

ARVIS

Designers & Manufactures of Bearing Housings

The background of the lower half of the page is a dark green field filled with a complex, light green technical drawing. The drawing consists of various geometric shapes, lines, and dimension lines, representing mechanical parts and their specifications. Some visible dimension values include 35, 79, 091, 22.5, 55, 72, and R4. The drawing is oriented diagonally across the page.

ARVIS® PLAIN BEARINGS

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INTRODUCTION

Plain bearings, also referred to as bushings, sleeve bearings, solid bearings, shaft bearings, or journal bearings, are differentiated from roller bearings by the fact that plain bearings have no rolling elements.

Plain bearings reduce friction by using highly specialised bearing materials, such as PTFE or graphite, to facilitate movement between two surfaces. Plain bearings can be either self-lubricating or externally lubricated.

High quality plain bearings are defined by the bearing material used, which includes metal-polymer, fiber reinforced composite, metal or bi-metal and engineered plastic. Plain bearings are commonly used in static oscillatory applications such as hinges, pivots and linkages. One special subtype of plain bearing is a spherical plain bearing, which can accommodate moderate misalignment.

Arvis® offers a variety of plain bearings that can replace roller bearings.

Plain bearings offer many advantages:

- » Higher load capacity, especially for shock load resistance and a greater contact zone
- » Compensation for misalignment and vibration damping with a conformal liner
- » Reduced noise due to the absence of moving parts
- » Space and weight savings
- » Straightforward and simple maintenance and installation
- » Low initial and overall cost
- » High Temperature

Arvis® Bearings are being used extensively throughout the world for the past 40 years in the following industries:

- » Steel works
- » Quarry plant
- » Agricultural plant
- » Conveyors
- » Materials and handling
- » Food machinery
- » Printing machinery
- » Heating and ventilation
- » Lifts and cranes
- » Machine tools
- » Furnaces
- » Foundry plant
- » Hosiery Machines
- » Textile Machinery
- » Mining equipment
- » Special purpose machinery
- » Bakery equipment
- » Chemical plant
- » Marine applications

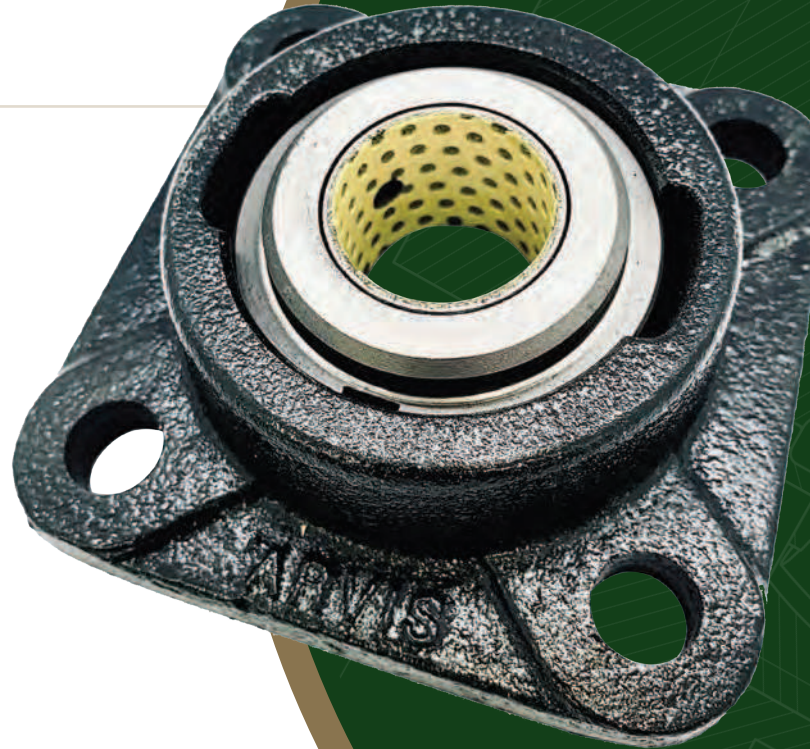


ARVIS® PRE-MOUNTED PLAIN BEARINGS FOR CONSTANT RE-ALIGNMENT

DU or DX steel backed bearings are pre-mounted in captive inner members. The spherical seating allows constant re-alignment of up to 15° during operation & eliminates the need for precise positioning and alignment during installation.

The working clearance of the bearings on the shaft means no press fitting is needed as with some rolling element bearings.

Excellent load carrying capacity prevents edge loading thus allowing full use to be made of DU & DX performance. Proven characteristics of DU & DX are long life with minimum maintenance. Sealing is unnecessary in most cases. Shaft location can be achieved by use of locking collars, if moderate thrust loads are expected standard thrust washers can be included.

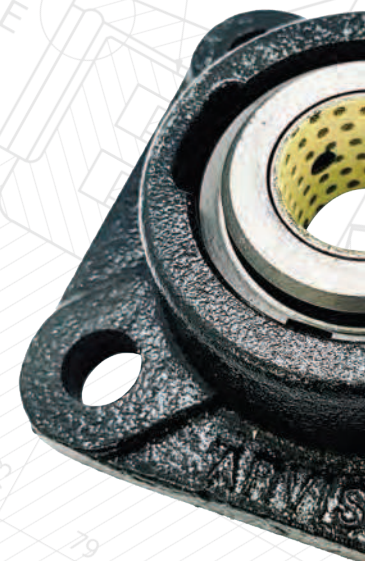
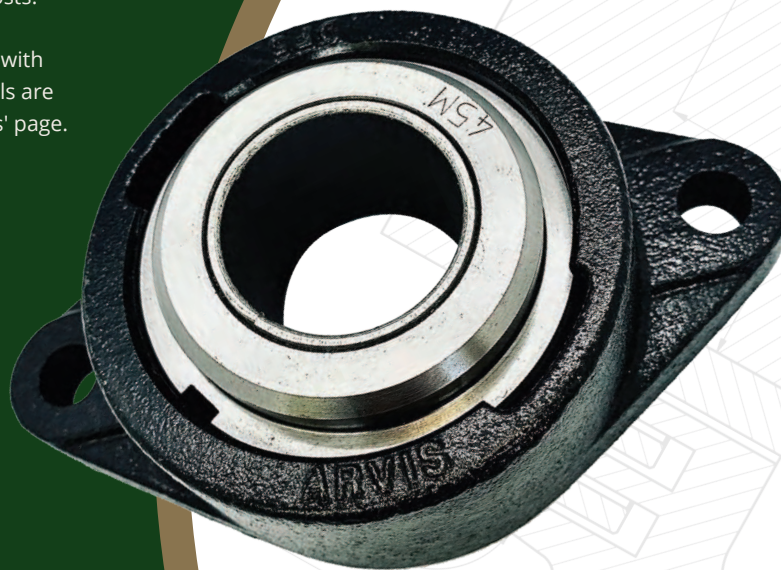


A choice of three housing styles, pillow block, two bolt flange & four bolt flange gives versatility for mounting.

Metric sizes from 10mm to 100mm & inch sizes from ½ " to 4" are offered as standard. Larger sizes are available to order.

The standard housings are made in grey cast iron & together with the DU & DX materials ensure low operating costs.

Both bush materials are supplied with pre-finished bores. Other materials are available on request. See 'Specials' page.





DU is a high performance dry-bearing material used where lubrication is impracticable or undesirable & where the operating temperature is between $-200\text{ }^{\circ}\text{C}$ & $+280\text{ }^{\circ}\text{C}$. It will also perform exceptionally well in water, oil & other liquids.

DX gives outstanding performance when greased on assembly only. Regreasing at extended intervals prolongs performance indefinitely. DX can withstand temperatures from $-40\text{ }^{\circ}\text{C}$ up to $130\text{ }^{\circ}\text{C}$ for short periods.

Plain bearing materials can be used in high load applications. The maximum permissible loading for the bush, particularly at low rubbing speeds, may exceed that for the housing. Where such conditions are likely to occur, design advice should be obtained.

ARVIS® HOUSING PERFORMANCE.

Estimated safe radial loads for units based on the strength of the cast iron outer housing.

Arvis® plain bearings materials can be used in high load applications. The maximum permissible loading for the bush, particularly at low rubbing speeds may exceed that for the Arvis® housing or securing bolts.

- » **Step 1** - Check from the table below that the load does not exceed the limit for the cast iron housing.
- » **Step 2** - For full technical information on the various bushes, contact the Arvis® sales team.
- » **Step 3** - Note that the thermal conductivity of these units is such that, in the 'Application Factor' for both DU & DX calculations a housing of a 'Light pressing' nature should be used.

Casting No	Bush Sizes						Maximum Bearing Load			
							PB Type		FL & DF	
	mm			Inch			Kg	lbf	Kg	lbf
1	10	12	15	1/2	3/8	3/4	432	950	386	850
2	20	25	-	7/8	1	-	770	1700	590	1300
3	30	-	-	1 1/8	1 1/4	-	955	2100	818	1800
4	35	40	-	1 3/8	1 1/2	1 5/8	1730	3800	1100	2400
5	45	-	-	1 3/4	-	-	2300	5100	1200	2600
6	50	-	-	1 7/8	2	-	2500	5500	1450	3200
7	55	60	65	2 1/4	-	-	3050	6700	1600	3500
8	70	75	-	2 1/2	2 3/4	-	2800	6200	1730	3800
9	80	85	-	3	-	-	4550	10000	2700	5900
10	90	100	-	3 1/2	4	-	7450	16400	3050	6700

Materials

Standard bearing housings are made in grey cast iron. Other materials are available (See 'Specials') Bearings can be specified in DU or DX material according to requirement. Both materials are supplied with pre-finished bores.

Selection

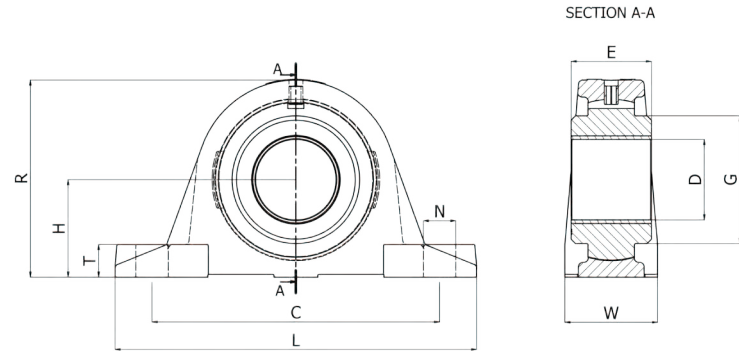
As a general guide on selection. DU is a high performance dry-bearing material, used where lubricant is impracticable or undesirable and where the operating temperature is between -200°C and +280°C. DX gives outstanding performance when greased on assembly only. Re-greasing at extended intervals prolongs performance indefinitely. DX is suitable for operating temperatures up to 120°C.

Specials

Pre-mounted self-aligning bearings other than the standards listed in this leaflet can be supplied to special order

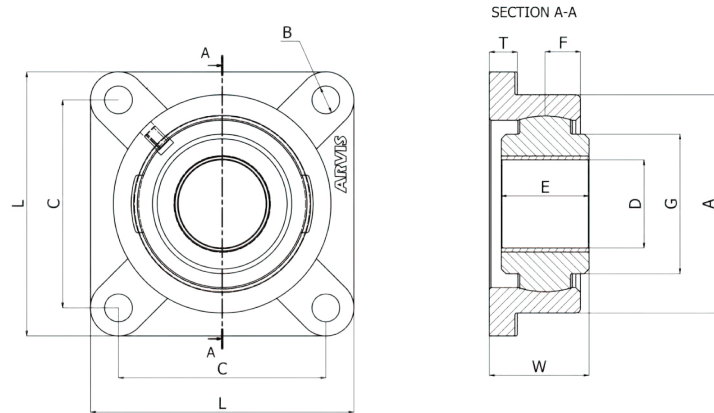
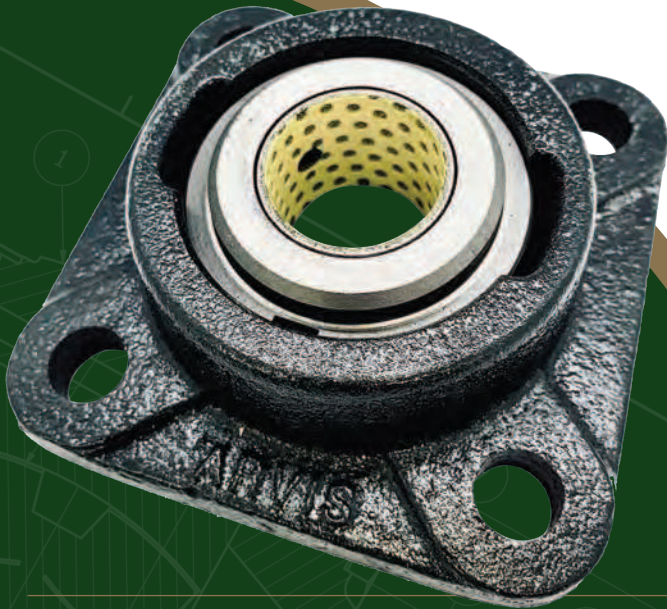
Variations from standard include: Bearings for shaft diameters over 100mm - Split housings to allow for assembly in awkward locations or to provide a greater length of bearing. Housings with provision for re-greasing (As an alternative, re-greasing can be through shaft end drilling). Housing for special applications made in SG iron or corrosion resistant materials.

PLUMMER BLOCK



SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
10mm - 75mm	f7	h8
> 75mm	H8	H8

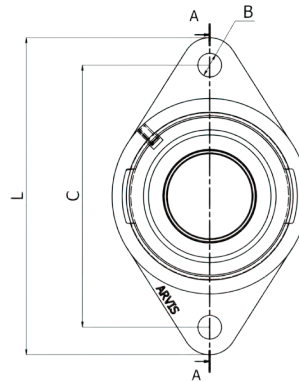
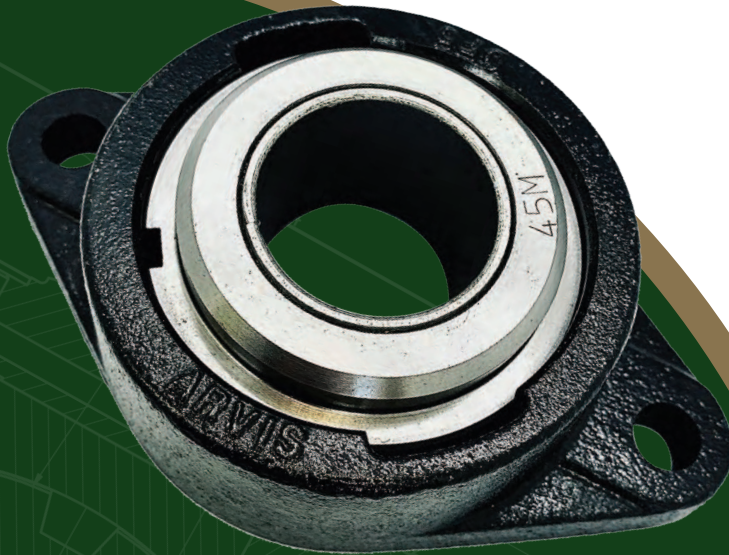
FOUR BOLT FLANGE



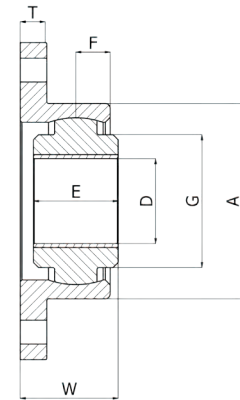
SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
10mm - 75mm	f7	h8
> 75mm	H8	H8

D	Part No	E	C	B (bolt)	L	T	W	A	F	G
10	FL1-10M-DU FL1-10M-DX	15	57	M8	76	8	23	54	6	33.3
12	FL1-12M-DU FL1-12M-DX	15								
15	FL1-15M-DU FL1-15M-DX	15								
20	FL2-20M-DU FL2-20M-DX	20	64	M10	89	10	27	64	10	39.7
25	FL2-25M-DU FL2-25M-DX	25					30			
30	FL3-30M-DU FL3-30M-DX	30	79	M12	110	11	36	79	13	51
35	FL4-35M-DU FL4-35M-DX	35	92	M12	121	14	43	95	16	60.3
40	FL4-40M-DU FL4-40M-DX	40								
45	FL5-45M-DU FL5-45M-DX	45	102	M12	133	16	51	108	16	73
50	FL6-50M-DU FL6-50M-DX	50	111	M12	143	16	58	117	21	79.3
55	FL7-55M-DU FL7-55M-DX	55	130	M16	165	17	62	137	22	83
60	FL7-60M-DU FL7-60M-DX	60					65			
65	FL7-65M-DU FL7-65M-DX	60					65			
70	FL8-70M-DU FL8-70M-DX	65	143	M16	175	19	71	145	25	89
75	FL8-75M-DU FL8-75M-DX	65								
80	FL9-80M-DU FL9-80M-DX	80	152	M20	197	20	81	171	29	108
85	FL9-85M-DU FL9-85M-DX	80								
90	FL10-90M-DU FL10-90M-DX	80	197	M20	241	25	91	210	32	130
100	FL10-100M-DU FL10-100M-DX	80								
120	FL10-120M-DU FL10-120M-DX	80	197	M20	241	25	82.5	210	32	130
120	FL11-120M-DU FL11-120M-DX	120	260	M24	340	45	132	300	40	190

TWO BOLT FLANGE

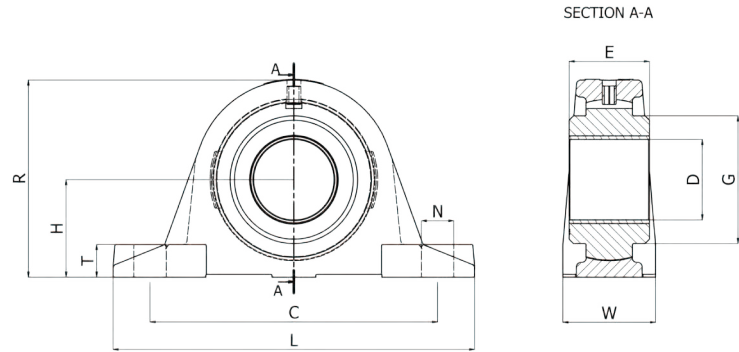
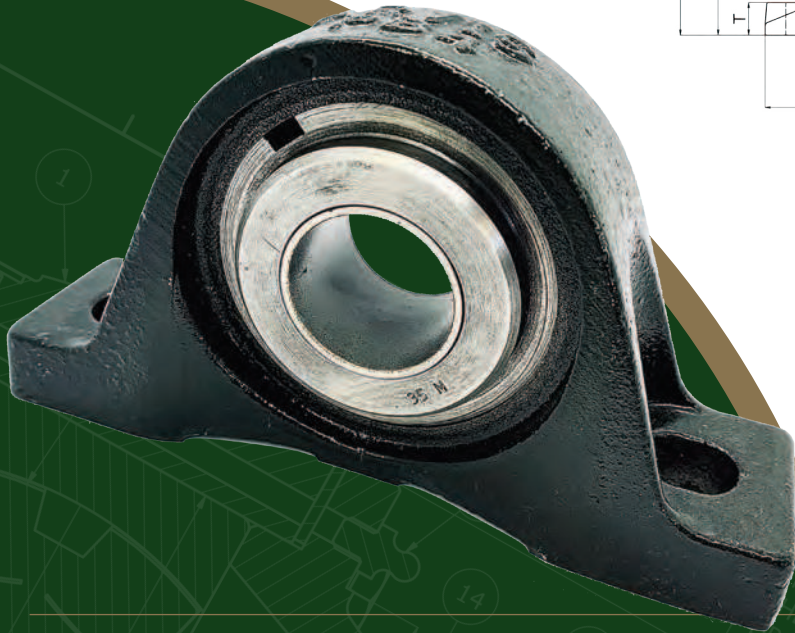


SECTION A-A



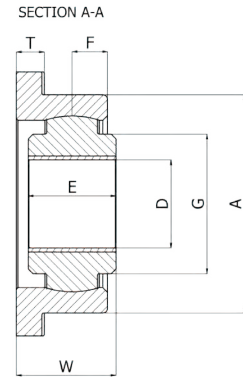
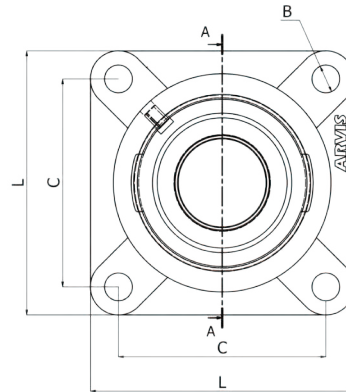
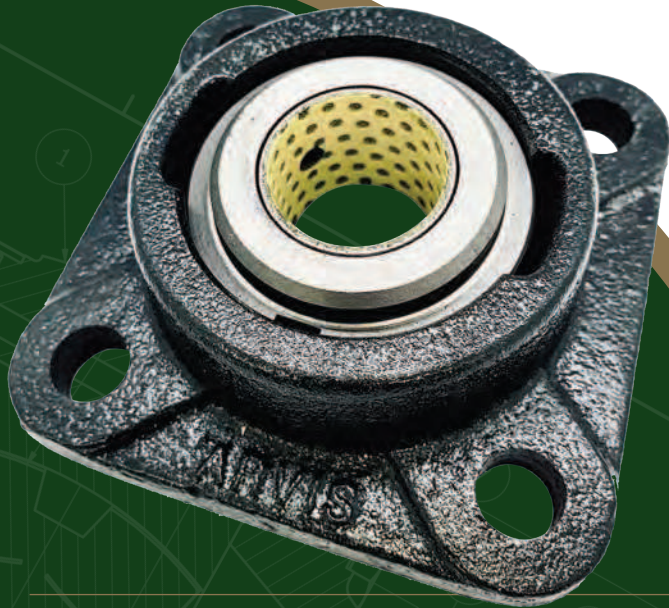
SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
10mm - 75mm	f7	h8
> 75mm	H8	H8

PLUMMER BLOCK



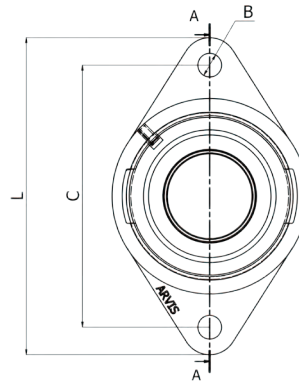
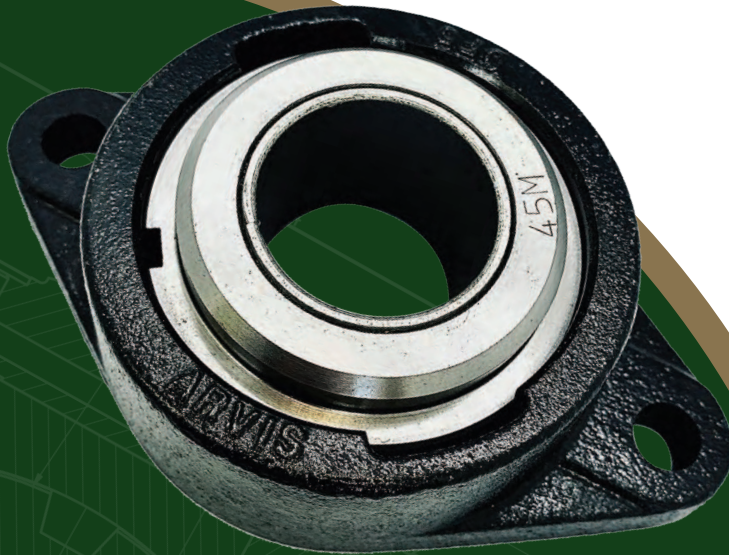
SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
½" TO 3"	f7	h8
> 3"	H8	H8

FOUR BOLT FLANGE

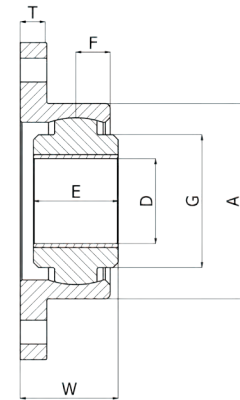


SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
½" TO 3"	f7	h8
> 3"	H8	H8

TWO BOLT FLANGE



SECTION A-A



SHAFT DIA	SHAFT TOLERANCE	
	DU	DX
½" TO 3"	f7	h8
> 3"	H8	H8

D	Part No	E	C	B (bolt)	L	T	W	A	F	G
1/2	DF1-08E-DU DF1-08E-DX	0.625	3.187	0.312	4.062	0.312	0.937	2.125	0.25	1.312
5/8	DF1-10E-DU DF1-10E-DX	0.625					0.937			
3/4	DF1-12E-DU DF1-12E-DX	0.75					1			
7/8	DF2-14E-DU DF2-14E-DX	0.875	3.5	0.375	4.562	0.375	1.125	2.5	0.375	1.562
1	DF2-16E-DU DF2-16E-DX	1					1.187			
1 1/8	DF2-16E-DU DF2-16E-DX	1	4.437	0.375	5.625	0.437	1.312	3.125	0.5	2
1 1/4	DF3-20E-DU DF3-20E-DX	1.25					1.437			
1 3/8	DF4-22E-DU DF4-22E-DX	1.375	5.125	0.5	6.25	0.625	1.687	3.625	0.625	2.375
1 1/2	DF4-24E-DU DF4-24E-DX	1.5					1.75			
1 5/8	DF4-26E-DU DF4-26E-DX	1.5					1.75			
1 3/4	DF5-28E-DU DF5-28E-DX	1.75	5.687	0.5	6.875	0.625	2	4.25	0.625	2.875
1 7/8	DF6-30E-DU DF6-30E-DX	1.875	6.187	0.5	7.5	0.625	2.25	4.625	0.812	3.125
2	DF6-32E-DU DF6-32E-DX	2					2.312			
2 1/4	DF7-36E-DU DF7-36E-DX	2.25	7.25	0.625	8.5	0.687	2.25	5.375	0.875	3.625
2 1/2	DF8-40E-DU DF8-40E-DX	2.5	7.937	0.625	9.312	0.75	2.75	5.625	1	3.75
2 3/4	DF8-44E-DU DF8-44E-DX	2.5					2.75			
3	DF9-48E-DU DF9-48E-DX	3	8.437	0.75	10.187	0.875	3.125	6.75	1.125	4.25
3 1/2	DF10-56E-DU DF10-56E-DX	3	11	0.75	12.75	1	3.5	8.25	1.25	5.125
4	DF10-64E-DU DF10-64E-DX	3					3.5			

SPECIAL ARVIS® BEARING UNITS

Arvis® bearing units offer the opportunity for an almost Infinite combination of housing & bush materials.

In addition to standard sizes, bores in between those offered & far in excess of 100mm & 4" can be supplied.



HOUSINGS

Standard housings can be painted or plated to any specification. Re-grease facilities can be included.

Stainless steel housings & inserts can be supplied for the food or marine industries as well as the chemical industry, sewage & water treatment plants where corrosion resistance is required.

The use of structural mild steels gives strength for heavy handling or for reasons of safety.

In fact, any commercially available material can be used. Units can be split to aid fitting where access is limited.

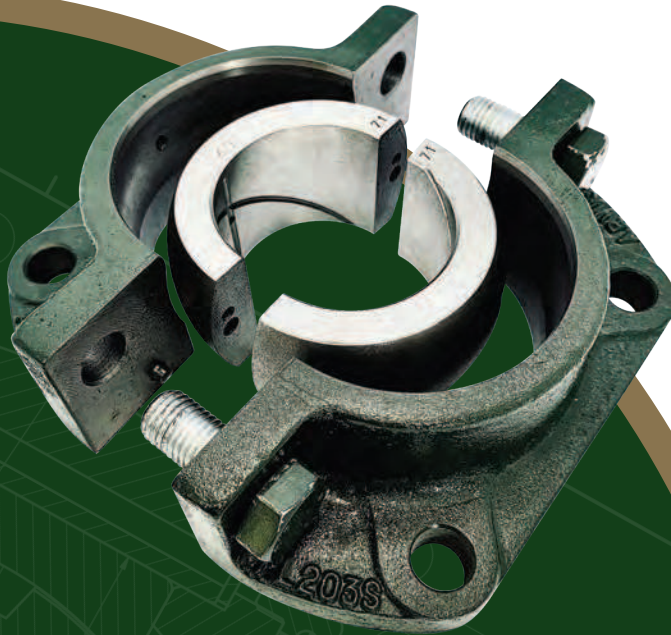
BUSHES

In addition to the standard DU & DX, the variety of bearing materials available means that Arvis® Bearings can be used in almost any environment.

Carbon graphite is ideal for temperatures up to 500°C & can operate in temperatures up to 1000°C under certain condition. A wide variety of Engineering plastics & self-lubricating materials such as Arvis® DRSL as well as phosphor bronze & Deva. Metal give the widest possible choice of bushings for all applications.



SPLIT 4 BOLT FLANGE BLOCKS



The FLS range of fully split self aligning bearing units are able to withstand continuous misalignment and oscillating shaft movements.

The manufacturing facilities offered by the company enable bushes to be supplied in a variety of materials to suit specific applications. Some information and links to plain bearing materials can be found by visiting www.arvis.co.uk.

Arvis® have manufactured a number of split four bolt flanged housings during recent years. As the demand for this style of product has increased a standard FLS range has been produced.

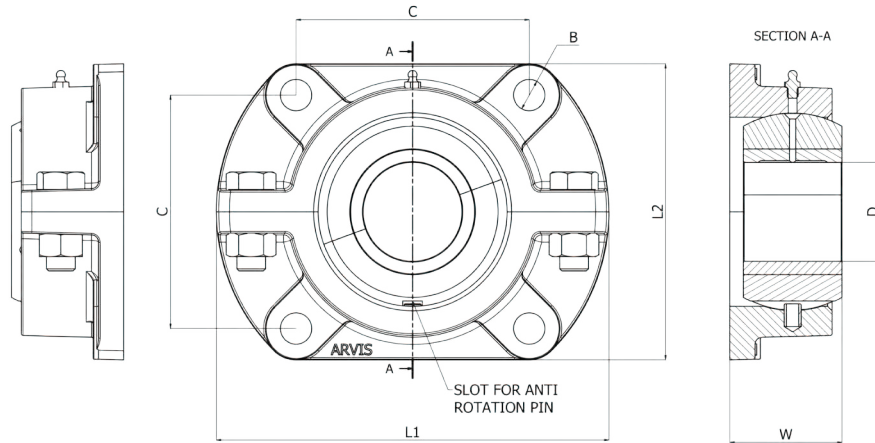
Split units have resulted in minimised down times during replacement or maintenance as the need for shaft removal is eliminated in the majority of applications. This ensures that the units can be fitted without causing disturbance to surrounding parts such as couplings or gearboxes. Bolt hole positions are manufactured to allow the split units to be interchangeable with the standard four bolt flange.

Self aligning inserts can be manufactured from any commercially available material and infinitely variable bush materials are also available on request. Bushes for the split units can be supplied in materials to suit specific applications. This results in optimum bearing life and performance.

DIMENSIONS

Find out what group of castings your shaft size falls into from the list below,

Contact the Arvis® sales team who will be pleased to deal with your enquiry and advise on the suitability.



Key:**XX**

Shaft Size

##

Bush Material

E

Imperial (in 16ths of Inch) e.g. 2" = 32E

M

Metric (mm)

PB

PB e.g. Phosphor Bronze

Metric

D Range	Part No	C	B	L2	L1	W
10 -19	FL1S-XXM-##	57.15	8.0	76.2	88.0	24
19.05 - 25.5	FL2S-XXM-##	63.5	9.5	89.0	110.0	28.6
25.5 -28.5	FL3S-XXM-##	79.0	13.0	110.0	122.0	36.9
28.6 - 41.3	FL4S-XXM-##	92.1	14.3	121.0	158.8	45.4
41.3 - 44.5	FL5S-XXM-##	101.6	13.0	133.4	172.0	50.8
44.6 - 51	FL6S-XXM-##	111.0	14.3	142.9	184.2	58.4
51.1 - 57.1	FL7S-XXM-##	130.0	17.5	165.0	219.0	63.5
57.15 - 69.86	FL8S-XXM-##	143.0	16.0	174.5	235.0	69.85
69.87 - 100	FL9S-XXM-##	152.0	21.5	195.0	258.0	81.28
82.57 - 100	FL10S-XXM-##	197.0	22.0	240.0	324.0	88.9

Imperial

D Range	Part No	C	B	L2	L1	W
0.5 -0.750	FL1S-XXE-##	2.250	0.312	3.000	3.465	0.937
0.751 - 1.00	FL2S-XXE-##	2.500	0.375	3.500	4.300	1.125
1.001 - 1.125	FL3S-XXE-##	3.125	0.500	4.330	4.812	1.45
1.126 -1.625	FL4S-XXE-##	3.652	0.562	4.750	6.250	1.785
1.626 - 1.750	FL5S-XXE-##	4.000	0.500	5.250	6.770	2.000
1.751 -2.000	FL6S-XXE-##	4.375	0.5625	5.625	7.250	2.300
2.001 - 2.250	FL7S-XXE-##	5.125	0.687	6.500	8.625	2.500
2.251 - 2.750	FL8S-XXE-##	5.625	0.625	6.875	9.250	2.750
2.751 - 3.250	FL9S-XXE-##	5.984	0.846	7.7	10.125	3.200
3.251 -4	FL10S-XXE-##	7.750	0.875	9.500	12.75	3.500

The ARVIS logo is rendered in a bold, white, sans-serif typeface. It is positioned in the lower-left quadrant of the page, set against a dark green background that features a faint, light-colored architectural floor plan pattern. A thin, light brown diagonal line runs across the top of the page, separating the white header area from the green patterned area.

ARVIS

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