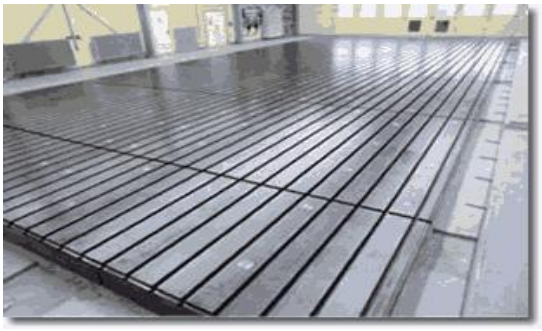
Catalog

1.T-SLOT BASE PLATES



Automotive Testing

We offer **T-slot Base Plates** for the Automotive Testing and Machine Tool industry. The base plates are very stiff by using a rib-pattern which eliminates the need of grouting the plate except for high dynamic loading. T-slots are machined according to DIN 650 and can be ordered in any size and pattern. Despite the high quality standards the plates comes with a competitive price and short delivery times.

Machine Tool

We offer the widest variety of products for the modern machine tool industry. Clamping plates in any sizes and shapes, machine tables, box tables, angle plates and more are available.

We offer T-nuts, bolts and washers, clamping sets, modular fixture systems, Block-Clamping Systems, Zero Point Clamping System, Multiple-Clamping Systems and more.

Measurement

The company today is one of the largest supplier for measuring plates in the field of horizontal arm measuring devices. All well known measuring machine manufacturers in Europe are our clients.

We provide the measuring plate for your individual guiding system. Guiding systems or even various guiding systems integrated in the same plate are possible.

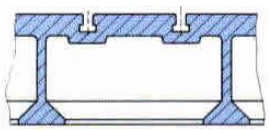
Please contact us with your request. We will work out an individual offer for you.

1.1 Base Plates

QUALITY DETAILS

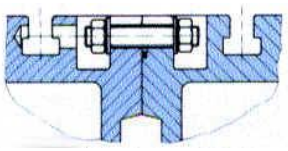
- **HIGHEST PLATE STIFFNESS**

  plates have a rib pattern every 20" to 24", with a "T" bottom to increase rigidity, torsion resistance and fatigue strength. Reinforced ribbing is available when heavier loads make it advisable.Therefore Plates are not required to be grouted with the exception of high dynamic forces or NVH requirements . Future re-leveling and easy plate relocation are guaranteed. Furthermore plates can be mounted on air springs placed on an industrial floor utilizing the weight of the plates as a seismic mass.



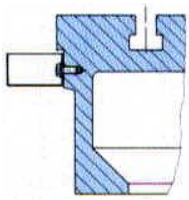
- **PLATE JOINING SYSTEM WITH SEAL BAND**

  The plate joining system provides an oil-and water tight seal available for applications using coolants or oil.



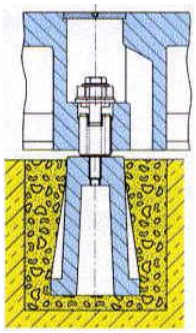
- **WATER TROUGH**

  A water or oil trough can be bolted to the plate. The plate itself provides a drip edge for spill free coolant recovery.



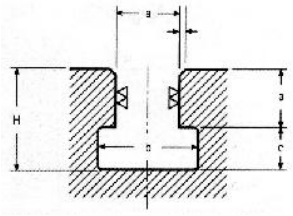
- **PLATE LEVELING AND ANCHORING**

  Several options for plate leveling are available. The most popular element AE55 is embedded in concrete poured around it's own anchor, with leveling accomplished by adjustment of the leveling bolt through access from above. Therefore readjustment of the plate even over a long period of time is possible.



- **MACHINED T-SLOTS**

  Since casted T-slots are technologically outdated in Europe all T-slots are machined on large CNC manufacturing centers. This guaranties highest surface accuracy of the T-slot for more precise fitting of the mounting bolts furnished. Any custom T-slot size and form can be manufactured. Therefore T-slots are available in Inch and Metric sizes.



- **SERVICE AND INSTALLATION**

  Service and Installation is handled from the US by ITBONA Corporation. We have the latest level equipment to guarantee smallest flatness tolerances across the plate field.

- **ATTRACTIVE PRICE AND FAST DELIVERY:**

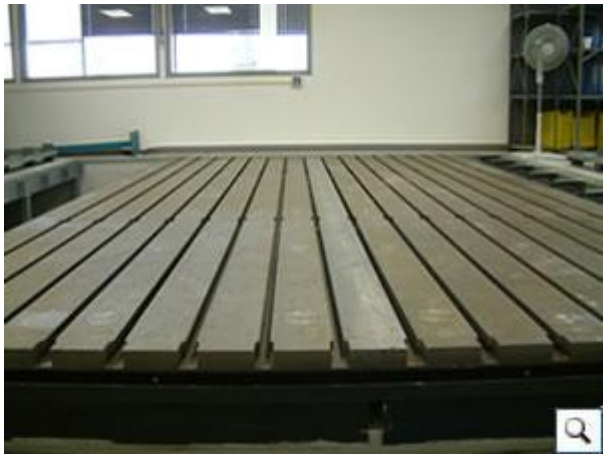
  Receiving a high quality Base Plate from Europe doesn't mean it is more expensive. The most advanced machining centers, iron foundry technology and of course high production numbers guaranty low prices. Delivery time of standard or custom plates is usually 8 to 10 weeks plus shipping.

1.2 OVERVIEW & EXAMPLES

T-SLOT BASE PLATES OVERVIEW

CAST IRON BASE PLATES

A cast iron/steel alloy achieves a Brinell hardness of 180 -200. The tensile strength varies between 260 -300 N/mm². Exceptional stability is achieved by 's rib pattern and design together with controlled cooling after casting, by sophisticated core design resulting in minimal cooling stresses and maximum stability of the plates. These manufacturing techniques developed by result in plates that will maintain distortion free accuracy providing they are stored and installed correctly. The top surface is machined to the different flatness accuracies of DIN 876, as required.



Base Plate 6000 x 3440 x 350 mm, oil-sealed with fluid trough. Protective wax still applied.
Customer: Continental Teves, Auburn Hills, MI

STEEL BASE PLATES

In addition to casted plates we can provide you also with steel plates, machined to the same specifications as the casted plates. Steel plates can be coated or plated to resist corrosin and wear. Please contact us for a quote!

T-SLOTS

T- slots are machined according to DIN 650 , with popular metric or SAE sizes . T-slots can be machined to width tolerance H7 or H8 at extra cost. Depth of T- slots can also be increased in cases of extremely high pull- out loads. Casted pockets, as required, are provided along the T- slot enable inserting and removal of T- nuts. T- slots can be machined in longitudinal and transversal direction depending on your requirements as well as threaded holes and fitting holes.

LEFT: Base plate with crossed T-slots, joints and caps sealed. Can be re-arranged in many different configurations (T-shape, 2 separate fields etc). Plate mounted on rubber vibration isolators with 1 st natural frequency around 7 Hz. Protective wax still applied to the plate surfaces. Customer: MTS Powertrain, Ann Arbor, MI.

CUSTOM SPINDLE CHANNELS, ACCESS TUNNELS, TAPPED HOLES ETC.

Our plates can be casted and machined entirely to your specification. In the picture to the right access tunnels have been casted into the plate for routing wires, hoses etc. through the plate and seismic mass to the specific instrumentations.

The seismic mass was designed by us together with the base plate and the anchoring system as a turn-key system approach.

RIGHT: View on base plate on seismic mass showing the access tunnels through the seismic mass and base plates. Customer: HONDA Performance Development, Santa Clarita, CA.

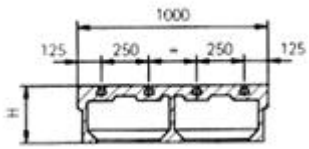
HIGHLY ACCURATE SURFACE PLATES.

We manufacture and install Surface Plates in all sizes and variations. The surface plate shown to the left has a size of 9000 x 4000 mm. It was manufactured and installed according to DIN 876/1 with a ***flatness of 0.1 mm on 9000 mm*** length!

ITBONA Scope of Supply:
- Surface Plate 9000 x 4000 mm (30' x 13')
- Pit Design
- Floor Cover
- Rigging
- Installation
- Leveling with Certification
- Accuracy Service Plan

1.3 SIZES（METRIC&US）

BASE PLATE SIZES



We manufacture any base plate size, shape and T-slot combination to your specification, in steel or cast iron. Nevertheless, standard base plates are available in a large range of width and length combinations. Base plates can be assembled to achieve larger plate areas.

STANDARD PLATE WIDTH (in mm / ft):

- 1000, 1500, 1750 , 2000, 2250, 2500 and 3000 (mm) / 4', 6', 8', 10' (ft)

STANDARD PLATE LENGTH (in mm / ft):

- 2000* mm, 2500*, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000 (mm)
- 6', 9', 12', 15', 18', 21', 24', 27', 30' (ft)

STANDARD PLATE HEIGHT :

The following table gives the recommend plate height in relation to area loading, together with plate weight per m² (resp. ft²). The maximum pull-out strength is determined by the maximum bolt or thread strength used.

Plate Height (metric)	Area Load (metric)	Weight (metric)
250 mm	up to 5 to/m²	approx.. 750 kg/m²
300 mm	up to 10 to/m²	approx. 790 kg/m²
300 mm	up to 15 to/m²	approx. 840 kg/m²
350 mm	up to 25 to/m²	approx. 880 kg/m²
350 mm	up to 35 to/m²	approx. 930 kg/m²
400 mm	up to 75 to/m²	approx. 960 kg/m²
450 mm	up to 150 to/m²	approx. 1020 kg/m²
Plate Height (SAE)	**Area Load (SAE)**	**Weight (SAE)**
10"	up to 980 lb/ft²	approx. 152 lb/ft²
12"	up to 1,950 lb/ft²	approx. 158 lb/ft²
12"	up to 2,930 lb/ft²	approx. 171 lb/ft²
14"	up to 4,890 lb/ft²	approx. 180 lb/ft²
14"	up to 7,330 lb/ft²	approx. 189 lb/ft²
16"	up to 14,670 lb/ft²	approx. 195 lb/ft²

18"	up to 30,550 lb/ft²	approx. 208 lb/ft²
20"	up to 30,550 lb/ft²	approx. 265 lb/ft²

(*Standard base plates with a width of 2250, 2500 and 3000 mm do not come in certain length, see data sheets for details. Shipping might restrict the single plate width.)

1.4 SURFACE ACCURACY DIN 876

SURFACE ACCURACY DIN 876

DESIGN FEATURES

The bottom side of the measuring surface has to be provided with at least three support points. The design of the plate will be such as to allow the forces acting on the table to be directed towards the support points in order to minimize distortion.

SURFACE QUALITIES

DIN 876/III	planed / milled
DIN 876/II	fine planed / milled, alternatively scraped
DIN 876/I	fine milled, alternatively fine scraped
DIN 876/0	fine scraped with bluing

FLATNESS

Measured at standard temperature of 20 C (68 F). Allowable variation of the measuring surface to a true plane in microns () or mil = 0.001 inch where L is the length of the longest side of the plate.

	Metric (L in mm)	**SAE (L in inch)**
DIN 876/III	m = 40 + (L / 25)	mil = 1.575 + (L / 25)
DIN 876/ II	m = 20 + (L / 50)	mil = 0.787 + (L / 50)
DIN 876/ I	m = 10 + (L / 100)	mil = 0.394 + (L / 100)
DIN 876/ 0	m = 4 + (L / 250)	mil = 0.157 + (L / 250)

Flatness inm(Metric)

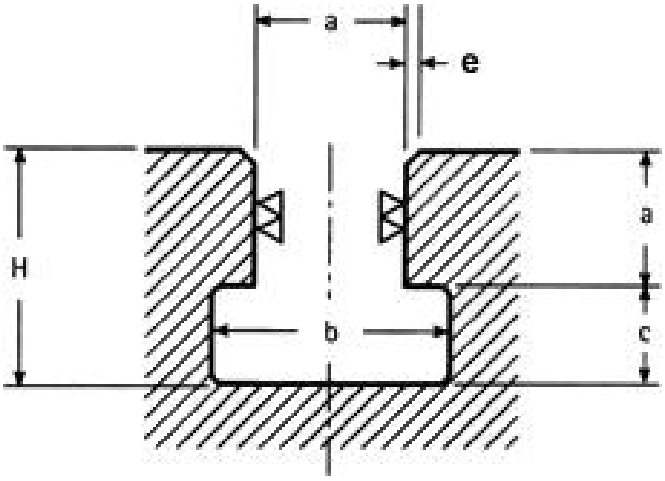
L (mm)	200	300	500	800	1000	1200	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
DIN 876/III	48	52	60	72	80	88	100	120	140	160	180	200	220	240	260	280	300
DIN 876/II	24	26	30	36	40	44	50	60	70	80	90	100	110	120	130	140	150
DIN 876/I	12	13	15	18	20	22	25	30	35	40	45	50	55	60	65	70	75
DIN 876/0	4.8	5.2	6	7.2	8	8.8	10	12	14	16	18	20	22	24	26	28	30

Flatness in mil (= 0.001 Inch) (SAE)

L (inch)	8	12	20	30	40	50	60	80	100	120	140	160	180	200	220	240	260
DIN 876/III	1.90	2.06	2.38	2.78	3.18	3.58	3.98	4.78	5.58	6.38	7.18	7.98	8.78	9.58	10.38	11.18	11.98
DIN 876/II	0.95	1.03	1.19	1.39	1.59	1.79	1.99	2.39	2.79	3.19	3.59	3.99	4.39	4.79	5.19	5.59	5.99
DIN 876/I	0.47	0.51	0.59	0.69	0.79	0.89	0.99	1.19	1.39	1.59	1.79	1.99	2.19	2.39	2.59	2.79	2.99
DIN 876/0	0.19	0.21	0.24	0.28	0.32	0.36	0.40	0.48	0.56	0.64	0.72	0.80	0.88	0.96	1.04	1.12	1.20

1.5 MACHINED T-SLOTS DIN 650

T-SLOT ACCURACY TO DIN 650



Tolerance on slot width H12. (Tolerances H7 or H8 on request)

Example:

A T-slot **DIN 650-28 H12** has a nominal slot opening (a) of
28 mm for bolt size M24 (1").
The T-slot height (H) according to the table below is 48 mm.

(1 mm = 0.03937 inch, 1 inch = 25.4 mm)

Dimension a	for screw		b (mm)	c (mm)	H (mm)	e (mm)
10	M 8	-	17.5 - 18	8	18	1.0
12	M 10	-	20.5 - 21	9	21	1.0

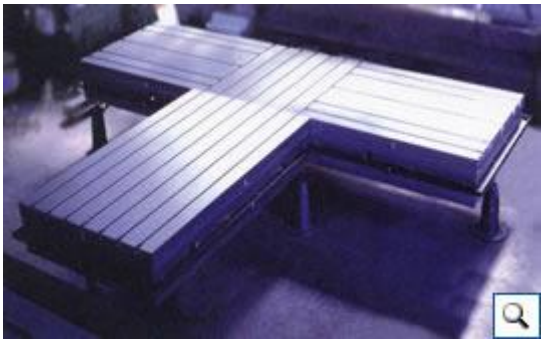
14	M 12	1/2"	23.5 - 24	10	24	1.0
16	M 14	-	26.5 - 27	11	27	1.0
18	M 16	5/8"	29.5 - 30	12	30	1.5
20	M 18	-	33.5 - 34	14	34	1.5
22	M 20	3/4"	37.5 - 38	16	38	1.5
24	M 22	7/8"	41.0 - 42	18	42	1.5
28	M 24	1"	47.0 - 48	20	48	1.5
32	M 27	1 1/8"	54	22	54	1.5
36	M 30	1 1/4"	60	25	61	2.0
42	M 36	1 1/2"	70	29	74	2.0

METRIC T-SLOT NUTS, BOLTS AND WASHERS

 DIN 787 Bolts for T-slots	 DIN 787 Bolts for T-slot complete with Nut and Washer	 DIN 787 Bolts for T-slots 12.9	 No. 797 Rhombus head screw	 DIN 6379 Studs
 DIN 508 Nuts for T-slots (T-nuts)	 DIN 508 F T-nuts with Spring (pat. pend.)	 DIN 508 C Nuts for T-slots, extended	 DIN 510 Nuts for T-slots "Rhombus"	 DIN 508 R Blanks for T-Nuts
 DIN 6330 B Hexagon nut height 1.5 dia	 DIN 6334 Extension nut height 3 dia	 DIN 6331 Collar nut height 1.5 dia	 DIN6319 C Special seat washer	 DIN6319 D No. 6319 Dished washer
 DIN6319 G Dished washer version similar to DIN	 DIN 6340 Washer	 T-slot covers		

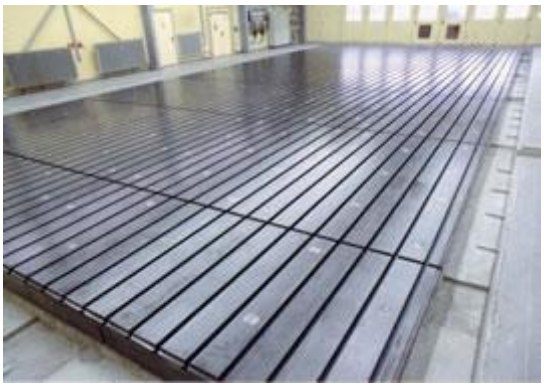
1.6 EXAMPLES

Base Plate Applications



(right picture)
Gear box test rig in T-shape arrangement, provided for assembly on air-springs, 6000 x 5000 mm

(left picture)
Base Plate area in the size of 18 m x 2.5 m for Turbine Repair and maintanance at GE, Dallas TX



(right picture)
Base Plate area in the size of 21 x 11.5 m for servohydraulic test system. The single plate sizes are 7000 x 2000 mm and 7000 x 1500 mm

(left picture)
Heavy duty Face plate, Ø 3000 mm

2.Floor Clamping Rails

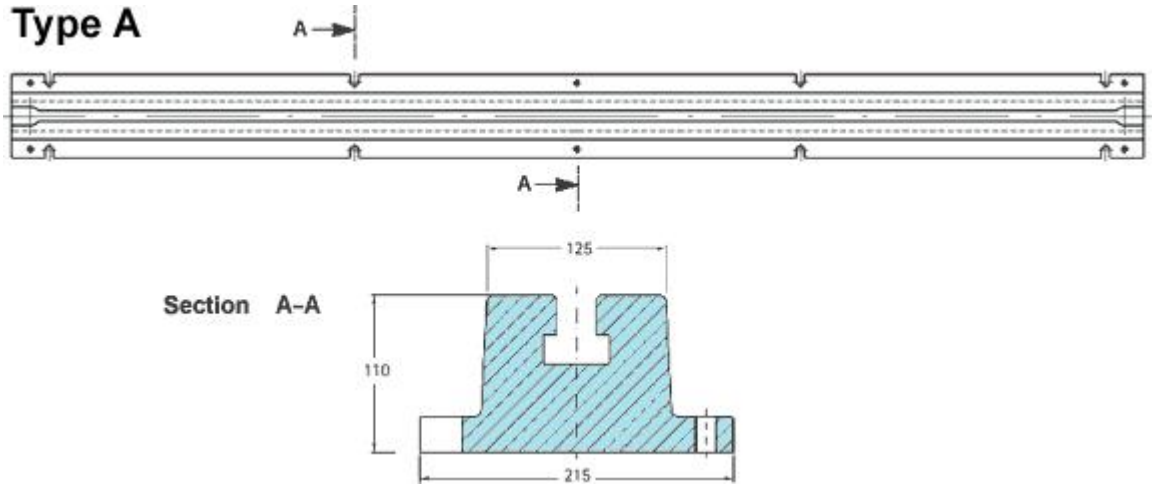
T-slotted Floor Clamping Rails

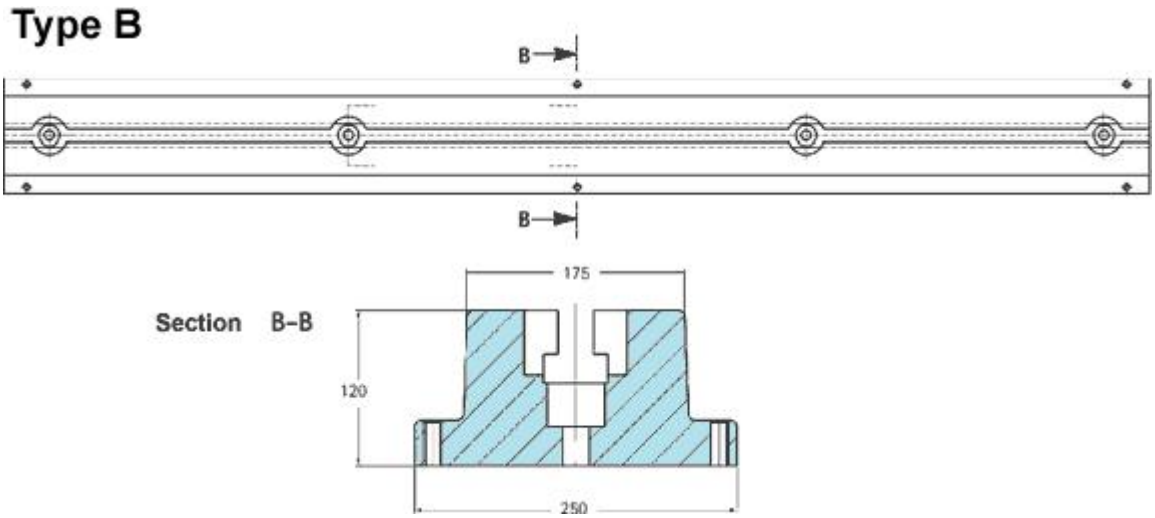
floor clamping rails type **A** and **B** have a wide range of use. These rails placed in lines, for example 500 mm apart, provide the perfect economical solution for large erection sites.

The floor clamping rails are secured with anchor bolts to the foundation. After positioning and levelling with levelling screws the rails will be grouted. Single lengths should not exceed 6000 mm (236"). The surface of the floor clamping rails is broad planed and provided with central T-slots to DIN 650 along its length. Cast pockets are provided for inserting the T-bolts.

Type A rails are grouted to the foundation by means of M20 (3/4") anchor bolts positioned on the sides. Type B rails are anchored in the center with M24 (7/8") bolts. Recommended grout is PAGEL V1/50.

The abutting surfaces are machined square to the top of the surface for the precise positioning of many single rails in one line.

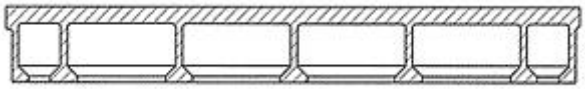




3.SURFACE PLATES

3.1 SURFACE PLATES

Surface Plates , Type ARP



surface plates are distinguished by their highly dense and even surface structure. Exceptional strength and durability of the surface are guaranteed by a special cast iron/steel alloy. The high stiffness and stability of the surface plates is achieved by the special rib design with T-shaped reinforcements and controlled cooling process.

Provided the surface plates are stored and supported correctly, subsequent distortion of the plate surface is eliminated due to the various finishing stages. The surface of the plate can befinished to DIN 876 / III, II or I. The sides are machined square.

The plate surface can be marked with a precise grid pattern of lines, or machined T slots to DIN 650 on request. A special finish is also possible on the sides for the purpose of fitting measuring machines.

Our surface plate supports are recommended for the installation of these tables.

Approximate plate size mm	Approx. plate thickness mm	Approx. rib height mm	Approx. plate height mm	Approx. weight kg	Number of supports required
2000 x 1250	50	200	250	1.600	6
2000 x 1500	50	200	250	2.040	5
2000 x 2000	50	200	250	2.530	5
2500 x 1000	50	200	250	1.730	6
2500 x 1250	50	200	250	2.020	6
2500 x 1500	50	200	250	2.470	8
2500 x 2000	50	200	250	3.050	8
3000 x 1000	50	200	250	2.100	6
3000 x 1500	50	200	250	2.980	8
3000 x 2000	50	250	300	3.940	8
3000 x 2500	50	250	300	5.100	9
3500 x 1000	50	200	250	2.460	8
3500 x 1500	50	200	250	3.500	11
3500 x 2000	50	250	300	4.630	11
3500 x 2500	50	250	300	5.970	12
4000 x 1000	50	200	250	2.820	8
4000 x 1500	50	200	250	4.000	11

4000 x 2000	50	250	300	5.300	11
4000 x 2500	50	250	300	6.850	12
4500 x 1500	50	200	250	4.450	11
4500 x 2000	50	250	300	5.850	11
4500 x 2500	50	250	300	7.600	12
5000 x 1000	50	250	300	3.780	10
5000 x 1500	50	250	300	5.330	14
5000 x 2000	50	250	300	6.540	14
5000 x 2500	50	250	300	8.500	15
6000 x 1500	50	250	300	6.340	14
6000 x 2000	50	250	300	7.770	14
6000 x 2500	50	250	300	10.100	15
7000 x 1500	50	250	300	7.350	17
7000 x 2000	50	250	300	9.050	17
7000 x 2500	50	250	300	11.650	18
3000 x 3000	50	300	350	6.190	13
4000 x 3000	50	300	350	8.320	18
4500 x 3000	50	300	350	9.200	18
5000 x 3000	50	300	350	10.230	23
5500 x 3000	50	300	350	11.300	23
6000 x 3000	50	300	350	12.250	23
3500 x 3000	50	300	350	13.210	23
7000 x 3000	50	300	350	14.180	23
7500 x 1500	50	300	350	8.500	20
7500 x 2000	50	300	350	10.280	20
7500 x 2500	50	300	350	13.240	21
7500 x 3000	50	300	350	15.240	28
8000 x 1500	50	300	350	9.150	23
8000 x 2000	50	300	350	10.940	23
8000 x 2500	50	300	350	14.180	24
8000 x 3000	50	300	350	16.360	28

Prices and other sizes on request.

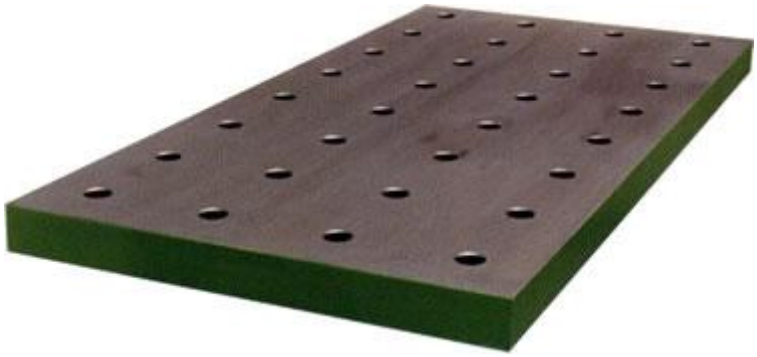
3.2 STRAIGHTENING PLATES

Solid Straightening Plates, Type RM

STOLLE straightening plates are made from a special cast iron / steel alloy giving an exceptional strength and durability. The top surface of the plate is planed or milled, the four side surfaces are machined right-angled. Additional optional features at extra cost include cast or drilled holes for bending or folding pipes, frames, etc. As well it is possible to provide T-slots on request. We recommend our plate **support frame UU** or a storing on **VS supports.** Without an information to the required working height we deliver the supports or frames for a working height of approx. 800 mm.

Ribbed Straightening Plates, Type RR

STOLLE ribbed straightening plates are made from a special cast iron / steel alloy giving exceptional strength and durability for heavy duty use. Our technicians have constructed the ribbing in such a way that the plates can be used universally for straightening, welding or mounting, providing their are properly positioned. The top surface of the plate is planed or milled, the four side surfaces are machined right-angled. If required plates can be supplied with holes or T slots at extra cost. A later incorporation is not advisable.
It is also possible at extra costs provide sound absorbing features. The rib channels are filled with an insulating compound and sealed from underneath with a wooden board. It is not possible to equip normal straightening plates with these sound absorbing features at a later time. We recommend our plate **support frame UU** or a storing on **VS supports.**



3.3 BLUEING PLATES

Blueing Plates , Type TLN

This lightweight marking plate is made from special cast iron / steel alloy. The top surface is machined to DIN 876, the sides are machined square to the top surface.

- DIN 876 III planed/milled
- DIN 876 II, I, 0 scraped

Optional extras include protective covers, lifting handles or leveling jacks. Plates are supplied with external cast surfaces painted green RAL 6011. The support frames are made for a working height of approx. 800 mm (31.5"), although various working heights are available on request. Dismantled models are supplied if the plates are intended for export shipping. For the larger sizes of these surface plates we recommend an assembly on supports.
We deliver suitable bottom lockers for surface plates on request in a stable metal construction.

For larger plate sizes see also "Surface Plates " or contact us for a custom design.

3.4 MEASURING MACH PLATES

Base Plates for Measuring Machines

The company today is one of the largest supplier for measuring plates in the field of horizontal arm measuring devices. All well known measuring machine manufacturers in Europe are our clients.

We provide your measuring plate for your individual guiding system. Guiding systems or even various guiding systems integrated in the same plate are possible.

Please contact us with your request. We will work out an individual offer for you.

Measuring plate with console measuring machine

Measuring plate with console measuring machine

3.5 PLATE SUPPORTS

Plate Supports and Leveling Units

Adjustable Height Supports,
Type VS

Made of cast iron and recommended for the support and accurate leveling of surface plates and larger straightening and welding tables. The
M 30 adjusting screw (M 20 is used on smaller plates) is fitted with a lock-nut. The number of supports required for any particular sized plate is given in the tables. Where very high loading is encountered the number of supports should be increased. The supports can also be supplied with machined bases at extra cost.

N	Approx. Support	Weight

Leveling Unit, Type BE

The leveling unit was developed as a rigid link between surface plate and foundation.

The main casting support of the BE unit is clamped to the foundation with anchor bolts. The level is adjusted by rotating support sleeve A.

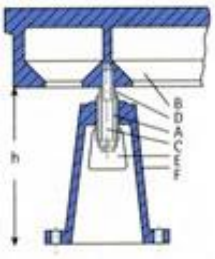
Tightening clamp screw C finally secures the table to the leveling unit and prevent further movement of sleeve A.

o	height			
	mm	inch	kg	lbs
1	270 - 320	10.6 - 12.6	24	53
2	345 - 395	13.6 - 15.5	29	64
3	420 - 470	16.5 - 18.5	32	70
4	500 - 550	19.7 - 21.6	38	84
5	570 - 620	22.4 - 24.4	43	95
6	620 - 670	24.4 - 26.4	47	104
7	700 - 750	27.6 - 29.5	49	108

Support, Type VSK

Support with ball bearing for every precise adjustment.

A: Support Sleeve
B: Plate
C: Clamp bolt
D: Special support seating-hardened
E: Adjustment access
F: Support stand
H: Height of support



No	Approx. Support height		Weight	
	mm	inch	kg	lbs
1	320	12.6	45	99
2	420	16.5	52	115
3	520	20.5	60	132

3.5.1 SUPORT FRAMES TYPE LU

Lightweight Table Support Frame, Type LU

This support frame is especially for use with marking-off tables and surface plates. Manufactured from welded steel sections for maximum rigidity. For precision plates it is recommended that optional leveling screws be specified to allow the plates to be aligned accurately in the horizontal plane. The support frames are manufactured to give a working height for the supported plate of approx. 800 mm, however, other working heights are available on request. Plates larger than 1200 x 1000 mm should be supported on **type VS units.**

Base Cabinets

Base cabinets for marking-off tables and surface plates are manufactured on request. Stability is afforded by the sheet metal construction, the door is supplied with a lock, the floor is inserted.

For approx. plate size of mm	Approx. weight kg
400 x 400	15
500 x 500	24
600 x 600	27
800 x 800	44
1000 x 800	49
1000 x 1000	52
1200 x 800	52
1500 x 1000	70
2000 x 1000	82

3.5.2 SUPPORT FRAMES TYPE UU

Heavy Duty Support Frames, type UU

The support frames for straightening plates consist of a heavy duty construction with welded steel sections, measured to give an approximate working height of 800 mm (normal height). Other working heights are available on request. For straightening plates of larger dimensions it is advisable to use VS supports.

Approx. plate size mm	Number of Legs	Approx. weight kg
400 x 400	4	16
500 x 500	4	27
600 x 600	4	29
700 x 700	4	42
800 x 800	4	46
1000 x 800	4	50
1000 x 1000	4	54
1200 x 800	4	54
1200 x 1000	4	65
1500 x 1000	4	72
2000 x 1000	4	86
2000 x 1500	6	105
2500 x 1000	6	100
2500 x 1500	6	180
3000 x 1000	6	160

3.6 SURFACE ACCURACY DIN 876

SURFACE ACCURACY DIN 876

DESIGN FEATURES

The bottom side of the measuring surface has to be provided with at least three support points. The design of the plate will be such as to allow the forces acting on the table to be directed towards the support points in order to minimize distortion.

SURFACE QUALITIES

DIN 876/III	planed / milled
DIN 876/II	fine planed / milled, alternatively scraped
DIN 876/I	fine milled, alternatively fine scraped
DIN 876/0	fine scraped with bluing

FLATNESS

Measured at standard temperature of 20C (68 F). Allowable variation of the measuring surface to a true plane in microns () or mil = 0.001 inch where L is the length of the longest side of the plate.

	Metric (L in mm)	SAE (L in inch)
DIN 876/III	m = 40 + (L / 25)	mil = 1.575 + (L / 25)
DIN 876/ II	m = 20 + (L / 50)	mil = 0.787 + (L / 50)
DIN 876/ I	m = 10 + (L / 100)	mil = 0.394 + (L / 100)
DIN 876/ 0	m = 4 + (L / 250)	mil = 0.157 + (L / 250)

Flatness in 聽 m 聽(Metric)

L (mm)	200	300	500	800	1000	1200	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
DIN 876/III	48	52	60	72	80	88	100	120	140	160	180	200	220	240	260	280	300
DIN 876/II	24	26	30	36	40	44	50	60	70	80	90	100	110	120	130	140	150
DIN 876/I	12	13	15	18	20	22	25	30	35	40	45	50	55	60	65	70	75
DIN 876/0	4.8	5.2	6	7.2	8	8.8	10	12	14	16	18	20	22	24	26	28	30

Flatness in mil (= 0.001 Inch) (SAE)

L (inch)	8	12	20	30	40	50	60	80	100	120	140	160	180	200	220	240	260
DIN 876/III	1.90	2.06	2.38	2.78	3.18	3.58	3.98	4.78	5.58	6.38	7.18	7.98	8.78	9.58	10.38	11.18	11.98
DIN 876/II	0.95	1.03	1.19	1.39	1.59	1.79	1.99	2.39	2.79	3.19	3.59	3.99	4.39	4.79	5.19	5.59	5.99
DIN 876/I	0.47	0.51	0.59	0.69	0.79	0.89	0.99	1.19	1.39	1.59	1.79	1.99	2.19	2.39	2.59	2.79	2.99
DIN 876/0	0.19	0.21	0.24	0.28	0.32	0.36	0.40	0.48	0.56	0.64	0.72	0.80	0.88	0.96	1.04	1.12	1.20

4.ANGLE PLATE

4.1 ANGLE PLATES

Angle Plates

Angle plates with a box-shaped cast design are required for almost all boring and milling machines to mount workpieces in a vertical position. The clamping surfaces of the standard angle plates have been machined in accordance with DIN 876/III and provided with T-slots in accordance with DIN 650-22 H 12 or DIN 650-28 H 12. Other slot sizes in accordance with DIN 650, ranging from 12 to 42 mm, can also be provided.

The bases of the angle plates have clamping slots and drill-holes adjusted to the clamping options of the machine table.

The sizes and dimensions of the angle plates and the T-slots can be varied according to your requirements. The angle plates can also be supplied with the spring-clamping cylinders of your choice. Particularly large and heavy angle plates can also be supplied in several sections. These can then be arranged in either a vertical or horizontal row to obtain the

Size
3500
x 1500
x 1200 mm

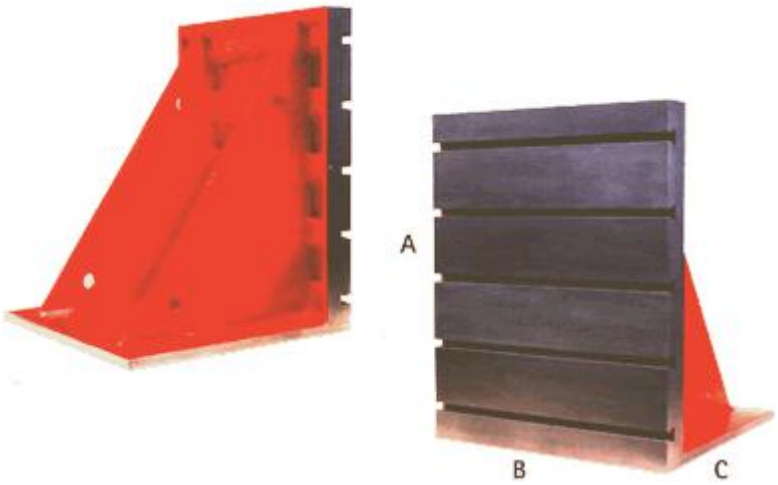
A		B		C	
mm	inch	mm	inch	mm	inch
1500	59	800	31	800	31
1500	59	1000	39	800	31
1500	59	1250	49	800	31
1500	59	1500	59	800	31
2000	79	800	31	800	31
2000	79	1000	39	800	31
2000	79	1250	49	800	31
2000	79	1500	59	800	31
2500	98	800	31	800	31
2500	98	1000	39	1200	47
2500	98	1250	49	1200	47
2500	98	1500	59	1200	47
3000	118	800	31	1200	47
3000	118	1000	39	1200	47
3000	118	1250	49	1200	47
3000	118	1500	59	1200	47

(custom sizes on request)

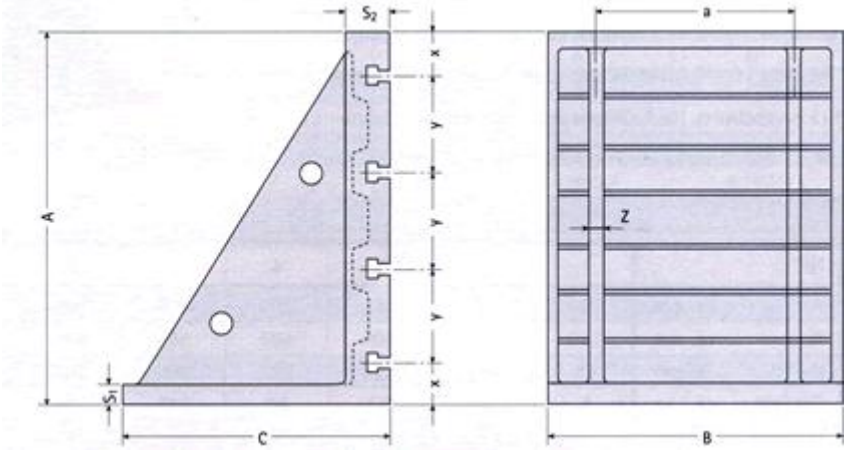
4.2 TYPE WN

Angle Plates, Type WN

We offer this multi-purpose angle plate in 6 standard sizes. Special casting techniques and the ideal standard measures guarantee a distortion free accuracy. The reverse of this angle plate has two ribs. The vertical work face and the base is machined to DIN 876 / III, the ends are machined sqare to these. Angular accuracy to DIN 875, workshop angle II. The horizontal T- slots are machined to DIN 650-22 H 12. In standard form the base is plain with no slots or holes, these can be supplied optionally at extra cost.



No	Vertical Face		Base		T-slots DIN 650 - H12		Weight	
	A x B (mm)	A x B (inch)	B x C (mm)	B x C (inch)	Size	No.	kg	lbs
1	500 x 400	19.7 x 15.7	400 x 400	15.7 x 15.7	22	4	180	397
2	550 x 550	21.7 x 21.7	550 x 500	21.7 x 19.7	22	4	215	475
3	700 x 550	27.6 x 21.7	550 x 500	21.7 x 19.7	22	4	250	550
4	700 x 700	27.6 x 27.6	700 x 600	27.6 x 23.6	22	4	380	840
5	900 x 700	35.4 x 27.6	700 x 600	27.6 x 23.6	22	5	430	950
6	1000 x 800	39.4 x 31.5	800 x 800	31.5 x 31.5	22	5	720	1590



No	A (mm)	B (mm)	C (mm)	S1 (mm)	S2 (mm)	a (mm)	z (mm)	x (mm)	y (mm)	T-slots DIN 650 H12	
										No.	Size
1	500	400	400	25	70	280	25	55	130	4	22
2	550	550	500	25	70	370	25	65	140	4	22
3	700	550	500	30	80	370	25	80	180	4	22
4	700	700	600	30	90	460	25	80	180	4	22
5	900	700	600	35	100	490	30	90	180	5	22

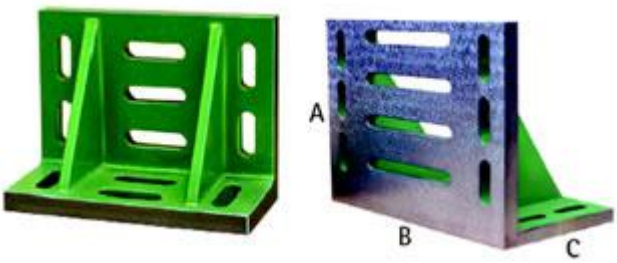
6	1000	800	800	35	100	550	35	100	200	5	22

No	A (inch)	B (inch)	C (inch)	S1 (inch)	S2 (inch)	a (inch)	z (inch)	x (inch)	y (inch)	T-slots DIN 650 H12	
										No.	Size
1	19.7	15.7	15.7	1	2.8	11	1	2.2	5.1	4	22
2	21.7	21.7	19.7	1	2.8	14.6	1	2.6	5.5	4	22
3	27.6	21.7	19.7	1.2	3.1	14.6	1	3.1	7	4	22
4	27.6	27.6	23.6	1.2	3.5	18.1	1	3.1	7	4	22
5	35.4	27.6	23.6	1.4	3.9	19.3	1.2	3.5	7	5	22
6	39.4	31.5	31.5	1.4	3.9	21.6	1.4	3.9	7.9	5	22

4.3 TYPE WS/WSN

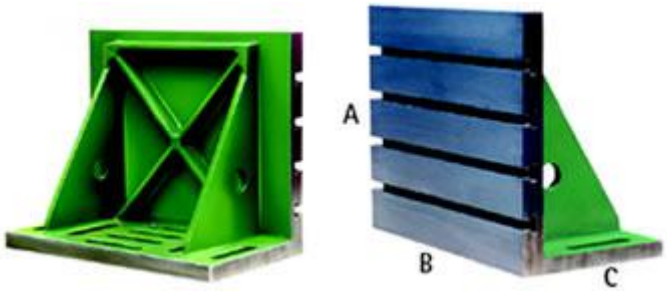
Angle Plates, Type WS

's lightweight angle plates are supplied with cast bolt slots in both faces. The arrangement and distribution of the slots means they can be used on backing plates with varying spacing between slots and holes. On the reverse the angle plates have two strengthening ribs. The working surfaces are machined to DIN 876 in varying grades of accuracy, angular accuracy to DIN 875. The end faces are also machined.



	1	2	3	3a	4	5	5a	6	7	8	9	10
A approx. mm	100	150	200	250	300	400	500	520	600	800	1000	1250
B approx. mm	150	200	275	300	400	500	600	700	800	1000	1200	1500
C approx. mm	75	100	150	150	225	300	350	390	450	600	700	900
Slot width approx. mm	16	16	20	20	20	24	24	24	24	30	30	30
Weight approx. kg	3	6	12	16	38	75	146	156	220	431	850	1370

Angle Plate, Type WSN



With its relatively light weight this angle is suited as angle plate for machine tools and equally can be used for control and marking purposes. The vertical work face and the base are machined to DIN 876 for flatness and DIN 875 for angular accuracy, the ends are also machined. Horizontal T-slots in the vertical face are to DIN 650 with the slot width tolerance to H 12. The base has cast clamping slots. The back face of this angle is webbed stable.

No.	1	2	3	4	5	6	7	8	9	10	11
A approx. mm	100	150	250	300	400	500	520	600	800	1000	1250
B approx. mm	150	200	300	400	500	600	700	800	1000	1200	1500
C approx. mm	75	100	150	225	300	350	390	450	600	700	900
Weight approx. kg	5	12	32	58	115	180	260	350	605	1250	2200
Number of T-slots	2	2	3	3	4	4	4	5	5	6	8
T-slots DIN 650	10	12	12	18	18	18	22	22	22	22	22
T-slot spac. app. mm	40	70	75	100	100	100	100	100	150	150	150
Dist. f. side app. mm	30	40	50	50	50	100	110	100	100	125	100
Buttom Slots width approx.	18	18	18	22	22	22	24	24	30	30	30

4.4 SPECIAL DESIGNS

Angle Plates, Special Design

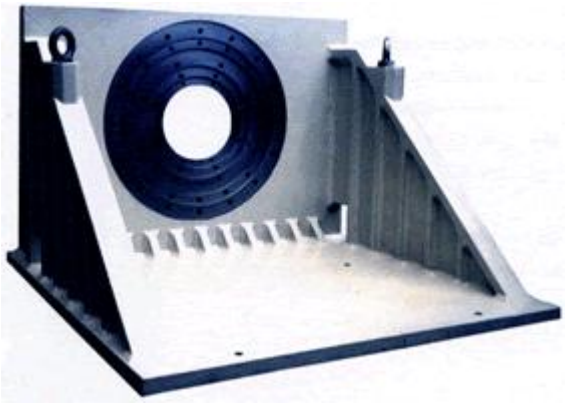
This special construction is chiefly for work piece support on large boring and milling machines. The angle plates are often used for horizontal dynamic test facilities in conjunction with a floor plate. These plates can be supplied for any application to any loading.
The single angle plate sections can also be used separately. Large plate areas can be constructed by placing angle plates alongside to each other.

A matched pair of angle plates each in two-piece construction, height 4000 mm, mounted on an isolated foundation floor plate for highly dynamic testing

Angle plate for heavy duty cutting work. Plate surface 3500 x 2500 mm

(left)
Angle plate in special construction for easy tooling,
1800 x 1100 x 800 mm

(right)
Heavy angle plate with for electric motor test rig,
200 x 1800 x 2000 mm



5. T-SLOT TABLES

5.1 T-SLOT TABLES

T-slot Tables

We manufacture T-slotted tables on support frames to your special request.

For design purposes please provide the following information:

- Table Top size (length x width)
- Working height (usually 32")
- No. of T-slots (or non)
- Size of T-slots (slot opening or bolt size)
- Special payload conditions (for example load on the table 5 tons)
- Adjustable feet with or without vibration dampers
- Any special stiffness requirements
- Special paint colors
- Any other additional information and requirements

Table 9’ x 3’ 3 T-slots DIN 650 28 H12 and 5“plate thickness. Weight approx. 3 tons

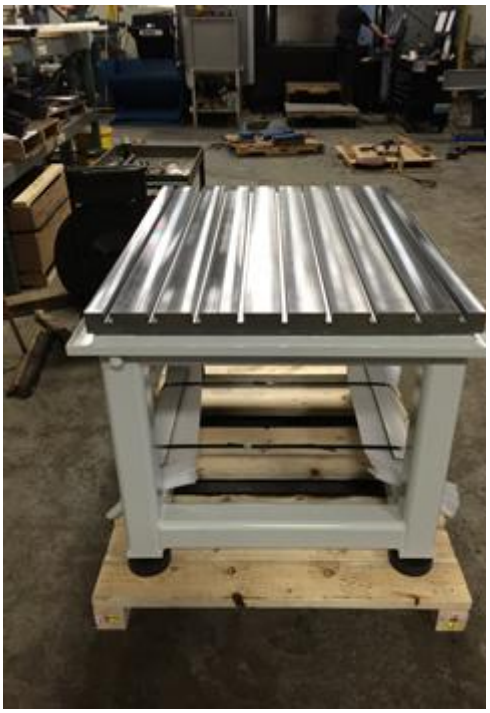
T-slot Table 2000 x 1000 mm with crossed T-slots DIN 650 28 H12

T-slot Table vibration isolated from the sub-frame by air springs

Steel T-slot Table on a heavy support frame
with a first natural frequency >100 Hz
size approx. 1800 x 900 x 800 mm

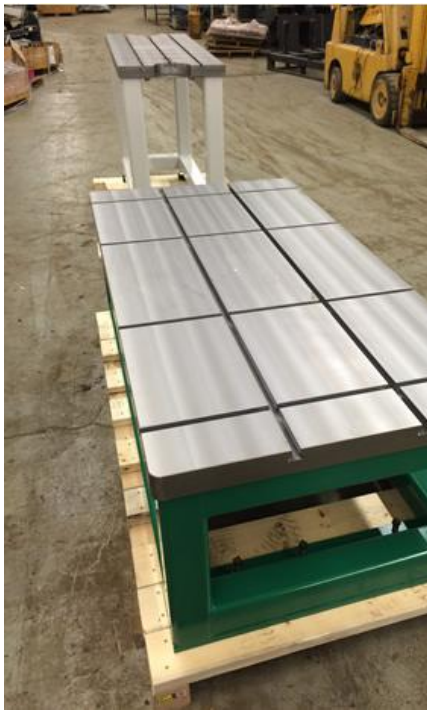
View of the table bottom with welded rib design

Isolation pads for vibration decoupling between table plate and frame



T-slot table with fluid trough

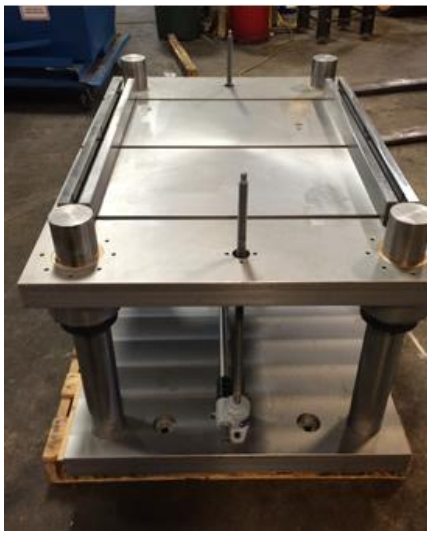
Fluid trough with drain



T-slot table with crossed T-slots

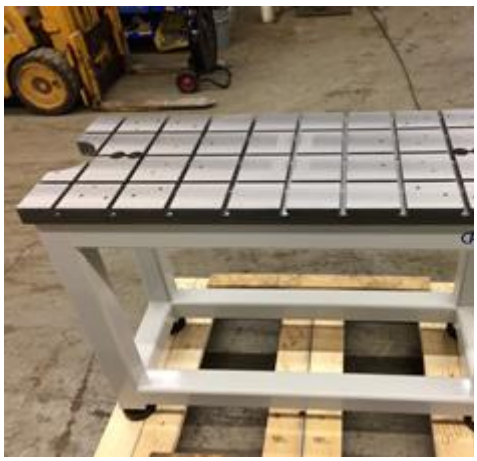
T-slot table with custom support frame

Support table for Water Brake or Dynamometer

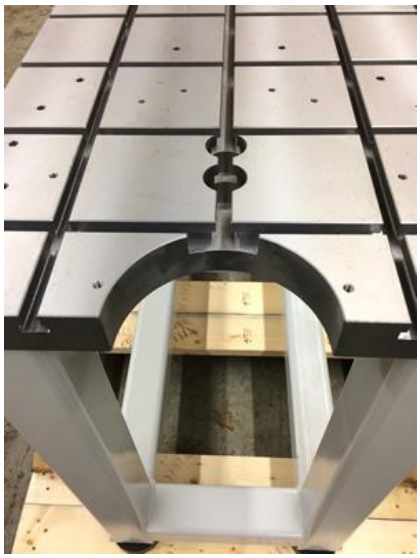


Height adjustable T-slot table

Stainless steel T-slot table with concrete base



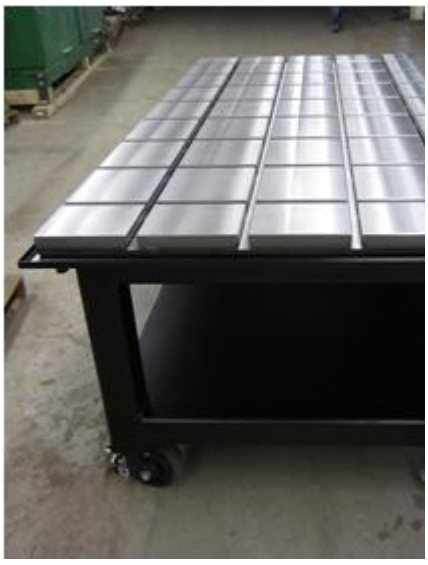
T-slot table with custom cut-outs for accessories



T-slot table close view

30' (9,000 mm) T-slot table

T-slot table extra wide with 12 T-slots



T-slot Table with crossed T-slots, fluid trough and shelf on casters

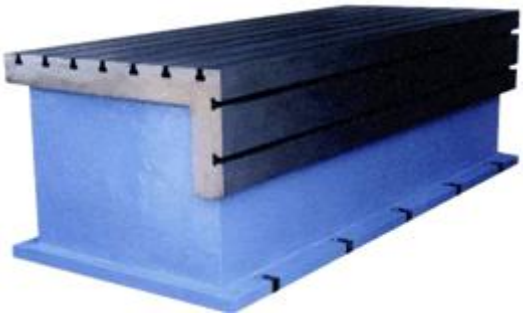
T-slot table with crossed T-slots 5/8" and drawers

5.2 MACHINE TABLES

Machine Tables

We manufacture machine tables on your special request. Either as clamping table just in front of your machine tool or as planparallel worked adapter table in order to enlarge your clamping possibilities on boring or milling machines. Size, accuracy, choice, and number of slots can be determined by you. Steps for rotary or elevator tables as well as guide bars are to integrate individually in the cast piece.

Machine table with enclosed clamping possibility,
2000 x 800 x 800 mm



Machine table with revolving clamping rim,
2500 x 1000 x 800 mm

6. BOX CUBES

6.1 BOX CUBES

Box Cube, Type KW

The box cube is made from cast iron with cast clamp slots on four sides for work piece support and positioning. The four work faces are machined to DIN 876 / III tolerances, with the end faces also being machined. The box cubes can also be used as parallels. Where several box cubes are required in the same size, a surcharge will be made.

No.	Approx. length mm	Approx. width mm	Approx. height mm	Approx. slot width mm	Approx. weight mm
1	250	150	100	18	10
2	300	200	150	18	20
3	400	250	200	20	50
4	500	300	250	22	85
5	600	350	250	22	120
6	800	500	400	24	400
7	1000	600	500	30	600

(Other sizes on request)

Box Cube, Type AW

Made from special cast iron these cubes have five clamping surfaces machined to DIN 876 / III flatness and DIN 875 / II angular accuracy. Cast clamp slots are provided on four faces and the top surface has four machined T slots to DIN 650. One side is open..

No.	Approx. length mm	Approx. width mm	Approx. height mm	Approx. slot width mm	Approx. cast slot width mm	Approx. weight mm
1	250	180	150	14	16	26
2	300	220	200	14	18	40
3	350	280	250	22	22	75
4	400	350	300	22	22	120
5	500	450	400	22	22	200

(Other sizes on request)

6.2 BOX TABLES

Box Table, Type BT

The special design and cast construction of this box table allows very high loading and is suitable for use on radial drills or similar machines. The two clamping surfaces are exactly machined to DIN 876/111 flatness accuracy.The base is machined parallel to the top surface. The top and side working surfaces have T-slots to DIN 650-22 H 12. The slots are spaced every 150 mm. Three clamping slots are provided in the bottom flanging for the purpose of clamping the table to the base plate.

without coolant through

witht coolant through

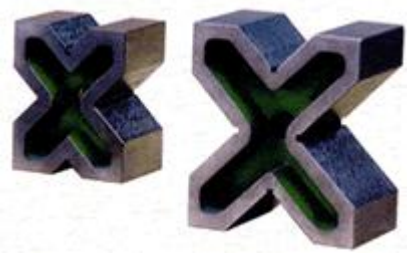
No.	Approx. table top size mm	Approx. side face size mm	Approx. height of table mm	No. of T-slots on table top	No. of T-slots side face	T-slots Din 650 mm	Approx. weight kg
1	500x600	500x600	500	3	3	22	300
2	600x750	500x750	500	4	3	22	380
3	750x1000	500x1000	500	5	3	22	620
4	1000x1000	500x1000	500	6	3	22	1000
5	1200x1000	500x1200	500	6	3	22	1250

Box table in special construction

7 PARALLEL VEES

Parallel Vees, Type PAS

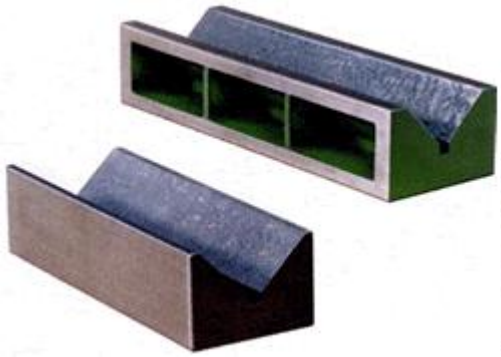
parallel vees are supplied with different sized vees in each of the four faces, allowing seating to accomodate different shaft sizes exactly.
The vees are made to specific sizes so that even heavier shafts can be accomodated without difficulty. These blocks are milled as matched pairs to DIN 876 / II.



No.	Approx. length mm	Approx. width mm	Approx. height mm	Approx. weight / pair kg
1	60	120	100	6
2	75	150	130	10
3	90	200	170	20

V-Blocks, Type PRI

Clamping features on base make vee-blocks ideal for supporting shafts during machine operations or for measuring round work pieces. Supplied with a single vee of 90 degrees machined parallel to the base, available as either normal or fine machined finish.



No.	Approx. length mm	Approx. width mm	Approx. height mm	For shaft-ø of approx. mm	Approx. weight / pair kg
1	100	40	30	7-35	0,6
2	150	50	40	8-45	1,4
3	200	70	50	10-70	2,7
3a	250	85	60	10-80	6,5
4	300	100	65	10-90	7,3

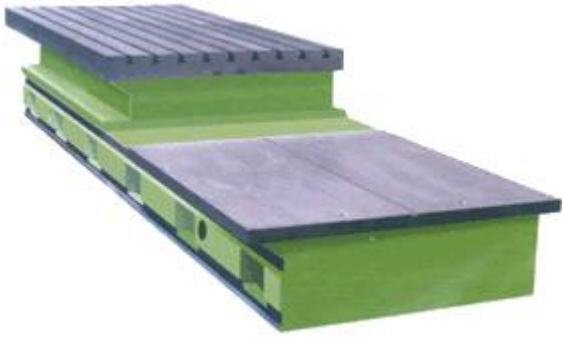
8. Custom Designs

Custom Designs

Heavy box cube, provided on two sides with T-slots, 2000 x 1500 x 1500 mm

Clamping table, three sides with T-slots, lateral side provided with pockets for clamping, 2400 x 1500 x 1200 mm

Box cube, on five sides provided with T-slots, suitable for heavy loads, 1800 x 1200 x 1200 mm



Machine bed for a milling machine with settled area of mounting surface for rotary table. 4300 x 1300 x 750/400 mm

Palette clamping table for a 4 x 90 degree exchangeable disk, 4 sides with T-slots,
height 2200 mm