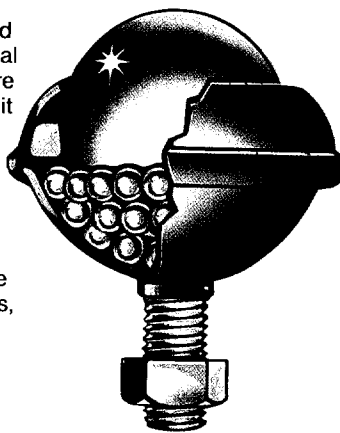


The following applies to all Ball Units unless mentioned in the appropriate section.

**ALWAYS** Ball Units consist of a large ball seated on a quantity of small bearings in a hemispherical cup. NOT JUST A SINGLE RING OF BALLS. There are from 80 to 150 bearings according to ball unit size. This design enables the large ball to rotate freely and instantaneously in ANY direction. Extremely heavy loads can be moved with the minimum of effort.

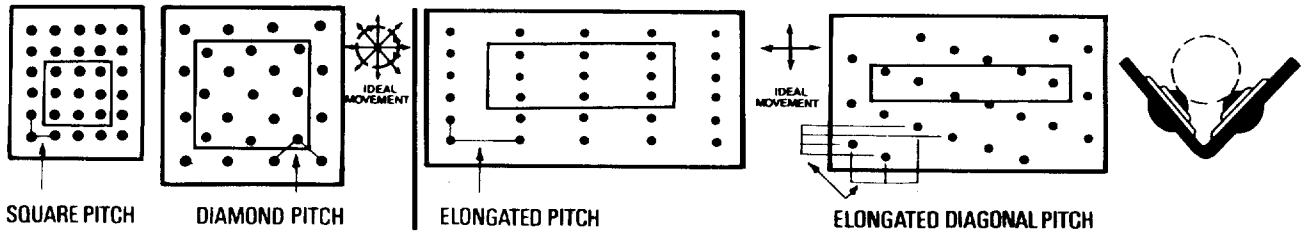


**TO DETERMINE BALL UNITS CAPACITY** the weight of the article to be conveyed should be divided by 3. The result gives the maximum load which any single ball unit may have to bear. If the Ball Units are levelled accurately, then a larger number than 3 may be applied. The surface hardness and condition of the article to be conveyed should be taken into consideration to avoid undue ball penetration.

It should be noted that the load is supported through the centre line of the unit. It may also be applied offset, upwards, downwards or sideways, although this may affect stated loading (see appropriate table). Tubes and bars of varying diameters can also be conveyed.

**SPACING OF BALL UNITS.** The pitch is obtained by dividing the narrowest dimension by 3.5 i.e. narrowest dimension 14" divided by 3.5 = pitch of 4" between ball centres, this ensures 3 units are beneath the narrowest dimension at any one time.

### SOME BALL UNIT ARRANGEMENTS



TYPE	MATERIALS	TYPE	MATERIALS
13	Carbon steel bearings. 60-66 Hrc Ferrous steel zinc plated bearing shell	15	Stainless bearings. AISI 420. 55-58 Hrc Stainless pressing. AISI 304 (EN58E).
14	Nylon large ball, ferrous bearings and shell.	16	Stainless bearings. 55-58 Hrc Ferrous steel pressings.

**LUBRICATION.** Each Ball Unit is PRE-LUBRICATED during manufacture and normally does not require further attention. In certain applications we will advise on lubrication. Greasing or oiling points can be incorporated in some units.

**CLEANING.** A suitable cleaning or release fluid should be used if dirty conditions prevail. Paraffin or suitable detergent for washing through and WD40 for freeing. Also see 1500, HI-TECH 6025 range and Extra Tuf with improved seals.

**SHOCK LOADS.** When calculating loads bear in mind the possibility of impact from dropping, incorrect levels etc. Spring loading will considerably reduce wear and tear to the Ball Units where they are subject to continuous harsh shock treatment. The shock will be absorbed by the springs but the article will move easily on the spring supported units. Shock loading can be reduced by fitting pads under each unit.

**RETRACTABLE BALL UNITS.** Ball Units can be made retractable by means other than spring loading. Pneumatic or hydraulic cylinders and cams or levers can be fitted below units to enable them to be lifted. They can be programmed to operate in sequence with the movement of a machine.

**SELF LEVELLING** can be effected by fitting rubber pads under each unit. This allows any unit standing proud to be compressed to the mean level eliminating the possibility of excessive loading on a few units. Details on request.

**SELF LOCKING.** Spring loaded Ball Units permit an empty container to move freely into position, then stand firmly when additional load is applied (with Ball Units retracted).

**SELF CLEANING.** Most designs of ALWAYSSE Ball Units have holes in the base of the bearing cup.

**SEAL.** A seal is incorporated to help resist ingress of dirt and swarf etc. Either Polyurethane foam or felt. Although it can be left out by request.

**TEMPERATURE.** (Minimum - 30°C to maximum 70°C continuous or 100°C intermittent), do not affect the running qualities but special seals may have to be fitted to suit prevailing conditions. In clean conditions without seal 150°C-200°C is possible.

**FINISHES.** Standard Bright Zinc, Heviload Black, other finishes available.

**LARGE BEARINGS** of Nylon, Phenolic, Bronze, Polypropylene, Hollow Steel etc. can be supplied.

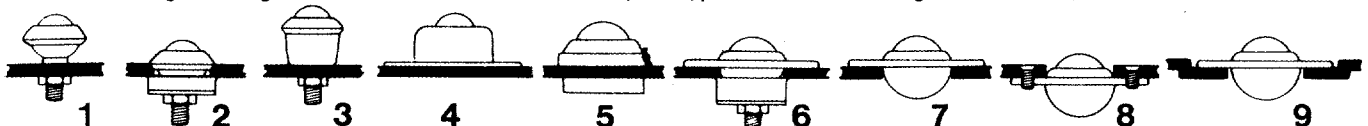
**FIXING.** Refer to specific unit for method. Overtightening may cause damage.

**BALL CASTORS.** Many Castor applications can be solved with Ball Transfers.

15 Nm  
MAX TORQUE  
ALL NUTS

*Illustrated below are various methods of fixing the standard range of 'Alwaysse' Ball Units.*

*A wide range of fittings enable them to be used with metals, wood, plastics and slotted angle, etc.*



Consult our Technical Department for further details

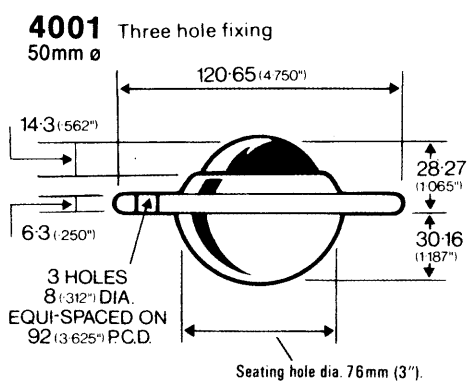
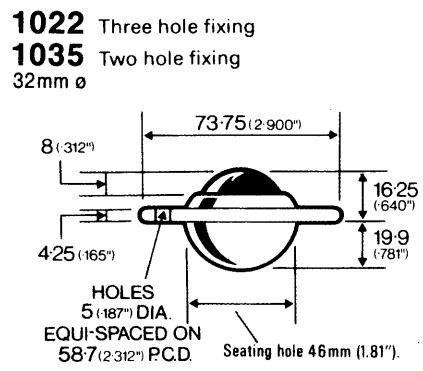
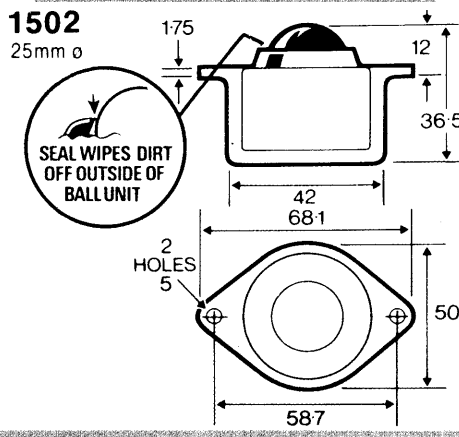
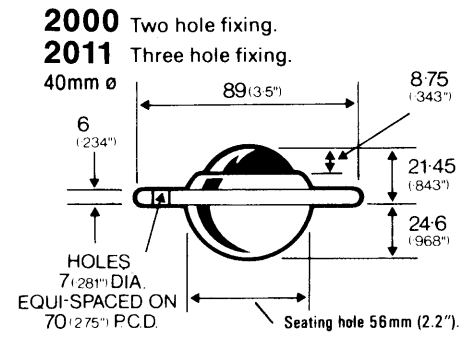
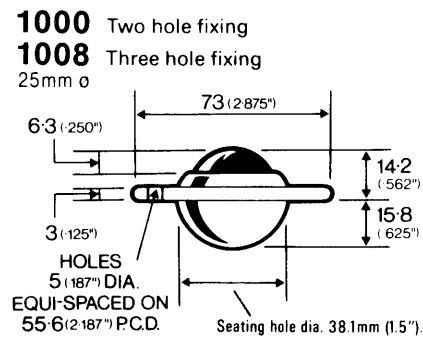
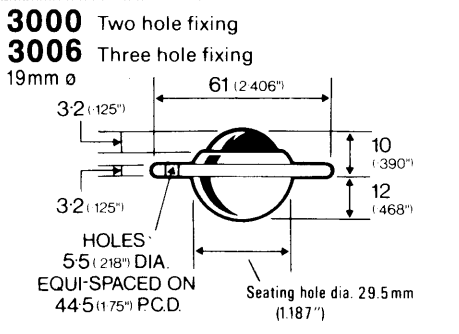
All specifications subject to change without prior notice providing the product capabilities are not reduced.

We cannot accept liability for any verbal recommendations

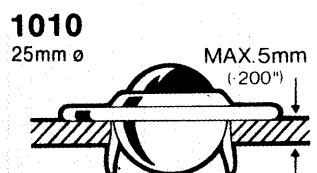
# FLANGE FITTINGS - STANDARD RANGE



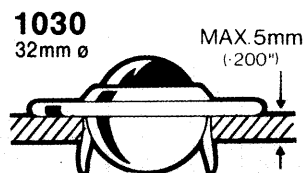
REF.	BALL SIZE	WEIGHT	TYPE 13 STEEL BEARINGS ZINC PLATED PRESSINGS		TYPE 14 NYLON MAIN BEARING ZINC PLATED PRESSINGS		TYPE 15 STAINLESS BEARINGS AND PRESSINGS		TYPE 16 STAINLESS BEARINGS ZINC PLATED PRESSINGS		SPECIAL FEATURES
			LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	
3000 3006	19mm (3/4")	80g 80g	25kg 25kg	10kg 10kg	20kg 20kg	N/A N/A	25kg 25kg	10kg 10kg	25kg 25kg	10kg 10kg	Self Cleaning Hole Felt/Foam Seal
1000 1008 1010	25mm (1")	175g 175g 180g	55kg 55kg 55kg	25kg 25kg 25kg	25kg 25kg 25kg	N/A N/A N/A	55kg 55kg 55kg	25kg 25kg 25kg	55kg 55kg 55kg	25kg 25kg 25kg	Self Cleaning Hole Felt/Foam Seal
1502	25mm (1")	200g	100kg	50kg	25kg	N/A	100kg	50kg	100kg	50kg	Self Cleaning Hole Moulded Plastic Seal
1022 1030 1035	32mm (1 1/4")	260g 260g 260g	125kg 125kg 125kg	55kg 55kg 55kg	25kg 25kg 25kg	N/A N/A N/A	125kg 125kg 125kg	55kg 55kg 55kg	125kg 125kg 125kg	55kg 55kg 55kg	Self Cleaning Hole Felt/Foam Seal Felt/Foam Seal Felt/Foam Seal
2000 2002 2011	40mm (1 9/16")	480g 640g 480g	140kg 225kg 140kg	60kg 60kg 60kg	N/A N/A N/A	N/A N/A N/A	140kg 225kg 140kg	60kg 100kg 60kg	140kg 225kg 140kg	60kg 100kg 60kg	Self Cleaning Hole Felt/Foam Seal
4001	50mm (2")	1kg	340kg	100kg	N/A	N/A	250kg	100kg	340kg	100kg	Felt/Foam Seal Self Cleaning Hole



## SPRING CLIP FITTING



Dimensions as Ball Unit 1008 above. A hole 50mm (1.96") ± 0.2mm (.008") dia. is required for unit to clip in.



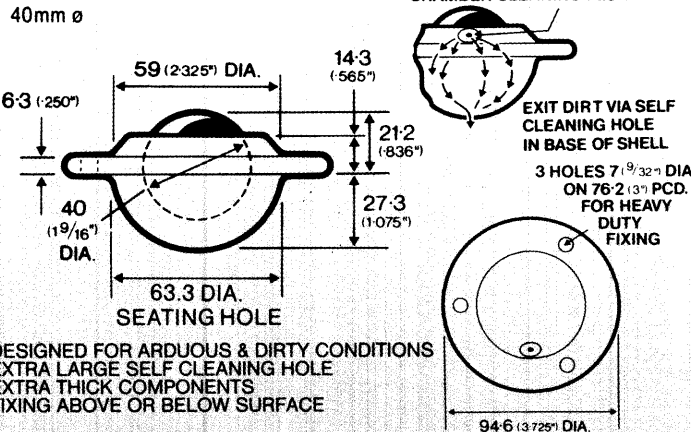
Dimensions as Ball Unit 1022 above. A hole 50mm (1.96") ± 0.2mm (.008") dia. is required for unit to clip in.

JUST PUSH UNIT INTO HOLE FROM ABOVE  
—PRISE OUT TO REPLACE.

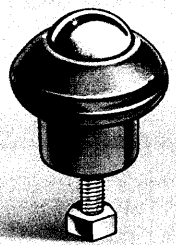
### ADVANTAGES

1. Easy assembly.
2. Replacements or exchanges made in seconds.
3. At floor level platforms do not have to be lifted to change units. Self cleaning hole standard.

## 2002 XTRA TUF



# BOLT FIXING - STANDARD RANGE



REF.	BALL SIZE	WEIGHT	TYPE 13 STEEL BEARINGS ZINC PLATED PRESSINGS		TYPE 14 NYLON MAIN BEARING ZINC PLATED PRESSINGS		TYPE 15 STAINLESS BEARINGS AND PRESSINGS		TYPE 16 STAINLESS BEARINGS ZINC PLATED PRESSINGS		SPECIAL FEATURES
			LOAD UP	LOAD DOWN	LOAD UP	LOAD DOWN	LOAD UP	LOAD DOWN	LOAD UP	LOAD DOWN	
3001 3002	19mm (3/4")	60g 80g	25kg 25kg	10kg 10kg	20kg 20kg	N/A N/A	25kg 25kg	10kg 10kg	25kg 25kg	10kg 10kg	Plastic Foam Seal Plastic Foam Seal
1003 1009	25mm (1")	160g 140g	55kg 55kg	25kg 25kg	25kg 25kg	N/A N/A	55kg 55kg	25kg 25kg	55kg 55kg	25kg 25kg	Plastic Foam Seal Plastic Foam Seal
1501	25mm (1")	180g	100kg	50kg	25kg	N/A	100kg	50kg	100kg	50kg	Moulded Scraper Seal
2001 2005	40mm (1 9/16")	400g 460g	140kg 140kg	60kg 60kg	N/A N/A	N/A N/A	140kg 140kg	60kg 60kg	140kg 140kg	60kg 60kg	Plastic Foam Seal Plastic Foam Seal
4004	50mm (2")	1.72kg	340kg	100kg	N/A	N/A	340kg	100kg	340kg	100kg	Plastic Foam Seal

SPECIAL FEATURES

Plastic Foam Seal  
Plastic Foam Seal

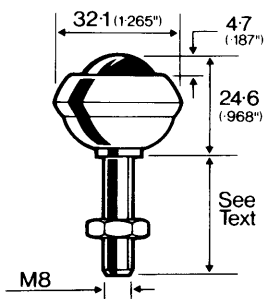
Plastic Foam Seal  
Plastic Foam Seal

Moulded Scraper Seal

Plastic Foam Seal  
Plastic Foam Seal

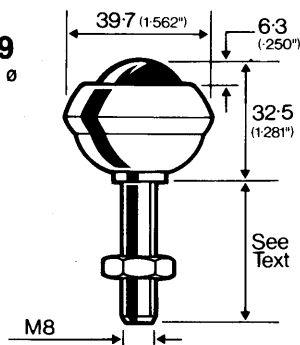
Plastic Foam Seal

**3001**  
19mm ø



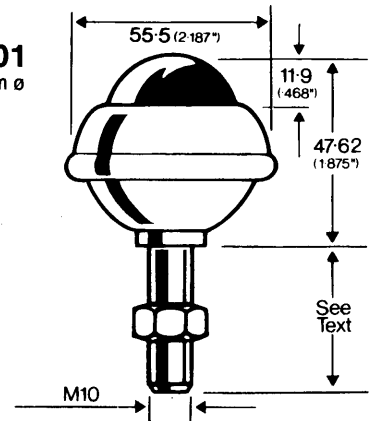
Extra nuts can be supplied.  
Maximum tightening torque 15Nm. M8 screw.  
Stock lengths 25, 30, 35, 40, 50mm (other fixings on request). Self cleaning hole extra.

**1009**  
25mm ø



Extra nuts can be supplied.  
Maximum tightening torque 15Nm.  
M8 screw. Stock lengths 25, 30, 35, 40, 50mm (other fixings on request). Self cleaning hole extra.

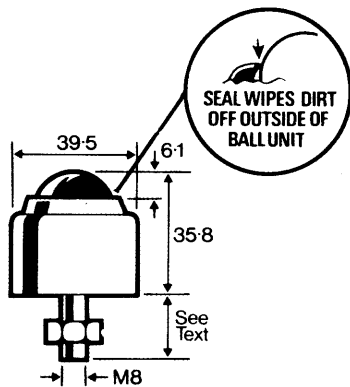
**2001**  
40mm ø



Extra nuts can be supplied.  
Maximum tightening torque 20Nm. M10 screw.  
Standard lengths 25, 30, 40, 50mm (other fixings on request). Self cleaning hole extra.

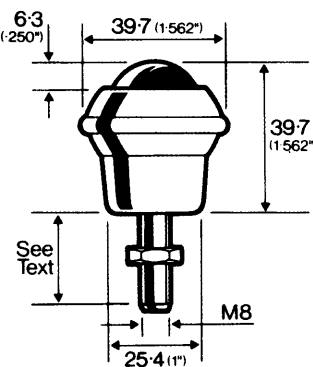
**THESE UNITS CAN BE USED FOR HEIGHT ADJUSTMENT – ASK OUR ADVICE.**

**1501**  
25mm ø



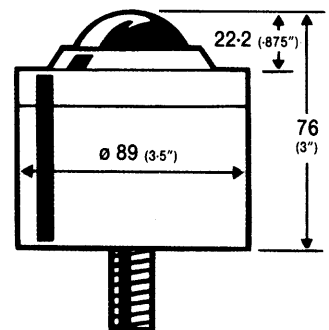
Maximum tightening torque 15Nm. For bolting to flat surfaces. M8 screw. Standard lengths 18, 23, 28mm.

**1003**  
25mm ø



Maximum tightening torque 15Nm. M8 screw lengths 18, 23, 28, 33, 43mm. Self cleaning hole extra.

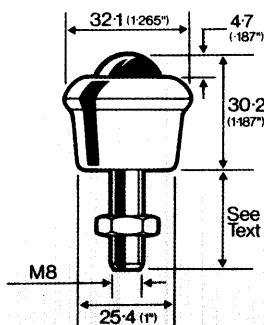
**4004**  
50mm ø



Maximum tightening torque 25Nm. Self cleaning hole standard. Grease points can be fitted. 5/8" whit or M16 thread available up to 75mm long.

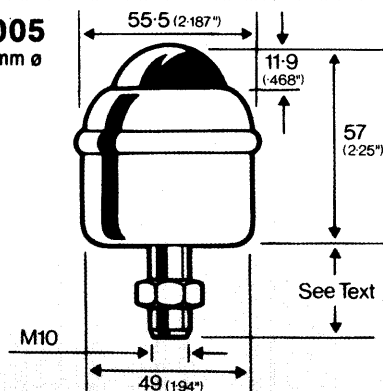
NOTE: Other screw sizes or plain shanks can be supplied on request.  
Can be dismantled for cleaning.

**3002**  
19mm ø



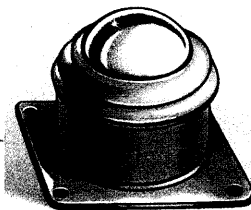
Maximum tightening torque 15Nm. M8 thread lengths 20, 25, 30, 35, 45mm (other fixings on request). Self cleaning hole extra.

**2005**  
40mm ø



Maximum tightening torque 20Nm. For bolting to flat plate, angle iron or slotted angle etc. M10 screw. Standard lengths 22, 32, 42mm.

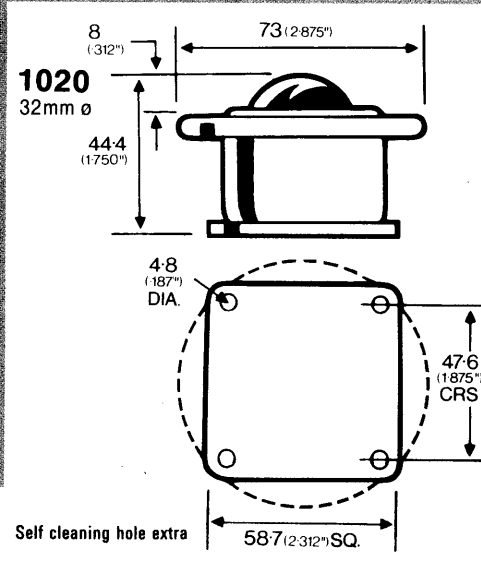
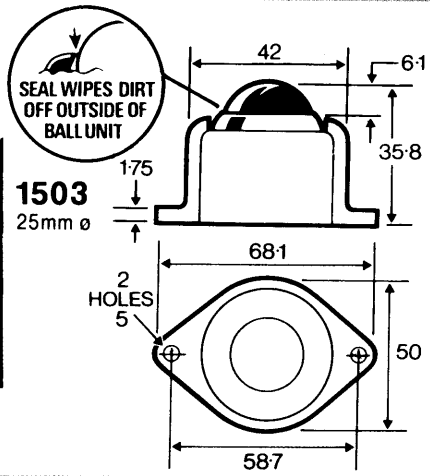
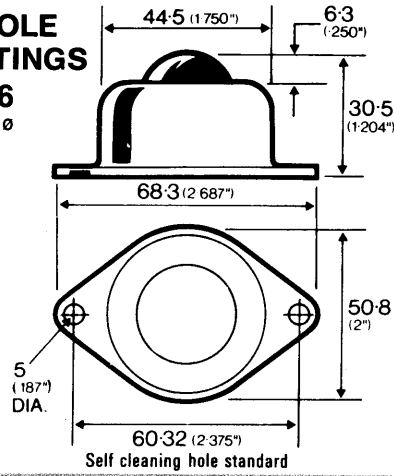
# BASE FIXINGS - STANDARD RANGE



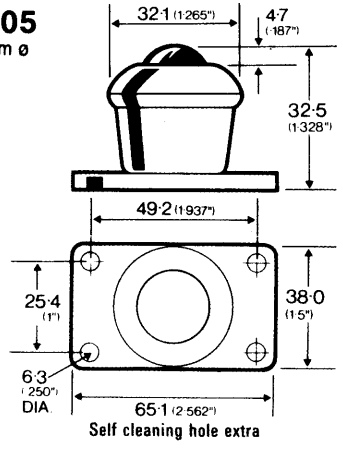
REF.	BALL SIZE	WEIGHT	TYPE 13 STEEL BEARINGS ZINC PLATED PRESSINGS		TYPE 14 NYLON MAIN BEARING ZINC PLATED PRESSINGS		TYPE 15 STAINLESS BEARINGS AND PRESSINGS		TYPE 16 STAINLESS BEARINGS ZINC PLATED PRESSINGS		SPECIAL FEATURES
			LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	LOAD UP	LOADDOWN	
3005	19mm (3/4")	100g	25kg	10kg	20kg	N/A	25kg	10kg	25kg	10kg	Foam Seal
1005	25mm (1")	160g	55kg	25kg	25kg	N/A	55kg	25kg	55kg	25kg	Foam Seal
1020	32mm (1 1/4")	380g	125kg	55kg	25kg	N/A	125kg	55kg	125kg	55kg	Felt/Foam Seal
2003	40mm (1 5/8")	480g	140kg	60kg	N/A	N/A	140kg	60kg	140kg	60kg	Foam Seal
4002	50mm (2")	2.10kg	340kg	100kg	N/A	N/A	340kg	100kg	340kg	100kg	Foam Seal
1006	25mm (1")	160g	55kg	25kg	25kg	N/A	55kg	25kg	55kg	25kg	Foam Seal
1503	25mm (1")	200g	100kg	50kg	25kg	N/A	100kg	50kg	100kg	50kg	Plastic Moulded Seal

## 2 HOLE FITTINGS

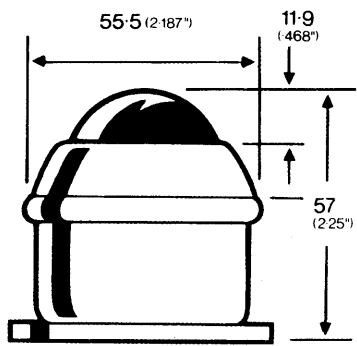
### 1006 25mm ø



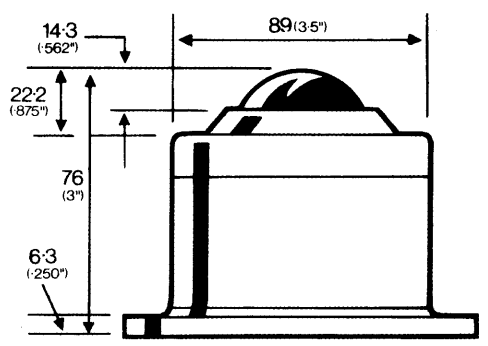
### 3005 19mm ø



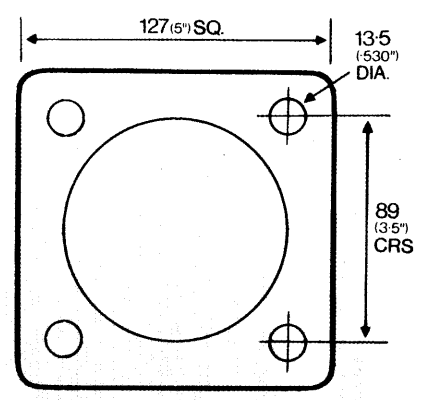
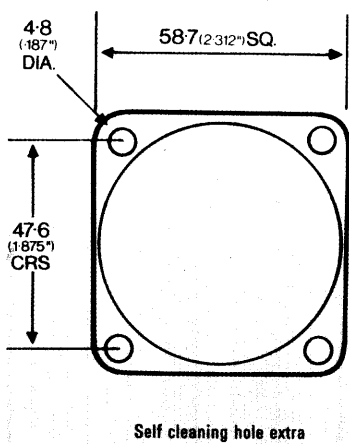
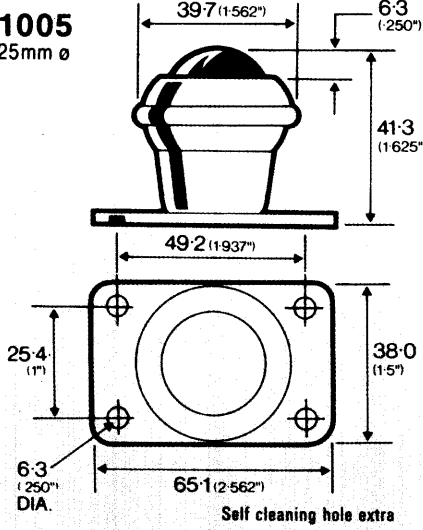
### 2003 40mm ø



### 4002 50mm ø

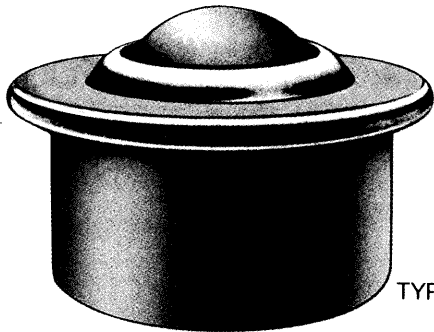


### 1005 25mm ø

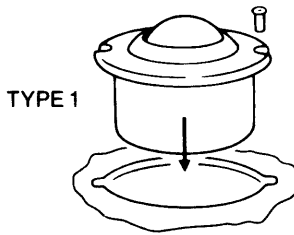


The overall height of this unit can be varied. Grease points can be fitted. Can be dismantled for cleaning.

# EURO ALWAYSSE UNITS

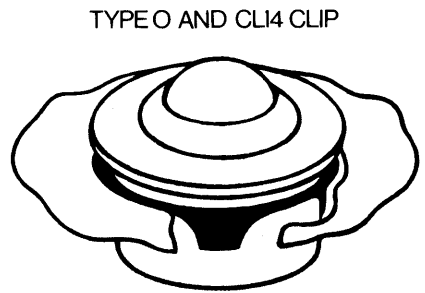


TYPE 0

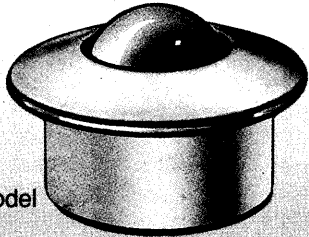


TYPE 1

FIRMLY SECURED  
WITH POP  
RIVETS OR SCREWS.



TYPE 0 AND CL14 CLIP



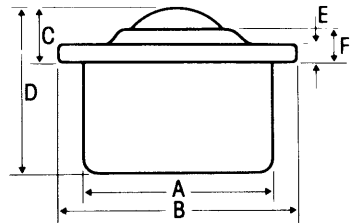
TYPE 4  
Excluding Model  
545

HOLE SIZES FOR UNITS			
15mm	22mm	30mm	45mm
24 <sup>+1.0</sup> <sub>+1.5</sub>	36 <sup>+1.0</sup> <sub>+1.5</sub>	45 <sup>+1.0</sup> <sub>+1.5</sub>	62 <sup>+1.0</sup> <sub>+1.5</sub>

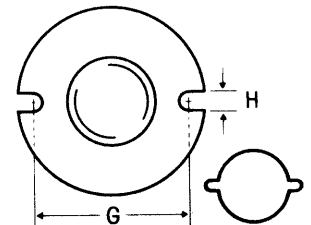
- INSERT CLIP
  - INSERTION LOCKS UNIT
  - PUSH IN - PRISE OUT
- CLIP REF. CL14

Ball Size	Type	Specification	Ref. No.	Capacity		Kg Approx Weight	DIMENSIONS M/M										
				N	Kg		A	B	C	D	E	F	G	H			
15mm	0	Steel	515-0-13	500	45	.038											
	0	Nylon ball	515-0-14	70	10	.024											
	0	Completely S/st.	515-0-15	370	35	.038	24	31	9.5	21	2.8	6.3	29	3.5			
	0	S/st brgs steel body	515-0-16	370	35	.038											
TO ORDER TYPE 1 USE REF. 515-1																	
22mm	0	Steel	522-0-13	1300	120	.132											
	0	Nylon ball	522-0-14	100	20	.093											
	0	Completely S/st.	522-0-15	970	90	.132	36	45	9.8	30	2.8	5.5	42	3.5			
	0	S/st brgs steel body	522-0-16	970	90	.132											
TO ORDER TYPE 1 USE REF. 522-1																	
30mm	0	Steel	530-0-13	2500	230	.265											
	0	Nylon ball	530-0-14	150	25	.168											
	0	Completely S/st.	530-0-15	1900	175	.265	45	55	13.8	37	4	8.3	51	3.5			
	0	S/st brgs steel body	530-0-16	1900	175	.265											
TO ORDER TYPE 1 USE REF. 530-1																	
45mm	0	Steel	545-0-13	6000	550	.720											
	0	Nylon ball	545-0-14	—	—	—											
	0	Completely S/st.	545-0-15	—	250	.720	62	75	19	53.5	4	10	69	4.3			
	0	S/st brgs steel body	545-0-16	4500	410	.720											
TO ORDER TYPE 1 USE REF. 545-1																	

TYPE 0 · 15,22,30,45 UNITS



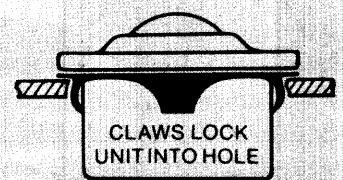
TYPE 1 · 15,22,30,45 UNITS



SLOTTED HOLE REQUIRED.

BALL UNIT	15	22	30	45
RIVET DIA.	32	4		

TYPE 0 WITH CL14 CLIP



CLIP CL 14  
522 & 530 UNITS

The main bearing cup is of special toughened steel with a self cleaning hole and a felt or plastic seal is incorporated in all EURO units except 15mm.  
Felt seal standard. Maximum temp +100°C -70°C. Polyurethane foam on request. Maximum temp. +70°C, minimum temp. not available.  
Maximum temperature: Steel and Stainless. No Seal. +100°C to +150°C intermittent.

MATERIAL SPECIFICATION: STAINLESS STEEL: TYPE AISI 304  
STAINLESS STEEL BEARINGS: TYPE AIS1420  
NYLON BALLS: NYLON 66



# DIE LIFTERS

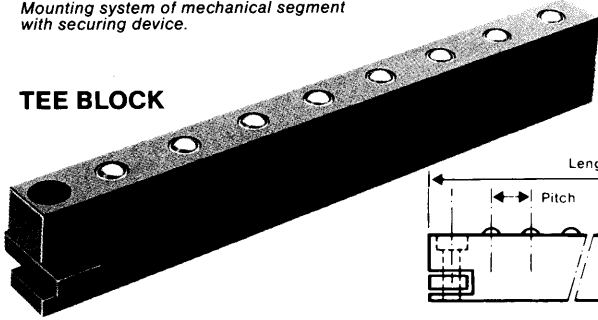


Mounting system of mechanical segment with securing device.

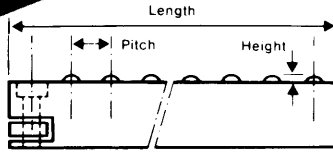
## SINGLE MINUTE TOOL & DIE CHANGING (S.M.E.D.)

Our comprehensive range of tee blocks and spring loaded ball transfer units when set into the bed of your power press or machine tool will allow effortless positioning of tooling but still allow rigid clamping. We can supply tee-blocks for standard and non standard tee slots, the length, pitch, ball height etc., being dependent on tool weight and profile.

## TEE BLOCK

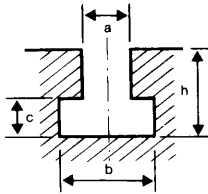


See also Spring Loaded Ball Units on page 15.

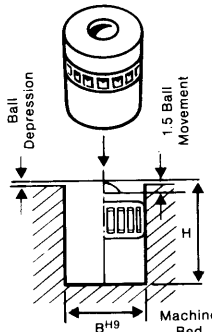
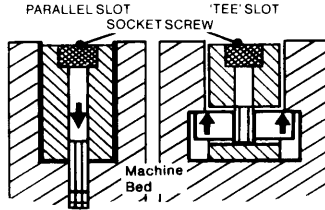


## TEE SLOT PROPORTION

DIN 650			
a	b	c	h
22	37	16	38
28	46	20	48
36	56	25	61
24	42	18	42



## SECURING TEE BLOCKS

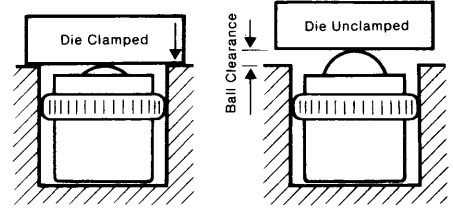


## SPRING-LOADED DIE LIFTERS

Reference Number	Standard Range		
	Body øB	Height H	Support Load Kg
DL-24-13	24	30	40
DL-30-13	30	36	60
DL-40-13	40	48	100

Supported Loads up to 500 Kg each. Available on request.

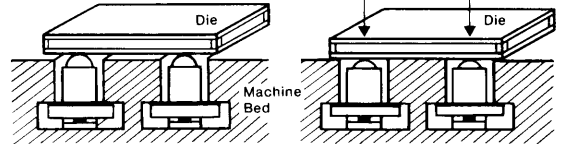
## TYPICAL APPLICATION FOR DIE LIFTERS



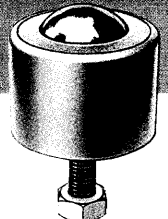
## APPLICATION OF TEE BLOCK

Quick and easy tool positioning.

Retracting Balls for Positive Tool Clamping



# HEAVY DUTY UNITS 12mm-90mm DIA.



- LONGER LIFE
- BUILT TO WITHSTAND ROUGH USE
- CHROME STEEL BEARINGS
- SOLID MACHINED BODY
- DUST SEAL & SELF CLEANING HOLE
- HIGHER LOAD CAPACITY

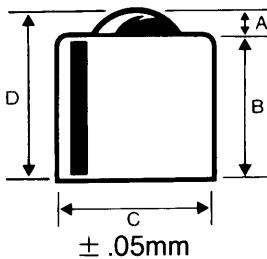
BALL DIA. (APPROX) M.M.	REF. No.	LOAD BALL UP	TYPE 21			TYPE 22			TYPE 23			TYPE 24			OVERALL HEIGHT N				
			BALL HEIGHT A	BODY HEIGHT B	BODY DIA. C	OVERALL HEIGHT (EXCEPT TYPE 24) D	FLANGE THICKNESS F	FLANGE DIA. L	FIXING HOLES SIZE	No.	P.C. DIA.	HEIGHT UNDER FLANGE J	SCREW DIA.	LENGTH		SQR. PLATE	PLATE THICKNESS M	FIXING HOLES SIZE	CENTRES
12.5 (1/2")	0519	25kg	2	18	20	20	4	32	3	2	26	8	M6	28	36	5	6	24	25
19 (3/4")	3019	50kg	4	26	30	30	5	50	5	2	40	16	M8	25	46	5	6.5	31	35
25 (1")	1019	125kg	7	28	35	35	5	60	5	2	49	15	M8	40	50	5	6.5	35	40
32 (1 1/4")	1029	250kg	8	37	50	45	5	75	5	2	62.5	21	M10	40	64	5	7	49	50
40 (1 5/8")	2019	500kg	9	46	60	55	5	84	6	2	72	28	M12	50	80	5	7	60	60

ALL DIMENSIONS IN MILLIMETRES

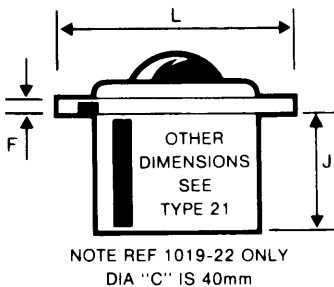
TO ORDER STATE REF. NO AND TYPE

\* NOTE:- 0519 ONLY - NO SEAL & NO SELF CLEAN HOLE

### TYPE 21

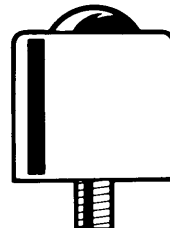


### TYPE 22

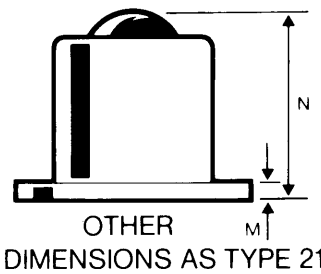


### TYPE 23

OTHER DIMENSIONS AS TYPE 21



### TYPE 24



BE SURE SPECIFY ALWAYS