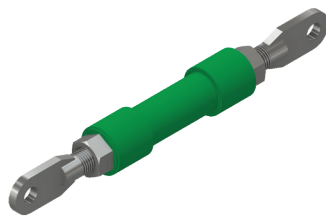




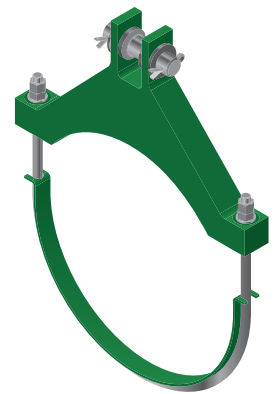
DYNAMIC RESTRAINTS



HYDRAULIC SNUBBERS



RIGID STRUTS



STIFF CLAMPS

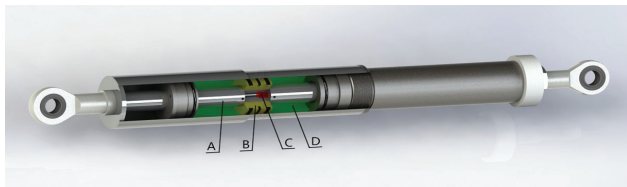
CPA DYNAMIC RESTRAINTS

As part of its extensive product offering, Carpenter & Paterson (Asia) Ltd ("CPA") designs and manufactures dynamic restraints (hydraulic snubbers and rigid struts) as well as connecting stiff clamps.

HYDRAULIC SNUBBERS



Under the normal operating conditions of a piping system, the CPA hydraulic snubbers accommodate the required displacement of the piping. However, during a dynamic event (such as an earthquake, rapid valve closure, two phase flow or relief valve discharge) the snubbers lock the piping system in place thus protecting it from excessive deflections /stresses.



A. Piston Rod
B. Valve components
C. Piston component
D. Oil chamber

As illustrated above, the CPA hydraulic snubber incorporates a 'through rod' design. This provides the following benefits over competitor products:

- No need for an external reservoir – the hydraulic fluid volume does not change, as a result of the existence of the piston rod on either side of the piston
- Strong design – the piston rod is supported at both ends to avoid 'knuckling' and subsequent wear on the bearings.
- Small diameter – efficient design and no external reservoir results in a compact product.
- Enables the snubber to be installed in any orientation.
- Results in robust product with strong and reliable performance.

FEATURES OF CPA HYDRAULIC SNUBBERS:

1. Piston rod and main components of snubber are suitably treated to provide a high level of corrosion resistance. This avoids corrosion issues and wear of bearings which would occur if piston rod corroded.
2. Sealing systems have been specially designed to ensure long working life without leakage.

3. Hydraulic fluid specially selected for snubber operation.
4. Compact design with pressurised built-in hydraulic system. No external piping or reservoir. Requires minimal space envelope for installation.
5. Rings of body of snubber, spaced at 10mm, provide an axial travel scale.
6. Finish of non stainless steel parts is by hot zinc spray. This provides a better protection than galvanising or epoxy paint systems.
7. Minimal lost motion in snubber performance achieved by design of seal system.
8. Rod end connections on snubbers allow + – 5-degree angulation.
9. Extension pieces on CSA snubbers provide precise installed lengths required.
10. Valves are critical to the performance of a snubber. CPA valves have been fine-tuned by continuous testing as well as by calculation.

CPA Hydraulic Snubbers awaiting inspection:



PERFORMANCE OF CPA SNUBBERS:

1. Standard lock up rate 3 to 5 mm/sec.
2. Bleed rate 0.2 to 2mm/sec.
3. Drag force less than 2% of rated load.
4. All snubbers are tested on our purpose built test rig and results tabulated. See photos below:

CPA Hydraulic Snubber Test Rig



CPA Hydraulic Snubber Test Report:



Carpenter & Paterson (Asia) Ltd.

Hydraulic Snubber Test Report					
Project Name		Hanger No.	SNB-2000-01	Rated Load	80.000KN
Serial No.	130179	Model	C5-50-150	Preset	100.0mm
100.0 Load(KN) 0.0 <					

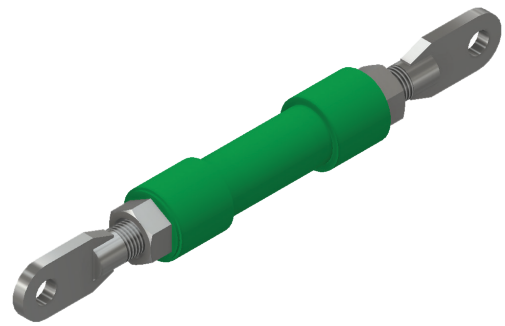
APPLICATION RECOMMENDATIONS:

1. Select only CPA connections to snubbers to ensure maximum stiffness of assembly.
2. When selecting snubber stroke, allow a minimum of 10mm excess travel over the expected thermal movement at both ends of the snubber.
3. Ensure all loadings are taken into account when selecting snubber size.
4. Snubber assemblies can angulate to allow for thermal movements of the pipework. Ensure there is sufficient space around snubber assembly to allow this angulation without clashes.
5. After installation a check should be made to ensure snubber assemblies have been installed correctly. Incorrect installation could cause severe problems to piping in the event the snubber is activated.
6. Snubbers should be regularly inspected during their working life in accordance with CPA operating and maintenance manual.

MAINTENANCE OF CPA SNUBBERS:

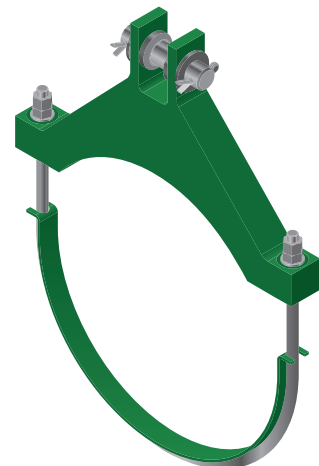
1. Annual inspection is recommended. This should include a visual inspection by personnel that are familiar with the operation of snubbers. CPA can perform such inspections. During such inspections the following should be recorded.
2. Installed position of snubber compared to design data.
3. Physical state of the snubber and its connections. Noting any damage or leakage.
4. Any physical obstructions affecting snubber performance.
5. After 10 years we would recommend a more detailed inspection involving removal and re-testing of a sample batch of snubbers. Please contact us for full information on detailed inspection procedure.

RIGID STRUTS



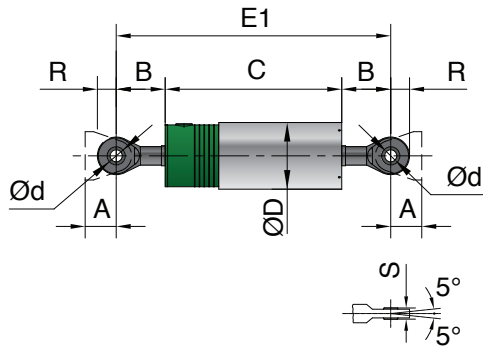
Where there is no pipe displacement at a required restraint location, a CPA rigid strut attached to the pipework and surrounding structure restrains any movement of the piping system during a dynamic event.

STIFF CLAMPS

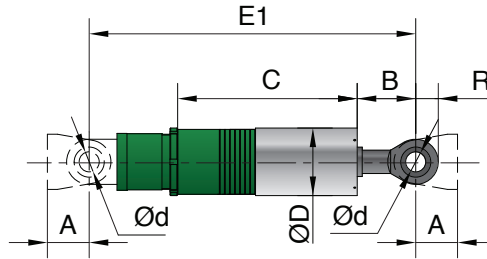


CPA's High-Stiffness Yoke Clamps firmly attaches the hydraulic snubber or rigid strut to the pipework. This ensures minimal 'chatter' between the pipe and clamp, thus ensuring optimal performance of the snubber/strut.

This range of CPA Yoke Clamps has been designed to suit CPA's range of Rigid Struts and Hydraulic Snubbers. Load capacities and connecting pin dimensions are compatible. Some of the designs incorporate two U-Bolts or U-Straps rather than the single items shown in the pictures. Selection of the item is based on pipe size, maximum applicable temperature and maximum load. Standard materials of construction are shown which are applicable to carbon and alloy steel pipes. For stainless steel pipes, stiff clamps constructed from stainless steel are available, and for temperatures up to 605 deg. C, will have the same enveloping dimensions. For higher temperatures, special designs can be produced.



SIZE 8 - 16



SIZE 48 - 1000

Figure No.	Load (kN)	Stroke (mm)	A	B	S	R	C (Middle Stroke)	Ød	ØD	E1 min (mm)	E1 max (mm)	Weight (kg)
CS-8-100	8	100	34	50	10.5	20	265	12	70	315	415	4.3
CS-8-200	8	200	34	50	10.5	20	415	12	70	415	615	5.7
CS-16-150	16	150	45	77	12.5	26.5	345	15	95	424	574	6.2
CS-16-300	16	300	45	77	12.5	26.5	570	15	95	574	874	6.2
CS-48-150	48	150	55	94	20.5	32	396	25	89	595	745	21.4
CS-48-300	48	300	55	94	20.5	32	621	25	89	895	1195	29.6
CS-80-150	80	150	70	125	25.5	41	425	35	108	670	820	35.3
CS-80-300	80	300	70	125	25.5	41	650	35	108	970	1270	46.1
CS-80-400	80	400	70	125	25.5	41	800	35	108	1170	1570	53.4
CS-120-150	120	150	80	142	28.5	46	426	40	133	700	850	51.6
CS-120-300	120	300	80	142	28.5	46	651	40	133	1000	1300	66.5
CS-120-400	120	400	80	142	28.5	46	801	40	133	1200	1600	77.1
CS-200-150	200	150	100	160	36.0	56	456	50	159	755	905	84.7
CS-200-300	200	300	100	160	36.0	56	681	50	159	1055	1355	105.2
CS-200-400	200	400	100	160	36.0	56	831	50	159	1255	1655	117.4
CS-320-150	320	150	125	175	45.0	68	488	60	202	815	965	140.2
CS-320-300	320	300	125	175	45.0	68	713	60	202	1115	1415	171.9
CS-320-400	320	400	125	175	45.0	68	863	60	202	1315	1715	191.6
CS-500-150	500	150	145	230	56.0	90	548	80	253	950	1100	250.3
CS-500-300	500	300	145	230	56.0	90	773	80	253	1250	1550	299.5
CS-500-400	500	400	145	230	56.0	90	923	80	253	1450	1850	325.2
CS-1000-150	1000	150	210	265	71.0	145	610	100	325	1075	1225	537.0
CS-1000-300	1000	300	210	265	71.0	145	835	100	325	1375	1675	609.0
CS-1000-400	1000	400	210	265	71.0	145	985	100	325	1575	1975	639.0

HYDRAULIC SNUBBERS - CSA TYPE

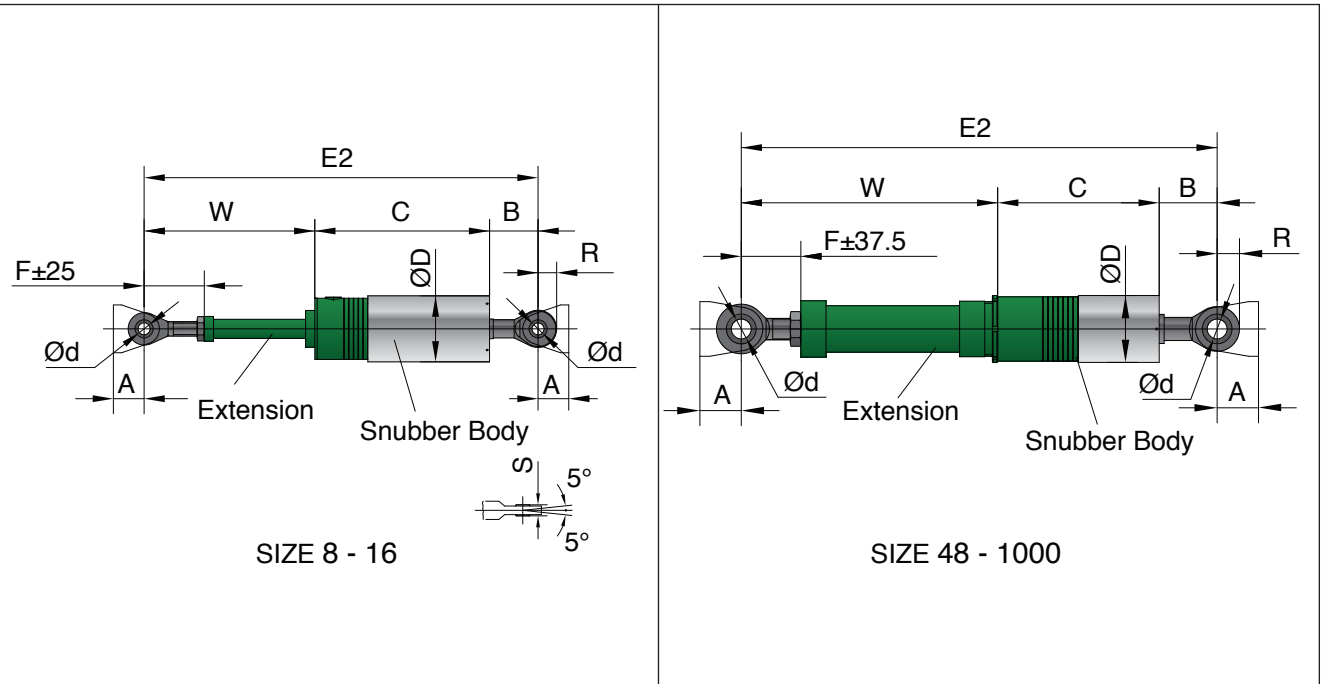


Figure No.	Load (kN)	Stroke (mm)	A	B	S	R	C (Middle Stroke)	Ød	ØD	E2 min (mm)	E2 max (mm)	F	Weight (kg)
CSA-8-100	8	100	34	50	10.5	20	265	12	70	510	1400	56	4.3
CSA-8-200	8	200	34	50	10.5	20	415	12	70	660	1400	56	5.7
CSA-16-150	16	150	45	77	12.5	26.5	345	15	95	627	1597	69	6.2
CSA-16-300	16	300	45	77	12.5	26.5	570	15	95	852	1597	69	6.2
CSA-48-150	48	150	55	94	20.5	32	396	25	89	870	2150	105	21.4
CSA-48-300	48	300	55	94	20.5	32	621	25	89	1170	2150	105	29.6
CSA-80-150	80	150	70	125	25.5	41	425	35	108	965	2450	130	35.3
CSA-80-300	80	300	70	125	25.5	41	650	35	108	1265	2450	130	46.1
CSA-80-400	80	400	70	125	25.5	41	800	38	108	1465	2450	130	53.4
CSA-120-150	120	150	80	142	28.5	46	426	40	133	1033	2798	150	51.6
CSA-120-300	120	300	80	142	28.5	46	651	40	133	1333	2796	150	66.5
CSA-120-400	120	400	80	142	28.5	46	801	40	133	1533	2798	150	77.1
CSA-200-150	200	150	100	160	36.0	56	456	50	159	1121	3201	175	84.7
CSA-200-300	200	300	100	160	36.0	56	681	50	159	1421	3201	175	105.2
CSA-200-400	200	400	100	160	36.0	56	831	50	159	1621	3201	175	117.4
CSA-320-150	320	150	125	175	45.0	68	488	60	202	1208	4098	190	140.2
CSA-320-300	320	300	125	175	45.0	68	713	60	202	1508	4098	190	171.9
CSA-320-400	320	400	125	175	45.0	68	863	60	202	1708	4098	190	191.6
CSA-500-150	500	150	145	230	56.0	90	548	80	253	1383	4148	240	250.3
CSA-500-300	500	300	145	230	56.0	90	773	80	253	1683	4148	240	299.5
CSA-500-400	500	400	145	230	56.0	90	923	80	253	1883	4148	240	325.2
CSA-1000-150	1000	150	210	265	71.0	145	610	100	325	1500	4700	280	537.0
CSA-1000-300	1000	300	210	265	71.0	145	835	100	325	1800	4700	280	609.0
CSA-1000-400	1000	400	210	265	71.0	145	985	100	325	2000	4700	280	639.0

WELDING CLEVIS (FOR SNUBBERS & STRUTS)

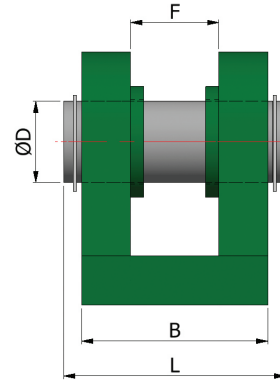
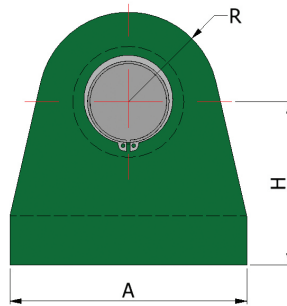
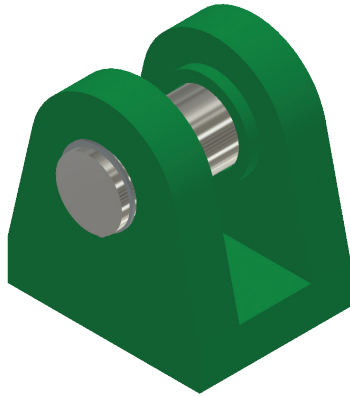
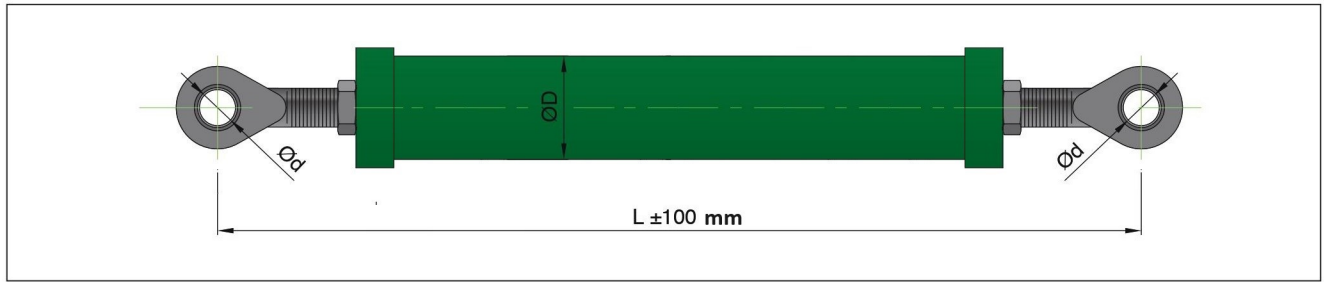


Figure No.	Nom. Load (kN)	D	H	R	A	F	B	L	Weight (kg)
WC-8	8	12	34	17	52	16	40	53	0.45
WC-16	16	15	45	20	65	17.5	41.5	54.5	0.74
WC-48	48	25	55	28	80	29	61	76	1.7
WC-80	80	35	70	38	110	37	77	94	3.7
WC-120	120	40	80	45	125	43	93	113	6.3
WC-200	200	50	100	55	145	54	114	136	11.9
WC-320	320	60	125	65	165	64	144	166	21.1
WC-500	500	80	145	90	215	84	164	192	36.3
WC-1000	1000	100	210	100	250	102	222	250	77.9

RIGID STRUTS

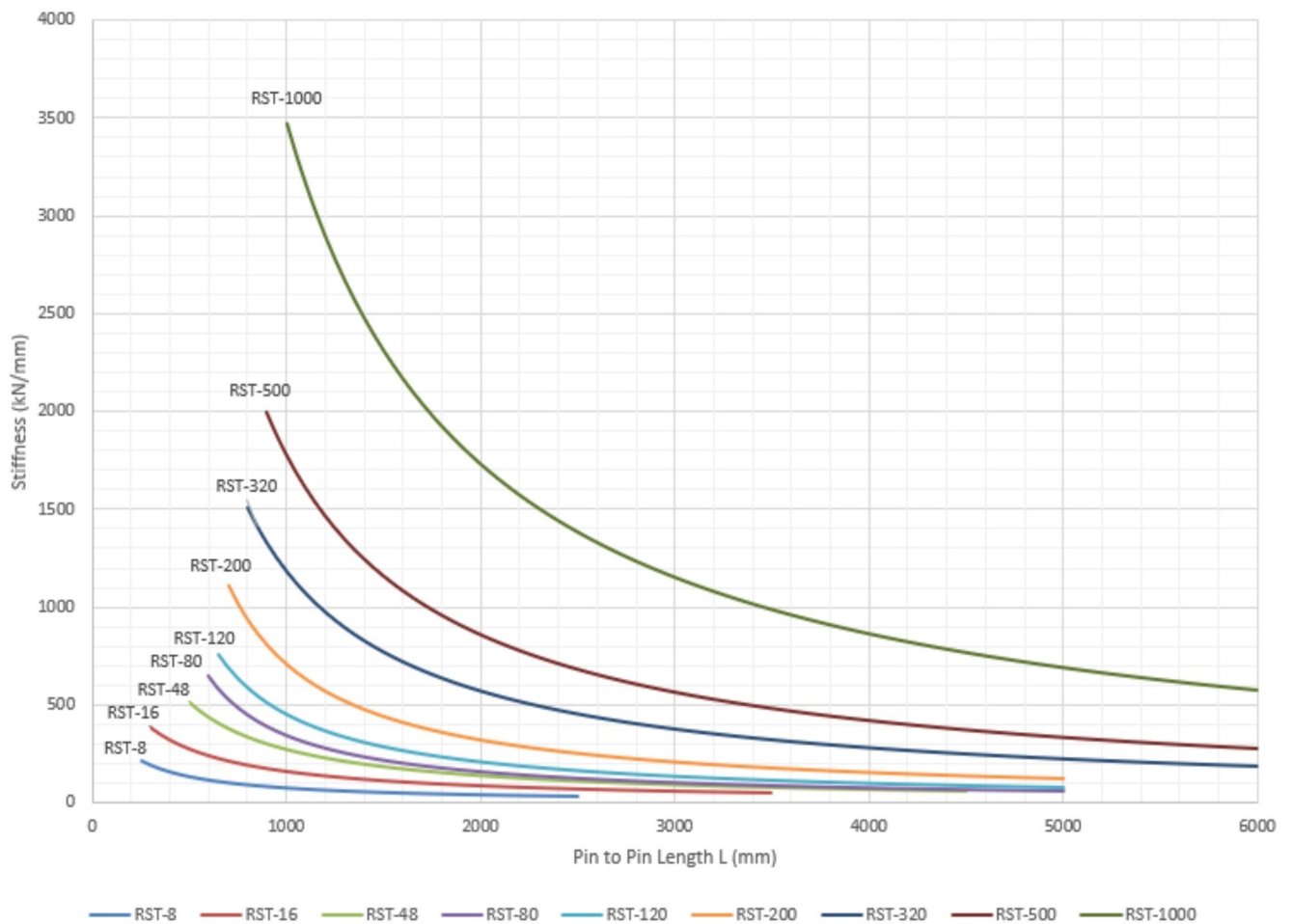


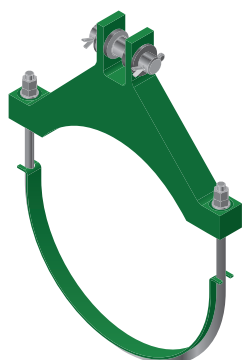
CPA Figure No.	Max Allowable Load (kN)	Length "L" mm			D (mm)	d (mm)	Weight (L=1000) kg
		Min.	Max. for Full Load	Max. for Reduced Load			
RST-8	8	420	2500	2500	42.2	12	4.7
RST-16	16	450	3500	3500	60.3	15	9.2
RST-48	48	500	3500	4500	73.0	25	14.9
RST-80	80	570	3500	5000	88.9	35	21.0
RST-120	120	650	3200	5000	88.9	40	26.4
RST-200	200	720	3800	5000	114.3	50	43.0
RST-320	320	800	6000	6000	168.3	60	63.4
RST-500	500	900	5100	6000	219.1	80	104.1
RST-1000	1000	1020	6000	6000	273.0	100	168.0

CPA Figure No.	Allowable Load (kN) at Length "L" =										
	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
RST-8	8.0	8.0	8.0	8.0	-	-	-	-	-	-	-
RST-16	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-
RST-48	48.0	48.0	48.0	48.0	48.0	48.0	37.2	28.3	-	-	-
RST-80	80.0	80.0	80.0	80.0	80.0	80.0	60.7	46.5	36.4	-	-
RST-120	120	120	120	120	120	104.3	77.9	59.6	46.6	-	-
RST-200	200	200	200	200	200	200	190.5	152.8	121.0	-	-
RST-320	320	320	320	320	320	320	320	320	320	320	320
RST-500	500	500	500	500	500	500	500	500	500	475	445
RST-1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Rigid struts can be supplied with nominal lengths less than the minimum shown if the amount of length adjustment is reduced.

Stiffnesses of Rigid Struts

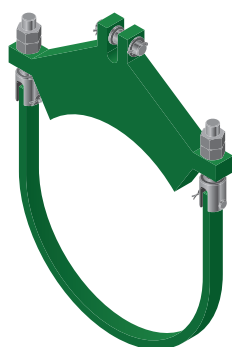




Clamp Type DC1 (with U-Bolt)

Materials

Component	Temperature Range			
	T0	T1-T2	T3	T4
Yoke Body	Carbon steel	Alloy Steel	Alloy Steel	9% Cr steel
Saddle	Carbon steel	Alloy Steel	Alloy Steel	9% Cr steel
U-Bolt	Carbon/Alloy steel	Alloy Steel	Alloy/Stainless steel	Stainless steel
Nuts	Carbon steel	Alloy Steel	Alloy/Stainless steel	Stainless steel
Pin	Stainless steel	Stainless steel	Stainless steel	Stainless steel



Clamp Type DC2 (with U-Strap)

Materials

Component	Temperature Range			
	T0	T1-T2	T3	T4
Yoke Body	Carbon steel	Alloy Steel	Alloy Steel	9% Cr steel
Strap	Carbon steel	Alloy Steel	Alloy Steel	9% Cr steel
Tensioners	Alloy steel	Alloy/Stainless steel	Stainless steel	Stainless steel
Nuts	Carbon steel	Alloy/Stainless steel	Stainless steel	Stainless steel
Pin	Stainless steel	Stainless steel	Stainless steel	Stainless steel

This range of High-Stiffness Yoke Clamps has been designed to suit Carpenter and Paterson (Asia) Limited's range of Rigid Struts and Hydraulic Snubbers. Load capacities and connecting pin dimensions are compatible. Some of the designs incorporate two U-Bolts or U-Straps rather than the single items shown in the pictures. Selection of the item is based on pipe size, maximum applicable temperature and maximum load. Standard materials of construction are shown which are applicable to carbon and alloy steel pipes. For stainless steel pipes, stiff clamps constructed from stainless steel are available, and for temperatures up to 600 deg. C, will have the same enveloping dimensions. For higher temperatures, special designs can be produced.

STIFF CLAMPS

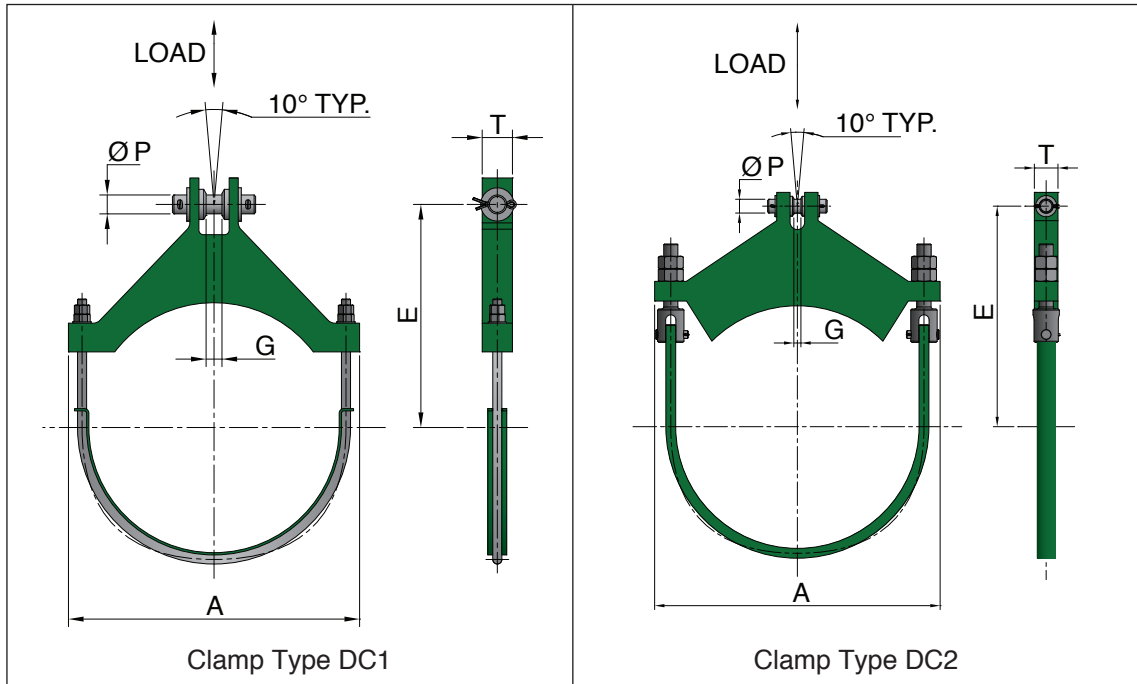


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-100-8-T0	100	114.3	8	400	12	195	230	10.5	40	5.5
DC1-100-16-T0	100	114.3	16	400	15	195	230	12.5	40	5.5
DC1-150-8-T0	150	168.3	8	400	12	265	255	10.5	40	7.4
DC1-150-16-T0	150	168.3	16	400	15	265	255	12.5	40	7.4
DC1-150-48-T0	150	168.3	48	400	25	285	265	20.5	55	16.9
DC1-200-8-T0	200	219.1	8	400	12	305	305	10.5	40	9.7
DC1-200-16-T0	200	219.1	16	400	15	305	305	12.5	40	9.7
DC1-200-48-T0	200	219.1	48	400	25	335	315	20.5	55	20.2
DC1-250-8-T0	250	273.0	8	400	12	360	355	10.5	40	12.8
DC1-250-16-T0	250	273.0	16	400	15	360	355	12.5	40	12.8
DC1-250-48-T0	250	273.0	48	400	25	390	365	20.5	55	25.5
DC1-250-80-T0	250	273.0	80	400	35	390	370	25.5	150	74
DC1-300-8-T0	300	323.9	8	400	12	410	380	10.5	40	14.9
DC1-300-16-T0	300	323.9	16	400	15	410	380	12.5	40	14.9
DC1-300-48-T0	300	323.9	48	400	25	445	390	20.5	55	29.1
DC1-300-80-T0	300	323.9	80	400	35	445	395	25.5	150	83.3
DC1-350-8-T0	350	355.6	8	400	12	440	395	10.5	40	15.3
DC1-350-16-T0	350	355.6	16	400	15	440	395	12.5	40	15.3
DC1-350-48-T0	350	355.6	48	400	25	475	405	20.5	55	29.3
DC1-350-80-T0	350	355.6	80	400	35	495	410	25.5	60	37.2
DC1-350-120-T0	350	355.6	120	400	40	495	415	28.5	170	118.1
DC1-400-8-T0	400	406.4	8	400	12	495	440	10.5	40	19.8
DC1-400-16-T0	400	406.4	16	400	15	495	440	12.5	40	19.8
DC1-400-48-T0	400	406.4	48	400	25	525	450	20.5	55	36.9
DC1-400-80-T0	400	406.4	80	400	35	545	455	25.5	60	46.4
DC1-400-120-T0	400	406.4	120	400	40	565	460	28.5	70	60
DC1-400-200-T0	400	406.4	200	400	50	545	475	36	190	135.6
DC1-450-8-T0	450	457.2	8	400	12	545	465	10.5	40	21.7
DC1-450-16-T0	450	457.2	16	400	15	545	465	12.5	40	21.7
DC1-450-48-T0	450	457.2	48	400	25	575	475	20.5	55	40.4
DC1-450-80-T0	450	457.2	80	400	35	595	480	25.5	60	51.2
DC1-450-120-T0	450	457.2	120	400	40	615	485	28.5	70	64.4

STIFF CLAMPS

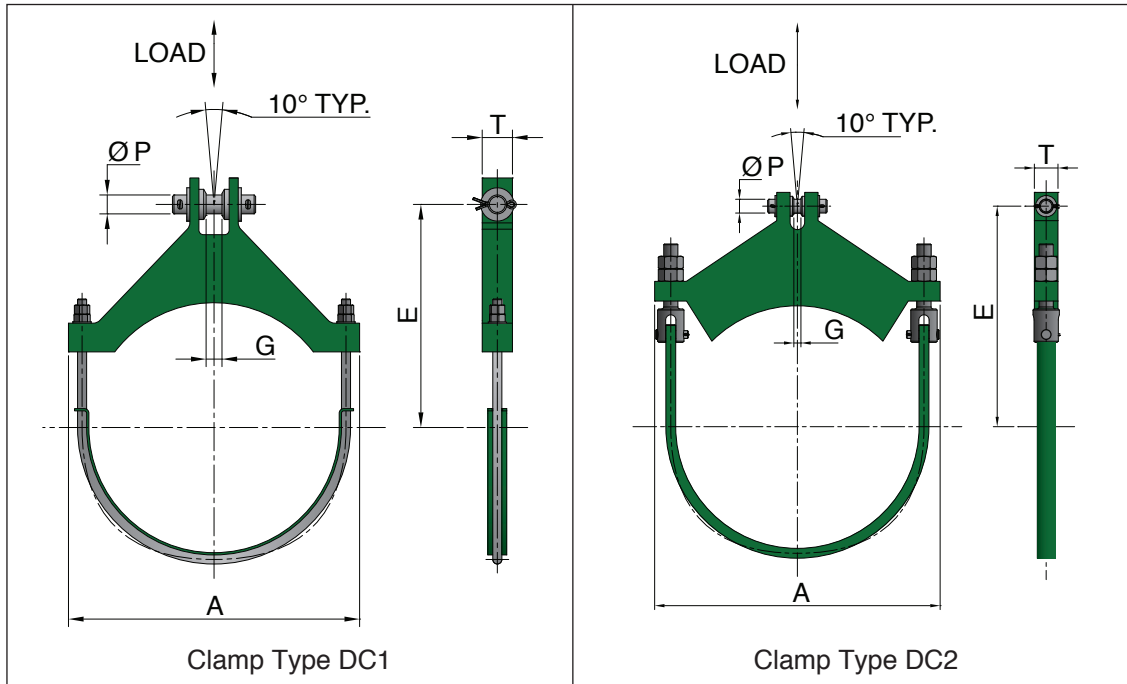


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	$\varnothing P$	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-450-200-T0	450	457.2	200	400	50	595	500	36	190	150.7
DC1-450-320-T0	450	457.2	320	400	60	595	505	45	190	117.3
DC1-500-8-T0	500	508.0	8	400	12	595	495	10.5	40	24.7
DC1-500-16-T0	500	508.0	16	400	15	595	495	12.5	40	24.7
DC1-500-48-T0	500	508.0	48	400	25	630	505	20.5	55	45.6
DC2-500-80-T0	500	508.0	80	400	35	620	510	25.5	60	70.8
DC2-500-120-T0	500	508.0	120	400	40	635	515	28.5	80	109.4
DC2-500-200-T0	500	508.0	200	400	50	665	530	36	90	144.8
DC2-500-320-T0	500	508.0	320	400	60	675	535	45	120	205.7
DC1-550-8-T0	550	558.8	8	400	12	645	520	10.5	40	26.5
DC1-550-16-T0	550	558.8	16	400	15	645	520	12.5	40	26.5
DC1-550-48-T0	550	558.8	48	400	25	680	530	20.5	55	48.6
DC2-550-80-T0	550	558.8	80	400	35	670	535	25.5	60	77.1
DC2-550-120-T0	550	558.8	120	400	40	685	540	28.5	80	119.2
DC2-550-200-T0	550	558.8	200	400	50	715	555	36	90	156.6
DC2-550-320-T0	550	558.8	320	400	60	725	560	45	120	223
DC1-600-48-T0	600	609.6	48	400	25	730	565	20.5	55	53.7
DC2-600-80-T0	600	609.6	80	400	35	725	570	25.5	60	83.9
DC2-600-120-T0	600	609.6	120	400	40	740	575	28.5	80	128.9
DC2-600-200-T0	600	609.6	200	400	50	765	590	36	90	169.1
DC2-600-320-T0	600	609.6	320	400	60	775	595	45	120	240.1
DC2-600-500-T0	600	609.6	500	400	80	790	620	56	130	313.4
DC1-650-48-T0	650	660.4	48	400	25	785	590	20.5	55	57.4
DC2-650-80-T0	650	660.4	80	400	35	775	595	25.5	60	89.9
DC2-650-120-T0	650	660.4	120	400	40	790	600	28.5	80	137.8
DC2-650-200-T0	650	660.4	200	400	50	820	615	36	90	180.6
DC2-650-320-T0	650	660.4	320	400	60	830	620	45	120	255.8
DC2-650-500-T0	650	660.4	500	400	80	840	645	56	130	332.3
DC1-700-48-T0	700	711.2	48	400	25	835	615	20.5	55	61.4
DC2-700-80-T0	700	711.2	80	400	35	825	620	25.5	60	99.9
DC2-700-120-T0	700	711.2	120	400	40	840	625	28.5	80	146.8
DC2-700-200-T0	700	711.2	200	400	50	870	640	36	90	191.9

STIFF CLAMPS

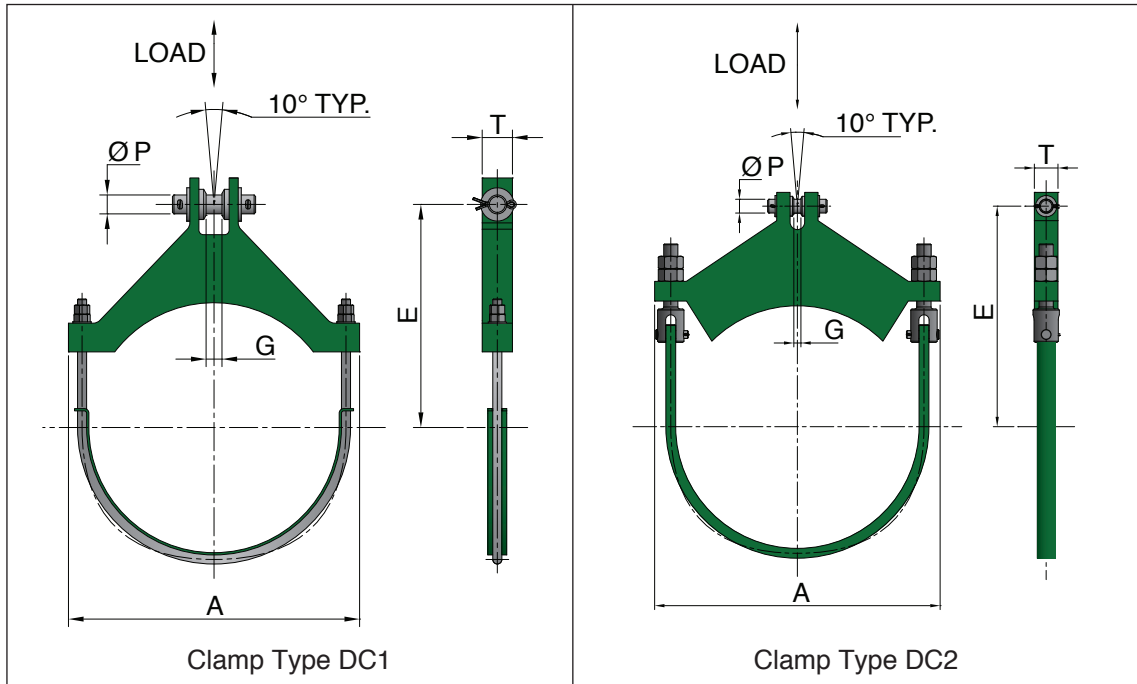


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-700-320-T0	700	711.2	320	400	60	880	645	45	120	271.1
DC2-700-500-T0	700	711.2	500	400	80	890	670	56	130	351.1
DC1-750-48-T0	750	762.0	48	400	25	885	665	20.5	55	68.7
DC2-750-80-T0	750	762.0	80	400	35	875	670	25.5	60	106.2
DC2-750-120-T0	750	762.0	120	400	40	890	675	28.5	80	161.7
DC2-750-200-T0	750	762.0	200	400	50	920	690	36	90	210.1
DC2-750-320-T0	750	762.0	320	400	60	930	695	45	120	296
DC2-750-500-T0	750	762.0	500	400	80	940	720	56	130	380.8
DC1-800-48-T0	800	812.8	48	400	25	935	690	20.5	55	73.2
DC2-800-80-T0	800	812.8	80	400	35	925	695	25.5	60	112.3
DC2-800-120-T0	800	812.8	120	400	40	940	700	28.5	80	170.7
DC2-800-200-T0	800	812.8	200	400	50	970	715	36	90	221.5
DC2-800-320-T0	800	812.8	320	400	60	980	720	45	120	311.6
DC2-800-500-T0	800	812.8	500	400	80	990	745	56	130	399.8
DC1-850-48-T0	850	863.6	48	400	25	985	715	20.5	55	77.6
DC2-850-80-T0	850	863.6	80	400	35	975	720	25.5	60	118.7
DC2-850-120-T0	850	863.6	120	400	40	990	725	28.5	80	180.2
DC2-850-200-T0	850	863.6	200	400	50	1020	740	36	90	233.4
DC2-850-320-T0	850	863.6	320	400	60	1030	745	45	120	327.8
DC2-850-500-T0	850	863.6	500	400	80	1040	770	56	130	419.6
DC1-900-48-T0	900	914.4	48	400	25	1035	760	20.5	55	85.9
DC2-900-80-T0	900	914.4	80	400	35	1030	765	25.5	60	129.7
DC2-900-120-T0	900	914.4	120	400	40	1045	770	28.5	80	196
DC2-900-200-T0	900	914.4	200	400	50	1070	785	36	90	252.4
DC2-900-320-T0	900	914.4	320	400	60	1080	790	45	120	353.6
DC2-900-500-T0	900	914.4	500	400	80	1095	815	56	130	450.6
DC1-950-48-T0	950	965.2	48	400	25	1090	790	20.5	55	89.4
DC2-950-80-T0	950	965.2	80	400	35	1080	795	25.5	55	128.1
DC2-950-120-T0	950	965.2	120	400	40	1095	800	28.5	60	168.3
DC2-950-200-T0	950	965.2	200	400	50	1125	815	36	80	245.1
DC2-950-320-T0	950	965.2	320	400	60	1135	820	45	90	304.4
DC2-950-500-T0	950	965.2	500	400	80	1145	845	56	120	447.5

STIFF CLAMPS

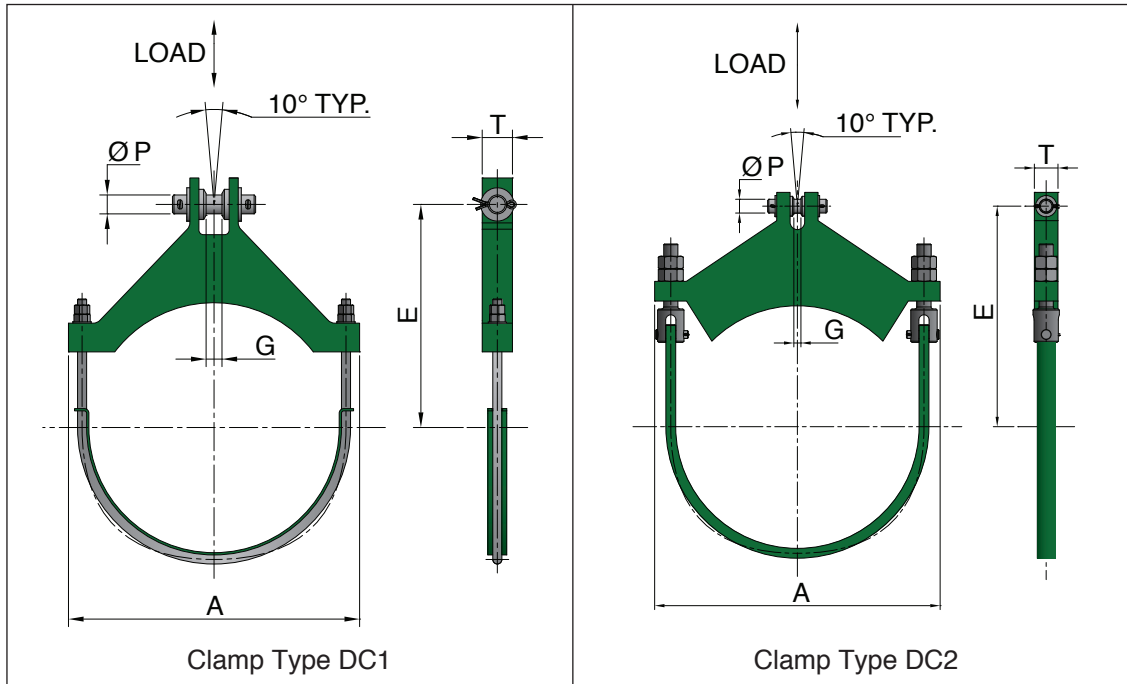


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-1000-80-T0	1000	1016.0	80	400	35	1135	820	25.5	60	144
DC2-1000-120-T0	1000	1016.0	120	400	40	1150	825	28.5	80	217.2
DC2-1000-200-T0	1000	1016.0	200	400	50	1180	840	36	90	279
DC2-1000-320-T0	1000	1016.0	320	400	60	1190	845	45	120	389.8
DC2-1000-500-T0	1000	1016.0	500	400	80	1200	870	56	130	494.2
DC2-1050-80-T0	1050	1066.8	80	400	35	1180	845	25.5	60	150.2
DC2-1050-120-T0	1050	1066.8	120	400	40	1195	850	28.5	80	226.3
DC2-1050-200-T0	1050	1066.8	200	400	50	1225	865	36	90	290.4
DC2-1050-320-T0	1050	1066.8	320	400	60	1235	870	45	120	405.3
DC2-1050-500-T0	1050	1066.8	500	400	80	1245	895	56	130	513
DC2-1100-80-T0	1100	1117.6	80	400	35	1235	875	25.5	55	147.8
DC2-1100-120-T0	1100	1117.6	120	400	40	1250	880	28.5	60	193.1
DC2-1100-200-T0	1100	1117.6	200	400	50	1280	895	36	80	280.6
DC2-1100-320-T0	1100	1117.6	320	400	60	1290	900	45	90	346.4
DC2-1100-500-T0	1100	1117.6	500	400	80	1300	925	56	120	507.5
DC2-1150-80-T0	1150	1168.4	80	400	35	1285	900	25.5	55	154.1
DC2-1150-120-T0	1150	1168.4	120	400	40	1300	905	28.5	60	201
DC2-1150-200-T0	1150	1168.4	200	400	50	1330	920	36	80	291.9
DC2-1150-320-T0	1150	1168.4	320	400	60	1340	925	45	90	359.8
DC2-1150-500-T0	1150	1168.4	500	400	80	1350	950	56	120	526.6
DC2-1200-80-T0	1200	1219.2	80	400	35	1337	926	25.5	55	160.6
DC2-1200-120-T0	1200	1219.2	120	400	40	1352	931	28.5	60	209.2
DC2-1200-200-T0	1200	1219.2	200	400	50	1377	946	36	80	303.5
DC2-1200-320-T0	1200	1219.2	320	400	60	1387	951	45	90	373.5
DC2-1200-500-T0	1200	1219.2	500	400	80	1402	976	56	120	546.6
DC1-100-8-T1	100	114.3	8	450	12	185	230	10.5	30	4.8
DC1-100-16-T1	100	114.3	16	450	15	185	230	12.5	30	4.8
DC1-150-8-T1	150	168.3	8	450	12	240	255	10.5	30	6.3
DC1-150-16-T1	150	168.3	16	450	15	240	255	12.5	30	6.3
DC1-150-48-T1	150	168.3	48	450	25	265	265	20.5	40	12.4
DC1-200-8-T1	200	219.1	8	450	12	290	305	10.5	30	8.4
DC1-200-16-T1	200	219.1	16	450	15	290	305	12.5	30	8.4

STIFF CLAMPS

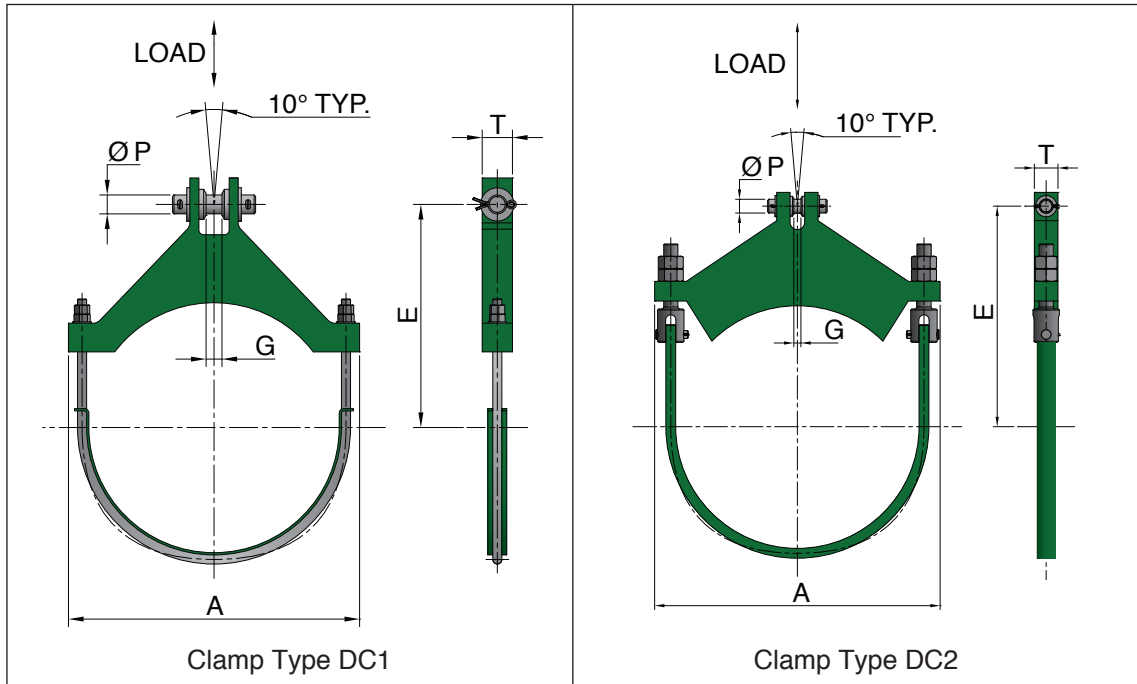


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-200-48-T1	200	219.1	48	450	25	315	315	20.5	40	15.8
DC1-250-8-T1	250	273.0	8	450	12	345	355	10.5	30	10.9
DC1-250-16-T1	250	273.0	16	450	15	345	355	12.5	30	10.9
DC1-250-48-T1	250	273.0	48	450	25	370	365	20.5	40	19.9
DC1-250-80-T1	250	273.0	80	450	35	370	370	25.5	130	55.3
DC1-300-8-T1	300	323.9	8	450	12	400	380	10.5	30	12.7
DC1-300-16-T1	300	323.9	16	450	15	400	380	12.5	30	12.7
DC1-300-48-T1	300	323.9	48	450	25	425	390	20.5	40	22.8
DC1-300-80-T1	300	323.9	80	450	35	425	395	25.5	130	62.9
DC1-350-8-T1	350	355.6	8	450	12	430	395	10.5	30	13.6
DC1-350-16-T1	350	355.6	16	450	15	430	395	12.5	30	13.6
DC1-350-48-T1	350	355.6	48	450	25	455	405	20.5	40	24.3
DC1-350-80-T1	350	355.6	80	450	35	475	410	25.5	55	38
DC1-350-120-T1	350	355.6	120	450	40	475	415	28.5	150	102.8
DC1-400-8-T1	400	406.4	8	450	12	480	440	10.5	30	16.4
DC1-400-16-T1	400	406.4	16	450	15	480	440	12.5	30	16.4
DC1-400-48-T1	400	406.4	48	450	25	505	450	20.5	40	28.6
DC1-400-80-T1	400	406.4	80	450	35	525	455	25.5	55	44.2
DC1-400-120-T1	400	406.4	120	450	40	545	460	28.5	60	54.6
DC1-400-200-T1	400	406.4	200	450	50	525	475	36	170	118.3
DC1-450-8-T1	450	457.2	8	450	12	535	465	10.5	30	18.2
DC1-450-16-T1	450	457.2	16	450	15	535	465	12.5	30	18.2
DC1-450-48-T1	450	457.2	48	450	25	555	475	20.5	40	31.6
DC1-450-80-T1	450	457.2	80	450	35	575	480	25.5	55	48.4
DC1-450-120-T1	450	457.2	120	450	40	595	485	28.5	60	59.6
DC1-450-200-T1	450	457.2	200	450	50	575	500	36	170	131.8
DC1-500-8-T1	500	508.0	8	450	12	585	495	10.5	30	20.3
DC1-500-16-T1	500	508.0	16	450	15	585	495	12.5	30	20.3
DC1-500-48-T1	500	508.0	48	450	25	610	505	20.5	40	35
DC2-500-80-T1	500	508.0	80	450	35	610	510	25.5	55	63.7
DC2-500-120-T1	500	508.0	120	450	40	625	515	28.5	60	86
DC2-500-200-T1	500	508.0	200	450	50	655	530	36	80	128.5

STIFF CLAMPS

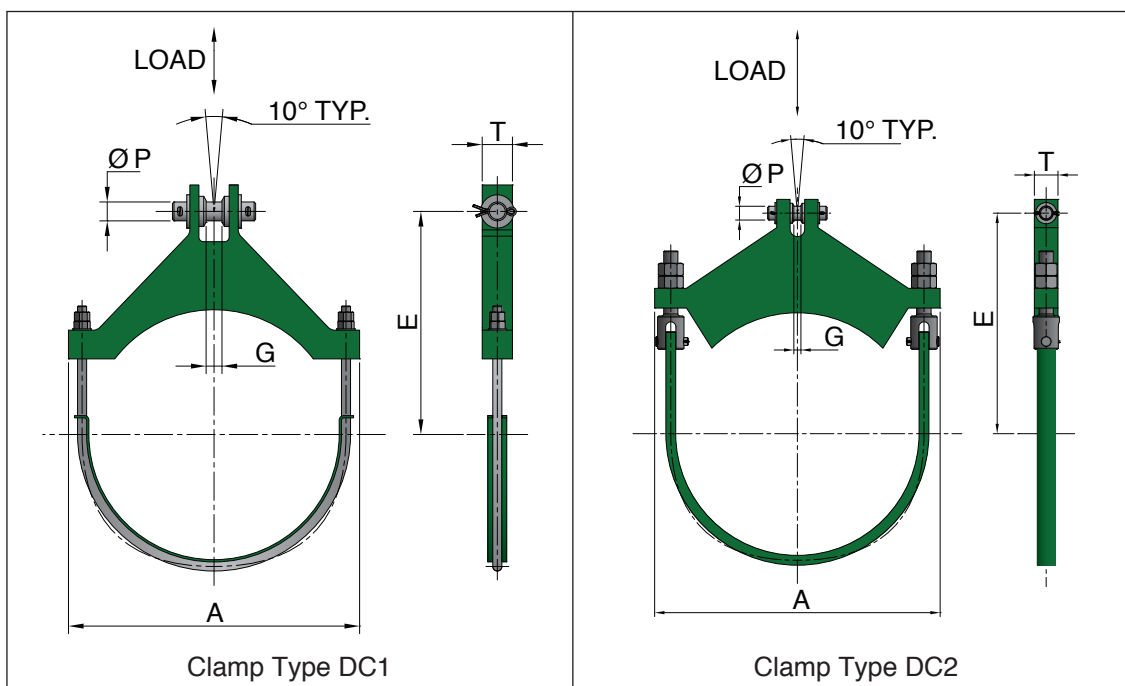


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-500-320-T1	500	508.0	320	450	60	665	535	45	90	165.4
DC1-550-8-T1	550	558.8	8	450	12	635	520	10.5	30	22.1
DC1-550-16-T1	550	558.8	16	450	15	635	520	12.5	30	22.1
DC1-550-48-T1	550	558.8	48	450	25	660	530	20.5	40	37.9
DC2-550-80-T1	550	558.8	80	450	35	660	535	25.5	55	68.7
DC2-550-120-T1	550	558.8	120	450	40	675	540	28.5	60	92.4
DC2-550-200-T1	550	558.8	200	450	50	705	555	36	80	138
DC2-550-320-T1	550	558.8	320	450	60	715	560	45	90	176.7
DC1-600-48-T1	600	609.6	48	450	25	710	565	20.5	40	41.9
DC2-600-80-T1	600	609.6	80	450	35	715	570	25.5	55	75.4
DC2-600-120-T1	600	609.6	120	450	40	730	575	28.5	60	100.8
DC2-600-200-T1	600	609.6	200	450	50	755	590	36	80	149.9
DC2-600-320-T1	600	609.6	320	450	60	765	595	45	90	190.9
DC2-600-500-T1	600	609.6	500	450	80	780	620	56	120	286.6
DC1-650-48-T1	650	660.4	48	450	25	765	590	20.5	40	45.1
DC2-650-80-T1	650	660.4	80	450	35	765	595	25.5	55	80.8
DC2-650-120-T1	650	660.4	120	450	40	780	600	28.5	60	107.6
DC2-650-200-T1	650	660.4	200	450	50	810	615	36	80	160.1
DC2-650-320-T1	650	660.4	320	450	60	820	620	45	90	203.1
DC2-650-500-T1	650	660.4	500	450	80	830	645	56	120	303.7
DC1-700-48-T1	700	711.2	48	450	25	815	615	20.5	40	48.2
DC2-700-80-T1	700	711.2	80	450	35	815	620	25.5	55	86.1
DC2-700-120-T1	700	711.2	120	450	40	830	625	28.5	60	114.4
DC2-700-200-T1	700	711.2	200	450	50	860	640	36	80	170
DC2-700-320-T1	700	711.2	320	450	60	870	645	45	90	214.9
DC2-700-500-T1	700	711.2	500	450	80	880	670	56	120	320.8
DC1-750-48-T1	750	762.0	48	450	25	865	665	20.5	40	52.7
DC2-750-80-T1	750	762.0	80	450	35	865	670	25.5	55	95.6
DC2-750-120-T1	750	762.0	120	450	40	880	675	28.5	60	125.7
DC2-750-200-T1	750	762.0	200	450	50	910	690	36	80	186.2
DC2-750-320-T1	750	762.0	320	450	60	920	695	45	90	234.1
DC2-750-500-T1	750	762.0	500	450	80	930	720	56	120	348

STIFF CLAMPS

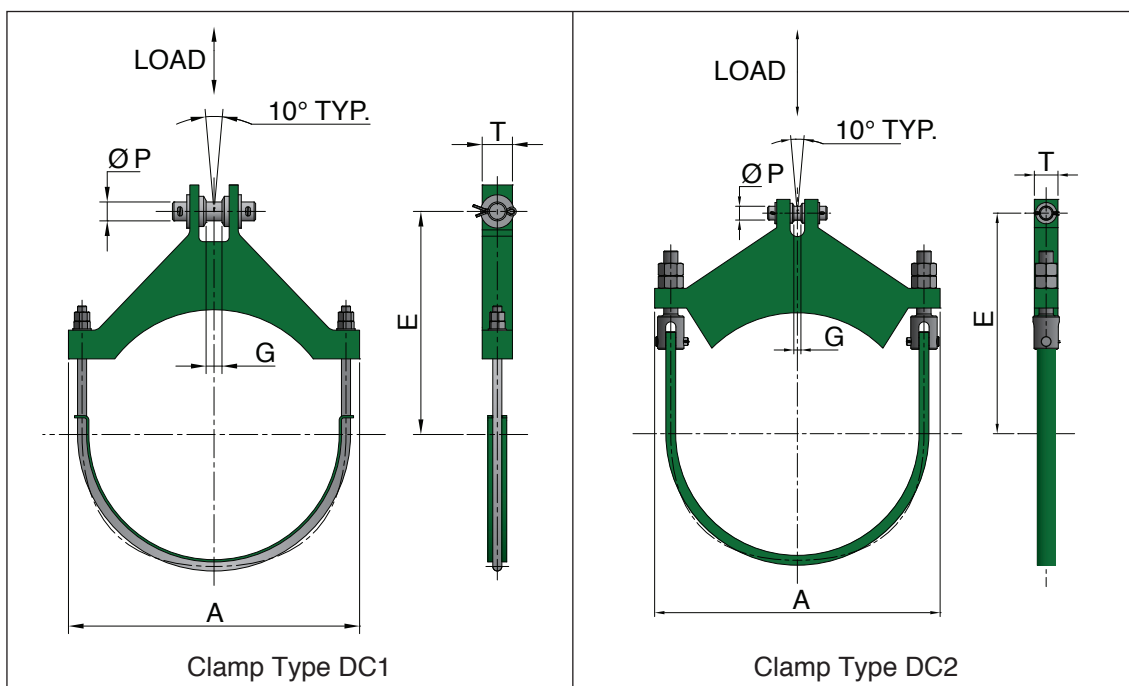


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-800-48-T1	800	812.8	48	450	25	915	690	20.5	40	57.4
DC2-800-80-T1	800	812.8	80	450	35	915	695	25.5	55	101.1
DC2-800-120-T1	800	812.8	120	450	40	930	700	28.5	60	132.6
DC2-800-200-T1	800	812.8	200	450	50	960	715	36	80	196.3
DC2-800-320-T1	800	812.8	320	450	60	970	720	45	90	246
DC2-800-500-T1	800	812.8	500	450	80	980	745	56	120	365.3
DC1-850-48-T1	850	863.6	48	450	25	965	715	20.5	40	60.6
DC2-850-80-T1	850	863.6	80	450	35	965	720	25.5	55	106.8
DC2-850-120-T1	850	863.6	120	450	40	980	725	28.5	60	139.8
DC2-850-200-T1	850	863.6	200	450	50	1010	740	36	80	206.8
DC2-850-320-T1	850	863.6	320	450	60	1020	745	45	90	258.5
DC2-850-500-T1	850	863.6	500	450	80	1030	770	56	120	383.3
DC1-900-48-T1	900	914.4	48	450	25	1015	760	20.5	40	67.1
DC2-900-80-T1	900	914.4	80	450	35	1020	765	25.5	55	116.8
DC2-900-120-T1	900	914.4	120	450	40	1035	770	28.5	60	151.8
DC2-900-200-T1	900	914.4	200	450	50	1060	785	36	80	223.6
DC2-900-320-T1	900	914.4	320	450	60	1070	790	45	90	278.3
DC2-900-500-T1	900	914.4	500	450	80	1085	815	56	120	411.7
DC1-950-48-T1	950	965.2	48	450	25	1070	790	20.5	40	71.1
DC2-950-80-T1	950	965.2	80	450	35	1070	795	25.5	55	123.5
DC2-950-120-T1	950	965.2	120	450	40	1085	800	28.5	60	160
DC2-950-200-T1	950	965.2	200	450	50	1115	815	36	80	235.7
DC2-950-320-T1	950	965.2	320	450	60	1125	820	45	90	292.8
DC2-950-500-T1	950	965.2	500	450	80	1135	845	56	120	432
DC2-1000-80-T1	1000	1016.0	80	450	35	1125	820	25.5	55	129.7
DC2-1000-120-T1	1000	1016.0	120	450	40	1140	825	28.5	60	167.9
DC2-1000-200-T1	1000	1016.0	200	450	50	1170	840	36	80	247.1
DC2-1000-320-T1	1000	1016.0	320	450	60	1180	845	45	90	306.3
DC2-1000-500-T1	1000	1016.0	500	450	80	1190	870	56	120	451.3
DC2-1050-80-T1	1050	1066.8	80	450	35	1170	845	25.5	55	135.3
DC2-1050-120-T1	1050	1066.8	120	450	40	1185	850	28.5	60	174.8
DC2-1050-200-T1	1050	1066.8	200	450	50	1215	865	36	80	257.1

STIFF CLAMPS

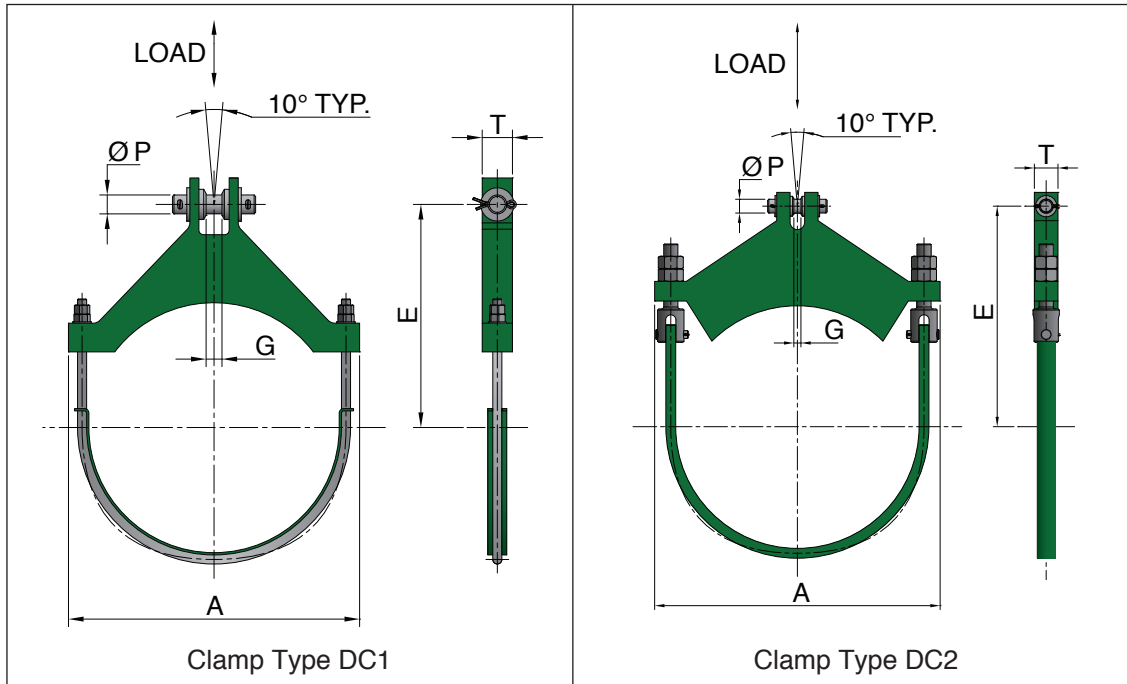


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-1050-320-T1	1050	1066.8	320	450	60	1225	870	45	90	318.2
DC2-1050-500-T1	1050	1066.8	500	450	80	1235	895	56	120	468.4
DC2-1100-80-T1	1100	1117.6	80	450	35	1225	875	25.5	55	142.6
DC2-1100-120-T1	1100	1117.6	120	450	40	1240	880	28.5	60	183.8
DC2-1100-200-T1	1100	1117.6	200	450	50	1270	895	36	80	270.1
DC2-1100-320-T1	1100	1117.6	320	450	60	1280	900	45	90	333.5
DC2-1100-500-T1	1100	1117.6	500	450	80	1290	925	56	120	490.2
DC2-1150-80-T1	1150	1168.4	80	450	35	1275	900	25.5	55	148.6
DC2-1150-120-T1	1150	1168.4	120	450	40	1290	905	28.5	60	191.4
DC2-1150-200-T1	1150	1168.4	200	450	50	1320	920	36	80	281
DC2-1150-320-T1	1150	1168.4	320	450	60	1330	925	45	90	346.4
DC2-1150-500-T1	1150	1168.4	500	450	80	1340	950	56	120	508.7
DC2-1200-80-T1	1200	1219.2	80	450	35	1327	926	25.5	55	155
DC2-1200-120-T1	1200	1219.2	120	450	40	1342	931	28.5	60	199.2
DC2-1200-200-T1	1200	1219.2	200	450	50	1372	946	36	80	292.2
DC2-1200-320-T1	1200	1219.2	320	450	60	1382	951	45	90	359.7
DC2-1200-500-T1	1200	1219.2	500	450	80	1392	976	56	120	528.1
DC1-100-8-T2	100	114.3	8	550	12	185	260	10.5	30	5.3
DC1-100-16-T2	100	114.3	16	550	15	185	260	12.5	30	5.3
DC1-150-8-T2	150	168.3	8	550	12	240	290	10.5	30	7.1
DC1-150-16-T2	150	168.3	16	550	15	240	290	12.5	30	7.1
DC1-150-48-T2	150	168.3	48	550	25	265	300	20.5	40	13.7
DC1-200-8-T2	200	219.1	8	550	12	290	335	10.5	30	9.3
DC1-200-16-T2	200	219.1	16	550	15	290	335	12.5	30	9.3
DC1-200-48-T2	200	219.1	48	550	25	315	345	20.5	40	17.2
DC1-250-8-T2	250	273.0	8	550	12	345	395	10.5	30	12.3
DC1-250-16-T2	250	273.0	16	550	15	345	395	12.5	30	12.3
DC1-250-48-T2	250	273.0	48	550	25	370	405	20.5	40	22.1
DC1-250-80-T2	250	273.0	80	550	35	370	450	25.5	130	38
DC1-300-8-T2	300	323.9	8	550	12	400	420	10.5	30	14.3
DC1-300-16-T2	300	323.9	16	550	15	400	420	12.5	30	14.3
DC1-300-48-T2	300	323.9	48	550	25	425	430	20.5	40	25.3

STIFF CLAMPS

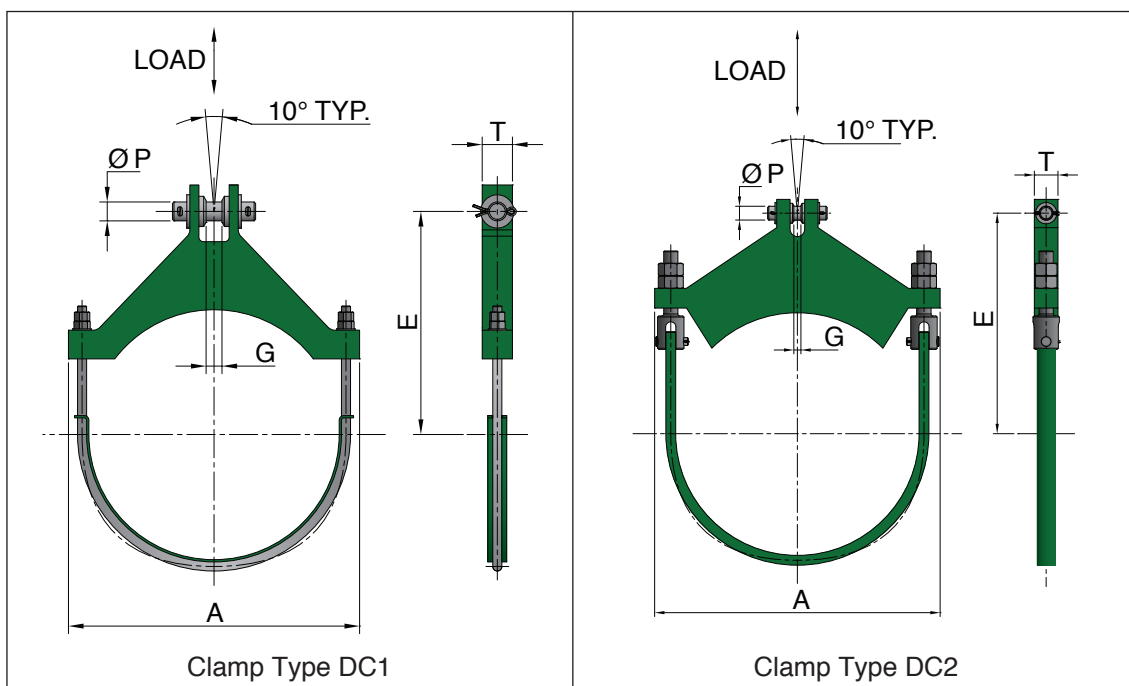


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-300-80-T2	300	323.9	80	550	35	425	475	25.5	130	42
DC1-350-8-T2	350	355.6	8	550	12	430	440	10.5	30	15.6
DC1-350-16-T2	350	355.6	16	550	15	430	440	12.5	30	15.6
DC1-350-48-T2	350	355.6	48	550	25	455	450	20.5	40	27.4
DC1-350-80-T2	350	355.6	80	550	35	475	495	25.5	90	40.5
DC1-350-120-T2	350	355.6	120	550	40	475	505	28.5	150	62.4
DC1-400-8-T2	400	406.4	8	550	12	480	485	10.5	30	18.6
DC1-400-16-T2	400	406.4	16	550	15	480	485	12.5	30	18.6
DC1-400-48-T2	400	406.4	48	550	25	505	495	20.5	40	32
DC1-400-80-T2	400	406.4	80	550	35	525	540	25.5	90	45.4
DC1-400-120-T2	400	406.4	120	550	40	545	550	28.5	95	57.1
DC1-400-200-T2	400	406.4	200	550	50	525	560	36	150	75.7
DC1-450-8-T2	450	457.2	8	550	12	535	510	10.5	30	20.7
DC1-450-16-T2	450	457.2	16	550	15	535	510	12.5	30	20.7
DC1-450-48-T2	450	457.2	48	550	25	555	520	20.5	40	35.4
DC1-450-80-T2	450	457.2	80	550	35	575	565	25.5	90	48.9
DC1-450-120-T2	450	457.2	120	550	40	595	575	28.5	95	61.2
DC1-450-200-T2	450	457.2	200	550	50	575	585	36	150	80.5
DC1-450-320-T2	450	457.2	320	550	60	615	605	45	210	152.8
DC1-500-8-T2	500	508.0	8	550	12	585	535	10.5	30	22.8
DC1-500-16-T2	500	508.0	16	550	15	585	535	12.5	30	22.8
DC1-500-48-T2	500	508.0	48	550	25	610	545	20.5	40	38.7
DC2-500-80-T2	500	508.0	80	550	35	610	590	25.5	115	62.6
DC2-500-120-T2	500	508.0	120	550	40	635	600	28.5	140	96.5
DC2-500-200-T2	500	508.0	200	550	50	665	610	36	180	155.2
DC2-500-320-T2	500	508.0	320	550	60	685	630	45	190	197.3
DC1-550-8-T2	550	558.8	8	550	12	635	560	10.5	30	24.8
DC1-550-16-T2	550	558.8	16	550	15	635	560	12.5	30	24.8
DC1-550-48-T2	550	558.8	48	550	25	660	570	20.5	40	41.9
DC2-550-80-T2	550	558.8	80	550	35	660	615	25.5	115	66.7
DC2-550-120-T2	550	558.8	120	550	40	685	625	28.5	140	102
DC2-550-200-T2	550	558.8	200	550	50	715	635	36	180	163.6

STIFF CLAMPS

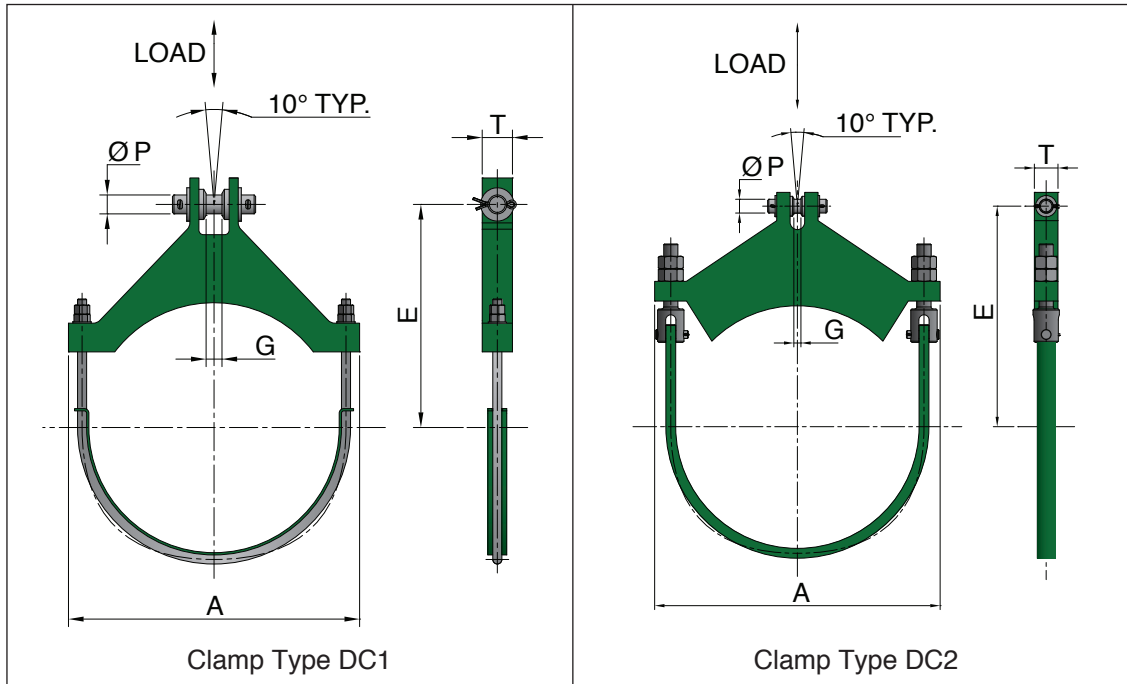


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-550-320-T2	550	558.8	320	550	60	735	655	45	190	207
DC1-600-48-T2	600	609.6	48	550	25	710	620	20.5	40	47.9
DC2-600-80-T2	600	609.6	80	550	35	715	665	25.5	115	73.9
DC2-600-120-T2	600	609.6	120	550	40	740	675	28.5	140	110.6
DC2-600-200-T2	600	609.6	200	550	50	765	685	36	180	176.3
DC2-600-320-T2	600	609.6	320	550	60	790	705	45	190	221.7
DC2-600-500-T2	600	609.6	500	550	80	765	735	56	330	339
DC1-650-48-T2	650	660.4	48	550	25	765	645	20.5	40	51.6
DC2-650-80-T2	650	660.4	80	550	35	765	690	25.5	115	78.4
DC2-650-120-T2	650	660.4	120	550	40	790	700	28.5	140	116.5
DC2-650-200-T2	650	660.4	200	550	50	820	710	36	180	185.7
DC2-650-320-T2	650	660.4	320	550	60	840	730	45	190	231.9
DC2-650-500-T2	650	660.4	500	550	80	820	760	56	330	354.5
DC1-700-48-T2	700	711.2	48	550	25	815	670	20.5	40	55.1
DC2-700-80-T2	700	711.2	80	550	35	815	715	25.5	115	82.8
DC2-700-120-T2	700	711.2	120	550	40	840	725	28.5	140	122.3
DC2-700-200-T2	700	711.2	200	550	50	870	735	36	180	194.5
DC2-700-320-T2	700	711.2	320	550	60	890	755	45	190	242.1
DC2-700-500-T2	700	711.2	500	550	80	870	785	56	330	369.3
DC1-750-48-T2	750	762.0	48	550	25	865	720	20.5	40	59.8
DC2-750-80-T2	750	762.0	80	550	35	865	765	25.5	115	90.4
DC2-750-120-T2	750	762.0	120	550	40	890	775	28.5	140	131.3
DC2-750-200-T2	750	762.0	200	550	50	920	785	36	180	208.3
DC2-750-320-T2	750	762.0	320	550	60	940	805	45	190	257.4
DC2-750-500-T2	750	762.0	500	550	80	920	835	56	330	390.6
DC1-800-48-T2	800	812.8	48	550	25	915	745	20.5	40	65.2
DC2-800-80-T2	800	812.8	80	550	35	915	790	25.5	115	95
DC2-800-120-T2	800	812.8	120	550	40	940	800	28.5	140	137.3
DC2-800-200-T2	800	812.8	200	550	50	970	810	36	180	217.4
DC2-800-320-T2	800	812.8	320	550	60	990	830	45	190	267.7
DC2-800-500-T2	800	812.8	500	550	80	970	860	56	330	405.6
DC1-850-48-T2	850	863.6	48	550	25	965	770	20.5	40	68.9

STIFF CLAMPS

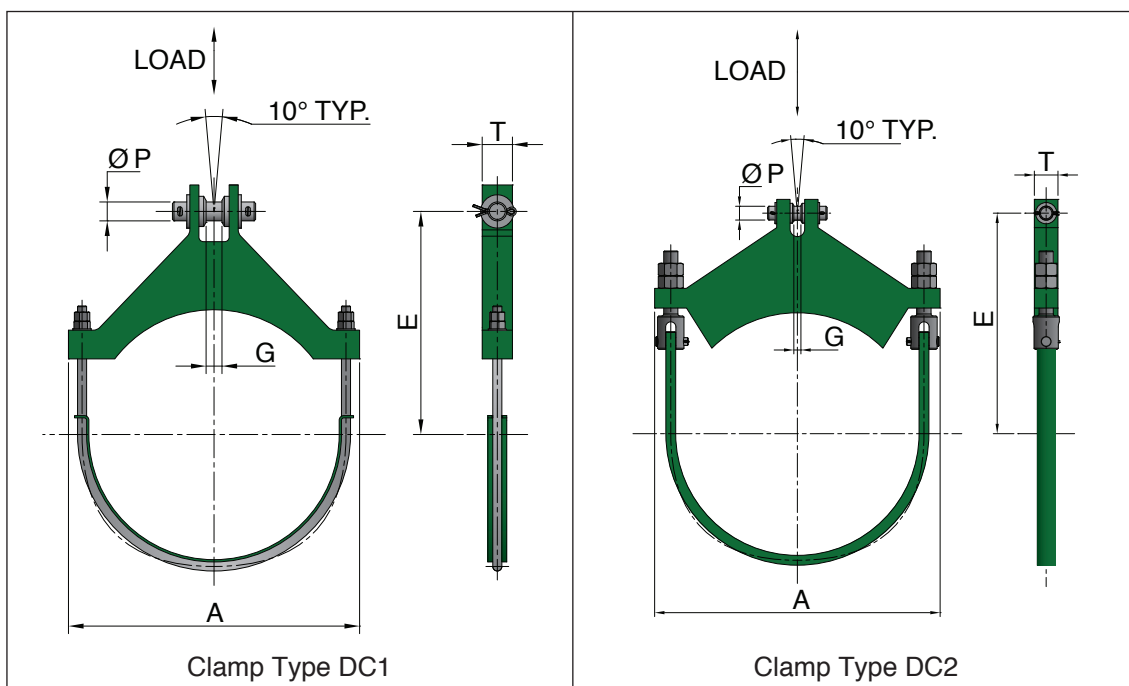


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-850-80-T2	850	863.6	80	550	35	965	815	25.5	115	99.7
DC2-850-120-T2	850	863.6	120	550	40	990	825	28.5	140	143.3
DC2-850-200-T2	850	863.6	200	550	50	1020	835	36	180	226.5
DC2-850-320-T2	850	863.6	320	550	60	1040	855	45	190	278.1
DC2-850-500-T2	850	863.6	500	550	80	1020	885	56	330	420.8
DC1-900-48-T2	900	914.4	48	550	25	1015	815	20.5	40	75.8
DC2-900-80-T2	900	914.4	80	550	35	1020	860	25.5	115	107.9
DC2-900-120-T2	900	914.4	120	550	40	1045	870	28.5	140	153
DC2-900-200-T2	900	914.4	200	550	50	1070	880	36	180	240.7
DC2-900-320-T2	900	914.4	320	550	60	1095	900	45	190	294.4
DC2-900-500-T2	900	914.4	500	550	80	1070	930	56	330	442.6
DC1-950-48-T2	950	965.2	48	550	25	1070	845	20.5	40	80.3
DC2-950-80-T2	950	965.2	80	550	35	1070	890	25.5	115	113.3
DC2-950-120-T2	950	965.2	120	550	40	1095	900	28.5	140	159.8
DC2-950-200-T2	950	965.2	200	550	50	1125	910	36	180	251.7
DC2-950-320-T2	950	965.2	320	550	60	1145	930	45	190	306.2
DC2-950-500-T2	950	965.2	500	550	80	1125	960	56	330	460.3
DC2-1000-80-T2	1000	1016.0	80	550	35	1125	915	25.5	115	118.6
DC2-1000-120-T2	1000	1016.0	120	550	40	1150	925	28.5	140	166.5
DC2-1000-200-T2	1000	1016.0	200	550	50	1180	935	36	180	261.8
DC2-1000-320-T2	1000	1016.0	320	550	60	1200	955	45	190	317.7
DC2-1000-500-T2	1000	1016.0	500	550	80	1180	985	56	330	477
DC2-1050-80-T2	1050	1066.8	80	550	35	1170	940	25.5	115	123.2
DC2-1050-120-T2	1050	1066.8	120	550	40	1195	950	28.5	140	172.5
DC2-1050-200-T2	1050	1066.8	200	550	50	1225	960	36	180	270.8
DC2-1050-320-T2	1050	1066.8	320	550	60	1245	980	45	190	327.8
DC2-1050-500-T2	1050	1066.8	500	550	80	1225	1010	56	330	491.6
DC2-1100-80-T2	1100	1117.6	80	550	35	1225	970	25.5	115	124.8
DC2-1100-120-T2	1100	1117.6	120	550	40	1250	980	28.5	140	175.5
DC2-1100-200-T2	1100	1117.6	200	550	50	1280	990	36	180	275.5
DC2-1100-320-T2	1100	1117.6	320	550	60	1300	1010	45	190	333.9
DC2-1100-500-T2	1100	1117.6	500	550	80	1280	1040	56	330	501

STIFF CLAMPS

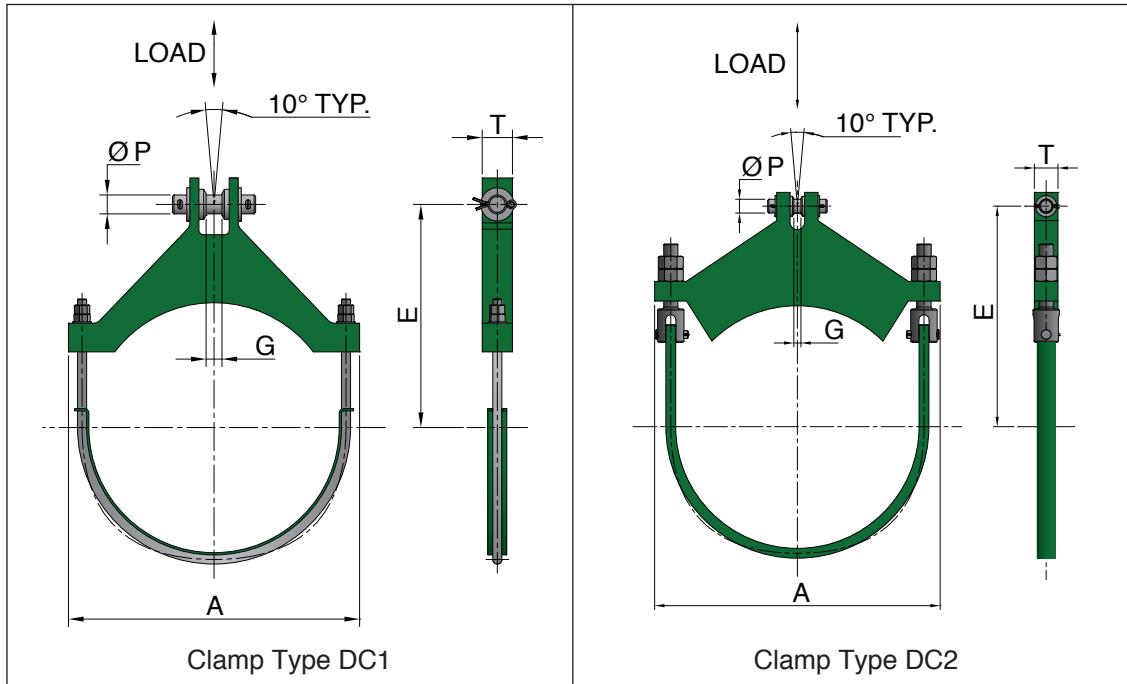


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-1150-80-T2	1150	1168.4	80	550	35	1275	995	25.5	115	126
DC2-1150-120-T2	1150	1168.4	120	550	40	1300	1005	28.5	140	177.7
DC2-1150-200-T2	1150	1168.4	200	550	50	1330	1015	36	180	278.9
DC2-1150-320-T2	1150	1168.4	320	550	60	1350	1035	45	190	338.3
DC2-1150-500-T2	1150	1168.4	500	550	80	1330	1065	56	330	507.9
DC2-1200-80-T2	1200	1219.2	80	550	35	1327	1021	25.5	115	127.2
DC2-1200-120-T2	1200	1219.2	120	550	40	1352	1031	28.5	140	180
DC2-1200-200-T2	1200	1219.2	200	550	50	1382	1041	36	180	282.5
DC2-1200-320-T2	1200	1219.2	320	550	60	1402	1061	45	190	342.9
DC2-1200-500-T2	1200	1219.2	500	550	80	1382	1091	56	330	515.1
DC1-100-8-T3	100	114.3	8	600	12	195	260	10.5	40	6.8
DC1-100-16-T3	100	114.3	16	600	15	195	260	12.5	40	6.8
DC1-150-8-T3	150	168.3	8	600	12	255	290	10.5	40	9.3
DC1-150-16-T3	150	168.3	16	600	15	255	290	12.5	40	9.3
DC1-200-8-T3	200	219.1	8	600	12	305	335	10.5	40	12.1
DC1-200-16-T3	200	219.1	16	600	15	305	335	12.5	40	12.1
DC1-200-48-T3	200	219.1	48	600	25	315	365	20.5	125	24.6
DC1-250-8-T3	250	273.0	8	600	12	360	395	10.5	40	16
DC1-250-16-T3	250	273.0	16	600	15	360	395	12.5	40	16
DC1-250-48-T3	250	273.0	48	600	25	370	425	20.5	125	29.1
DC1-250-80-T3	250	273.0	80	600	35	390	450	25.5	150	48.8
DC1-300-8-T3	300	323.9	8	600	12	410	420	10.5	40	18.6
DC1-300-16-T3	300	323.9	16	600	15	410	420	12.5	40	18.6
DC1-300-48-T3	300	323.9	48	600	25	425	450	20.5	125	32.5
DC1-300-80-T3	300	323.9	80	600	35	445	475	25.5	150	53.7
DC1-350-8-T3	350	355.6	8	600	12	440	440	10.5	40	20.3
DC1-350-16-T3	350	355.6	16	600	15	440	440	12.5	40	20.3
DC1-350-48-T3	350	355.6	48	600	25	490	470	20.5	95	38.5
DC1-350-80-T3	350	355.6	80	600	35	475	495	25.5	150	56.7
DC1-350-120-T3	350	355.6	120	600	40	490	505	28.5	170	73.8
DC1-400-8-T3	400	406.4	8	600	12	495	485	10.5	40	24.1
DC1-400-16-T3	400	406.4	16	600	15	495	485	12.5	40	24.1

STIFF CLAMPS

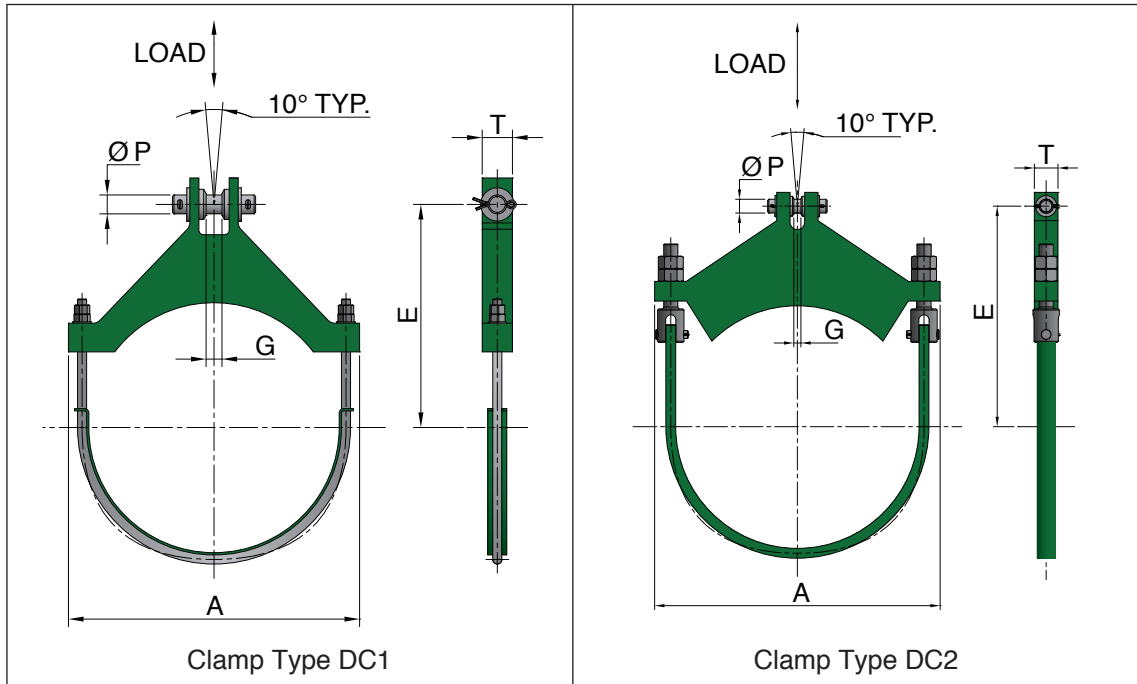


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-400-48-T3	400	406.4	48	600	25	545	515	20.5	95	43.1
DC1-400-80-T3	400	406.4	80	600	35	560	540	25.5	100	61.9
DC1-400-120-T3	400	406.4	120	600	40	545	550	28.5	170	80.9
DC1-400-200-T3	400	406.4	200	600	50	580	560	36	230	151.3
DC1-450-8-T3	450	457.2	8	600	12	545	510	10.5	40	26.9
DC1-450-16-T3	450	457.2	16	600	15	545	510	12.5	40	26.9
DC1-450-48-T3	450	457.2	48	600	25	595	540	20.5	95	46.5
DC1-450-80-T3	450	457.2	80	600	35	615	565	25.5	100	66.7
DC1-450-120-T3	450	457.2	120	600	40	595	575	28.5	170	86.4
DC1-450-200-T3	450	457.2	200	600	50	635	585	36	230	160.8
DC1-500-8-T3	500	508.0	8	600	12	595	535	10.5	40	29.6
DC1-500-16-T3	500	508.0	16	600	15	595	535	12.5	40	29.6
DC2-500-48-T3	500	508.0	48	600	25	605	565	20.5	90	40.9
DC2-500-80-T3	500	508.0	80	600	35	630	590	25.5	110	64.8
DC2-500-120-T3	500	508.0	120	600	40	645	600	28.5	140	98.3
DC2-500-200-T3	500	508.0	200	600	50	690	610	36	180	173.6
DC2-500-320-T3	500	508.0	320	600	60	660	630	45	305	265.4
DC1-550-8-T3	550	558.8	8	600	12	645	560	10.5	40	32.1
DC1-550-16-T3	550	558.8	16	600	15	645	560	12.5	40	32.1
DC2-550-48-T3	550	558.8	48	600	25	655	590	20.5	90	43.9
DC2-550-80-T3	550	558.8	80	600	35	680	615	25.5	110	69
DC2-550-120-T3	550	558.8	120	600	40	695	625	28.5	140	103.7
DC2-550-200-T3	550	558.8	200	600	50	740	635	36	180	182.1
DC2-550-320-T3	550	558.8	320	600	60	710	655	45	305	276.8
DC2-600-48-T3	600	609.6	48	600	25	710	640	20.5	90	49.3
DC2-600-80-T3	600	609.6	80	600	35	735	665	25.5	110	76
DC2-600-120-T3	600	609.6	120	600	40	745	675	28.5	140	111.8
DC2-600-200-T3	600	609.6	200	600	50	795	685	36	180	195.2
DC2-600-320-T3	600	609.6	320	600	60	765	705	45	305	294.2
DC2-600-500-T3	600	609.6	500	600	80	810	735	56	330	475.8
DC2-650-48-T3	650	660.4	48	600	25	760	665	20.5	90	52.6
DC2-650-80-T3	650	660.4	80	600	35	785	690	25.5	110	80.5

STIFF CLAMPS

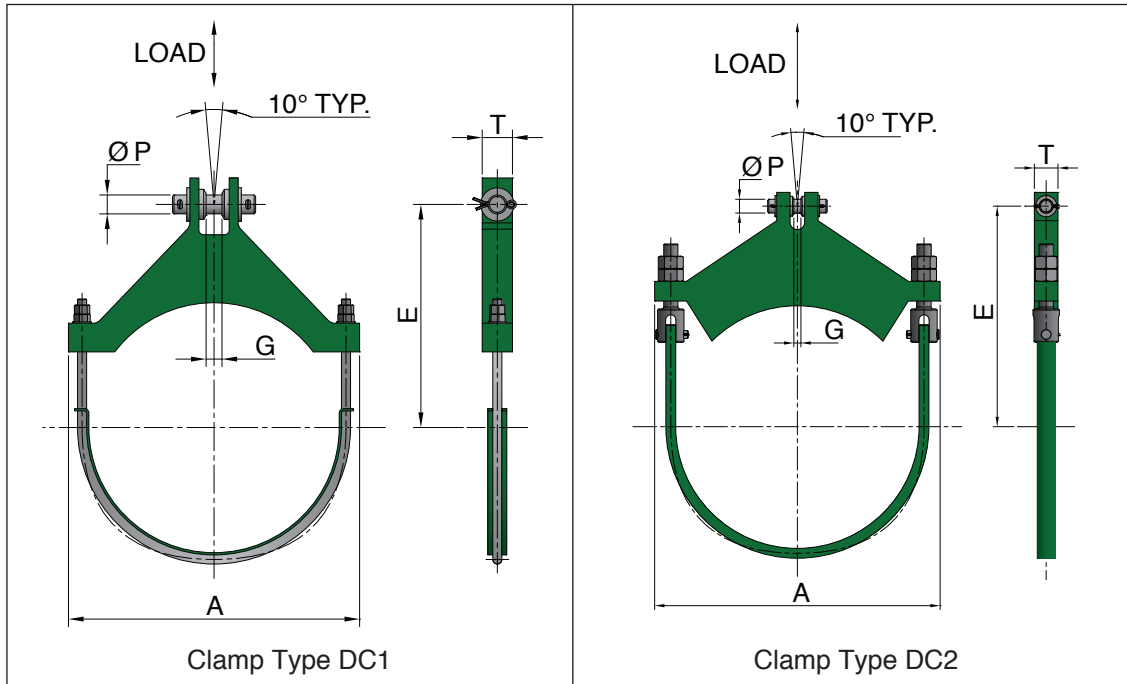


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-650-120-T3	650	660.4	120	600	40	800	700	28.5	140	117.9
DC2-650-200-T3	650	660.4	200	600	50	845	710	36	180	204.2
DC2-650-320-T3	650	660.4	320	600	60	815	730	45	305	306.3
DC2-650-500-T3	650	660.4	500	600	80	860	760	56	330	491.4
DC2-700-48-T3	700	711.2	48	600	25	815	690	20.5	90	56.1
DC2-700-80-T3	700	711.2	80	600	35	835	715	25.5	110	84.9
DC2-700-120-T3	700	711.2	120	600	40	850	725	28.5	140	123.6
DC2-700-200-T3	700	711.2	200	600	50	895	735	36	180	213.2
DC2-700-320-T3	700	711.2	320	600	60	865	755	45	305	318.3
DC2-700-500-T3	700	711.2	500	600	80	915	785	56	330	507.7
DC2-750-48-T3	750	762.0	48	600	25	860	740	20.5	90	61.6
DC2-750-80-T3	750	762.0	80	600	35	885	765	25.5	110	92.4
DC2-750-120-T3	750	762.0	120	600	40	900	775	28.5	140	132.3
DC2-750-200-T3	750	762.0	200	600	50	945	785	36	180	226.9
DC2-750-320-T3	750	762.0	320	600	60	915	805	45	305	336.5
DC2-750-500-T3	750	762.0	500	600	80	960	835	56	330	528.3
DC2-800-48-T3	800	812.8	48	600	25	910	765	20.5	90	65
DC2-800-80-T3	800	812.8	80	600	35	935	790	25.5	110	97
DC2-800-120-T3	800	812.8	120	600	40	950	800	28.5	140	138.2
DC2-800-200-T3	800	812.8	200	600	50	995	810	36	180	236.1
DC2-800-320-T3	800	812.8	320	600	60	965	830	45	305	348.8
DC2-800-500-T3	800	812.8	500	600	80	1010	860	56	330	544
DC2-850-48-T3	850	863.6	48	600	25	965	790	20.5	90	68.8
DC2-850-80-T3	850	863.6	80	600	35	985	815	25.5	110	101.6
DC2-850-120-T3	850	863.6	120	600	40	1000	825	28.5	140	144.1
DC2-850-200-T3	850	863.6	200	600	50	1045	835	36	180	245.3
DC2-850-320-T3	850	863.6	320	600	60	1015	855	45	305	361.2
DC2-850-500-T3	850	863.6	500	600	80	1065	885	56	330	560.9
DC2-900-48-T3	900	914.4	48	600	25	1015	835	20.5	90	74.7
DC2-900-80-T3	900	914.4	80	600	35	1040	860	25.5	110	109.8
DC2-900-120-T3	900	914.4	120	600	40	1055	870	28.5	140	153.6
DC2-900-200-T3	900	914.4	200	600	50	1100	880	36	180	260

STIFF CLAMPS

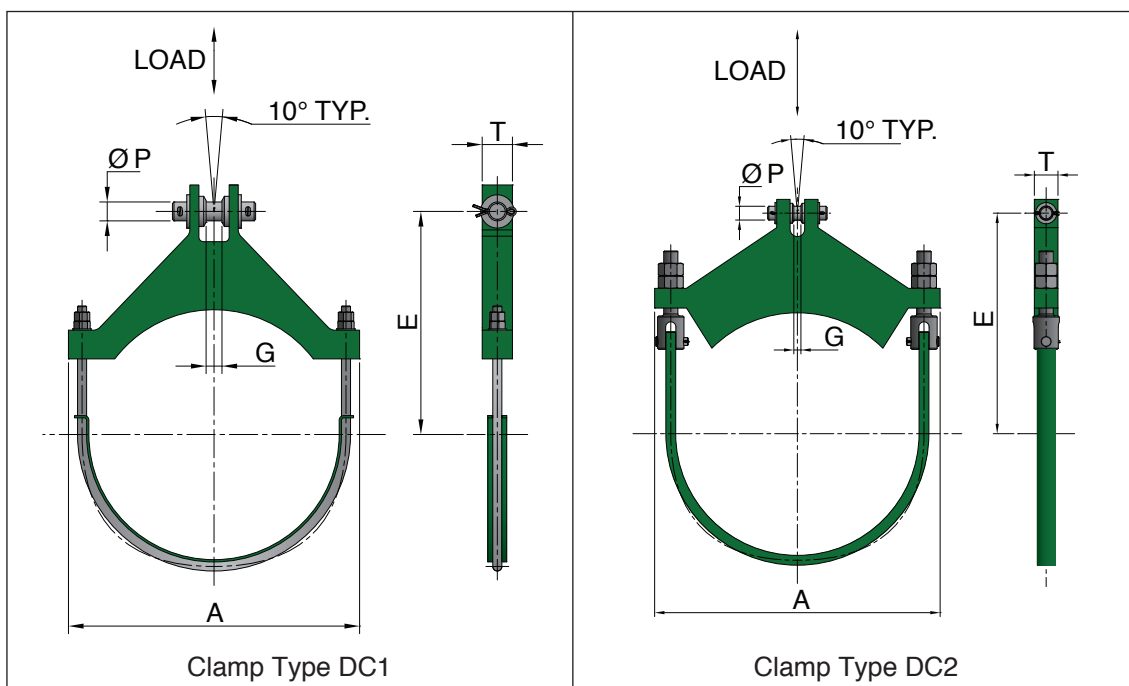


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-900-320-T3	900	914.4	320	600	60	1070	900	45	305	380.8
DC2-900-500-T3	900	914.4	500	600	80	1115	930	56	330	583
DC2-950-48-T3	950	965.2	48	600	25	1065	865	20.5	90	78.7
DC2-950-80-T3	950	965.2	80	600	35	1090	890	25.5	110	115.2
DC2-950-120-T3	950	965.2	120	600	40	1105	900	28.5	140	160.3
DC2-950-200-T3	950	965.2	200	600	50	1150	910	36	180	270.5
DC2-950-320-T3	950	965.2	320	600	60	1120	930	45	305	394.8
DC2-950-500-T3	950	965.2	500	600	80	1165	960	56	330	600.5
DC2-1000-80-T3	1000	1016.0	80	600	35	1145	915	25.5	110	120.4
DC2-1000-120-T3	1000	1016.0	120	600	40	1160	925	28.5	140	166.9
DC2-1000-200-T3	1000	1016.0	200	600	50	1205	935	36	180	280.8
DC2-1000-320-T3	1000	1016.0	320	600	60	1175	955	45	305	408.6
DC2-1000-500-T3	1000	1016.0	500	600	80	1220	985	56	330	618.1
DC2-1050-80-T3	1050	1066.8	80	600	35	1190	940	25.5	110	125.1
DC2-1050-120-T3	1050	1066.8	120	600	40	1205	950	28.5	140	172.7
DC2-1050-200-T3	1050	1066.8	200	600	50	1250	960	36	180	289.8
DC2-1050-320-T3	1050	1066.8	320	600	60	1220	980	45	305	420.8
DC2-1050-500-T3	1050	1066.8	500	600	80	1265	1010	56	330	633.3
DC2-1100-120-T3	1100	1117.6	120	600	40	1260	980	28.5	140	199.7
DC2-1100-200-T3	1100	1117.6	200	600	50	1305	990	36	180	330.6
DC2-1100-320-T3	1100	1117.6	320	600	60	1275	1010	45	305	426.8
DC2-1100-500-T3	1100	1117.6	500	600	80	1320	1040	56	330	642.7
DC2-1150-120-T3	1150	1168.4	120	600	40	1310	1005	28.5	140	201.9
DC2-1150-200-T3	1150	1168.4	200	600	50	1355	1015	36	180	334
DC2-1150-320-T3	1150	1168.4	320	600	60	1325	1035	45	305	431.3
DC2-1150-500-T3	1150	1168.4	500	600	80	1370	1065	56	330	649.6
DC2-1200-120-T3	1200	1219.2	120	600	40	1362	1031	28.5	140	204.2
DC2-1200-200-T3	1200	1219.2	200	600	50	1407	1041	36	180	337.6
DC2-1200-320-T3	1200	1219.2	320	600	60	1377	1061	45	305	435.8
DC2-1200-500-T3	1200	1219.2	500	600	80	1422	1091	56	330	656.7
DC1-100-8-T4	100	114.3	8	600	12	195	260	10.5	40	6.8
DC1-100-16-T4	100	114.3	16	600	15	195	260	12.5	40	6.8

STIFF CLAMPS

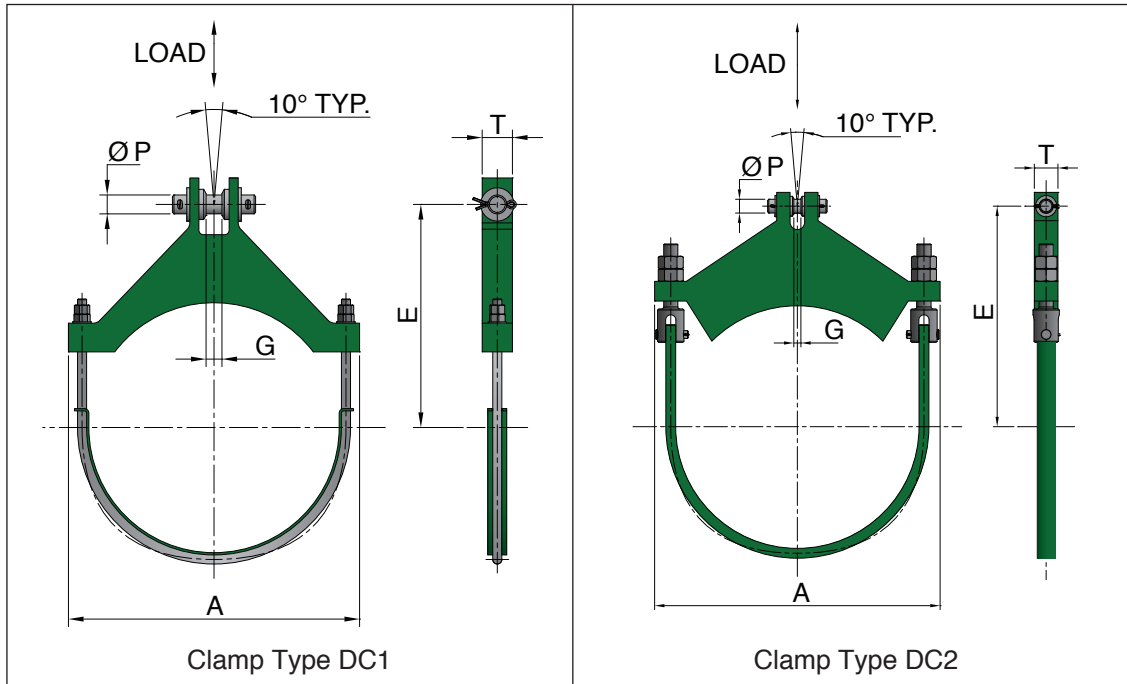


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-150-8-T4	150	168.3	8	600	12	255	290	10.5	40	9.3
DC1-150-16-T4	150	168.3	16	600	15	255	290	12.5	40	9.3
DC1-200-8-T4	200	219.1	8	600	12	305	335	10.5	40	12.1
DC1-200-16-T4	200	219.1	16	600	15	305	335	12.5	40	12.1
DC1-200-48-T4	200	219.1	48	600	25	315	365	20.5	117	20.5
DC1-250-8-T4	250	273	8	600	12	360	395	10.5	40	16
DC1-250-16-T4	250	273	16	600	15	360	395	12.5	40	16
DC1-250-48-T4	250	273	48	600	25	370	425	20.5	117	24.2
DC1-250-80-T4	250	273	80	600	35	390	450	25.5	140	40.7
DC1-300-8-T4	300	323.9	8	600	12	410	420	10.5	40	18.6
DC1-300-16-T4	300	323.9	16	600	15	410	420	12.5	40	18.6
DC1-300-48-T4	300	323.9	48	600	25	425	450	20.5	117	27.1
DC1-300-80-T4	300	323.9	80	600	35	445	475	25.5	140	44.7
DC1-350-8-T4	350	355.6	8	600	12	440	440	10.5	40	20.3
DC1-350-16-T4	350	355.6	16	600	15	440	440	12.5	40	20.3
DC1-350-48-T4	350	355.6	48	600	25	490	470	20.5	87	32.1
DC1-350-80-T4	350	355.6	80	600	35	475	495	25.5	140	47.2
DC1-350-120-T4	350	355.6	120	600	40	490	505	28.5	160	61.5
DC1-400-8-T4	400	406.4	8	600	12	495	485	10.5	40	24.1
DC1-400-16-T4	400	406.4	16	600	15	495	485	12.5	40	24.1
DC1-400-48-T4	400	406.4	48	600	25	545	515	20.5	87	35.9
DC1-400-80-T4	400	406.4	80	600	35	560	540	25.5	90	51.6
DC1-400-120-T4	400	406.4	120	600	40	545	550	28.5	160	67.4
DC1-400-200-T4	400	406.4	200	600	50	580	560	36	220	134.5
DC1-450-8-T4	450	457	8	600	12	545	510	10.5	40	26.9
DC1-450-16-T4	450	457	16	600	15	545	510	12.5	40	26.9
DC1-450-48-T4	450	457	48	600	25	595	540	20.5	87	38.8
DC1-450-80-T4	450	457	80	600	35	615	565	25.5	90	55.5
DC1-450-120-T4	450	457	120	600	40	595	575	28.5	160	72
DC1-450-200-T4	450	457	200	600	50	635	585	36	220	142.9
DC1-500-8-T4	500	508	8	600	12	595	535	10.5	40	29.6
DC1-500-16-T4	500	508	16	600	15	595	535	12.5	40	29.6

STIFF CLAMPS

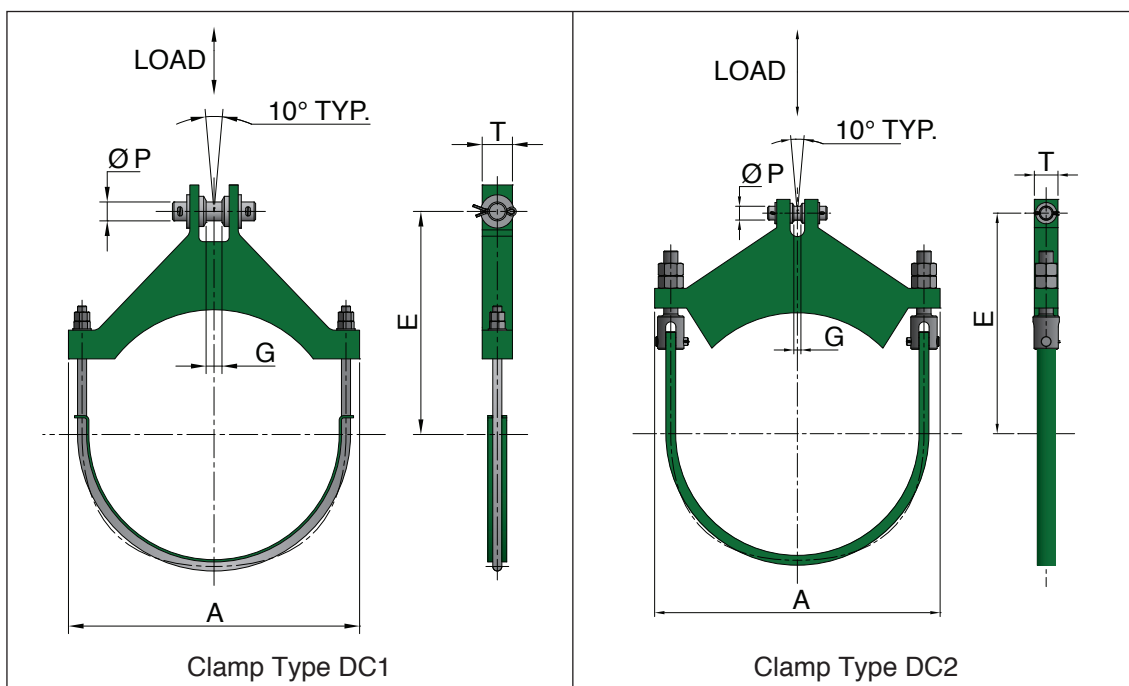


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC1-550-8-T4	550	559	8	600	12	645	560	10.5	40	32.1
DC1-550-16-T4	550	559	16	600	15	645	560	12.5	40	32.1
DC2-500-48-T4	500	508	48	600	25	605	565	20.5	80	34.1
DC2-500-80-T4	500	508	80	600	35	630	590	25.5	100	54
DC2-500-120-T4	500	508	120	600	40	645	600	28.5	130	81.9
DC2-500-200-T4	500	508	200	600	50	690	610	36	170	154.3
DC2-500-320-T4	500	508	320	600	60	660	630	45	285	221.2
DC2-550-48-T4	550	558.8	48	600	25	655	590	20.5	80	36.6
DC2-550-80-T4	550	558.8	80	600	35	680	615	25.5	100	57.5
DC2-550-120-T4	550	558.8	120	600	40	695	625	28.5	130	86.5
DC2-550-200-T4	550	558.8	200	600	50	740	635	36	170	161.8
DC2-550-320-T4	550	558.8	320	600	60	710	655	45	285	230.7
DC2-600-48-T4	600	609.6	48	600	25	710	640	20.5	80	41.1
DC2-600-80-T4	600	609.6	80	600	35	735	665	25.5	100	63.4
DC2-600-120-T4	600	609.6	120	600	40	745	675	28.5	130	93.1
DC2-600-200-T4	600	609.6	200	600	50	795	685	36	170	173.5
DC2-600-320-T4	600	609.6	320	600	60	765	705	45	285	245.2
DC2-600-500-T4	600	609.6	500	600	80	810	735	56	310	396.5
DC2-650-48-T4	650	660.4	48	600	25	760	665	20.5	80	43.8
DC2-650-80-T4	650	660.4	80	600	35	785	690	25.5	100	67.1
DC2-650-120-T4	650	660.4	120	600	40	800	700	28.5	130	98.2
DC2-650-200-T4	650	660.4	200	600	50	845	710	36	170	181.5
DC2-650-320-T4	650	660.4	320	600	60	815	730	45	285	255.3
DC2-650-500-T4	650	660.4	500	600	80	860	760	56	310	409.5
DC2-700-48-T4	700	711.2	48	600	25	815	690	20.5	80	46.8
DC2-700-80-T4	700	711.2	80	600	35	835	715	25.5	100	70.7
DC2-700-120-T4	700	711.2	120	600	40	850	725	28.5	130	103
DC2-700-200-T4	700	711.2	200	600	50	895	735	36	170	189.5
DC2-700-320-T4	700	711.2	320	600	60	865	755	45	285	265.3
DC2-700-500-T4	700	711.2	500	600	80	915	785	56	310	423.1
DC2-750-48-T4	750	762	48	600	25	860	740	20.5	80	51.3
DC2-750-80-T4	750	762	80	600	35	885	765	25.5	100	77

STIFF CLAMPS

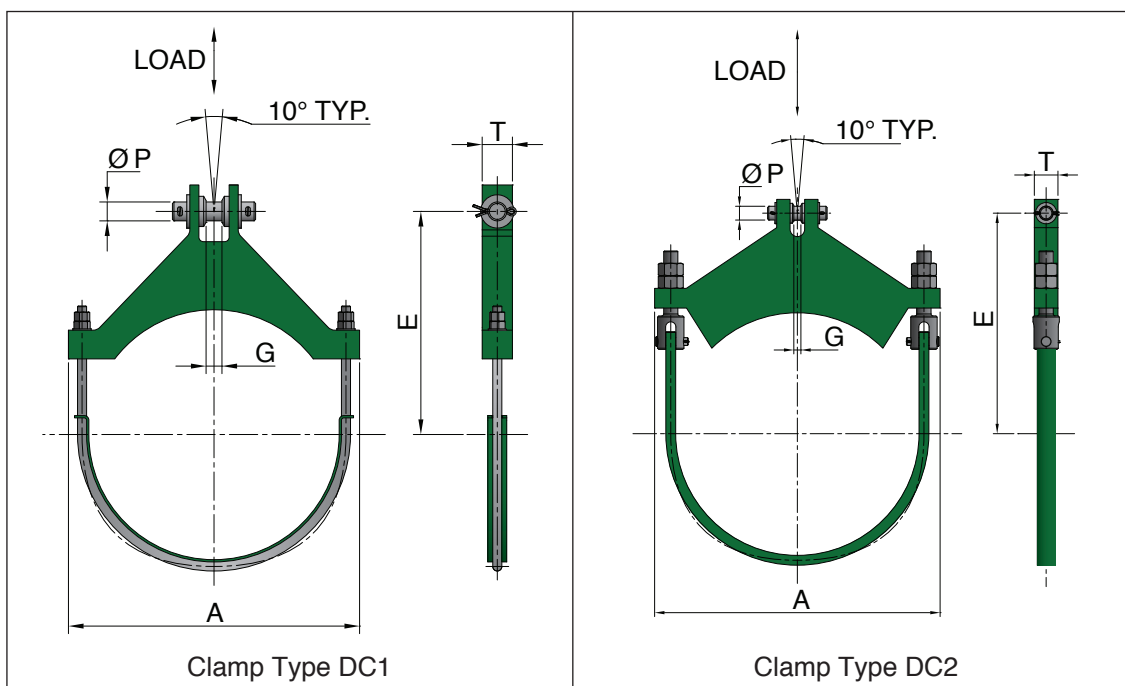


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-750-120-T4	750	762	120	600	40	900	775	28.5	130	110.3
DC2-750-200-T4	750	762	200	600	50	945	785	36	170	201.7
DC2-750-320-T4	750	762	320	600	60	915	805	45	285	280.4
DC2-750-500-T4	750	762	500	600	80	960	835	56	310	440.2
DC2-800-48-T4	800	812.8	48	600	25	910	765	20.5	80	54.2
DC2-800-80-T4	800	812.8	80	600	35	935	790	25.5	100	80.8
DC2-800-120-T4	800	812.8	120	600	40	950	800	28.5	130	115.2
DC2-800-200-T4	800	812.8	200	600	50	995	810	36	170	209.8
DC2-800-320-T4	800	812.8	320	600	60	965	830	45	285	290.6
DC2-800-500-T4	800	812.8	500	600	80	1010	860	56	310	453.4
DC2-850-48-T4	850	863.6	48	600	25	965	790	20.5	80	57.3
DC2-850-80-T4	850	863.6	80	600	35	985	815	25.5	100	84.7
DC2-850-120-T4	850	863.6	120	600	40	1000	825	28.5	130	120.1
DC2-850-200-T4	850	863.6	200	600	50	1045	835	36	170	218.1
DC2-850-320-T4	850	863.6	320	600	60	1015	855	45	285	301
DC2-850-500-T4	850	863.6	500	600	80	1065	885	56	310	467.4
DC2-900-48-T4	900	914.4	48	600	25	1015	835	20.5	80	62.2
DC2-900-80-T4	900	914.4	80	600	35	1040	860	25.5	100	91.5
DC2-900-120-T4	900	914.4	120	600	40	1055	870	28.5	130	128
DC2-900-200-T4	900	914.4	200	600	50	1100	880	36	170	231.2
DC2-900-320-T4	900	914.4	320	600	60	1070	900	45	285	317.3
DC2-900-500-T4	900	914.4	500	600	80	1115	930	56	310	485.8
DC2-950-48-T4	950	965.2	48	600	25	1065	865	20.5	80	65.6
DC2-950-80-T4	950	965.2	80	600	35	1090	890	25.5	100	96
DC2-950-120-T4	950	965.2	120	600	40	1105	900	28.5	130	133.6
DC2-950-200-T4	950	965.2	200	600	50	1150	910	36	170	240.5
DC2-950-320-T4	950	965.2	320	600	60	1120	930	45	285	329
DC2-950-500-T4	950	965.2	500	600	80	1165	960	56	310	500.5
DC2-1000-80-T4	1000	1016	80	600	35	1145	915	25.5	100	100.3
DC2-1000-120-T4	1000	1016	120	600	40	1160	925	28.5	130	139.1
DC2-1000-200-T4	1000	1016	200	600	50	1205	935	36	170	249.6
DC2-1000-320-T4	1000	1016	320	600	60	1175	955	45	285	340.5

STIFF CLAMPS

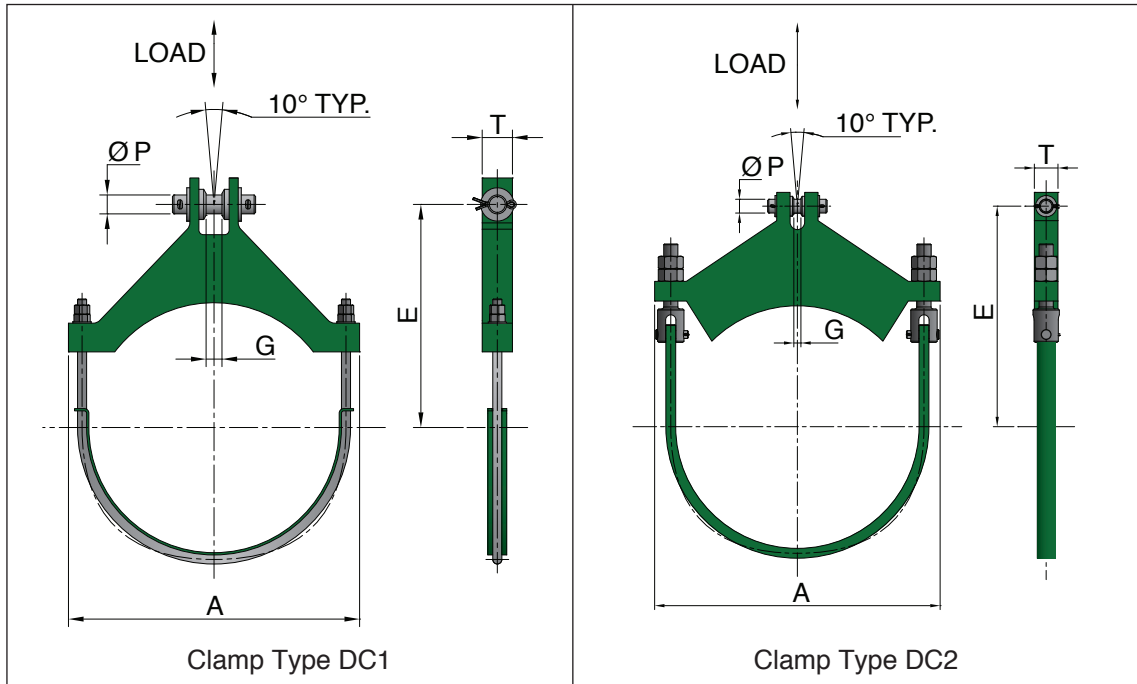


Figure No.	Pipe NB	Pipe O/D	Maximum Load	Maximum Temp.	Ø P	A	E	G	T	Weight
	mm	mm	kN	Deg. C	mm	mm	mm	mm	mm	kg
DC2-1000-500-T4	1000	1016	500	600	80	1220	985	56	310	515.1
DC2-1050-80-T4	1050	1066.8	80	600	35	1190	940	25.5	100	104.2
DC2-1050-120-T4	1050	1066.8	120	600	40	1205	950	28.5	130	143.9
DC2-1050-200-T4	1050	1066.8	200	600	50	1250	960	36	170	257.6
DC2-1050-320-T4	1050	1066.8	320	600	60	1220	980	45	285	350.6
DC2-1050-500-T4	1050	1066.8	500	600	80	1265	1010	56	310	527.7
DC2-1100-120-T4	1100	1117.6	120	600	40	1260	980	28.5	130	166.4
DC2-1100-200-T4	1100	1117.6	200	600	50	1305	990	36	170	293.8
DC2-1100-320-T4	1100	1117.6	320	600	60	1275	1010	45	285	355.7
DC2-1100-500-T4	1100	1117.6	500	600	80	1320	1040	56	310	535.6
DC2-1150-120-T4	1150	1168.4	120	600	40	1310	1005	28.5	130	168.3
DC2-1150-200-T4	1150	1168.4	200	600	50	1355	1015	36	170	296.9
DC2-1150-320-T4	1150	1168.4	320	600	60	1325	1035	45	285	359.4
DC2-1150-500-T4	1150	1168.4	500	600	80	1370	1065	56	310	541.3
DC2-1200-120-T4	1200	1219.2	120	600	40	1362	1031	28.5	130	170.2
DC2-1200-200-T4	1200	1219.2	200	600	50	1407	1041	36	170	300.1
DC2-1200-320-T4	1200	1219.2	320	600	60	1377	1061	45	285	363.2
DC2-1200-500-T4	1200	1219.2	500	600	80	1422	1091	56	310	547.3



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