

reXus



KII

MECHANICAL COUPLINGS

Pipe Couplings, Flange Adaptors, Stepped Couplings, Dismantling Joints and Pipe Related Products

The REXUS Difference

The specialised field of pressure pipeline systems demands in depth knowledge and experience. REXUS has identified the need to establish a unique design, technical sales and aftersales team dedicated to the design, manufacture and supply of a wide range of materials for Water, Wastewater, Sewage Treatment and Pumping stations.

At REXUS our team will provide you with professional advice on the most technically sound and commercially viable solutions. We are committed to value engineering, supplying you with fit for purpose materials in the most cost effective form.

Our strong and intimate relationship with our products and our market, from design and manufacture to the final operation of our products in the field, ensures you get the most up to date information about new products and innovations, enabling REXUS to offer the most competitive materials range and pipeline solutions.

At Rexus we put our customer at the centre of our operations. It is our mission to listen attentively to your needs and to continuously develop our products and services to meet your requirements.

REXUS upholds exactly the same objects as our clients namely, innovation and cost reduction and are constantly striving to identify both efficiencies and cost savings that can and will enhance our customers business.

REXUS KII Couplings, Flange Adaptors and Dismantling Joints

The REXUS KII range of Couplings Flange Adaptors and Dismantling Joints are 100% locally manufactured and have been utilised on some of the most significant projects in South Africa. In addition, our products are exported to several countries.

Factors that distinguish Rexus KII Coupling products from competing products are:

- * **Moulded Rubber Gaskets** - all our rubber gaskets, regardless of size are moulded and not glued.
 - * **Rubber Gasket Thickness and Profile** - all our gaskets have a specific ribbed sealing profile to ensure drip-tight sealing regardless of the pipe surface.

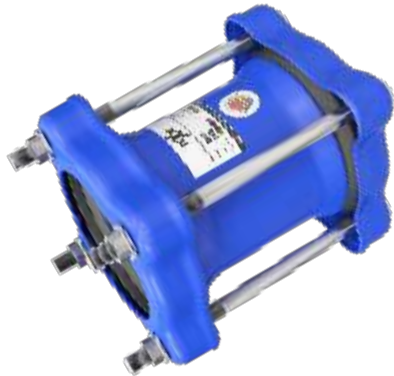
In addition, the thickness of our rubber gasket coupled with the specific angle of our flared ends provide a deep gasket chamber and allows for maximum possible pipe adjustment.
 - * **Fusion Bonded Epoxy Coating** - all our Couplings regardless of size are fusion bonded epoxy coated to 300 microns as standard. Couplings exposed to sunlight are coated with an additional UV resistant coating.
 - * **Longer Standard Barrels** - Our Coupling barrels are as standard, as long as some competitors "long" barrel couplings, at no additional cost to better allow for expansion and contraction of various types of pipe.
 - * **Short Lead Times** - REXUS is rapidly becoming the company of choice to design, manufacture and supply couplings for emergency conditions. Our standard turnaround time for emergency items is 24 to 48 hours and for out of stock standard items in batches is 5 to 10 days.
 - * **Technical Expertise and Aftersales Backup** - Rexus is a designer, manufacturer and supplier of all pipeline related products. We therefore have an in depth understanding on pipeline material selection, valve performance and complex pipeline phenomena such as Surge and Waterhammer. We bring all our expertise to bear in every recommendation and back up our products with unparalleled sale support - try us!
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Product Range

REXUS provides a comprehensive range of Pipeline Connection products that includes Couplings, Flange adaptors, Dismantling Joints and Stepped Couplings. Our entire product range makes use of the unique REXUS KII rubber gasket design which allows for driptight sealing across a wide range of pipe diameters, pipeline materials and pressure ratings. Our product range includes but is not limited to:



REXUS KII Smartfit Couplings

Accommodates a wide range of pipes, Rexus Smartfit Couplings caters for sizes from 40mm to 600mm NB.

REXUS KII Dedicated Couplings

Rexus KII Dedicated Couplings joins pipes from 40mm to 1600mm NB and is ideally suited for higher pressure applications.

REXUS KII Long Barrel Couplings for HDPE Pipe

Rexus KII Long Barrel Couplings caters specifically for HDPE pipe because of its unique expansion and contraction characteristics. It is available for sizes from 40 to 1600mm NB with any length of barrel.



REXUS KII Stepped Coupling

Rexus KII Step Couplings joins pipes with different outside diameters and/or from different pipe materials where the sizes fall outside the range of the Rexus SmartFit coupling. It is available for sizes from 40mm to 1200mm NB.

REXUS KII Make-up Ring Sleeve Coupling

Rexus KII Make-up Ring Sleeve Couplings join pipes with different outside diameters where there is large steps between pipe sizes. It is also utilised on slopes to prevent pipe creep where the one pipe slide into the other. It is available for sizes from 40mm to 1600mm NB.



REXUS KII Universal Flange Adaptors

Combining Smartfit wide range technology with universal flange drillings, Rexus KII Universal Flange Adaptors accommodates pipes sizes between 50mm to 300mm NB, and in most PN10 and PN16 flange drillings.

REXUS KII Dedicated Flange Adaptors

Rexus KII Dedicated Flange Adaptors are available for pipes from 40mm to 1600mm NB. It can be supplied in any flange drilling from PN6 to PN40.



REXUS KII Dismantling Joints

Rexus KII Dismantling Joints are available for double flanged installations to facilitate easy removal of items such as valves etc.

Rexus KII Dismantling Joints are available in sizes DN50 to DN1600 and for pressure ratings of PN10, PN16, PN25 and PN40

Application Overview

Pipe Materials

Most pipe materials can be joined with REXUS KII Coupling products. Of all materials, those such as Steel, Ductile Iron, PVC and Fibre Cement can be joined using standard REXUS KII Couplings without revision to our standard design or revision of our fitting instructions.

Glass Reinforced Plastic (GRP) pipe is relatively flexible and its structure may be damaged by high gasket pressures. Reduced bolt torques are recommended for this pipe material. REXUS upon request, provides Couplings with the ability to have different torque settings on each ring end.

High Density Polyethylene (HDPE) pipe exhibit the tendency to creep i.e. change shape when loaded. The use of standard REXUS KII couplings may result in leakage or pipe pull-out. REXUS offers Long Barrel Couplings which are three (3) times the length of a standard Coupling or the REXUS KII Quick Fit Flange Adaptors, both products are specifically designed to join HDPE pipe either to another HDPE pipe or to flanged equipment or, other pipe materials.

Pipe Outside Diameters and Tolerances

REXUS KII Couplings and Flange Adaptors may be specified for any pipe size between 40 NB and 1600 NB, even for outside diameters not covered by recognized pipe standards. It is essential that the Outside Diameter (OD) of the pipe is specified at time of enquiry/order.

REXUS provides the KII Smartfit wide range coupling for smaller diameters allowing one Coupling to join different pipe diameters of the same nominal size. In addition we provide a range of Dedicated Couplings for pipeline diameters larger than 600 NB and/or for any abnormal pipeline diameters. Couplings in general, and, specifically for high pressure applications, give their optimum performance when they are a close fit on the pipe. Seal effectiveness depends on the pressure which the gasket applies to the pipe surface. Undersized pipes may mean a loss in pressure rating. It is imperative that the actual pipe tolerances specifically for large diameter and high pressure applications are discussed with REXUS.

Pipe Ovality

REXUS KII range of couplings can accommodate a certain degree of ovality. For large diameter Steel or Ductile Iron pipe, moderate ovality can frequently be rectified by selective bolt tightening to give a uniform annular gap between pipe and Coupling. More severe ovality for these materials may be corrected by jacking as good circularity is essential if Couplings are to be fitted successfully.

Pipe Coatings

Steel and Ductile Iron pipes are often finished with a coating of some description, which can affect pipe outside diameter. It is important that details of the intended pipe corrosion protection are made known to REXUS when ordering so that the correct size of Coupling can be produced. Alternatively, REXUS must be informed of the finished pipe diameter including all coatings, with appropriate tolerances.

Working Pressure

The working pressure capability of a Coupling varies with its size and construction. It is also dependent upon correct pipe tolerances and surface finish. Wider pipe OD tolerances than those specified will result in a reduction in pressure capability. For most pipe materials, the actual test pressure will be lower than that of the Coupling and will be determined by the pipe capability or class. When assembled onto the pipe(s), the pressure rating of the completed assembly will be that of the lowest rated component. REXUS produces Couplings for PN 16, PN 25 and PN 40 applications

Operating Temperature

The operating temperature of REXUS Couplings is determined primarily by the temperature rating of the gaskets. Different grades of gaskets are available to suit various temperature ranges as well as different chemical resistance requirements. Standard REXUS KII Couplings are suitable for a maximum operating temperature of 90°C.

Chemical Resistance

The chemical resistance of a REXUS KII Coupling is determined by suitability of the gaskets and by the chemical resistance of the internal surfaces of the Coupling sleeve. If the Coupling is coated with epoxy, it is necessary to ensure that this material is chemically suitable for contact with the pipe contents. REXUS can provide Couplings with Stainless Steel sleeves or in full Stainless Steel 304 or 316 upon request.

KII SmartFit Couplings

REXUS KII Couplings are uncomplicated. Our standard Coupling consists of a Centre Sleeve located between two Rubber Gaskets which are in turn housed inside two End Rings. When the captivated “Dee” or ‘Oval’ cup Bolts are tightened, the End Rings draw closer to one another compressing the tapered rubber Gaskets between the pipe outside surface and Coupling Sleeve inner surface. This results in a flexible leak-tight compression seal between the two pipes

The captivated head of the Bolt prevents the Bolt from rotating when the Nuts are tightened. This allows for assembly utilizing only one spanner.

The more the Bolts are tightened the greater the compression force exerted on the rubber Gasket. At the specified torque ratings the Coupling assembly will result in a permanent leak proof connection between two plain-ended pipes.

REXUS KII Couplings have the ability to absorb expansion and contraction in pipeline which results from temperature variations. In addition, REXUS KII Couplings accommodate a specified degree of pipeline deflection which may result from lateral displacement and ground settlement.

Nuts and Washers

BS 970 Grade 070 M020

Hot Dipped Galvanised to SANS 763 as standard.
Other coating available on request. Stainless Steel 304 or 316 available on request.

End Ring

Steel: Steel to SANS 1431 Grade 300 or Grade 350 WA or EN 10025 - S355 JR - Fusion Bonded Epoxy Coated to 300 microns as standard
Alternatively: Ductile Iron: BS 2789 Gr. 420/12

Rigoursly tested for strength and life expectancy of 50 years or more

Rubber Gasket

EPDM to ISO 4633/ SANS 974

Unique design allows for 8° deflection in pipe as tested by SABS

Wide tolerance of up to 34mm variances in pipe Diameter eases installation and reduces stock holding

Centre Sleeve

Steel: SABS 1431 Gr. 350 WA or EN 10025 - S355 JR - Fusion Bonded Epoxy Coated to 300 microns as standard
Alternatively: Ductile Iron: BS 2789 Gr. 420/12

Longer sleeve to better allow for expansion and contraction of pipe

Flared ends to provide deep gasket chamber and allow for maximum possible pipe adjustment

Bolts

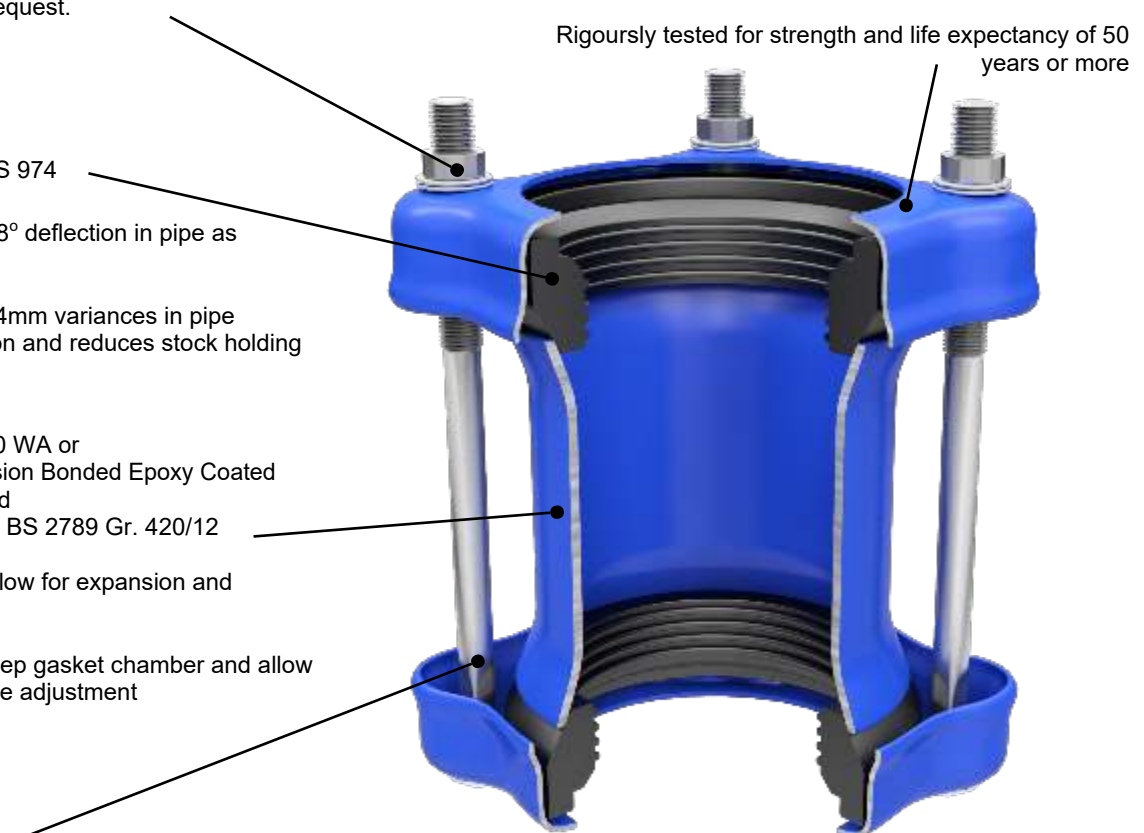
BS 970 Grade 070 M020

Hot Dipped Galvanised as standard. Other coating available upon request

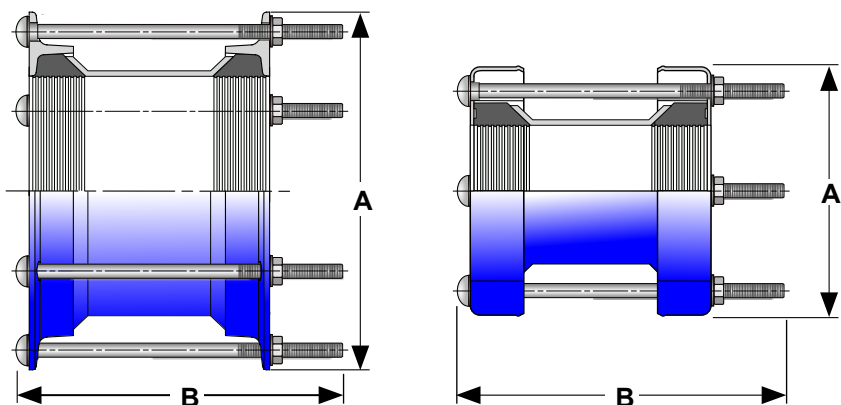
Captive, non rotating bolt head require just one spanner to install.

Coating - Centre Sleeve and End Rings
High impact, abrasion, weather and chemical resistant
Fusion Bonded Epoxy to 300 microns as standard.
Other coatings available upon request.

All Stainless Steel 304 or 316 available upon request



Overall Dimensions KII SmartFit Couplings



Rexus KII Couplings can be manufactured to any pipe OD and Pressure Rating.

Standard Working Pressure is 16 bar.

Site Test pressure is 1.5 times working pressure.

Nominal Bore (mm)	Pipe O.D. Range in mm	Standard				Long Barrel			
		Order Code	A mm	B mm	Weight Kg	Order Code	A mm	B mm	Weight Kg
50mm	59-73	KII0050	154	220	3	KII0050 LGB	154	290	3.1
50mm	59-78	KII0050/2	173	220	3.5	KII0050/2 LGB	173	290	3.6
65mm	74-90	KII0065	185	220	4.2	KII0065 LGB	185	290	4.3
80mm	83-102	KII0080/2	197	220	4.5	KII0080/2 LGB	197	290	4.7
100mm	108-118	KII0100	207	220	4.5	KII0100 LGB	207	290	4.7
100mm	109-128	KII0100/2	223	220	7.2	KII0100/2 LGB	223	290	7.5
125mm	135-153	KII0125	257	220	8.0	KII0125 LGB	257	290	8.2
150mm	159-170	KII0150	266	220	9.0	KII0150 LGB	266	325	9.3
150mm	159-182	KII0150/2	286	220	10.0	KII0150/2 LGB	286	325	10.3
150mm	180-193	KII0150/3	293	220	10.5	KII0150/3 LGB	293	325	10.8
175mm	190-205	KII0175	304	290	12	KII0175 LGB	304	325	12.3
200mm	218-234	KII0200	335	290	12.5	KII0200 LGB	335	325	12.8
225mm	239-250	KII0225	351	290	13	KII0225 LGB	351	325	13.3
225mm	250-267	KII0225/2	369	290	13.5	KII0225/2 LGB	369	325	13.8
250mm	273-286	KII0250	387	290	15.5	KII0250 LGB	387	325	15.8
250mm	286-304	KII0250/2	408	290	16	KII0250/2 LGB	408	435	16.3
300mm	302-318	KII0275	430	290	18	KII0275 LGB	430	435	18.4
300mm	315-332	KII0300	464	290	20	KII0300 LGB	464	435	20.4
350mm	334-350	KII0300/2	484	290	19	KII0300/2 LGB	484	435	19.4
350mm	344-360	KII0300/3	474	290	21	KII0300/3 LGB	474	435	21.4
350mm	356-372	KII0350	500	290	21.5	KII0350 LGB	500	435	21.5
350mm	374-391	KII0350/2	522	290	22	KII0350/2 LGB	522	435	22.5
400mm	391-410	KII0400	531	290	22.5	KII0400 LGB	531	435	23
400mm	401-417	KII0400/2	550	290	23	KII0400/2 LGB	550	435	23.5
400mm/2	417-437	KII0400/3	559	290	24.5	KII0400/3 LGB	559	435	24.9
450mm	430-446	KII0400/4	573	290	26	KII0400/4 LGB	573	435	26.5
450mm	444-460	KII0450	588	290	27	KII0450 LGB	588	435	27.5
450mm	458-474	KII0450/2	602	290	29	KII0450/2 LGB	602	435	29.6
450mm	477-493	KII0450/3	644	290	30	KII0450/3 LGB	644	435	30.6
500mm	494-510	KII0450/4	623	290	32	KII0450/4 LGB	623	435	32.6
500mm	520-532	KII0500	659	290	33	KII0500 LGB	659	435	33.6
500mm/2	530-546	KII0500/2	706	290	33.2	KII0500/2 LGB	706	435	33.8
500mm/3	556-572	KII0500/3	685	290	33.5	KII0500/3 LGB	685	435	34.1
600mm	583-593	KII0550	730	290	34	KII0550 LGB	730	435	34.6
600mm	606-616	KII0600	730	290	35	KII0600 LGB	730	435	35.6
600mm	629-638	KII0600/2	752	290	36	KII0600/2 LGB	752	435	36.7

Materials of Construction & Relevant Standards

Couplings

Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

All Stainless Steel 304 or 316 construction on request

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Bolts & Nuts

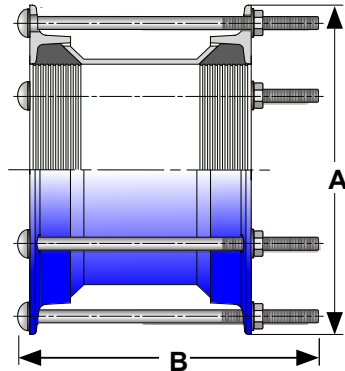
Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Overall Dimensions KII Large Bore Couplings



Rexus KII Couplings can be manufactured to any pipe OD and Pressure Rating.

Standard Working Pressure is 16 bar.

Site Test pressure is 1.5 times working pressure.

Nominal Bore (mm)	Pipe O.D. Range in mm	Order Code	Pipe Material	A mm	B mm	Weight Kg
600	651	KIID0651	AC 600 CLASS 12	781	351	45.9
650	660	KIID0660	Steel	790	351	46.5
600	667	KIID0667	AC 600 COD	797	351	46.9
600	672	KIID0672	AC 600 CLASS 18	802	351	47.2
600	699	KIID0699	AC 600 CLASS 24	829	351	48.8
700	711	KIID0711	STEEL	841	351	49.7
600	727	KIID0727	AC 600 CLASS 30	857	351	50.8
700	738	KIID0738	DUCTILE IRON	868	351	51.4
700	744	KIID0744	AC 700 CLASS 6	874	351	51.8
600	755	KIID0755	AC 600 CLASS 36	885	351	52.5
700	760	KIID0760	AC 700 CLASS 12	890	351	52.8
750	762	KIID0762	STEEL	892	351	52.9
700	784	KIID0784	AC 700 CLASS 18	914	351	54.2
800	813	KIID0813	STEEL	943	351	56.1
700	816	KIID0816	AC 700 CLASS 24	946	351	56.3
800	842	KIID0842	DUCTILE IRON	972	351	57.9
700	848	KIID0848	AC 700 CLASS 30	978	351	58.2
800	850	KIID0850	AC 800 CLASS 6	980	351	58.4
800	868	KIID0868	AC 800 CLASS 12	998	351	59.5
800	896	KIID0896	AC 800 CLASS 18	1 026	351	61.4
900	914	KIID0914	STEEL	1 044	351	62.5
800	932	KIID0932	AC 800 CLASS 24	1 062	351	63.6
900	945	KIID0945	DUCTILE IRON	1 075	351	64.4
900	956	KIID0956	AC 900 CLASS 6	1 086	351	65
800	969	KIID0969	AC 800 CLASS 30	1 099	351	65.8
900	976	KIID0976	AC 900 CLASS 12	1 106	351	66.2
900	1008	KIID1008	AC 900 CLASS 18	1 138	351	68.5
1000	1016	KIID1016	STEEL	1 146	351	68.9
1000	1048	KIID1048	DUCTILE IRON	1 178	351	70.9
1000	1062	KIID1062	AC 1000 CLASS 6	1 192	351	71.7
1000	1084	KIID1084	AC 1000 CLASS 12	1 214	351	73
1100	1118	KIID1118	STEEL	1 248	351	75.1
1000	1120	KIID1120	AC 1000 CLASS 18	1 250	351	75.2
1000	1165	KIID1165	AC 1000 CLASS 24	1 295	351	78
1200	1219	KIID1219	STEEL	1 349	351	81.4
1200	1255	KIID1255	DUCTILE IRON	1 385	351	96.4
1300	1321	KIID1321	STEEL	1 451	351	101.2
1400	1422	KIID1422	STEEL	1 552	351	108.6
1400	1462	KIID1462	DUCTILE IRON	1 592	351	111.5

Materials of Construction & Relevant Standards

Couplings

Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

All Stainless Steel 304 or 316 construction on request

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Bolts & Nuts

Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

KII Stepped Couplings

REXUS KII Stepped Couplings are uncomplicated. Our standard Coupling consists of a Centre Sleeve located between two Rubber Gaskets which are in turn housed inside two End Rings. When the captivated "Dee" or 'Oval' cup Bolts are tightened, the End Rings draw closer to one another compressing the tapered rubber Gaskets between the pipe outside surface and Coupling Sleeve inner surface. This results in a flexible leak-tight compression seal between the two pipes

The captivated head of the Bolt prevents the Bolt from rotating when the Nuts are tightened. This allows for assembly utilizing only one spanner.

The more the Bolts are tightened the greater the compression force exerted on the rubber Gasket. At the specified torque ratings the Coupling assembly will result in a permanent leak proof connection between two plain-ended pipes.

REXUS KII Couplings have the ability to absorb expansion and contraction in pipeline which results from temperature variations. In addition, REXUS KII Couplings accommodate a specified degree of pipeline deflection which may result from lateral displacement and ground settlement.

Nuts and Washers

BS 970 Grade 070 M020

Hot Dipped Galvanised to SANS 763 as standard. Other coating available on request. Stainless Steel 304 or 316 available on request.

End Ring

Steel: Steel to SANS 1431 Grade 300 or Grade 350 WA or EN 10025 - S355 JR - Fusion Bonded Epoxy Coated to 300 microns as standard
Alternatively: Ductile Iron: BS 2789 Gr. 420/12

Rigoursly tested for strength and life expectancy of 50 years or more

Lugs

Specifically designed Lugs to provide better support and accurate torquing of the bolts as there is no deflection as in competitor designs who use a flat plate.

Rubber Gasket

EPDM to ISO 4633/ SANS 974
All Rubber Gaskets, regardless of size moulded and not glued

Centre Sleeve

Steel: SABS 1431 Gr. 350 WA or EN 10025 - S355 JR - Fusion Bonded Epoxy Coated to 300 microns as standard
Alternatively: Ductile Iron: BS 2789 Gr. 420/12

Longer sleeve to better allow for expansion and contraction of pipe

Flared ends to provide deep gasket chamber and allow for maximum possible pipe adjustment

Bolts

BS 970 Grade 070 M020

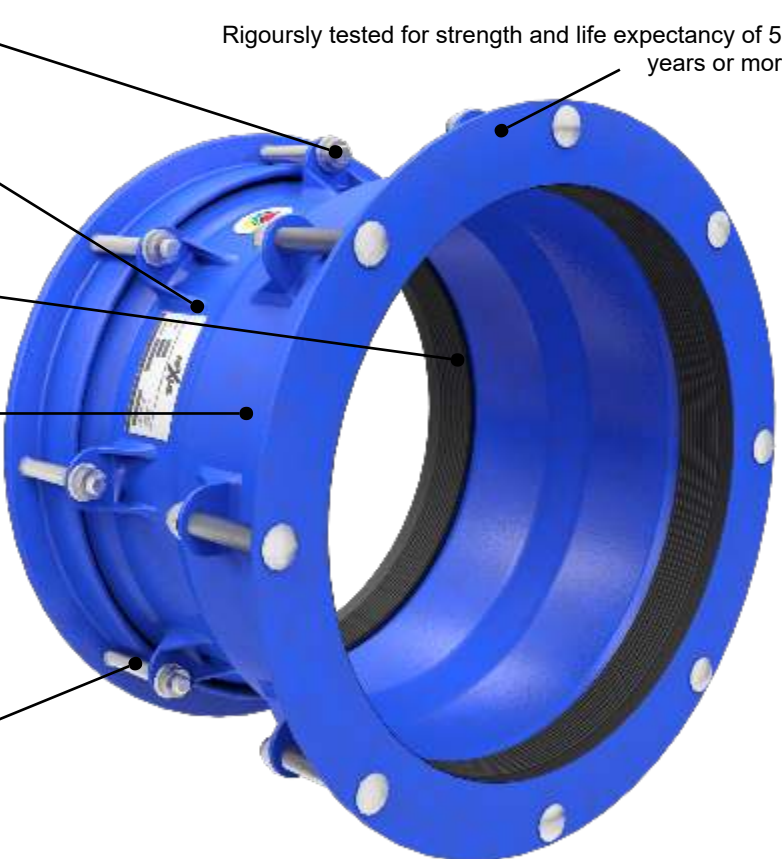
Hot Dipped Galvanised as standard. Other coating available on request

Stainless Steel 304 or 316 on request

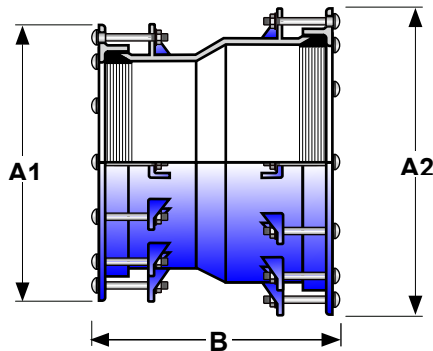
Captive, non rotating bolt head require just one spanner to install.

Coating - Centre Sleeve and End Rings
High impact, abrasion, weather and chemical resistant
Fusion Bonded Epoxy to 300 microns as standard.
Other coatings available upon request.

All Stainless Steel 304 or 316 available upon request



Overall Dimensions KII Stepped Couplings



Rexus KII Stepped Couplings can be manufactured to any pipe OD and Pressure Rating.

Standard Working Pressure is 16 bar.

Site Test pressure is 1.5 times working

Smaller Dia.		Larger Dia.		Order Code	A1 mm	A2 mm	B mm	Weight kg
Nominal Bore (mm)	Pipe OD Range (mm)	Nominal Bore (mm)	Pipe OD Range (mm)					
50	59-78	80	88-103	KIISTPLGLG0050-0080	142	167	290	4
50	59-78	100	109-128	KIISTPLGLG0050-0100	142	192	290	4
80	88-103	100	98-118	KIISTPLGLG0080-0100	167	182	290	4
80	88-103	100	109-128	KIISTPLG0080-0100/2	167	192	290	5
80	88-103	125	132-154	KIISTPLG0080-0125	167	218	290	6
100	98-118	100	109-128	KIISTPLG100-0100/2	182	192	290	6
100	98-118	125	132-154	KIISTPLG0100-0125	182	218	320	6
100	98-118	150	150-170	KIISTPLG0100-0150	182	234	320	6
100	98-118	150	159-182	KIISTPLG0100-0150/2	182	256	320	6
100	109-128	125	132-154	KIISTPLG01002-0125	192	218	320	6
100	109-128	150	150-170	KIISTPLG01002-0150	192	234	320	6
100	109-128	150	159-182	KIISTPLG0100-0150/2	192	256	320	7
125	132-154	150	150-170	KIISTPLG0125-0150	218	234	320	8
125	132-154	150	159-182	KIISTPLG0125-0150/2	218	256	320	8
125	132-154	175	192-209	KIISTPLG0125-0175	218	283	320	8
150	150-170	150	159-182	KIISTPLG0150-0150/2	234	256	320	8
150	150-170	150	170-193	KIISTPLG0150-0150/3	234	268	320	8
150	150-170	175	192-209	KIISTPLG0150-0175	234	283	320	9
150	150-170	200	218-235	KIISTPLG0150-0200	234	309	320	9
150	159-182	150	170-193	KIISTPLG0150-0150/3	256	268	320	9
150	159-182	175	192-209	KIISTPLG0150-0175	256	283	320	10
150	159-182	200	218-235	KIISTPLG150/2-0200	256	309	320	1
150	170-193	175	192-209	KIISTPLG150/3-0175	268	283	320	1
150	170-193	200	218-235	KIISTPLG0150/3-0200	268	309	320	1
175	192-209	200	218-235	KIISTPLG0175-0200	283	309	320	12
175	192-209	225	239-250	KIISTPLG0175-0225	283	326	320	13
175	192-209	225	250-267	KIISTPLG0175-0225/2	283	341	320	14
200	218-235	225	235-252	KIISTPLG0200-0225	296	326	320	14
200	218-235	225	259-267	KIISTPLG0200-0225/2	296	341	320	14
200	218-235	250	271-289	KIISTPLG0200-0250	296	403	320	15
200	218-235	275	302-318	KIISTPLG0200-0275	296	432	320	15
200	218-235	300	315-332	KIISTPLG0200-0300	296	446	320	16
225	235-252	225	250-267	KIISTPLG0225-0225/2	309	341	320	17
225	235-252	250	273-286	KIISTPLG0225-0250	309	403	320	17
225	235-252	275	302-318	KIISTPLG0225-0275	309	432	320	18
225	235-252	300	315-332	KIISTPLG0225-0300	309	446	320	19
225	250-267	250	271-289	KIISTPLG0225/2-0250	341	403	320	19
225	250-267	275	302-318	KIISTPLG225/2-0275	341	403	320	19
225	250-267	300	315-332	KIISTPLG0225/2-0300	341	446	320	20

Materials of Construction & Relevant Standards

Couplings

Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

All Stainless Steel 304 or 316 construction on request

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Bolts & Nuts

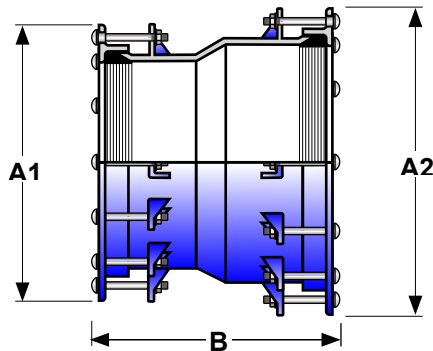
Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Overall Dimensions KII Stepped Couplings



Rexus KII Stepped Couplings can be manufactured to any pipe OD and Pressure Rating.

Standard Working Pressure is 16 bar.

Site Test pressure is 1.5 times working

Smaller Dia.		Larger Dia.		Order Code	A1 mm	A2 mm	B mm	Weight kg
Nominal Bore (mm)	Pipe OD Range (mm)	Nominal Bore (mm)	Pipe OD Range (mm)					
250	271-289	250	286-304	KIISTPLGLG0250-0250/2	403	418	320	22
250	271-289	275	302-318	KIISTPLGLG0250-0275	403	432	320	22
250	271-289	300	315-332	KIISTPLGLG0250-0300	403	446	320	23
250	286-304	275	302-318	KIISTPLGLG0250/2-0275	418	432	320	23
250	286-304	300	315-332	KIISTPLGLG0250/2-0300	418	446	320	24
275	302-318	300	315-332	KIISTPLGLG0275-0300	432	446	320	24
275	302-318	300	334-350	KIISTPLGLG0275-0300/2	432	464	320	24
275	302-318	350	334-360	KIISTPLGLG0275-0350	432	474	320	25
300	315-332	300	334-350	KIISTPLGLG0300-0300/2	446	464	320	25
300	315-332	350	344-360	KIISTPLGLG0300-0350	446	474	320	25
300	315-332	350	374-391	KIISTPLGLG0300-0350/2	446	505	320	26
350	344-360	350	374-391	KIISTPLGLG0350-0350/2	474	505	320	27
350	344-360	400	391-410	KIISTPLGLG0350-0400	474	524	320	27
350	344-360	400	401-417	KIISTPLGLG0350-0400/2	474	531	320	27
350	344-360	400	417-437	KIISTPLGLG0350-0400/3	474	551	320	28
350	344-360	400	430-446	KIISTPLGLG0350-0400/4	474	560	320	29
350	344-360	450	444-460	KIISTPLG0350-0450	474	574	320	29
400	397-410	400	401-417	KIISTPLG0400-0400/2	524	531	320	30
400	397-410	400	417-437	KIISTPLG0400-0400/3	524	551	320	30
400	397-410	400	430-446	KIISTPLG0400-0400/4	524	560	320	30
400	397-410	450	444-460	KIISTPLG0400-0450	524	574	320	31
400	397-410	450	458-474	KIISTPLG0400-0450/2	524	588	320	32
400	397-410	450	477-493	KIISTPLG0400-0450/3	524	607	320	32
400	397-410	500	494-510	KIISTPLG0400-0500	524	624	320	33
400	401-417	450	444-460	KIISTPLG0400/2-0450	531	573	320	33

Materials of Construction & Relevant Standards

Couplings

Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

All Stainless Steel 304 or 316 construction on request

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Bolts & Nuts

Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

KII Flange Adaptors

Flange Adaptors are used to enable plain-ended pipes to be connected either to flanged pipe or to flanged valves and other fittings.

REXUS KII Flange Adaptors are provided as standard with flat mating faces (raised faces can be provided upon request). These are suitable for bolting to both flat and raised faces. The same gasket loading characteristics can be obtained as with a raised face assembly.

Pressure Ratings

REXUS KII Flange Adaptors are supplied to suit the pressure rating of the flange, unless specifically ordered otherwise.

REXUS Provides Flange Adaptors in Pressure Ratings of PN10, PN16, PN25 and PN40 as standard. Flange Adaptors with working pressures of up to PN64 are available on request.

Design

Rexus provides as standard, Flange Adaptors with a straight sleeve and a full bore for ease of installation.

Flange Adaptors with an expanded sleeve for specific use with very thick walled pipe such as Fibre Cement or Concrete can be supplied upon request.

Always confirm dimensional details before ordering.

The Rexus KII Difference

End Ring

Steel to SANS 1431 Grade 300 or Grade 350 WA or EN 10025 - Grade S355 JR Fusion Bonded Epoxy Coated to 300 microns as standard.

Rigoursly tested for strength and life expectancy of 50 years or more

Flanges

Steel to SANS 1431 Grade 300 WA or 350 WA or EN 10025 - Grade S355 JR Fusion Bonded Epoxy Coated to 300 microns as standard.

Flanges available to SANS 1123 or BS 4504 or EN 1092 pressure ratings of PN10 to PN40

Centre Sleeve

Rolled Steel to SANS 1431 Grade 300 or 350 WA or to EN 10025 - Grade S355 JR Fusion Bonded Epoxy Coated to 300 microns as standard

Long sleeve lengths as standard for ease of installation

Flared ends to provide deep gasket chamber and allow for maximum possible pipe adjustment

Coating - Flange, Centre Sleeve and End Rings
High impact, abrasion, weather and chemical resistant Fusion Bonded Epoxy to 300 microns as standard.

Other coatings are available upon request

Studs, Nuts and Washers

Hot Dipped Galvanised to SANS 763 as standard. Other coatings available on request

Stainless Steel 304 or 316 available on request

Rubber Gasket

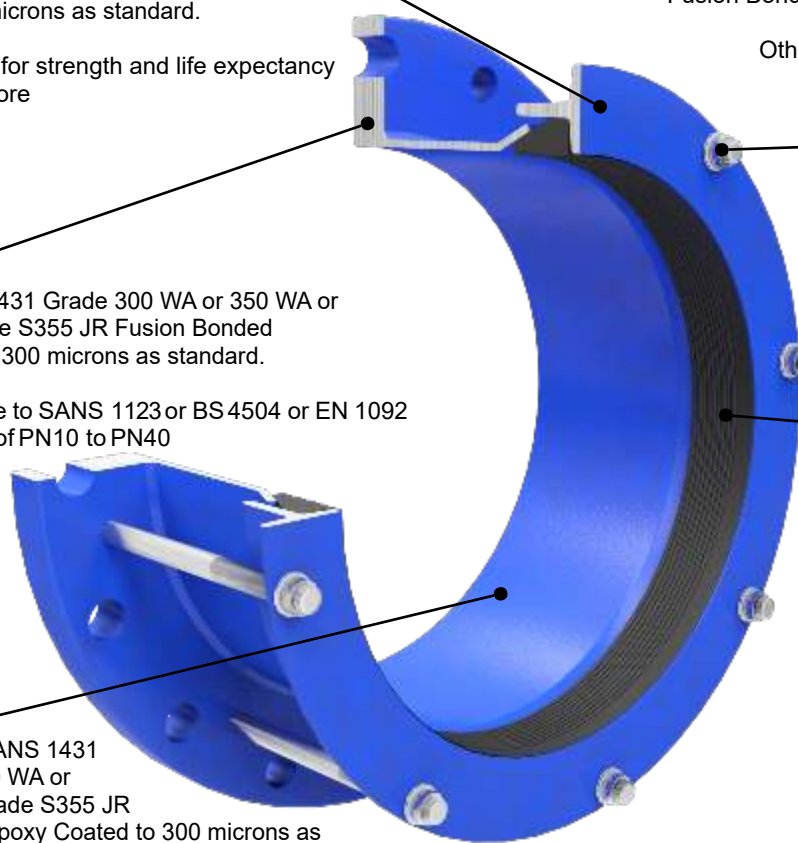
EPDM to ISO 4633/ SABS 974 Rubber Gasket ribbed and generously sized. All Rubber Gaskets are moulded regardless of size.

Alternative grades available on request

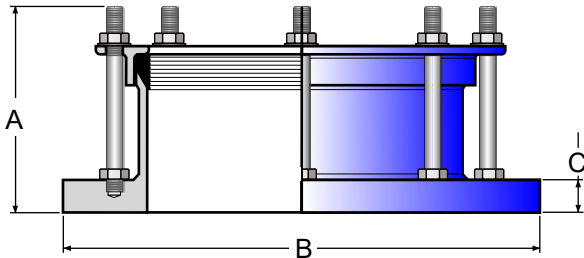
Distinct circumferential ribs provides maximum sealing on scored, corroded and pitted pipe

Gasket is compressed independently of the tie rods.

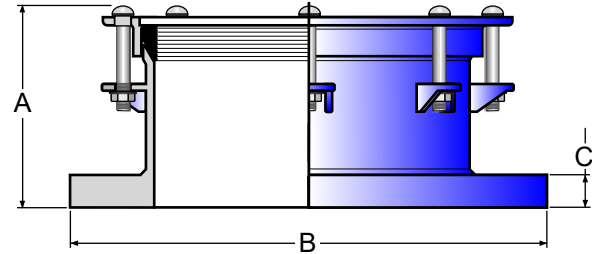
Sealing failure cannot occur once the gasket is compressed to the required torque



Overall Dimensions Sizes DN50 to DN300



KII Couplings with Studs



KII Couplings with Brackets

- Rexus KII Flange Adaptors can be manufactured to any pipe diameter or pressure rating. Please contact Rexus for any size or pressure rating not displayed.
- The working pressures of all our Flange Adaptors are in accordance to the flange drilling. Site test pressure is 1.5 times the pipeline working pressure.
- Rexus KII Flange Adaptors as standard, have a long barrel design for ease of installation and for a generous allowance for expansion and contraction.
- Rexus KII Flange Adaptors can, upon request, be supplied for end restraint.

DN (mm)	FLANGE SPEC.		FLANGE DRILLING SANS	FLANGE DRILLING BS EN	A (mm)	B (mm)	C (mm)	FLANGE BOLT SIZE (mm)	WEIGHT kg (APPROX)
50	SANS1123	BS EN 1092	T1000/3, T1600/3	PN10, PN16	180	165	12	4 x M16	3
50	SANS1123	BS EN 1092	T2500/3, T4000/3	PN25, PN40	180	165	20	4 x M16	3.2
80	SANS1123	BS EN 1092	T1000/3, T1600/3	PN10, PN16	180	200	14	8 x M16	3.8
80	SANS1123	BS EN 1092	T2500/3, T4000/3	PN25, PN40	180	200	22	8 x M16	4
100	SANS1123	BS EN 1092	T1000/3, T1600/3	PN10, PN16	180	220	14	8 x M16	4.8
100	SANS1123	BS EN 1092	T2500/3, T4000/3	PN25, PN40	180	235	25	8 x M20	5
150	SANS1123	BS EN 1092	T1000/3, T1600/3	PN10, PN16	220	285	18	8 x M20	7.6
150	SANS1123	BS EN 1092	T2500/3, T4000/3	PN25, PN40	220	300	30	8 x M24	8
200	SANS1123	BS EN 1092	T1000/3	PN10	220	340	18	12 x M20	9
200	SANS1123	BS EN 1092	T1600/3	PN16	220	340	22	12 x M20	9.5
200	SANS1123	BS EN 1092	T2500/3	PN25	220	360	28	12 x M24	10
200	SANS1123	BS EN 1092	T4000/3	PN40	220	375	32	12 x M24	11
250	SANS1123	BS EN 1092	T1000/3	PN10	220	395	18	12 x M20	14
250	SANS1123	BS EN 1092	T1600/3	PN16	220	405	18	12 x M24	14.5
250	SANS1123	BS EN 1092	T2500/3	PN25	220	425	28	12 x M24	15
250	SANS1123	BS EN 1092	T4000/3	PN40	220	450	28	12 x M30	15.5
300	SANS1123	BS EN 1092	T1000/3	PN10	220	445	18	12 x M20	16
300	SANS1123	BS EN 1092	T1600/3	PN16	220	460	18	12 x M24	17
300	SANS1123	BS EN 1092	T2500/3	PN25	220	485	28	16 x M24	18
300	SANS1123	BS EN 1092	T4000/3	PN40	220	515	28	16 x M30	19

Materials of Construction & Relevant Standards

Flange Drilling

SANS 1123 or BS EN 1092-1 ISO 7005

Flange Adaptor

Body/ Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings/Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Flange - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Stainless Steel Tie Rods & Nuts

Studs - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

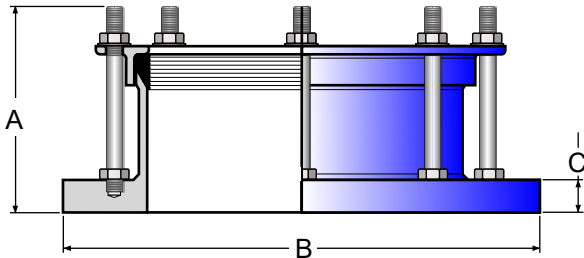
Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

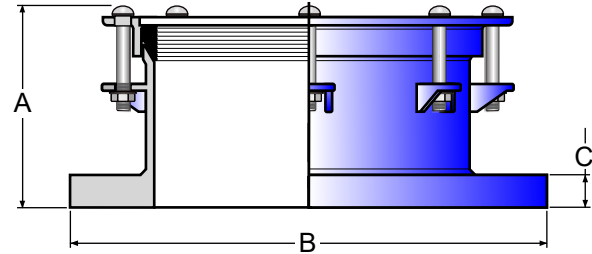
Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Overall Dimensions DN350 to DN600



KII Couplings with Studs



KII Couplings with Brackets

- Rexus KII Flange Adaptors can be manufactured to any pipe diameter or pressure rating. Please contact Rexus for any size or pressure rating not displayed.
- The working pressures of all our Flange Adaptors are in accordance to the flange drilling. Site test pressure is 1.5 times the pipeline working pressure.
- Rexus KII Flange Adaptors as standard, have a long barrel design for ease of installation and for a generous allowance for expansion and contraction.
- Rexus KII Flange Adaptors can upon request be supplied for end restraint.

DN (mm)	FLANGE SPEC.			FLANGE DRILLING BS EN	A (mm)	B (mm)	C (mm)	FLANGE BOLT SIZE (mm)	WEIGHT kg (APPROX.)
350	SANS1123	BS EN 1092	T1000/3	PN10	260	505	23	16 x M20	23
350	SANS1123	BS EN 1092	T1600/3	PN16	260	520	23	16 x M24	27
350	SANS1123	BS EN 1092	T2500/3	PN25	260	555	28	16 x M30	36
350	SANS1123	BS EN 1092	T4000/3	PN40	260	580	28	16 x M30	39
400	SANS1123	BS EN 1092	T1000/3	PN10	260	565	23	16 x M24	26
400	SANS1123	BS EN 1092	T1600/3	PN16	260	580	23	16 x M24	28
400	SANS1123	BS EN 1092	T2500/3	PN25	260	620	28	16 x M30	40
400	SANS1123	BS EN 1092	T4000/3	PN40	260	660	28	16 x M36	43
450	SANS1123	BS EN 1092	T1000/3	PN10	260	615	23	20 x M24	33
450	SANS1123	BS EN 1092	T1600/3	PN16	260	640	23	20 x M24	37
450	SANS1123	BS EN 1092	T2500/3	PN25	260	670	28	20 x M30	45
450	SANS1123	BS EN 1092	T4000/3	PN40	260	685	28	20 x M36	48
500	SANS1123	BS EN 1092	T1000/3	PN10	260	670	23	20 x M24	38
500	SANS1123	BS EN 1092	T1600/3	PN16	260	715	23	20 x M30	45
500	SANS1123	BS EN 1092	T2500/3	PN25	260	730	28	20 x M30	55
500	SANS1123	BS EN 1092	T4000/3	PN40	260	755	28	20 x M36	58
600	SANS1123	BS EN 1092	T1000/3	PN10	260	780	23	20 x M24	52
600	SANS1123	BS EN 1092	T1600/3	PN16	260	840	23	20 x M30	60
600	SANS1123	BS EN 1092	T2500/3	PN25	260	845	28	20 x M36	67
600	SANS1123	BS EN 1092	T4000/3	PN40	260	890	38	20 x M45	70

Materials of Construction & Relevant Standards

Flange Drilling

SANS 1123 or BS EN 1092-1 ISO 7005

Flange Adaptor

Body/ Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings/Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Flange - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Stainless Steel Tie Rods & Nuts

Studs - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

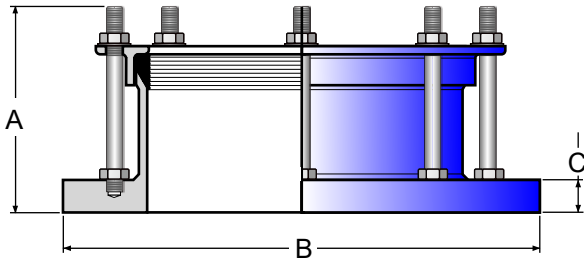
Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

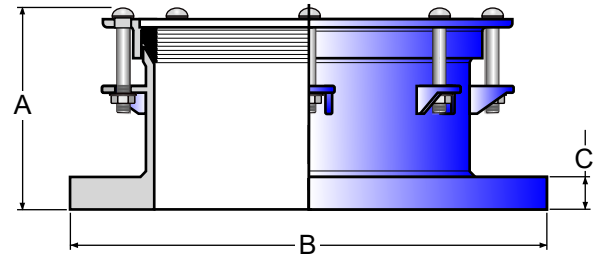
Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Overall Dimensions DN700 to DN1200



KII Couplings with Studs



KII Couplings with Brackets

- Rexus KII Flange Adaptors can be manufactured to any pipe diameter or pressure rating. Please contact Rexus for any size or pressure rating not displayed.
- The working pressures of all our Flange Adaptors are in accordance to the flange drilling. Site test pressure is 1.5 times the pipeline working pressure.
- Rexus KII Flange Adaptors as standard, have a long barrel design for ease of installation and for a generous allowance for expansion and contraction.
- Rexus KII Flange Adaptors can upon request be supplied for end restraint.

DN (mm)	FLANGE SPEC.		FLANGE DRILLING SANS	FLANGE DRILLING BS EN	A (mm)	B (mm)	C (mm)	FLANGE BOLT SIZE (mm)	WEIGHT kg (APPROX.)
700	SANS1123	BS EN 1092	T1000/3	PN10	260	895	23	24 x M24	55
700	SANS1123	BS EN 1092	T1600/3	PN16	260	910	23	24 x M30	67
700	SANS1123	BS EN 1092	T2500/3	PN25	280	960	28	24 x M39	76
700	SANS1123	BS EN 1092	T4000/3	PN40	280	995	38	24 x M45	81
800	SANS1123	BS EN 1092	T1000/3	PN10	260	1015	23	24 x M30	90
800	SANS1123	BS EN 1092	T1600/3	PN16	260	1025	23	24 x M36	92
800	SANS1123	BS EN 1092	T2500/3	PN25	280	1085	28	24 x M45	95
800	SANS1123	BS EN 1092	T4000/3	PN40	280	1140	38	24 x M52	99
900	SANS1123	BS EN 1092	T1000/3	PN10	260	1115	28	28 x M30	103
900	SANS1123	BS EN 1092	T1600/3	PN16	260	1125	28	28 x M36	124
900	SANS1123	BS EN 1092	T2500/3	PN25	280	1185	28	28 x M45	130
900	SANS1123	BS EN 1092	T4000/3	PN40	280	1250	38	28 x M52	132
1000	SANS1123	BS EN 1092	T1000/3	PN10	260	1230	28	28 x M30	112
1000	SANS1123	BS EN 1092	T1600/3	PN16	260	1255	28	28 x M36	152
1000	SANS1123	BS EN 1092	T2500/3	PN25	280	1320	38	28 x M52	180
1000	SANS1123	BS EN 1092	T4000/3	PN40	280	1360	38	28 x M52	200
1200	SANS1123	BS EN 1092	T1000/3	PN10	260	1455	38	32 x M36	224
1200	SANS1123	BS EN 1092	T1600/3	PN16	260	1485	38	32 x M42	228
1200	SANS1123	BS EN 1092	T2500/3	PN25	280	1530	38	32 x M52	243
1200	SANS1123	BS EN 1092	T4000/3	PN40	280	1575	38	32 x M56	256

Materials of Construction & Relevant Standards

Flange Drilling

SANS 1123 or BS EN 1092-1 ISO 7005

Flange Adaptor

Body/ Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

End Rings/Sleeve - Rolled Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Flange - Carbon Steel to SANS 1431 Grade 350 WA or EN 10025 - S355 JR

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Stainless Steel Tie Rods & Nuts

Studs - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

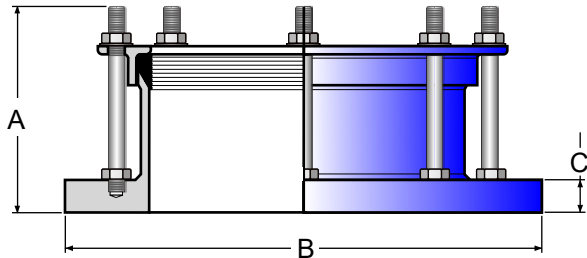
Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

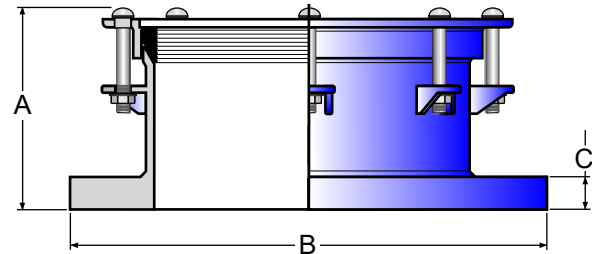
Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Overall Dimensions DN1400 to DN2000



KII Couplings with Studs



KII Couplings with Brackets

- Rexus KII Flange Adaptors can be manufactured to any pipe diameter or pressure rating. Please contact Rexus for any size or pressure rating not displayed.
- The working pressures of all our Flange Adaptors are in accordance to the flange drilling. Site test pressure is 1.5 times the pipeline working pressure.
- Rexus KII Flange Adaptors as standard, have a long barrel design for ease of installation and for a generous allowance for expansion and contraction.
- Rexus KII Flange Adaptors can upon request be supplied for end restraint.

DN (mm)	FLANGE DRILLING SANS	FLANGE SPEC BS EN	FLANGE DRILLING SANS	FLANGE DRILLING BS EN	A (mm)	B (mm)	C (mm)	FLANGE BOLT SIZE SANS (mm)	FLANGE BOLT SIZE BS EN (mm)	WEIGHT kg (APPROX.)
1400	SANS 1123	BS EN 1092	T1000	PN10	260	1675	38	36 x M36	36 x M39	229
1400	SANS 1123	BS EN 1092	T1600	PN16	260	1685	38	36 x M42	36 x M45	262
1400	SANS 1123	BS EN 1092	T2500	PN25	280	1755	60	36 x M56	36 x M56	392
1600	SANS 1123	BS EN 1092	T1000	PN10	260	1915	38	40 x M42	40 x M45	329
1600	SANS 1123	BS EN 1092	T1600	PN16	260	1930	38	40 x M42	40 x M52	383
1600	SANS 1123	BS EN 1092	T2500	PN25	280	1975	60	40 x M56	40 x M56	531
1800	SANS 1123	BS EN 1092	T1000	PN10	260	2115	38	44 x M42	44 x M45	373
1800	SANS 1123	BS EN 1092	T1600	PN16	260	2130	60	44 x M48	44 x M52	433
1800	SANS 1123	BS EN 1092	T2500	PN25	280	2195	60	44 x M64	44 x M64	681
2000	SANS 1123	BS EN 1092	T1000	PN10	260	2325	28	48 x M42	48 x M45	635
2000	SANS 1123	BS EN 1092	T1600	PN16	260	2345	60	48 x M56	48 x M56	748
2000	SANS 1123	BS EN 1092	T2500	PN25	280	2425	60	48 x M64	48 x M64	835

Materials of Construction & Relevant Standards

Flange Drilling

SANS 1123 or BS EN 1092-1 ISO 7005

Flange Adaptor

Body/ Sleeve - Rolled Carbon Steel to SANS 1431 or EN 10025 - S355 JR

End Rings/Sleeve - Rolled Carbon Steel to SANS 1431 or EN 10025 - S355 JR

Flange - Carbon Steel to SANS 1431 or EN 10025 - S355 JR

Protective Coating

Fusion Bonded Epoxy - 300 microns as standard

Gaskets

EPDM to SABS 974/ ISO 4633

Stainless Steel Tie Rods & Nuts

Studs - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Nuts and Bolts - Steel to SANS 1143 Grade 8.8 Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

Washers - Steel Hot Dipped Galvanised to SANS 763

- Stainless Steel 304 or 316 on request

KII Dismantling Joint

REXUS KII provides a Dismantling Joint design that is double flanged and allows for longitudinal adjustment in flanged pipe systems and therefore greater flexibility at the planning, installation and subsequent maintenance stages of flanged pipework systems.

REXUS KII Dismantling Joints accommodates for up to 50mm longitudinal adjustment and can be locked at a required length with the tie rods that are supplied as standard. This allows for fast and simple maintenance of valves and pumps.

Dismantling Joints simplifies future pipework modifications and reduces down time. Tie rods act as flange jointing bolts, reducing the number of flange bolts required. The harnessing capacity accommodated within the bolt circle, eliminating other complex anchoring systems and reducing space requirements.

The gasket is compressed independently of the tie rods. Sealing failure cannot occur once the gasket is compressed to the required torque.

Custom made Dismantling Joints are available on request.

REXUS KII Dismantling Joints are manufactured to the highest possible quality and tested to the most exacting standards to ensure that they outlast the pipes on which they are fitted.

All REXUS KII Dismantling Joints are fully end load resistant and have a pressure rating equal to that of the flange.

Nuts, Tie Rods and Washers
BS 970 Grade 070M020

Coating - Sleeve Assembly, Flange Adaptor and End Rings

High impact, abrasion, weather and chemical resistant Fusion Bonded Epoxy to 300 microns as standard. Other coatings available on request

Hot Dipped Galvanised as standard. Other coating available on request.

Harnessing accommodated within the bolt circle eliminating other complex systems and reducing space requirements.

Rubber Gasket

EPDM to ISO 4633/ SABS 974

Distinct circumferential ribs provides maximum sealing on scored, corroded and pitted pipe

Gasket is compressed independently of the tie rods.

Sealing failure cannot occur once the gasket is compressed to the required torque

Ring

Rolled Steel: SABS 1431 Gr. 350 WA or EN 10025 - S355 JR

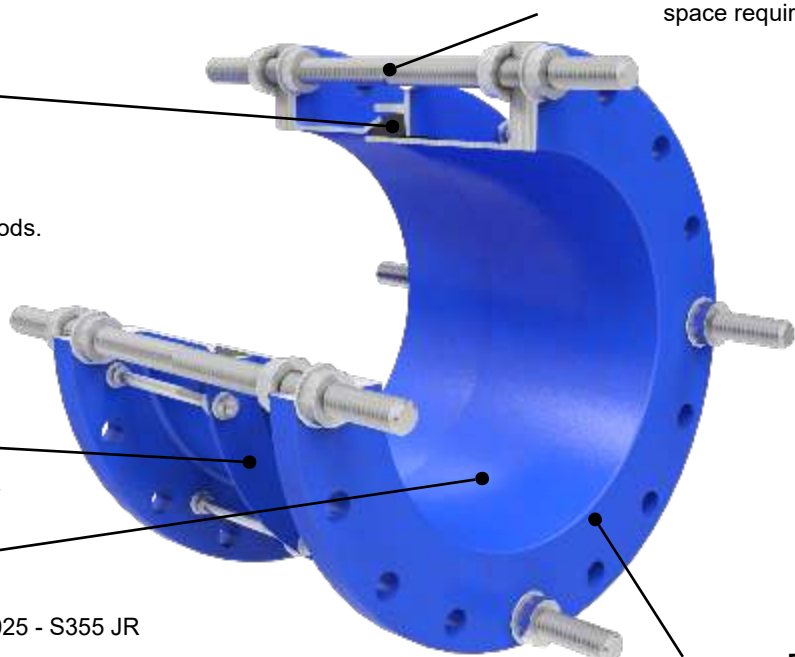
Rigourously tested for strength and life expectancy of 50 years or more

Sleeve

Rolled Steel: SABS 1431 Gr. 350 WA or EN 10025 - S355 JR

Accommodates for 50mm of longitudinal adjustment

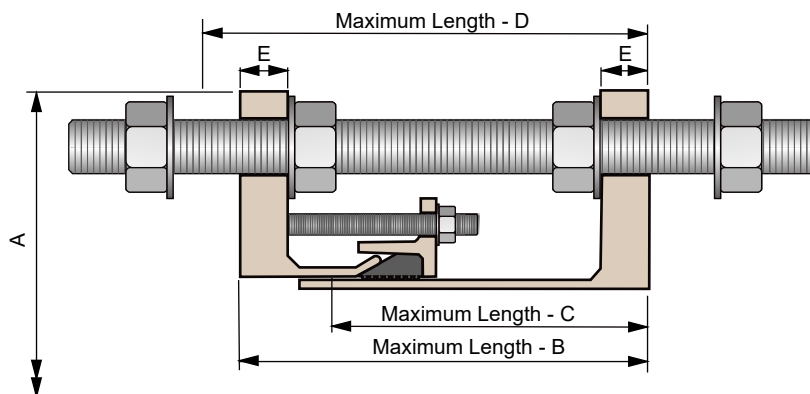
Flared ends to provide deep gasket chamber and allow for maximum possible pipe adjustment



Flanges
Steel SABS 1431 Gr. 350 WA or EN 10025 - S355 JR

Flanges are flat faced as standard

Flanges available to SANS 1123 or BS 4504 or EN 1092 in pressure ratings of PN10 to PN40 as standard



Dismantling Joint PN10

Flange Details		Flange To Flange Details					Tie Rod Details		
Nom	Drilling	Flg. Thickness	Flg. OD	Nominal Lg.	Minimum Lg.	Maximum Lg.	Steel Tie Rod		
		E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia x Length (mm)	No.	Total Weight of DJ (kg)
50	PN10	17	165	194	175	213	M16 x 300	4	8
80	PN10	17	200	194	175	213	M16 x 300	4	10
100	PN10	17	220	194	175	213	M16 x 300	4	11
150	PN10	17	285	194	175	213	M20 x 310	4	17
200	PN10	20	340	194	175	213	M20 x 310	4	24
250	PN10	19	395	194	175	213	M24 x 330	4	32
300	PN10	19	445	194	175	213	M24 x 330	4	40
350	PN10	18	505	295	270	320	M20 x 430	4	58
400	PN10	18	565	295	270	320	M24 x 440	4	69
450	PN10	23	615	300	275	325	M24 x 450	4	88
500	PN10	23	670	300	275	325	M24 x 460	5	97
550	PN10	23	730	300	275	325	M27 x 470	5	110
600	PN10	23	780	300	275	325	M27 x 470	5	118
650	PN10	23	835	300	275	325	M27 x 480	6	130
700	PN10	23	895	300	275	325	M27 x 480	6	145
800	PN10	23	1015	300	275	325	M27 x 500	6	168
900	PN10	25	1115	307	277	337	M30 x 520	6	214
1000	PN10	25	1230	307	277	337	M30 x 530	7	250
1100	PN10	38	1340	320	290	350	M33 x 540	7	295
1200	PN10	38	1466	320	290	350	M33 x 570	8	430
1400	PN10	38	1675	320	290	350	M39 x 600	8	535
1500	PN10	38	1785	320	290	350	M39 x 610	9	635
1600	PN10	38	1915	320	290	350	M39 x 630	9	728
1800	PN10	38	2115	320	290	350	M45 x 650	11	890
2000	PN10	60	2325	440	390	490	M45 x 810	12	1 040
2200	PN10	60	2550	440	390	490	M52 x 840	13	2 740
2400	PN10	60	2760	462	412	512	M52 x 880	14	2 040

Note: Flanges as standard are Flat Faced Drilled to SANS 1123/3 specifications Up to DN1000 and to BS EN1009-2 for larger sizes. Flanges are available with raised faces upon request.

Materials & Relevant Standards

Flange Drilling

BS EN1092-1 ISO7005

Flange Adaptor

Body - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

End Rings/Sleeve - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Flanged Spigot

Flange - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Spigot - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

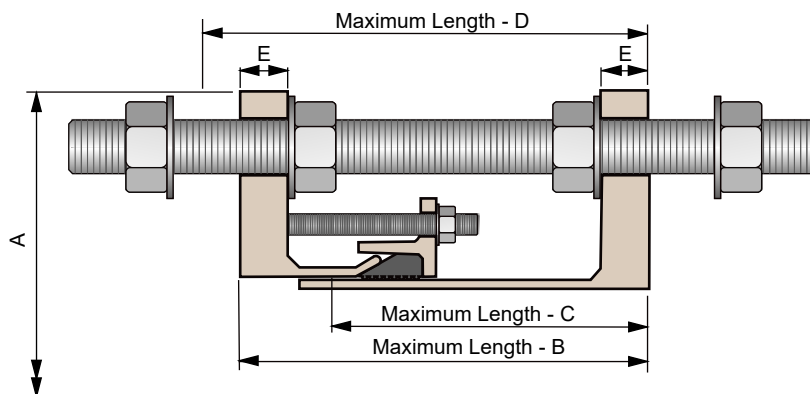
Gaskets

ISO 4633

Steel Tie Rods & Nuts

Tie Rods, Tie Rods, Nuts, Studs and Washers - Hot Dipped Galvanised to SANS 763

Alternatively - Stainless Steel 304 or 316



Dismantling Joint Dimensions PN16

Flange Details		Flange To Flange Details					Tie Rod Details		
Nom	Drilling	Flg. Thickness	Flg. OD	Nominal Lg.	Minimum Lg.	Maximum Lg.	Stainless Steel Tie Rod		
		E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia x Length (mm)	No.	Total Weight of DJ (kg)
50	PN16	17	165	194	175	213	M16 x 300	4	8
80	PN16	17	200	194	175	213	M16 x 300	4	10
100	PN16	17	220	194	175	213	M16 x 300	4	11
150	PN16	17	285	194	175	213	M20 x 310	4	17
200	PN16	20	340	194	175	213	M20 x 310	4	24
250	PN16	19	405	194	175	213	M24 x 330	4	32
300	PN16	19	460	194	175	213	M24 x 330	4	40
350	PN16	18	520	295	270	320	M24 x 450	4	65
400	PN16	18	580	295	270	320	M27 x 460	4	76
450	PN16	23	640	300	275	325	M27 x 470	5	98
500	PN16	23	715	300	275	325	M30 x 480	5	122
550	PN16	23	775	300	275	325	M30 x 490	5	135
600	PN16	23	840	300	275	325	M33 x 500	5	155
650	PN16	23	860	300	275	325	M33 x 510	6	155
700	PN16	23	910	300	275	325	M33 x 520	6	165
800	PN16	23	1025	300	275	325	M36 x 540	8	192
900	PN16	25	1125	307	277	337	M36 x 570	10	252
1000	PN16	25	1255	307	277	337	M39 x 590	10	308
1100	PN16	38	1355	320	290	350	M39 x 610	12	439
1200	PN16	38	1485	320	290	350	M45 x 640	10	531
1400	PN16	38	1685	320	290	350	M45 x 660	14	646
1500	PN16	38	1820	320	290	350	M52 x 770	12	830
1600	PN16	38	1930	320	290	350	M52 x 800	12	905
1800	PN16	38	2130	320	290	350	M52 x 810	16	1 078
2000	PN16	60	2345	462	412	512	M56 x 1020	18	1 900
2200	PN16	60	2555	462	412	512	M56 x 1040	20	2 147
2400	PN16	60	2765	462	412	512	M56 x 1070	24	2 469

Note: Flanges as standard are Flat Faced Drilled to SANS 1123/3 specifications Up to DN1000 and to BS EN1009-2 for larger sizes. Flanges are available with raised faces upon request.

Materials & Relevant Standards

Flange Drilling

BS EN1092-1 ISO7005

Flange Adaptor

Body - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

End Rings/Sleeve - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Flanged Spigot

Flange - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Spigot - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

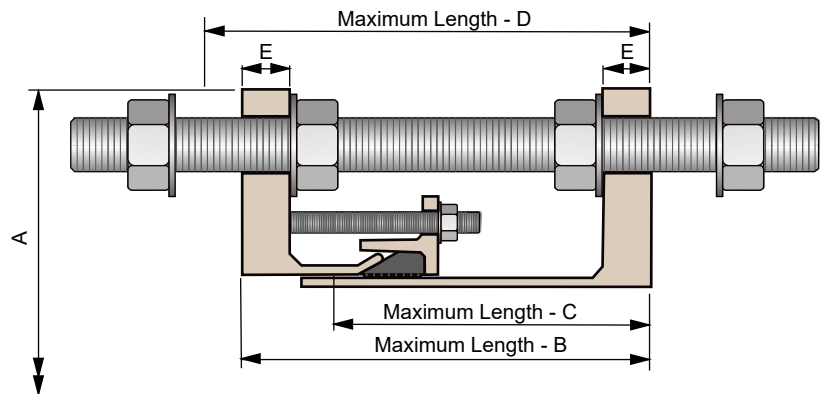
Gaskets

ISO 4633

Steel Tie Rods & Nuts

Tie Rods, Tie Rods, Nuts, Studs and Washers - Hot Dipped Galvanised to SANS 763

Alternatively - Stainless Steel 304 or 316



Dismantling Joint Dimensions PN25

Flange Details		Flange To Flange Details					Tie Rod Details		
Nom	Drilling	Flg. Thickness	Flg. OD	Nominal Lg.	Minimum Lg.	Maximum Lg.	Stainless Steel Tie Rod		
		E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia x Length (mm)	No.	Total Weight of DJ (kg)
50	PN25	18	165	194	175	213	M16 x 300	4	8
80	PN25	18	200	194	175	213	M16 x 300	4	10
100	PN25	18	235	194	175	213	M16 x 320	4	11
150	PN25	18	300	194	175	213	M20 x 330	4	17
200	PN25	25	340	194	175	213	M24 x 350	4	24
250	PN25	25	425	194	175	213	M27 x 350	4	32
300	PN25	25	485	194	175	213	M27 x 350	4	40
350	PN25	25	565	302	277	327	M30 x 480	4	90
400	PN25	25	620	302	277	327	M33 x 490	4	105
450	PN25	25	670	302	277	327	M33 x 500	5	120
500	PN25	25	730	302	277	327	M33 x 510	5	135
550	PN25	25	785	302	277	327	M36 x 530	5	150
600	PN25	25	845	302	277	327	M36 x 540	5	165
650	PN25	25	895	302	277	327	M36 x 550	6	195
700	PN25	25	960	302	277	327	M39 x 570	6	210
800	PN25	25	1086	307	277	337	M45 x 630	6	280
900	PN25	25	1185	307	277	337	M45 x 630	7	316
1000	PN25	38	1320	320	290	350	M52 x 740	7	521
1200	PN25	60	1530	462	290	350	M52 x 770	8	640
1400	PN25	60	1755	462	412	512	M56 x 980	9	1185
1600	PN25	60	1975	462	412	512	M56 x 1010	10	1520

Note: Flanges as standard are Flat Faced Drilled to SANS 1123/3 specifications Up to DN1000 and to BS EN1009-2 for larger sizes. Flanges are available with raised faces upon request.

Materials & Relevant Standards

Flange Drilling

BS EN1092-1 ISO7005

Flange Adaptor

Body - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

End Rings/Sleeve - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Flanged Spigot

Flange - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Spigot - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

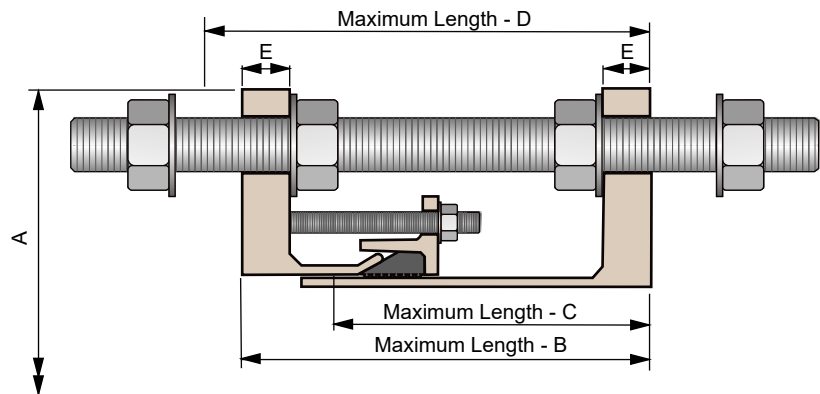
Gaskets

ISO 4633

Tie Rods & Nuts

Tie Rods, Tie Rods, Nuts, Studs and Washers - Hot Dipped Galvanised to SANS 763

Alternatively - Stainless Steel 304 or 316



Dismantling Joint Dimensions PN40

Flange Details		Flange To Flange Details					Tie Rod Details		
Nom	Drilling	Flg. Thickness	Flg. OD	Nominal Lg.	Minimum Lg.	Maximum Lg.	Stainless Steel Tie Rod		
		E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia x Length (mm)	No.	Total Weight of DJ (kg)
50	PN40	17	165	194	175	213	M16 x 300	4	8
80	PN40	17	200	194	175	213	M16 x 300	4	10
100	PN40	25	235	194	175	213	M20 x 320	4	11
150	PN40	25	285	194	175	213	M24 x 330	4	17
200	PN40	25	375	194	175	213	M27 x 350	4	24
250	PN40	25	450	194	175	213	M30 x 370	4	32
300	PN40	25	515	194	175	213	M30 x 380	4	40
350	PN40	25	580	307	277	337	M33 x 520	4	115
400	PN40	25	660	307	277	337	M36 x 540	4	140
450	PN40	25	685	307	277	337	M36 x 550	5	149
500	PN40	25	755	307	277	337	M39 x 570	5	175
550	PN40	38	835	320	290	350	M45 x 600	5	292
600	PN40	38	890	320	290	350	M45 x 620	5	310
650	PN40	38	945	320	290	350	M45 x 630	6	365
700	PN40	38	995	320	290	350	M45 x 640	6	380
800	PN40	38	1140	320	290	350	M52 x 680	6	472
900	PN40	38	1250	320	290	350	M52 x 700	7	568
1000	PN40	38	1360	320	290	350	M52 x 720	8	872
1200	PN40	38	1575	320	290	350	M56 x 780	10	1649
1400	PN40	60	1795	462	412	512	M56 x 980	14	1650
1600	PN40	60	2025	462	412	512	M64 x 1040	14	1996

Note: Flanges as standard are Flat Faced Drilled to SANS 1123/3 specifications Up to DN600 and to BS EN1009-2 for larger sizes. Flanges are available with raised faces upon request.

Materials & Relevant Standards

Flange Drilling

BS EN1092-1 ISO7005

Flange Adaptor

Body - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

End Rings/Sleeve - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Flanged Spigot

Flange - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Spigot - Ductile Iron: BS 2789 Gr. 420/12 or Rolled Steel to EN 10025 - S355 JR Fusion Bonded Epoxy Coated to 300 microns

Gaskets

ISO 4633

Steel Tie Rods & Nuts

Tie Rods, Tie Rods, Nuts, Studs and Washers - Hot Dipped Galvanised to SANS 763

Alternatively - Stainless Steel 304 or 316

Angular Deflection

REXUS KII couplings and flange adaptors are able to accommodate a certain degree of pipe angular deflection.

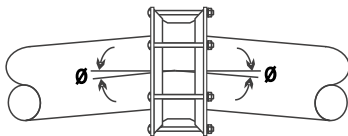
This feature allows for pipe axial mis-alignment (lateral displacement) when pipes are laid. It also accommodates for ground movement and ground settlement. In addition it allows for the negotiation of long radius bends without the use of special small angle bends.

Couplings and flange adaptors exhibit a maximum setting pipe angular deflection. This is the maximum deflection allowed between the axis of the two pipes, the coupling is joining. This setting angular deflection is listed in the table below:

The angular deflections given are for use with pipes that are not expected to move in service.

If the pipes move in service it is recommended to half the setting angularity figures allowing for in service pipe movement and flexibility.

Coupling Setting Angularity		Flange Adaptor Setting Angularity	
Pipe Nominal Bore	Angular Deflection	Pipe Nominal Bore	Angular Deflection
mm	degrees	mm	degrees
Up to DN450	±6°	Up to DN450	±3°
Over DN450-DN600	±5°	Over DN450-DN600	±2.5°
Over DN600-DN750	±4°	Over DN600-DN750	±2°
Over DN750-DN1200	±3°	Over DN750-DN1200	±1.5°



Angular deflection (θ) up to 6 degrees for smaller diameters and 3 degrees or less for larger diameter

Lateral Displacement

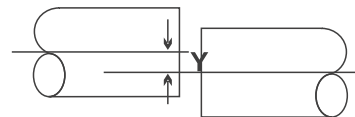
Lateral displacement occurs when the axis of two pipes to be joined are not aligned. That is the axis of the pipes are parallel but they are offset.

This displacement between two pipes can easily be accommodated using two couplings and an appropriate length of closing pipe (spool piece).

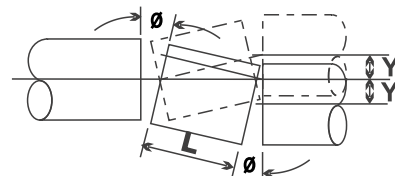
A single coupling cannot accommodate lateral displacement. The length of the closing pipe can be calculated from the table below.

Closing Length Table	
Pipe Nominal Bore	Angular Deflection
mm	L Minimum Length (mm)
Up to DN450	Displacement Y x 10
Over DN450-DN600	Displacement Y x 12
Over DN600-DN750	Displacement Y x 15
Over DN750-DN1200	Displacement Y x 20

Examples: Pipe OD = 711mm
 Lateral displacement (Y) to be accommodated
 Minimum closing length (spool piece) = 90 x 15 = 1350mm



Lateral displacement (Y) can be accommodated using two couplings



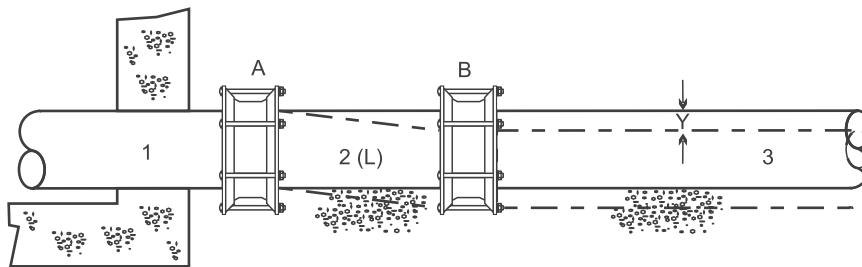
Length of closing pipe (L) depends on maximum angularity (θ)

Angular Deflection

Ground Settlement

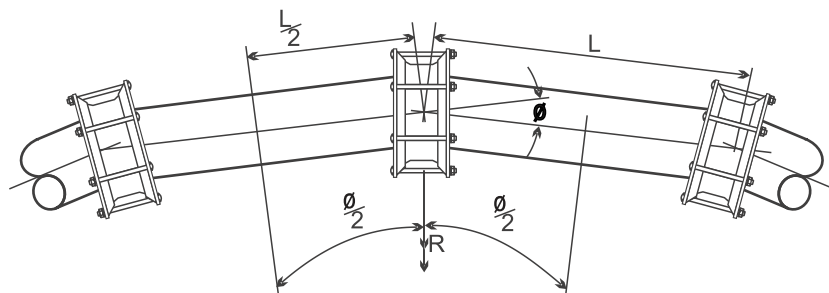
Ground settlement that results from the settlement of valve chambers and/or pipe bedding may put stresses onto the pipe exiting valve chambers. The stress on the pipe can be minimised by the use of two REXUS KII couplings.

To minimise stresses coupling A should be installed as close as possible to the valve chamber wall. The two couplings A and B should allow the spool piece to deflect to take up settlement Y. The minimum length of spool piece is determined using Table 2.



Long Radius Curves

It is possible, utilising, REXUS KII couplings, to lay long radius curves without the need for special large angle bends and associated thrust blocks. This is achieved by taking a small angular deflection at each coupling.



$$R = \frac{L}{2 \sin 1/2 \theta} \quad \text{Or} \quad \theta = 2 \sin^{-1} \left(\frac{L}{2R} \right)$$

where L = pipe length
 theta = angular deflection
 r = radius of curve

Note:

In an above ground pipeline, lateral pressure thrusts will need to be restrained by the support system. Buried pipes laid to a curve will normally receive sufficient support from the trench backfill material.

Minimum Radius Table				
Pipe Diameter	DN40-DN450	DN450-DN600	DN600-DN750	DN750-DN1200
Nominal Angle	6°	5°	4°	3°
3m	29m	34m	43m	57m
6m	57m	69m	86m	115m
9m	86m	103m	129m	172m
12m	115m	138m	172m	229m

Note:

Other radii may be calculated using the formula above. These minimum radii do not allow for any in service movement

Setting Gaps

Mechanical Couplings are often referred to as Flexible Couplings due to their performance characteristics which allows for a degree of angular deflection and pipe movement throughout the life-span of the pipeline. Pipe movement can result from ground settlement, thermal expansion and contraction, pressure forces etc. The coupling accommodates this movement without leakage.

It is important that a specified gap exists between pipe ends at the time of pipeline installation. If the gap between pipe ends is insufficient under excessive thermal expansion, the pipe ends may butt up against each other resulting in possible buckling of the pipeline. The other extreme is possible; if the gap between pipe ends is too large and pipeline contraction occurs, then the pipe ends may pull out of the coupling resulting in pipeline failure.

It is necessary to ensure the pipe ends are set at the correct setting gaps for each REXUS KII connection, albeit a coupling, flange adapter or socketed fitting. The setting gaps correlate with the maximum settings for angular deflection to ensure that at the maximum angularity the pipe ends do not butt up against each other. Likewise the pipe ends do not disengage from the coupling.

Under normal operating conditions soil friction is sufficient to restrain buried pipelines. Certain soil conditions and extreme operating environments, such as high pressure and steep gradients do not prevent pipe lengths from moving and additional restraint must be supplied. Normally in the form of Strapping or Concrete Thrust Blocks.

For above ground installations it can occur that the pipe lengths creep in one direction and shunt up against each other resulting in pipeline failure. This creep of the pipes must be restrained to ensure that the maximum setting gaps are not exceeded. The drawing below, illustrates recommended setting gaps.

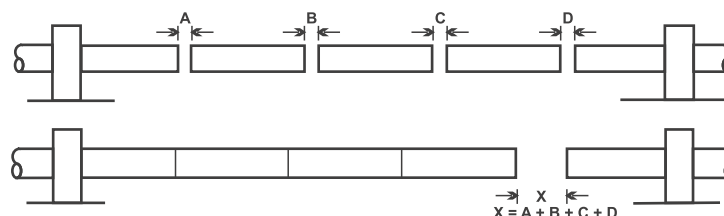
Pipe movement must be controlled to ensure that the maximum permissible setting gap is not exceeded. Consideration of the pipe material and hence the coefficient of thermal expansion and actual angular deflection may lead to different initial setting gaps.

When laying pipes in a straight line, the setting gap should be between 15-20 mm regardless of the pipe size.

If Couplings are supplied with centre registers the recommended setting gap should be increased by the thickness of the centre register pin, the maximum permissible setting gap can not be increased or exceeded.

Where pipe with high coefficients of thermal expansion are used REXUS can manufacture Couplings with a longer barrel. These couplings are called REXUS KII Plus Couplings and referred to as Long Barrel Couplings, Adaptors or Socketed Fittings. The longer barrel allows for an increased amount of pipe expansion and contraction and hence increased setting gaps are available. Long Barrel Couplings of all nominal bores are available.

Setting Gaps - Couplings			
Coupling Nominal Size mm	Coupling Sleeve Width mm	Recommended Setting Gap mm	Maximum Allowable Setting Gap mm
40 - 125	100	20	40
150	120	20	40
175 - 300	130	20	40
350 - 750	160	25	50
Specials	> 180	40	80



Pressure Forces

All pipelines under pressure are subject to longitudinal forces which tend to separate the component parts of the pipeline.

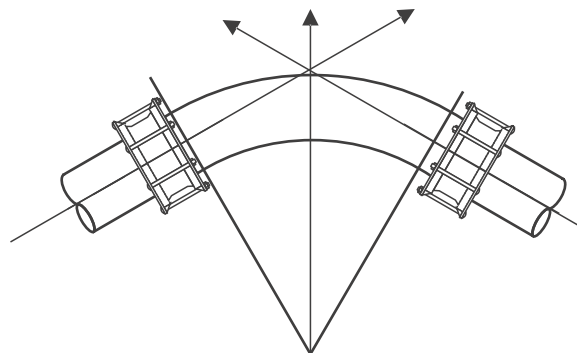
It is important to appreciate the magnitude of the end thrusts which can result from internal pressure in a pipeline. These longitudinal forces are particularly important in pipelines joined with couplings. Due consideration should be taken not only of these forces but also the means of resisting them to prevent failure of the pipeline.

Pressure thrusts will be produced at all changes in direction, e.g. bends, tees etc. and at end caps, valves and reducers. Unless these thrusts are restrained locally at the point at which they are developed, pipe components may move under the load, leading to failure.

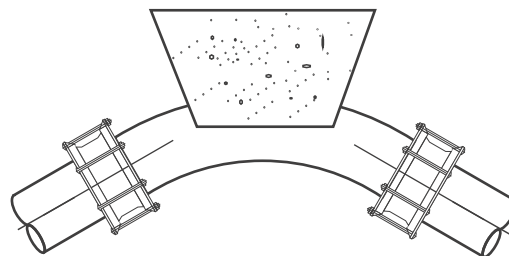
REXUS KII couplings do not resist longitudinal thrust loading and pipe pull out may occur unless the loads are restrained by other means.

Even small diameter pipes may pull out of couplings at modest pressures unless proper external restraint is provided, especially if the pipe system is subjected to temperature or pressure fluctuations, vibrations and external loadings.

With above ground pipelines it is generally necessary to take full account of the thrusts produced by internal pressures and to restrain them with thrust blocks, anchorages or tie rods.



Typical Longitudinal Pressure Forces Acting on a Bend



Concrete Thrust Block for Restraining a Bend

Pressure Forces

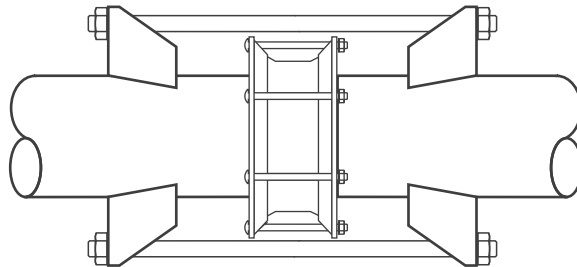
Buried pipelines are restrained by the use of thrust blocks at bends, crosses, pipeline changes in direction, pump and valve chambers etc. Above ground pipelines require a different pipeline component restraining method. REXUS KII couplings do not restrain longitudinal thrust forces or prevent end pull out, adequate external restraint must be provided. Therefore, a common method of above ground pipeline component restraint is the use of a Coupling Harness Assembly.

A Coupling Harness Assembly is a simple method of restraint using weld-on lugs and tie rods suitable for the pipeline separation forces, i.e. bigger tie rods for larger pipe diameters and greater internal operating pressures, as these result in higher separation forces.

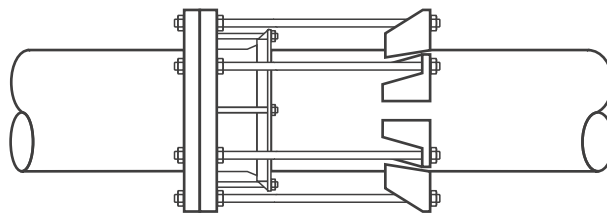
As the lugs are weld-on lugs manufactured from mild steel, they can only be used on steel pipeline components (they cannot be welded onto PVC pipe). For other pipe materials such as GRP restraining flanges can be cast onto the pipe end, suitable for restraining tie rods. REXUS provides a simple and elegant solution for restraining PVC and HDPE pipe - please contact REXUS for more details.

The Harness Assembly must be designed specifically to suit the application, to ensure suitable restraint for the anticipated separation forces. The Harness Assembly is, unless otherwise specified, supplied with tie bars, the weld-on lugs are welded to the side of the pipes and not on the top and bottom of the pipes. This allows for angularity in the vertical plane to cater for ground settlement.

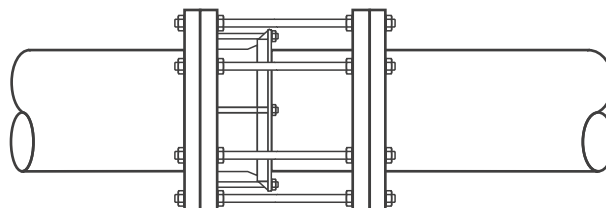
A Flange Adaptor supplied with restraining tie rods is a Restraining Adaptor. Restraining Flange Adaptors are cost effective simple Flanged Restraining Joints that can be easily Dismantled and re-installed. A Dismantling Joint is also a Restrained Flange Adaptor that is installed between two flanged faces. Dismantling Joints allow for an adjustable telescopic setting gap, which is set at time of installation.



Harness assembly for straight stepped coupling to prevent pipe separation under pressure



Harness assembly with flange adaptor



Dismantling KII Dismantling Joint (Flange Adaptor with Flanged Spigot)

Pipe Supports

When pipes are laid above ground they must be supported by plinths. The positions of the plinths is determined to ensure successful transfer of all of the pipe weight, pipeline contents weight and pressure related forces through the supports.

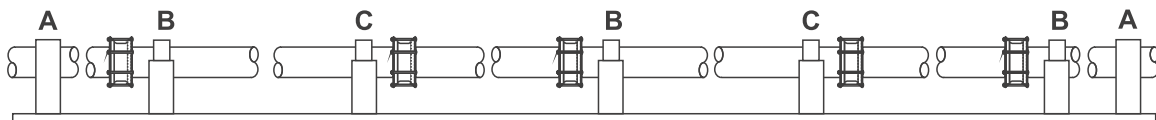
Couplings allow for a specified degree of ground settlement, miss-alignment, pipe angularity and movement in above ground pipelines. The drawing below displays the standard method of supporting above ground pipelines where ground subsidence is expected. Alternate pipe lengths are supported between two couplings, provided that the clear pipe span does not exceed 10 meters.

In situations such as displayed below it is advisable to contact REXUS to ensure the correct product design for your application.

A = Thrust block at the end of each straight run or change in pipeline direction

B = Intermediate anchor points

C = Guide supports or cradles



Anchored Couplings

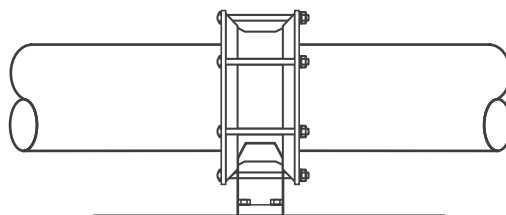
Anchored Couplings provide an alternative method of anchoring pipes above ground, specifically designed for use on pipe bridges. Pedestal feet are welded to the bottom of each Coupling, with a steel flat bar welded between the base of the feet ensuring that the feet are not pressed outward and away from each other under the weight of the operational pipeline.

These feet are supplied with holes drilled through to bolt directly to the supporting structure. The Anchored Coupling therefore eliminates the need for special pipe strapping equipment, reducing costs and installation time.

The pedestals are designed to cater for the thrust forces developed at maximum pipe setting angularity. The pedestals are also designed to withstand the weight of a 9m length of pipe full of water.

Anchored Couplings are NOT designed to withstand the effects of transient surge and water hammer. They should also NOT be used in conjunction with a restraining harness assembly.

When large diameter Anchored Pipe Couplings are supplied, the pedestal is modified to include a supporting saddle under the sleeve of the Coupling, this ensures the sleeve of the coupling is not deformed under the weight of a 9m length of pipe full of water. It is good design practice to use Centre Registers in conjunction with Anchored Couplings, thus controlling pipe movement.



REXUS KII Anchored Coupling

Pipe Supports Inclined Pipe

Mechanical couplings used on pipelines laid on severe slopes require special consideration with regards to the restraint of the pipeline components under the forces of gravity as components will have a tendency to slide down the slope.

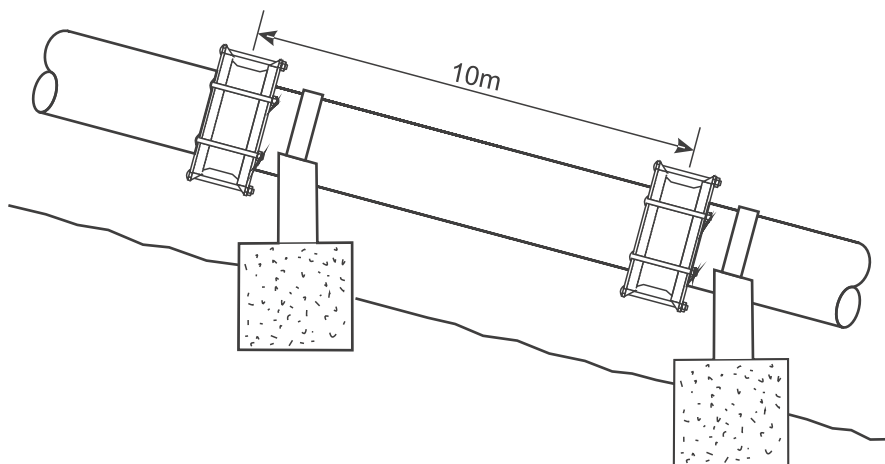
Buried pipelines will have significant restraint from backfill loading and therefore less restraint against the forces of gravity will be necessary. However, the action under the force of gravity must still be considered to ensure sufficient restraint of the pipeline components. This can be completed via an engineering assessment of the design.

Plinths, thrust blocks and pipe supports must be used on pressurized above ground inclined pipelines. Centre Registers should be used on the Couplings to ensure they do not creep down the pipeline. Centre Registers ensure the coupling maintains its position relative to the pipe ends once installed. Under the action of pipe movement, ground settlement and expansion and contraction, a coupling without center registers will over a period of time creep downwards on the pipeline. Eventually it is possible for the Coupling to disengage from the pipe ends, resulting in pipeline failure.

Centre Registers are NOT designed to restrain the pipe lengths, or restrain the pipes under the action of forces of gravity. The Centre Registers restrain the movement of the Coupling only. Therefore, the pipe lengths must be restrained.

Where the length of the pipe is less than 10 metres, it is standard practice to anchor one end of each pipe, in position relative to the ground, allowing the other end, to be supported by the Coupling. The Coupling will allow axial movement (within the limitations of the coupling) due to the effects of thermal expansion and contraction.

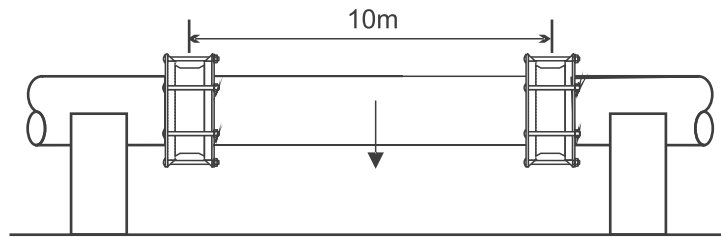
The pipeline anchorage must be designed to account for all the forces resulting from the weight of the pipe material, weight of the pipeline contents, fluid friction and pressure. The design of the pipe support is influenced by the pipe diameter, pipe material, pipe wall thickness, operating pressure, pipeline inclination, pipeline angularity, soil conditions etc. As each of the above components, and many contributing factors not named, effect the design of the pipe supports, the design of pipeline supports is an area of design of its own, and hence is beyond the scope of this document.



Typical Inclined Coupling Installation

Shear Strength

Mechanical Couplings up to DN 1600 can be designed and supplied capable of withstanding the shear forces of gravity (W) generated by a 10 m length of pipe filled with water, when supported between two Couplings. However, the REXUS KII SmartFit range of Couplings is a wide range Coupling and it is advisable to contact the manufacturer for the exact shear strength capabilities for each of these Couplings, the above also applies to Step Couplings.



Shear Strength

Expansion and Contraction

REXUS KII couplings and flange adaptors provide a simple solution for problems resulting from thermal expansion and contraction of pipeline components. By means of gasket deformation as apposed to a sliding action over the pipe surface, REXUS KII couplings can accommodate a significant amount of pipe movement. The large range gasket allows for up to 5 mm of pipe movement per gasket.

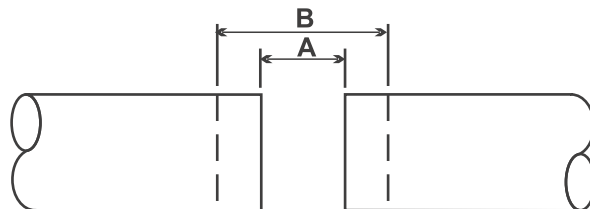
The use of REXUS KII components often negates the need for specialised Expansion Joints in a pipeline. Most expansion due to temperature variations can be accommodated by REXUS KII couplings.

REXUS KII Socketed Fittings, Step Couplings and Long Barrel Couplings allow for the same amount of expansion and contraction as a standard REXUS KII Coupling. End caps and flange adaptors exhibit only one rubber seal and therefore only take up half the expansion and contraction as a coupling with two rubber seals.

Couplings laid on a pipeline that transverses a steep slope exposed to a large degree of expansion and contraction may experience coupling creep. This is when the coupling creeps down the pipe due to repetitive expansion and contraction. Coupling restraint or Centre Registers are required.

Step couplings are also exposed to thrust forces similar to those experienced on reducers, the coupling may move along the pipe toward the smaller nominal bore. In this situation coupling restraint is required.

Expansion and Contraction Maximum Pipe Movement (B - A)	
Coupling	10 mm
Flange Adaptor	5 mm



Cathodic Protection

Cathodic Protection (CP) is used to reduce corrosion of steel pipeline components thereby extending their useful life span.

In order to allow for the connection of CP anodes it is necessary to supply the Coupling with CP pads, of suitable thickness (16mm) to allow for connection of the anodes externally without damaging the internal corrosion protection.

Pipe Preparation

Pipe end preparation refers to the distance from the end of the pipe that must be prepared to enable an effective coupling seal. It is important to note the following regarding the pipe end upon which a coupling gasket seals:

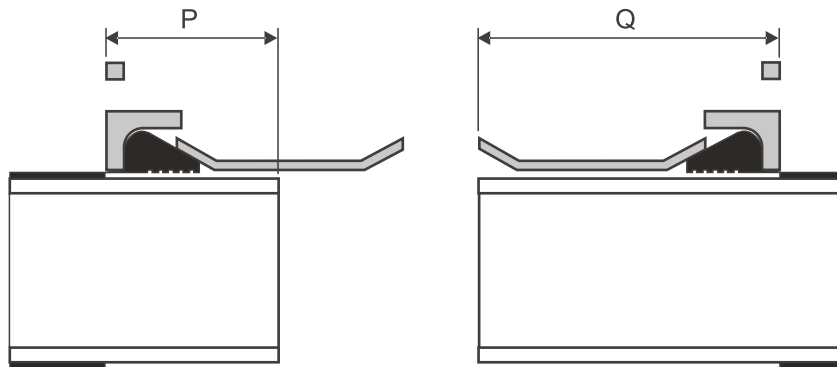
the pipe surface is to be round, smooth, clean, free of grooves, weld beads, bumps, score marks or other irregularities in order to maintain specified coupling pressure ratings, pipe end tolerance should be within $\pm 0.75\%$ of pipe outside diameter.

The preparation of pipe ends is to ensure the coupling seal performs optimally on the pipe end.

The REXUS KII rubber Gasket seal has rows of ridges on the inner gasket face, designed to increase the performance range of the product. A REXUS KII coupling rubber Gasket can seal over a deep groove or scratch on a pipe surface due to the ridges compressing into the groove and preventing leakage.

For pipe end preparation; two dimensions are used. The first method is the minimum length required to fit the coupling, the pipe end preparation distance for normal coupling assembly is specified by the dimension **P**.

For the pipe end preparation distance for coupling assembly where cutting back of pipe wrapping is necessary refer to dimension **Q**.



Pipe End Preparation Couplings		
Sleeve Width mm	Dimension P mm	Dimension Q mm
100	100	140
125	120	160
130	130	210
160	160	250
200	210	300

Centre Registers

Centre Registers are used to prevent Coupling creep. Coupling creep is the gradual movement of a pipe Coupling along a pipeline resulting from several factors, namely:

- pipe movement
- temperature variations
- pipeline vibration

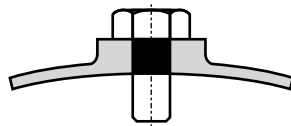
A Centre Register is essentially a pin that is fixed to the inner wall of the coupling sleeve, when the Coupling is assembled the Centre Register is located between the two pipe ends. When the Coupling begins to creep the Centre Register will butt up against a pipe end, hence restraining the creep of the coupling.

There are two types of Centre Register namely:

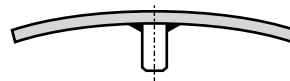
1. Removable Centre Register
2. Fixed Centre Register

The Removable Centre register may be removed from the coupling allowing the product to slide completely over the pipe end during assembly. It is replaced when the coupling is correctly aligned. Therefore a Removable Centre Register should be used when regular in service pipe removal may be required.

The Fixed Centre Register is a fixed pin welded to the inside of the coupling sleeve, it can not be removed and the coupling is therefore unable to slide completely over the pipe end. Fixed centre registers are recommended for buried service where there is no possibility of routine coupling removal in service.



Removable Centre Register



Fixed Centre Register

Special Couplings and Flange Adaptors

REXUS provides a virtual limitless range of Coupling configurations for virtually every possible application. Two of the arrangements in addition to our standard range include:

REXUS KII Make-up Ring Sleeve Coupling

Rexus KII Make-up Ring Sleeve Couplings joins pipes with different outside diameters where there is large steps between pipe sizes. It is also utilised on slopes to prevent pipe creep where the one pipe may slide into the other. It is available for sizes from 40mm to 1600mm NB.

REXUS KII Flange Adaptor with Expanded Sleeve

Rexus KII Flange Adaptor with Expanded Sleeve is utilised for connecting thick walled pipe such as Fibre Cement pipe. It is also used when the nominal size of the pipe and the flange are different i.e. a DN350 pipe connected to a DN300 valve. It is available for sizes from 40mm to 1600mm NB.

Installation 40mm to 150mm

REXUS KII Couplings and Flange Adaptors are supplied pre-assembled ready for quick and easy installation. Fitting instructions differ for products above DN150 mm nominal bore as these are disassembled and then installed.

Successful installation of slip-on flexible couplings between DN40 and DN150 nominal bore requires adherence by the installer to the following steps:

All pipe ends must conform to the relevant pipe end specifications as laid out by the pipe manufacturer (e.g. SABS 719 : 1971 section 4). It is important to note that the Coupling Gaskets (and sometimes the Coupling Sleeve and End Rings) be thoroughly cleaned immediately prior to assembly, as loose dirt can limit the effectiveness of the Gasket Seal.

The pipe end preparation distance (e.g. P = 100 mm for a DN100 mm nominal bore coupling) should be prepared to remove all loose dirt, corrosion or other foreign matter on each pipe end.

Equi-distant reference marks should be made on each of the prepared pipe ends to facilitate accurate centering of the Coupling over the specified setting gap between the pipe ends.

The protective plastic shrink wrap can be removed from the Coupling. A suitable gasket lubricant (such as soapy water) should be applied to each of the pipe ends and Coupling Gaskets before placing the coupling on a pipe end. Soapy water assists the coupling installer as the coupling will tighten easier over the setting gap.

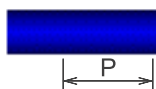
The complete Coupling can now slide over a pipe end of the pipe already in position.

The pipe ends can now be aligned with reference to the correct pipe setting gap. It is important that the setting gap is correct at the time of installation and it may therefore be necessary to adjust the pipe trench bed to ensure this.

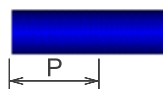
Using the marks made on the pipe ends the Coupling can now be centred over the gap between the pipe ends.

The Coupling bolts may now be tightened to the recommended REXUS bolt torque, 75 - 85 Nm for M12 bolts, i.e. For all couplings from 40 - 150mm nominal bore.

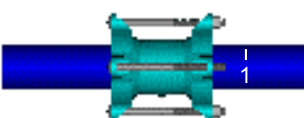
Coupling bolts must be tightened in pairs at diametrically opposite positions. Each nut must be given two or three turns at a time until returning to the first pair. This tightening sequence is necessary to ensure that the Coupling End Rings pull together evenly and the Gaskets are compressed equally between pipe and Coupling Sleeve. The tightening sequence above must be repeated as many times as is necessary to reach the specified torque rating. It is advisable to re-torque the Coupling several hours after installation and pressure testing to ensure the bolts are at the correct torque.



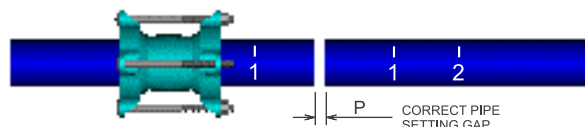
1. Prepare Pipe Ends



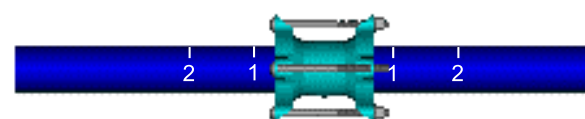
2. Mark Pipe Ends



3. Slide Coupling Over Pipe End



4. Position Pipe Ends Together



5. Centre Coupling Over Gap and Torque Bolts

Installation Larger than 150mm

REXUS KII Couplings and Flange Adaptors are supplied pre-assembled for quick and easy installation. Successful installation of Slip-on Flexible Couplings above DN150 mm nominal bore requires adherence to the following steps:

All pipe ends must conform to the relevant pipe end specifications as laid out by the pipe manufacturer. The Coupling Gaskets (and sometimes the Coupling Sleeve and End rings) must be thoroughly cleaned prior to assembly, as loose dirt can limit the effectiveness of the Gasket Seal.

The pipe end preparation distance (e.g. P = 160 mm for a DN400 mm nominal bore coupling) should be prepared by removing all loose dirt, corrosion or other foreign matter on each pipe end. Equi-distant reference marks should be made on each of the prepared pipe ends to facilitate accurate centering of the Coupling over the specified setting gap between the pipe ends.

The protective plastic shrink wrap can be removed from the Coupling. A suitable gasket lubricant should be applied to each of the pipe ends and Coupling gaskets before placing the Coupling on a pipe end.

The Coupling end rings can now be slid over the pipe ends.

The Rubber Seals can be slid onto the pipe ends behind the End Rings. Ensure the seals are put on with the circumferential ribs facing downward onto the pipe and the tapered leading edge pointing toward the pipe end.

The Coupling Centre Sleeve can now be slid over a pipe end.

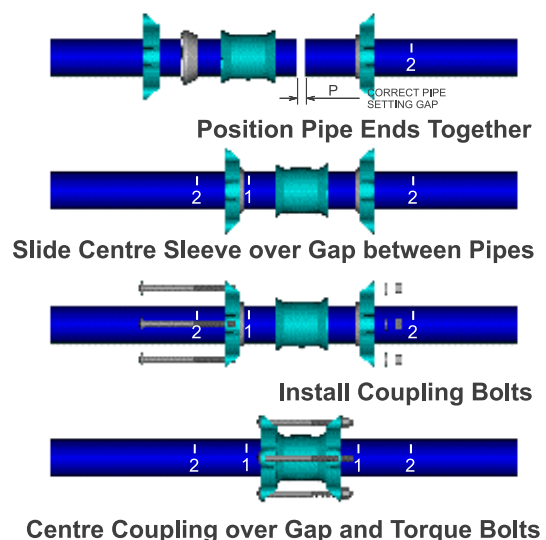
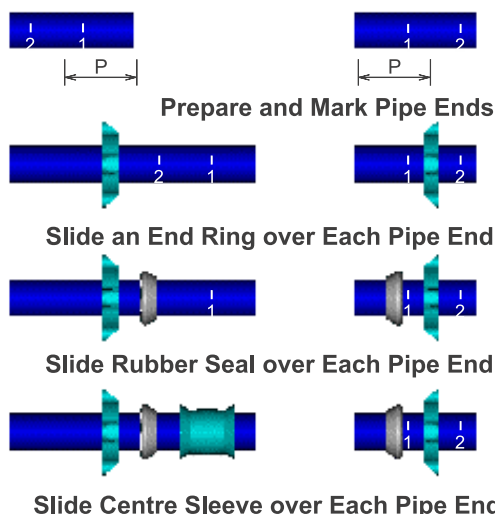
The pipe ends can now be aligned with reference to the correct pipe setting gap. It is important that the setting gap is correct at the time of installation and it may therefore be necessary to adjust the pipe trench bed to ensure this.

Using the marks made on the pipe ends the Coupling can now be centered over the gap between the pipe ends.

Bolts may now be installed.

The Coupling bolts may now be tightened to the recommended bolt torque of 75 - 85 Nm for M12 bolts, for all couplings from 150 - 800 mm nominal bore.

Coupling bolts must be tightened in pairs at diametrically opposite positions. This tightening sequence is necessary to ensure that the Coupling End Rings pull together evenly and the gaskets are compressed equally between pipe and Coupling Sleeve. The tightening sequence must be repeated as many times as is necessary to reach the specified torque rating. It is advisable to re-torque the Coupling several hours after installation and pressure testing to ensure the bolts are at the correct torque.





Airflo

Variable Orifice Air Valves

Series ESP Model SA Variable Orifice Air Valves is a triple function valve with automatic surge protection for use in potable and strained raw water applications.

Valves are manufactured in fusion bonded epoxy coated Steel. The top cover, jointing and internal trim are in Stainless Steel 304 or 316.

Valves are available in sizes DN25 to DN300 and for pressure ratings PN10 to PN100



Airflo

Variable Orifice Air Valves

Series ERP Variable Orifice Air Valves is a compact, triple function valve design with automatic surge protection for Sewer and Slurry applications.

Valves are manufactured in Stainless Steel 304 or 316 as standard or epoxy coated Steel with Stainless Steel 304 or 316 trim. Flush ports are optional extras.

Valves are available in sizes DN50 to DN300 and for pressure ratings PN16 and PN25



Checkflo

Nozzle Check Valves

CHECKFLO Nozzle Check Valves are available in the reliable Central Shaft design as well as the Annular Disc design for superior surge protection and efficient low head pipeline operation.

Valves are available in a variety of materials and trim options in both short and long face to face dimensions

Valves are available in sizes DN50 to DN1200 and for pressure ratings PN10 to PN63



Checkflo

Silent Check Valves

CHECKFLO Silent Check Valves are of a conical disc design with metal to metal or soft seal options for cost effective surge protection.

CHECKFLO Silent Check Valves are available in a variety of materials and trim options.

Valves are available in sizes DN80 to DN1000 and for pressure ratings PN10 to PN40