FORMTIE FORMWORK SYSTEM

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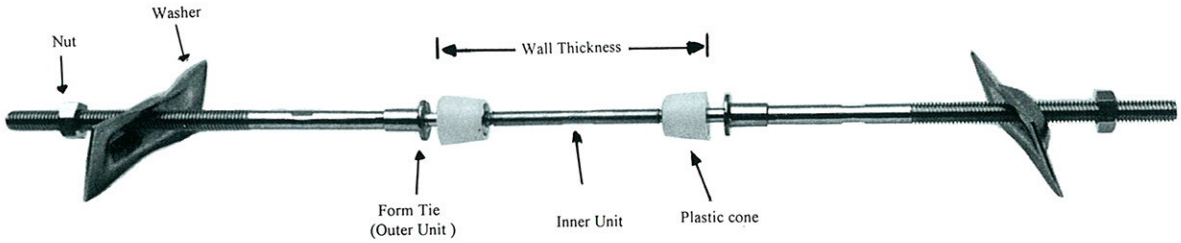
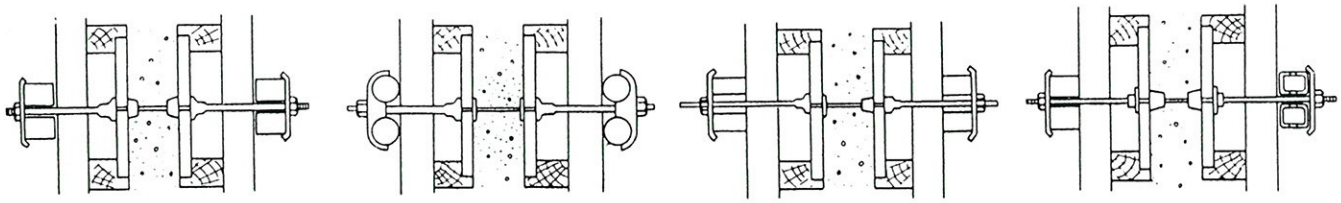
The Form Tie System prevents breakage in the formwork, thus keeping concrete structures in good shape without discolouration. Besides ease of assembly and removal, the system saves construction costs as all parts are reusable except for the separator which is casted into the wall.

FORM TIE SYSTEM





B TYPE C TYPE BC TYPE D TYPE

FORM TIE COMPLETE SET REQUIREMENTS :

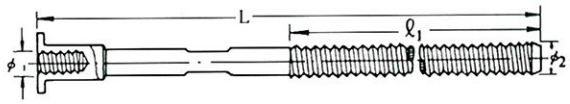
FORM TIE B TYPE Consists of : Form Tie C 2 pcs , Inner Unit B 1 pc, Cone B 2 pcs, Washer 2 pcs, Nut 2 pcs.

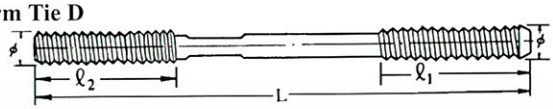
FORM TIE D TYPE Consists of : Form Tie D 2 pcs , Inner Unit D 1 pc, Cone D 2 pcs, Washer 2 pcs, Nut 2 pcs.

FORM TIE BC TYPE Consists of : Form Tie C 2 pcs , Inner Unit BC 1 pc, Cone B 1 pc, Washer 2 pcs, Nut 2 pcs.

FORM TIE C TYPE Consists of : Form Tie C 2 pcs , Inner Unit C 1 pc, Washer 2 pcs, Nut 2 pcs.

FORM TIE

Type	Lm/m	ℓ_1 m/m	Remarks
Form Tie C (Common to B , C and BC) 	310	145	$\varnothing_1$ = $W_{3/8}$ (9 mm) $\varnothing_2$ = $W_{1/2}$ (12 mm) with a nut
	250	145	
	210	120	
	180	95	
	150	95	

Type	*Lm/m*	*ℓ_1 m/m*	*ℓ_2 m/m*	Remarks
Form Tie D 	360	75	75	$\varnothing$ = $W_{1/2}$ (12 mm) with a nut
	300	75	75	
	250	75	75	

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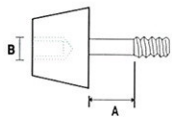
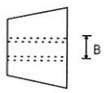
PLASTIC CONE

TYPE B

Panel	Diagrams		Remarks
	A (m/m)	B	
Metal Form	For Metal	W3/8 (9mm)	A - Panel thickness B- Inner unit diameter
Ply Wood Panel	12	W3/8 (9mm)	
	16	W3/8 (9mm)	
	24	W3/8 (9mm)	

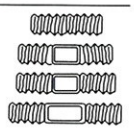


PLASTIC CONE FOR BEAM



Cone

Metal
12 m/m
16 m/m
24 m/m
(A m/m)

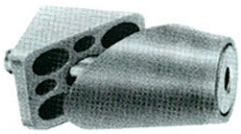


Axes

TYPE D

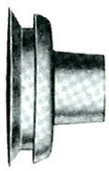
Inner Unit W1/2 (12mm) is only used.
Available in several lengths.

TAPERED P CONE



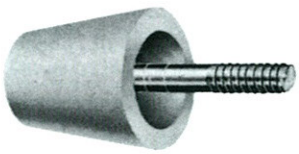
For the leaning panel construc-ture.

BEDDING PLUG



It is used to seal the hole which is made because the Cone is removed after the concrete has set.

L CONE



L 50 x 9 x 12 mm

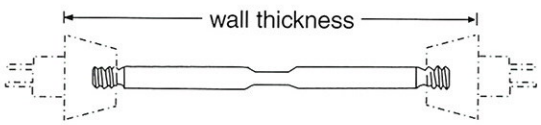
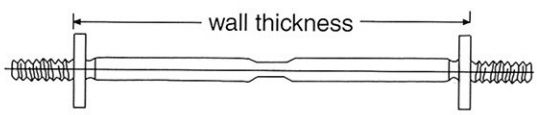
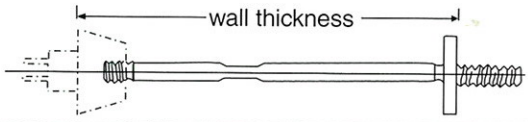
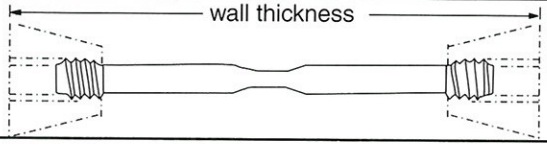
D CONE

D 12 x 40 mm

INNER UNIT

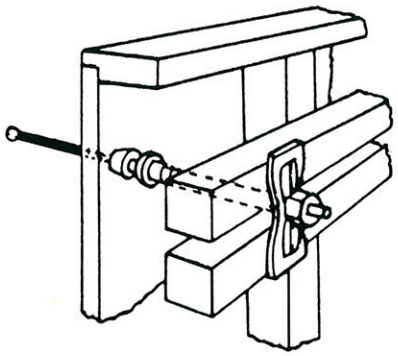
Inner units of all sizes can be made and supplied upon request depending on required wall thickness.

INNER UNIT SPECIFICATION

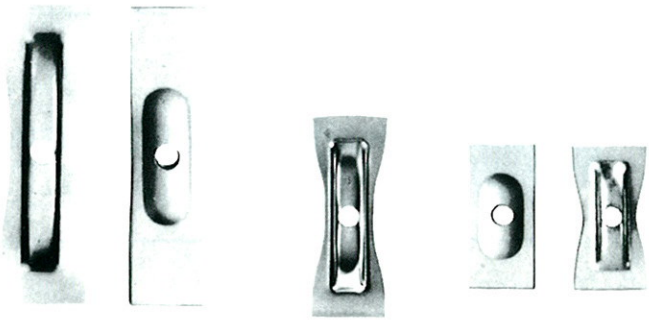
Type	Dimensional Diagrams	Use
Inner Unit B		Both sides exposed. W3/8 (9mm)
Inner Unit C		Both sides finished. W3/8 (9mm)
Inner Unit BC		One side finished and other side exposed. W3/8 (9mm)
Inner Unit D		Both sides exposed. W1/2 (12mm)

WASHER

Flat Rib Washers for wood batters

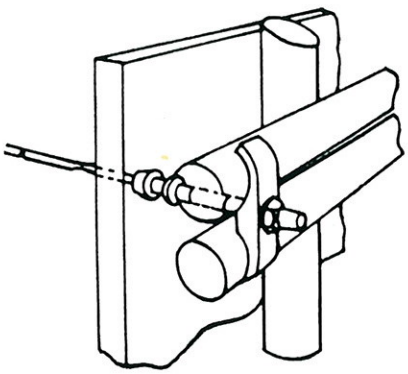


WOOD BATTERS
(WALES AND STUDS)

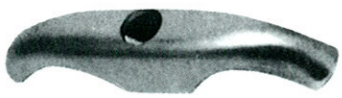


200 X 55 mm 150 X 50 mm 105 X 50 mm

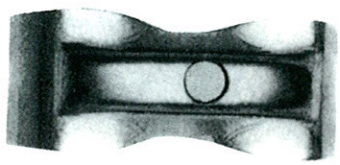
FOR ROUND PIPE BATTERS



ROUND PIPE BATTERS
(WALES AND STUDS)



3-shape Rib Washer

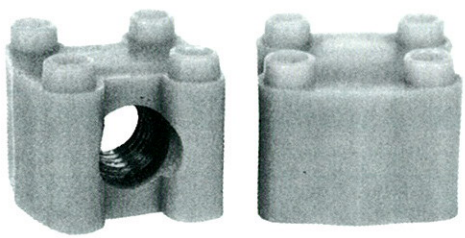


Square pipe Washer

ACCESSORIES

FORM TIE SPANNER

Used to fasten and remove Form Tie and Inner Unit.



SLAB JOINER

9mm

BOX SPANNER B AND D

Used to remove Cones.

RUBBER RING
(9mm, 12mm)

TECHNICAL DATA OF FORM TIE

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MECHANICAL CHARACTERISTIC OF FORM TIE

1. Mechanical Properties of All Types of Inner Units

Type	Dia	Cross Sectional Area mm^2	Rupture Strength kg/pce	Safe Working loads kg/pce	Breakage
B	W5/16	34.3	2000	1400	Threaded portion
C	W5/16	34.3	2000	1400	Threaded portion
BC	W5/16	34.3	2000	1400	Threaded portion
B	W3/8	50.4	3000	2100	▲
D	W1/2	89.6	4000	2800	▲

▲ means Form Tie Main Body, Head Part, Center-Rod, Threaded Part of Inner Unit, etc.

2. Allowable Strength of Inner Unit

When using steel as the material, the designing must be based on the strength within the yield point on the safe side. In general, the yield point of steel is considered to be within 70-80% of the repture strength, but in case of the Inner Unit, because it is workhardened, the rupture strength and the yield point are almost the same. Therefore, to be on the safe side, 70% is the percentage to be considered.

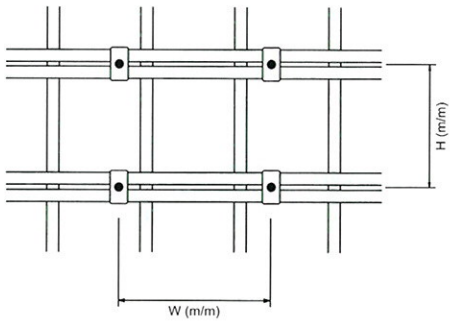
QUANTITY OF FORM TIE USED

To decide how many Form Ties should be used, calculation has been made based on side pressure 2 t/m^2 (2 Form Ties per 1 m^2 of vertical form) in accordance with Jass 5. Today, side pressure 6 t/m^2 is used, largely due to mass production of plywood panels, concrete pomps and concrete.
The pressure of concrete on the form varies in accordance with concreting speed, slump, setting speed of concrete, tamping way of concrete and atmospheric temperature.
Therefore, the best way to estimate the side pressure is by taking into consideration all the conditions at the working site and decide the quantity of Form Tie.

Quantity of Form Tie / per m^2

Type \ Side Pressure t/m^2	2 t/m^2	3 t/m^2	4 t/m^2	5 t/m^2	6 t/m^2	7 t/m^2
Inner Unit W 5/16	1.42	2.14	2.85	3.57	4.28	5.00
W 3/8	0.95	1.42	1.90	2.38	2.85	3.33
W 1/2	0.71	1.07	1.42	1.78	2.14	2.50

Form Tie Pitch



TENSILE STRENGTH OF INNER UNIT

4 t/m^2

H m/m \ W m/m	500	550	600	650	700	750	800	850	900
500	1000	1100	1200	1300	1400	1500	1600	1700	1800
550	1100	1210	1320	1430	1540	1650	1760	1870	1980
600	1200	1320	1440	1560	1680	1800	1920	2040	2160
650	1300	1430	1560	1690	1820	1950	2080	2210	2340
700	1400	1540	1680	1820	1960	2100	2240	2350	2520
750	1500	1650	1800	1950	2100	2250	2400	2550	2700
800	1600	1760	1920	2080	2240	2400	2560	2720	2880
850	1700	1870	2040	2210	2380	2550	2720	2890	3060
900	1800	1980	2160	2340	2520	2700	2880	3060	3240

5 t/m^2

H m/m \ W m/m	500	550	600	650	700	750	800	850	900
500	1250	1375	1500	1625	1750	1875	2000	2125	2250
550	1375	1513	1650	1788	1925	2063	2200	2338	2475
600	1500	1650	1800	1950	2100	2250	2400	2550	2700
650	1625	1788	1950	2113	2275	2438	2600	2763	2925
700	1750	1925	2100	2275	2450	2625	2800	2975	3150
750	1875	2063	2250	2438	2625	2813	3000	3188	3375
800	2000	2200	2400	2600	2800	3000	3200	3400	3600
850	2125	2338	2550	2763	2975	3188	3400	3613	3825
900	2250	2475	2700	2925	3150	3375	3600	3825	4050

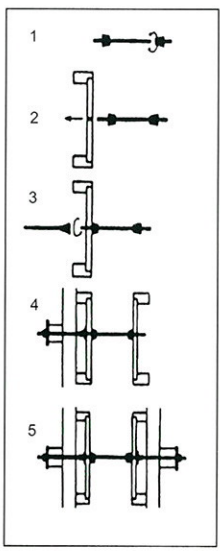
6 t/m

H m/m \ W m/m	500	550	600	650	700	750	800	850	900
500	1500	1650	1800	1950	2100	2250	2400	2550	2700
550	1650	1815	1980	2145	2310	2475	2640	2805	2970
600	1800	1980	2160	2340	2520	2700	2880	3060	3240
650	1950	2145	2340	2535	2730	2925	3120	3315	3510
700	2100	2310	2520	2730	2940	3150	3360	3570	3780
750	2250	2475	2700	2925	3150	3375	3600	3825	4050
800	2400	2640	2880	3120	3360	3600	3840	4080	4320
850	2550	2805	3060	3315	3700	3825	4080	4335	4590
900	2700	2970	3240	3510	3780	4050	4320	4590	4860

7 t/m^2

H m/m \ W m/m	500	550	600	650	700	750	800	850	900
500	1750	1925	2100	2275	2450	2625	2800	2975	3150
550	1925	2118	2310	25.3	2695	2888	3080	3273	3465
600	2100	2310	2520	2730	2940	3150	3360	3570	3780
650	2275	2503	2730	2958	3185	3413	3640	3868	4095
700	2450	2695	2940	3185	3430	3675	3920	4165	4410
750	2625	2888	3150	3413	3675	3938	4200	4463	4725
800	2800	3080	3360	3640	3920	4200	4480	4760	5040
850	2975	3255	3570	3868	4165	4463	4760	5078	5355
900	3150	3465	3780	4095	4410	4725	5040	5355	5670

☐ W 5/16 ☐ W 3/8(9 mm) ☐ W 1/2(12 mm) ☐ High tensile W 3/8



ASSEMBLY

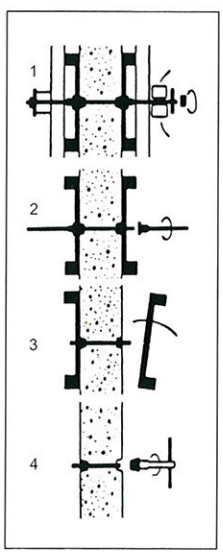
1 Plastic cone to be attached to both ends of Inner Unit.

2 Drill a 12 m/m hole for the passage of a plastic cone axis at a prescribed location in the panel before hand.

3 Insert the Inner Unit from the inner panel and screw on the Form Tie.

4 Erect the studs successively.
Apply the Flat Rib Washer to the wales and tighten with nuts.

5 Repeat the same procedure for the outer panel.



DISASSEMBLY

1 Loosen nuts and remove the wales.

2 Remove Form Tie.

3 Take off panel.

4 Remove plastic cone from concrete surface.
Plastic cone hole is filled up by cement mortar.