

FASTMILL MODULAR SYSTEM VOL. 1

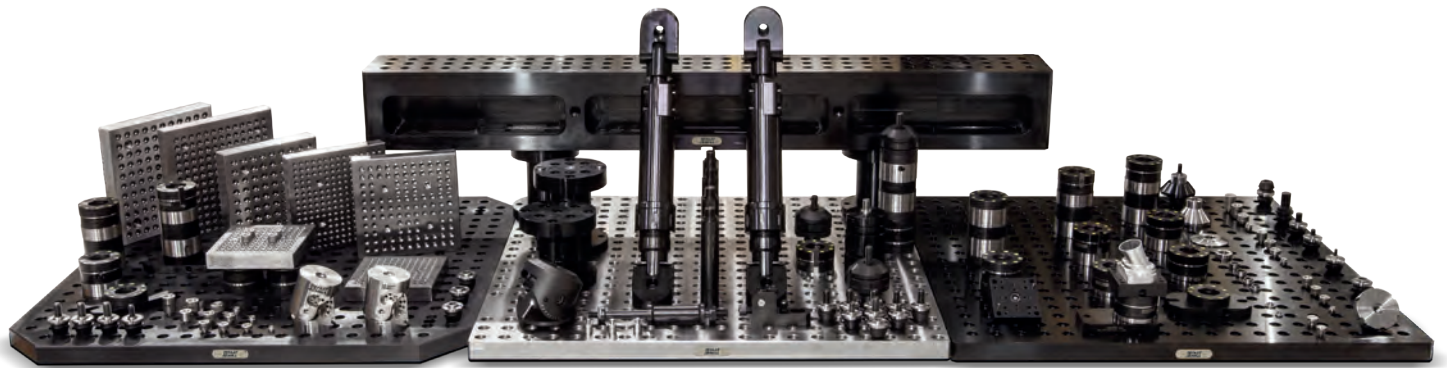
WORKPIECE DIRECT CLAMPING



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FAST MILL® OFFERS A COMPLETE RANGE OF PRODUCTS TO MEET CLAMPING EXPECTATIONS AND PRECISE POSITIONING.



FAST MILL® an innovative system for precise positioning and rapid fixing developed through the continued excellence of the engineers of REM Industrie srl.

All solutions have been adopted by taking into consideration problems and experiences acquired from all the application fields in where REM Industrie srl has been operating successfully over the years.

The result? FAST MILL® .

SIMPLE AND RELIABLE SYSTEM THAT SATISFIES ALL BUSINESS NEEDS AIMED TO SIGNIFICANTLY REDUCE MACHINE SETUP TIME AND POSITIONING ERRORS.



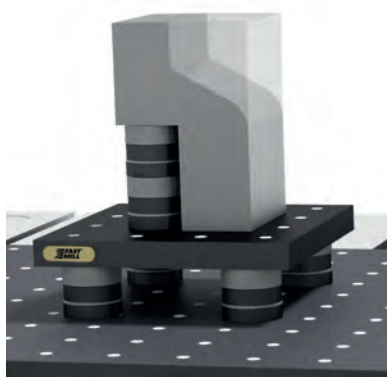
ADVANTAGES

Increased productivity, decreased production costs and flexibility in operations are concrete purposes, directly measurable by adopting a system which is able to exceed industry expectations in a short time. Thanks to its easy-to-use products, FAST MILL® ensures a rapid return on investments by standardizing machining processes of complex elements too.

PLANNING - CAD/CAM



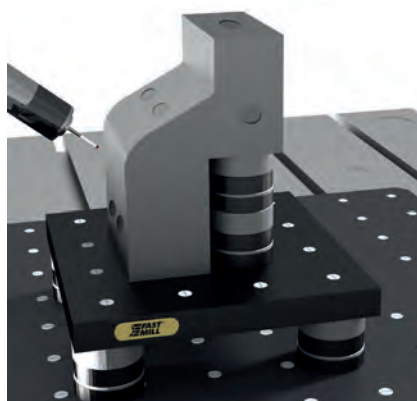
ROUGHING DEEP HOLES DRILLING



FINISHING



EDM - CMM



● CLAMPING TIME REDUCTION

During CAD or CAM programming, it is possible to choose where to mount FAST MILL® elements on the workpieces, and eventually on the machine table; this allows to arrange everything without interrupting machining processes.

● HIGH CLAMPING FORCE

FAST MILL® modules are designed to tolerate extremely high axial and radial loads. Permissible loads depending on the type of application are mentioned in the user manual.

● MAXIMUM ACCURACY IN REPOSITIONING

FAST MILL® is developed and manufactured in stringent temperature and humidity controlled environments to guarantee system accuracy both in dimensions and positioning repeatability.

● PRECISE POSITIONING REPEATABILITY

Tolerances of all FAST MILL® parts have been defined to ensure a positioning accuracy that avoids any waste of time in moving the workpiece after clamping.

● SYSTEM FOR WORKPIECE REPOSITIONING WITHOUT TENSIONING PATENT PENDING

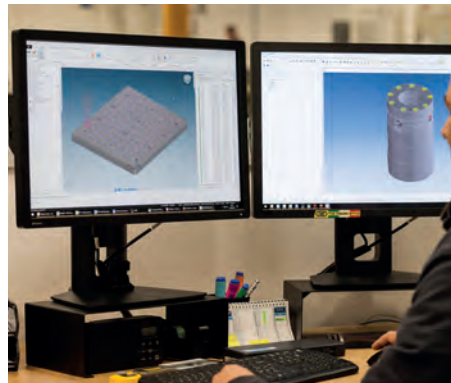
FAST MILL® offers a patented solution to work pieces after they have been thermally processed, and ensures the repositioning and clamping without applying stress on even finer, smaller work pieces.

CONCEIVE, DESIGN, PRODUCTION,

TEMPERATURE AND HUMIDITY
CONTROLLED INSIDE THE ENTIRE
PRODUCTION BUILDING.

INTERNAL PROGRAMMING UP TO
6 AXIS FOR MILLING, TURNING
AND GRINDING OPERATIONS.

TURNING DEPARTMENT WITH
AUTOMATIC PARTS CHANGER ON
MULTITASKING MACHINES.



TOOL SUPPLY AND HIGH
PRECISION PRESETTING
SYSTEMS CONNECTED
THROUGH MARES 4.0+
PLATFORM.

CUSTOM HIGH PRECISION
GRINDING MACHINES FOR
MAXIMUM QUALITY PARTS.

AUTOMATIC 5 AXIS LASER
SYSTEM.

TEST, WAREHOUSE, CONSULTING

**QUALIFIED TECHNICIANS FOR
FAST MILL® PRODUCTS
ASSEMBLING.**



**MILLING DEPARTMENT
WITH CUSTOM HIGH
PRECISION MACHINES.**



**IN STOCK AVAILABILITY
OF PLATES.**



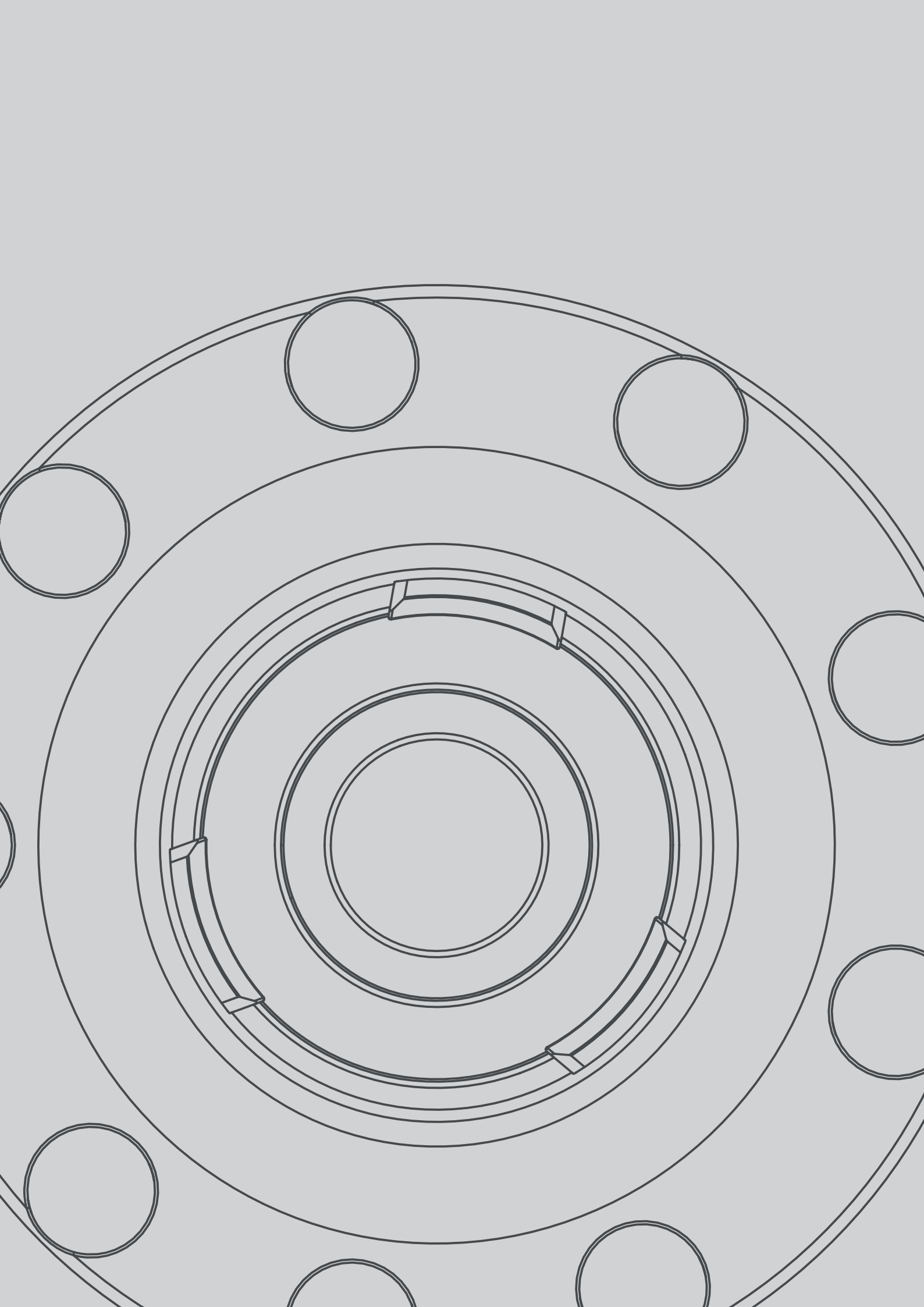
**HIGH PRECISION CMM TO
CERTIFY THE MANUFACTURED
COMPONENTS.**



**MILLING DEPARTMENT WITH
CUSTOM HIGH PRECISION
MACHINES.**



**FAST MILL® STANDARD
ELEMENTS ARE ALWAYS
AVAILABLE IN STOCK.
SPECIAL ELEMENTS ARE
DRAWN UPON REQUEST AND
MANUFACTURED INTERNALLY
IN A SHORT TERM.**



MODULE

SINGLE MODULE Ø49 ASSEMBLY EXAMPLE

STAINLESS STEEL
D49
LINEA

STAINLESS STEEL
INOX
LINEA



Video VBA Fast Mill D49-Programm



MALE PIN WITH STANDARD
(DIN 913) SCREW

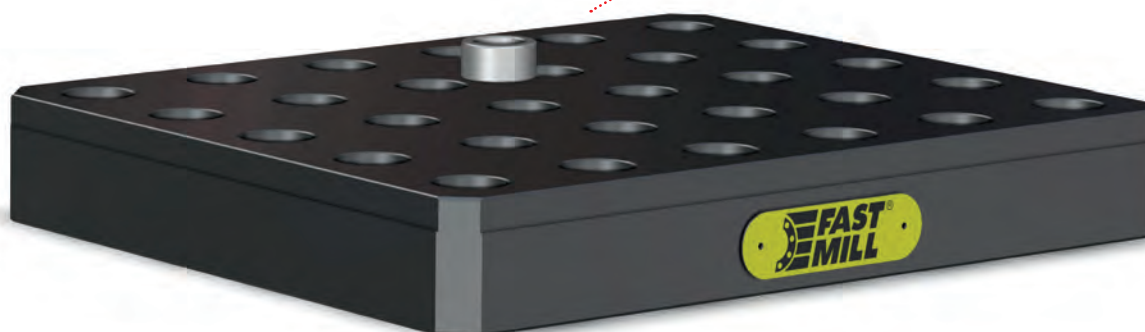


STANDARD 12.9
(DIN912) SCREW



SINGLE MODULE
Ø49 (1,96")

BUSH

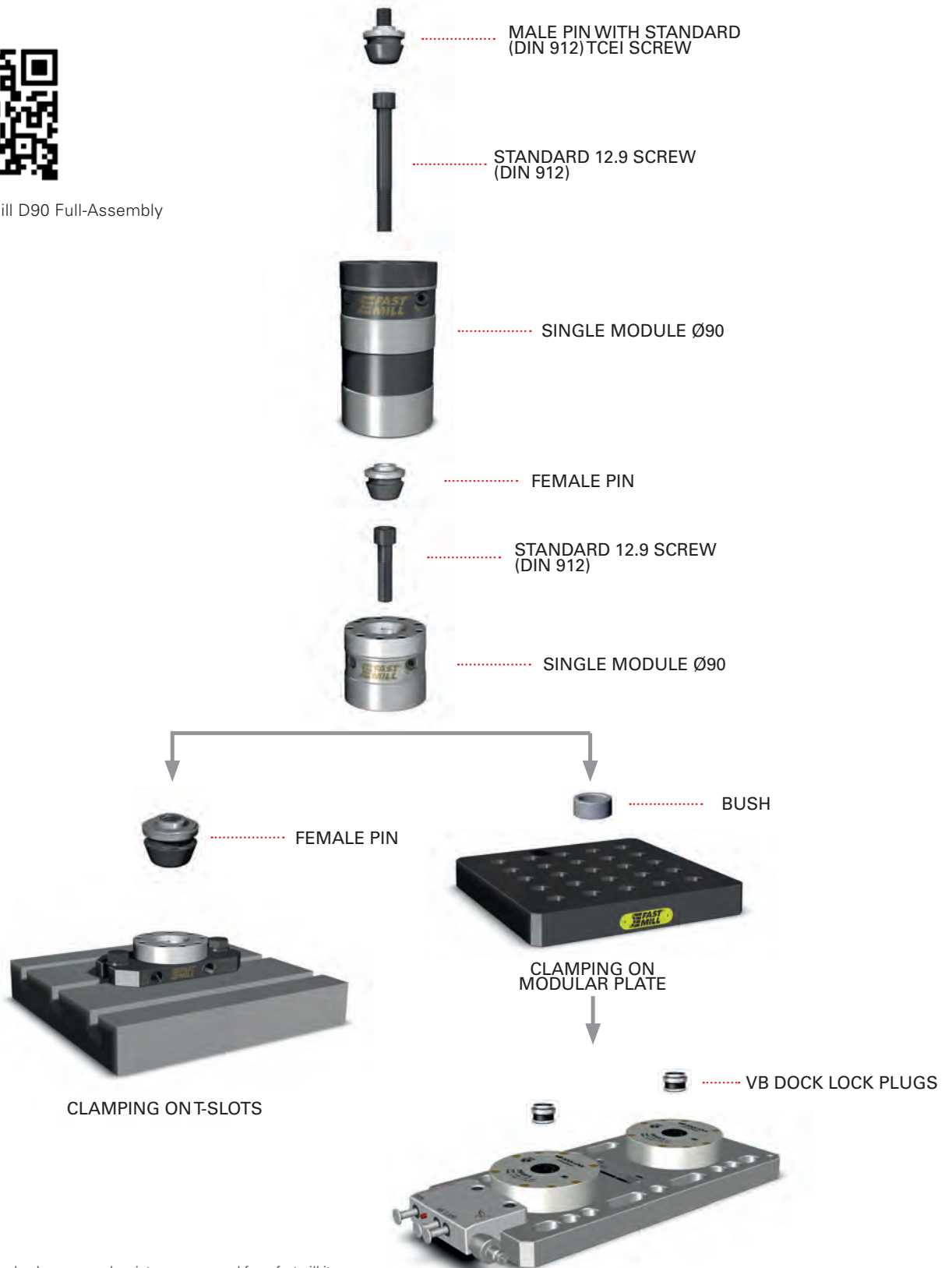


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SINGLE MODULE Ø90 ASSEMBLY EXAMPLE



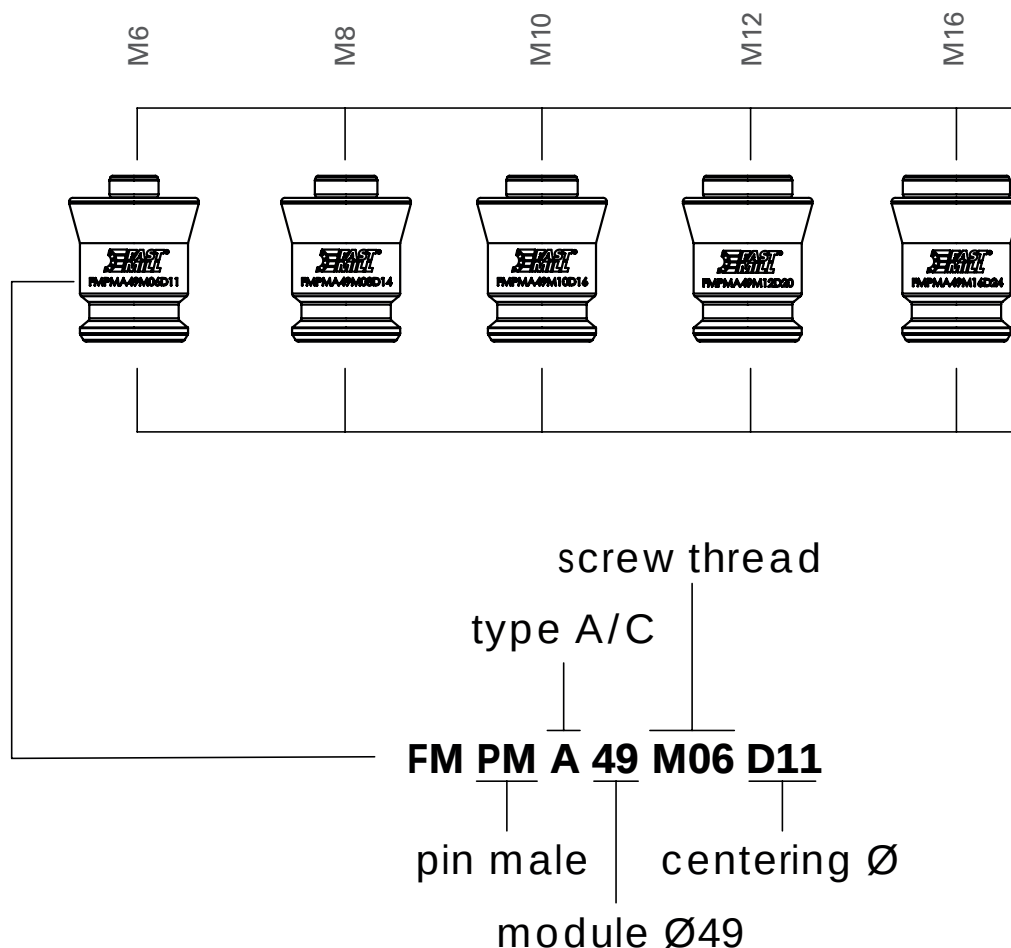
Video VBA Fast Mill D90 Full-Assembly



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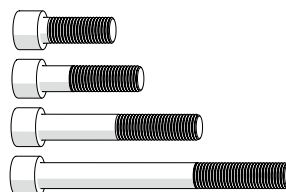
VB DOCK LOCK BASE PLATE
PNEUMATIC OR HYDRAULIC

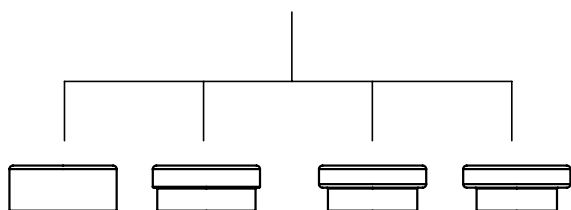
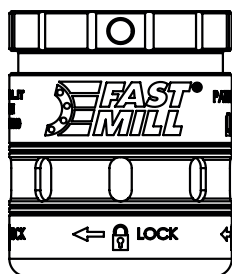
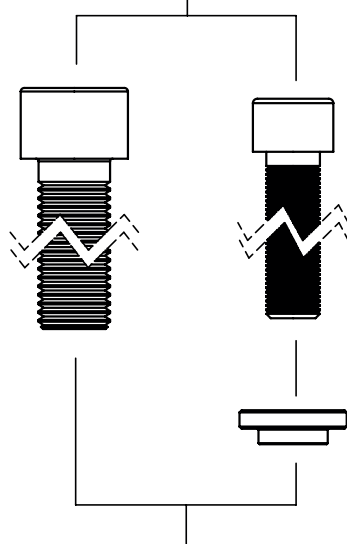
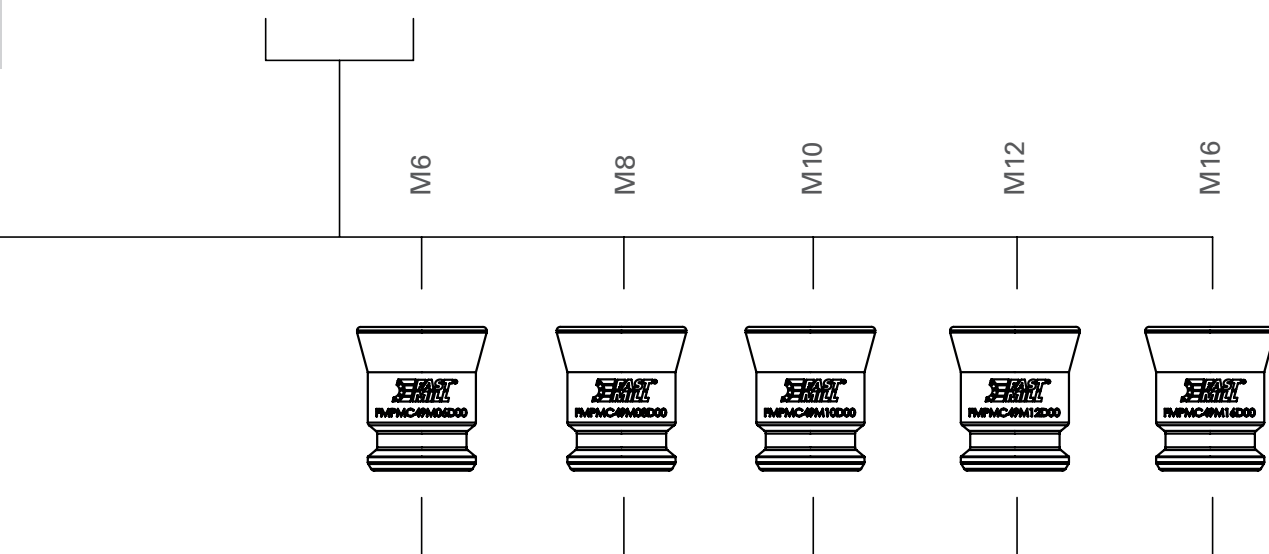
SINGLE MODULE Ø49 ASSEMBLY EXAMPLE



TECHNICAL TIPS

In the whole range of FAST MILL® modules you can use standard 12.9 (DIN912) screws from M6 to M16 or higher of different heights for the connection of the pieces, to the plates and to the risers / spacers.





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Single module Ø49

Ø49
STAINLESS STEEL
LINEA

INOX
STAINLESS STEEL
LINEA



HARDENED STAINLESS STEEL

CODE	Ø	HEIGHT	
FMMSSS0049060	49,8 (1,96")	60 (2,36")	

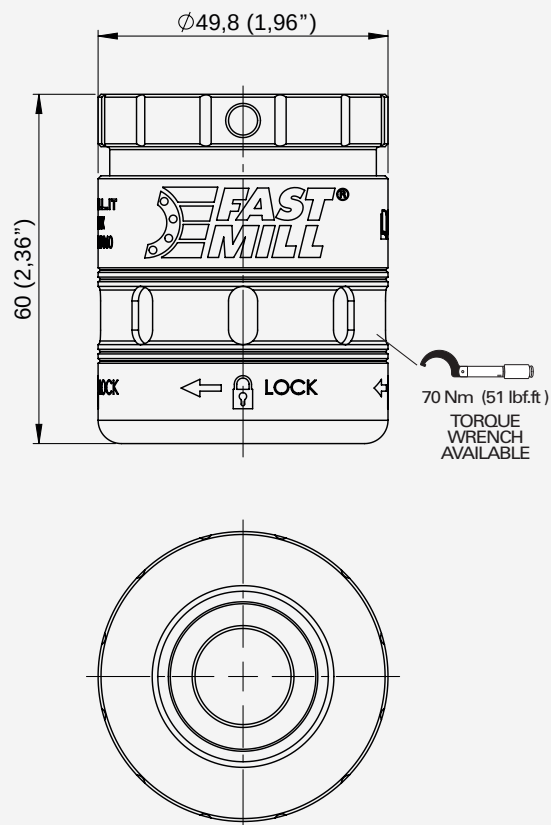


Related pins and bushes 42



Technical information at page 120

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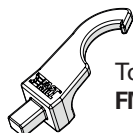
Torque Wrench kit

Ø49
STAINLESS STEEL
LINEA



Closing force for Ø49 module: 70Nm (51 lbf.ft)

CODE	TORQUE		
FMMSSS0049TWK	40÷200 Nm 30÷150 lbf.ft		



Torque wrench insert available code
FMMSSS0049TWI

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SINGLE MODULES Ø49 COMBINATION EXAMPLE



MALE PIN

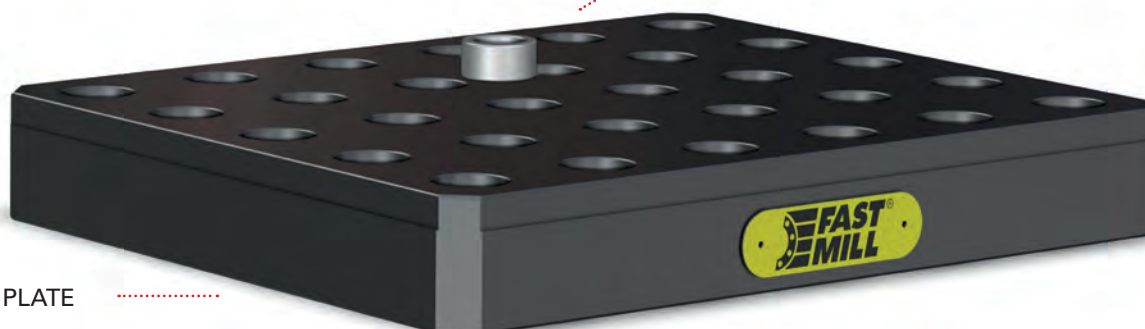


STANDARD 12.9
(DIN912) SCREW



SINGLE MODULE
Ø49 (1,96")

BUSH



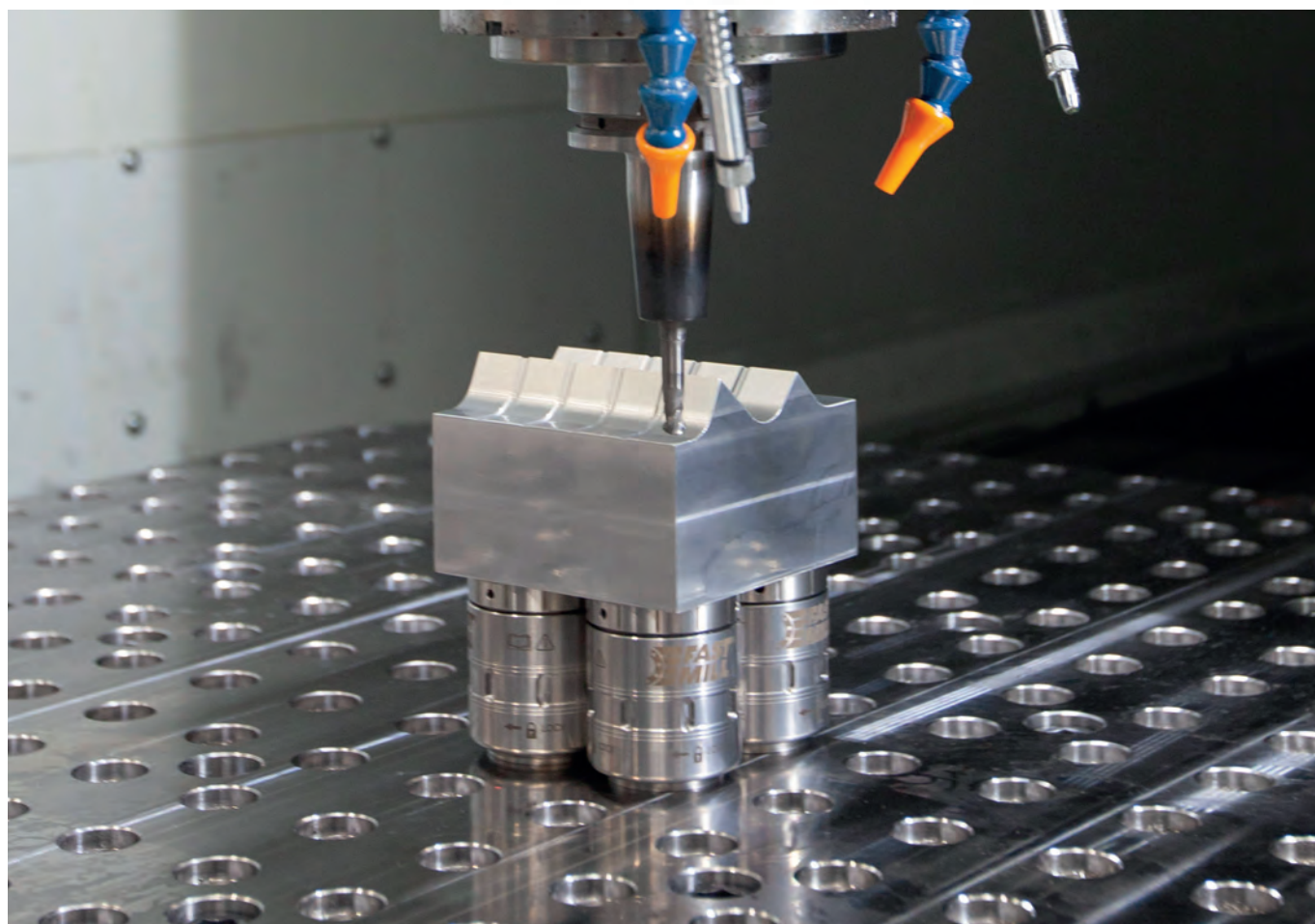
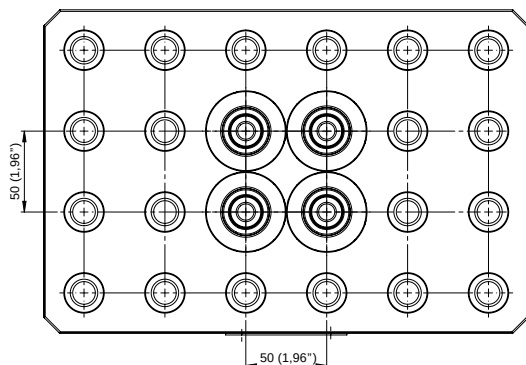
PLATE



SINGLE MODULES Ø49 SETUP EXAMPLE

STAINLESS STEEL
N49
LINEA

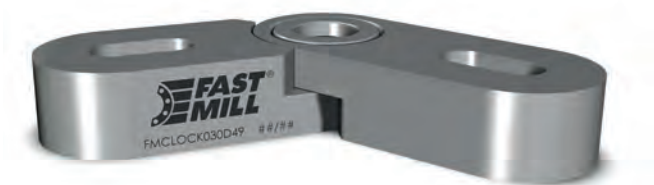
STAINLESS STEEL
INOX
LINEA



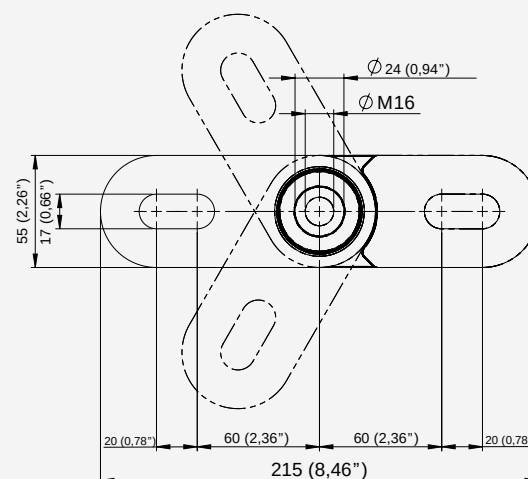
Clock plate for Ø49 module (For clamp on any position)

Ø49
STAINLESS STEEL
LINEA

INOX
STAINLESS STEEL
LINEA

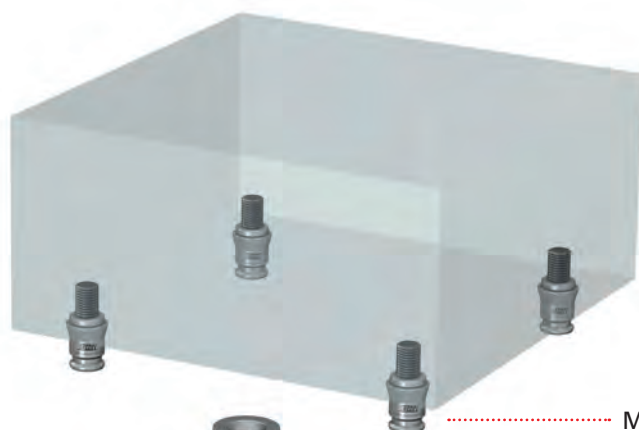


CODE	DIMENSION	HEIGHT	WEIGHT
FMCLOCK030D49	215x55 (8,46"x2,16")	30 (1,18")	2,2 (4,85 lbs)



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Setup example



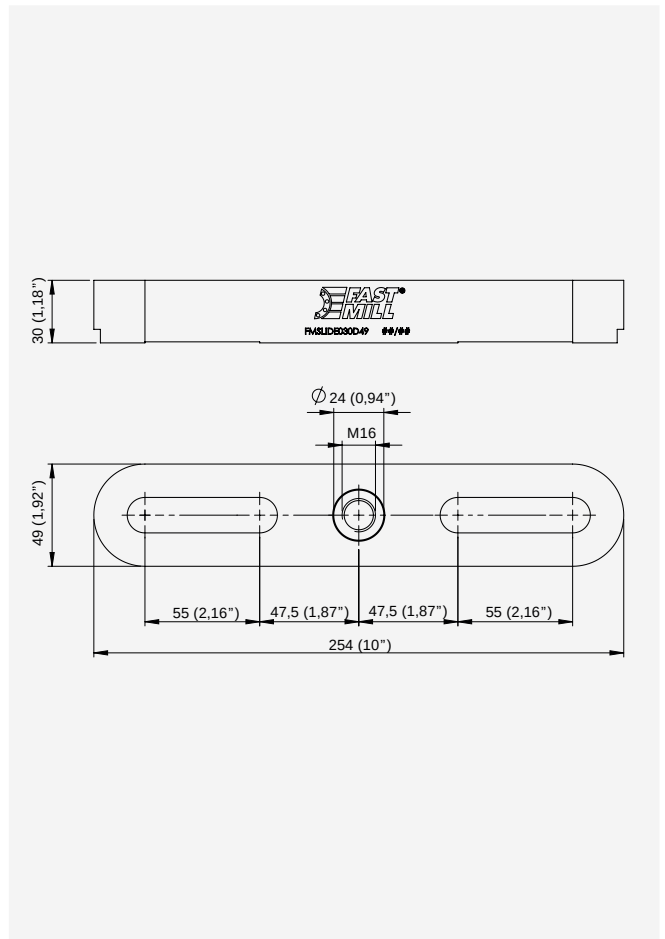
Slide plate for Ø49 module

Ø49
STAINLESS STEEL
LINEA

INOX
STAINLESS STEEL
LINEA

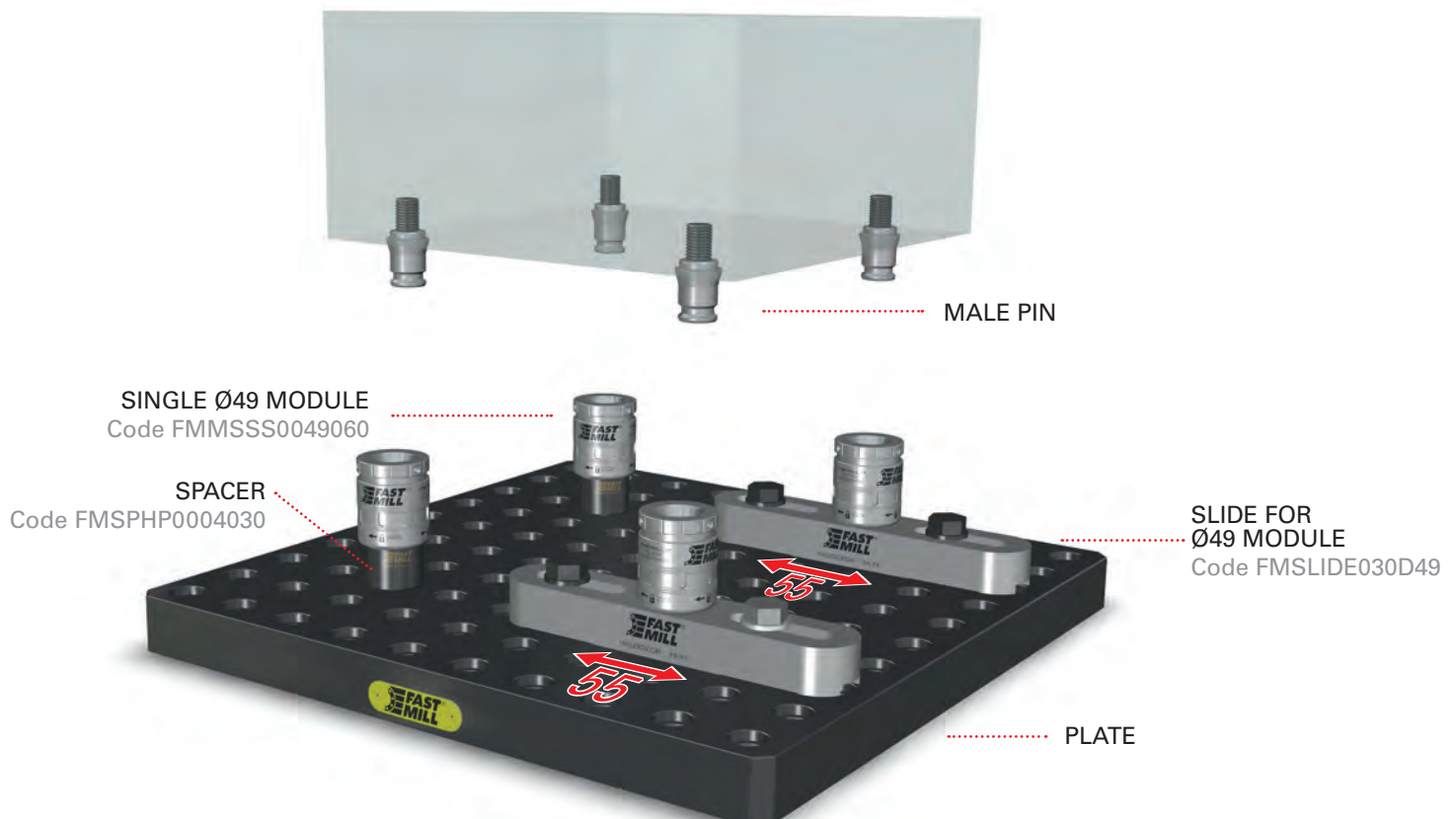


CODE	DIMENSION	HEIGHT	WEIGHT
FMSLIDE030D49	254x49 (10"x1,92")	30 (1,18")	2,0 (4,40 lbs)



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Setup example

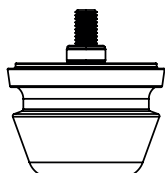


SINGLE MODULE Ø90 ASSEMBLY EXAMPLE

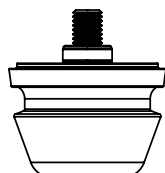
D50
LINEA
STAINLESS STEEL

INOX
LINEA
STAINLESS STEEL

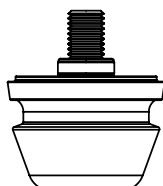
MALE PIN M6



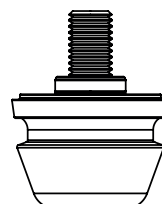
MALE PIN M8



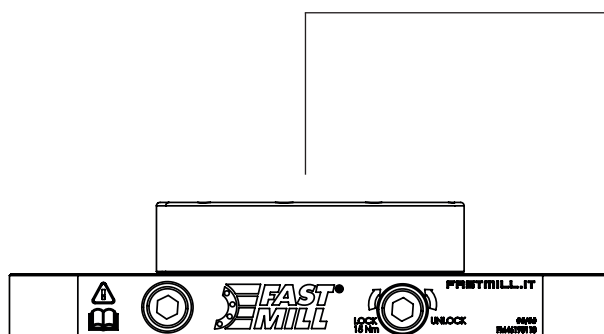
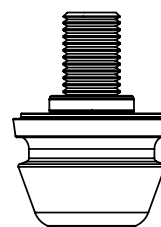
MALE PIN M10



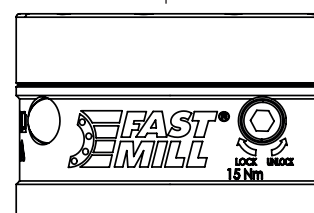
MALE PIN M12



MALE PIN M16



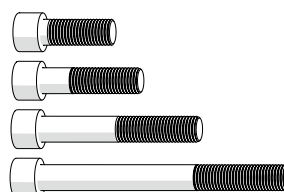
SINGLE MODULE H40

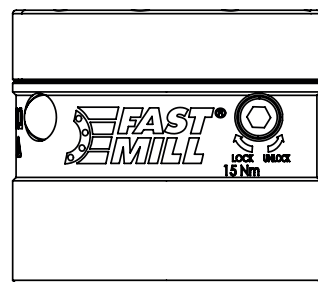
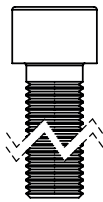
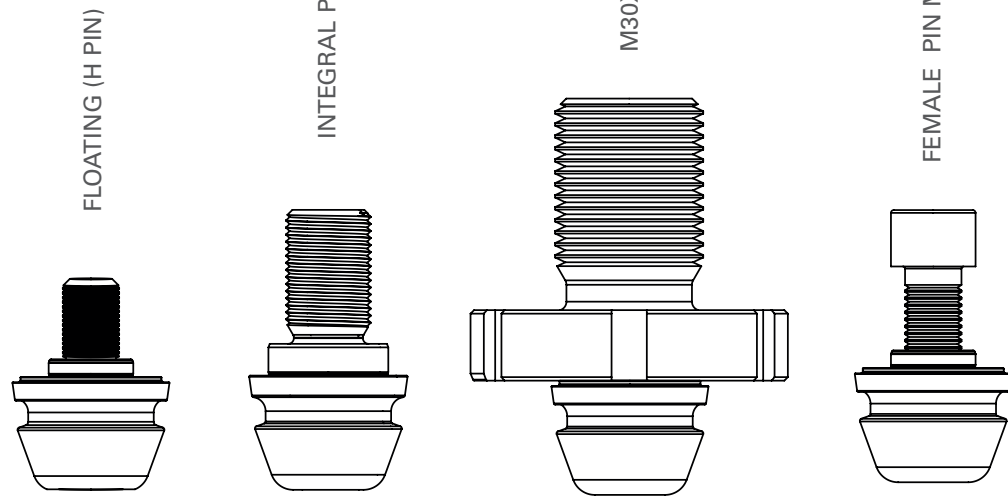


SINGLE MODULE H60

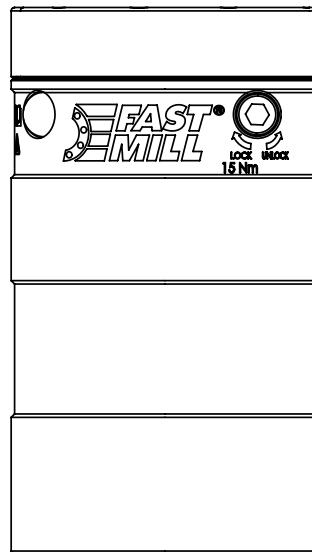
TECHNICAL TIPS

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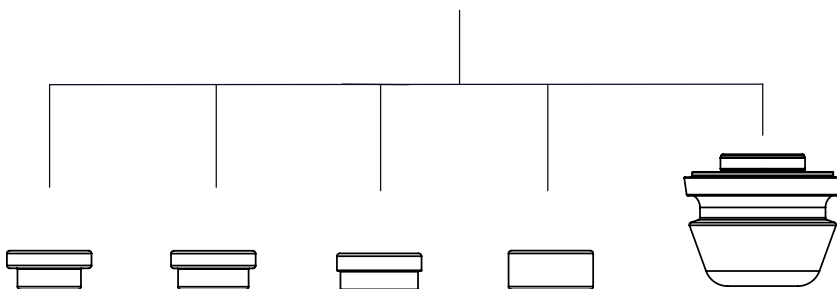




SINGLE MODULE H80

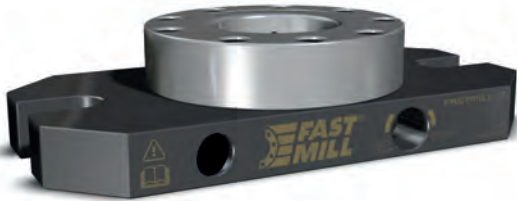


SINGLE MODULE H160

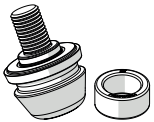


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Single module H40 - Opt. T-slots

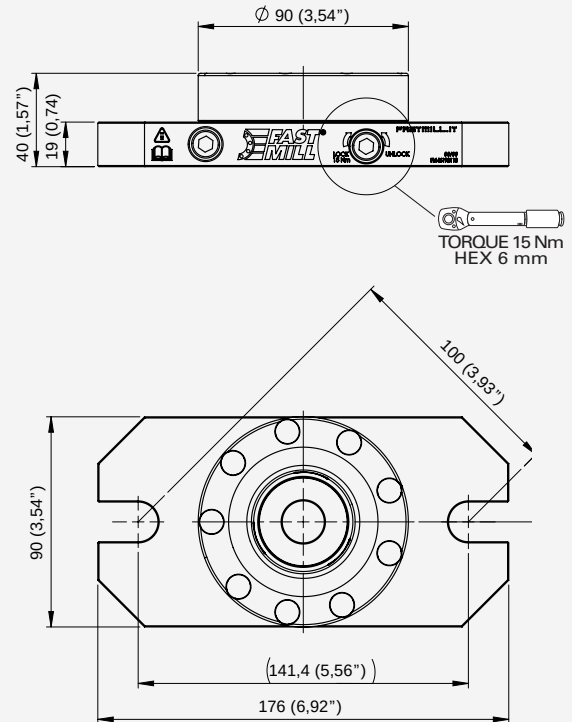


CODE	Ø	DIMENSION	WEIGHT
FMX46190110	90 (3,54")	40x176 (1,57"x6,92")	2,7 (5,95 lbs)



Related pins and bushes 42

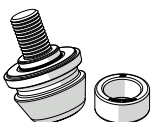
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Single module H60

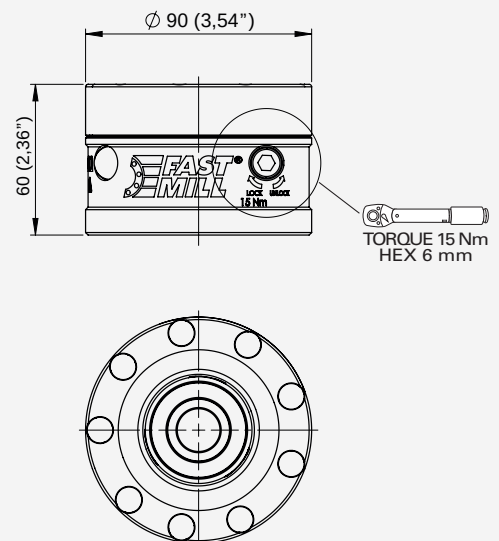


CODE	Ø	HEIGHT	WEIGHT
FMX46190120	90 (3,54")	60 (2,36")	2,3 (5,07 lbs)



Related pins and bushes at page 41

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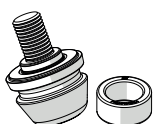
Single module H80

STAINLESS STEEL
INOX LINEA

STAINLESS STEEL
INOX LINEA

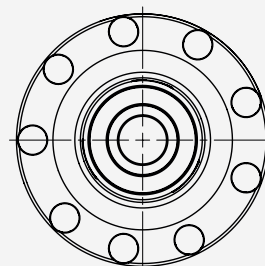
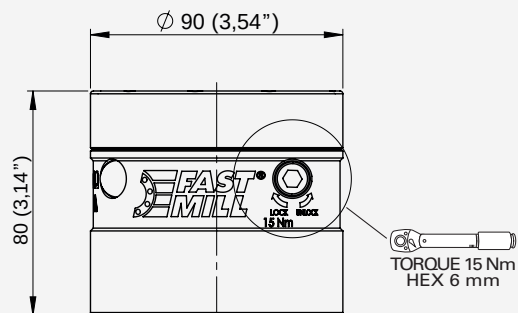


CODE	Ø	HEIGHT	WEIGHT
FMX46190130	90 (3,54")	80 (3,14")	3,3 (7,27 lbs)



Related pins and bushes at page 41

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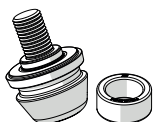
Single module H160

STAINLESS STEEL
INOX LINEA

STAINLESS STEEL
INOX LINEA

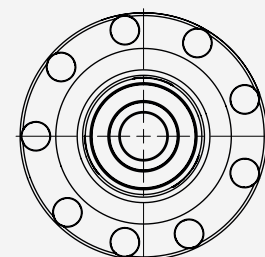
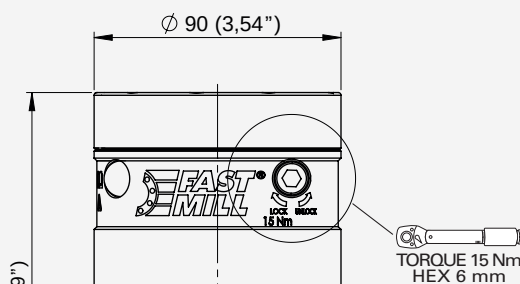


CODE	Ø	HEIGHT	WEIGHT
FMX46190140	90 (3,54")	160 (6,29")	7,1 (15,65 lbs)



Related pins and bushes at page 41

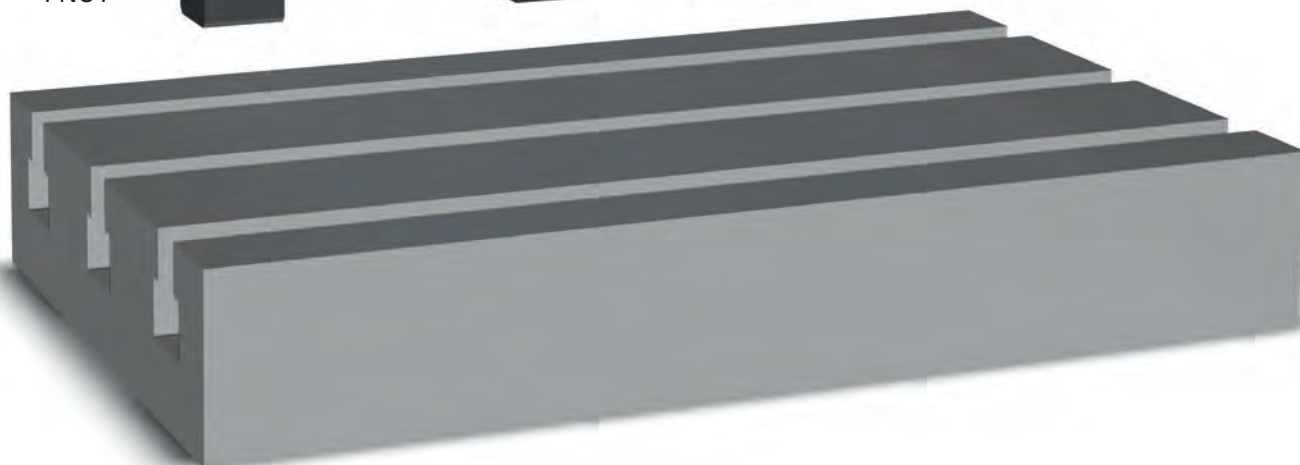
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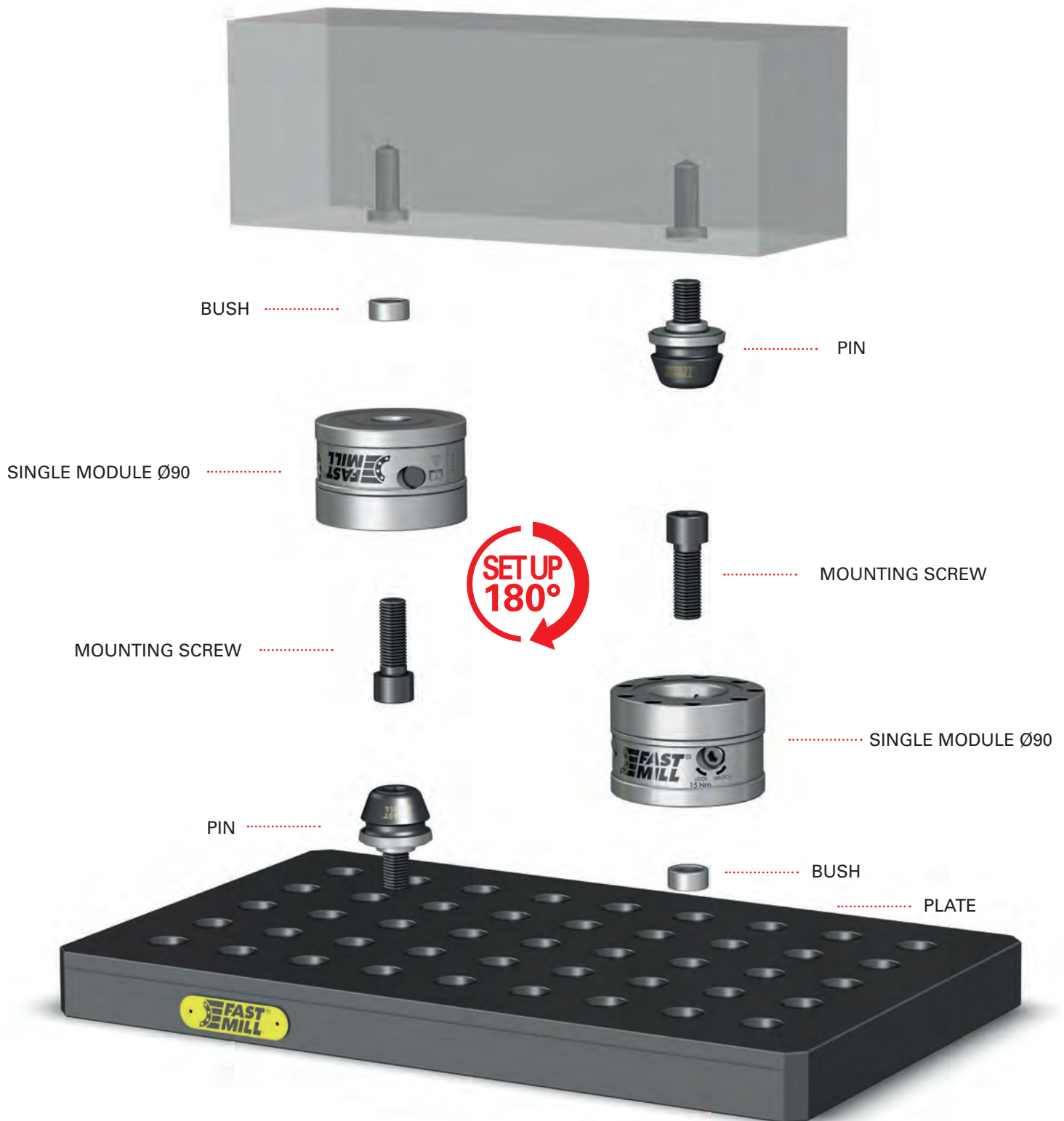
SINGLE MODULES H40 COMBINATION EXAMPLE

STAINLESS STEEL
INOX LINEA

STAINLESS STEEL
INOX LINEA

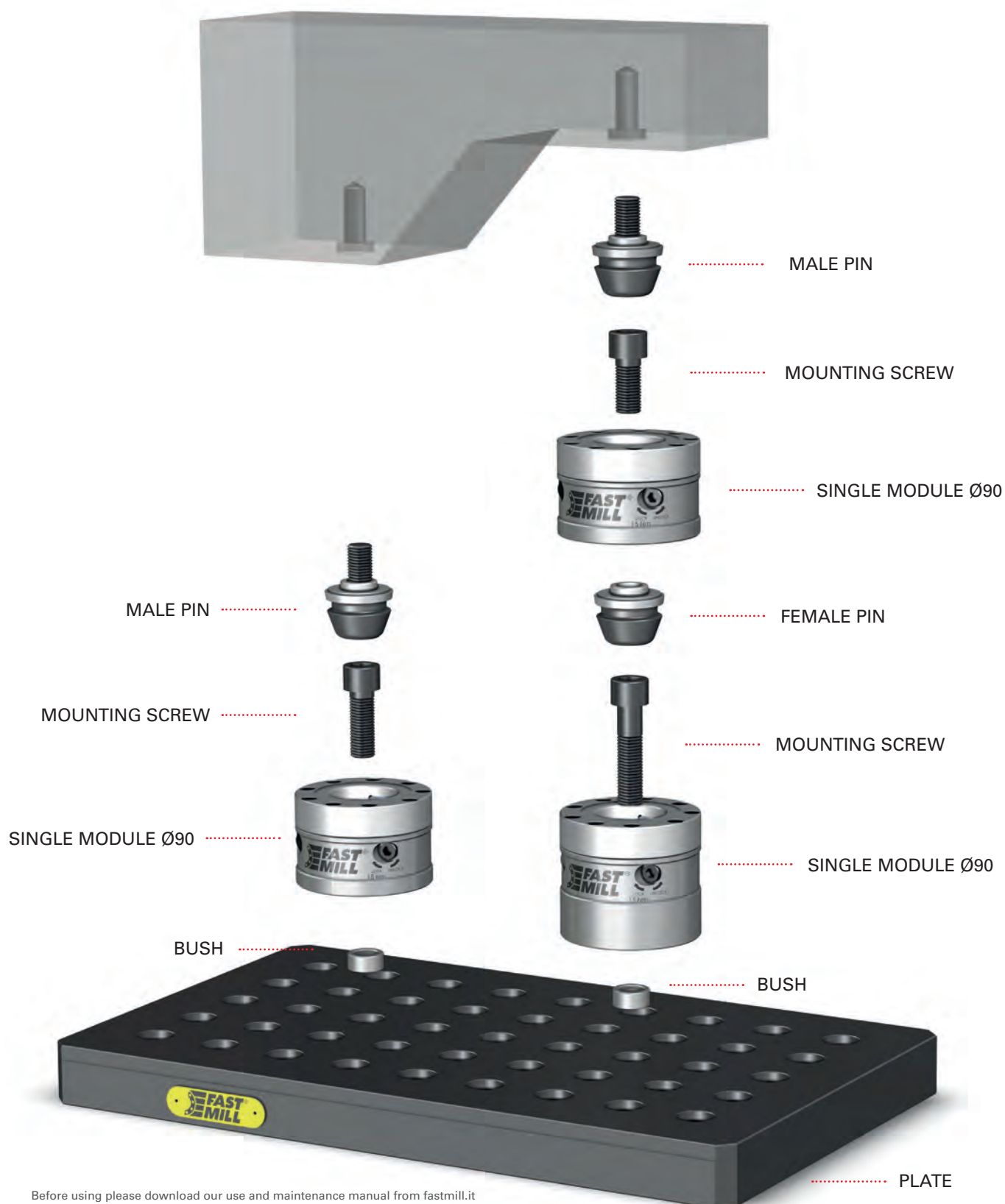


SINGLE MODULES COMBINATION EXAMPLE



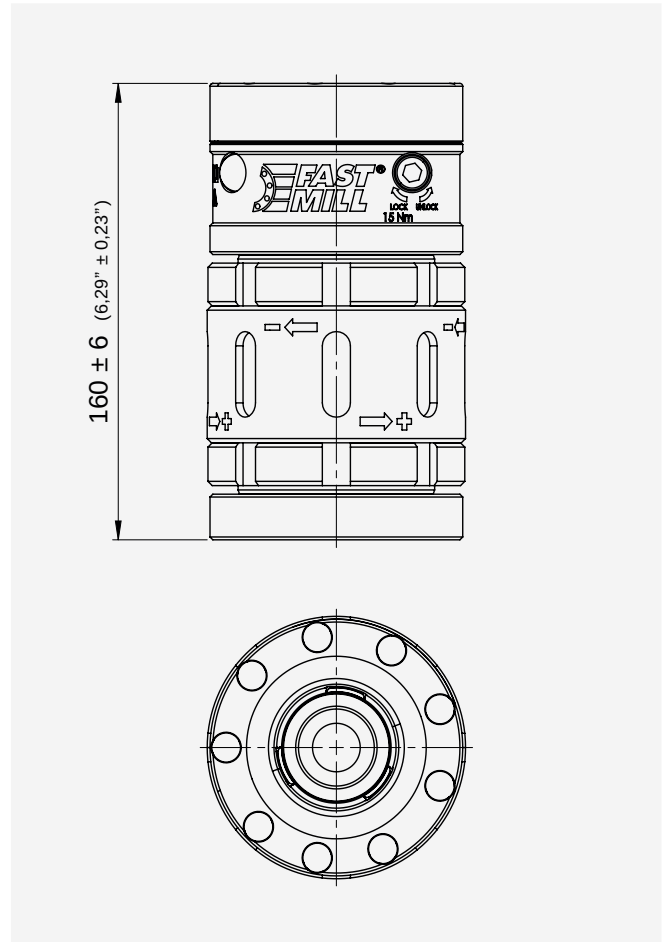


SINGLE MODULES COMBINATION EXAMPLE



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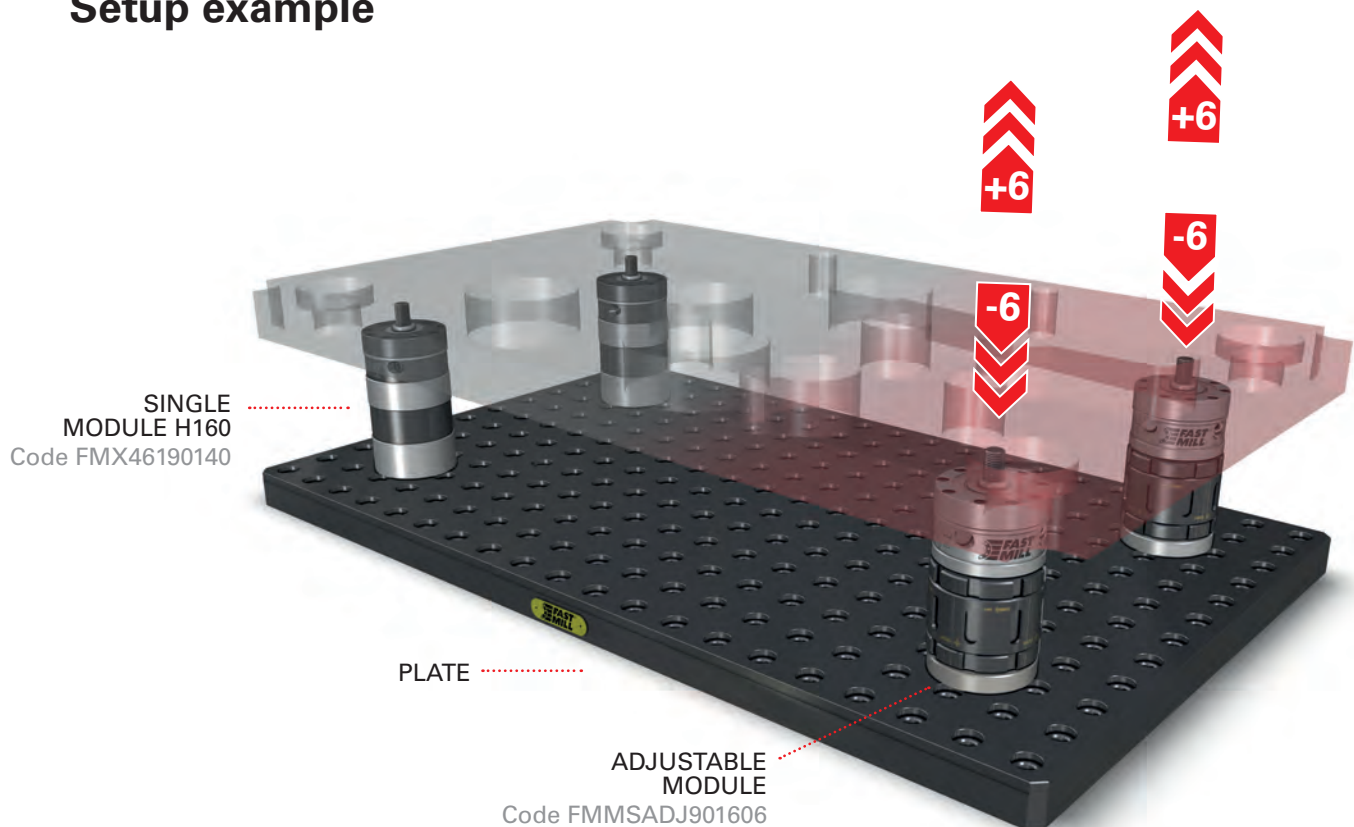
Adjustable module Ø90



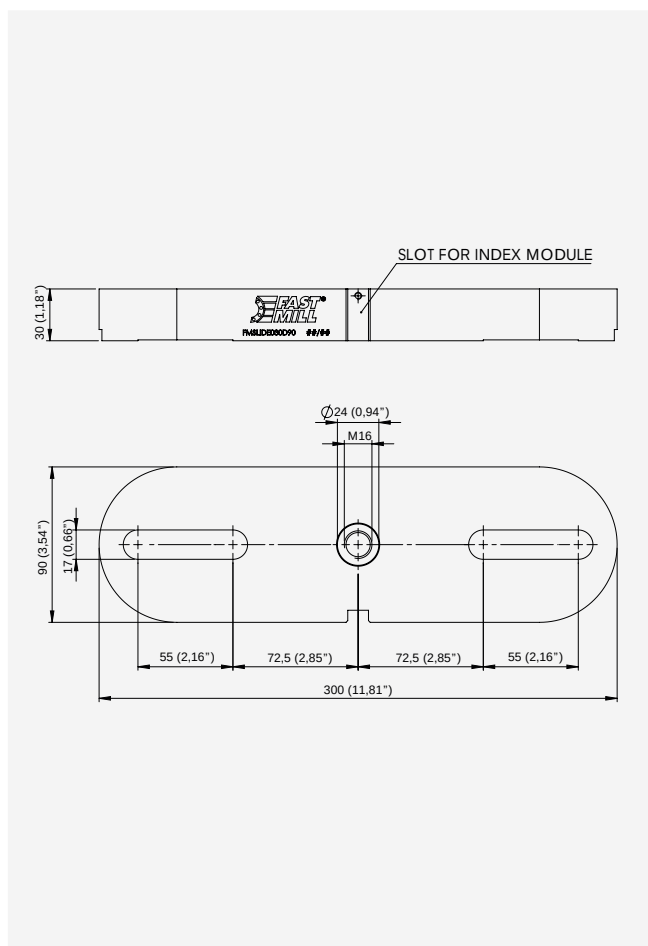
CODE	Ø	HEIGHT	WEIGHT
FMMSADJ901606	90 (3,54")	160 ± 6 (6,29" ± 0,23")	5,1 (11,24 lbs)

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Setup example



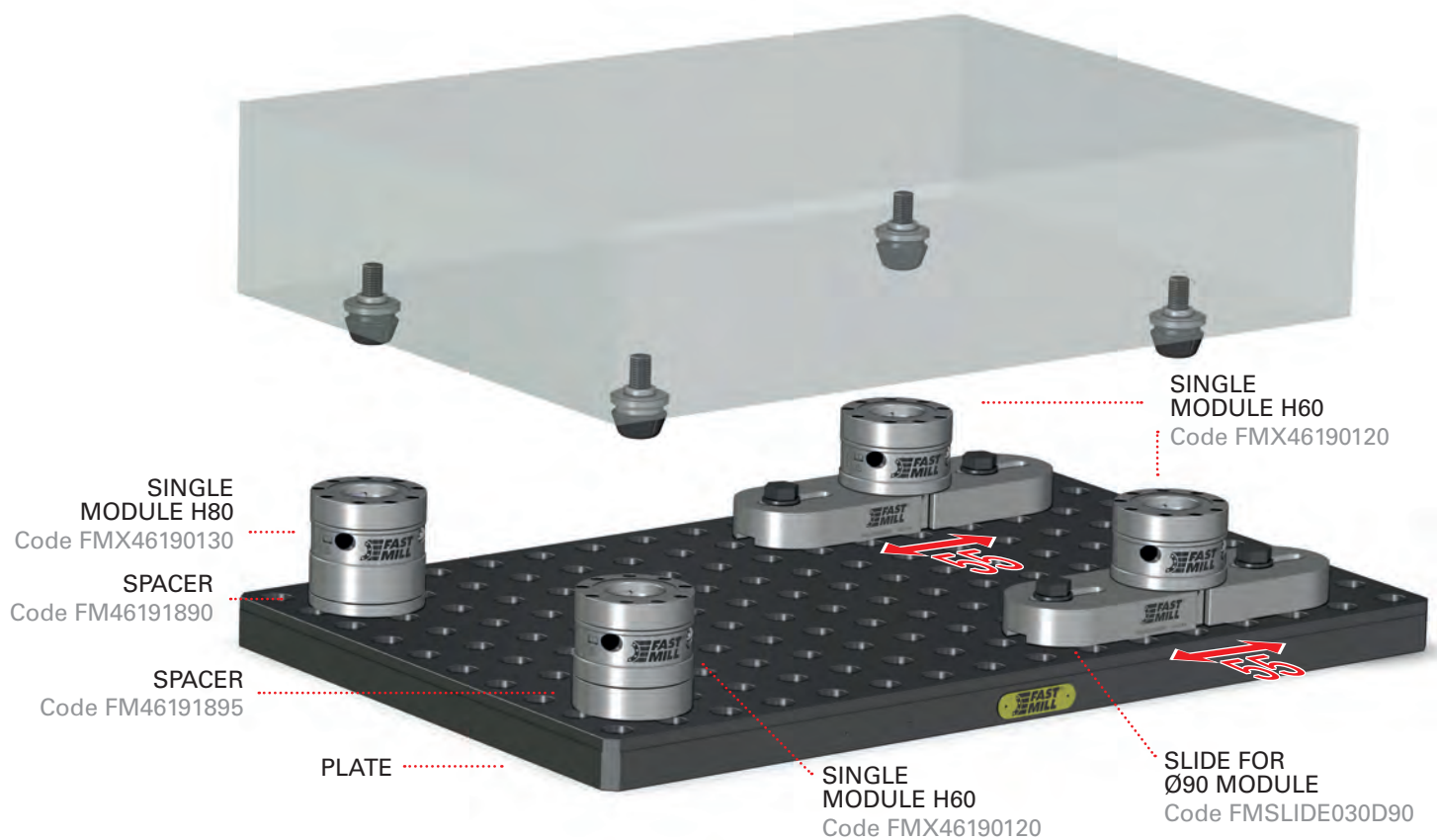
Slide plate for Ø90 module



CODE	DIMENSION	HEIGHT	WEIGHT
FMSLIDE030D90	300x90 (11,81"x3,54")	30 (1,18")	5,1 (11,24 lbs)

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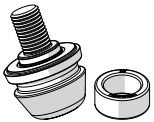
Setup example



Anti-Rotation plate for index module setup

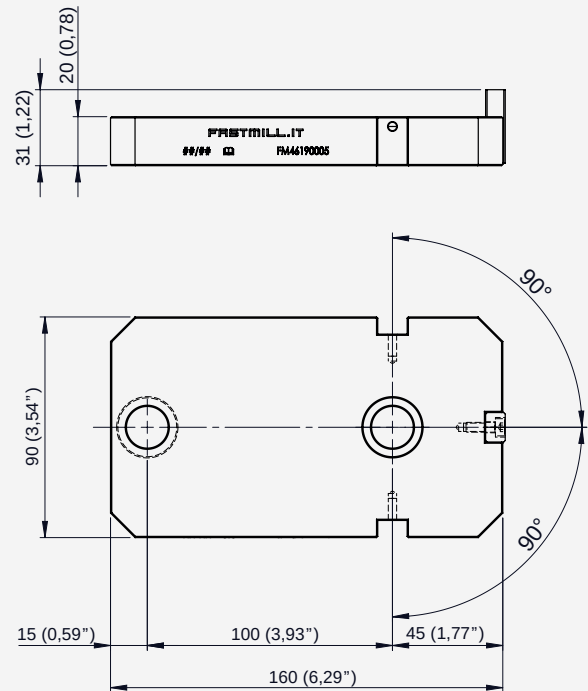


CODE	DIMENSION	HEIGHT	WEIGHT
FM46190005	90x160 (3,54"x6,29")	20 (0,78")	2,1 (4,62 lbs)



Related pins and bushes at page 41

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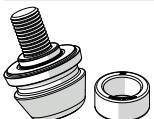


Index single module H60



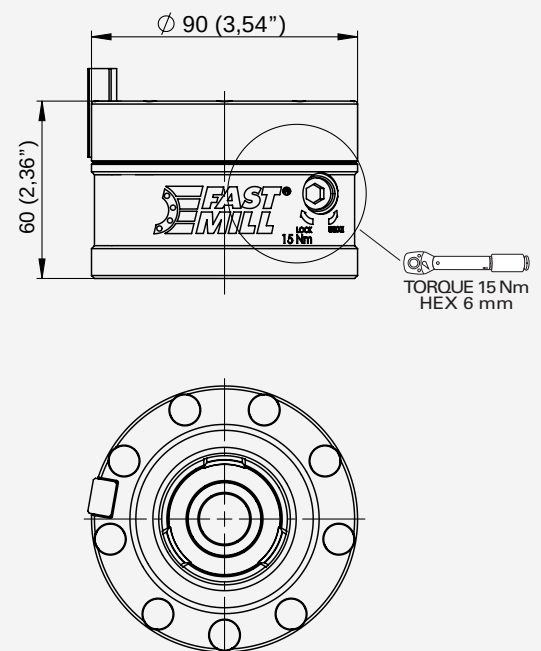
Index single module height 60 mm and diameter 90 mm for application on FAST MILL® plates.

CODE	Ø	HEIGHT	WEIGHT
FM46190125	90 (3,54")	60 (2,36")	2,2 (4,85 lbs)



Related pins and bushes at page 41

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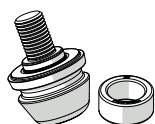


Index single module H80



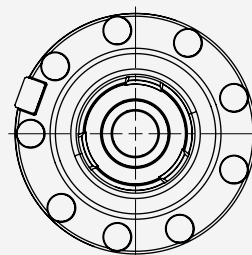
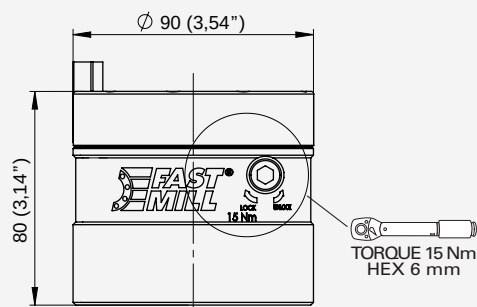
Index single module height 80 mm and diameter 90 mm for application on FAST MILL® plates.

CODE	Ø	HEIGHT	WEIGHT
FM46190135	90 (3,54")	80 (3,14")	3,4 (7,49 lbs)



Related pins and bushes at page 41

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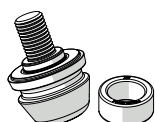


Index single module H160



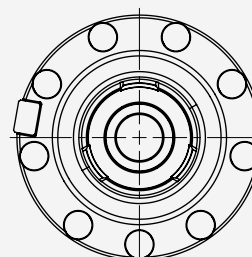
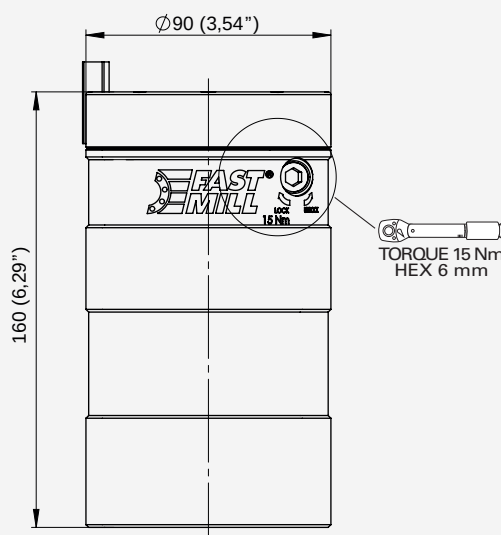
Index single module height 160 mm and diameter 90 mm for application on FAST MILL® plates.

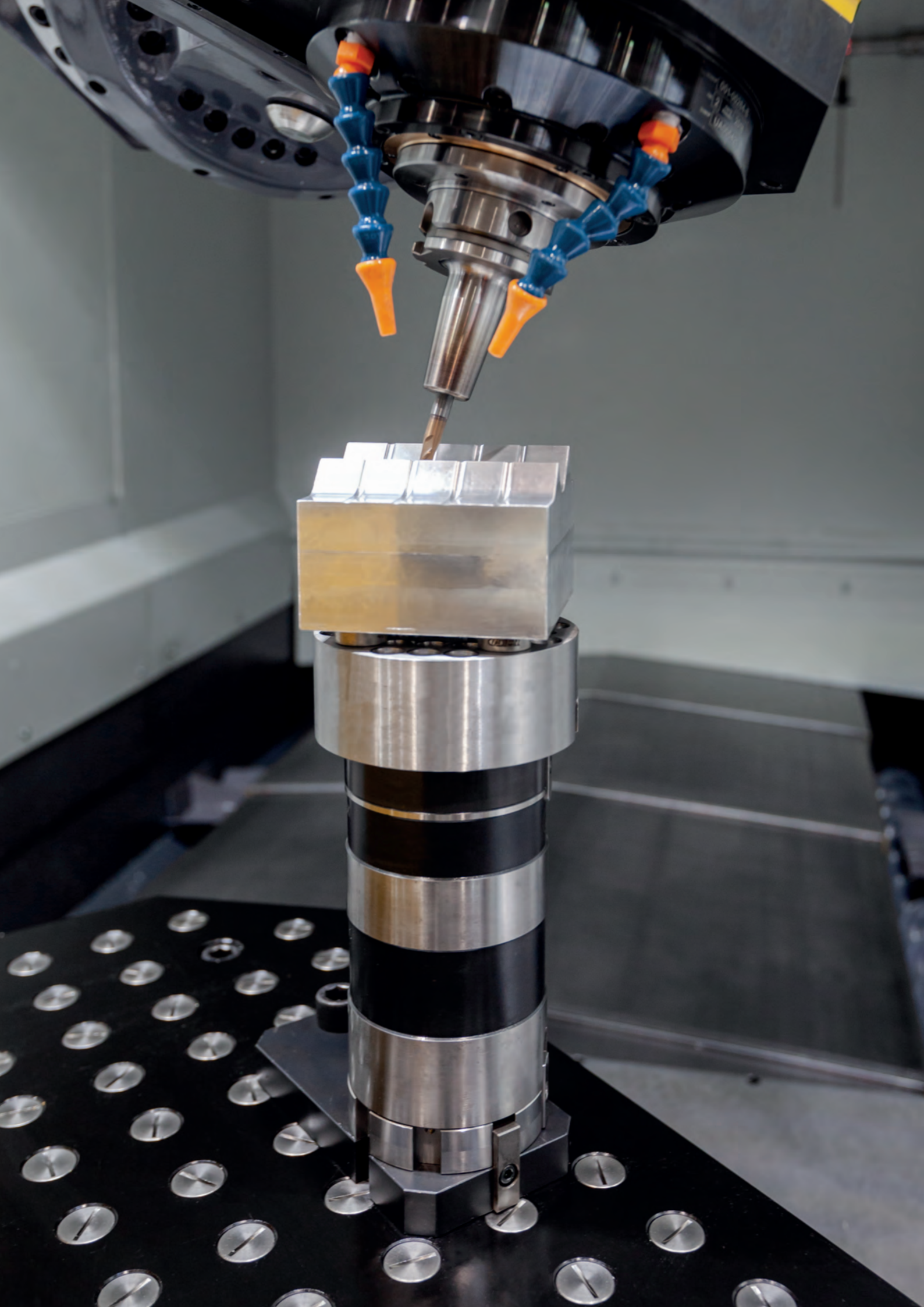
CODE	Ø	HEIGHT	WEIGHT
FM46190145	90 (3,54")	160 (6,29")	7,1 (15,65 lbs)



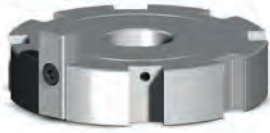
Related pins and bushes at page 41

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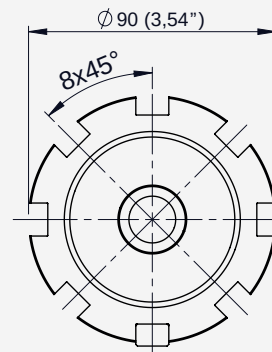
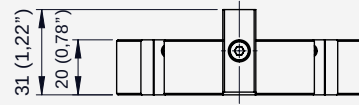




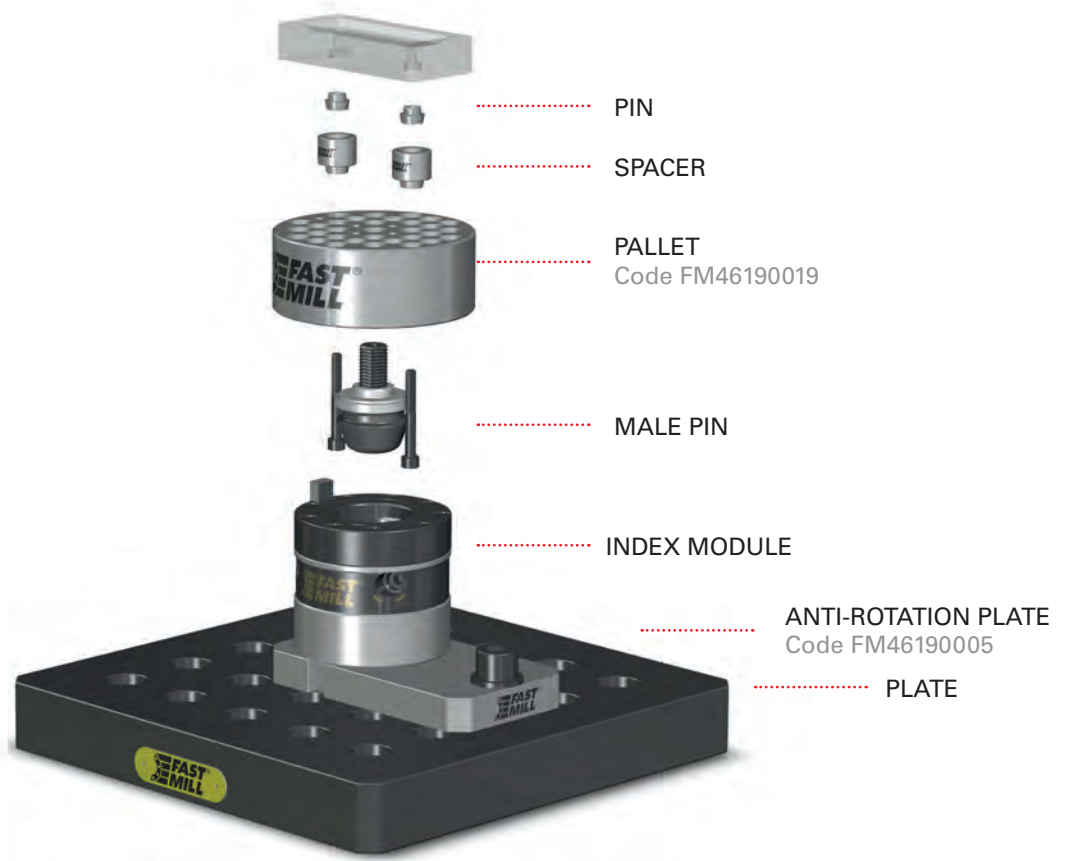
Index flange 45°



CODE	Ø	HEIGHT	WEIGHT
FM46191705	90 (3,54")	20 (0,78")	0,9 (1,98 lbs)



Index module combination example





Module ER32 set

DSO
LINEA

INOX
LINEA

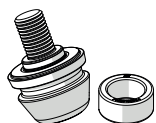


ER 32 module for application on FAST MILL® modules.

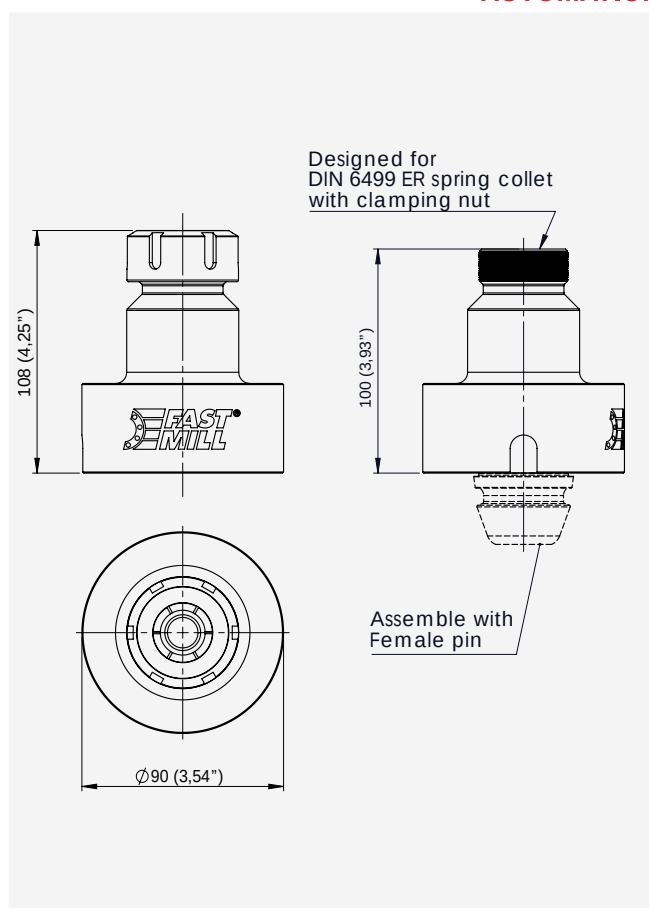
CODE	Ø	HEIGHT	WEIGHT
FMAMER3290100	90 (3,54")	108 (4,25")	2,6 (5,07 lbs)

SET CONFIGURATION

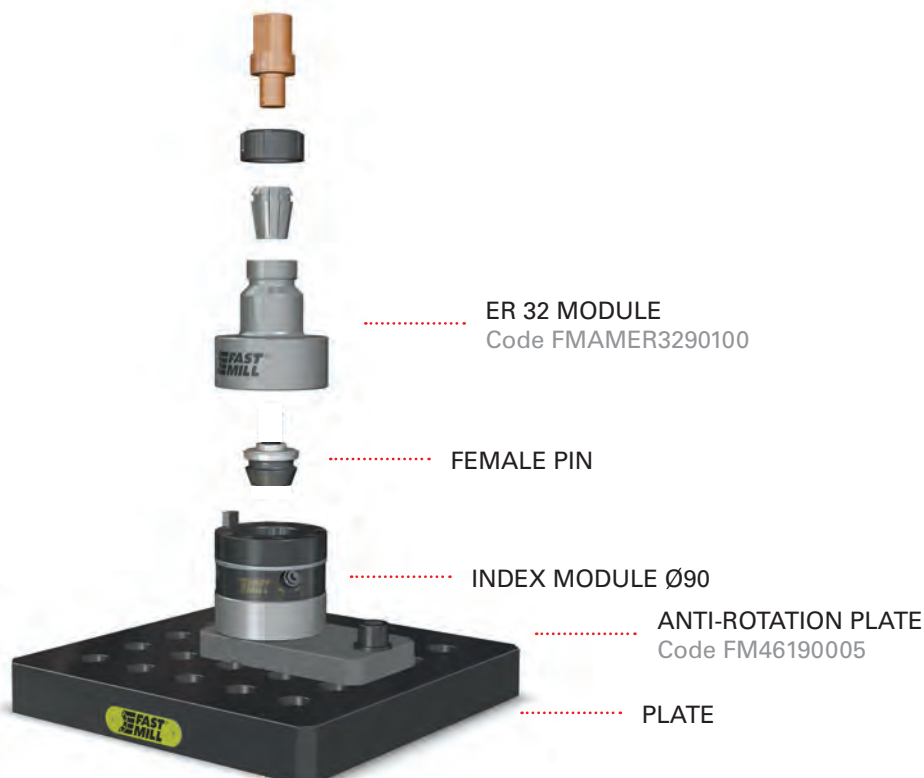
Nut ER32 standard DIN6499 M40x1,5	1 pieces
Collet ER32 standard DIN6499 Ø20	1 pieces
Hook wrench for ER32 nut	1 pieces



Related pins and bushes at page 41



Assembly example



Double module H80



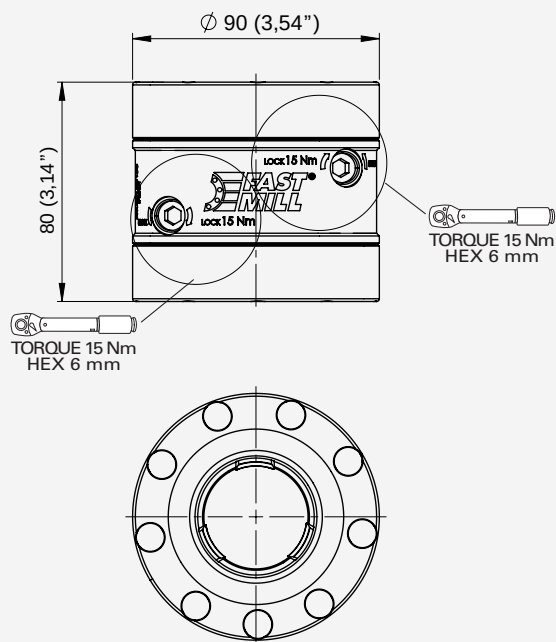
Double module height 80 mm and diameter 90 mm for application on FAST MILL® plates.

CODE	Ø	HEIGHT	WEIGHT
FM46190150	90 (3,54")	80 (3,14")	3,9 (8,59 lbs)



Related pins at page 41

Before using please download our use and maintenance manual from fastmill.it



Double module H160



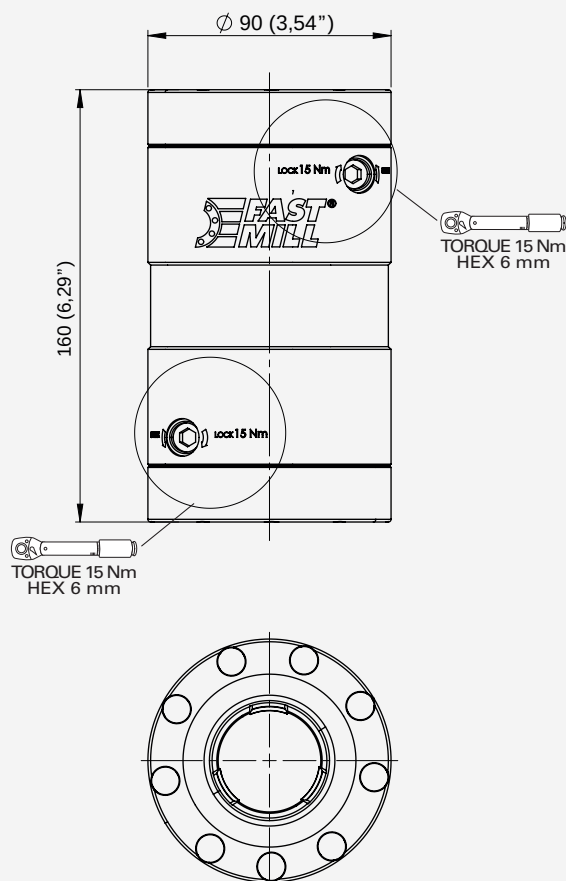
Double module height 160 mm and diameter 90 mm for application on FAST MILL® plates.

CODE	Ø	HEIGHT	WEIGHT
FM46190160	90 (3,54")	160 (6,29")	7,2 (15,87 lbs)

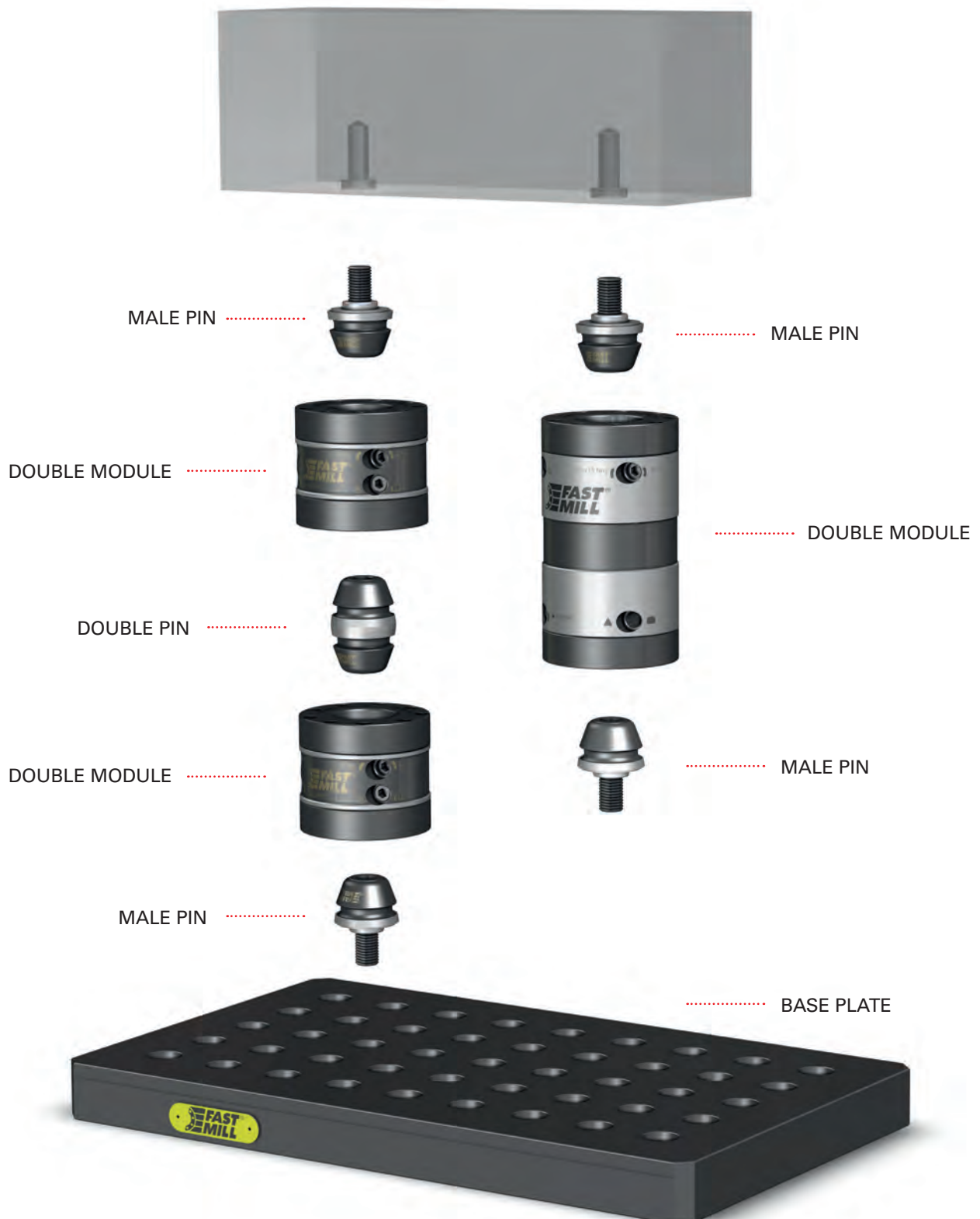


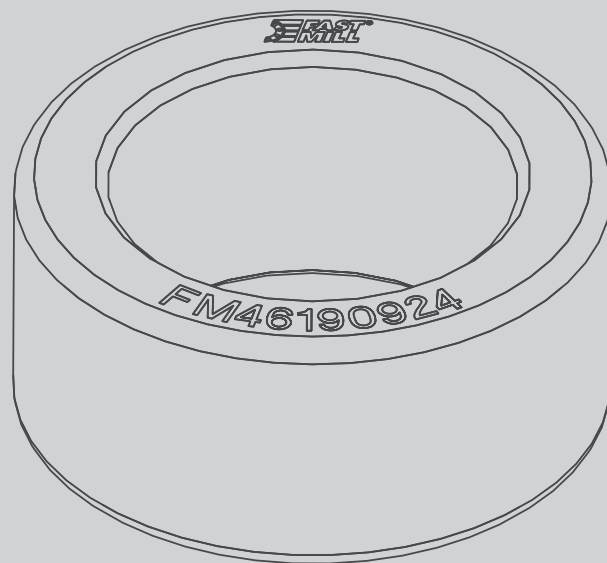
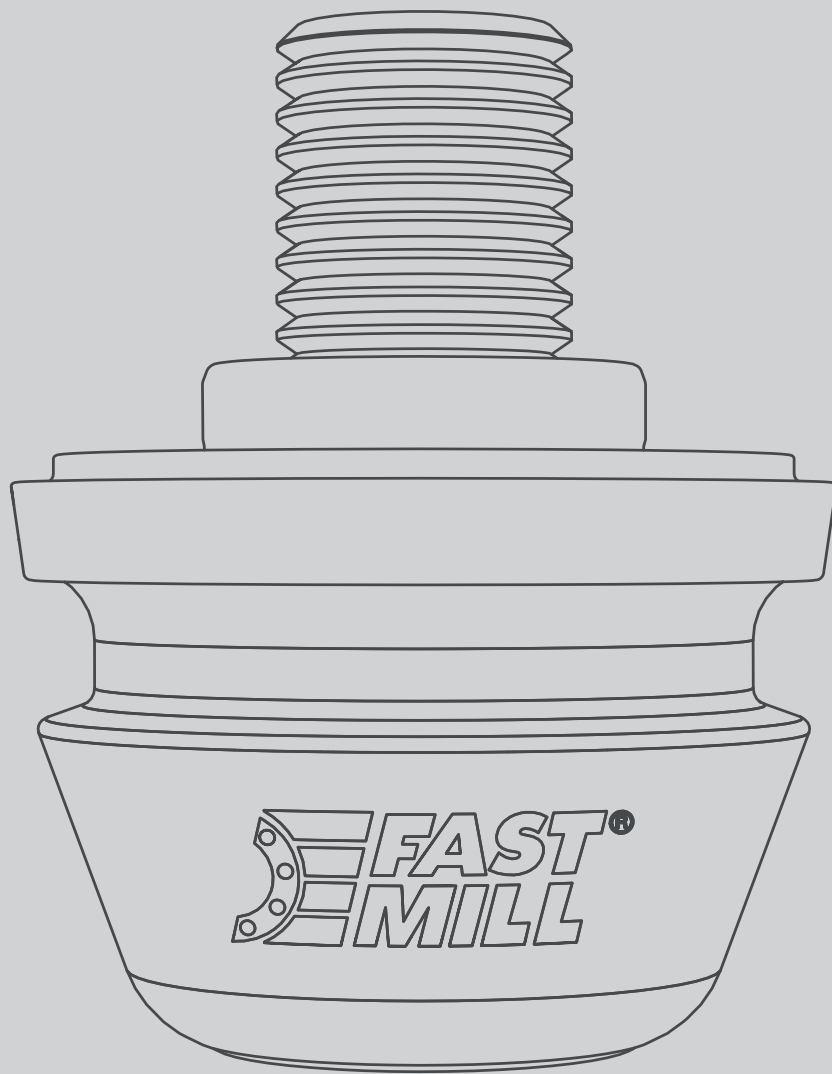
Related pins at page 41

Before using please download our use and maintenance manual from fastmill.it



DOUBLE MODULE COMBINATION EXAMPLE





PINS AND BUSHES

Bush

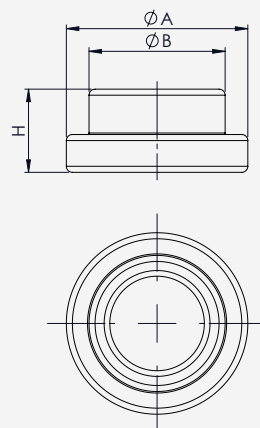


CODE	Ø A	Ø B	HEIGHT
FM46190918	24 (0,94")	18 (0,70")	11 (0,43")
FM46190920	24 (0,94")	20 (0,78")	11 (0,43")
FM46190922	24 (0,94")	22 (0,86")	11 (0,43")
FM46190924	24 (0,94")	24 (0,94")	11 (0,43")
FM46190925	24 (0,94")	25 (0,98")	11 (0,43")
FM93000003 *	24 (0,94")	24 (0,94")	13 (0,51")
FM93000042 *	24 (0,94")	24 (0,94")	16 (0,23")
FM93000040 **	36 (1,41")	24 (0,94")	15 (0,59")
FM93000041 **	36 (1,41")	36 (1,41")	20 (0,78")

* For special applications.

** For vertical clamping at page 72

⚠ Minimum order quantity for all bushes is 5 pieces or multiple of 5.



Pin for single module Ø49



CODE	M	Ø	TYP
FMPMA49M06D10	M6	10 (0,39")	A
FMPMC49M06D10	M6	10 (0,39")	C
FMPMA49M06D11	M6	11 (0,43")	A
FMPMC49M06D11	M6	11 (0,43")	C
FMPMC49M06D00	M6	-	C

CODE	M	Ø	TYP
FMPMA49M08D12	M8	12 (0,47")	A
FMPMC49M08D12	M8	12 (0,47")	C
FMPMA49M08D14	M8	14 (0,55")	A
FMPMC49M08D14	M8	14 (0,55")	C
FMPMC49M08D00	M8	-	C

ART. NR.	M	Ø	TYP
FMPMA49M10D14	M10	14 (0,55")	A
FMPMC49M10D14	M10	14 (0,55")	C
FMPMA49M10D16	M10	16 (0,62")	A
FMPMC49M10D16	M10	16 (0,62")	C
FMPMC49M10D00	M10	-	C

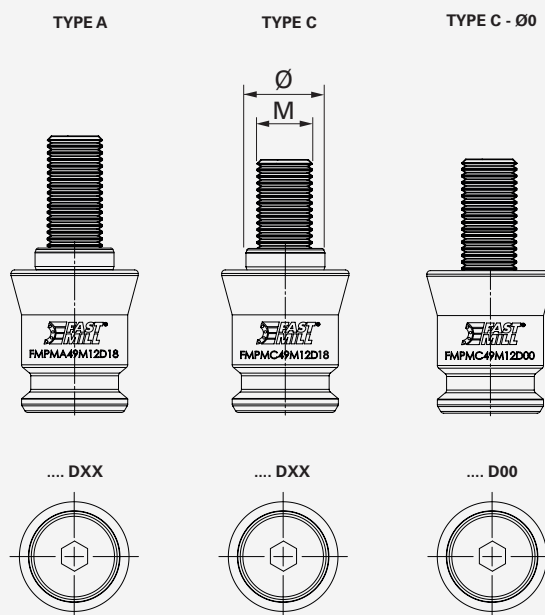
ART. NR.	M	Ø	TYP
FMPMA49M12D18	M12	18 (0,70")	A
FMPMC49M12D18	M12	18 (0,70")	C
FMPMA49M12D20	M12	20 (0,78")	A
FMPMC49M12D20	M12	20 (0,78")	C
FMPMC49M12D00	M12	-	C

ART. NR.	M	Ø	TYP
FMPMA49M16D22	M16	22 (0,86")	A
FMPMC49M16D22	M16	22 (0,86")	C
FMPMA49M16D24	M16	24 (0,94")	A
FMPMC49M16D24	M16	24 (0,94")	C
FMPMC49M16D00	M16	-	C



Screw 12.9 DIN913 included.

STANDARD 12.9
SCREW DIN912 OR DIN913



Male Pin for single module Ø90



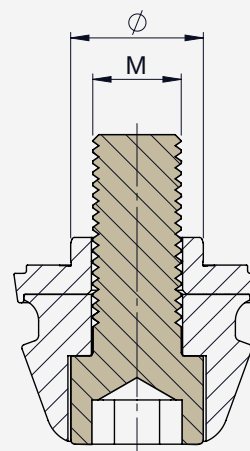
CODE	M	Ø	TYPE
FM46191105	M6	10 (0,39")	A
FM46193105	M6	10 (0,39")	C
FM46191106	M6	11 (0,43")	A
FM46193106	M6	11 (0,43")	C

CODE	M	Ø	TYPE
FM46191107	M8	12 (0,47")	A
FM46193107	M8	12 (0,47")	C
FM46191108	M8	14 (0,55")	A
FM46193108	M8	14 (0,55")	C

CODE	M	Ø	TYPE
FM46191109	M10	14 (0,55")	A
FM46193109	M10	14 (0,55")	C
FM46191110	M10	16 (0,62")	A
FM46193110	M10	16 (0,62")	C

CODE	M	Ø	TYPE
FM46191111	M12	18 (0,70")	A
FM46193111	M12	18 (0,70")	C
FM46191121	M12	20 (0,78")	A
FM46193121	M12	20 (0,78")	C

CODE	M	Ø	TYPE
FM46191132	M16	22 (0,86")	A
FM46193132	M16	22 (0,86")	C
FM46191142	M16	24 (0,94")	A
FM46193142	M16	24 (0,94")	C



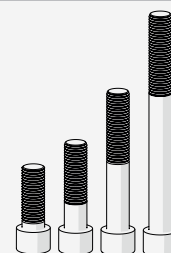
Screw 12.9 (DIN912) included.



For different screw combinations refer to reducer washer at page 107

TECHNICAL TIPS

In the whole range of FAST MILL® modules you can use standard 12.9 (DIN912) screws from M6 to M16 or higher of different heights for the connection of the pieces, to the plates and to the risers/ spacers.



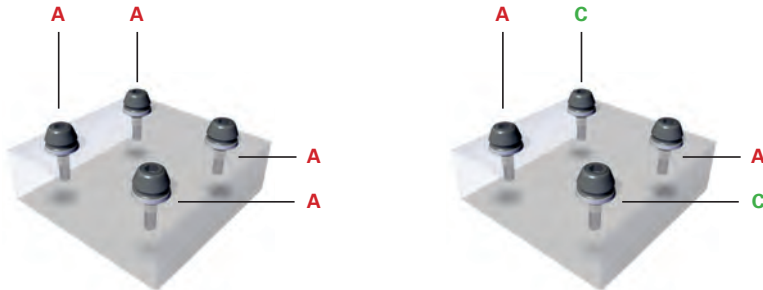
TECHNICAL INFORMATION

A
CENTERING
PIN

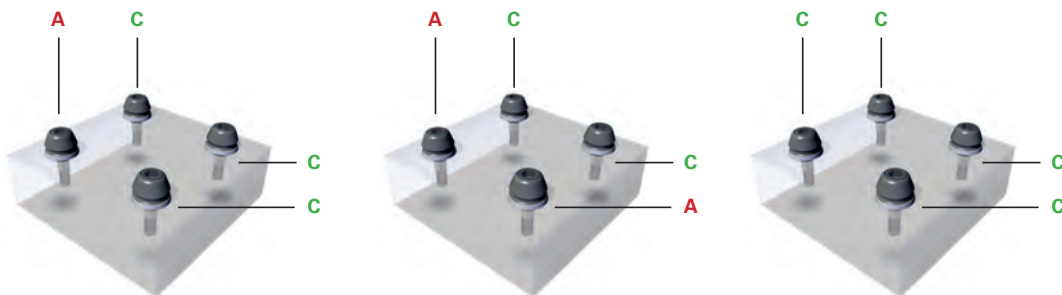
C
CLAMPING
PIN

Clamping and positioning of fixture and/or workpiece are achieved through the clamping pins. Type A is used for centering and clamping, type C only for clamping.

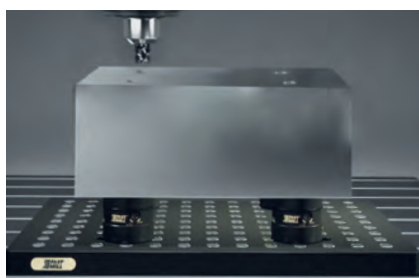
SMALL PARTS



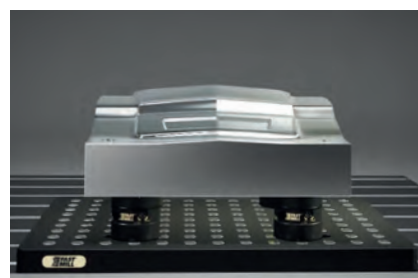
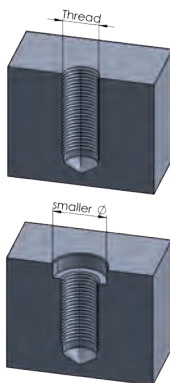
BIG PARTS



Re-machining process of the counterbores to compensate for distortion of the part.



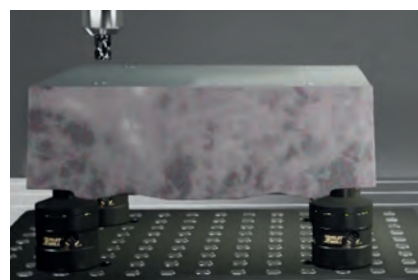
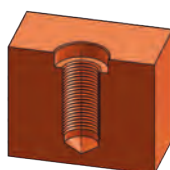
**1 : MACHINING
COUNTERBORES (SMALLER Ø)**



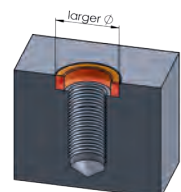
2 : ROUGHING



3 : HEAT TREATMENT

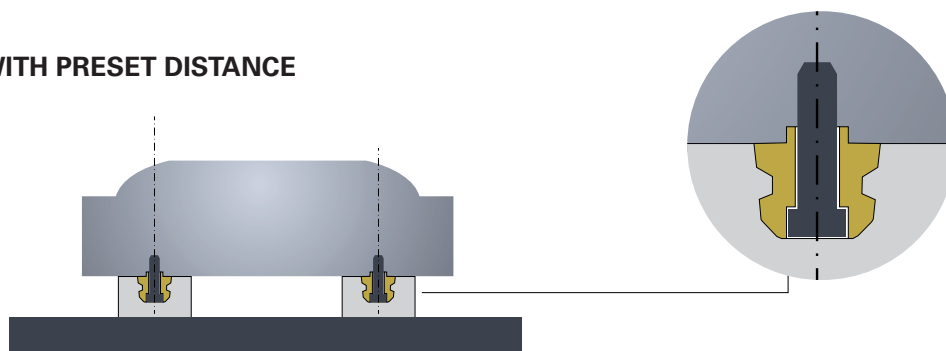


4 : ENLARGING HOLES (LARGER Ø)

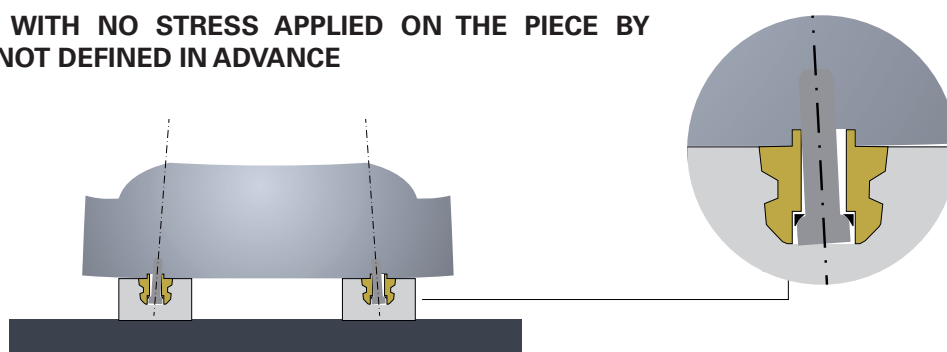


Floating Pin (H Pin): Innovative solution for workpiece re-positioning with no stress applied on the piece.

CLAMPING WITH PRESET DISTANCE



CLAMPING WITH NO STRESS APPLIED ON THE PIECE BY DISTANCE NOT DEFINED IN ADVANCE



Floating Pin (H Pin)

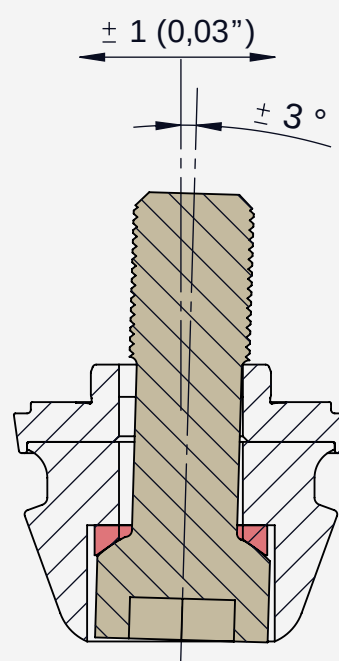


CODE	M	Ø	TYPE
FM46191421	M12	20 (0,78")	A
FM46193421	M12	20 (0,78")	C

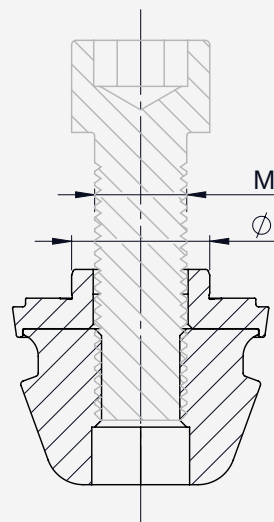
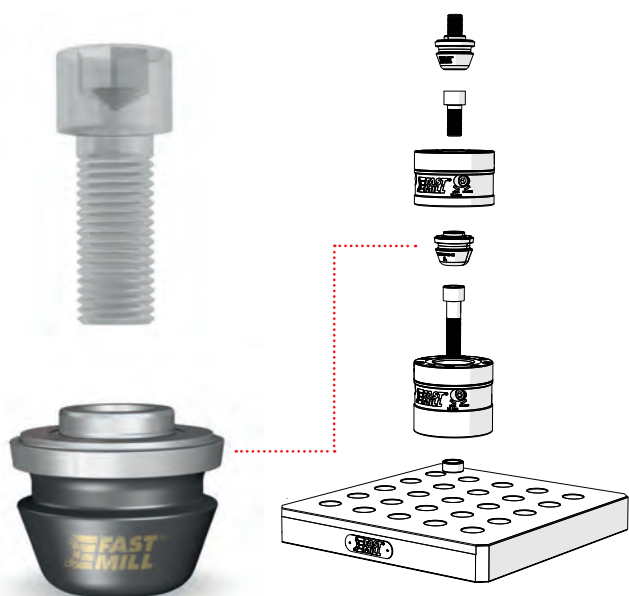
CODE	M	Ø	TYPE
FM46191442	M16	24 (0,94")	A
FM46193442	M16	24 (0,94")	C



Special screw included.



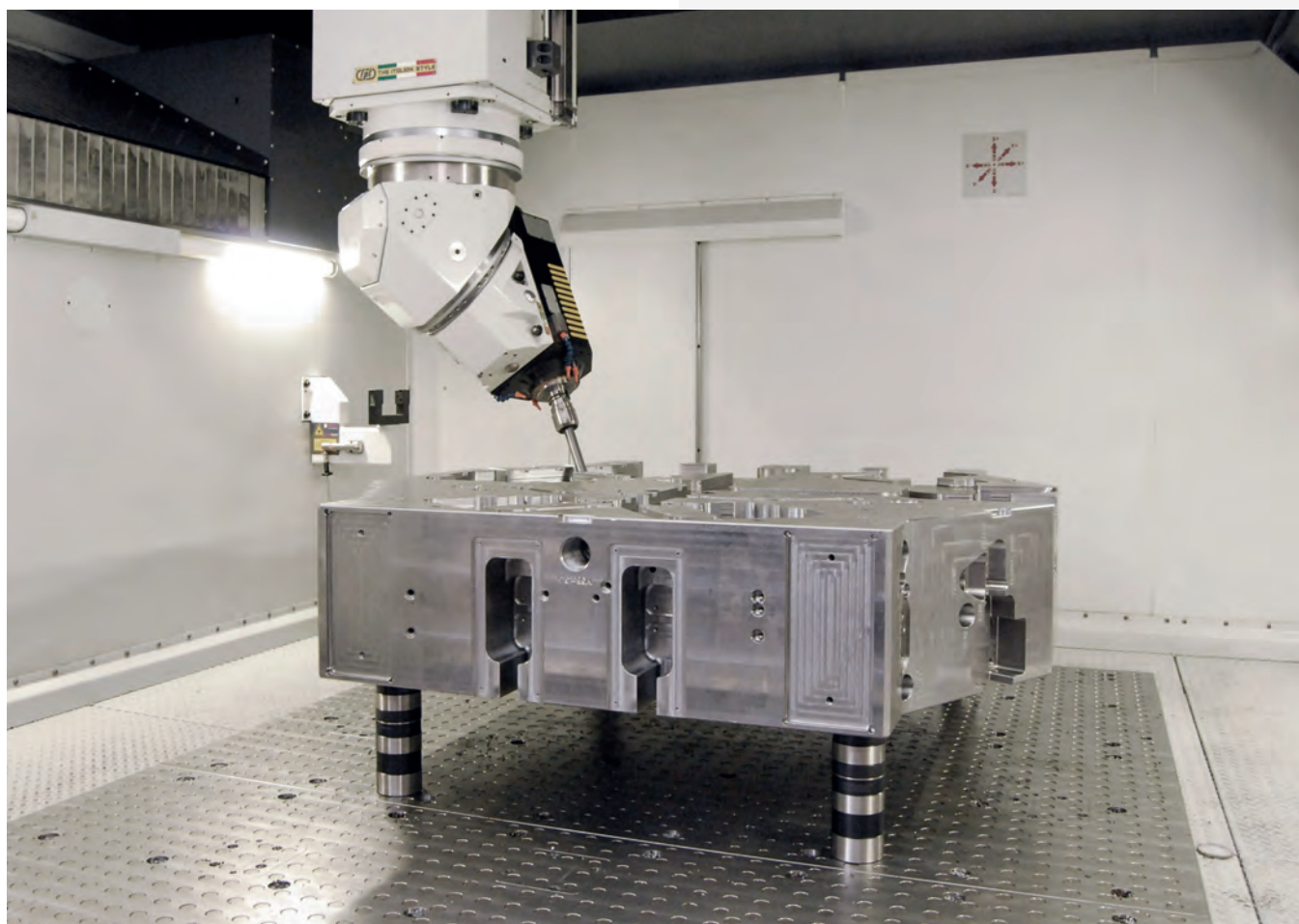
Female Pin for single module Ø90



CODE	M	Ø	TYPE
FM46191242	M16	24 (0,94")	A

Also available M12 Ø18/20 mm type A and C - M16 Ø22 mm type A and C - M16 Ø24 mm type C

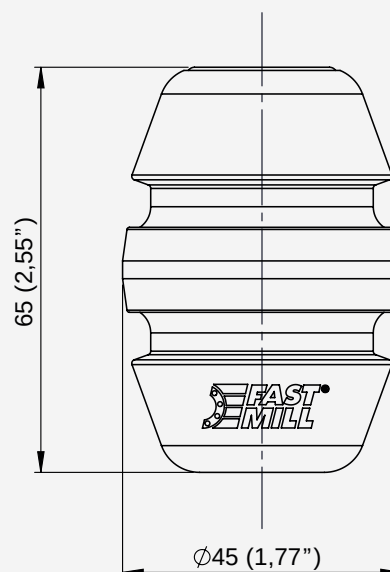
⚠ Screw not included.



Double Pin



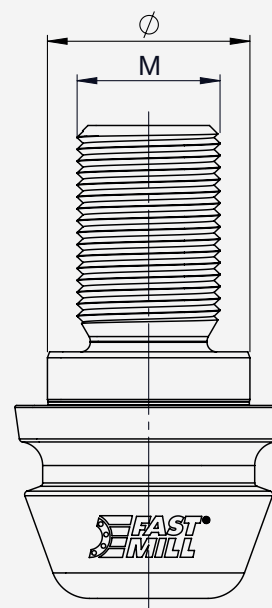
CODE	Ø	HEIGHT	
FM46191316	45 (1,77")	65 (2,55")	



Integral Pin M24



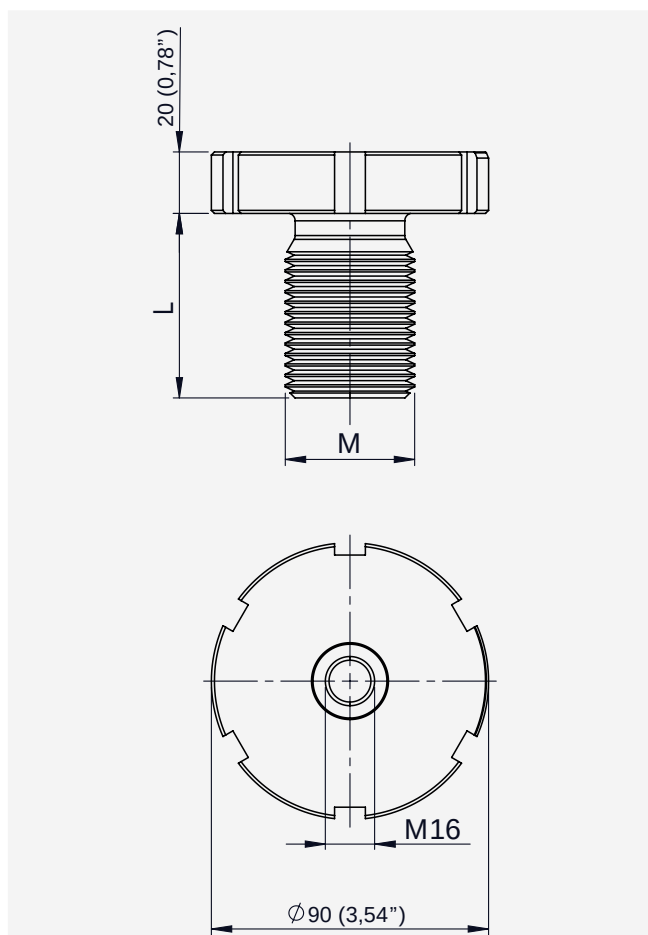
CODE	M	Ø	TYPE
FM46191162	M24	34 (1,33")	A
FM46191164	M24	34 (1,33")	C
FM46191163	M24	36 (1,33")	A
FM46191165	M24	36 (1,33")	C



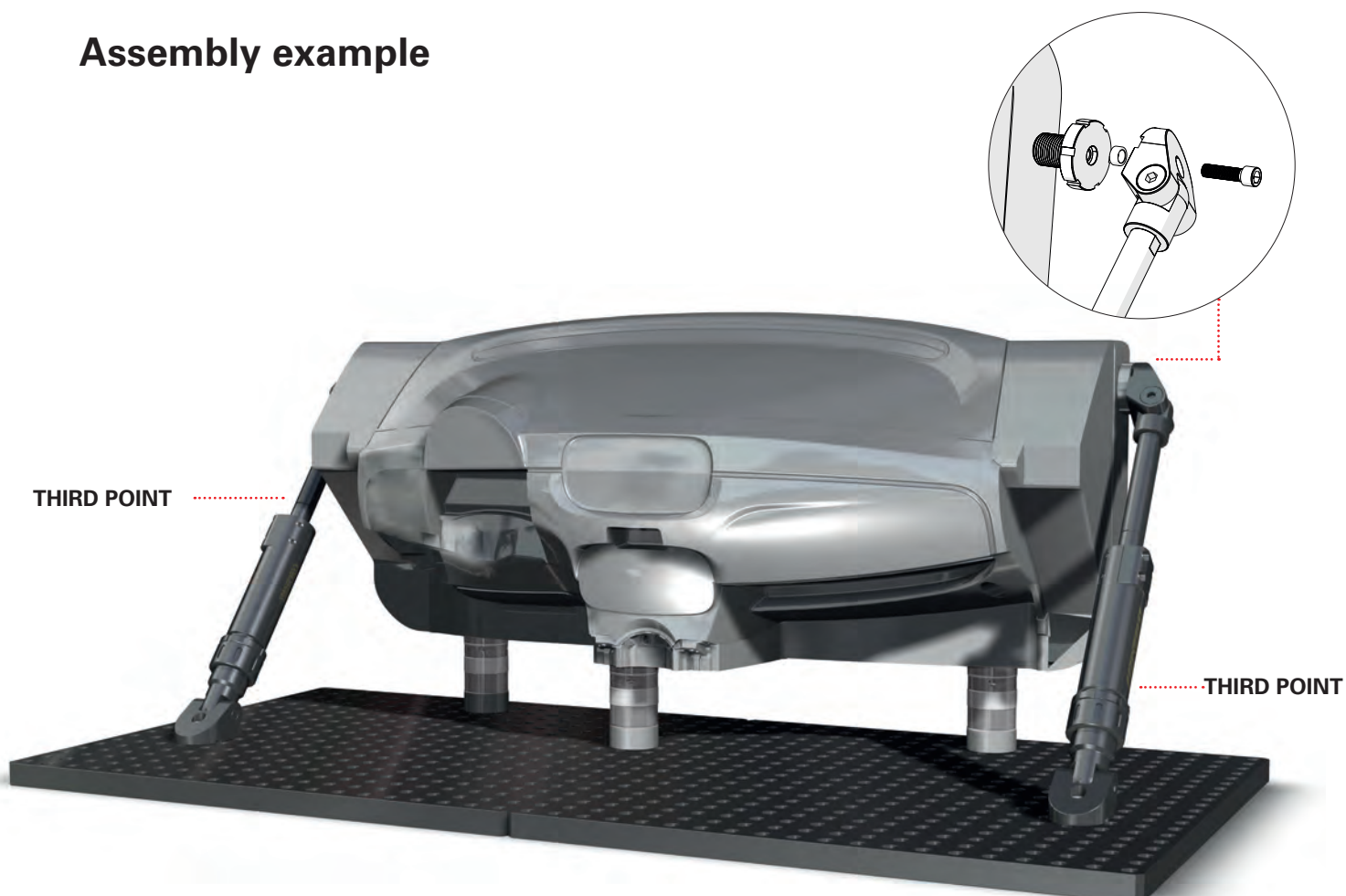
Adapter M24 > M64

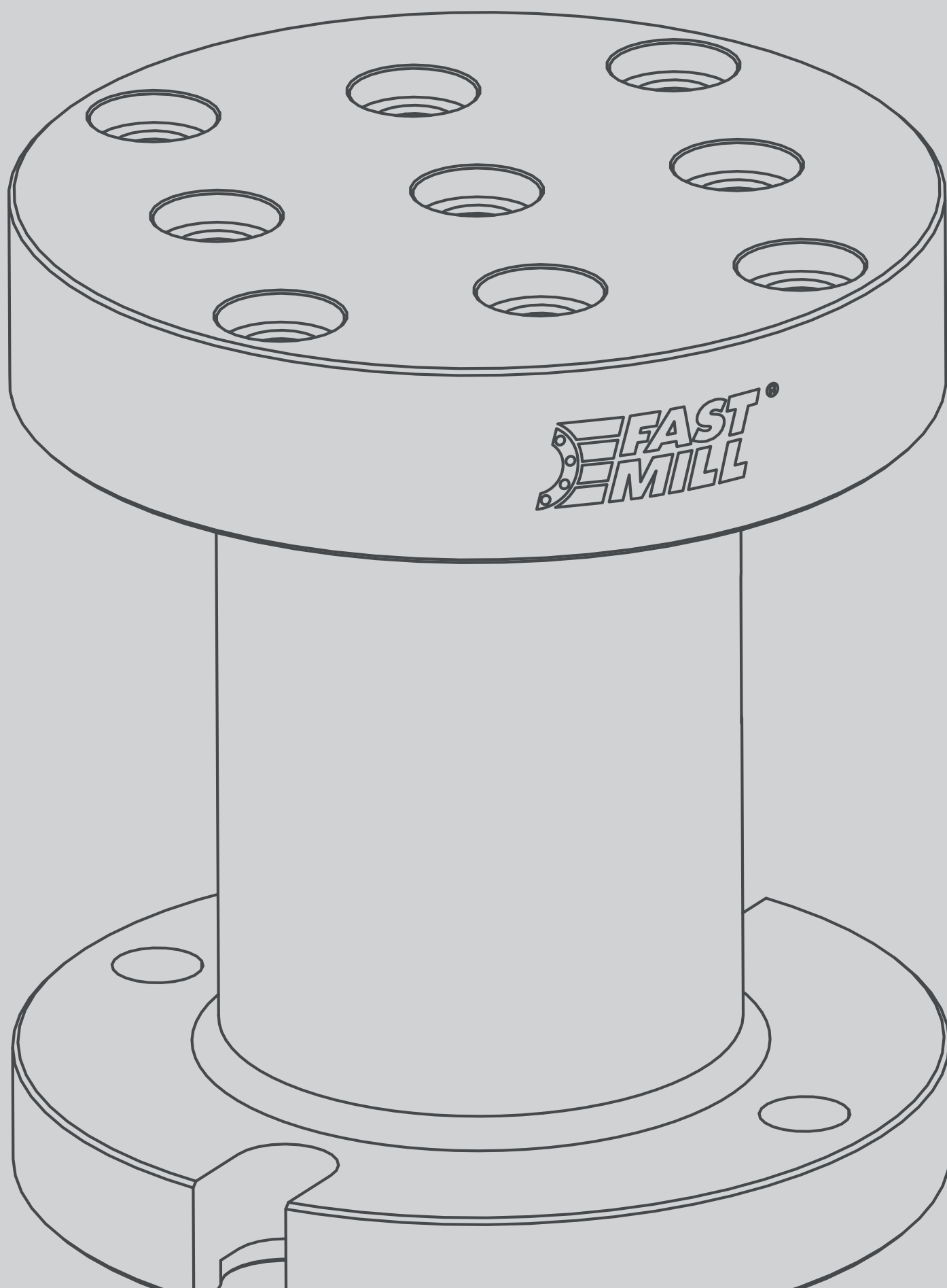


CODE	M	L	
FM93000028	M24X3	35 (1,37")	
FM93000010	M30X3,5	40 (1,57")	
FM93000023	M36X3	50 (1,96")	
FM93000011	M36X4	50 (1,96")	
FM93000024	M42X3	60 (2,36")	
FM93000012	M42X4,5	60 (2,36")	
FM93000025	M48X3	70 (2,75")	
FM93000013	M48X5	70 (2,75")	
FM93000014	M56X5,5	80 (3,14")	
FM93000015	M64X6	90 (3,54")	
FM93000043	M20X2,5	30 (1,18")	



Assembly example





RISERS



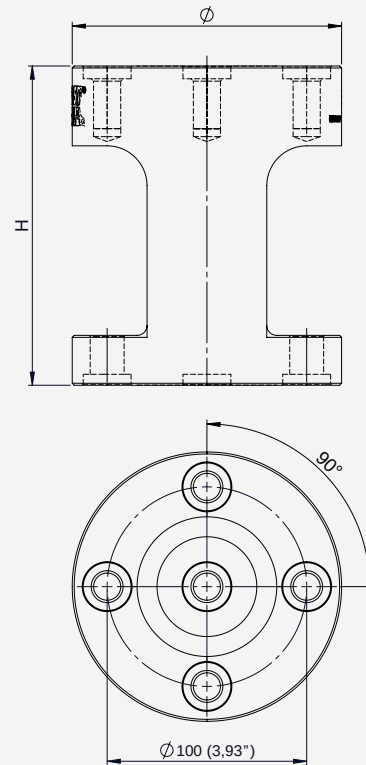
Riser Ø135



CODE	Ø	HEIGHT	WEIGHT
FM46192060	135 (5,31")	160 (6,29")	13 (28,66 lbs)



Related bushes at page 41



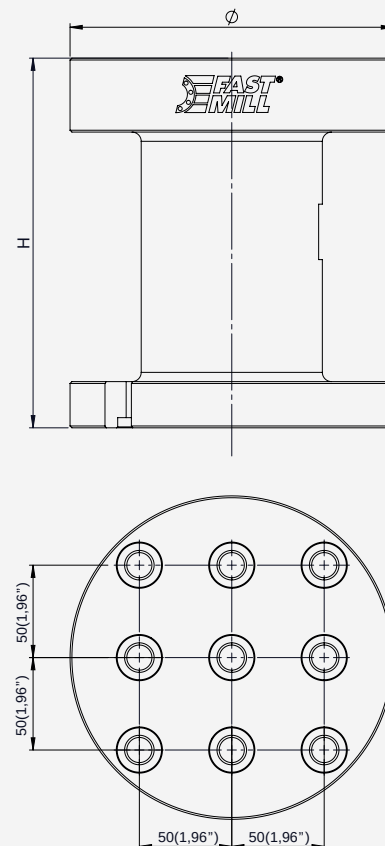
Riser Ø175



CODE	Ø	HEIGHT	WEIGHT
FM46192050	175 (6,88")	200 (7,87")	13 (28,66 lbs)

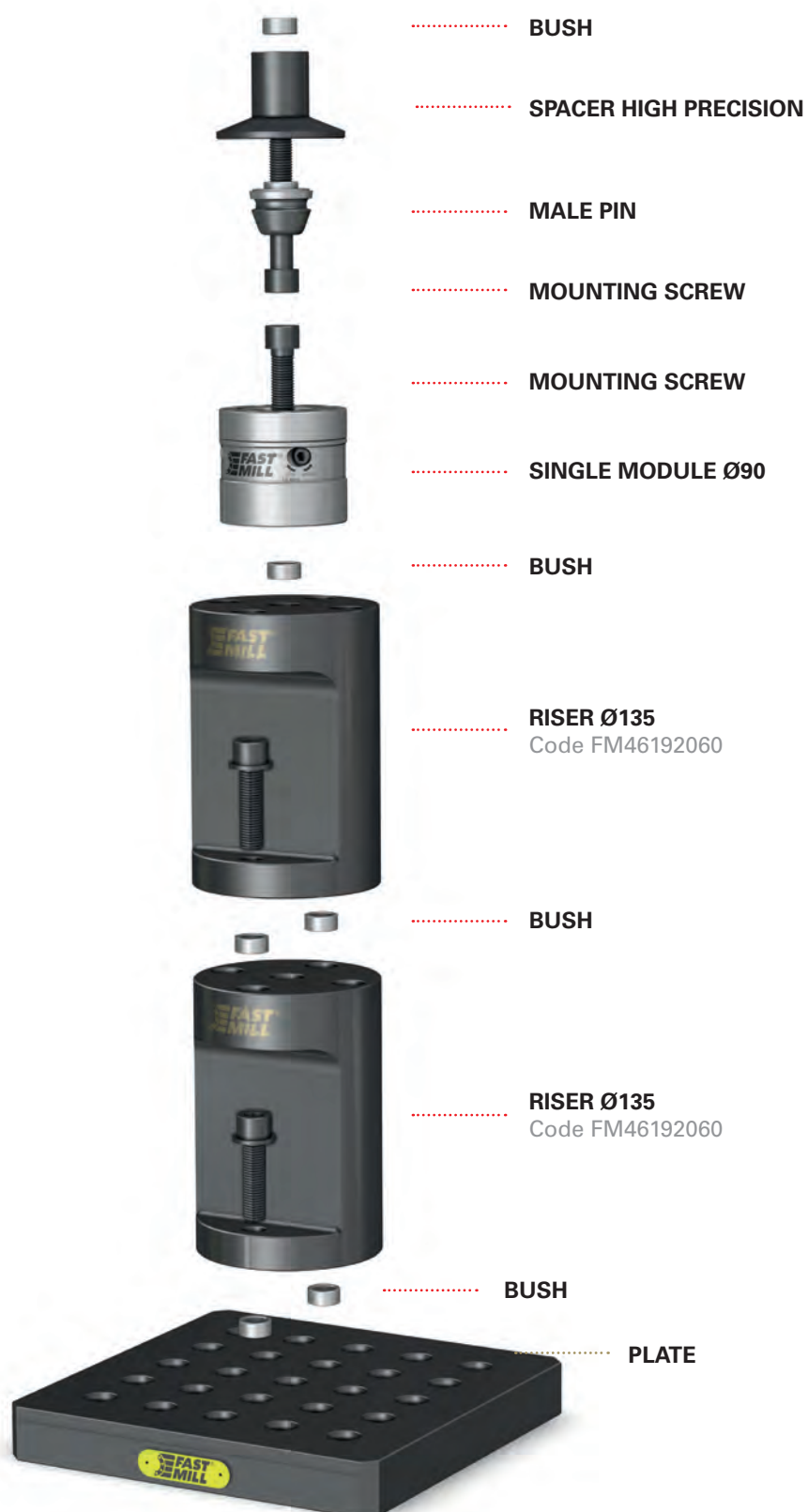


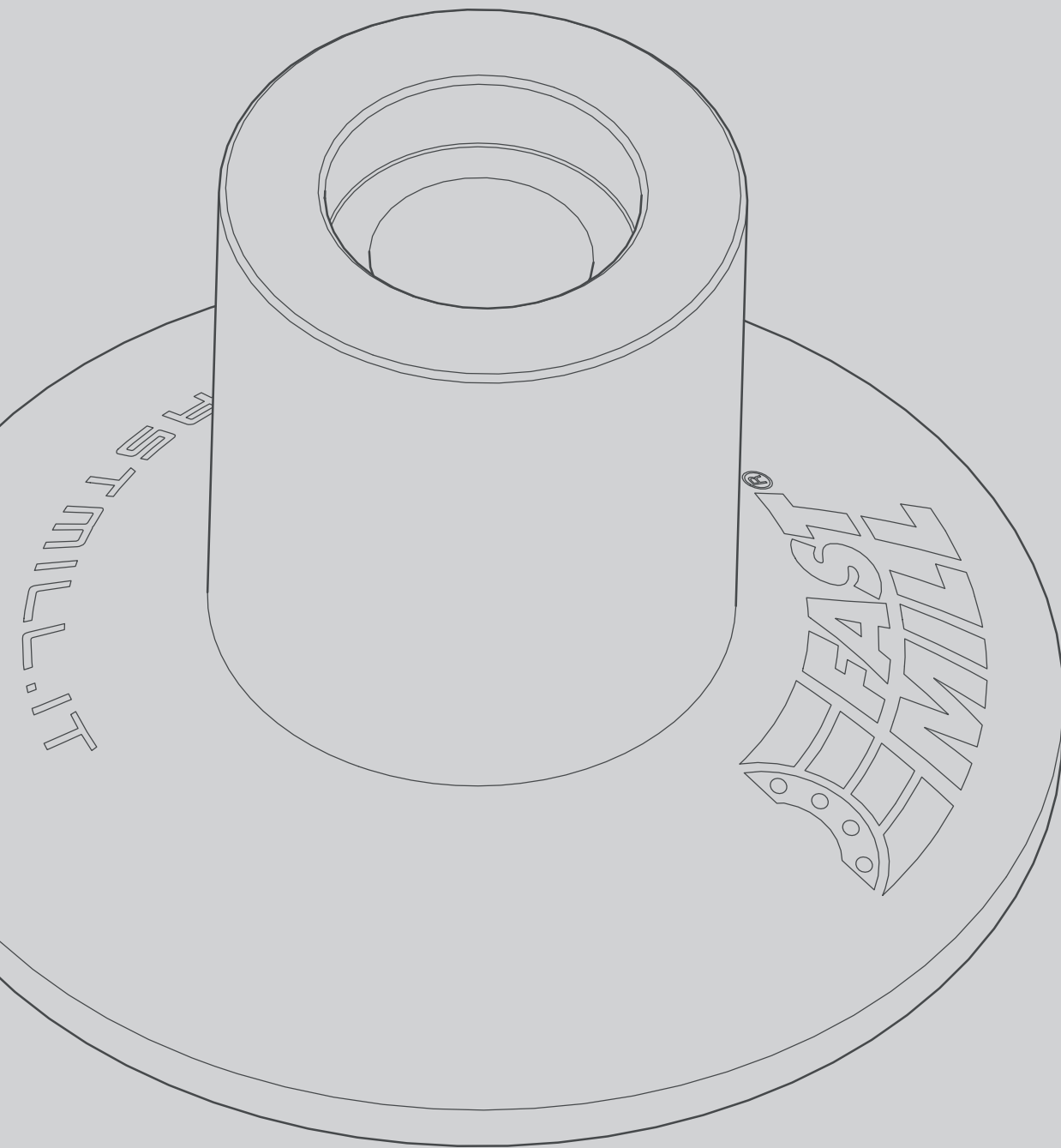
Related bushes at page 41





RISER ASSEMBLY EXAMPLE





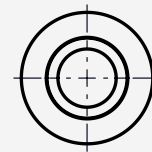
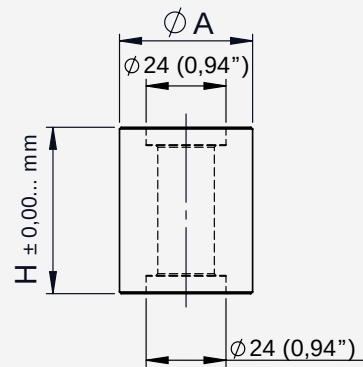
SPACERS

Spacer Ø40 HIGH PRECISION

HARDENED - GRINDED - HTOLERANCE $\pm 0,00... \text{ mm}$



CODE	Ø A	HEIGHT	
FMSPHP0004010	40 (1,57")	10 (0,39")	
FMSPHP0004015	40 (1,57")	15 (0,59")	
FMSPHP0004020	40 (1,57")	20 (0,78")	
FMSPHP0004025	40 (1,57")	25 (0,98")	
FMSPHP0004030	40 (1,57")	30 (1,18")	
FMSPHP0004040	40 (1,57")	40 (1,57")	
FMSPHP0004050	40 (1,57")	50 (1,96")	

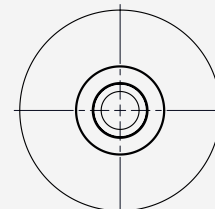
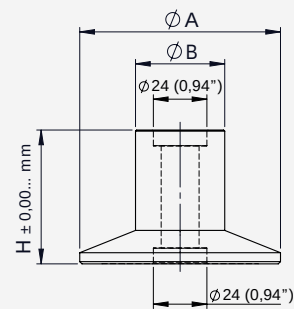


Reduction Ø90 - 40 HIGH PRECISION

HARDENED - GRINDED - HTOLERANCE $\pm 0,00... \text{ mm}$



CODE	Ø A	Ø B	HEIGHT
FM46191801	90 (3,54")	40 (1,57")	10 (0,39")
FM46191802	90 (3,54")	40 (1,57")	20 (0,78")
FM46191803	90 (3,54")	40 (1,57")	30 (1,18")
FM46191804	90 (3,54")	40 (1,57")	40 (1,57")
FM46191805	90 (3,54")	40 (1,57")	50 (1,96")
FM46191806	90 (3,54")	40 (1,57")	60 (2,36")



Related bushes at page 41

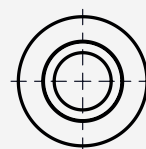
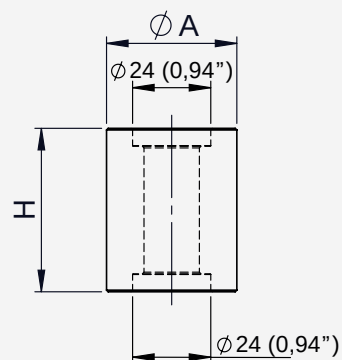
Spacer Ø40



CODE	Ø A	HEIGHT	
FM46191910	40 (1,57")	10 (0,39")	
FM46191915	40 (1,57")	15 (0,59")	
FM46191920	40 (1,57")	20 (0,78")	
FM46191925	40 (1,57")	25 (0,98")	
FM46191940	40 (1,57")	40 (1,57")	
FM46191950	40 (1,57")	50 (1,96")	

 To be used on top of reduction Ø90

 Related bushes at page 41

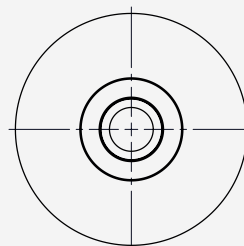
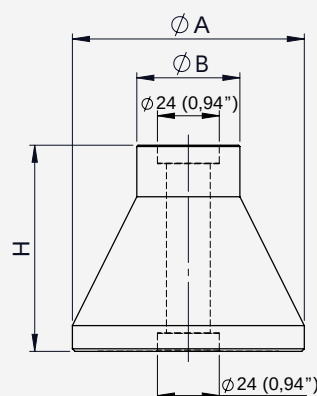


Reduction Ø90 - 40



CODE	Ø A	Ø B	HEIGHT
FM46191785	90 (3,54")	40 (1,57")	20 (0,78")
FM46191790	90 (3,54")	40 (1,57")	40 (1,57")
FM46191795	90 (3,54")	40 (1,57")	60 (2,36")
FM46191800	90 (3,54")	40 (1,57")	80 (3,14")

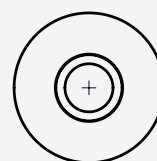
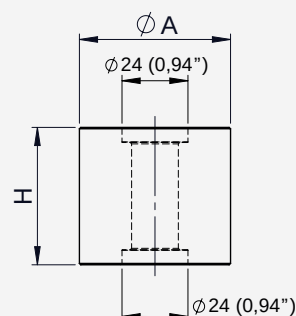
 Related bushes at page 41



Spacer Ø55

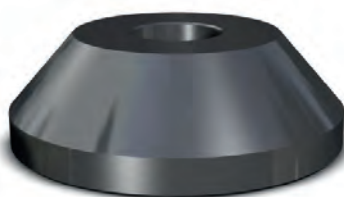


CODE	Ø A	HEIGHT	
FM46191843	55 (2,16")	3 (0,11")	
FM46191844	55 (2,16")	4 (0,15")	
FM46191845	55 (2,16")	5 (0,19")	
FM46191810	55 (2,16")	10 (0,39")	
FM46191815	55 (2,16")	15 (0,59")	
FM46191820	55 (2,16")	20 (0,78")	
FM46191825	55 (2,16")	25 (0,98")	
FM46191840	55 (2,16")	40 (1,57")	
FM46191850	55 (2,16")	50 (1,96")	

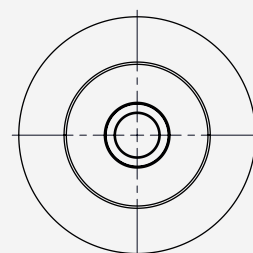
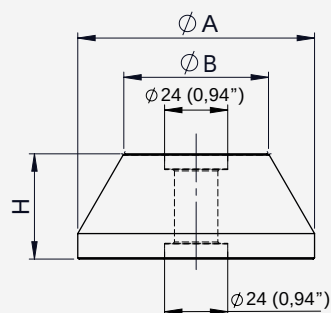


Related bushes at page 41

Reduction Ø90 - 55

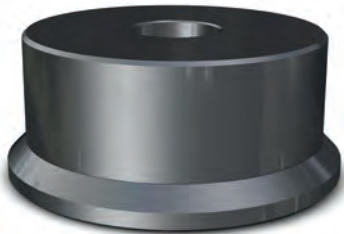


CODE	Ø A	Ø B	HEIGHT
FM46191740	90 (3,54")	55 (2,16")	10 (0,39")
FM46191745	90 (3,54")	55 (2,16")	25 (0,98")
FM46191750	90 (3,54")	55 (2,16")	30 (1,18")

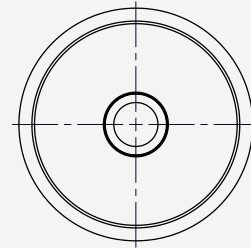
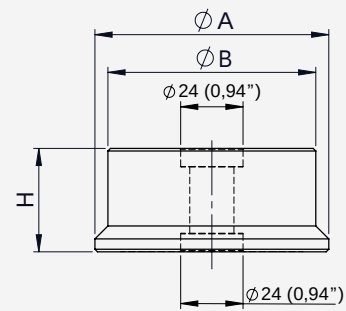


Related bushes at page 41

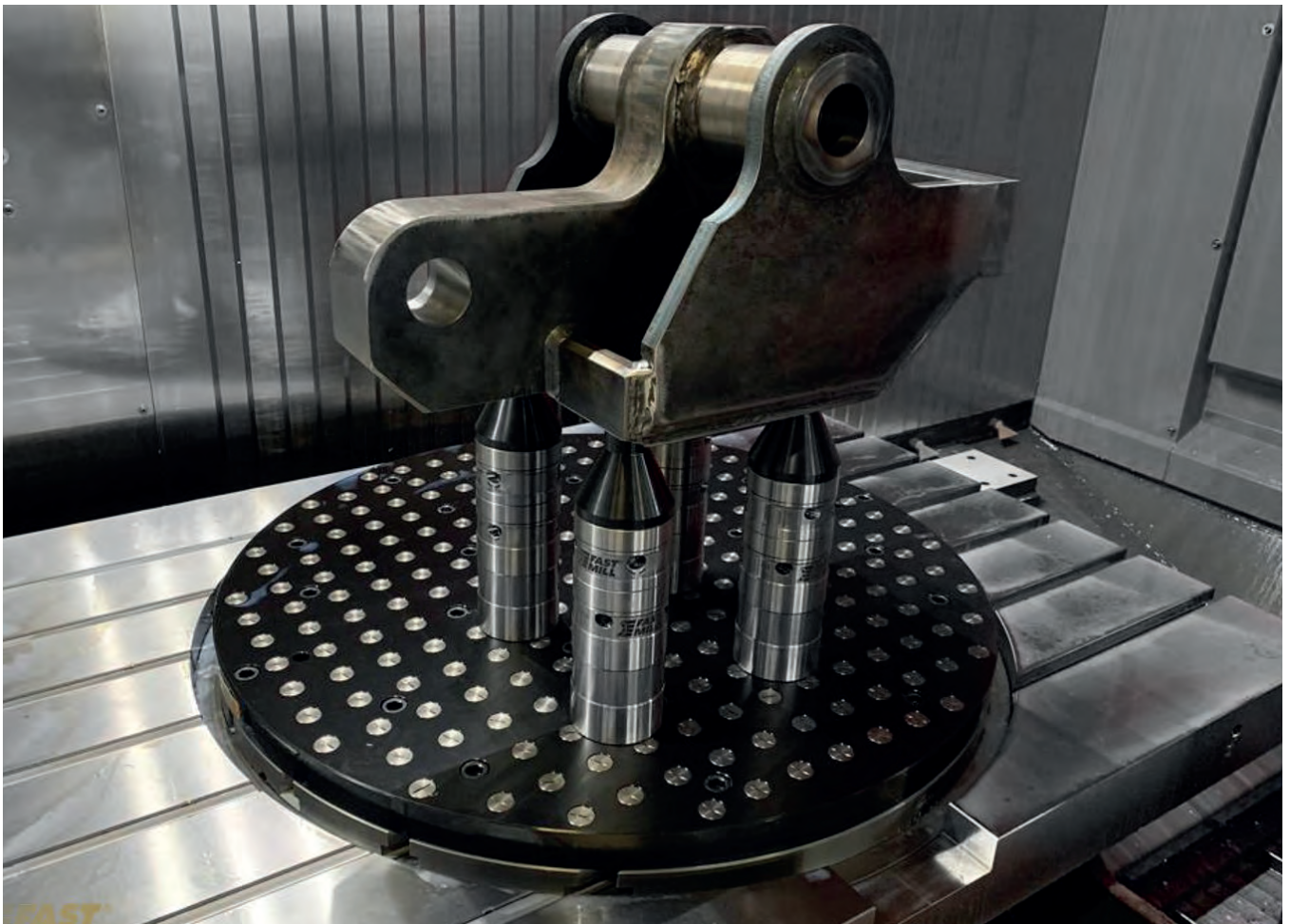
Reduction Ø90 - 80



CODE	Ø A	Ø B	HEIGHT
FM46191770	90 (3,54")	80 (3,14")	20 (0,78")
FM46191780	90 (3,54")	80 (3,14")	40 (1,57")
FM46191782	90 (3,54")	80 (3,14")	60 (2,36")

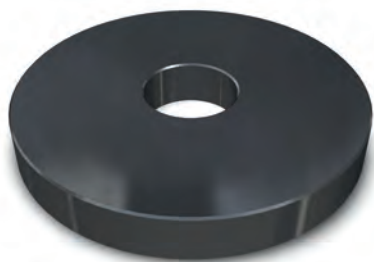


Related bushes at page 41





Spacer Ø90

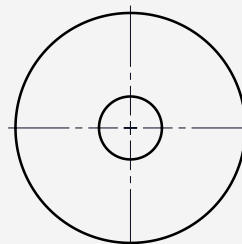
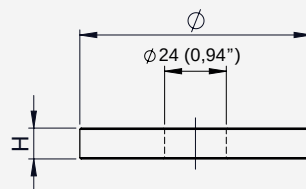


CODE	Ø	HEIGHT	
FM46191889 *	90 (3,54")	5 (0,19")	
FM46191890	90 (3,54")	10 (0,39")	
FM46191891	90 (3,54")	11 (0,43")	
FM46191892	90 (3,54")	12 (0,47")	
FM46191895	90 (3,54")	30 (1,18")	

* Bushes Ø24 h16 Code **FM93000042**



Related bushes at page 41



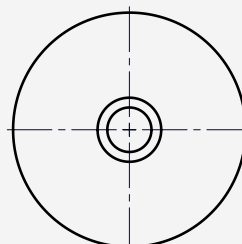
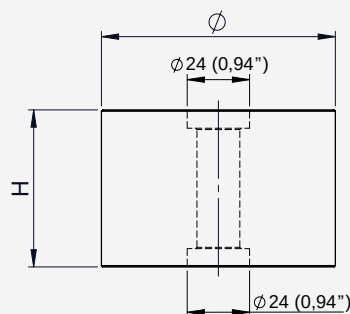
Turnable spacer Ø90



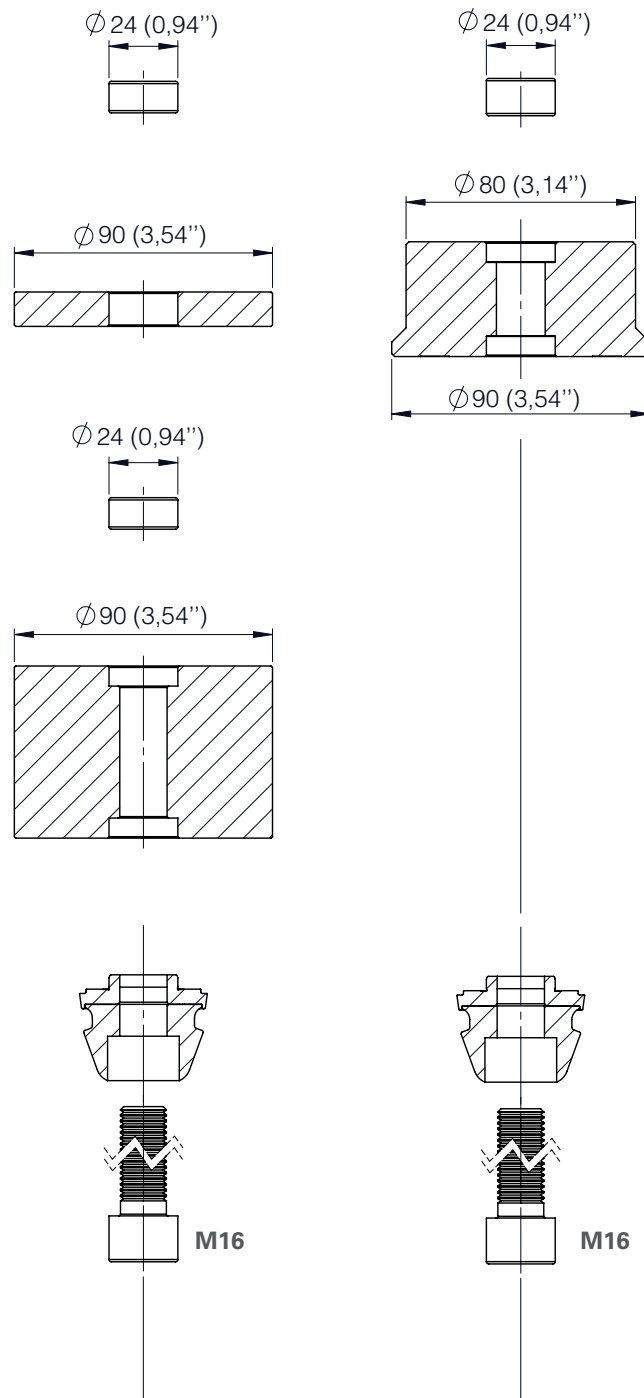
CODE	Ø A	HEIGHT	
FM46191710	90 (3,54")	60 (2,36")	
FM46191715	90 (3,54")	80 (3,14")	



Related bushes at page 41

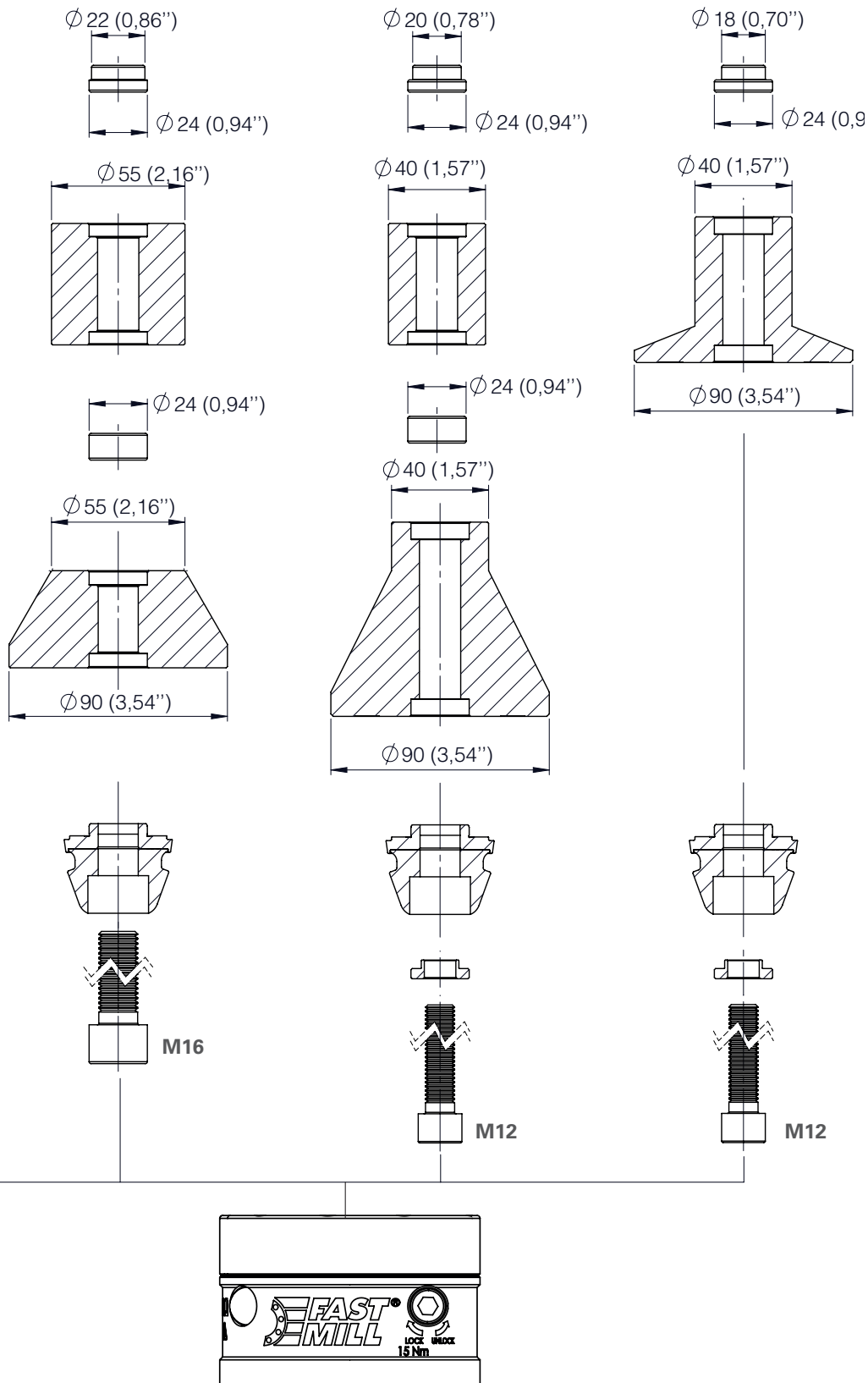
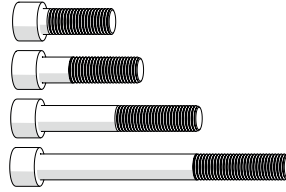


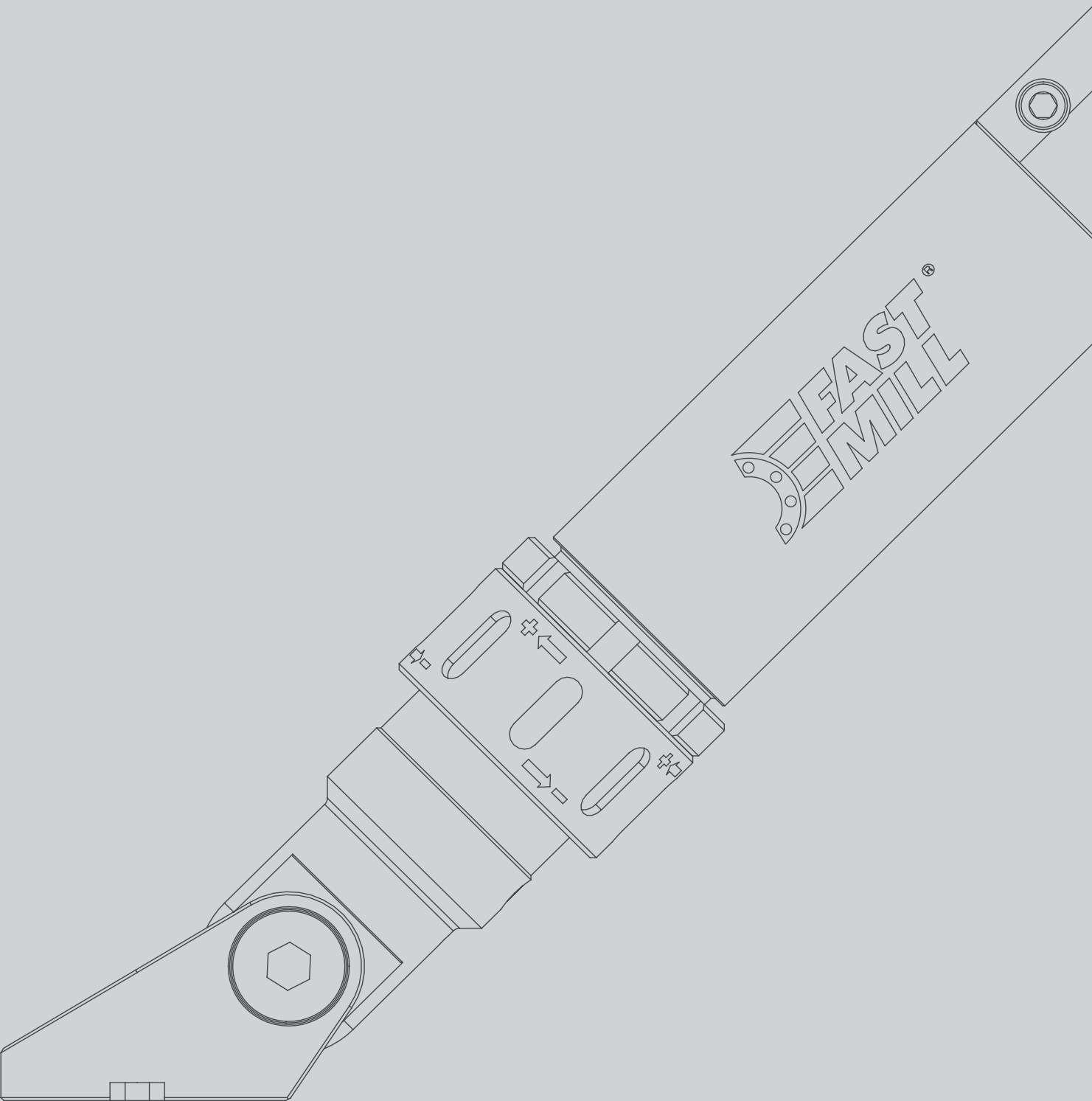
SPACERS ASSEMBLY EXAMPLE

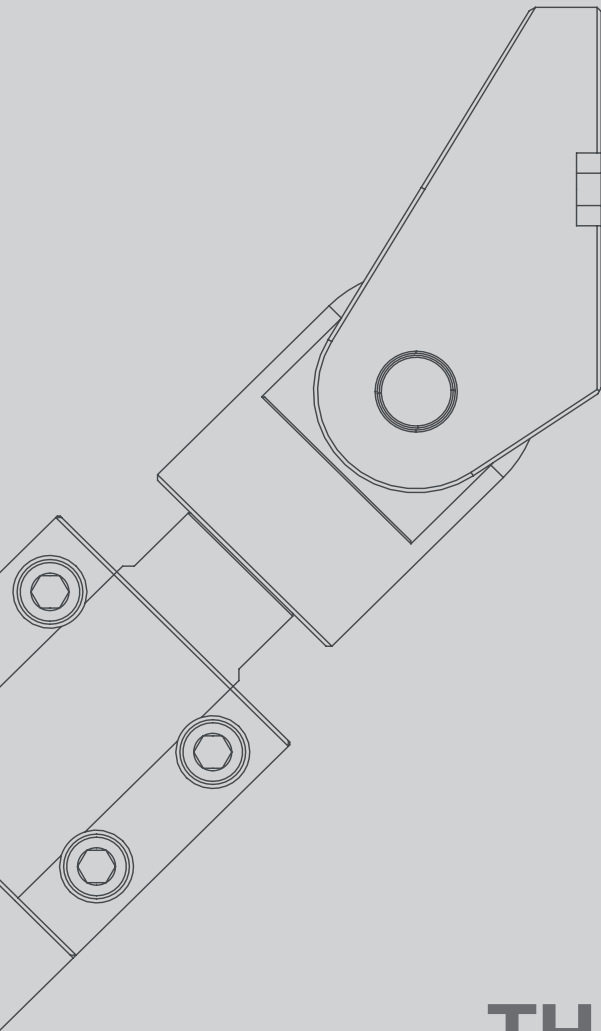


TECHNICAL TIPS

In the whole range of FAST MILL® modules you can use standard 12.9 (DIN912) screws from M6 to M16 or higher of different heights for the connection of the pieces, to the plates and to the risers / spacers.







THIRD CLAMPING POINT

Third clamping point set

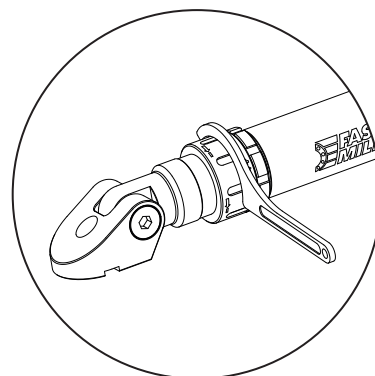


Third clamping point set

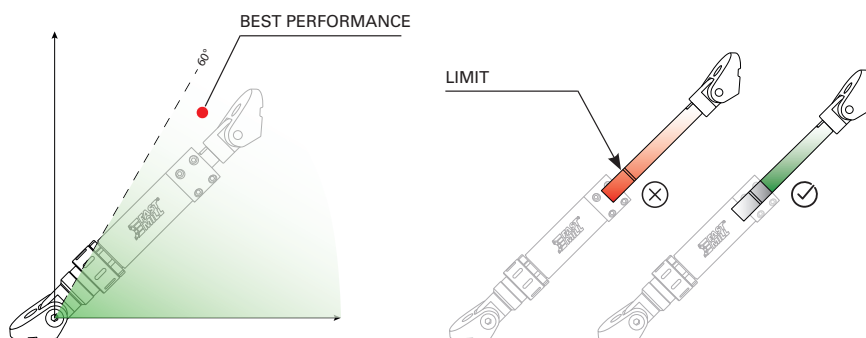
A third clamping point for roughing, finishing and drilling operations of pieces fixed in a vertical position. Thanks to its rigid telescopic system and its additional modular extensions, the third clamping point supports workpieces and opposes vibrations and flexures caused by machining operations, thus avoiding the use of expensive, heavy and bulky fastening brackets. The third clamping point can be fixed directly on plates or workpieces by means of standard TCEI screws or FAST MILL® coordinate modules/risers. Alternatively, it can be fixed on the machine's T-slots. In addition to fixing, thanks to its efficient fine adjustment system, it can be adjusted for the purposes of thrust or traction to ensure verticality of workpieces before their machining.

CODE	DIMENSION mm (in)
FM46191600	630/820 (24,80"/32,28")

SET CONFIGURATION	
Third clamping point	1 piece
C-hook spanner 92-95	1 piece
Bush Ø24-24 mm	2 pieces
Cylindrical head hexagon socket screw 12.9 (DIN912)	2 pieces



**C-HOOK SPANNER 92-95
APPLICATION**



Extension

CODE	DIMENSION mm (in)
FM46191650	+ 200 (7,87")



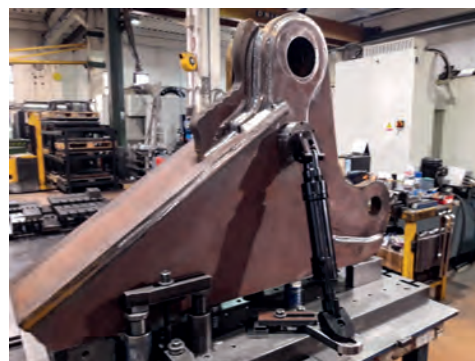
Not included in the set.

Magnetic plate

CODE	DIMENSION mm (in)
FM46191660	Ø 150 (5,90")

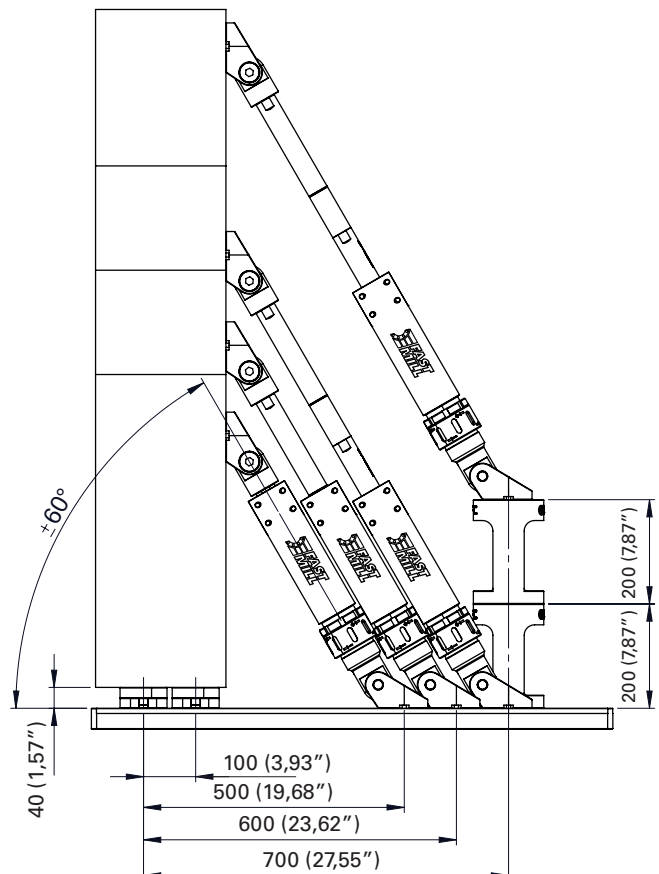
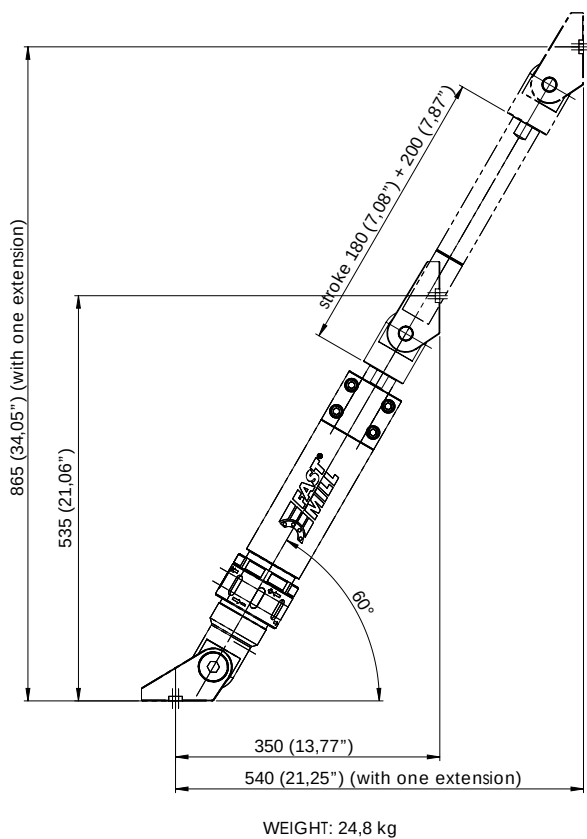
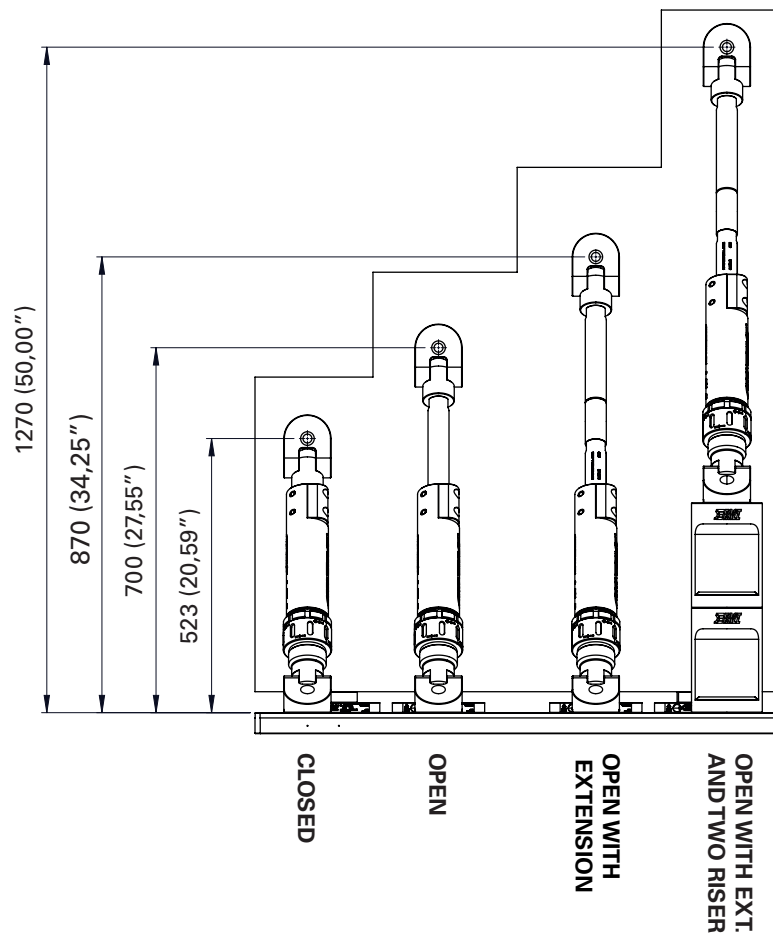


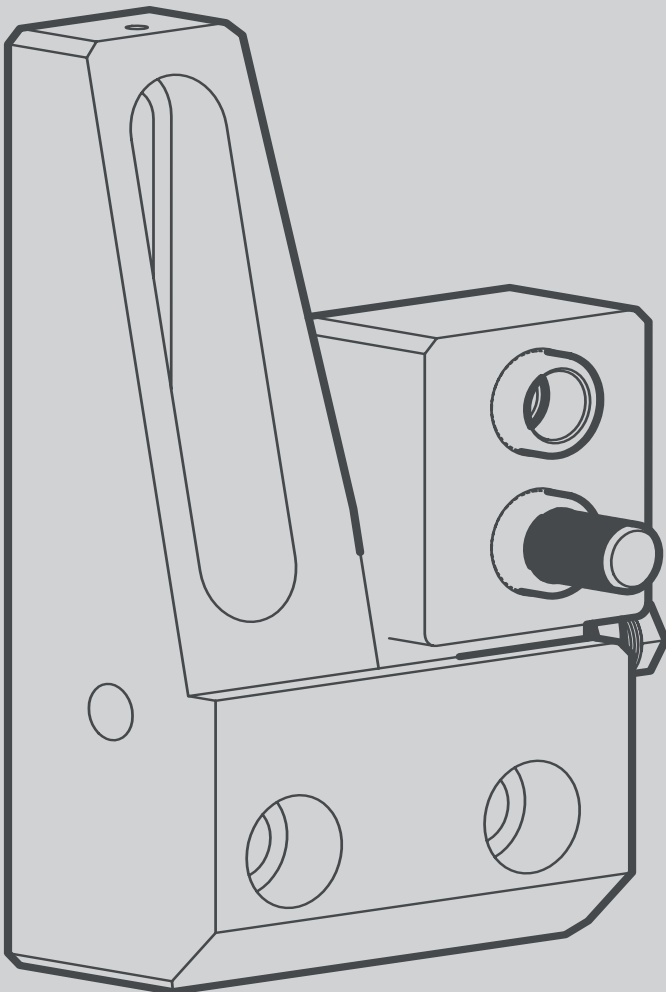
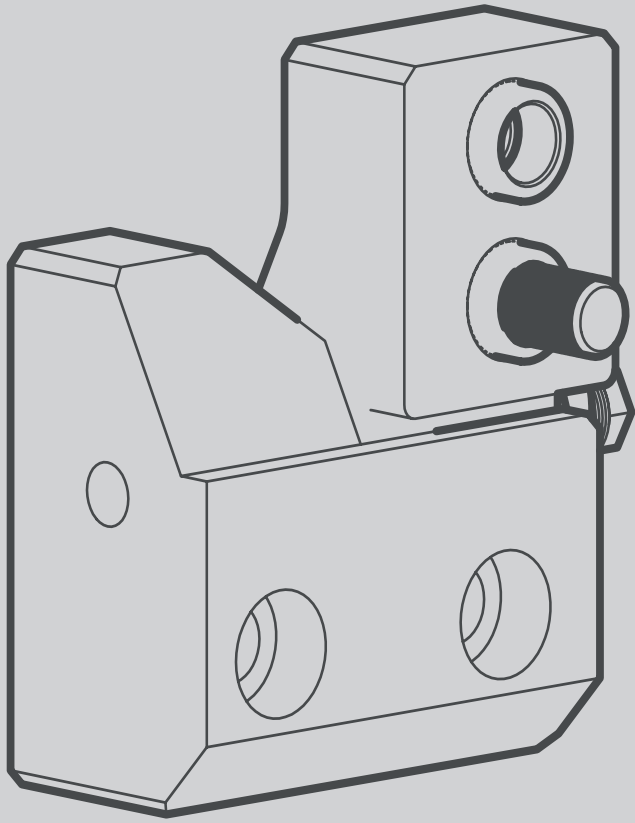
Not included in the set.





Third clamping point mm (in)





VERTICAL CLAMPING

Vertical clamping for HEAVY PARTS set

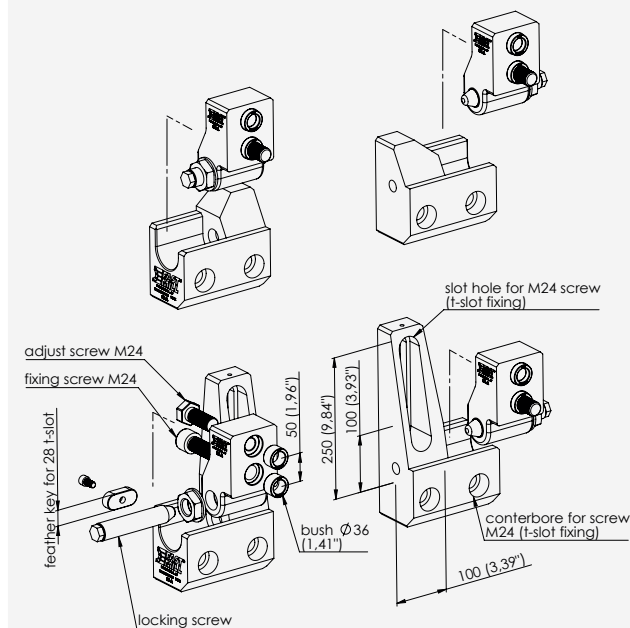


CODE

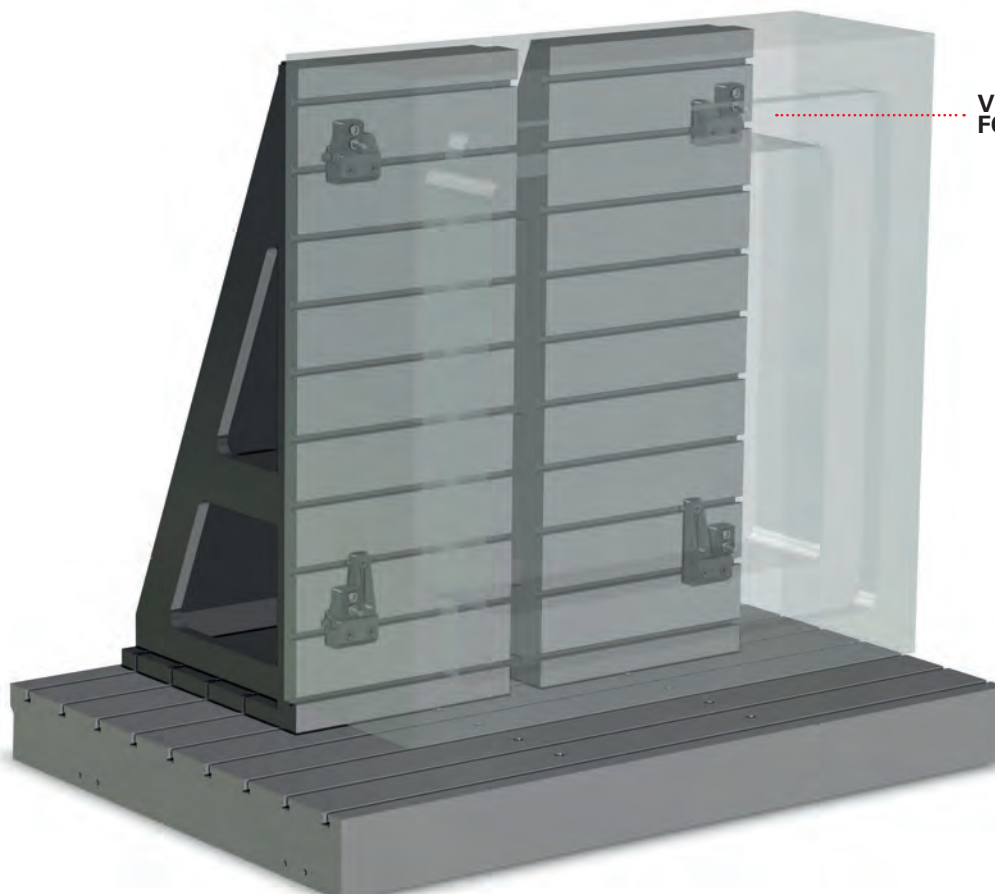
FMVCHP0024036

SET CONFIGURATION

Special bush $\varnothing 36$ -36 mm h 20 mm	8 pieces
TE M24X60 UNI 5739-8,8	4 pieces
31X56 UNI 6592-69 washer	4 pieces
Feather key 28X16X60 DIN6885 C	4 pieces
M30 NUT UNI 5589 -8G	4 pieces
TCEI M24X80 UNI 5931-12,9 screw	4 pieces
TCEI M10X20 UNI 5931-12,9 screw	4 pieces



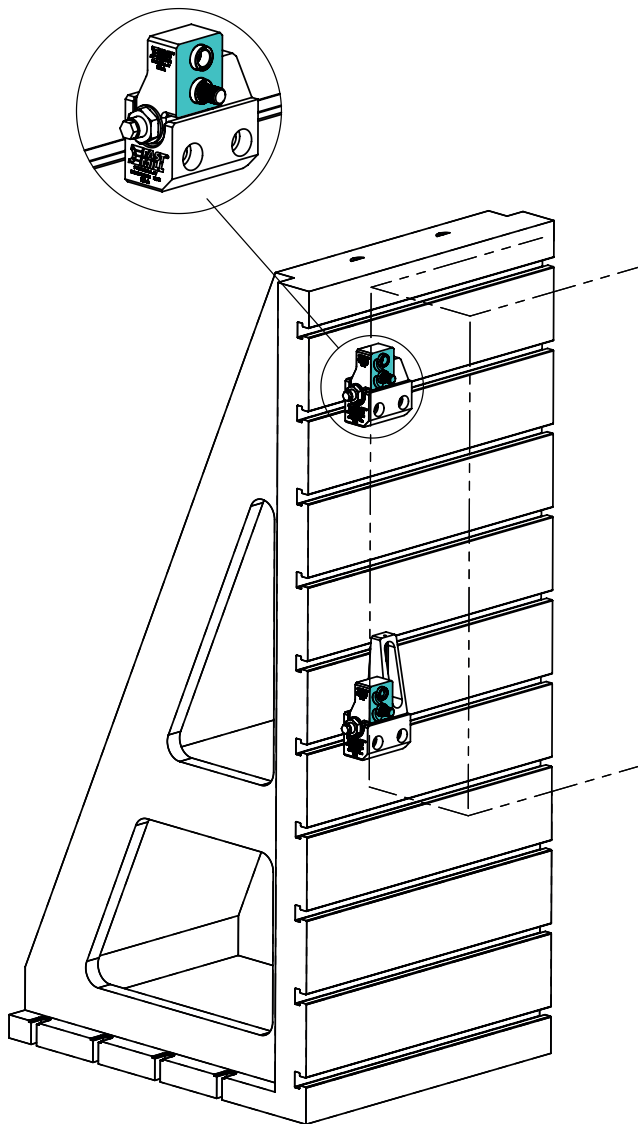
Setup example



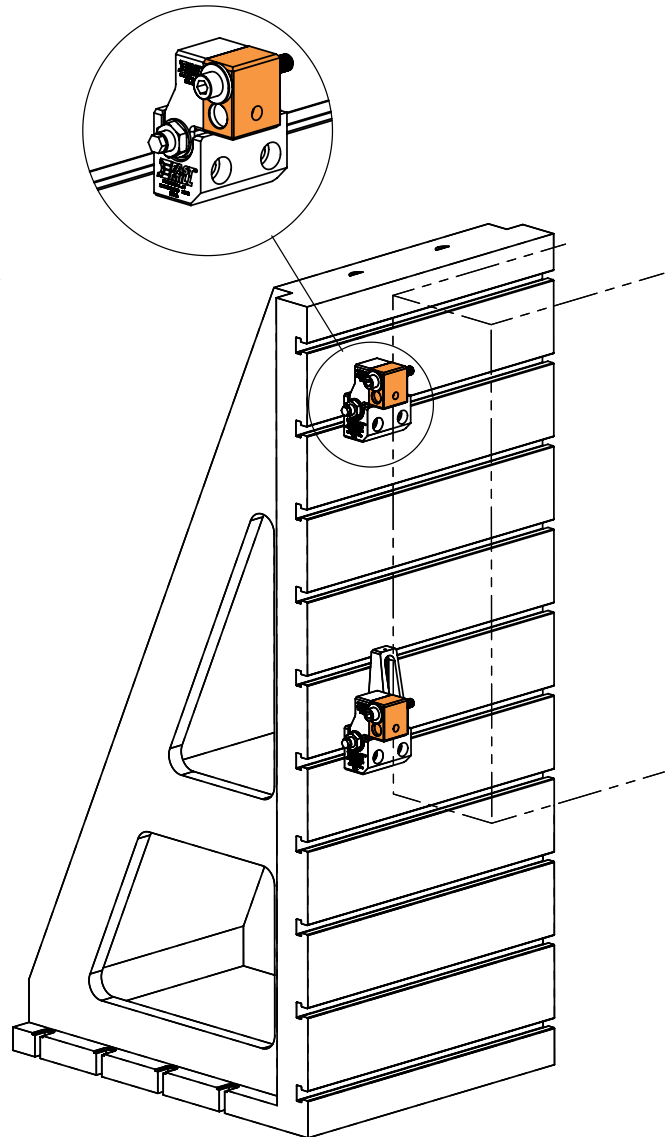
**VERTICAL CLAMPING
FOR HEAVY PARTS**

Setup example

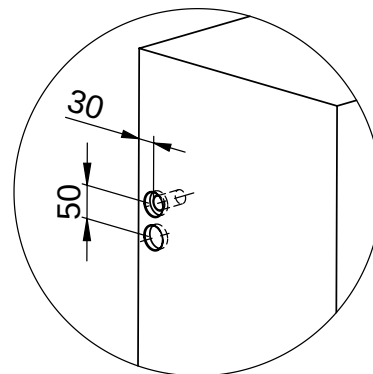
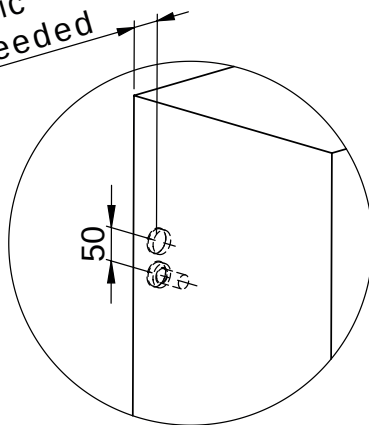
VERTICAL CLAMPING
BACK CONFIGURATION



VERTICAL CLAMPING
LATERAL CONFIGURATION



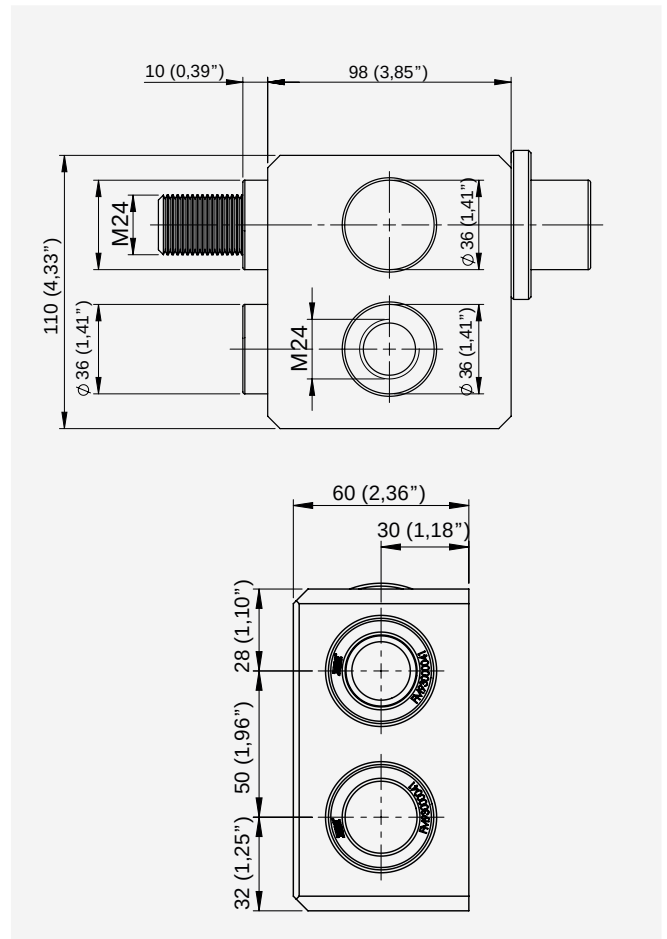
No specific
position is needed



90° Lateral clamping accessories



CODE	DIMENSION	HEIGHT	WEIGHT
FMVCHPLATERAL	98x60 (3,85"x2,36")	110 (4,33")	2,7 (5,95 lbs)



Vertical clamping and POSITIONING set



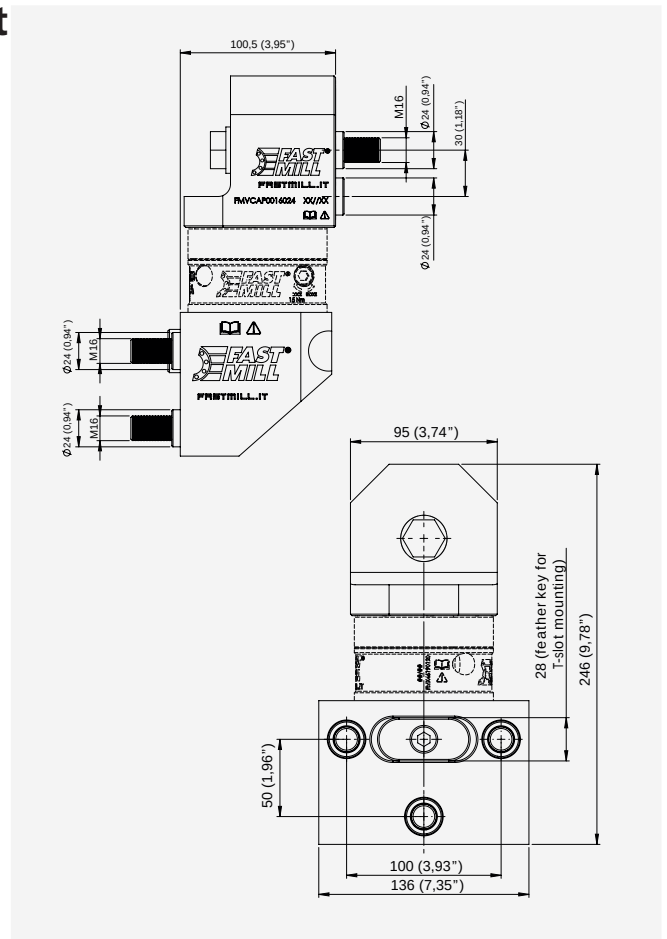
CODE

FMVCAP0016024

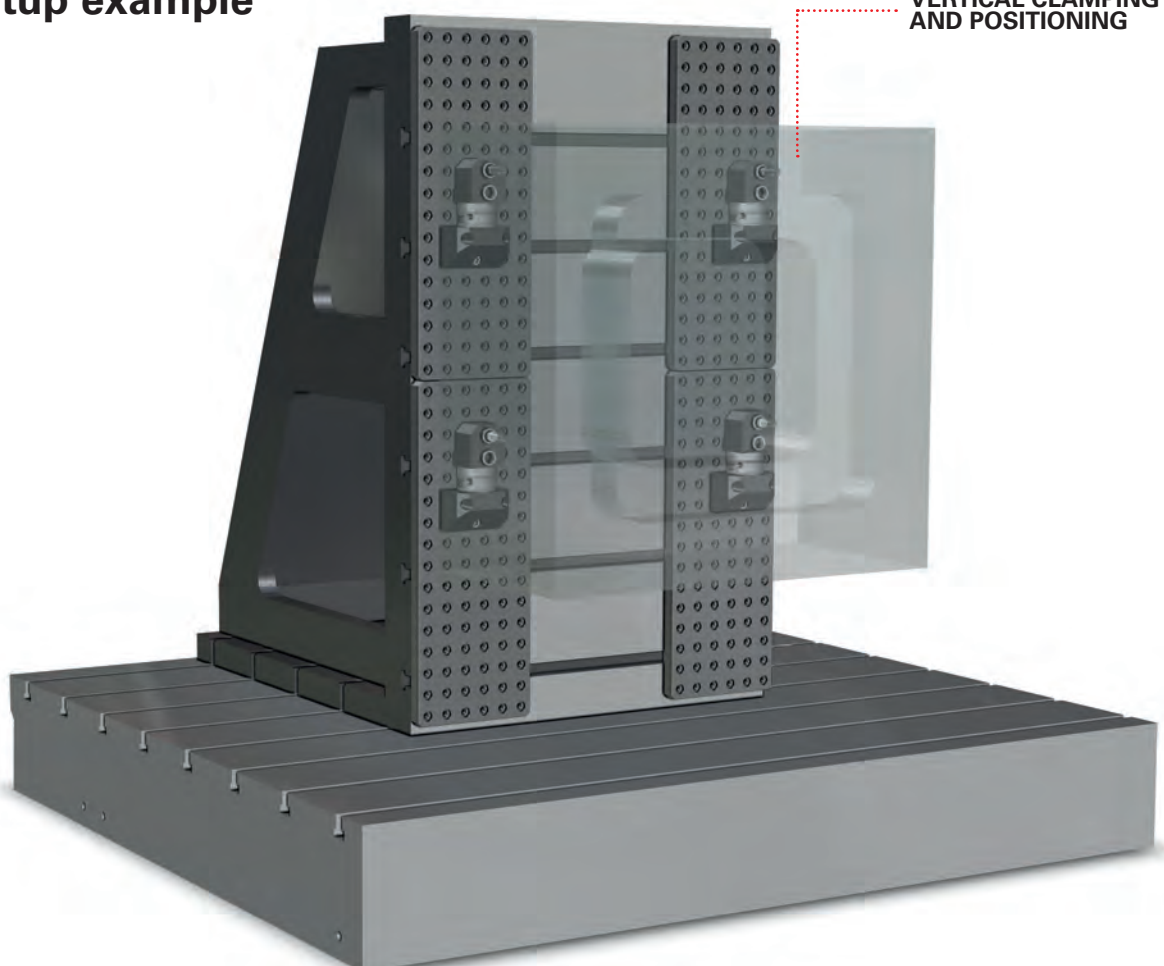
SET CONFIGURATION

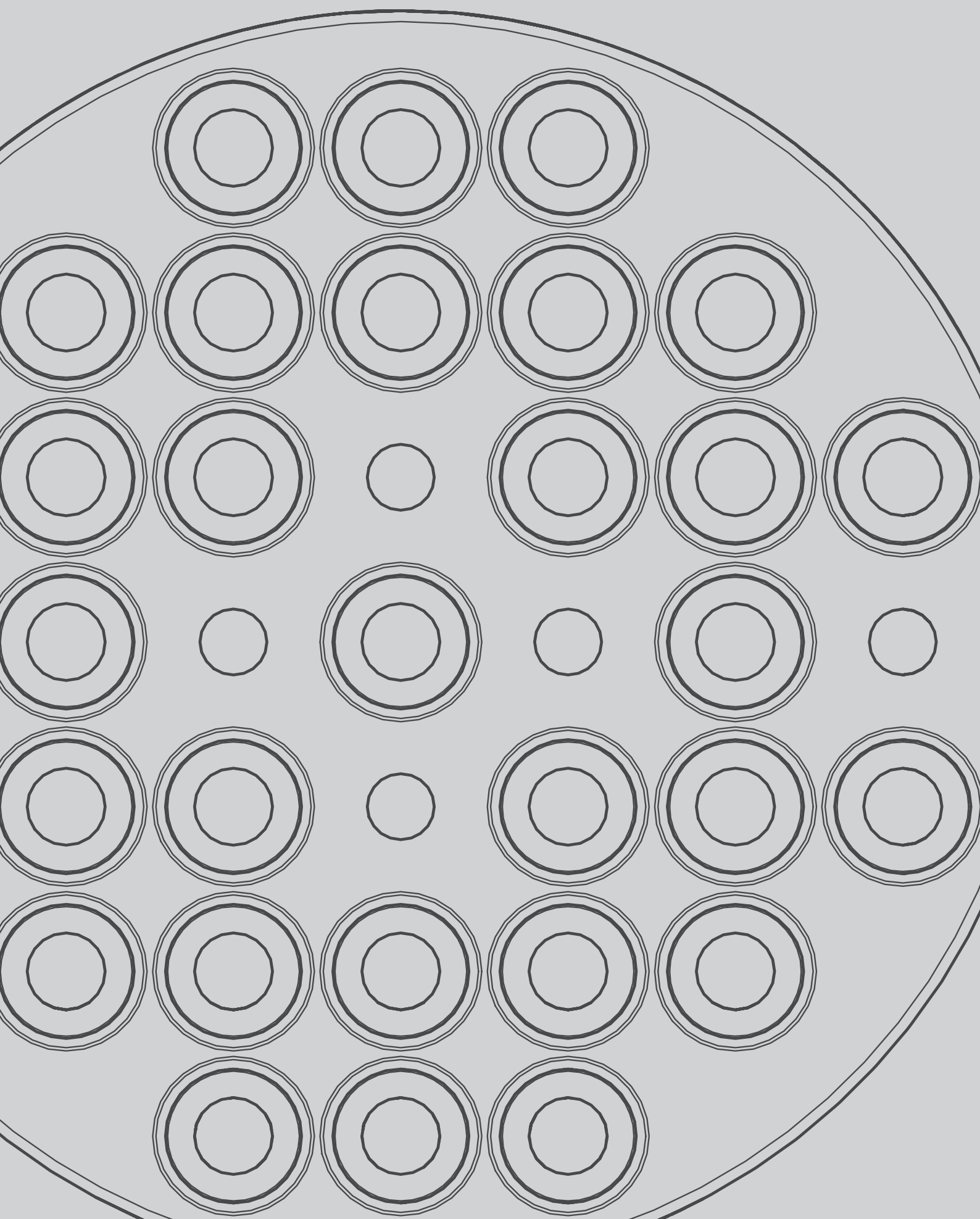
Bush Ø24-24 mm	6 pieces
TCEI M16X60 mm UNI 5931-12,9 screw	3 pieces
TCEI M16X40 mm UNI 5931-12,9 screw	1 piece
TCEI M16X20 mm UNI 5931-12,9 screw	1 piece
TCEI M16X100 mm UNI 5739-12,9 screw	1 piece
Feather key 28X16X60 DIN6885 C	1 piece
17x30 UNI 6592-69 washer	1 piece

⚠ Module and pin not included.



Setup example



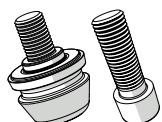


MINI RANGE

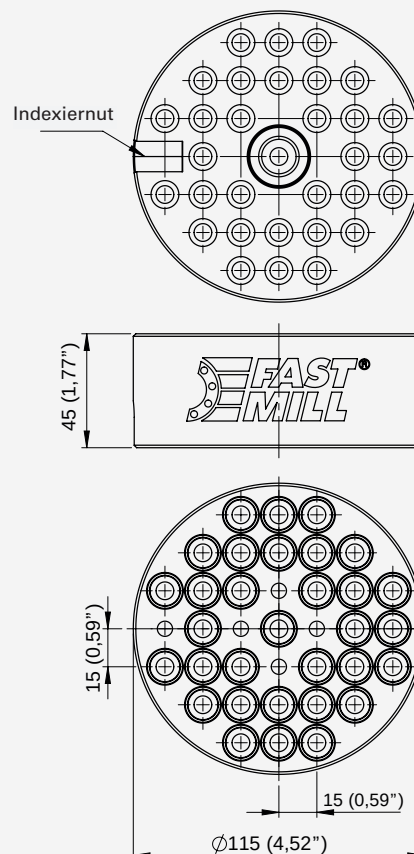
Pallet for index module



CODE	SCREW	Ø	HEIGHT	GRID
FM46190019	M6	115 (4,52")	45 (1,77")	15 (0,59")



Required for assembly (not included):
 No. 1 Special drilled screw code **FM46190018**.
 No. 1 Male pin code **FM46191142** at page 43



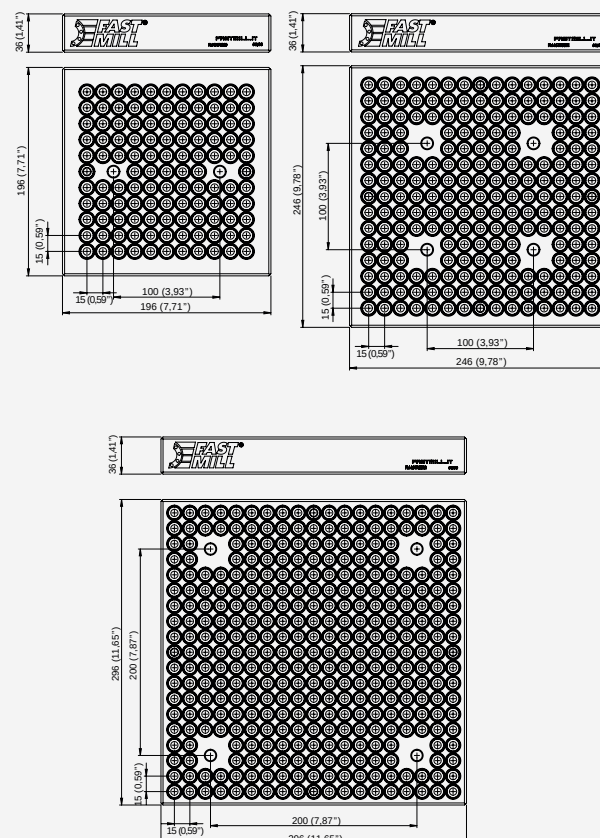
Pallet M6



CODE	SCREW	BXB	HEIGHT	GRID	XxY
FM46195020	M6	196x196 (7,71"x7,71")	36 (1,41")	15 (0,59")	100x0 (3,93"x0)
FM46195021*	M6	246x246 (9,68"x9,68")	36 (1,41")	15 (0,59")	100x100 (3,93"x 3,93")
FM46195022*	M6	296x296 (11,65"x11,65")	36 (1,41")	15 (0,59")	200x200 (7,87"x 7,87")



Required for assembly:
 No. 2 Male pin **M12 Ø20** at page 43
 No. 4 Male pin **M12 Ø20 (*)** at page 43



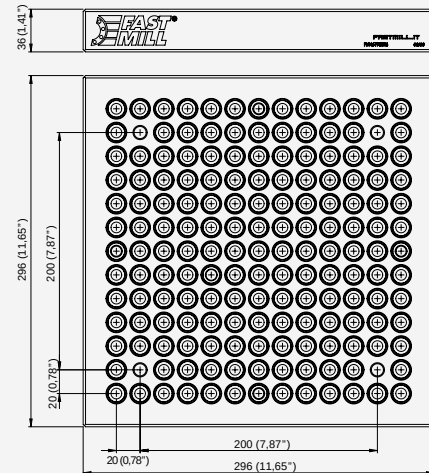
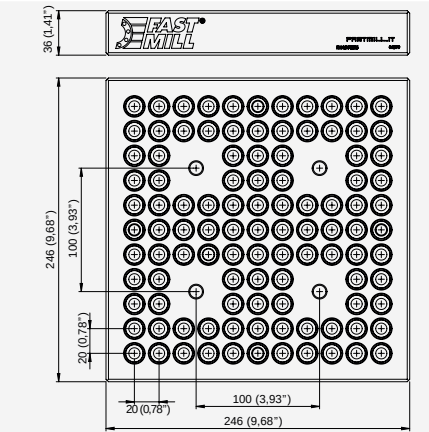
Pallet M8



CODE	SCREW	BXB	HEIGHT	GRID	XxY
FM46195025	M8	246x246 (9,68"x9,68")	36 (1,41")	20 (0,78")	100x100 (3,93" x 3,93")
FM46195026	M8	296x296 (11,65"x11,65")	36 (1,41")	20 (0,78")	200x200 (7,87" x 7,87")



Required for assembly:
No. 4 Male pin **M12 Ø20** at page 43



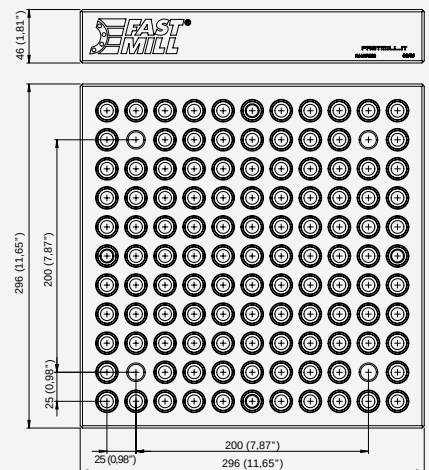
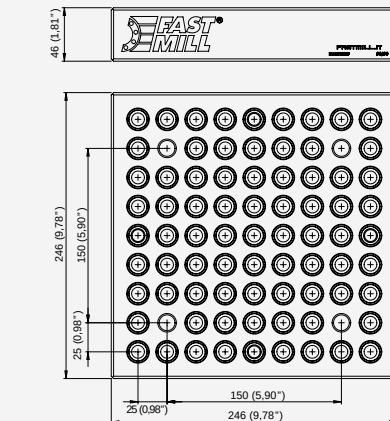
Pallet M10



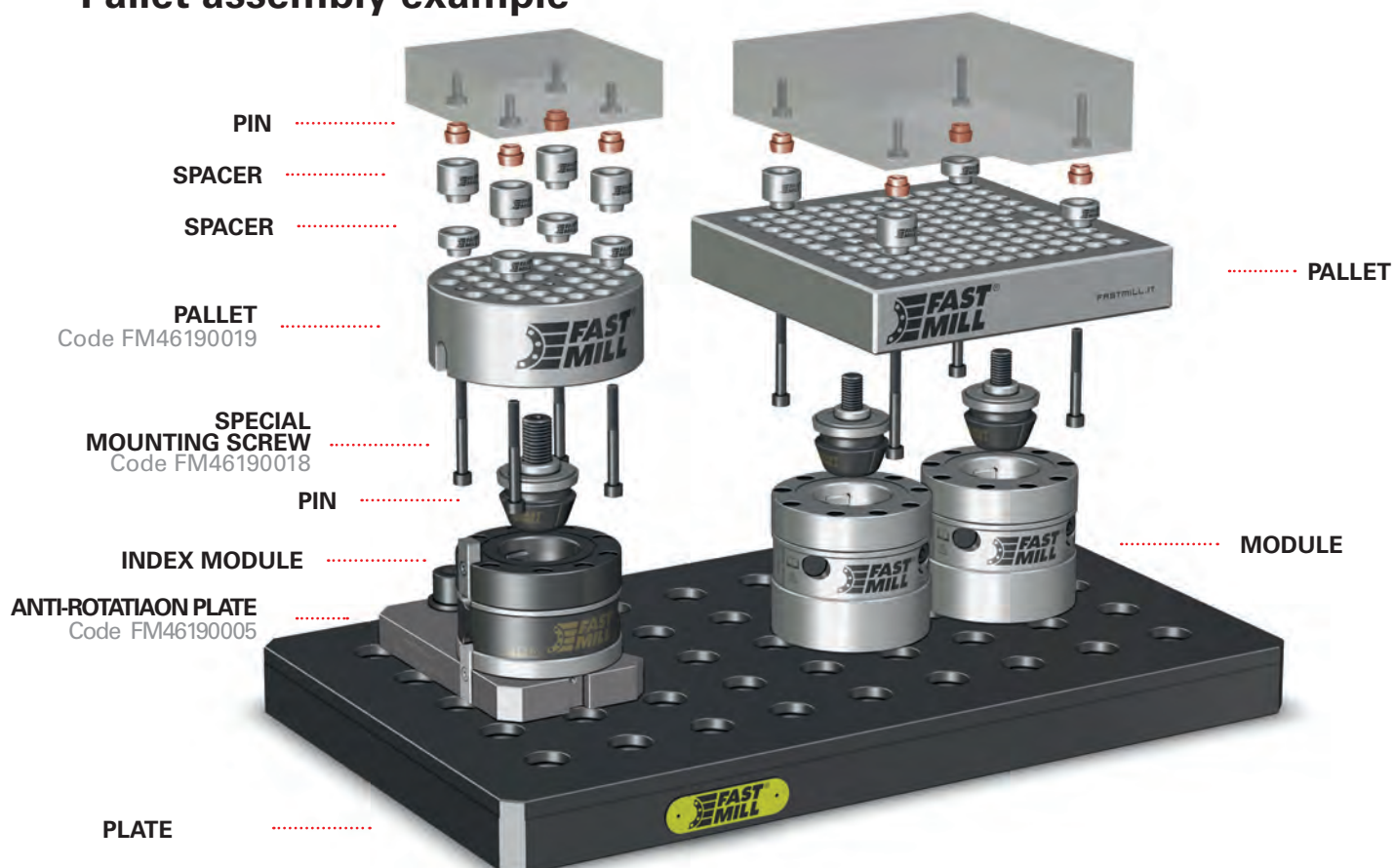
CODE	SCREW	BXB	HEIGHT	GRID	XxY
FM46195029	M10	246x246 (9,68"x9,68")	46 (1,81")	25 (0,98")	150x150 (5,90" x 3,93")
FM46195030	M10	296x296 (11,65"x11,65")	46 (1,81")	25 (0,98")	200x200 (7,87" x 7,87")



Required for assembly:
No. 4 Male pin **M16 Ø24** at page 43



Pallet assembly example



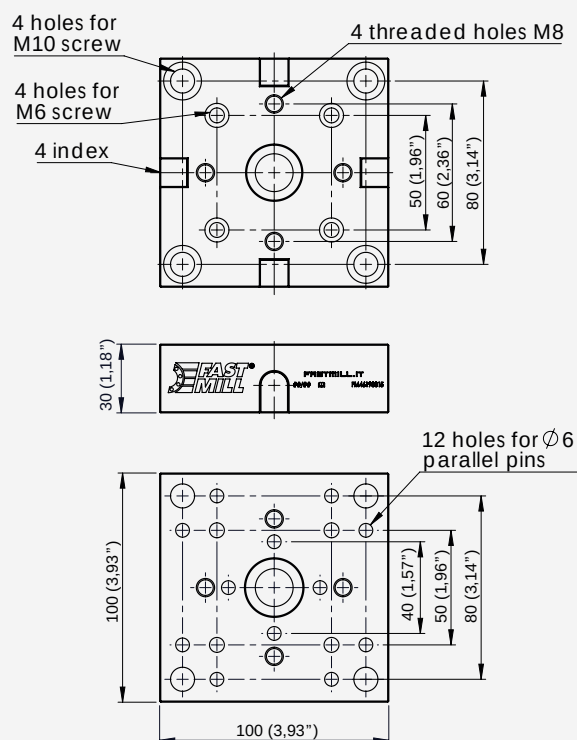
Pallet for index module



CODE	SCREW	DIMENSION	HEIGHT
FM46190015	M6 - M8 - M10	100x100 (3,93"x3,93")	30 (1,18")



Required for assembly (not included):
No. 1 Female pin code **FM46191242** at page 46



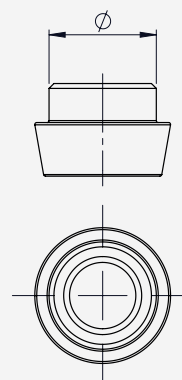
Coated Pin



CODE	SCREW	Ø
FM46194015	M6	10 (0,39")
FM46194010	M6	11 (0,43")

CODE	SCREW	Ø
FM46194025	M8	12 (0,47")
FM46194020	M8	14 (0,55")

CODE	SCREW	Ø
FM46194035	M10	14 (0,55")
FM46194030	M10	16 (0,62")



Related extractor adapter at page 108

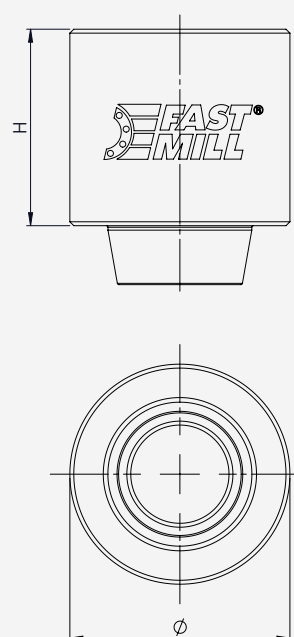
Spacer



CODE	SCREW	Ø	HEIGHT
FM46194011	M6	22 (0,86")	8 (0,31")
FM46194012	M6	22 (0,86")	12 (0,47")
FM46194013	M6	22 (0,86")	16 (0,62")

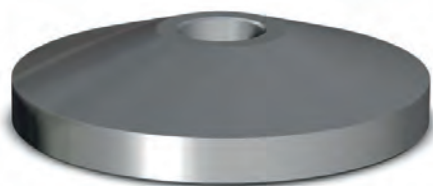
CODE	SCREW	Ø	HEIGHT
FM46194021	M8	25 (0,98")	10 (0,39")
FM46194022	M8	25 (0,98")	15 (0,59")
FM46194023	M8	25 (0,98")	20 (0,78")

CODE	SCREW	Ø	HEIGHT
FM46194031	M10	28 (1,10")	15 (0,59")
FM46194032	M10	28 (1,10")	25 (0,98")
FM46194033	M10	28 (1,10")	35 (1,37")





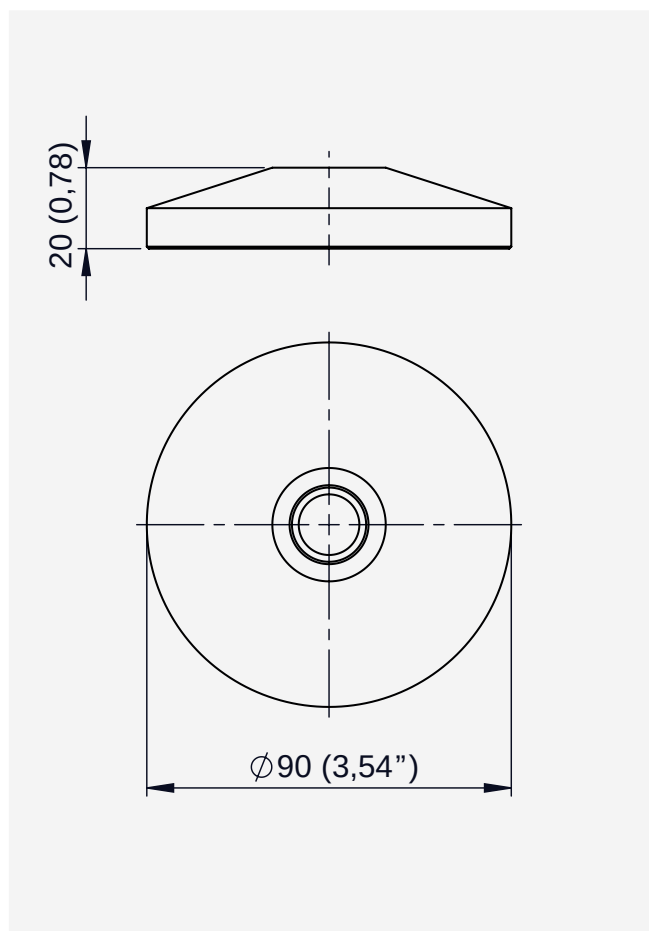
Adapter for module



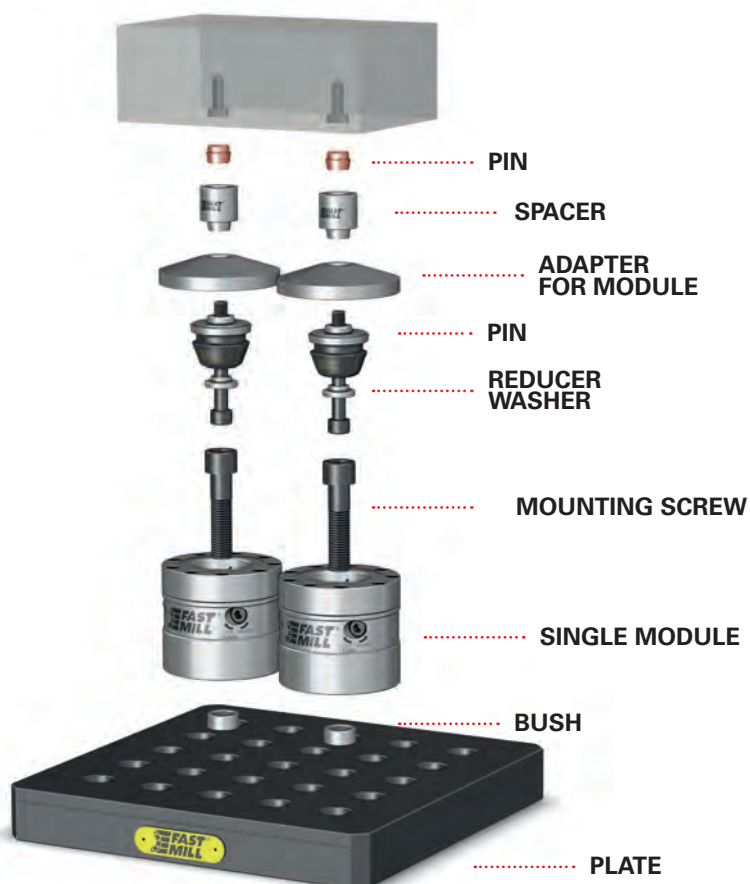
CODE	SCREW	Ø	HEIGHT
FM46194000	M6	90 (3,54")	20 (0,78")

CODE	SCREW	Ø	HEIGHT
FM46194003	M8	90 (3,54")	20 (0,78")

CODE	SCREW	Ø	HEIGHT
FM46194006	M10	90 (3,54")	20 (0,78")

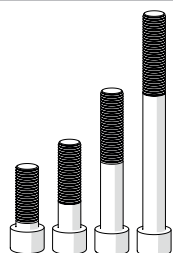


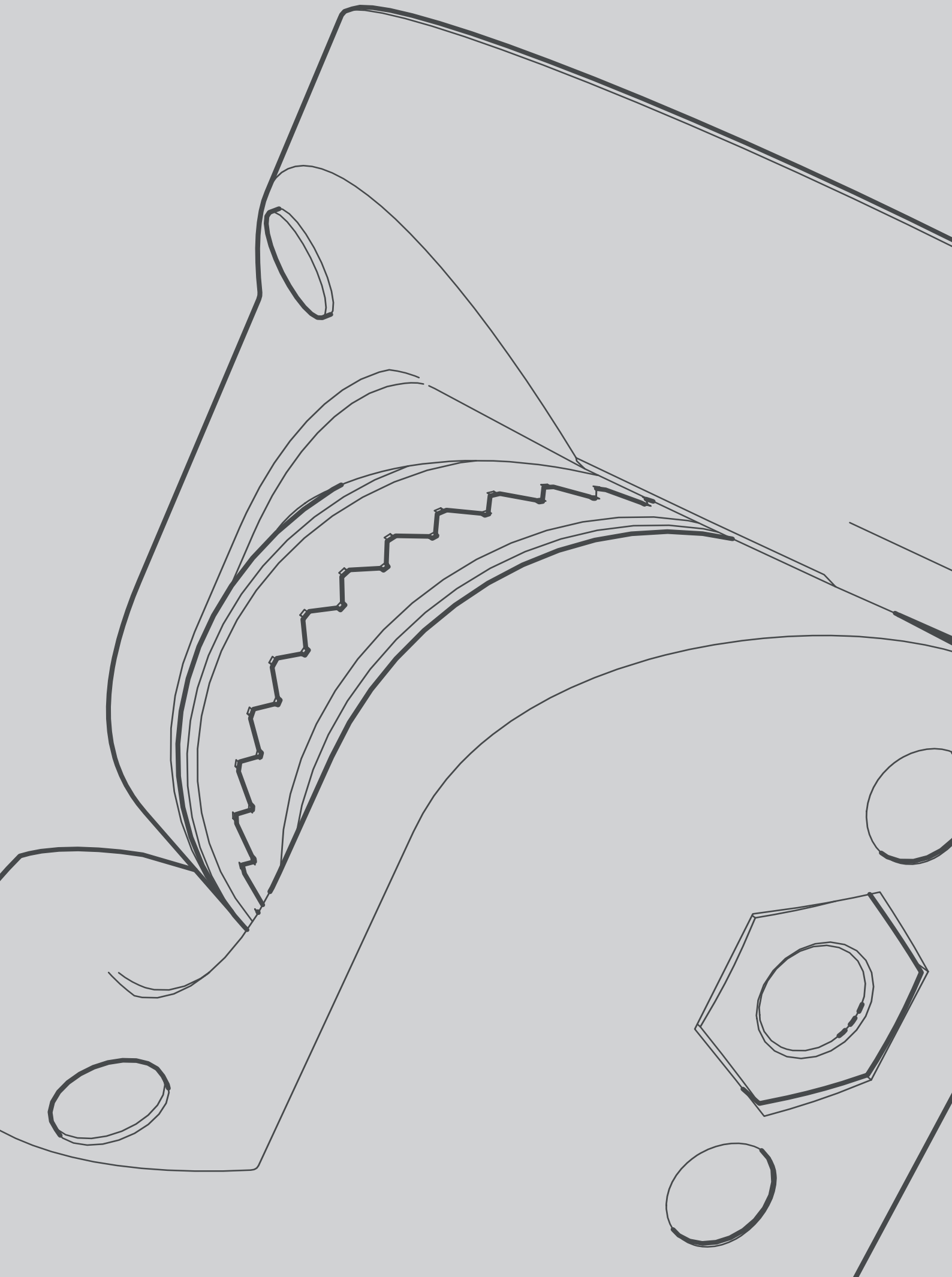
Adapter for module assembly example

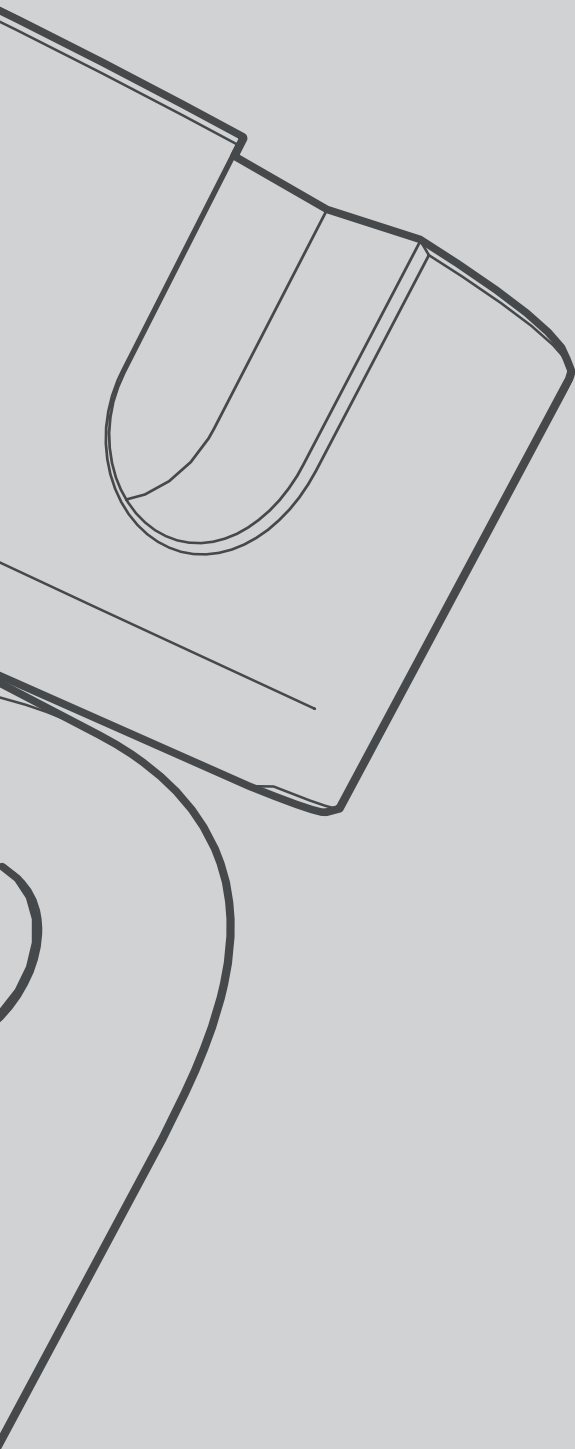


TECHNICAL TIPS

In the whole range of FAST MILL® modules you can use standard 12.9 (DIN912) screws from M6 to M16 or higher of different heights for the connection of the pieces, to the plates and to the risers/ spacers.



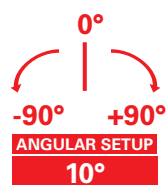




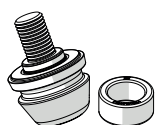
TILTING



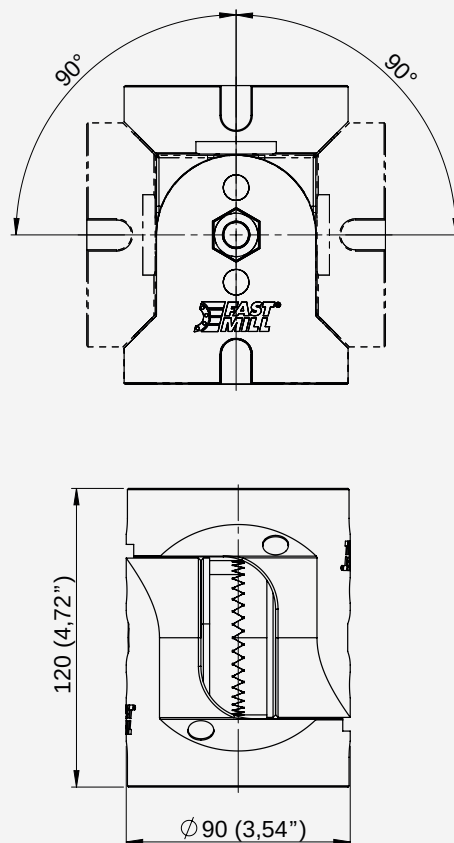
Tilting module Ø90 with 10° hirth

DSO
 STAINLESS STEEL
LINEA
INOX
 STAINLESS STEEL
LINEA


CODE	Ø	HEIGHT	WEIGHT
FMTMSS1090120	90 (3,54")	120 (4,72")	4,8 (10,58 lbs)



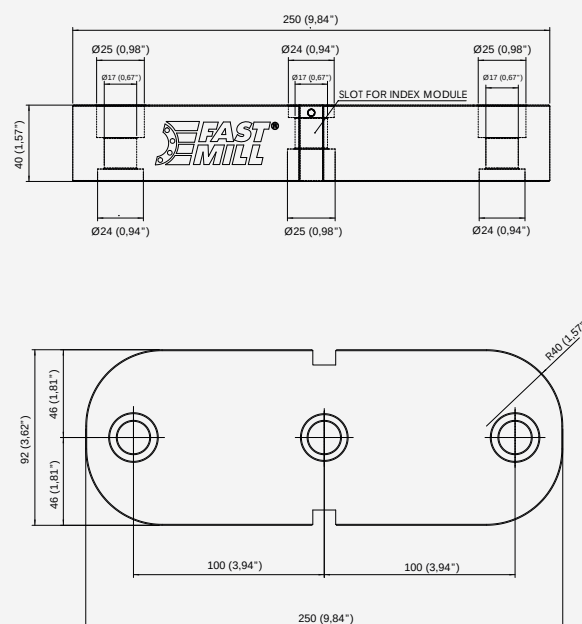
Related pins and bushes at page 41

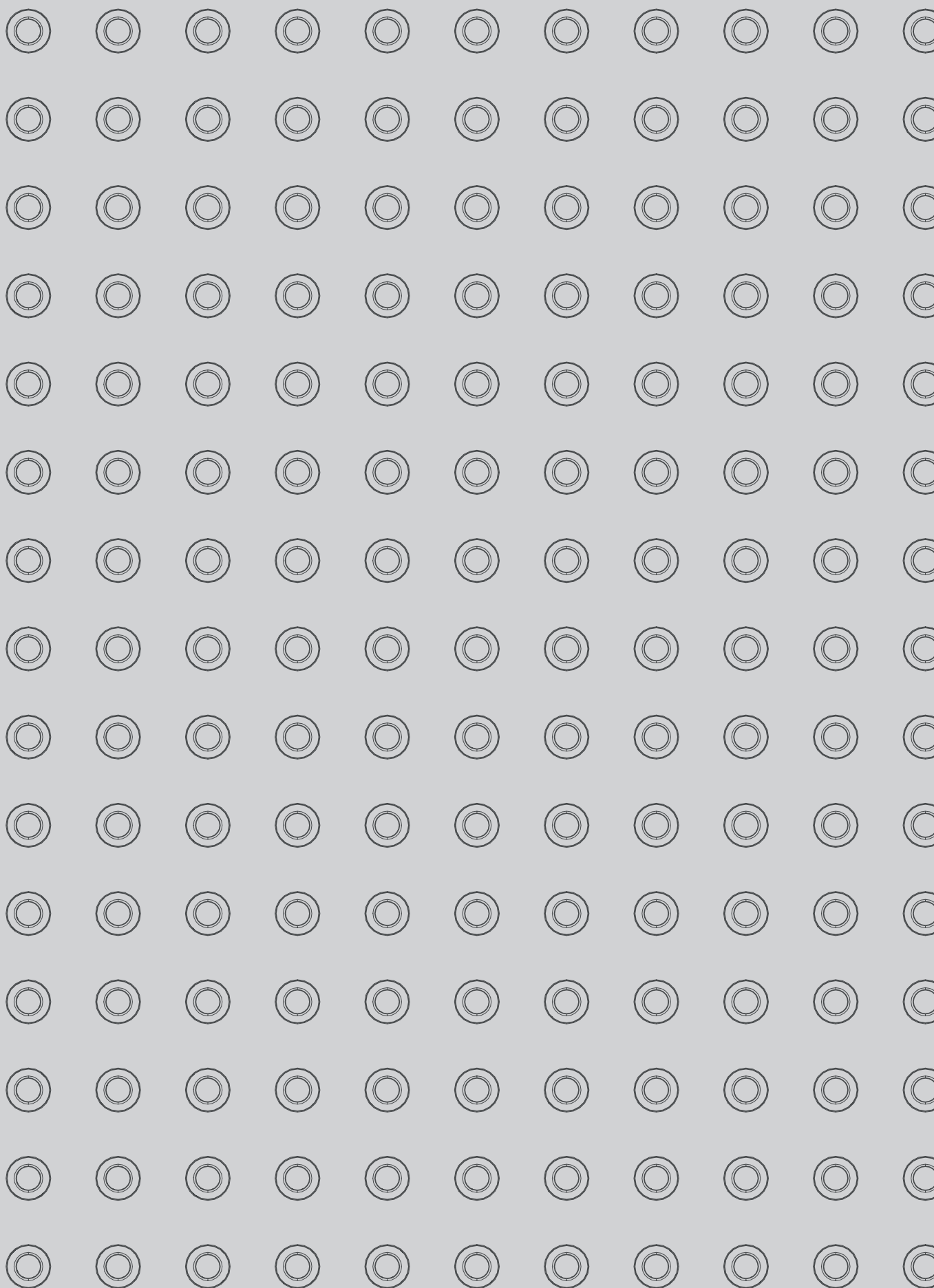


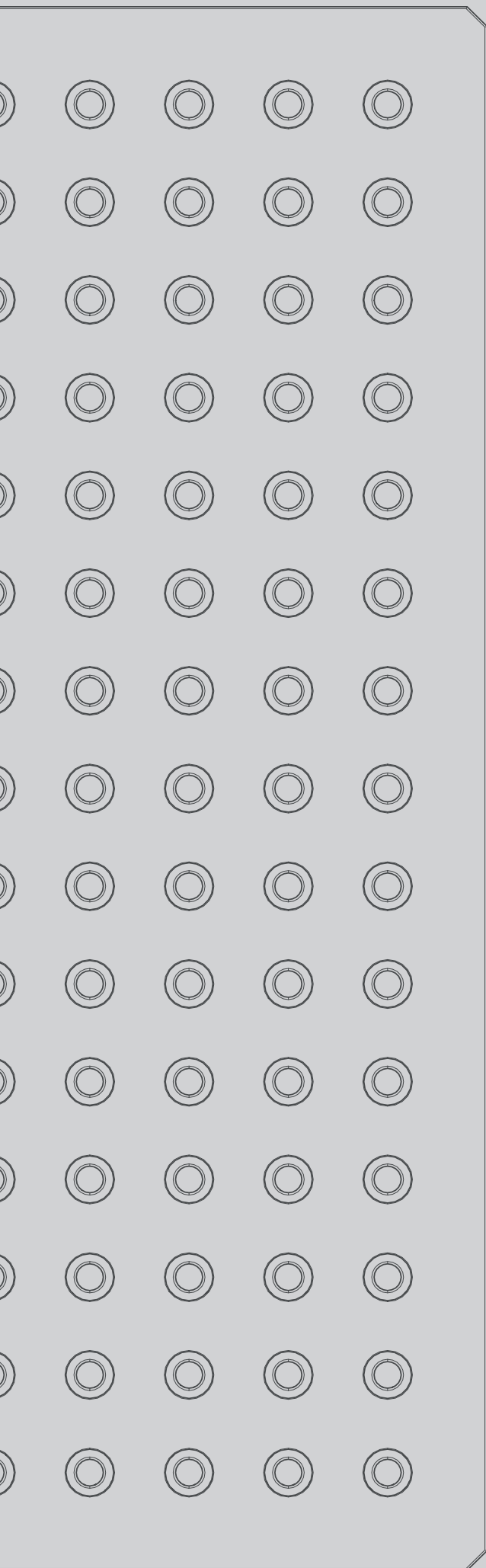
Base plate for tilting module

INOX
 STAINLESS STEEL
LINEA


CODE	DIMENSION	HEIGHT	WEIGHT
FMTMSS1090C06	250x92 (9,84"x3,62")	40 (1,57")	5,1 (11,24 lbs)



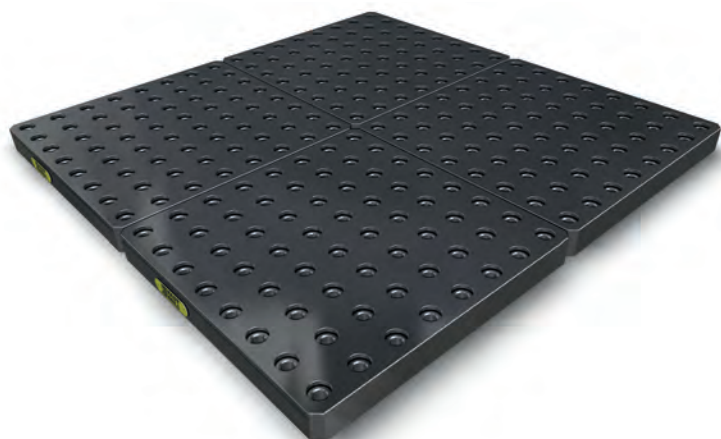




PLATES



Finished MODULAR plate



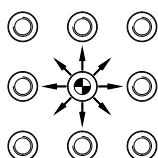
L x C	HEIGHT	GRID	Ø
ON DEMAND	40 (1,57")	50 (1,96")	24H



**ON
DEMAND**

CODE	L x C	HEIGHT	GRID
FM46195201	600x400 (23,6"x15,7")	40 (1,57")	50 (1,96")
FM46195202	500x500 (19,6"x19,6")	40 (1,57")	50 (1,96")
FM46195203	600x500 (23,6"x19,6")	40 (1,57")	50 (1,96")
FM46195204	800x600 (31,4"x23,6")	40 (1,57")	50 (1,96")
FM46195205	1000x500 (39,3"x19,6")	40 (1,57")	50 (1,96")
FM46195206	1000x600 (39,3"x23,6")	40 (1,57")	50 (1,96")
FM46195207	1000x800 (39,3"x31,4")	40 (1,57")	50 (1,96")
FM46195208	1000x1000 (39,3"x39,3")	40 (1,57")	50 (1,96")
FM46195210	800x800 (31,4"x31,4")	40 (1,57")	50 (1,96")
FM46195223	800x400 (31,4"x15,7")	40 (1,57")	50 (1,96")

Grid 100 mm, alternative dimensions or custom solutions on demand.

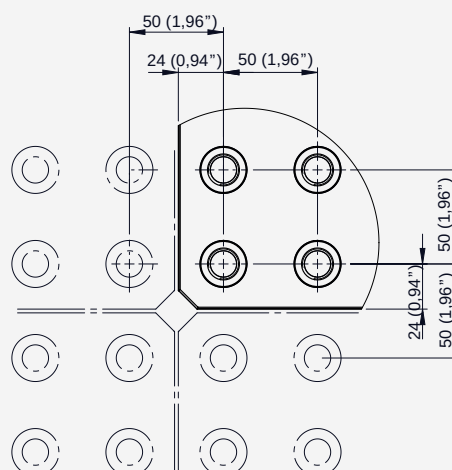
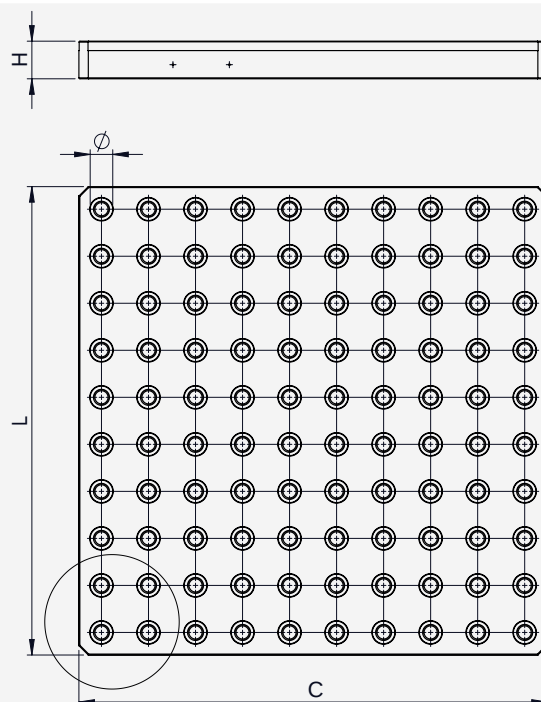


Position tolerance $\pm 0,00...$ on adjacent holes.

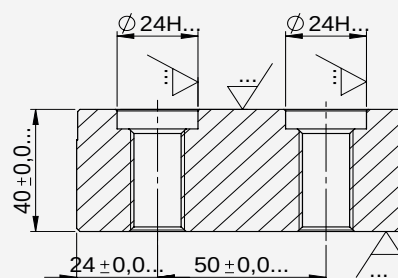
Available alphanumeric marking option for the hole grid according to customer specifications.



Related accessories at page 105.



FINISHED



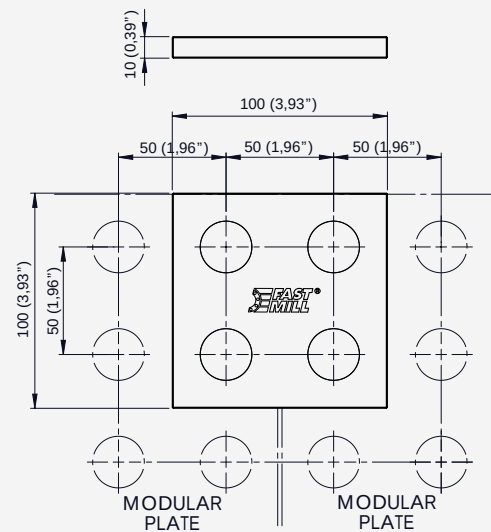
Set for modular plate alignment



SET CONFIGURATION

Plate for alignment	1 piece
Cones bushes	4 pieces

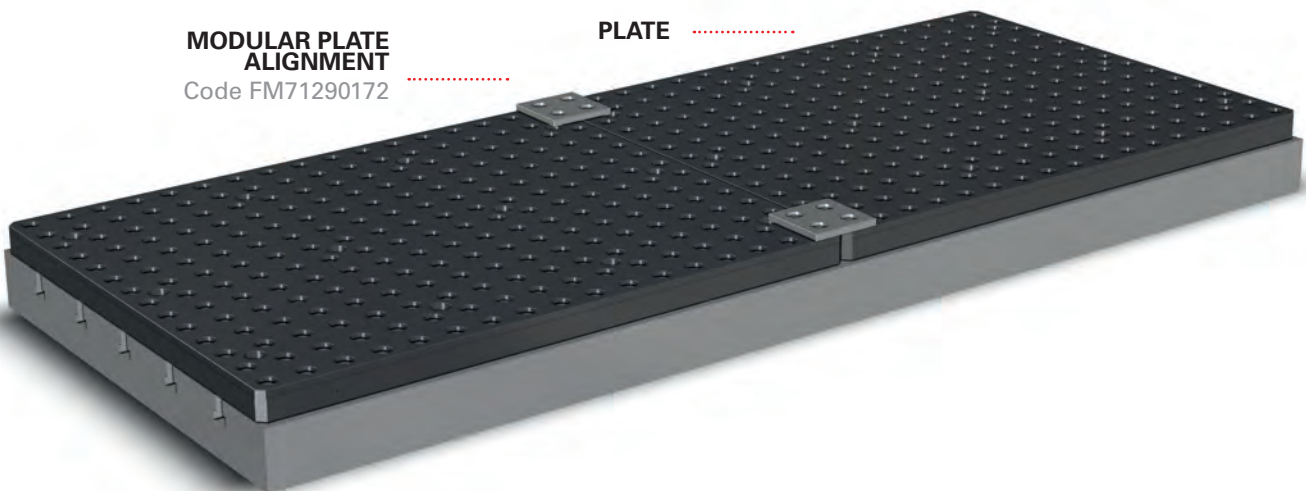
CODE	DIMENSION	HEIGHT	GRID
FM71290172	100x100 (3,93"x3,93")	10 (0,39")	50 (1,96")



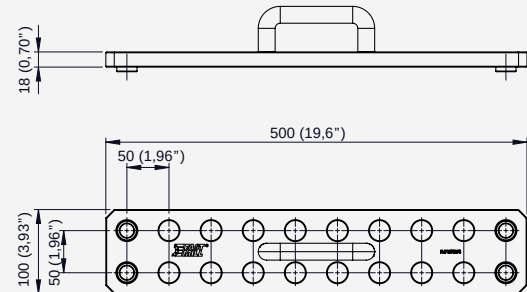
Setup example

**MODULAR PLATE
ALIGNMENT**
Code FM71290172

PLATE



Set for modular plate alignment



SET CONFIGURATION

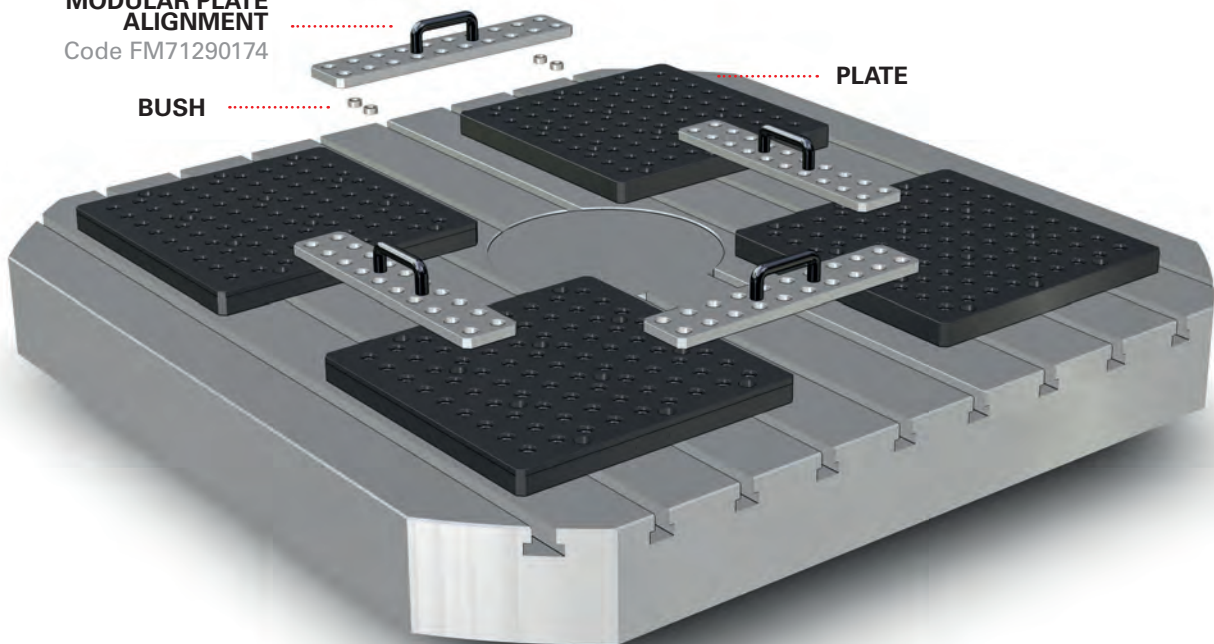
Plate for alignment	1 piece
Cones bushes	4 pieces

CODE	DIMENSION	HEIGHT	GRID
FM71290174	500x100 (19,6''x3,93'')	18 (0,70'')	50 (1,96'')

Setup example

MODULAR PLATE ALIGNMENT

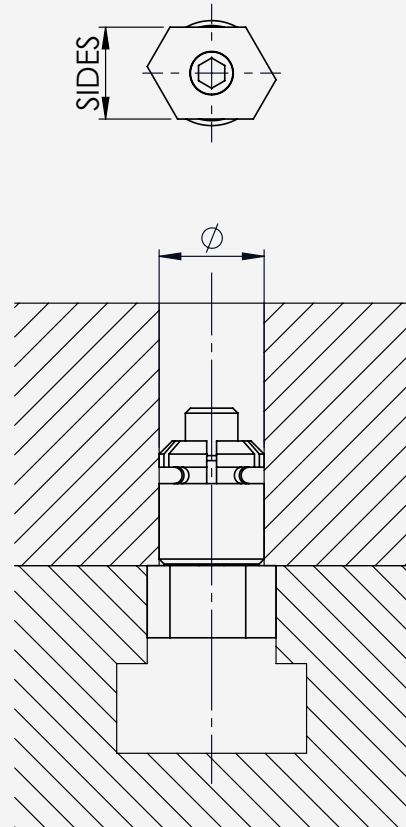
Code FM71290174



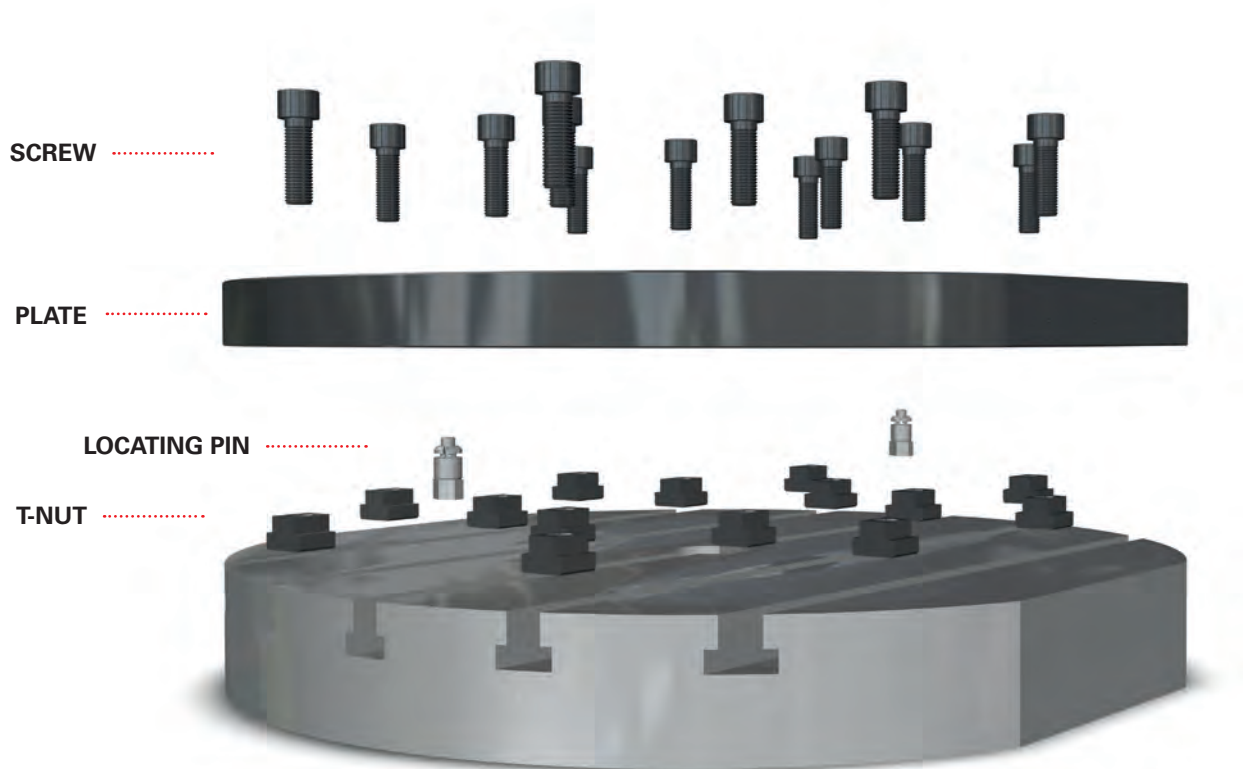
Locating pin expanding for H7 t-slot



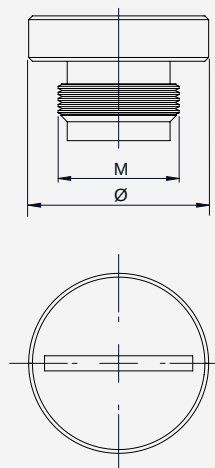
CODE	Ø	SIDES	
FM71290181	16 (0,72")	12-22	
FM71290182	16 (0,72")	14-16-18	
FM71290183	16 (0,72")	10-20	
FM71290184	20 (0,78")	24-28-32	



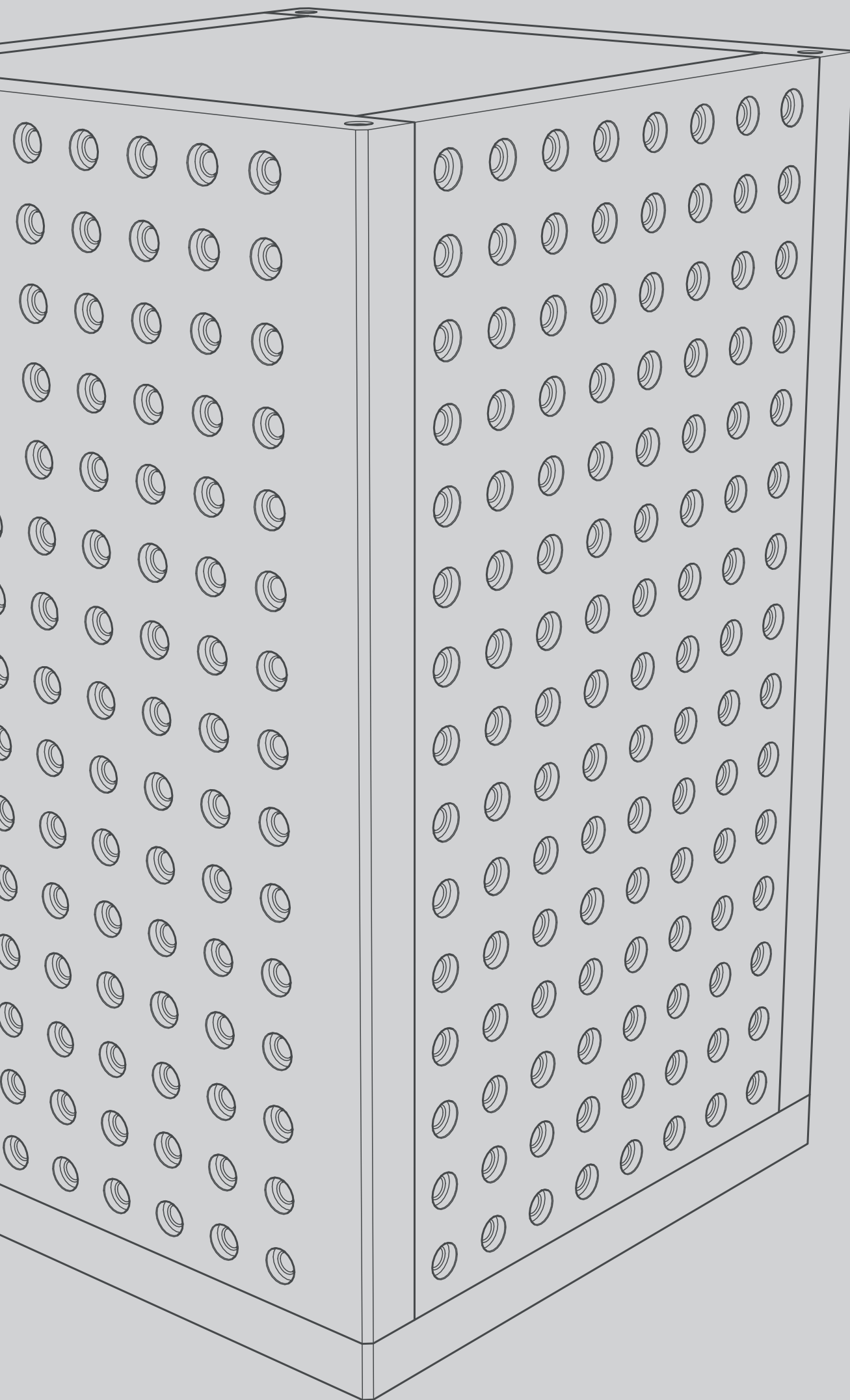
Setup example



Cap for plate

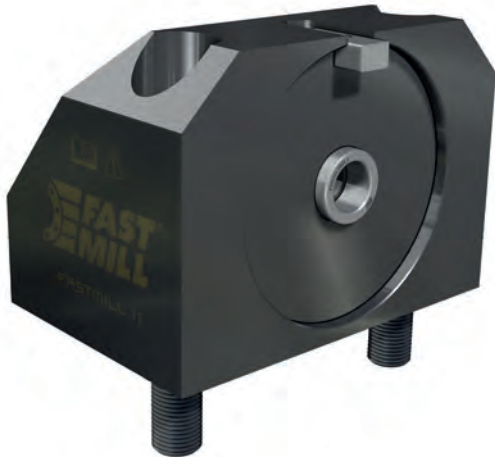


CODE	Ø	M	
FM46191011	18 (0,70")	M12	
FM46191012	20 (0,78")	M12	
FM46191016	24 (0,94")	M16	



CUBES

90° Index riser set

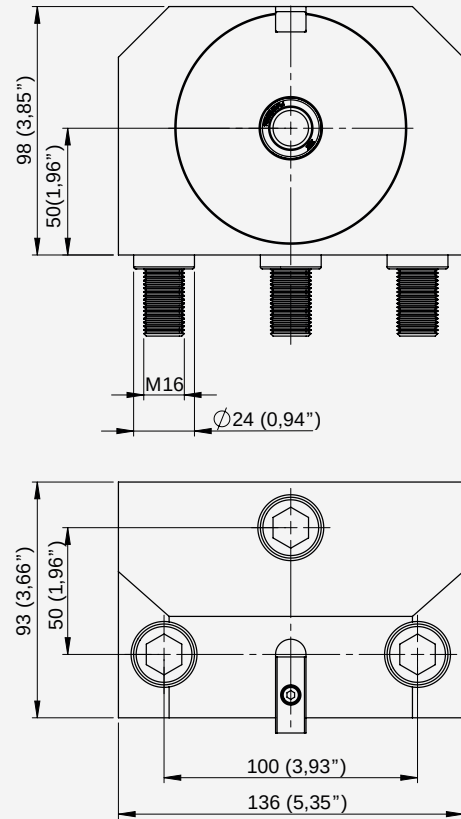


CODE

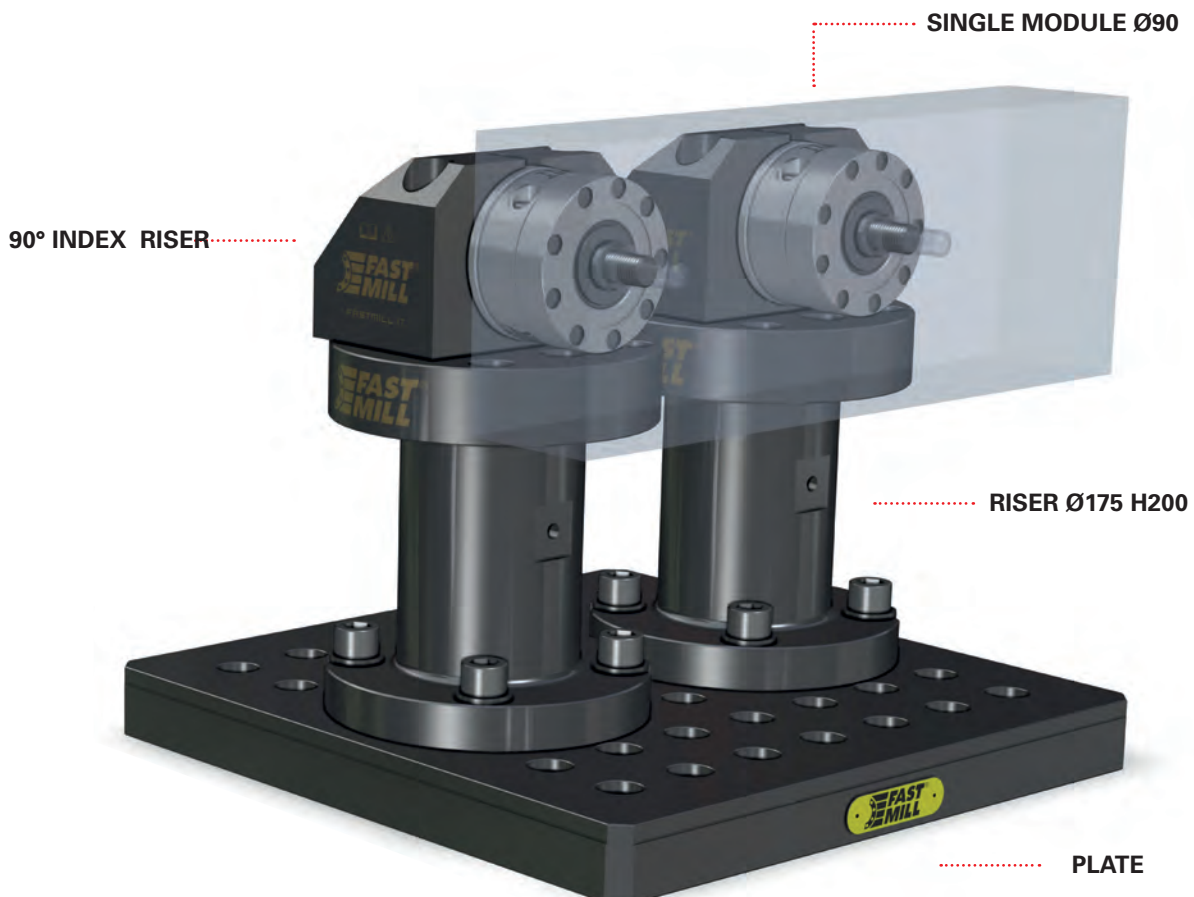
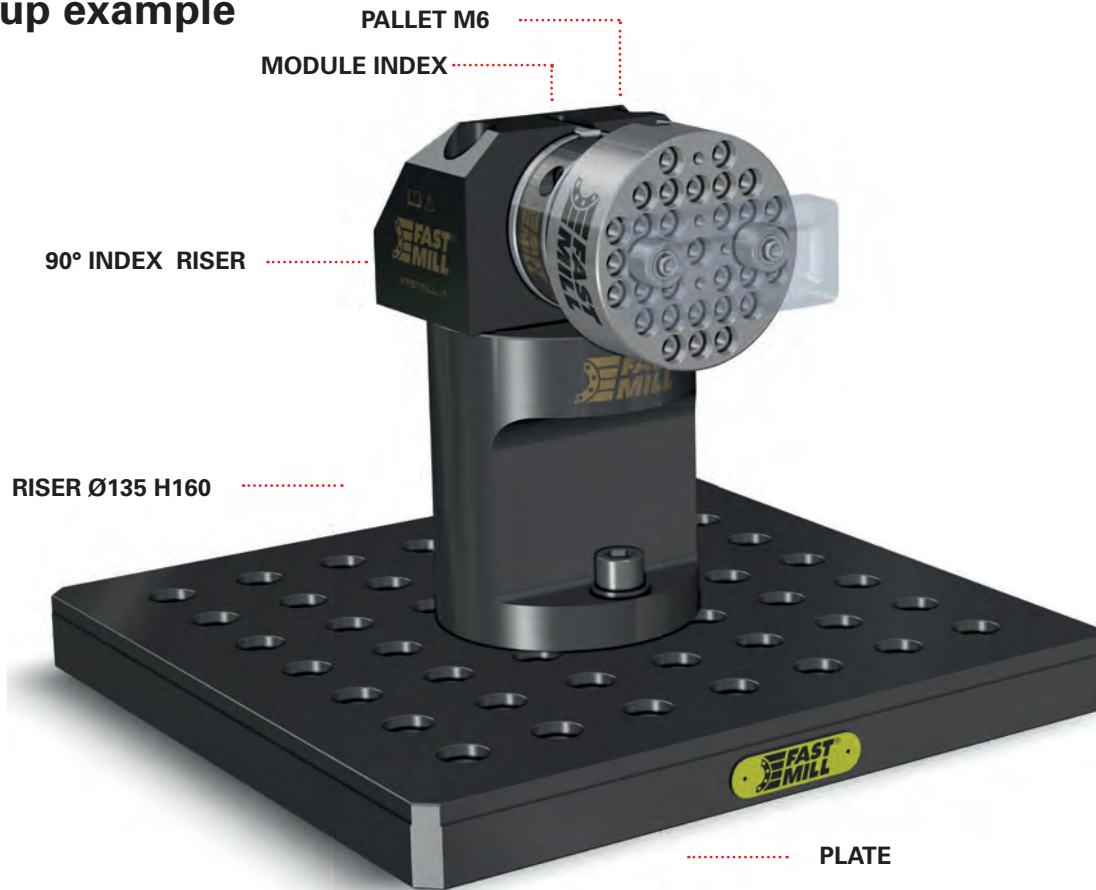
FM90IR0016024

SET CONFIGURATION

Feather key 12H6X8X30 for index	1 pieces
Bush Ø24-24 mm	5 pieces
TCEI M4X10 mm UNI 5931 inox screw	1 pieces
TCEI M16X60 mm UNI 5931-12,9 screw	3 pieces



Setup example



Smart Cube set

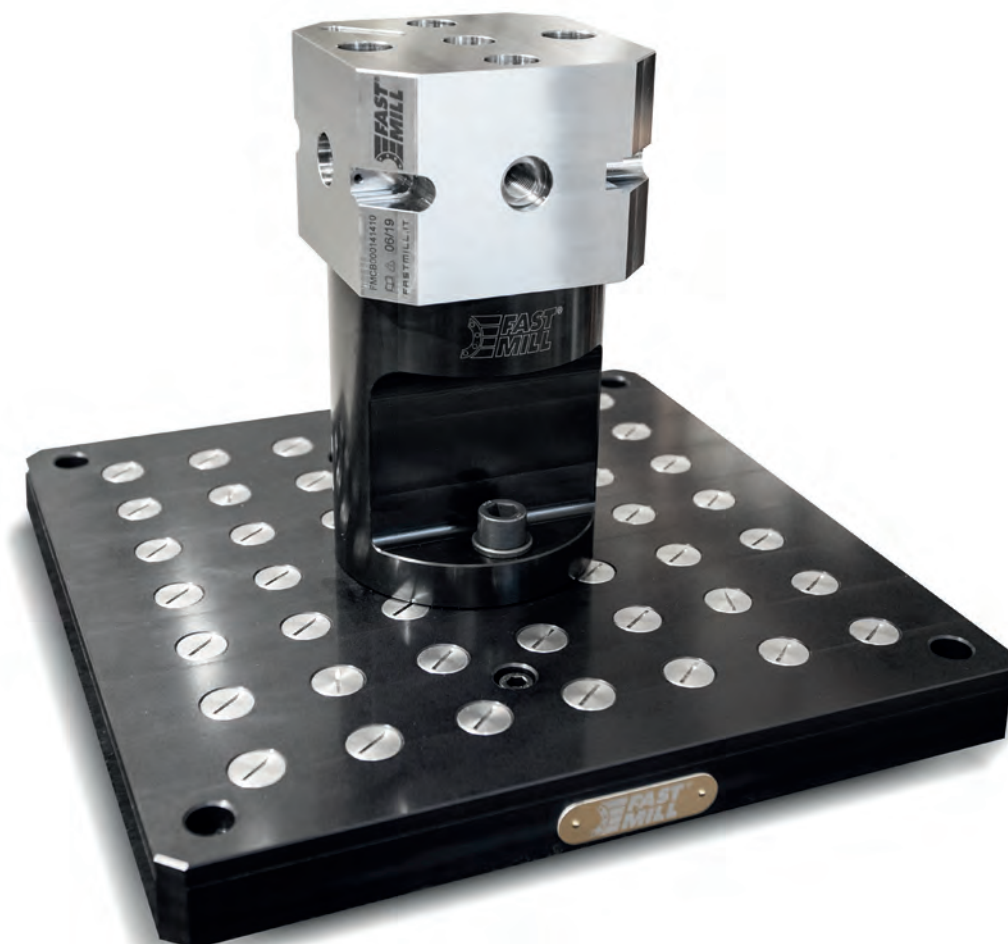
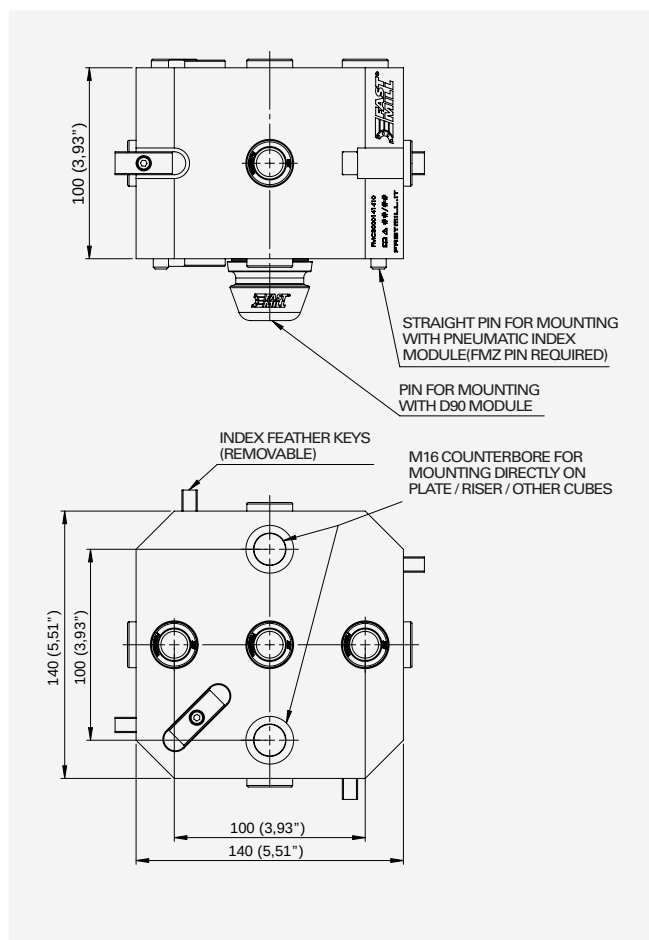


CODE

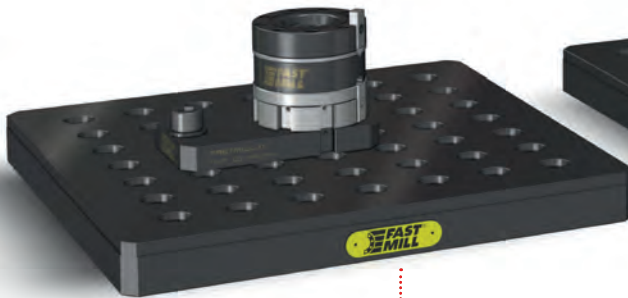
FMCB000141410

SET CONFIGURATION

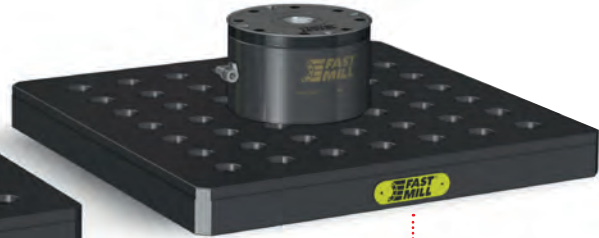
Feather key 12H6X8X30 for index	6 pieces
Bush Ø24-24 mm	10 pieces
Male Pin type A M12 Ø18	1 piece
TCEI M4X10 mm UNI 5931 inox screw	6 pieces
Straight pin 8x18 UNI 6364-B	2 pieces



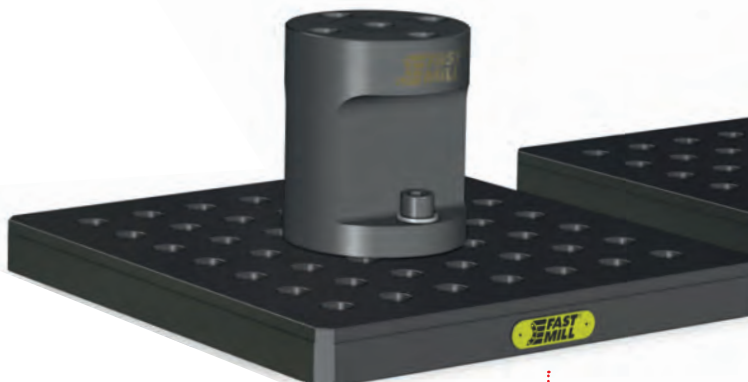
Setup example



CLAMPING ON
INDEX MODULE



CLAMPING ON
PNEUMATIC MODULE

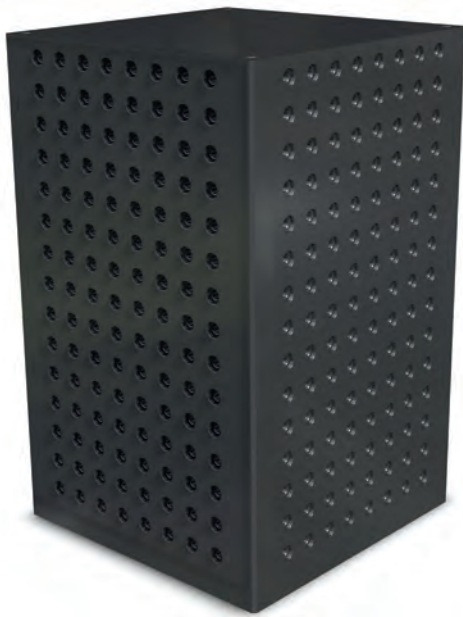


CLAMPING ON
RISER Ø135



CLAMPING ON
RISER Ø175

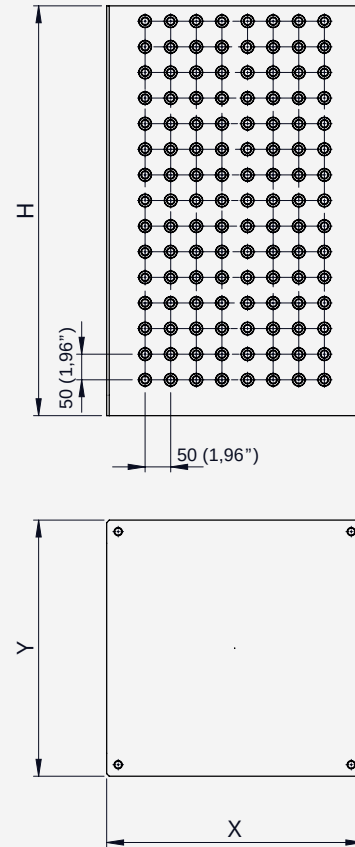
Cube/Tombstone



Alternative dimensions or custom solutions on demand.

CODE	DIMENSION	HEIGHT	WEIGHT
FM57700700	500x500 (19,6"x19,6")	800 (31,4")	597 (1.316 lbs)

ON DEMAND

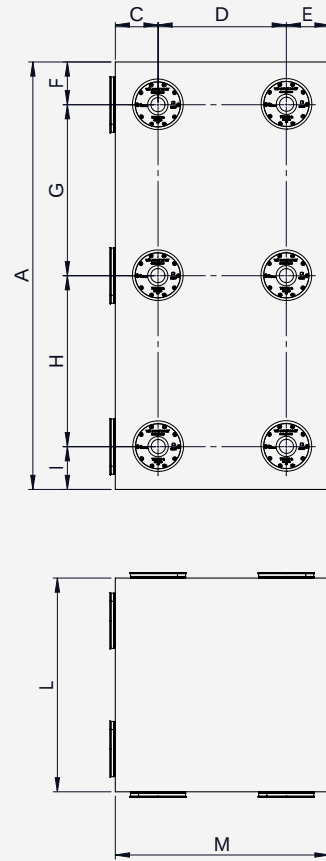


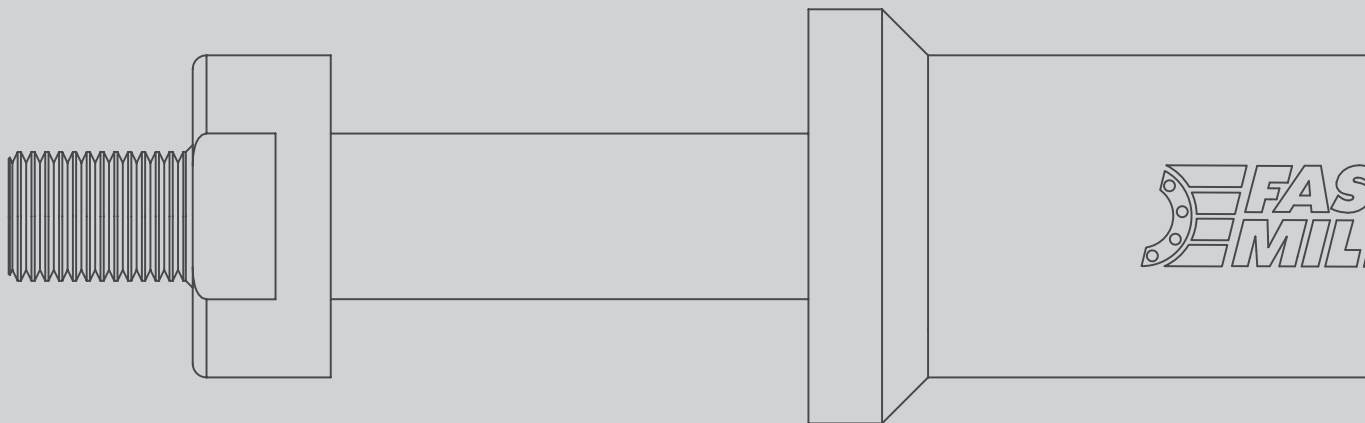
Clamping tower with vb Dock Lock zero-point clamping system, pneumatic or hydraulic



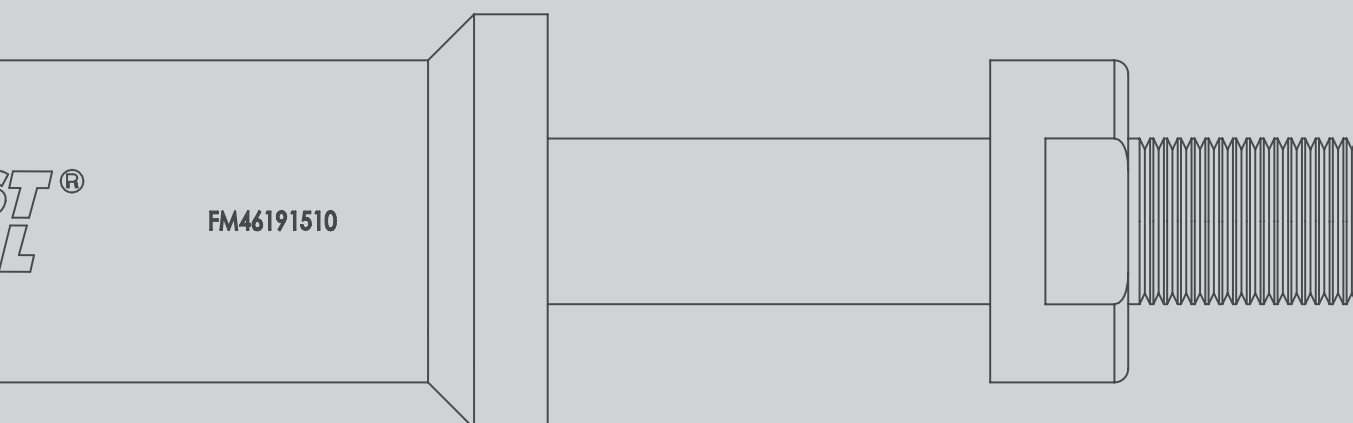
ON DEMAND

Alternative dimensions or custom solutions on demand.

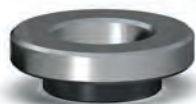




ACCESSORIES



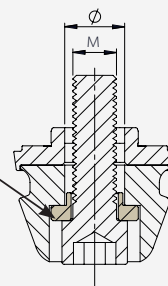
Reducer washer for pin



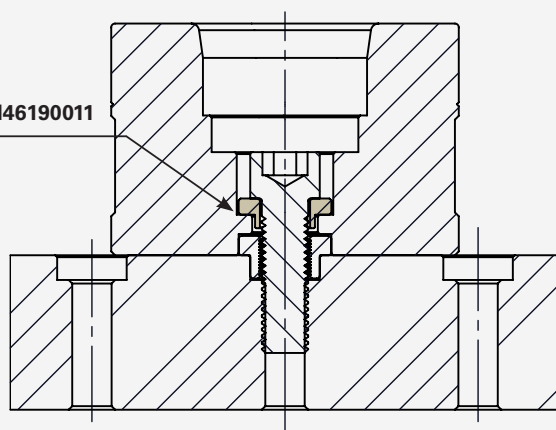
CODE	Ø	M	
FM46190008	M12	M6	
FM46190010	M12	M8	
FM46190011 *	M16	M10-M12	

* Usable with single or index modules h 60/80/160 mm.

FM46190008
FM46190010
FM46190011



FM46190011



Extractor adapter



CODE	FOR PIN		
FM46191520	M6		
FM46191521	M8		
FM46191522	M10		
FM46191523 *	M14		
FM46191525 **	M26		

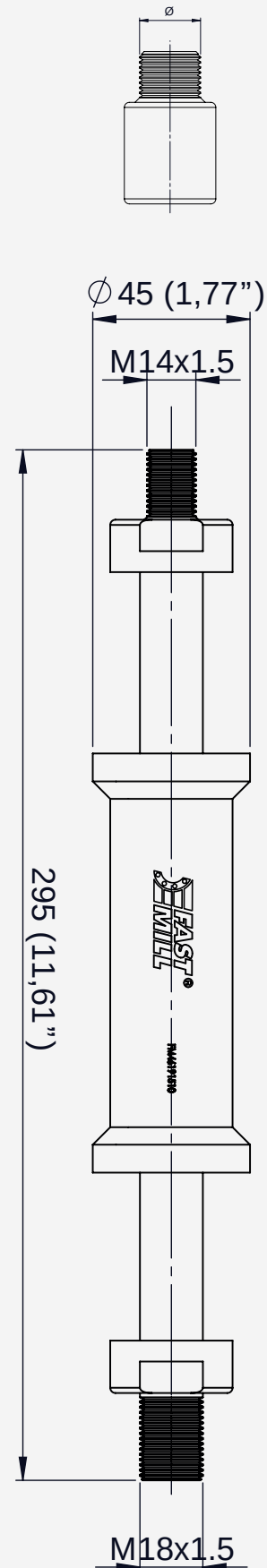
* Usable with FMZ range.

** For vertical clamping at page 72

Pin and bush extractor



CODE	DIMENSION		
FM46191510	295 (11,61")		



TECHNICAL INFORMATION

! TECHNICAL INFORMATION

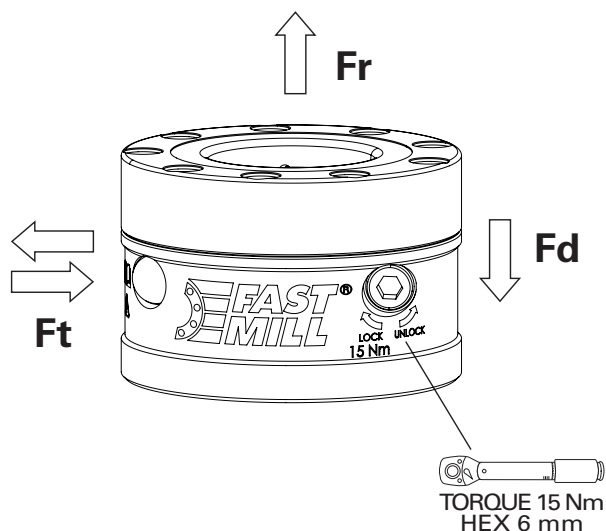
ALL STANDARD SCREW MUST BE TIGHTEN WITH 80% OF MAX TORQUE ACCORDING TO ISO 7379 12.9.

ISO METRIC PITCH

Screw 12.9	Hex wrench	Resistant section rated mm ²	Max torque Nm
M12 x 1.75	10	84.3	120
M16 x 2	14	157	300

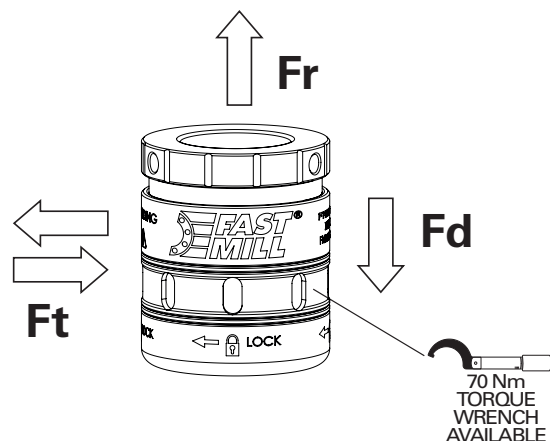
USAGE LIMIT MODULE Ø90

Screw 12.9	Usage limit		
Thread on steel with $R_m \geq 950 \text{ N/mm}^2$	Ft Admissible lateral force	Fr Admissible holding force	Fd Admissible loading force
M12 x 1.75	30 kN	50 kN	100 kN
M16 x 2	30 kN	75 kN	100 kN



USAGE LIMIT MODULE Ø49

Screw 12.9	Usage limit		
Thread on steel with $R_m \geq 950 \text{ N/mm}^2$	Ft Admissible lateral force	Fr Admissible holding force	Fd Admissible loading force
M12 x 1.75	18 kN	50 kN	100 kN
M16 x 2	18 kN	75 kN	100 kN

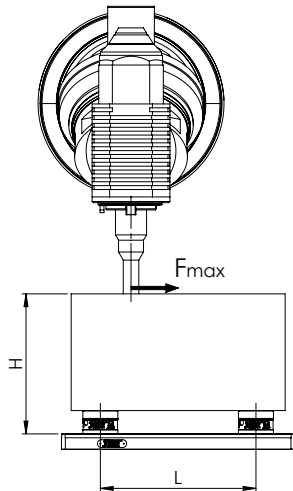


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CALCULATION FORMULA FOR MAXIMUM WEIGHT AND FORCE DURING MACHINING AND DETERMINATION OF THE NUMBER OF MODULES REQUIRED

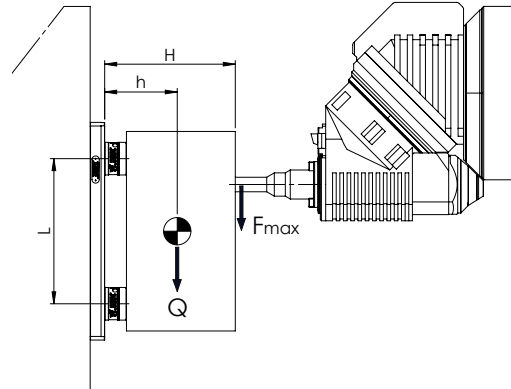
VERTICAL MACHINING



F_{max} = maximum force of the axis during machining

$$F_{\max} = \frac{L}{H} \times \beta \times \frac{n}{2} \text{ [N]}$$

HORIZONTAL MACHINING



Q_{max} = maximum payload that can be fixed

$$Q_{\max} = \frac{L}{h} \times \beta \times \frac{n}{2} \text{ [N]} \text{ (without F applied)}$$

F_{max} = maximum force of the axis during machining

$$F_{\max} = \left(\frac{L}{H} \times \beta \times \frac{n}{2} \right) - \frac{h}{H} \times Q \text{ [N]}$$

RESISTANCE VALUE	M12	M16
β	12000	21000

LEGENDA

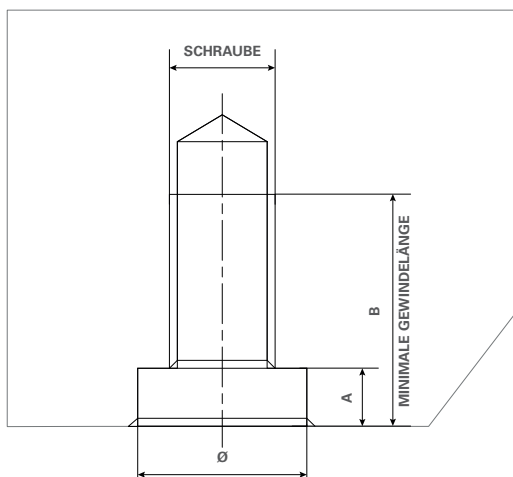
n = n° of modules applied (ex. two modules as shown in figure are n=2)

L = mm / h = mm / H = mm

β = Newton / Q = Newton / F = Newton

N = Kgf x 9,81

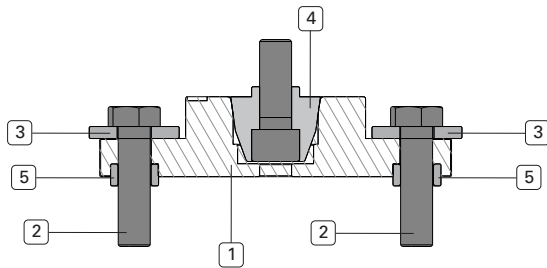
Standard and mini range workpiece preparation



SCREW	DIAMETER Ø	A	B (STEEL)	B (CAST IRON/ ALLOY)
M6	10-11 mm H6	7 mm	16 mm	20 mm
M8	12-14 mm H6	7 mm	20 mm	27 mm
M10	14-16 mm H6	7 mm	22 mm	29 mm
M12	18-20 mm H6	7 mm	26 mm	32 mm
M12 *	18-20 mm H6	9,5 mm	26 mm	32 mm
M16	22-24 mm H6	7 mm	32 mm	40 mm
M24	34-36 mm H6	10 mm	48 mm	60 mm

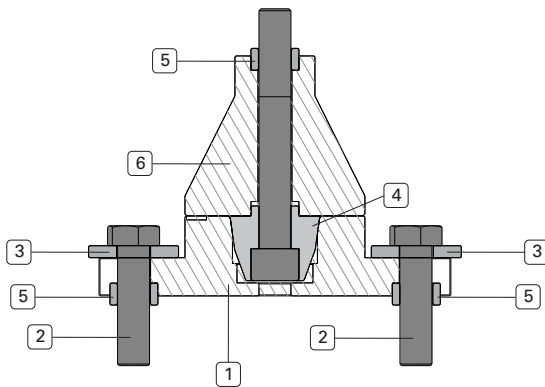
* For FMZ pin.

Single module h40 mm FMX46190110 SET UP example



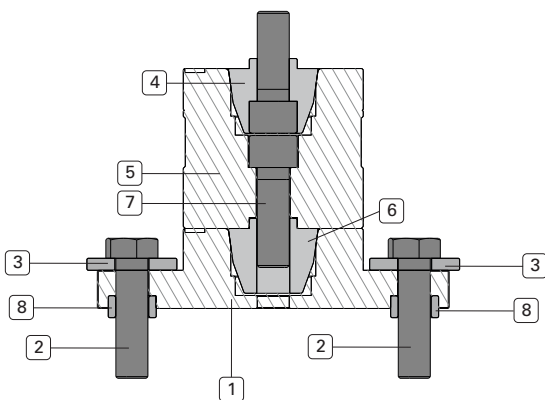
SINGLE MODULE h40 mm ON PLATE ORT-SLOT

- 1 Single module Opt. T-slots - Code **FMX46190110**
- 2 Hexagon head screw M16x60
- 3 Reducer washer for M16 strengthen screw DIN 6340 AND UNI 6602 A
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 5 Single centering bush M16 Ø24-24 mm - Code **FM46190924**



SINGLE MODULE h40 mm ON PLATE ORT-SLOT WITH SPACER

- 1 Single module Opt. T-slots - Code **FMX46190110**
- 2 Hexagon head screw M16x60
- 3 Reducer washer for M16 strengthen screw DIN 6340 AND UNI 6602 A
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 5 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 6 Reduction spacer Ø90-40 mm h 80 mm - Code **FM46191800**

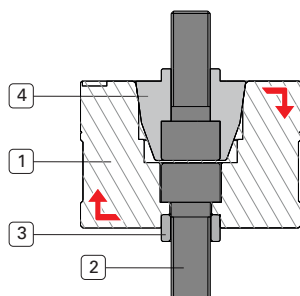


SINGLE MODULE h40 mm ON PLATE ORT-SLOT WITH MODULE h80 mm FMX46190130

- 1 Single module Opt. T-slots - Code **FMX46190110**
- 2 Hexagon head screw M16x60
- 3 Reducer washer for M16 strengthen screw DIN 6340 AND UNI 6602 A
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 5 Single module Ø90 mm h 80 mm - Code **FMX46190130**
- 6 Female pin type A M16 Ø24 mm - Code **FM46191242**
- 7 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x50
- 8 Single centering bush M16 Ø24-24 mm - Code **FM46190924**

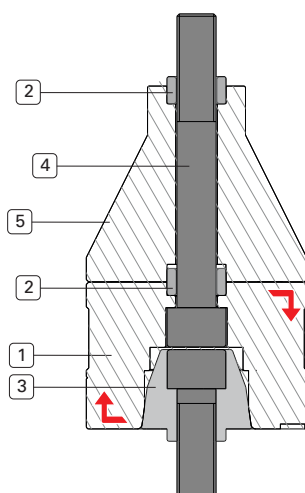


Single module h60 mm FMX46190120 SET UP example



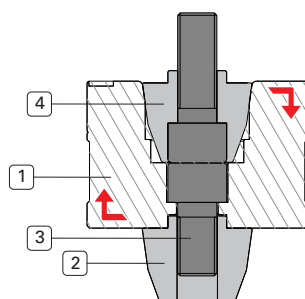
SINGLE MODULE h60 mm ON PLATE ORT-SLOT

- 1 Single module Ø90 mm h60 mm - Code **FMX46190120**
- 2 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x40
- 3 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**



SINGLE MODULE h60 mm ON PLATE ORT-SLOT WITH SPACER

- 1 Single module Ø90 mm h60 mm - Code **FMX46190120**
- 2 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 3 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 4 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x120
- 5 Reduction spacer Ø90-40 mm h 80 mm - Code **FM46191800**

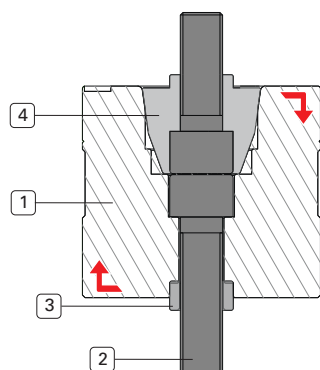


SINGLE MODULE h60 mm ON PLATE ORT-SLOT WITH FEMALE PIN FM46191242

- 1 Single module Ø90 mm h60 mm - Code **FMX46190120**
- 2 Female pin type A M16 Ø24 mm - Code **FM46191242**
- 3 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x30
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**

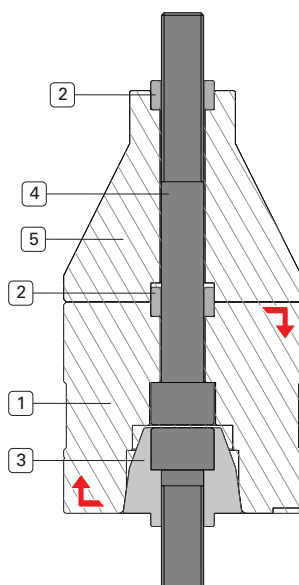


Single module h80 mm FMX46190130 SET UP example



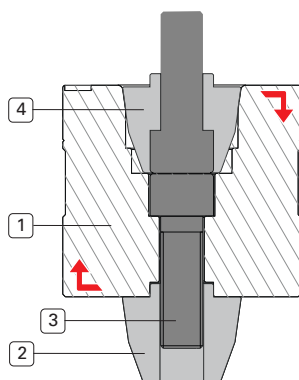
SINGLE MODULE h80 mm ON PLATE ORT-SLOT

- 1 Single module Ø90 mm h80 mm - Code **FMX46190130**
- 2 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x60
- 3 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**



SINGLE MODULE h80 mm ON PLATE ORT-SLOT WITH SPACER

- 1 Single module Ø90 mm h80 mm - Code **FMX46190130**
- 2 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 3 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 4 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x140
- 5 Reduction spacer Ø90-40 mm h 80 mm - Code **FM46191800**

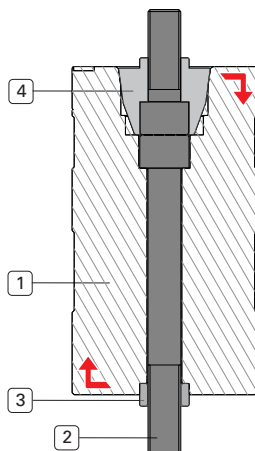


SINGLE MODULE h80 mm ON PLATE ORT-SLOT WITH FEMALE PIN FM46191242

- 1 Single module Ø90 mm h80 mm - Code **FMX46190130**
- 2 Female pin type A M16 Ø24 mm - Code **FM46191242**
- 3 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x50
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**

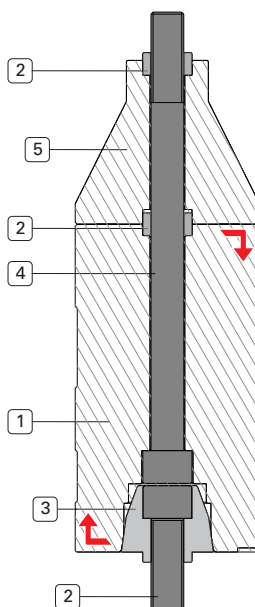


Single module h160 mm FMX46190140 SET UP example



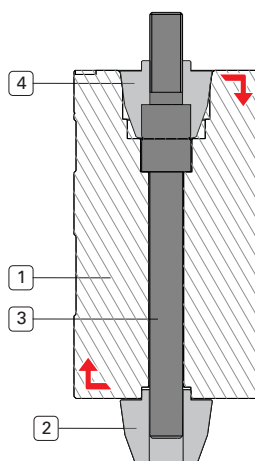
SINGLE MODULE h160 mm ON PLATE ORT-SLOT

- 1 Single module Ø90 mm h160 mm - Code **FMX46190140**
- 2 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x140
- 3 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**



SINGLE MODULE h160 mm ON PLATE ORT-SLOT WITH SPACER

- 1 Single module Ø90 mm h160 mm - Code **FMX46190140**
- 2 Single centering bush M16 Ø24-24 mm - Code **FM46190924**
- 3 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**
- 4 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x220
- 5 Reduction spacer Ø90-40 mm h 80 mm - Code **FM46191800**



SINGLE MODULE h160 mm ON PLATE ORT-SLOT WITH FEMALE PIN FM46191242

- 1 Single module Ø90 mm h160 mm - Code **FMX46190140**
- 2 Female pin type A M16 Ø24 mm - Code **FM46191242**
- 3 Cylindrical head hexagon socket screw 12.9 (DIN912) M16x130
- 4 Male pin type A M16 Ø24 mm with M16x45 screw - Code **FM46191142**

INDEX

CODE	DESCRIPTION (DIMENSION mm)	N°
MODULE		PAGE 10
FMMSSS0049060	Single module Ø49	
FMMSSS0049TWK	Torque Wrench kit	
FMMSSS0049TWI	Torque wrench insert	
FMCLK030D49	Clock plate for Ø49 module	
FMSLIDE030D49	Slide plate for Ø49 module	
FM46190110	Opt. T-slots Ø90 - h40	
FMX46190120	Single Ø90 - h60	
FMX46190130	Single Ø90 - h80	
FMX46190140	Single Ø90 - h160	
FMSADJ901606	Adjustable module Ø90	
FMSLIDE030D90	Slide plate for Ø90 module	
FM46190005	Anti-rotation plate	
FM46190125	Index Ø90 - h60	
FM46190135	Index Ø90 - h80	
FM46190145	Index Ø90 - h160	
FM46191705	Index flange 45°	
FMAMER3290100	ER 32 module	
FM46190150	Double Ø90 - h80	
FM46190160	Double Ø90 - h160	
PINS AND BUSHES		PAGE 40
FM46190918	Bush Ø24-18 - h11	
FM46190920	Bush Ø24-20 - h11	
FM46190922	Bush Ø24-22 - h11	
FM46190924	Bush Ø24-24 - h11	
FM46190925	Bush Ø24-25 - h11	
FM93000003	Bush Ø24-24 - h13	
FM93000042	Bush Ø24-24 - h16	
FM93000040	Bush Ø36-24 - h15	
FM93000041	Bush Ø36-36 - h20	
FMPMA49M06D10	Pin for Ø49 module M6 Ø10 A	
FMPMC49M06D10	Pin for Ø49 module M6 Ø10 C	
FMPMA49M06D11	Pin for Ø49 module M6 Ø11 A	
FMPMC49M06D11	Pin for Ø49 module M6 Ø11 C	
FMPMC49M06D00	Pin for Ø49 module M6 C	
FMPMA49M08D12	Pin for Ø49 module M8 Ø12 A	
FMPMC49M08D12	Pin for Ø49 module M8 Ø12 C	
FMPMA49M08D14	Pin for Ø49 module M8 Ø14 A	
FMPMC49M08D14	Pin for Ø49 module M8 Ø14 C	
FMPMC49M08D00	Pin for Ø49 module M8 C	
FMPMA49M10D14	Pin for Ø49 module M10 Ø14 A	

CODE	DESCRIPTION (DIMENSION mm)	N°
FMPMC49M10D14	Pin for Ø49 module M10 Ø14 C	
FMPMA49M10D16	Pin for Ø49 module M10 Ø16 A	
FMPMC49M10D16	Pin for Ø49 module M10 Ø16 C	
FMPMC49M10D00	Pin for Ø49 module M10 C	
FMPMA49M12D18	Pin for Ø49 module M12 Ø18 A	
FMPMC49M12D18	Pin for Ø49 module M12 Ø18 C	
FMPMA49M12D20	Pin for Ø49 module M12 Ø20 A	
FMPMC49M12D20	Pin for Ø49 module M12 Ø20 C	
FMPMC49M12D00	Pin for Ø49 module M12 C	
FMPMA49M16D22	Pin for Ø49 module M16 Ø22 A	
FMPMC49M16D22	Pin for Ø49 module M16 Ø22 C	
FMPMA49M16D24	Pin for Ø49 module M16 Ø24 A	
FMPMC49M16D24	Pin for Ø49 module M16 Ø24 C	
FMPMC49M16D00	Pin for Ø49 module M16 C	
FM46191105	Male M6 Ø10 A	
FM46193105	Male M6 Ø10 C	
FM46191106	Male M6 Ø11 A	
FM46193106	Male M6 Ø11 C	
FM46191107	Male M8 Ø12 A	
FM46193107	Male M8 Ø12 C	
FM46191108	Male M8 Ø14 A	
FM46193108	Male M8 Ø14 C	
FM46191109	Male M10 Ø14 A	
FM46193109	Male M10 Ø14 C	
FM46191110	Male M10 Ø16 A	
FM46193110	Male M10 Ø16 C	
FM46191111	Male M12 Ø18 A	
FM46193111	Male M12 Ø18 C	
FM46191121	Male M12 Ø20 A	
FM46193121	Male M12 Ø20 C	
FM46191132	Male M16 Ø22 A	
FM46193132	Male M16 Ø22 C	
FM46191142	Male M16 Ø24 A	
FM46193142	Male M16 Ø24 C	
FM46191242	Female M16 Ø24 A	
FM46191421	H Pin M12 Ø20 A	
FM46193421	H Pin M12 Ø20 C	
FM46191442	H Pin M16 Ø24 A	
FM46193442	H Pin M16 Ø24 C	
FM46191316	Double Pin	
FM46191162	Integral M24 Ø34 A	

CODE	DESCRIPTION (DIMENSION mm)	N°
FM46191164	Integral M24 Ø34 C	
FM46191163	Integral M24 Ø36 A	
FM46191165	Integral M24 Ø36 C	
FM93000028	Adapter M24x3	
FM93000010	Adapter M30X3.5	
FM93000023	Adapter M36x3	
FM93000011	Adapter M36x4	
FM93000024	Adapter M42x3	
FM93000012	Adapter M42x4.5	
FM93000025	Adapter M48x3	
FM93000013	Adapter M48x5	
FM93000014	Adapter M56x5.5	
FM93000015	Adapter M64x6	
FM93000043	Adapter M20x2,5	
RISERS		PAGE 50
FM46192060	Riser Ø135 - h160	
FM46192050	Riser Ø175 - h200	
SPACERS		PAGE 56
FMSPHP0004010	Ø40 - h10 HP	
FMSPHP0004015	Ø40 - h15 HP	
FMSPHP0004020	Ø40 - h20 HP	
FMSPHP0004025	Ø40 - h25 HP	
FMSPHP0004030	Ø40 - h30 HP	
FMSPHP0004040	Ø40 - h40 HP	
FMSPHP0004050	Ø40 - h50 HP	
FM46191801	Ø90-40 - h10 HP	
FM46191802	Ø90-40 - h20 HP	
FM46191803	Ø90-40 - h30 HP	
FM46191804	Ø90-40 - h40 HP	
FM46191805	Ø90-40 - h50 HP	
FM46191806	Ø90-40 - h60 HP	
FM46191910	Ø40 - h10	
FM46191915	Ø40 - h15	
FM46191920	Ø40 - h20	
FM46191925	Ø40 - h25	
FM46191940	Ø40 - h40	
FM46191950	Ø40 - h50	
FM46191785	Ø90-40 - h20	
FM46191790	Ø90-40 - h40	
FM46191795	Ø90-40 - h60	
FM46191800	Ø90-40 - h80	

CODE	DESCRIPTION (DIMENSION mm)	N°
FM46191843	Ø55 - h03	
FM46191844	Ø55 - h04	
FM46191845	Ø55 - h05	
FM46191810	Ø55 - h10	
FM46191815	Ø55 - h15	
FM46191820	Ø55 - h20	
FM46191825	Ø55 - h25	
FM46191840	Ø55 - h40	
FM46191850	Ø55 - h50	
FM46191740	Ø90-55 - h10	
FM46191745	Ø90-55 - h25	
FM46191750	Ø90-55 - h30	
FM46191770	Ø90-80 - h20	
FM46191780	Ø90-80 - h40	
FM46191782	Ø90-80 - h60	
FM46191889	Ø90 - h05	
FM46191890	Ø90 - h10	
FM46191891	Ø90 - h11	
FM46191892	Ø90 - h12	
FM46191895	Ø90 - h30	
FM46191710	Ø90 - h60	
FM46191715	Ø90 - h80	
THIRD CLAMPING POINT		PAGE 66
FM46191600	Third clamping point set	
FM46191650	Extension	
VERTICAL CLAMPING		PAGE 72
FMVCHP0024036	Vertical clamp. for heavy parts set	
FMVCHPLATERAL	90° Lateral clamping	
FMVCAP0016024	Vertical clamp. and positioning set	
MINI RANGE		PAGE 78
FM46190019	Pallet for index module Ø115	
FM46190018	Special drilled screw	
FM46195020	M6 pallet 196x196 h36	
FM46195021	M6 pallet 246x246 h36	
FM46195022	M6 pallet 296x296 h36	
FM46195025	M8 pallet 246x246 h36	
FM46195026	M8 pallet 296x296 h36	
FM46195029	M10 pallet 246x246 h46	
FM46195030	M10 pallet 296x296 h46	
FM46190015	Pallet for index module	
FM46194015	M6 pin Ø10	

CODE	DESCRIPTION (DIMENSION mm)	N°
FM46194010	M6 pin Ø11	
FM46194025	M8 pin Ø12	
FM46194020	M8 pin Ø14	
FM46194035	M10 pin Ø14	
FM46194030	M10 pin Ø16	
FM46194011	M6 spacer Ø22 h8	
FM46194012	M6 spacer Ø22 h12	
FM46194013	M6 spacer Ø22 h16	
FM46194021	M8 spacer Ø25 h10	
FM46194022	M8 spacer Ø25 h15	
FM46194023	M8 spacer Ø25 h20	
FM46194031	M10 spacer Ø28 h15	
FM46194032	M10 spacer Ø28 h25	
FM46194033	M10 spacer Ø28 h35	
FM46194000	M6 Adapter Ø90 h20	
FM46194003	M8 Adapter Ø90 h20	
FM46194006	M10 Adapter Ø90 h20	

TILTING PAGE 86

FMTMSS1090120	Tilting module Ø90 with 10° hirth
FMTMSS1090C06	Base plate for tilting module

FINISHED MODULAR PLATES PAGE 90

FM46195201	600x400 mm
FM46195202	500x500 mm
FM46195203	600x500 mm
FM46195204	800x600 mm
FM46195205	1000x500 mm
FM46195206	1000x600 mm
FM46195207	1000x800 mm
FM46195208	1000x1000 mm
FM46195210	800x800 mm
FM46195223	800X400 mm

PLATES ACCESSORIES PAGE 90

FM71290172	Set for modular plate alignment
FM71290174	Set for mod. plate alignment L500
FM46191011	Plate cap M12 Ø18
FM46191012	Plate cap M12 Ø20
FM46191016	Plate cap M16 Ø24
FM71290181	Loc. pins exp. Ø16 - 12-22
FM71290182	Loc. pins exp. Ø16 - 14-16-18
FM71290183	Loc. pins exp. Ø16 - 10-20
FM71290184	Loc. pins exp. Ø20 - 24-28-32

CUBES PAGE 98

FM90IR0016024	90° Index riser set
FMCB000141410	Smart Cube set
FM57700700	500x500 h800

ACCESSORIES PAGE 106

FM46190008	Reduc. washer M12 - M6
FM46190010	Reduc. washer M12 - M8
FM46190011	Reduc. washer M16 - M12/10
FM46191520	Extractor Adapter M6
FM46191521	Extractor Adapter M8
FM46191522	Extractor Adapter M10
FM46191523	Extractor Adapter M14
FM46191525	Extractor Adapter M26
FM46191510	Pin and bush extractor

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FASTMILL 02-2022



Fast Mill fixture with third clamping points