPFPA-1628075-CH	16.00	28.00	.75	12.75	13.00	26.05	25	32
MPFPA-1628100-SL	MPFPA-1628100-CH	16.00	28.00	1.00	12.75	13.00	26.05	25	42

Steel

Standard Liner Part #	Stepped Liner Part #	Width A	Length B	Thickness C	Hole Spacing D	Hole Spacing E	Hole Spacing F	Liner Size mm	Weight Lbs.
MPFPS-0821075-SL	MPFPS-0821075-CH	8.00	21.00	.75	4.75	9.50	19.05	25	36
MPFPS-0821100-SL	MPFPS-0821100-CH	8.00	21.00	1.00	4.75	9.50	19.05	25	48
MPFPS-1024075-SL	MPFPS-1024075-CH	10.00	24.00	.75	6.75	11.00	22.05	25	51
MPFPS-1024100-SL	MPFPS-1024100-CH	10.00	24.00	1.00	6.75	11.00	22.05	25	68
MPFPS-1224075-SL	MPFPS-1224075-CH	12.00	24.00	.75	8.75	11.00	22.05	25	62
MPFPS-1224100-SL	MPFPS-1224100-CH	12.00	24.00	1.00	8.75	11.00	22.05	25	82
MPFPS-1628075-SL	MPFPS-1628075-CH	16.00	28.00	.75	12.75	13.00	26.05	25	96
MPFPS-1628100-SL	MPFPS-1628100-CH	16.00	28.00	1.00	12.75	13.00	26.05	25	127

MODULAR TOOLING COLUMN SUB-PLATES



These machined column sub-plates attach to the machine table to allow for fast and accurate removal/fastening of the tooling columns. They are supplied with four Speedloc receivers so the user can utilize Speedloc locators to quickly and accurately attach the tooling column or fixture plate. The aluminum sub-plates are made from MIC-6 aluminum. The steel sub-plates are made from A36 steel. Hard anodized finish on the aluminum sub-plates is available by request. The 500 and 630mm plates can be supplied with additional hole configurations on the same plate to fit multiple column sizes on the same sub-plate. The part numbers ending with XX designate the user must specify the required mounting hole spacing. Parts without the XX are supplied without mounting holes. The following part numbers show just some of the sizes and options available. Fixtureworks can assist you to customize any of these products to meet your exact needs.

Aluminum

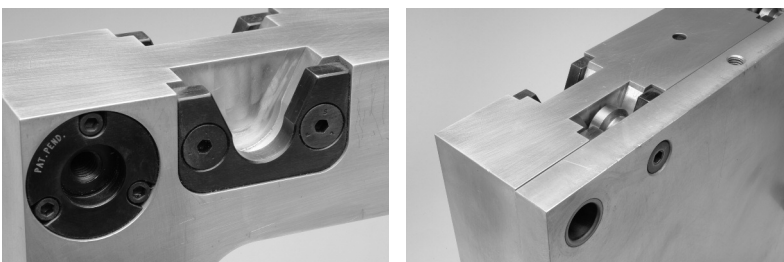
Part #	Width A mm	Receiver Hole Spacing B	Receiver Size mm	Weight Lbs.
MPSPA-400	400	12.00	25	29
MPSPA-400XX	400	12.00	25	29
MPSPA-500	500	16.00	25	45
MPSPA-500XX	500	16.00	25	45
MPSPA-630	630	20.00	25	72
MPSPA-630XX	630	20.00	25	72

Steel

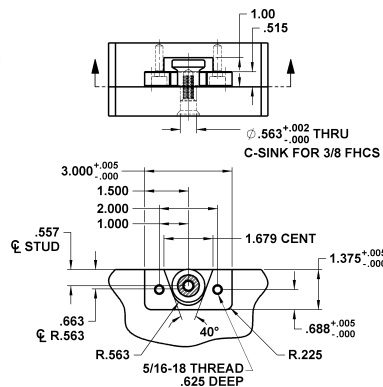
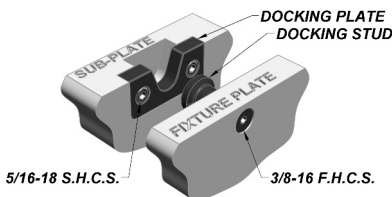
Part #	Width A mm	Receiver Hole Spacing B	Receiver Size mm	Weight Lbs.
MPSPS-400	400	12.00	25	88
MPSPS-400XX	400	12.00	25	88
MPSPS-500	500	16.00	25	137
MPSPS-500XX	500	16.00	25	137
MPSPS-630	630	20.00	25	218
MPSPS-630XX	630	20.00	25	218

PRECISION LOCATING & MOUNTING SYSTEM

Docking Hardware



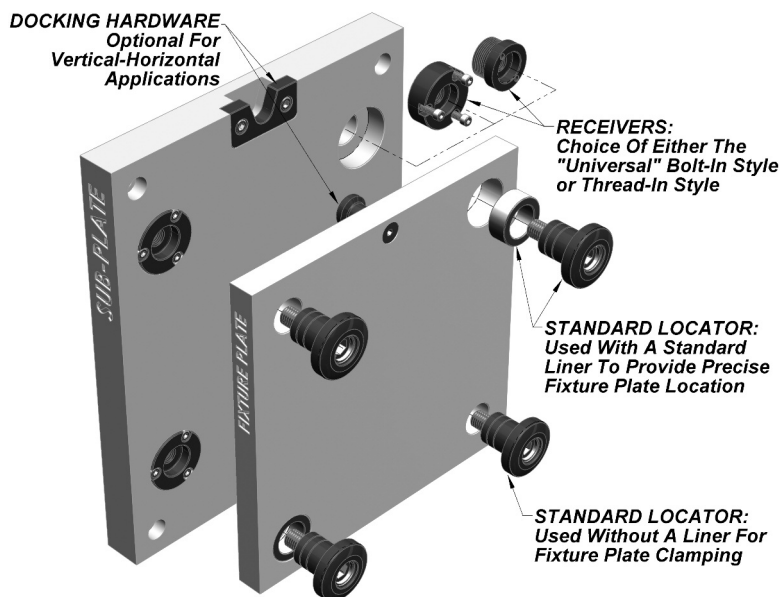
Docking hardware allows a user to position a fixture plate, before fastening the surfaces together with SpeedLoc locators. This allows for faster set ups and eliminates the need for additional personnel or lifting aids to mount fixture plates. The docking hardware consists of two parts: The docking plate and docking stud. The docking hardware can be installed on any conventional tooling column. The docking plate is installed into the top of a tooling column and mates with the positioning studs mounted to the fixture plate. Made from alloy steel with black oxide finish.



Part #	Description
MP-DH-10001	Plate with Fasteners
MP-DH-10003	Positioning Stud with Fasteners – For 1" Plate
MP-DH-10007	Positioning Stud with Fasteners – For 3/4" Plate

PRECISION LOCATING & MOUNTING SYSTEM

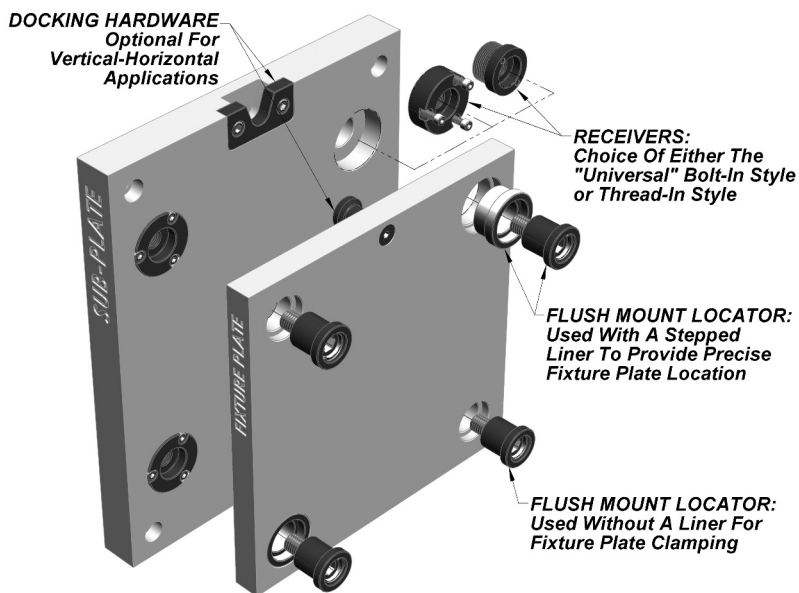
Standard Locators



The SpeedLoc™ Precision Locating & Mounting System consists of locators/fasteners, receivers and bushings for use in 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.

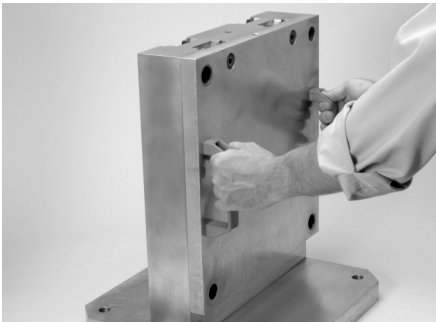
SpeedLoc has solved the typical problems associated with precision attachment and removal of fixture plates, tooling, and accessories. The SpeedLoc System eliminates the need to pry, pound and use jack screws to separate the fixture plate from the sub-plate or machine table. The SpeedLoc System uses 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, SpeedLoc does not require expensive "repair kits" since there are no rubber o-rings to break or finicky ball bearings to fall out or fracture.

Flush Mount Locators



The SpeedLoc Precision Locating & Mounting System is often used with:

- CNC Machines
- Fabricating
- Assembly Machines
- Welding Fixtures
- Palletized Fixtures
- Injection Molding
- EDM
- Stamping
- Packaging Machines
- Robotics
- Tooling Columns
- Fixture Plates
- Modular Fixturing

PRECISION LOCATING & MOUNTING SYSTEM


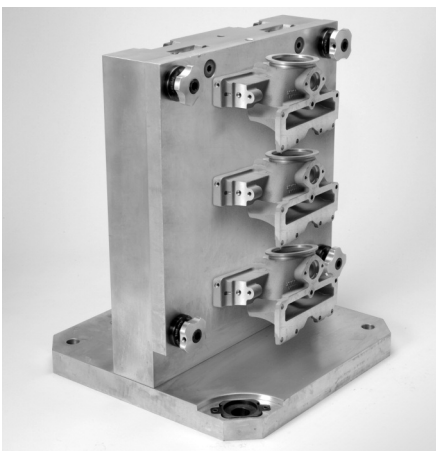
Place fixture plate over sub-plate or machine table containing SpeedLoc receivers.


SpeedLoc Precision Mounting and Locating System features include...


Insert two SpeedLoc precision locators through holes lined with hardened bushings and into the receivers.



Insert remaining two locators into unlined holes and tighten to draw each locator to the desired torque.



Total time required to unload existing fixture plate and load a new fixture plate is typically under 2 minutes.

- **Self-Extracting** – the unique design of SpeedLoc enables the device to easily and quickly “self-extract” from tooling, fixturing, etc. There is no binding or other hang-ups that delay removal time or compromise the accuracy of the locking system.
- **Precise Locating** – Features a repeatability of +/- .0004”
- **Easy Installation** – the SpeedLoc System is easily installed into a wide range of applications using standard tooling and machining practices.
- **Compact** – requires minimal space in tooling and fixturing applications.
- **American Made** – Manufactured from quality alloy materials.
- **High Clamping Strength** – over 45,000 lbs.
- **Recessed/Flush mount capability.**
- **Ability to retrofit with existing competitive ball lock type systems.**



Commonly asked questions...

Q. What is the SpeedLoc 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-plate, 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 SpeedLoc 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. The SpeedLoc 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 SpeedLoc be mounted so the work piece mounting surface is free from any interference?

A. Yes, flush mount locators allow the head to lie flush with the fixture plate surface.

Q. Can the SpeedLoc System be used in high temperature applications?

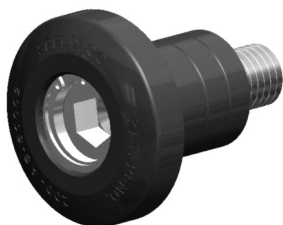
A. Yes, because all parts are made from heat treated alloy steel, temperatures up to +500°F are not a problem. The user should account for thermal expansion of the fixture plates and bases that could affect tolerances.

Q. Can fixture plates be mounted in both the horizontal and vertical positions with the SpeedLoc System?

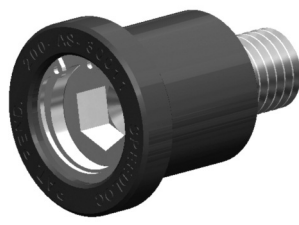
A. Yes, in vertical mounting applications, SpeedLoc offers docking hardware to “hang” the fixture plate from the tooling column before fastening the surfaces together.

Q. Can a current ball locking type system be retrofit to work with the SpeedLoc System?

A. Yes, the Universal Bolt-In Receivers will fit directly into the pocket that holds ball locking type receivers. Also, the SpeedLoc locators will fit the existing holes and liners of a fixture plate set up for ball locking systems.



**Standard
Locators**



**Flush Mount
Locators**

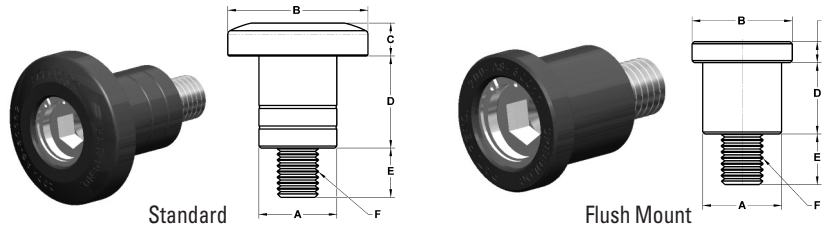


**Thread-In
Receivers**



**Universal Bolt-In
Receivers**

PRECISION LOCATING & MOUNTING SYSTEM



Material	Heat Treat	Tensile Strength PSI Min	Yield Strength PSI Min	Finish
AISI-4340	Rc 40-43	180,000	140,000	Black Oxide

These locators offer easy installation, quick operation, high holding strength and precise repeatability for use in a wide range of tooling, fixturing and assembly operations. They thread into the receivers shown on the following pages or can be used in specialty customer designed applications for accurate and fast set up. In addition, they can also be used in production environments. The flush mount locators allow the head to lie flush with the fixture plate surface leaving the surface free from interference. The unique design enables these locators to easily and quickly "self-extract" from fixture plates. This eliminates binding issues which can compromise alignment accuracy or damage fixturing.

Standard Locators

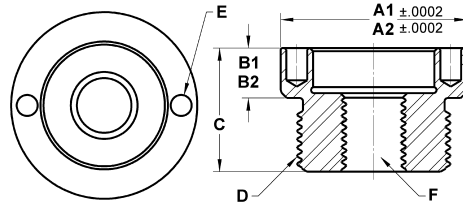
Part#	Fixture Plate Thickness +/- .005"	Shank Dia.(mm) A	Head Dia. B	Head Thickness C	Shank Length D	Thread Length E	Screw Size F	Max Holding Force(Lbs.)	Max Torque (Ft./Lbs.)
MPAS-13001	.500	13	1.000	.250	.780	.40	1/4-20	2,964	13
MPAS-13002	.750	13	1.000	.250	1.030	.40	1/4-20	2,964	13
MPAS-16001	.500	16	1.375	.312	.780	.43	5/16-18	5,385	26
MPAS-16002	.750	16	1.375	.312	1.030	.43	5/16-18	5,385	26
MPAS-16003	1.000	16	1.375	.312	1.280	.43	5/16-18	5,385	26
MPAS-20001	.750	20	1.625	.375	1.070	.50	3/8-16	8,107	46
MPAS-20002	1.000	20	1.625	.375	1.320	.50	3/8-16	8,107	46
MPAS-20003	1.500	20	1.625	.375	1.820	.50	3/8-16	8,107	46
MPAS-20004	2.000	20	1.625	.375	2.320	.50	3/8-16	8,107	46
MPAS-25001	.750	25	1.800	.406	1.065	.63	1/2-13	14,709	113
MPAS-25002	1.000	25	1.800	.406	1.315	.63	1/2-13	14,709	113
MPAS-25005	1.500	25	1.800	.406	1.815	.63	1/2-13	14,709	113
MPAS-25004	2.000	25	1.800	.406	2.315	.63	1/2-13	14,709	113
MPAS-30001	.750	30	2.125	.500	1.150	.75	5/8-11	22,623	213
MPAS-30002	1.000	30	2.125	.500	1.400	.75	5/8-11	22,623	213
MPAS-30003	1.500	30	2.125	.500	1.900	.75	5/8-11	22,623	213
MPAS-30004	2.000	30	2.125	.500	2.400	.75	5/8-11	22,623	213
MPAS-35001	.750	35	2.250	.500	1.150	.88	3/4-10	31,572	375
MPAS-35002	1.000	35	2.250	.500	1.400	.88	3/4-10	31,572	375
MPAS-35003	1.500	35	2.250	.500	1.900	.88	3/4-10	31,572	375
MPAS-35004	2.000	35	2.250	.500	2.400	.88	3/4-10	31,572	375
MPAS-50001	.750	50	3.000	.687	1.270	1.17	1"-8	46,958	781
MPAS-50002	1.000	50	3.000	.687	1.520	1.17	1"-8	46,958	781
MPAS-50003	1.500	50	3.000	.687	2.020	1.17	1"-8	46,958	781
MPAS-50004	2.000	50	3.000	.687	2.520	1.17	1"-8	46,958	781

Flush Mount Locators

Part#	Fixture Plate Thickness +/- .005"	Shank Dia.(mm) A	Head Dia. B	Head Thickness C	Shank Length D	Thread Length E	Screw Size F	Max Holding Force(Lbs.)	Max Torque (Ft./Lbs.)
MPAS-13010	.500	13	.635	.175	.587	.40	1/4-20	2,964	13
MPAS-13011	.750	13	.635	.175	.837	.40	1/4-20	2,964	13
MPAS-16010	.500	16	.786	.175	.587	.38	5/16-18	5,385	26
MPAS-16011	.750	16	.786	.175	.837	.38	5/16-18	5,385	26
MPAS-16012	1.000	16	.786	.175	1.087	.38	5/16-18	5,385	26
MPAS-20010	.750	20	.975	.250	.800	.45	3/8-16	8,107	46
MPAS-20011	1.000	20	.975	.250	1.050	.45	3/8-16	8,107	46
MPAS-20013	1.500	20	.975	.250	1.550	.45	3/8-16	8,107	46
MPAS-20014	2.000	20	.975	.250	2.050	.45	3/8-16	8,107	46
MPAS-25010	.750	25	1.218	.250	.800	.55	1/2-13	14,709	113
MPAS-25011	1.000	25	1.218	.250	1.050	.55	1/2-13	14,709	113
MPAS-25013	1.500	25	1.218	.250	1.55	.55	1/2-13	14,709	113
MPAS-25014	2.000	25	1.218	.250	2.050	.55	1/2-13	14,709	113
MPAS-30010	.750	30	1.500	.312	.825	.75	5/8-11	22,623	213
MPAS-30011	1.000	30	1.500	.312	1.075	.75	5/8-11	22,623	213
MPAS-30013	1.500	30	1.500	.312	1.575	.75	5/8-11	22,623	213
MPAS-30014	2.000	30	1.500	.312	2.075	.75	5/8-11	22,623	213
MPAS-35010	1.000	35	1.750	.312	1.075	.88	3/4-10	31,572	375
MPAS-35012	1.500	35	1.750	.312	1.575	.88	3/4-10	31,572	375
MPAS-35014	2.000	35	1.750	.312	2.075	.88	3/4-10	31,572	375
MPAS-50011	1.500	50	2.460	.312	1.513	1.17	1"-8	46,958	781
MPAS-50013	2.000	50	2.460	.312	2.013	1.17	1"-8	46,958	781

PRECISION LOCATING & MOUNTING SYSTEM

Thread-In Receivers

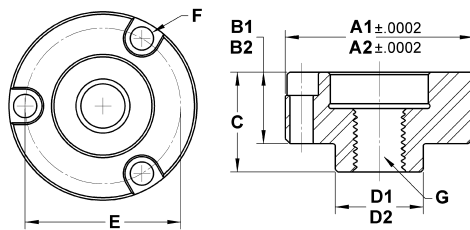


Material	Heat Treat	Tensile Strength PSI Min	Yield Strength PSI Min	Finish
AISI-4340	Rc 40-43	180,000	140,000	Black Oxide

These receivers are installed in the sub-plate or table to receive the locator units. Thread-in receivers occupy a smaller footprint which optimizes sub-plate space. They are easier to install, less expensive and offer higher pull out strengths than the universal bolt-in receivers. In addition, thread-in receivers allow the sub-plate to be fully machined from one side.

Part #	Fixture Plate Thickness Min. (Inch)	Locator Size mm	Receiver Head Dia. A1	Fixture Plate Bore Dia. A2	Receiver Head Height B1	Fixture Plate C'Bore Depth B2	Receiver Height C	Thread Size D	Spanner Wrench Hole E	Tap F
MPAR-13005	.75	13	.9498	.9506	.285	.305	.720	3/4-16	.140	1/4-20
MPAR-16005	.75	16	1.0623	1.0631	.285	.305	.720	7/8-14	.140	5/16-18
MPAR-20005	1.00	20	1.2748	1.2756	.375	.395	.840	1"-12	.170	3/8-16
MPAR-25005	1.00	25	1.4998	1.5006	.375	.395	.955	1-1/4-12	.170	1/2-13
MPAR-30005	1.25	30	1.8123	1.8131	.485	.510	1.200	1-1/2-12	.204	5/8-11
MPAR-35005	1.31	35	2.1248	2.1256	.607	.635	1.265	1-1/2-12	.265	3/4-10
MPAR-50005	1.75	50	2.7498	2.7506	.750	.770	1.700	2-12	.265	1"-8

Universal Bolt-In Receivers



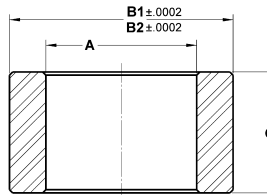
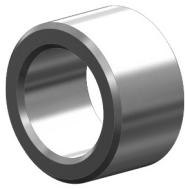
Material	Heat Treat	Tensile Strength PSI Min	Yield Strength PSI Min	Finish
AISI-4340	Rc 40-43	180,000	140,000	Black Oxide

These receivers are installed in the sub-plate or machine table to receive the locator units. Universal bolt-in receivers are interchangeable with competitive ball locking systems. They allow you to take advantage of the speed, precision and easy installation of the SpeedLoc System without the need to produce new sub-plates or reworking existing sub-plates. Mounting socket head cap screws are included.

Part #	Fixture Plate Thickness Min. (inch)	Locator Size (mm)	Receiver Head Dia. A1	Fixture Plate Bore Dia. A2	Receiver Head Height B1	Fixture Plate C'Bore Depth B2	Receiver Height C	Receiver OD D1	Fixture Plate Clear. Hole D2	Bolt Center Dia. E	SHCS Size F	Tap G	Max Torque on Screw (ft/lbs)
MPAR-13001	.75	13	1.3748	1.3756	.454	.474	.720	.563	.688	.984	#8-32 X .50	1/4-20	3.6
MPAR-16001	.75	16	1.4368	1.4376	.454	.474	.720	.688	.813	1.125	#8-32 X .50	5/16-18	3.6
MPAR-20001	1.00	20	1.6871	1.6879	.625	.642	.840	.750	.813	1.362	#10-32 X .75	3/8-16	5.6
MPAR-25001	1.25	25	2.0621	2.0629	.785	.804	.955	.875	1.000	1.644	1/4-28 X .88	1/2-13	14.4
MPAR-30001	1.38	30	2.2652	2.2660	.860	.876	1.200	1.063	1.188	1.875	1/4-28 X 1.00	5/8-11	14.4
MPAR-35001	1.50	35	2.6871	2.6879	.890	.909	1.265	1.438	1.563	2.178	5/16-24 X 1.00	3/4-10	28.8
MPAR-50001	2.00	50	3.4996	3.5004	1.225	1.244	1.700	2.000	2.156	2.916	3/8-24 X 1.25	1"-8	52.8

PRECISION LOCATING & MOUNTING SYSTEM

Standard Liner Bushings

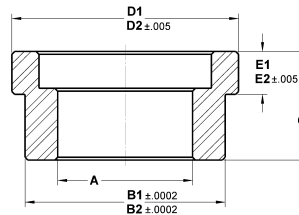


Standard headless liner bushings are used with standard SpeedLoc locators to protect the integrity of precision locating holes on bases, fixture plates, indexers and other workholding devices. They are a critical component for creating the highest possible machining accuracy and extending the life of the SpeedLoc System. For most applications, only two bushings should be used to avoid binding and alignment issues. Made from AISI-1144 alloy steel. Hardened to Rc 62-64.

Part #	Fixture Plate Thickness +/- .005"	Locator Size A (mm)	Liner OD B1	Plate Bore Dia. B2	Liner Height C
MPAL-13001	.500	13	0.7516	.7510	.450
MPAL-13002	.750	13	0.7516	.7510	.700
MPAL-16001	.500	16	1.0016	1.0010	.450
MPAL-16002	.750	16	1.0016	1.0010	.700
MPAL-16004	1.000	16	1.0016	1.0010	.950
MPAL-20011	.750	20	1.1268	1.1261	.700
MPAL-20012	1.000	20	1.1268	1.1261	.950
MPAL-20013	1.500	20	1.1268	1.1261	1.450
MPAL-20014	2.000	20	1.1268	1.1261	1.950
MPAL-25001	.750	25	1.3770	1.3764	.700
MPAL-25002	1.000	25	1.3770	1.3764	.950
MPAL-25003	1.500	25	1.3770	1.3764	1.450
MPAL-25004	2.000	25	1.3770	1.3764	1.950

Part #	Fixture Plate Thickness +/- .005"	Locator Size A (mm)	Liner OD B1	Plate Bore Dia. B2	Liner Height C
MPAL-30001	.750	30	1.7521	1.7515	.700
MPAL-30002	1.000	30	1.7521	1.7515	.950
MPAL-30003	1.500	30	1.7521	1.7515	1.450
MPAL-30004	2.000	30	1.7521	1.7515	1.950
MPAL-35001	.750	35	1.7521	1.7515	.700
MPAL-35002	1.000	35	1.7521	1.7515	.950
MPAL-35003	1.500	35	1.7521	1.7515	1.450
MPAL-35004	2.000	35	1.7521	1.7515	1.950
MPAL-50001	.750	50	2.5023	2.5017	.700
MPAL-50002	1.000	50	2.5023	2.5017	.950
MPAL-50003	1.500	50	2.5023	2.5017	1.450
MPAL-50004	2.000	50	2.5023	2.5017	1.950

Stepped Liner Bushings



Stepped liner bushings are used with flush mount SpeedLoc locators and offer a flush work surface free from interference. (stepped liners may be used with standard locators) Liners protect the integrity of locating holes on bases, fixture plates, indexers and other workholding devices. They are a critical component for creating the highest possible machining accuracy and extending the life of the SpeedLoc System. For most applications, only two bushings should be used to avoid binding and alignment issues. Made from AISI-1144 alloy steel. Hardened to Rc 62-64.

Part #	Fixture Plate Thickness +/- .005"	Locator Size A (mm)	Liner OD B1	Fixture Plate Bore Dia. B2	Liner Height C	Liner Head OD D1	Fixture Plate C' Bore Dia. D2	Liner C' Bore Height E1	Fixture Plate C' Bore Depth E2
MPAL-13101	.500	13	.7516	.7510	.450	.922	.935	.218	.235
MPAL-13102	.750	13	.7516	.7510	.700	.922	.935	.218	.235
MPAL-16101	.500	16	1.0016	1.0010	.450	1.234	1.250	.313	.330
MPAL-16102	.750	16	1.0016	1.0010	.700	1.234	1.250	.313	.330
MPAL-16103	1.000	16	1.0016	1.0010	.950	1.234	1.250	.313	.330
MPAL-20111	.750	20	1.1268	1.1261	.700	1.359	1.375	.375	.395
MPAL-20112	1.000	20	1.1268	1.1261	.950	1.359	1.375	.375	.395
MPAL-20113	1.500	20	1.1268	1.1261	1.450	1.359	1.375	.375	.395
MPAL-20114	2.000	20	1.1268	1.1261	1.950	1.359	1.375	.375	.395
MPAL-25101	.750	25	1.3770	1.3764	.700	1.609	1.625	.375	.395
MPAL-25102	1.000	25	1.3770	1.3764	.950	1.609	1.625	.375	.395
MPAL-25103	1.500	25	1.3770	1.3764	1.450	1.609	1.625	.375	.395
MPAL-25104	2.000	25	1.3770	1.3764	1.950	1.609	1.625	.375	.395
MPAL-30101	.750	30	1.7521	1.7515	.700	1.984	2.000	.375	.395
MPAL-30102	1.000	30	1.7521	1.7515	.950	1.984	2.000	.375	.395
MPAL-30103	1.500	30	1.7521	1.7515	1.450	1.984	2.000	.375	.395
MPAL-30104	2.000	30	1.7521	1.7515	1.950	1.984	2.000	.375	.395
MPAL-35102	1.000	35	1.7521	1.7515	.950	1.984	2.000	.450	.470
MPAL-35103	1.500	35	1.7521	1.7515	1.450	1.984	2.000	.450	.470
MPAL-35104	2.000	35	1.7521	1.7515	1.950	1.984	2.000	.450	.470
MPAL-50103	1.500	50	2.5023	2.5018	1.450	3.000	3.015	.700	.715
MPAL-50104	2.000	50	2.5023	2.5018	1.950	3.000	3.015	.700	.715