MPUMALANGA CRANE SERVICES

Product Catalogue

CONTENTS PAGE

CONTENTS *(continued)* PAGE

Mpumalanga Crane Services

1.1 CABLES

PENDANT CABLE

1. Cable make-up

Extra fine wire strands of bare copper wire, special PVC-based core insulation, cores twisted together. Weather-resistant outer sheath of special PVC based compound retaining it's fexibility in cold weather. The support elements with a tensile strength of 2100N each are integrated longitudinally and diametrically opposite each other in the outer sheath of the cable.

2. Application

The pendant cable can be used on control units, as a self-supporting shaft cable, in high-bay racking systems, cable ways, etc.

3. Special feature

In this control cable the tensile stresses are taken up by two separate, parallel steel supporting elements which are incorporated into the outer sheath either side of the core unit. These supporting elements have a tensile strength of 2100N each and allow self-supporting installation lengths of up to 150m.

Technical data

Minimum bending radius	20 x cable diameter
Temperature range	-15°C to 70°C
Working voltage	300/500V
Test voltage	3000V
Insulation resistance	20 Mega-ohms x km
Conductor stranding	Extra fine wire to VDE 0295 class 6
Colourcoding	Black cores with white numbering (VDE 0293)
Earth conductor	Green/yellow, long striped
VDE regulation	0250

PART NO	SECTION mm²	APPROX TOTAL WIDTH mm	APPROX DISTANCE BETWEEN WIRES mm	WEIGHT APPROX Kg/1000m	AMPS PER CORE		GLAND
					25°C	30°C	
PC8X1.5	8 x 1,5	26,2	18	345	12.29	11.7	PG21
PC12X1.5	12 x 1,5	28,5	21	439	10.40	9.9	PG21
PC20X1.5	20 x 1,5	32,1	25	670	7.56	7.2	PG29

1.2 CABLES

HARMOPRENE

Construction

1. Conductor of copper, finely stranded, class 5 according to DIN VDE 0295, tinned up to 6mm2
2. Core insulation of dielectric and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR) compound type 3GI3 according to DIN VDE 0207 part 20, extruded and coloured up to 5 cores, thereafter black with printed no's.
3. Inner sheath (only for multi-core cable with cross-sections of 16mm^2 and higher and for multicore cables with 7 or more cores), extruded, flling the interstices compound Gm16 according to DIN VDE 0207, part 21, colour natural.
4. Outer sheath of polychloroprene rubber, oil resistant and flame retardant, compound type 5GM3 according to DIN VDE 0207 part 21.

Harmoprene/05
Medium weight rubber sheathed cable foruseonhandtoolsandlightweight workshop tools with medium stress in dry and damp interiors as well as in open air and wet industrial environments.

Harmoprene/07
Heavy rubber sheathed cable for use on heavy appliances with high level stress in dry and damp conditions as well as in open air and wet industrial environments.

Technical data

	Harmoprene/05	***Harmoprene/07***
Minimum bending radius	15 x cable diameter	15 x cable diameter
Temperature range	-30°C to +80°C	-30°C to +80°C
Working voltage	300/500V	450/750V
Test voltage	2000V	2500V
Insulation resistance	Mega-ohms x km	1Mega-ohms x km
Conductor stranding	Fine wire to VDE 0295 class 5	Fine wire to VDE 0295 class 5
Colour coding	To VDE 0293	To VDE 0293
Earth conductor	Green/yellow, long striped	Green/yellow, long striped
VDE regulation	0282	0282

1.2 CABLES

HARMOPRENE/ 05		to VDE 0282				300/500V
PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE		GLAND
				25°C	30°C	
1H5030007	CAB3x0,75 R NEO	7.3	75	14.7	14	PG9
1H5030010	CAB3x1,0 R NEO	7.8	87	17.85	17	PG9
1H5030015	CAB3x1,5 R NEO	9.5	135	22.05	21	PG11
1H5040015	CAB4x1,5 R NEO	9.9	165	22.05	21	PG11
1H5040025	CAB4x2,5 R NEO	12.4	235	31.50	30	PG16

HARMOPRENE/ 07		to VDE 0282				300/500V
PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE		GLAND
				25°C	30°C	
1H7010350	CAB1x35 R NEO	18.5	540	170	162	PG29
1H7010500	CAB1x50 R NEO	21.0	720	212	202	PG29
1H7010700	CAB1x70 R NEO	23.5	947	262	250	PG29
1H7010950	CAB1x95 R NEO	26	1230	316	301	PG36
1H7011200	CAB1x120 R NEO	28.6	1520	370	353	PG36
1H7011500	CAB1x150 R NEO	31.5	1887	410	391	PG36
1H7030025	CAB3x2,5 R NEO	14.5	235	31.50	30	PG21
1H7030040	CAB3x4 R NEO	16.2	310	43	41	PG21
1H7030060	CAB3x6 R NEO	20	407	55	53	PG29
1H7030100	CAB3x10 R NEO	25.5	810	77	74	PG36
1H7030160	CAB3x16 R NEO	29.5	1008	104	99	PG36
1H7030250	CAB3x25 R NEO	34	1470	137	131	PG42
1H7030350	CAB3x35 R NEO	38	1950	170	162	PG42
1H7040025	CAB4x2,5 R NEO	15.5	280	31.50	30	PG21
1H7040040	CAB4x4 R NEO	18	380	43	41	PG21
1H7040060	CAB4x6 R NEO	22	514	55	53	PG29
1H7040100	CAB4x10 R NEO	28	940	77	74	PG36
1H7040160	CAB4x16 R NEO	32	1253	104	99	PG36
1H7040250	CAB4x25 R NEO	37.5	1850	137	131	PG42
1H7040350	CAB4x35 R NEO	42	2393	170	162	PG48
1H7040500	CAB4x50 R NEO	48.5	3284	212	202	PG48
1H7040700	CAB4x70 R NEO	54.5	4331	262	250	PG48
1H7050025	CAB5x2.5 R NEO	17	340	23.6	22.5	PG21
1H7050040	CAB5x4 R NEO	19.9	470	33.3	30.75	PG29
1H7070015	CAB7x1.5 R NEO	17.5	371	14.3	13.65	PG21
1H7070025	CAB7x2.5 R NEO	20	499	20.5	19.50	PG29
1H7070040	CAB7x4 R NEO	23	680	27.98	26.65	PG29
1H7070060	CAB7x6 R NEO	26	808	36.17	34.45	PG36
1H7080015	CAB8x1.5 R NEO	17.5	350	12.13	11.55	PG29
1H7080025	CAB8x2.5 R NEO	19.5	590	20.5	19.50	PG29
1H7120015	CAB12x1.5 R NEO	22.4	600	12.13	11.55	PG29
1H7120025	CAB12x2.5 R NEO	26.2	745	17.37	16.55	PG36
1H7190025	CAB19x2.5 R NEO	28	1250	14.18	13.5	PG36
1H7240015	CAB24x1.5 R NEO	28	980	8.82	8.4	PG36
1H7240025	CAB24x2.5 R NEO	32.5	1480	12.6	12	PG42

1.3 CABLES

CHLOROPRENE/NSSHou-J

Construction

1. Conductor of copper, finely stranded, class 5 according to DIN VDE 0295, tinned up to 6mm2
2. Core insulation of dielectric and thermal high quality, ozone resist antethylene-propylene-rubber (EPR) compound type 3GI3 according to DIN VDE 0207 part20,extruded and coloured up to 6 cores.
3. Inner sheath filling the interstices compound type GM16.
4. Outer sheath of polychloroprene rubber (CR), oil resistant and flame retardant, tear and abrasion resistant, compound type 5GM3 according to DIN VDE 0207 part21. Colour–yellow.

Application

Heavy duty rubber sheathed cables suitable for connecting moving equipment at very high mechanical stress, eg.Dango cars and counterweight feed systems

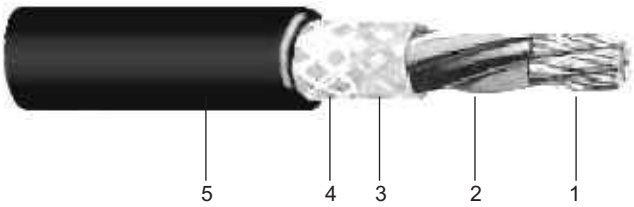
Technical data

Minimum bending radius	15 x cable diameter
Temperature range	Flexing: -30°C to +90°C Static -45°C to 90°C
Working voltage	1000V
Test voltage	2500V
Insulation resistance	10 Mega-ohms x km
Conductor stranding	Fine wire to VDE 0295 class 5
Colour coding	To VDE 0293
Earthconductor	Green/yellow, long striped
VDE regulation	0250

PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS PER CORE		GLAND
				25°C	30°C	
1CH040025	4 x 2,5	17	364	34.50	30	PG21
1CH040040	4 x 4	19	477	43	41	PG29
1CH040060	4 x 6	20.5	600	55	53	PG29
1CH040100	4 x 10	25	950	77	74	PG29
1CH040160	4 x 16	30	1440	104	99	PG36
1CH190025	19 x 2.5	28.5	1200	14.18	13.5	PG36

1.4 CABLES

DRUMOPRENE/NSHTöu



Construction

1. Conductor of Copper, finely stranded, class 5, according to DIN VDE 0295, tinned up to 6mm^2
2. Core insulation of dielectric and thermal high quality, ozone resistant ethylene-propylenerubber (EPR) compound type 3GI3, according to DIN VDE 0207 part 20, extruded and coloured up to 5 cores, 7 or more cores, black cores with white numbering, cores twisted in short lay lengths.
3. Inner sheath filling interstices compound type Gm16.
4. Nylon textile braid integrated into outer sheath.
5. Outer sheath of polychloroprene rubber (CR), oil and flame retardant, tear and abrasion resistant, compound type 5GM3 according to DIN VDE 0207 part 21.

Application

In dry, damp and wet locations, also outdoors as universal reeling cable for hoisting equipment, transportation and handling equipment with heavy mechanical stresses.

For high dynamic stresses, where the cable is drawn off the drum vertically, e.g.with electrohydraulic grabs, lifting magnets or similar equipment, and also mobile cable carriers.

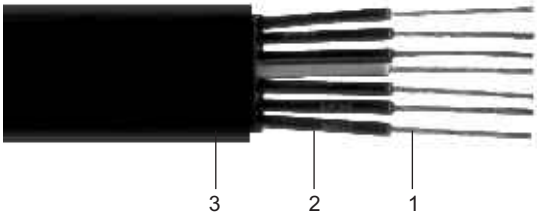
Technical data

Minimum bending radius	15 x cable diameter
Temperature range	Flexing: -30°C to +90°C Static -45°C to 90°C
Working voltage	1000V
Test voltage	2500V
Insulation resistance	10 Mega-ohms x km
Conductor stranding	Fine wire to VDE 0295 class 5
Colour coding	To VDE 0293
Earthconductor	Green/yellow, long striped
VDE regulation	0250

Available in a great variety of sizes and core confguration

1.5 CABLES

FESTOPLAST



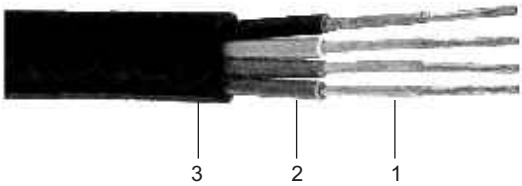
Construction

1. Conductor of copper, finely stranded, bare, class 5 according to DIN VDE 0295.
2. Core insulation of polyvinylchloride (PVC), compound YJ2 to VDE 0207,part 4. Cores arranged in parallel, cables with more than 5 cores have grouped cores, the individual groups are separated by a web.
3. Outer sheath of plasticized polyvinyl chloride (PVC) compound typeYM2 to VDE 0207 part 5.

Application

- In dry and moist rooms, however not outdoors. Under low and medium mechanical stresses, especially if the cables are subjected to heavy and frequent bending in one level only.
- In conveying systems for operations on cable carriers for power supply and control of crane systems.

FESTOPRENE



Construction

1. Conductor of copper, finely stranded, bare, class 6 according to DIN VDE 0295.
2. Core insulation of ethylene-propylene-rubber, compound type 3GJ3 to VDE 0207, part 20. Cores arranged in parallel, cables with more than 3 cores have grouped cores, the individual groups are separated by a web.
3. Outer sheath of polychloroprene rubber (CR), oil resistant and flame retardant, compound type 5GM3 to VDE 0207 part 21.

Application

- In dry, wet and moist rooms and outdoors under medium and high mechanical stresses, especially if the cables are subjected to heavy and frequent bending in one direction only
- In conveying systems for operations on cablecarriers for power supply and control of automatic warehouses, crane systems and conveyor belts.
- Festoprene flat cables guarantee a maximal operating security under the roughest environmental conditions.

1.5 CABLES

FESTOPLAST		to VDE 0250				750V
PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE		GLAND
				25°C	30°C	
1FP040015	CAB4x1,5 PVC	5.2x15.5	150	19	18	FPG 16
1FP040025	CAB4x2,5 PVC	5.7x18.5	215	27.6	26	FPG 21
1FP040040	CAB4x4.0 PVC	7.0x21.5	320	36	34	FPG 29
1FP040060	CAB4x6 PVC	7.6x24.8	430	46.64	44	FPG 29
1FP040100	CAB4x10 PVC	10x31	690	64.66	61	FPG 36
1FP040160	CAB4x16 PVC	10.9x35.5	990	86.92	82	FPG 42
1FP040250	CAB4x25 PVC	12.8x41.5	1550	114.5	108	FPG 48
1FP070040	CAB7x4 PVC	7x38	560	23.4	22.1	FPG 36
1FP080015	CAB8x1.5 PVC	5x30	300	10.5	9.9	FPG 29
1FP080025	CAB8x2.5 PVC	5.6x37.5	430	15.16	14.3	FPG 36
1FP120015	CAB12x1.5 PVC	5.0x41	420	10.5	9.9	FPG 42
1FP120025	CAB12x2.5 PVC	6x51	620	15.16	14.3	FPG 48

FESTOPRENE		to VDE 0250				550V
PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE		GLAND
				25°C	30°C	
1FR040015	CAB4x1,5 NEO	6.2x17.5	220	22.05	21	FPG 21
1FR040025	CAB4x2,5 NEO	7.5x21	290	31.50	30	FPG 29
1FR040040	CAB4x4 NEO	9x26	470	43	41	FPG 29
1FR040060	CAB4x6 NEO	9.6x29	620	55	53	FPG 29
1FR040100	CAB4x10 NEO	11x33	960	77	74	FPG 36
1FR040160	CAB4x16 NEO	13x38	1350	104	99	FPG 42
1FR040250	CAB4x25 NEO	15x49.5	2400	137	131	FPG 48
1FR040350	CAB4x35 NEO	17x55	2720	170	162	FPG 48
1FR070040	CAB7x4 NEO	8.6x42.3	852	27.98	26.65	FPG 42
1FR080015	CAB8x1.5 NEO	6.2x31.5	400	12.13	11.55	FPG 36
1FR080025	CAB8x2.5 NEO	7.5x39	585	20.5	19.50	FPG 42
1FR120015	CAB12x1.5 NEO	6.8x47	630	12.13	11.55	FPG 48
1FR120025	CAB12x2.5 NEO	8x56	870	17.37	16.55	FPG 48

1.6 CABLES

THERMOSIL/SiAF

Construction

1. Tinned copper conductor, fine stranded, DIN VDE 0295 class 5.
2. Insulation of silicone rubber 2GI 1 to DIN VDE 0207 part 20.

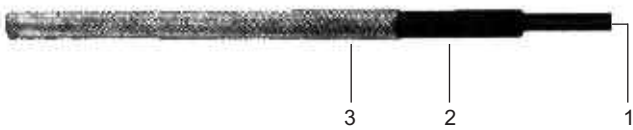
Within a relatively short period of time the interaction of extremely high and low temperatures causes the insulation of cables to become brittle and fexible. In such cases we recommend the use of silicone cables.

These special cables have become indispensable in a wide range of industrial sectors – in foundries, steel and hot rolling mills, cooking equipment, cement, glass and ceramic factories, in motor, ship and aircraft construction, bakery machinery, oil burners, solariums, saunas, as ignition cable and in many other fields.

The cable insulation is silicone rubber based. The outer sheath and conductor insulation are resistant to high-molecular oils, vegetable and animal fats, alcohols, plasticers and chlophenes, diluted acids, bleaches, braais, salt water and oxidizing agents. The cable is also immune to tropical influences and oxidizing effect of oxygen and ozone.

One of the cable's outstanding properties is its high flash point, and the insulating layer of SiO2 which forms ife xposed to excessive heat.

THERMOSIL/SiAF-GL



Construction

1. Tinned copper conductor, fine stranded, DIN VDE 0295 class 5.
2. Insulation of silicone rubber 2GI1 to DIN VDE 0207 par t20.
3. Outer sheath of varnished Si-impregnated glass fibre braid.

The outer sheath of silicone SiAF GL cables is in the form of a glass fibre braid. This gives the inner silicone sheath mechanical protection, and is itself heat resistant and corrosion proof.

The braid has hardly any effect on the flexibility of the cable, and the increased diameter as against silicone SiAF is minimal.

Application

The use of Thermosil cable is recommended where heat or high temperature changes cause damages of cable insulation within a relatively short period of time. They are used not only in foundries and steel works, but in a large extent in the machine and plant construction industries, where high temperature occur.

1.6 CABLES

THERMOSIL/SiAF **to VDE 0250** **550V**

PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	COLOUR	AMPS/CORE As per VDE 0100 part 523 Table 2, group 2		GLAND
					AMBIENT TEMP		
					150°C 100%	175°C 41%	
1TS010005	1x0.5	2.1	9	VARIOUS	9	3.69	
1TS010007	1x.75	2.4	12	VARIOUS	12	4.92	
1TS010010	1x1	2.5	14	VARIOUS	15	6.15	
1TS010015	1x1.5	2.8	19	VARIOUS	18	7.38	
1TS010025	1x2.5	3.4	30	VARIOUS	26	10.16	
1TS010040	1x4	4.2	50	VARIOUS	34	13.94	PG07
1TS010060	1x6	4.9	69	VARIOUS	44	18.04	PG07
1TS010100	1x10	6.7	115	VARIOUS	61	25.01	PG07
1TS010160	1x16	7.7	175	RED	82	33.62	PG09
1TS010250	1x25	9.8	260	RED	108	44.28	PG11
1TS010350	1x35	11	365	RED	135	55.35	PG11
1TS010500	1x50	12.6	500	RED	168	68.88	PG13.5
1TS010700	1x70	14.6	690	RED	207	84.87	PG16
1TS010950	1x95	17.5	910	RED	250	102.50	PG21

THERMOSIL/SiAFGL **AMBIENT TEMP = 50ºC to +180/250ºC** **300/550V**
With glass silk braiding

PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE As per VDE 0100 part 523 Table 2, group 2		GLAND
				AMBIENT TEMP		
				150°C 100%	175°C 41%	
1TG010015	1x1.5	4.3	23.7	18	7.38	PG07
1TG010025	1x2.5	5	35.6	26	10.16	PG07
1TG010040	1x4	5.6	53.3	34	13.94	PG07
1TG010060	1x6	6.2	77.3	44	18.04	PG07
1TG010100	1x10	8.2	129.2	61	25.01	PG11
1TG010160	1x16	9.6	198.6	82	33.62	PG11
1TG010250	1x25	12	302.5	108	44.28	PG13.5
1TG010350	1x35	13.5	413	135	55.35	PG16
1TG010500	1x50	15.5	578	168	68.88	PG21
1TG010700	1x70	18	825	207	84.87	PG21
1TG010950	1x95	20	1075	250	102.50	PG29

1.7 CABLES

THERMOSIL/SiHF

Construction

1. Tinned copper conductor, fine stranded, DIN VDE 0295 class 5.
2. Insulation of silicone rubber 2GI 1 to DIN VDE 0207 part 20.
3. Outer sheath of silicon rubber 2 GM1 to DIN VDE 0207 part 21.

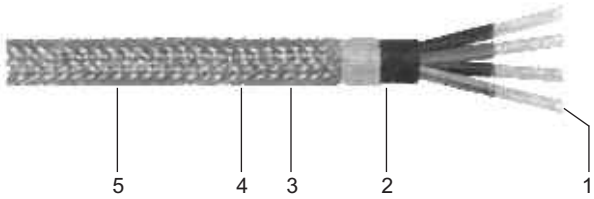
Application

Electric units, light fittings, motors, transformers, reactors, refrigeration plants, jet engines, rolling ills, foundries, smelting works, cement works, dock-yards, cookeries, forges, manufacturers of special vehicles (crane motors, ventilator motors, rock breakers, railway engines), all medical apparatus (due to the resistance of silicone to bacteria.)

Temperature and aging resistance

The aging resistance of a cable relates to the temperatures constantly acting on the cable. The operating temperature under the German standard VDE 0204 is the temperature at which the cable can operate for at least 25 000 hours before any diminishing of the minimum requirements is observed. If the cable is to be used for shorter time periods e.g. if the cable only carries current intermittently then the operating temperature can be raised.

THERMOSIL/SiHFGLP-J



Construction

1. Fine wire strands of tinned electrolytic copper wires to DIN VDE 0295 class 5.
2. Insulation of silicon rubber 2 GL 1 to DIN VDE 0207 part 20. Core identifcation to DIN VDE 0293, cores stranded in layers.
3. Outer sheath of silicon rubber 2 GM 1 to DIN VDE 0207 part 21, reddish brown.
4. Glass-fibre wrap.
5. Galvanized steel wire braid.

Silicone-SiHFGLP-J cables have a thick braid of galvanized steel wire on top of the silicone outer sheath. This serves primarily as mechanical protection for the cable, but also provides electrical screening. Despite the steel wire braid, Silicone-SiHFGLP-J cable attains a bending radius of 10 x cable diameter and is easily installed in confined spaces.

Application

This cable is recommended where high mechanical strength is required together with high temperature changes.

1.7 CABLES

THERMOSIL/SiHf **AMBIENT TEMP = 50°C to +180/250°C** **550V**

PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE AMBIENT TEMP		GLAND
				150°C 100%	175°C 41%	
1TH020015	2 x 1.5	7.6	85	18	7.38	PG09
1TH030010	3 x 1	7.3	75	15	6.15	PG09
1TH030015	3 x 1.5	8.1	105	18	7.38	PG11
1TH030025	3 x 2.5	9.8	160	26	10.16	PG11
1TH040007	4 x .75	7.5	75	12	4.92	PG09
1TH040010	4 x 1	8	90	15	6.15	PG09
1TH040015	4 x 1.5	8.8	130	18	7.38	PG11
1TH040025	4 x 2.5	10.7	200	26	10.11	PG13.5
1TH040040	4 x 4	12.6	260	34	13.94	PG16
1TH070025	7 x 2.5	12.7	310	16.9	6.93	PG16

THERMOSIL/SiHF-GLP-J **AMBIENT TEMP = 50°C to +180/250°C** **550V**
With glass silk and zinc-plated steel wire braiding

PART NO	SECTION mm²	OUTER DIAMETER mm	WEIGHT APPROX Kg/1000m	AMPS/CORE AMBIENT TEMP		GLAND
				150°C 100%	175°C 41%	
1TP020040	2x4	12.2	272	34	13.94	PG16
1TP030015	3x1.5	9.3	145.2	18	7.38	PG11
1TP030025	3x2.5	11	205	26	10.16	PG13.5
1TP040015	4x1.5	10	173.2	18	7.38	PG11
1TP040025	4x2.5	12.1	278.2	26	10.16	PG13.5
1TP040040	4x4	14	383.6	34	13.94	PG16
1TP040060	4x6	15.4	543.9	44	18.04	PG21
1TP040100	4x10	21	925	61	25.01	PG29
1TP040160	4x16	23.4	1235	82	33.62	PG29
1TP070015	7x1.5	11.8	244.3	11.7	4.79	PG13.15
1TP070025	7x2.5	14.1	380.3	16.9	6.93	PG16
1TP070040	7x4	17	560	22.1	9.06	PG21
1TP120015	12x1.5	15	328	9.4	4.06	PG21
1TP120025	12x2.5	18.7	426	14.3	5.86	PG29

1.8 CABLES

Technical Data

INSULATION MATERIAL	PVC	EPR	SIR
RATED CROSS SECTION COPPER CONDUCTOR mm2	CURRENT CARRYING CAPACITY		
	A	**A**	**A**
0.5	7	-	7
0.75	12	14	12
1	15	17	15
1.5	18	21	18
2.5	26	30	26
4	34	41	34
6	44	53	44
10	61	74	61
16	82	99	82
25	108	131	108
35	135	162	135
50	168	202	168
70	207	250	207
95	250	301	250
120	292	353	292
150	-	391	335

Derating factors for multi-core cables with conductor cross sections up to 10mm ^{2}

Number of loaded cores	Derating factor
5	0.75
7	0.65
10	0.55
14	0.55
19	0.45
24	0.40
40	0.35
61	0.30

Derating factors for reeled cables

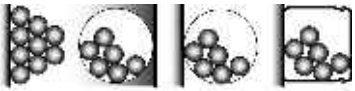
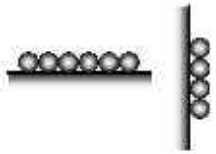
Number of layers	1	2	3	4
Derating factors	0.80	0.61	0.49	0.42

1.8 CABLES

Derating factors for deviating ambient temperatures

INSULATION MATERIAL PERMISSIBLE OPERATING TEMP AMBIENT TEMPERATURE °C	PVC	EPR	SIR
	70°c	80°c and 90°C	180°C
	DERATING FACTORS		
10	1.22	1.18	1.00
15	1.17	1.14	1.00
25	1.06	1.05	1.00
30	1.0	1.0	1.00
35	0.94	0.95	1.00
40	0.87	0.89	1.00
45	0.79	0.84	1.00
50	0.71	0.77	1.00
55	0.61	0.71	1.00
60	0.50	0.63	1.00
65	-	0.55	1.00
70	-	0.45	1.00
75	-	-	1.00
145	-	-	1.00
150	-	-	1.00
155	-	-	0.91
160	-	-	0.82
165	-	-	0.71
170	-	-	0.58
175	-	-	0.41

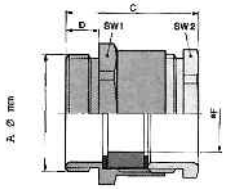
Derating factors for grouping

Arrangement	Number of multi-core cables														
	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20
Mode of installation  Bundled directly on the wall, on the floor, in a tube or in a duct, on or in a wall	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
 Single layer on a wall or on the f oor-touching	1.00	0.85	0.79	0.75	0.73	0.72	0.71	0.70							
 Single layer on a wall or on the floor with clearances equal to the cable diameter	1.00	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

2 COMPRESSION GLANDS

BRASS GLANDS FOR FLAT CABLES

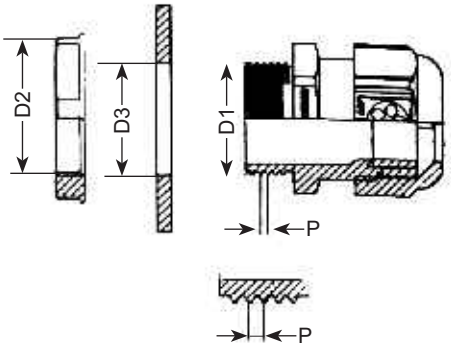
PART NUMBER	PG SIZE	A	F (Cable size min/max)		C	D
		Ø mm	width	thickness	mm	mm
2-FCMG-FPG16	16	22.5	-/15	-/5	35	6.5
2-FCMG-FPG21	21	28.3	9/21	3/8	40	7
2-FCMG-FPG29	29	37.0	14/30	4/11.5	48	8
2-FCMG-FPG36	36	47.0	24/40	4/11.5	62	15
2-FCMG-FPG42	42	54.0	29/45	5/12	62	15
2-FCMG-FPG48	48	59.3	34/50	5/12	62	15



FLAT CABLE SIZES WITH CORRESPONDING GLAND SIZES

FESTOPLAST-PVC FLAT	FESTOPRENE-NEOPRENE FLAT
4x1.5=FPG 16	4x1.5=FPG 21
4x2.5=FPG 21	4x2.5=FPG 29
4x4=FPG 29	4x4=FPG 29
4x6=FPG 29	4x6=FPG 29
4x10=FPG 36	4x10=FPG 36
4x16=FPG 42	4x16=FPG 42
4x25=FPG 48	4x25=FPG 48
8x1.5=FPG 29	8x1.5=FPG 36
8x2.5=FPG 36	8x2.5=FPG 42
12x1.5=FPG 42	12x1.5=FPG 48
12x2.5=FPG 48	12x2.5=FPG 48

2 COMPRESSION GLANDS



TECHNICAL DATA FOR ASSEMBLY DIN 404030 ***Nominal Thread***

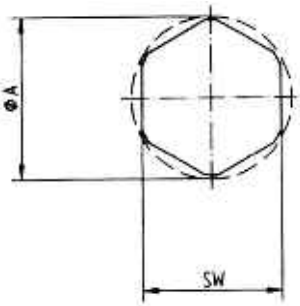
PG - Thread	Ø D1	P	Ø D2	Ø D3
PG 7	12.5	1.27	11.3	13.0 ± 0.2
PG 9	15.2	1.41	13.9	15.7 ± 0.2
PG 11	18.6	1.41	17.3	19.0 ± 0.2
PG 13.5	20.4	1.41	19.1	21.0 ± 0.2
PG 16	22.5	1.41	21.2	23.0 ± 0.2
PG 21	28.3	1.558	26.8	28.0 ± 0.2
PG 29	37.0	1.558	35.5	37.5 ± 0.3
PG 36	47.0	1.558	45.5	47.5 ± 0.3
PG 42	54.0	1.558	52.5	54.5 ± 0.3
PG 48	59.3	1.558	57.8	59.8 ± 0.3

Fitting dimensions and widths across flats

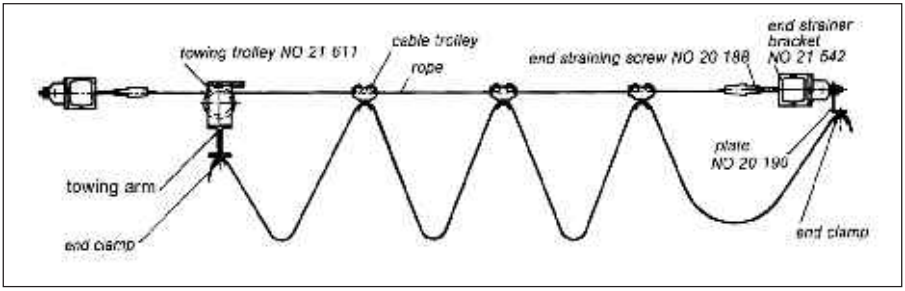
The diameter A indicates the assembly spacer required for the relevant hexagon. This diameter corresponds to the width across corner of the hexagon, plus an assembly tolerance.

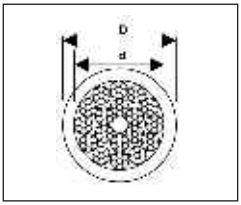
SW = wrench 5:26

PG Size	SW	A
7	15	17.1
9	19	20.4
11	22	23.9
13.5	24	27.3
16	27	29.5
21	33	36.2
29	42	46.1
36	53	58.3
42	60	67.5
48	65	72.3

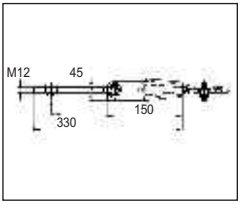


3.1 STEEL ROPE SYSTEM/*PVC*



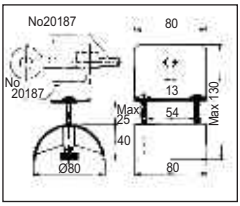


PART NO	d	D	MIN BRAKING STRENGTH F2(kN)	F2(kp)	PERM TENSILE STRENGTH F2(kN)	F2(kp)	WEIGHT (kg/m)
3-SF/0102	4	6	14.5	1480	3.6	370	0.094
3-SF/0103	6	8	20.3	2060	5.1	515	0.160



3-SF/0200 - END STRAINING SCREW

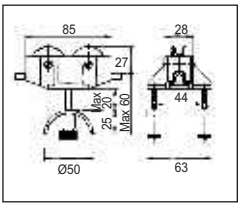
Material	Ropelock	- galvanizedsteel
	Screw	- galvanizedsteel
	Nut	- galvanizedsteel
	Ropeclamp	- galvanizedsteel
Weight	0.7kg	



3-SF/0300 – END CLAMP

Material	Buttstrap	- galvanizedsteel
	Support	- plastic
	Screw	- galvanizedsteel
	Nut	- galvanizedsteel
	Split nut	- plastic
Weight	0.220kg	

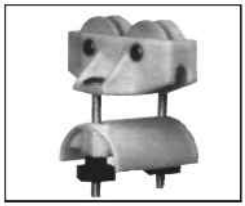
Application: The cable clip is fastened with straining screw to the end strainer bracket. Suitable for fastening fat cables with a minimum width of 54mm and a maximum thickness of 25mm. The split nuts allow the flat cables to be clamped by hand.

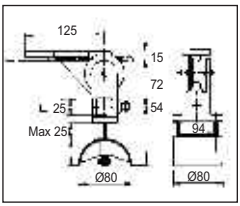


3-SF/0400 – CABLE CARRIER

Material	Casing	- plastic
	Support	- plastic
	Runner	- nylon
	Shaft	- stainless steel
	Screw	- galvanized steel
	Nut	- galvanized steel
	Split nut	- plastic
Weight	0.100kg	
Load	approx 6kg	

Application: This cable trolley is designed for flat cables with a maximum width of 44mm and a maximum thickness of 20mm. Suitable for one or more flat cables. The split nuts allow the flat cables to be clamped by hand



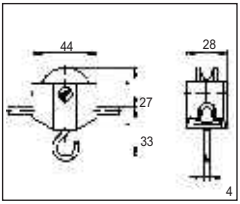


3-SF/0500 – MASTER CARRIER

Material	Casing	- plastic
	Runner	- nylon
	Bolt	- stainless steel
	Support	- plastic
	Screw	- galvanized steel
	Nut	- galvanized steel
	Split nut	- plastic
Weight	0.380kg	

Application: The master carrier ensures the correct guidance of flat cable and flat cable trolley. The maximum width of the cable can be 54mm. The maximum thickness 25mm. The split nuts allow the fat cables to be clamped by hand.

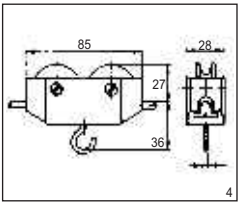
3.1 STEEL ROPE SYSTEM/*PVC*



3-SR/0301 – CABLE CARRIER

Material	Casing	- plastic
	Runner	- nylon
	Shaft	- stainless steel
	Hook	- galvanized steel
	Nut	- galvanized steel
Weight	0.035kg	
Load	approximately 3kg	

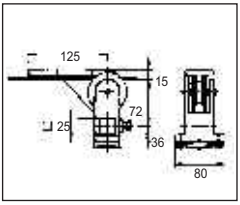
Application:This cable trolley is used for light weight applications (for example on electric hoists, electric chain hoists as well as for gas and oxygen hoses)



3-SR/0302 – CABLE CARRIER

Material	Casing	- plastic
	Runner	- nylon
	Shaft	- stainless steel
	Hook	- galvanized steel
	Nut	- galvanized steel
Weight	0.060kg	
Load	approximately 6kg	

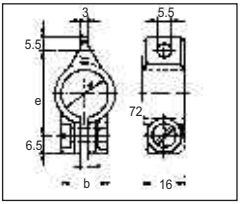
Application: This cable trolley is also used for light weight applications (for example on electric hoists, electric chain hoists as well as for gas and oxygen hoses), but it can also be used for heavier loads.



3-SR/0200 – MASTER CARRIER

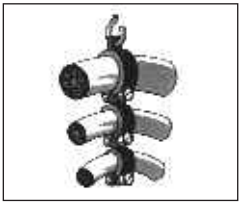
Material	Casing	- nylon
	Runner	- nylon
	Bolt	- stainless steel
	Connecting plate	- nylon
	Screw	- galvanized steel
	Nut	- galvanized steel
Weight	0.310kg	

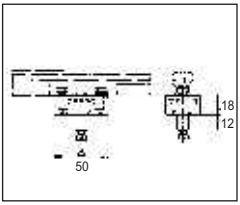
Application: The master carrier ensures the correct guidance of cable and cable trolley.



3-SR/0304-*.* - CABLE COLLAR FOR ROUND CABLE

PART NUMBER CABLE COLLAR	d	b	e	WEIGHT KG/1000
3-SR/0304-10	10	18	24.5	7.7
3-SR/0304-11	11	18	25.5	7.7
3-SR/0304-12,5	12.5	18	27	8.1
3-SR/0304-14	14	18	28.5	8.4
3-SR/0304-16	16	18	30.5	8.5
3-SR/0304-18	18	18	32.5	8.5
3-SR/0304-20	20	23	34.5	10
3-SR/0304-22	22	23	36.5	10
3-SR/0304-25	25	23	39.5	11
3-SR/0304-28	28	23	42.5	12
3-SR/0304-32	32	23	46.5	13
3-SR/0304-36	36	23	50.5	14

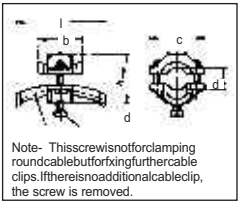




P6881 – BALL JOINT

Material	Joint	- nylon
	Screw	- galvanized steel
	Nut	- galvanized steel
Weight	0.040kg	

Application: The ball joint can be fastened to the rail or to the cable support and secures the cable clips.



Note- Thisscrewisnotforclamping roundcablebutforfxingfurthercable clips.Ifthereisnoadditionalcableclip, the screw is removed.

CABLE HALTER

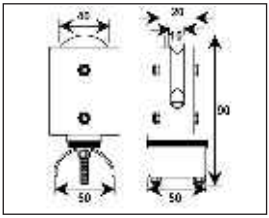
Material	Cable clip	- nylon
	Screw	- galvanized steel
	Nut	- galvanized steel

Application: The cable clips are designed to support round cables.

PART NUMBER	d CABLEØ	r	l	h MAX	b	c	WEIGHT (kg)
P6755	10-16	80	70	38	35	42	0.040
P6756	17-25	125	100	47	50	50	0.060
P6757	26-36	180	140	58	70	64	0.120

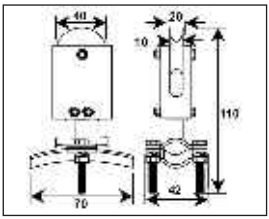
3.2 STEEL WIRE ROPE STEEL CARRIERS

Cable carrier system for light duty applications in working environments where dust and dirt buildup occurs. For short distances and slow moving applications.



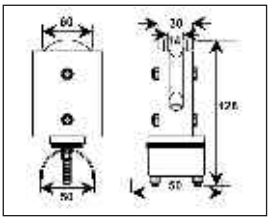
RLD6/8

* Vesconite carrier wheel
* Flat form cable width up to 25mm
* Wire rope size 6-8mm diameter
* Weight = 0.19kg



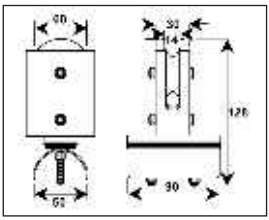
RLS6/8

* Vesconite carrier wheel
* Round cable up to 12mm diameter
* Wireropesize6-8mm diameter
* Weight = 0.235kg



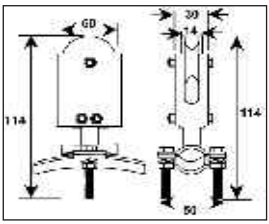
RLD10
RLD12

* Steel carrier wheel with Anti-tip roller
* Flatformcable width up to 25mm.
* Wire rope size 10 and 12mm respectively
* Weight = 0.52kg



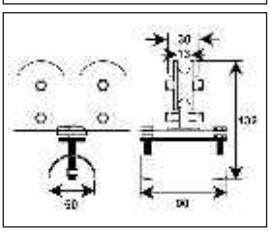
RMD10
RMD12

* Steel carrier wheel with Anti-tip roller
* Flat form cable width up to 65mm.
* Wire rope size10 and 12mm respectively
* Weight = 0.63kg



RMSD10
RMSD12

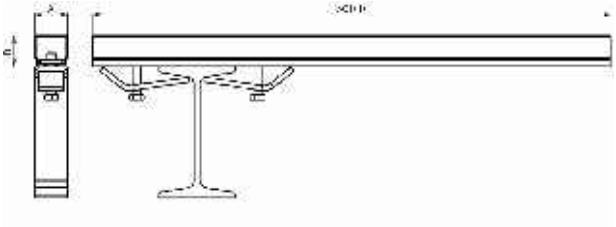
* Steel carrier wheel with Anti-tip roller
* Round cable-diameter up to 25mm.
* Wire rope size 10 and 12mm respectively
* Weight = 0.7kg



RMH2/10C
RMH2/12C

* Heavy duty double wheel carrier
* Flat cable width up to 65mm.
* Wire rope size 10 and 12mm respectively.
* Weight = 0.9kg

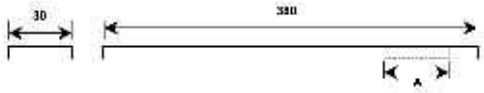
3.3 MOUNTING SYSTEMS AND OTHER ACCESSORIES



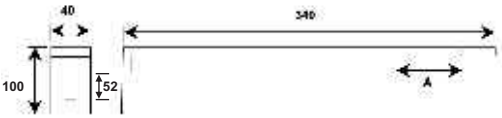
GIRDER CLAMP MOUNTS			
	A	B	
LD	32	30	M8 bolts
HD	40	36	M12 bolts

BRA25X25-LDZY: LD WELD-ON BRACKET
BRAHD30X30ZY: HD WELD-ON BRACKET

WELD ON MOUNTS		
	A	
LD	65	M8 bolts
HD	80	M12 bolts

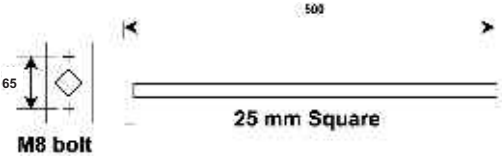


FLAT WELD ON MOUNTS		
	A	
LD	65	M8 bolts
HD	80	M12 bolts



BRA90LDZY: 90°LD WALL MOUNT BRACKET
BRA90HDZB: 90°HD WALL MOUNT BRACKET

90° WALL MOUNTS		
	A	
LD	65	M8 bolts
HD	80	M12 bolts

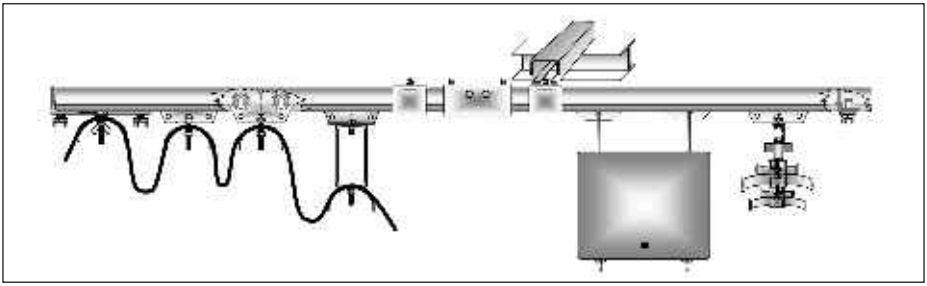


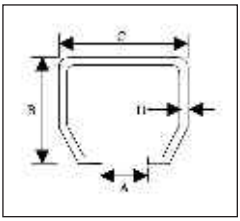
TOWING ARMS

FLAT BAR SYSTEMS
HANGER BRACKETS
(weld on or bolt on)

Finishes – Zinc electroplated
These are standard stock products.
Special sizes can be manufactured

3.4 C-TRACK SYSTEM-*LIGHT DUTY*

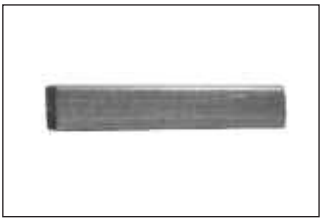


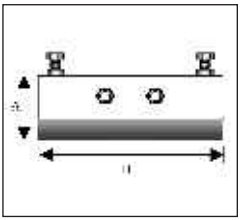


3-CT/0100 – LD C-TRACK RAIL

A	11
B	30
C	32
D	1.6
Weight=6.2kg/5m	
Supply lengths = 5m	

Permissible area load/m 3-CT/0100	SUPPORT SPACING						
	m	1	1.5	2	2.5	3	3.5
	kg	25	20	15	10	7	3



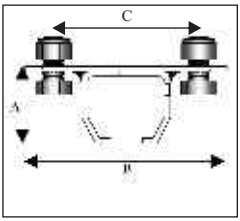


3-CT/0200 – LD JOINT SET

Material Galvanized steel

Weight 0.295kg
Application To join rail sections

A = 38
B=100



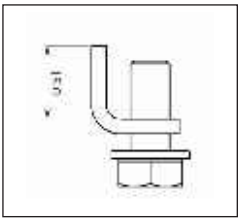
3-CT/0300 – LD RAIL SUPPORT

Material Galvanized steel

Weight 0.29kg
Max load 63kg

Application To support C-rails

A = 32
B = 80
C = 65

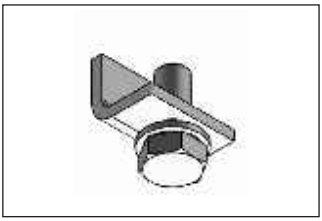


3-CT/0400 – LD END STOP

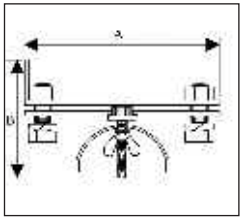
Material Galvanized steel

Weight 0.044kg

A = 20
B = 32



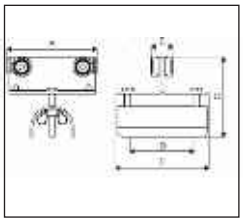
3.4 C-TRACK SYSTEM-*LIGHT DUTY*



3-CT/0500 – END CLAMP

Material	Galvanized steel
Weight	0.292kg

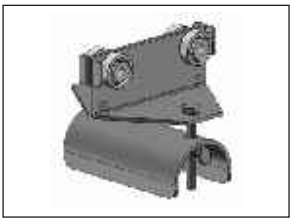
A = 80
B = 70



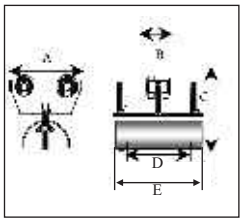
3-CT/0600 – C-TRACK CARRIER type MDS CARRIER 95/F

Material	2mm galvanized steel
Rollers	Sealed ball bearings
Cable Width	68mm
Weight	0.490 kg
Max cable load	22kg/carrier

A = 103 B = 25 C = 100
D = 75 E = 103



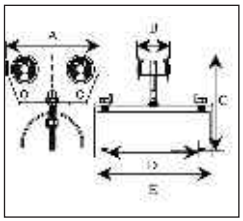
3-CT/0610 – C-TRACK CARRIER type LDL CARRIER 50/F



Material	2mm galvanized steel
Rollers	Sealed ball bearings
Cable width	30
Weight	0.267kg

Max cable load 22kg/carrier
A = 65
B = 25
C = 85
D = 30
E = 54

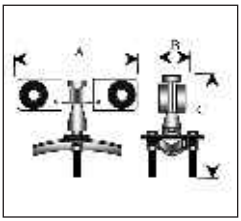
3-CT/0620 – C-TRACK CARRIER type MDL CARRIER 68/F



Material	2mm galvanized steel
Rollers	Sealed ball bearings
Cable width	68
Weight	0.385kg
Max cable load	22kg/carrier

A = 85
B = 25
C = 85
D = 68
E = 94

3.4 C-TRACK SYSTEM-*LIGHT DUTY*



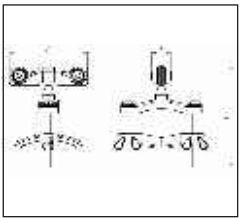
3-CT/0630 – C-TRACK CARRIER
type LSL CARRIER LD 24R

Material 2mm galvanized steel
Rollers Sealed ball bearings
Cable diameter 8 - 20 mm

Weight 0.490kg

Max cable load 22kg/carrier

A = 103
B = 28
C = 55



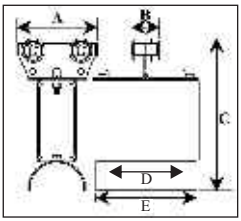
3-CT/0650 – C-TRACK CARRIER
type HSL CARRIER HD 50R

Material 2mm galvanized steel
Rollers Sealed ball bearings
Cable diameter 15 - 35 mm

Weight 0.490kg

Max cable load 22kg/carrier

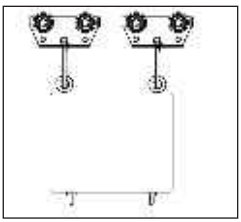
A = 85
B = 25
C = 67



3-CT/0710 – LD MASTER CARRIER
Material 2mm galvanized steel
Rollers Sealed ball bearings

Weight 0.730kg
A = 85
B = 25
C = 165
D = 30
E = 54

* Master box available separately
* Also available in: 3-CT/0710 - LDL MASTER CARRIER
3-CT/0720 - MDL MASTER CARRIER

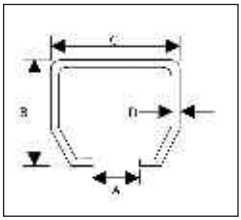


3-CT/0820 - MDL MOBILE BOX ASSEMBLY

Material Galvanized steel
Weight 2.3kg
Max load 44k
* Mobile box available separately

Note – It is recommended to use strain relief rope/chain between the carriers to prevent damage to the cables.
For support brackets, see page 19.
– When designing a festoon system, the ambush area/parking area must be taken into account.
– **Light Duty C-track system also available in Stainless Steel**

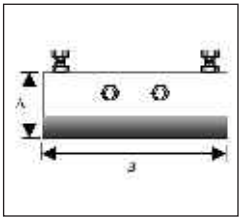
3.5 C-TRACK SYSTEM-*HEAVY DUTY*



3-BC/0100 – BIG C-TRACK RAIL

A	14.5
B	36
C	41
D	2
Weight=9.9kg/5m	
Supply lengths = 5m	

PERMISSIBLE AREA LOAD/m	SUPPORT SPACING						
	m	1	1.5	2	2.5	3	3.5
3-BC/0100	Kg	35	30	25	20	15	8

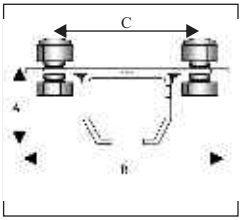


3-BC/0200 – HD JOINT SET

Material Galvanized steel

Weight 0.41kg
Application To join rail sections

A = 43
B = 125



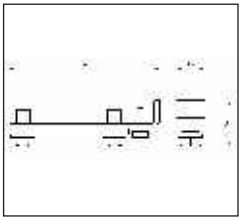
3-BC/0300 – HD RAIL SUPPORT

Material Galvanized steel

Weight 0.49kg
Max load 108kg

Application To support C-rails

A =47
B = 110
C = 80

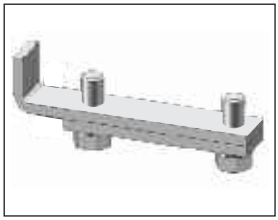


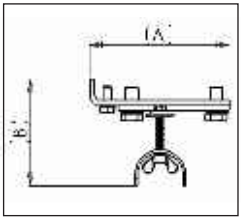
3-BC/0400 – HD END STOP

Material Galvanized steel

Weight 0.33kg

A = 157
B = 25
C = 42

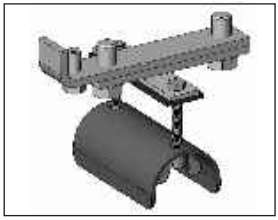




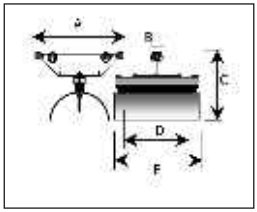
3-BC/0500 – HD ANCHOR DOME SET

Material Galvanized steel

MD	HD
Weight 0.53kg	Weight 0.98kg
A = 145	A = 145
B = 95	B = 160



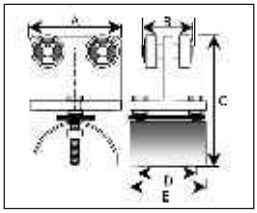
3.5 C-TRACK SYSTEM-*HEAVY DUTY*



3-BC/0600 – CARRIER TYPE EHD 200/F

Material	galvanized steel
Rollers	Sealed ball bearings
Weight	1.850kg
Maximum load	55kg

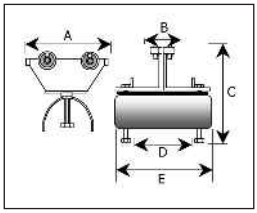
A = 235
B = 30
C = 206
D = 160
E = 198



3-BC/0610 – LDH CARRIER LD 30/F

Material	galvanized steel
Rollers	Sealed ball bearings
Weight	0.270kg
Maximum load	28kg

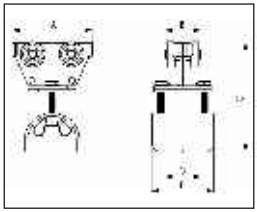
A = 65
B = 33
C = 90
D = 30
E = 55



3-BC/0620 – MDH CARRIER MD 68/F

Material	galvanized steel
Rollers	Sealed ball bearings
Weight	0.433kg
Maximum load	28kg

A = 85
B = 33
C = 90
D = 68
E = 90

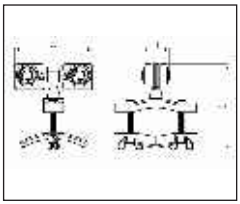


3-BC/0630 – C-TRACK HDH CARRIER HDH 80/F

Material	Galvanized steel
Weight	1.15kg

A = 150
B = 33
C = 160
D = 80
E = 123

3.5 C-TRACK SYSTEM- HEAVY DUTY

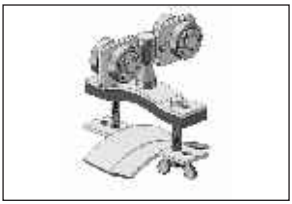


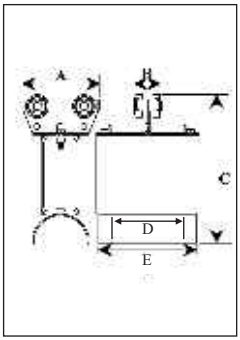
3-BC/0650 – HSLSWIVEL CARRIER HS 50/R

PLEASE STATE CABLE DIAMETER UPON ORDER

Material	mm galvanized steel
Rollers	Sealed ball bearings
Cable Width	15-50mm
Weight	0.850kg
Maximum load	30kg/Carrier

A = 85 B = 25 C = 67





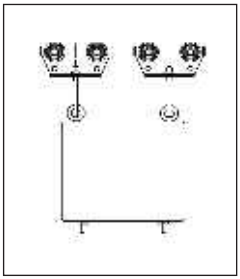
3-BC/0720 – HD MASTER CARRIER

Material mm galvanized steel
Rollers Sealed ball bearings

MDH	HDH
Weight 1.10kg	Weight 1.70kg
A = 85	A = 150
B = 33	B = 33
C = 170	C = 200
D = 68	D = 80
E = 120	E = 120

* Master box available separately
* Also available in:

3-BC/0710 LDH MASTER CARRIER
3-BC/0720 MDH MASTER CARRIER
3-BC/0730 HDH MASTER CARRIER



3-BC/0820 – HD MOBILE BOX

Material Galvanized steel

Weight 3.4kg

Max load 100kg

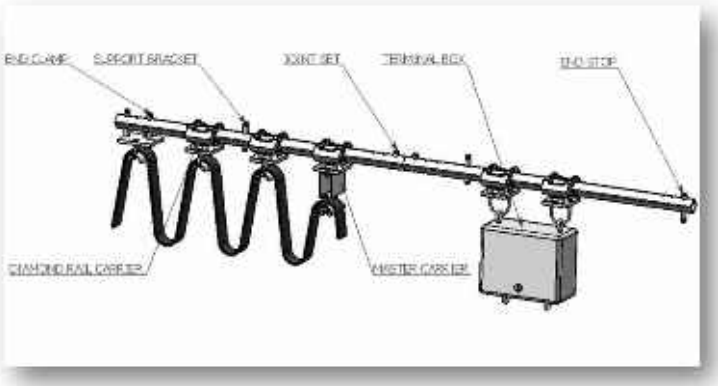
* Mobile box available seperately
*Also available in:
3-BC/0820 MDH MOB. BOX ASSEMBLY
3-BC/0830 HDH MOB. BOX ASSEMBLY

Note – It is recommended to use strain relief rope/chain between the carriers to prevent damage to the cables.
For support brackets, see page 19 .

– When designing a festoon system, the ambush area/parking area must be taken into account.

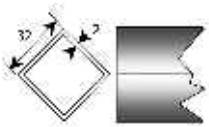
– Heavy Duty C-track system also available in Stainless Steel

3.6 DIAMOND SYSTEM



Applications:

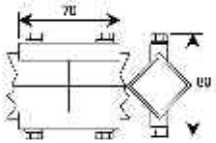
1. Very dusty/dirty environments
2. Applications where rail must be bent around curve
3. Medium to heavy duty.



3-DT/0100 – DIAMOND RAIL

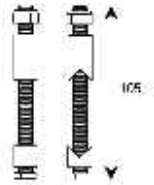
Material	2mm galvanized steel
Supply lengths	6 meters
Weight	11kg
Min bending radius	1500mm

Other support centres and permissible area loads			
Support spacing	1m	1.5m	2m
Permareaload/m	50kg	40kg	30kg



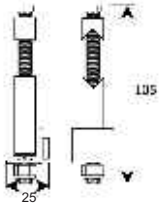
3-DT/0200 – JOINT SET
3-DT – REPAIR JOINT 0200 SIT

Material	Galvanized steel
Weight	0.125kg
Application	To join rail sections



3-DT/0300 – RAIL SUPPORT

Material	Galvanized steel
Weight	0.11kg
Application	To support rail sections

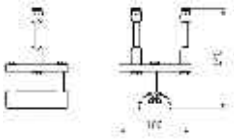


3-DT/0400 – END STOP

Material	Galvanized steel
Weight	0.12kg

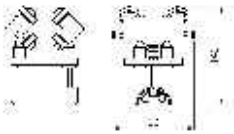
Diamond rail system also available in Stainless Steel

3.6 DIAMOND SYSTEM



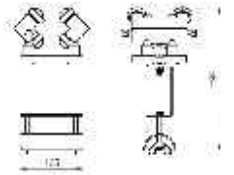
3-DT/0520–ENDCLAMP

Material	Galvanized steel
Weight	0.70 kg



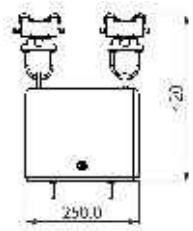
3-DT/0620 MD – DIAMOND RAIL CARRIER

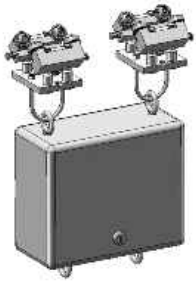
Material	Galvanized steel Sides = aluminium castings
Rollers	Sealed ball bearings
Load capacity	40kg
Weight	1.190 kg
Maxspeed	80m/min



3-DT-0720 MD – MASTER CARRIER

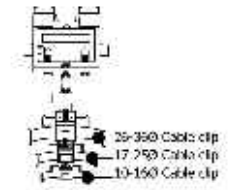
Material	Galvanized steel Sides = aluminium castings
Rollers	Sealed ball bearings
Load capacity	40kg
Weight	1.598 kg





3-DT/0820 MD – MOBILE BOX C/W CARRIERS

Material	Galvanizedsteel
Load capacity	40kg
Weight	5.9kg
Application	Carry pendant cable and pendant station



CARRIER FOR ROUND CABLE

Material	Galvanized steel
Weight	+- 1.42kg depending on the assembly
Application	Specially for use on round cables and air/hydraulic hoses
Max load	40kg

3-DT/0300 AP - ADJUSTING BRACKET

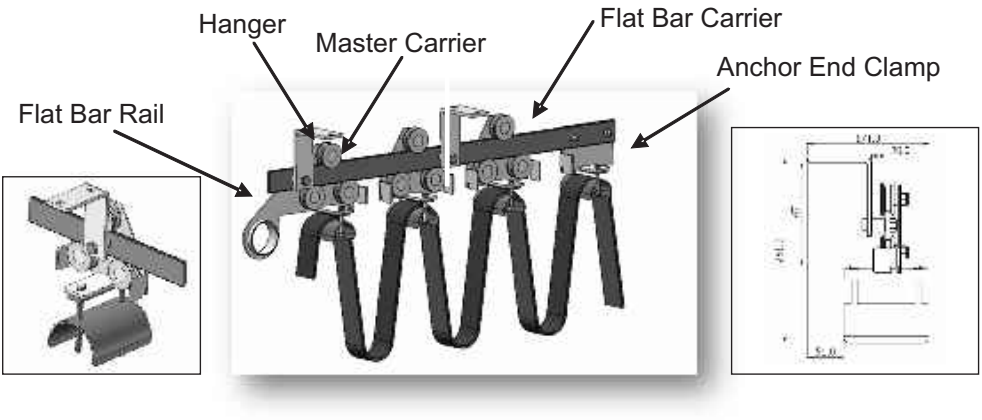
Material	Galvanized steel

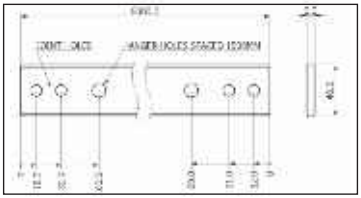
Application: Used to align rail and hangers where brackets are diffcult to align, eg where system has bends

Note – It is recommended to use strain relief rope/chain between the carriers to prevent damage to the cables.
For support brackets, see page 19.
- When designing a festoon system, the ambush area/parking area must be taken into account.

3.7 FLAT BAR CARRIER

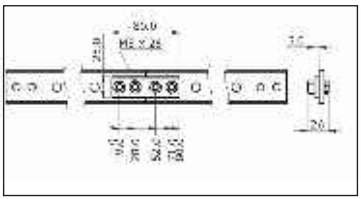
Cable carrier systems for working environments with heavy dust and dirt buildup.
Also ideal for monorail and curved applications as the flatbar rail can be manipulated on site.





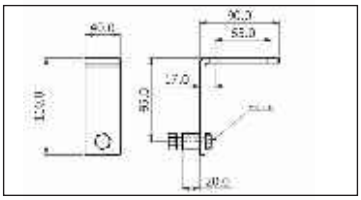
FLAT BAR

3-FB46/0100	40 x 6 x 6m Mild steel flat bar
3-FB56/0100	50 x 6 x 6m Mild steel flat bar
3-FB68/0100	60 x 8 x 6m Mild steel flat bar
3-FBS46/0100	40 x 6 x 6m Stainless steel flat bar



FLAT BAR UNIVERSAL JOINT

3-FB/0200	Joint section universal
3-FBS/0200	Joint section universal S/S

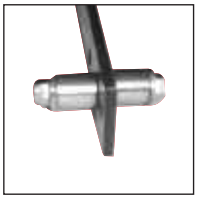


FLAT BAR HANGER & OFFSET SPACER

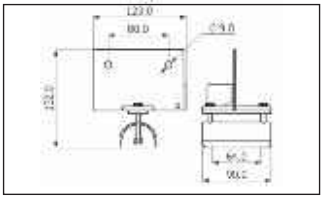
3-FB/0300	Universal Support Hanger
3-FBS/0300	Universal Support Hanger S/S

FLAT BAR END STOP UNIVERSAL

3-FB/0400	End stop
3-FBS/0400	End stop S/S

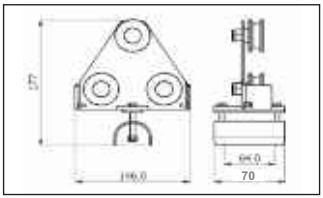


3.7 FLAT BAR CARRIER



FLAT BAR ANCHOR DOME UNIVERSAL

3-FBM/0520	Medium duty Anchor
3-FBH/0530	Heavy duty Anchor
3-FBMS/0520	Medium duty Anchor S/S
3-FBHS/0530	Heavy duty Anchor S/S

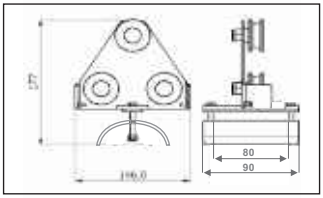


FLAT BAR 40X6 CARRIER MEDIUM DUTY

3-FBM46/0620	Mild steel Carrier Galvanized
3-FBMS46/0620	Stainless steel Carrier

FLAT BAR 50X6 CARRIER MEDIUM DUTY

3-FBM56/0620	Mild steel Carrier Galvanized
3-FBMS56/0620	Stainless steel Carrier



FLAT BAR 40X6 CARRIER HEAVY DUTY

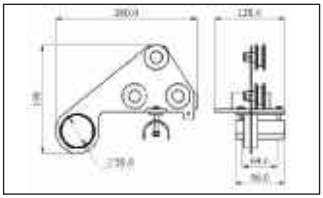
3-FBH46/0630	Mild steel Carrier Galvanized
3-FBHS46/0630	Stainless steel Carrier

FLAT BAR 50X6 CARRIER HEAVY DUTY

3-FBH56/0630	Mild steel Carrier Galvanized

FLAT BAR 60X8 CARRIER HEAVY DUTY

3-FBM46/0630	Mild steel Carrier Galvanized



FLAT BAR 40X6 MASTER CARRIER MEDIUM DUTY

3-FBM46/0720	Mild steel Master Carrier Galvanized
3-FBMS46/0730	Stainless steel Master Carrier

FLAT BAR 50X6 MASTER CARRIER HEAVY DUTY

3-FBH56/0730	Mild steel Master Carrier Galvanized

FLAT BAR 60X8 MASTER CARRIER HEAVY DUTY

3-FBH56/0730	Mild steel Master Carrier Galvanized

Flat Bar system also available in Stainless Steel

Options on application

1. Dust proof bearing caps are available for wheels
2. Other flat bar sizes available on application
3. Stainless steel bearings on application
4. Heavy Duty four wheel carriers also available on request

Note - For support brackets, see page 19.

- When designing a festoon system, the ambush area/parking area must be taken into account.

- Min bending radius = 1000mm

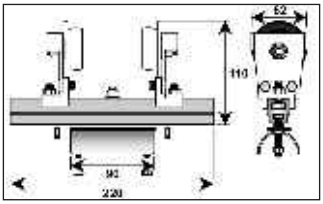
- Support bracket spacing every 0,5 m for curves.

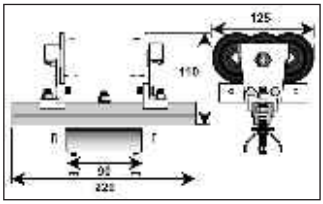
3.8 LIGHT DUTY ADJUSTABLE WIDTH FLANGED WHEEL I-BEAM CARRIER

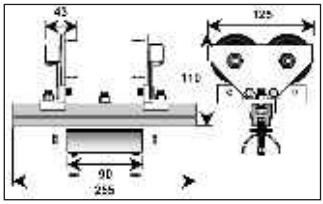
For short systems on jib cranes and monorails (width can be adjusted on site) low installation cost.

30kg/carrier







3-IB/MD-A	Anchor
3-IB/MD2W-C	2 Wheel carrier
3-IB/MD3W-C	3 wheel carrier
3-IB/MD4W-C	4 wheel carrier
3-IB/MD2W-MC	Master box
3-IB/MD3W-MC	Master box
3-IB/MD4W-MC	Master box

***-Materials**

Code V = vesconite wheel
Code MS = zinc plated mild steel with bearing
Code SS = stainless steel with rubber bearings

(Adjustment rail is aluminium for all types)

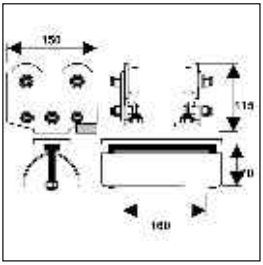
Technical

- µ Anchor is supplied with 8mm bolts for mounting on I-beam. Alternatively girder clips can be supplied
- µ A light leader chain or cable is recommended to avoid damage to the power cable which can lead to single phasing on the electric motor.
- µ 2 wheel type should not be used on beams wider than 90mm to avoid possibilities of crabbing.

Options - Anti-tip rollers can be fitted on request.

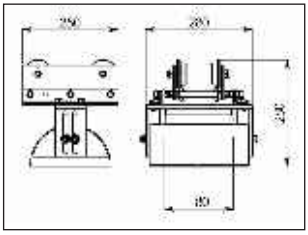
Note
- *When designing a festoon system, the ambush area/parking area must be taken into account.*
- *The carrier width can be adjusted to suit any beam size.*
- *Specify beam width when ordering.*

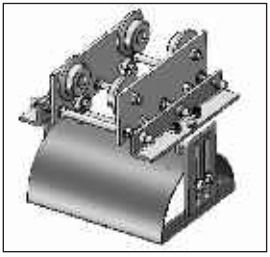
3.9 FLANGED WHEEL I-BEAM CARRIERS LIGHT TO MEDIUM DUTY



Type IB100	
Use 4-6mm leader chain	**5.38kg**
Specifcation:	
Cable capacity	160 wide x30mm 150kg max
Carriersize	200 long x200 wide
Wheels	Flanged wheel, tread dia 45 anti tip bearings
Part numbers	
3-IB100C	Carrier
3-IB100-AC	Anchor clamp
3-IB100-WC	Weld on master dome
3-IB100-MC	Master carrier
Accessories	Rubber buffers plate
	Auxiliary cable clamps

Flanged wheel I-Beam carriers are also available in Stainless Steel

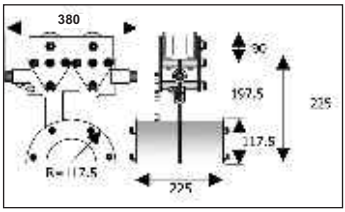




Type IBM210	
Use 4-6mm leader chain	**12.4kg**
Specifcation:	
Cable capacity	180 wide x50mm 250kg max
Carriersize	250 long x280 wide
Wheels	Flanged wheel, tread dia 45x60 with 4 anti tip bearings
Part numbers	
3-IBM210C	Carrier
3-IB210AC	Anchor clamp
3-IB210WC	Weld on master dome
3-IBM210MC	Master carrier
Accessories	Rubber buffers
	Auxiliary cable clamps

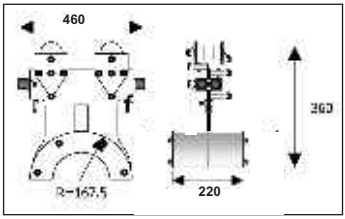
Type IBH210	
Use 6mm leader chain	**14.0kg**
Specifcation:	
Cable capacity	180 wide x50mm 350kg max
Carriersize	250 long x280 wide
Wheels	Flanged wheel, tread dia 85 with 4 anti tip bearings
Part numbers	
3-IBH210-C	Carrier
3-IB210-AC	Anchor clamp
3-IB210-WC	Weld on master dome
3-IBM210-MC	Master carrier
Accessories	Rubber buffers
	Auxiliary cable clamps

3.10 FLANGED WHEEL HEAVY DUTY I-BEAM CARRIER



Type 3-IBM235	19.4kg
Specifcation:	
Cable capacity	Ø60mm max 250kg
Carriersize	380 long x335 high x240 wide
Domesize	Ø235mm
Dome width	2x110mm extensions on width in multiples of 2
Wheels	Flanged wheel, tread 45mm with 4 anti tip bearings
Buffers	4x Ø30
Part numbers	
3-IBM235-C	Carrier
3-IBM235-AC	Anchor clamp
3-IB235-WC	Weld on master dome
3-IBM235-MC	Master carrier
3-IB235-D	Additional dome (set of 2)
Accessories	220 auxiliary cable clamps

Type 3-IBH235	22.4kg
Specifcation:	
Cable capacity	Ø60mm max 350kg
Carriersize	380 long x405 high x220 wide
Domesize	Ø235mm
Dome width	2x110mm extensions on width in multiples of 2
Wheels	Flanged wheel, tread 85mm with 4 anti tip bearings
Buffers	4x Ø30
Part numbers	
3-IBH235-C	Carrier
3-IB235-EC	Anchor clamp
3-IB235-WC	Weld on master dome
3-IBH235-MC	Master carrier
3-IB235-D	Additional dome (set of 2)
Accessories	220 auxiliary cable clamps



Type 3-IBM335	26kg
Specifcation:	
Cable capacity	Ø60mm max 250kg
Carriersize	460 long x385 high x220 wide
Domesize	Ø335mm
Dome width	2x110mm extensions on width in multiples of 2
Wheel	Flanged wheel, tread 45mm with 4 anti tip bearings
Buffers	4x Ø30
Part numbers	
3-IBM335-C	Carrier
3-IB335-EC	Anchor clamp
3-IB335-WC	Weld on master dome
3-IBM335-MC	Master carrier
3-IB335-D	Additional dome (set of 2)
Accessories	220 auxiliary cable clamps

Type 3-IBH335	28kg
Specifcation:	
Cable capacity	Ø60mm max 350kg
Carriersize	460 long x405 high x220 wide
Domesize	Ø335mm
Dome width	2x110mm extensions on width in multiples of 2
Wheels	Flanged wheel, tread 85mm with 4 anti tip bearings
Buffers	4x Ø30
Part numbers	
3-IBH335-C	Carrier
3-IB335-EC	Anchor clamp
3-IB335-WC	Weld on master dome
3-IBH335-MC	Master carrier
3-IB335-D	Additional dome (set of 2)
Accessories	220 auxiliary cable clamps

3.10 FLANGED WHEEL HEAVY DUTY I-BEAM CARRIER

Type 3-IBH440	**34.6kg**
Specifcation:	
Cable capacity	Ø60mm max 400kg
Carriersize	570 long x 490 high x 220 wide
Domesize	Ø440mm
Dome width	2x110mm extensions on width in multiples of 2
Wheels	Flanged wheel, tread 85mm with 4 anti tip bearings
Buffers	4x Ø40
Part numbers	
3-IBH440C	Carrier
3-IB440AC	Anchor clamp
3-IB440WC	Weld on master dome
3-IBH440MC	Master carrier
3-IB440D	Additional domes (set of 2)
3-IB440ACC	220 auxiliary cable clamps

Use 6mm leader chain

CARRIER
34.6kg

IBH335/235

2 TIER
40kg

Examples of Carrier and Multi Tier Carriers

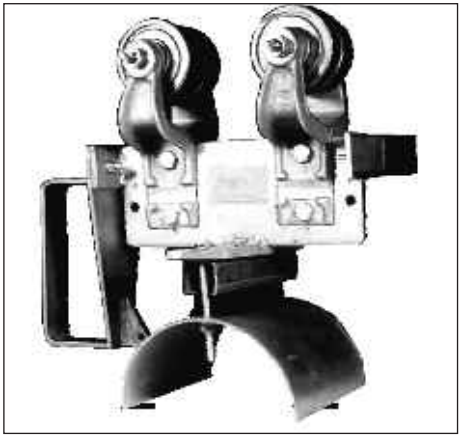
Options: Guide rollers for curved beams

IBH435/335/235 GR

3 TIER - with Guide Rollers

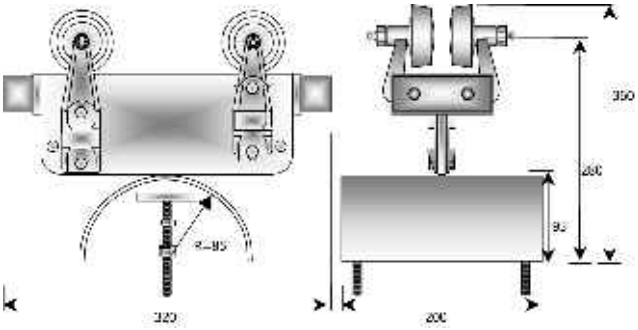
45kg

3.11 MEDIUM DUTY I-BEAM CARRIER TYPE SIB 100/250

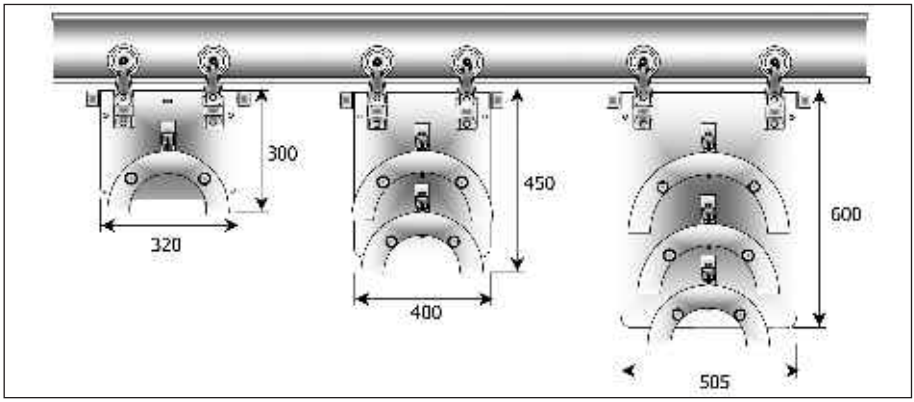


- This carrier is designed to fill the gap between the DDP 140/3 carrier and the SHD carrier.
- It was designed to take either flat or round cable and to run on a IPE 140 or a 52 x 89 x 16kg/m parallel flange I-beam.
- The wheels are 62mm overall diameter and are made of “double life” machined steel and are fitted with grease nipples.
- These carriers are supplied with heavy duty rubber buffers.
- The rated load of the SIB service cable carrier is 200kg.
- Weight:

	Endclamp	= 5.8kg
	Carrier	= 9.6kg
	Master carrier	= 10.4kg

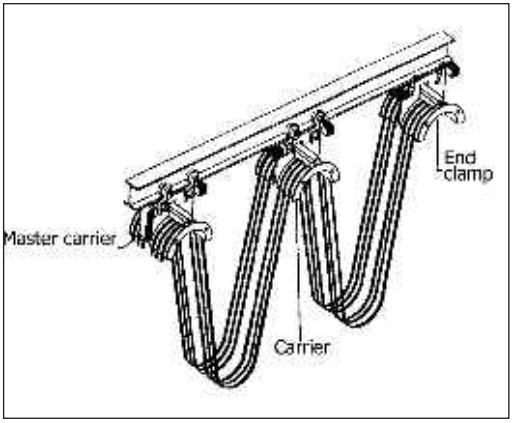


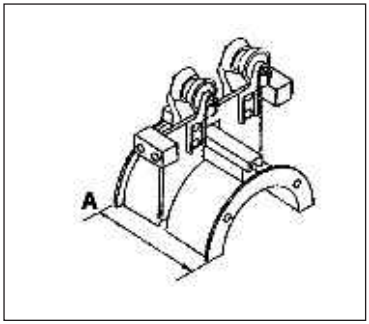
3.12 HEAVY DUTY I-BEAM SYSTEM TYPE SHD



- **The Siteeco type SHD cable carrier can be supplied in single or multi-deck confguration.**
- Suitable for use with trailing cables up to 40mm od.
- Thewheels areof“doublelife” machinedsteel,62,82mmand120mmandarefttedwith grease nipples.
- The wheels were designed to run on a
  - o With 62mm wheel - IPE 140 parallel flange I-beam.
  - o With 82mm wheel - IPE 160 parallel flange I-beam.
  - o With120mm wheel - Compound beam consisting of IPE 200 parallel flange I-beam complete with 178 x 54 channel.
- The carriers are fitted with heavy duty rubber buffers.
- The cables are carried on a steel half round and held in position by a rubber moulding to avoid any damage to the cable.
- Strain relief chain should be used between carriers.
- The rated load of the SHD carriers is 320kg.

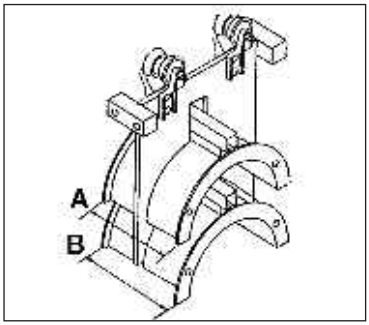
3.12 HEAVY DUTY I-BEAM SYSTEM TYPE SHD





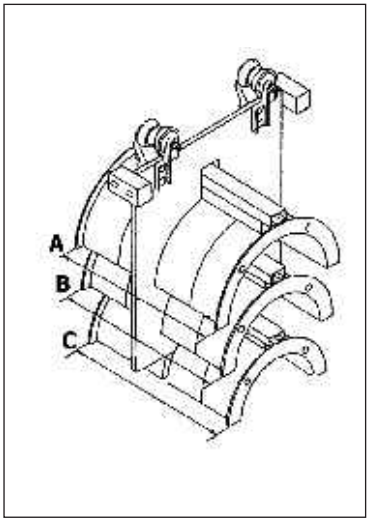
SHD SINGLE SERIES

DIMENSIONS	PART NUMBER	WEIGHT:kg		
A mm		END CLAMP	CARRIER	MASTER
200	3-SHD/C10L0M2S	10.2	13.8	15
300	3-SHD/C10L0M3S	11.8	15.2	16.4



SHD DOUBLE SERIES

DIMENSIONS		PART NUMBER	WEIGHT:kg		
A mm			END CLAMP	CARRIER	MASTER
200	200	3-SHD/C20L2M2S	16.4	20.4	21.4
300	300	3-SHD/C20L3M3S	19.8	23.4	24.4
200	300	3-SHD/C20L2M3S	18.4	22	23
300	200	3-SHD/C20L3M2S	18.4	22	23



SHD TRIPLE SERIES

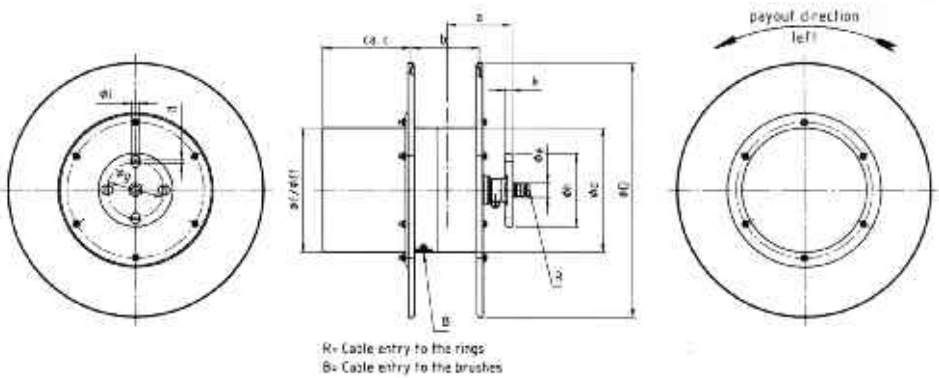
DIMENSIONS	PART NUMBER	WEIGHT:kg		
A mm		END CLAMP	CARRIER	MASTER
200 200 200	3-SHD/C32L2M2S	30.8	34.4	35.4
300 300 300	3-SHD/C33L3M3S	35.6	38.8	39.8
300 200 200	3-SHD/C33L2M2S	38.8	38.2	39.3
300 300 200	3-SHD/C33L3M2S	34	37.6	38.8
200 300 300	3-SHD/C32L3M3S	34.5	37.6	38.1
200 200 300	3-SHD/C32L2M3S	32.6	36	3

4.1 SPRING DRIVEN CABLE REELS

Type Series	Drawing No.	Ø d	Ø D	a	b	Ø e	Ø f	Ø ff	Ø g	Ø h	Ø i	it	k
LT155	01-95-00-0-3	155	260	101	110	35	155	–	65	85	4 x Ø 9	–	5
LT180	01-95-00-0-3	180	300	109	130	35	180	–	65	85	4 x Ø 9	–	5
LT220	01-95-00-0-3	220	400	114	120	35	220	–	100	130	4 x Ø 13	6	12
LT221	01-95-00-0-3	220	450	129	150	35	220	–	100	130	4 x Ø 13	6	12
LT222	01-95-00-0-3	220	450	139	170	35	220	–	100	130	4 x Ø 13	6	12
LT300	01-95-00-0-3	300	550	165	190	50	300	–	100	135	4 x Ø 13	5	20
LT301	01-95-00-0-3	300	550	213	285	50	300	–	100	135	4 x Ø 13	5	20
LT420	01-95-00-0-3	420	680	200	240	60	420	–	135	178	4 x Ø 17	5	20
LT421	01-95-00-0-3	420	770	200	240	60	420	–	175	215	4 x Ø 17	5	20
LT530	01-95-00-0-3	530	900	260	310	70	420	–	185	250	4 x Ø 18	15	23

Cover dimension c in mm based on the number of poles

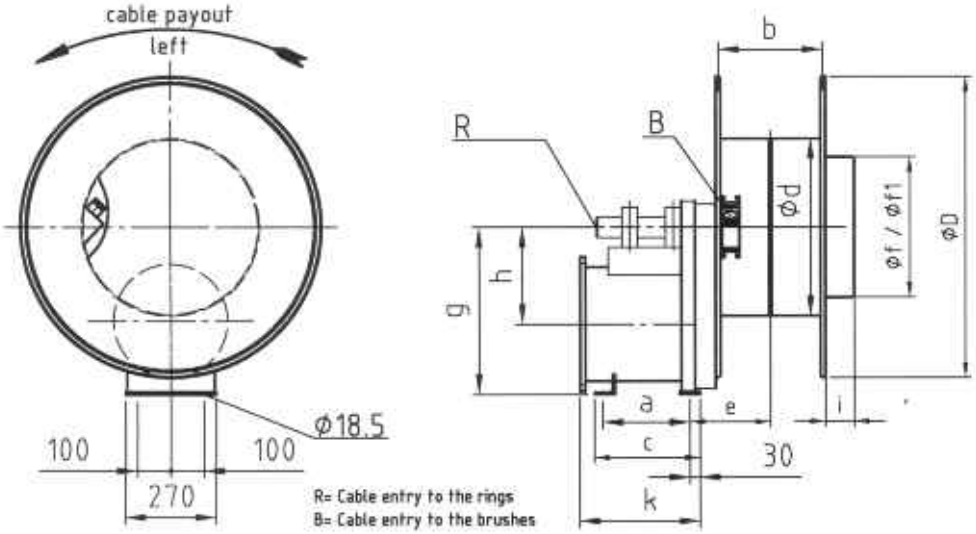
Type Series	3+Earth 26A	3+Earth 36A	3+Earth 40A	3+Earth 42A	3+Earth 60A	3+Earth 125A	3+Earth 150A	3+Earth 220A	4+Earth 26A	4+Earth 35A	4+Earth 40A	4+Earth 42A	4+Earth 60A
LT155	60	–	60	–	–	–	–	–	60	–	90	–	–
LT180	80	–	90	–	–	–	–	–	90	–	90	–	–
LT220	50	100	50	100	100	–	–	–	75	75	75	75	100
LT221	50	75	50	75	75	–	–	–	50	75	50	75	100
LT222	50	35	50	35	35	–	–	–	60	60	60	–	85
LT300	80	80	80	80	80	120	–	–	80	80	80	80	80
LT301	80	80	80	80	80	80	–	–	80	80	80	80	80
LT420	–	85	85	–	85	–	85	–	–	85	–	85	85
LT421	–	85	–	85	85	–	85	–	–	85	–	85	85
LT530	–	85	–	85	85	–	85	85	–	85	–	85	85

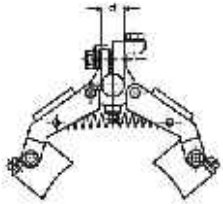


R= Cable entry to the rings
B= Cable entry to the brushes

4.1 SPRING DRIVEN CABLE REELS

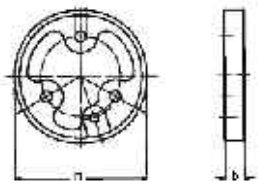
Type Series	Drawing No.	Ø d	Ø D	a	b	e	Øf	Øf1	g	h	c	k
LTAI 420	02-66-00-0-4	420	680	260	240	206	420	300	500	290	320	358
LTAI 421	02-66-00-0-4	420	770	260	240	206	420	300	500	290	315	358
LTAI 530	02-66-00-0-4	530	900	260	310	241	420	300	500	290	315	358
LTAII 530	02-66-00-0-4	530	900	390	310	241	420	300	500	290	445	488
LTAI 701	02-66-00-0-4	700	1200	260	350	255	300	300	500	290	315	358
LTAII 701	02-66-00-0-4	700	1200	390	350	255	300	300	500	290	445	488





BRUSH ASSEMBLIES

AMPS	DIMENSIONS d(mm)		PART NUMBER	
	PHASE	EARTH	PHASE	EARTH
40	10	8	4-BA/40-P	4-BA/40-E
60	13	12	4-BA/60-P	4-BA/60-E
150	16	15	4-BA/150-P	4-BA/150-E
220	17	16	4-BA/220-P	4-BA/220-E



COLLECTOR RINGS

AMPS	DIMENSIONS d(mm)				PART NUMBER	
	D	d		b		
	mm	Ph	E	mm	PHASE	EARTH
40	50	8.5	5.5	10	4-CR/40-P	4-CR/40-E
60	80	11.5	6.5	12	4-CR/60-P	4-CR/60-E
150	130	12.5	8.5	15	4-CR/150-P	4-CR/150-E
220	130	12.5	8.5	20	4-BA/220-P	4-CR/220-E

4.2 SLIP RING PACKS

Hartmann & König
Stromzuführungs AG

SLIP RING PACKS USAGE

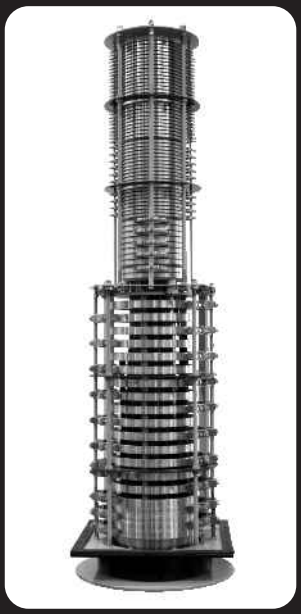
FOR POWER TRANSFER FROM STATIONARY SUPPLY TO ROTARY SUPPLY

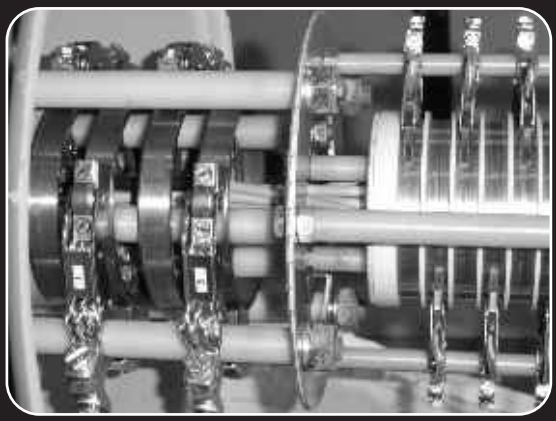
APPLICATIONS:
- **360 Jib Cranes**
- **Stacker Reclaimers for Mining**
- **Turntables**
- **Drill Rigs**
- **Revolving Light Towers**

SLIP RING PACKS PRODUCT RANGE

POWER SUPPLY RANGE up to 30,000V ENCAPSULATED IP54

PRODUCTS:
- **Block type**
- **Air Gap type**
- **Rotary type IP00**
- **Rotary type IP54**
- **Gas and Explosion Proof ranges**





4.3 MOTOR DRIVEN CABLE REELS

CABLE REELING DRUMS, INDIVIDUALLY DRIVEN WITHOUT COMPROMISE TO QUALITY

Suitable for use on portal, shipyard and harbour cranes,ship's cranes and tunnel construction applications.

Motor Driven Cable Reeling drums

The economical solution forarduousapplications with less maintenance. Our range of motor driven reels can be fitted with different types of drive.

- Permanentmagnetic coupling (Hysteresis coupling)
- Stalled torque motor (Cage or slipring rotors)
- Hydraulic coupling
- Induction coupling (with stator coil)

Our cable reels can be used everywhere where live conductors are needed on travelling machinery. Cable is payed on and off the reels while the cable tension remains constant. High integrity data signals are ensured by using silver plated sliprings and silver carbon brushes. Optical waveguides can be used for the transmission of data lines without being influenced by power carrying sliprings.

Hose Reeling Drums
Spring driven hose reeling drums are similar in design to the cable drums but the slipring assembly is replaced with a rotary coupling,suitableforair, gas, water, oil etc. with an operating pressure up to 10 bar. For other medias or pressures we can offer special solutions.

4.4 CABLE REELS - Examples of Arrangements

Drawing A

Drawing B

Drawing A and B
Cable drum on travelling device. Cable deposit on the ground or continuous deposit. Cable payout horizontal in one or two directions. Drawing B over deflector sheaves.

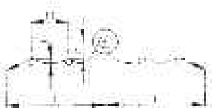
Drawing C

Drawing D

Drawing C and D
Cable drum on travelling device. Cable deposit on supports for l_1 up to 1 m. For l_1 over 1 m up to max. 3 m deposit on rollers or rounded level supports. Drawing D over deflector sheaves.

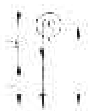
Drawing E

Drawing E
Cable drum on travelling device or fixed.
Cable payout horizontal in one or two directions.
(l_2 is dependent on crosssection of cable and on pull of cable).



Drawing F

Drawing F
Cable drum fixed.
Cable payout horizontal in one or two directions. Cable deposit like drawings C and D but over deposit rollers.



Drawing G

Drawing G
Cable payout vertically downwards or at an angle.
l = lifting height or payout length
L = cable length = l + l_2 + 2 safety windings.

Drawing H

Drawing H
Cable payout vertically upwards, otherwise like drawing G.

l = max. payout length of cable in m
(for cable payout in two directions = 1/2 travelling length)
h = mounting height = distance from cable deposit to cable centre point

F = cable centre point
f = [illegible] of cable in m
l_1 = distance of rollers or supports in m

l_2 = [illegible] cable in m [illegible]

4.5 CABLE REELS - Quote Request Sheet

1. Length of travel

   l= _____ m

2. What length of cable should be coiled onto the cable drum?

   l= _____ m

   (if the cable centre point is in the middle of the track, the length of cable must be half the length of the track)

3. Type of coiling:

   ☐ spiral
   ☐ cylindrical
   ☐ 3.2.3 winding

4. Type and size of cable crosssection

   _____ mm²

   Cable diameter Ø _____

   _____ mm

   Cable weight _____

   _____ kg/m

5. Power and current requirements

   _____

   _____ kW

   _____ A

6. How much % of duty circle?

   _____

   _____

7. How many insulated sliprings are required?

   _____

   _____

   (our cable drums are always equipped with a non-insulated earth ring PE)

8. For which device will the cable drum be used?

   _____

   (e.g. crane, tower crane, sliding platform etc.)

9. Does the cable drum have to be fixed (stationary) or mounted on a travelling device? ☐

10. Cable payout

    horizontal ☐
    vertical ☐
    hanging design ☐
    (see arrangement examples)

11. Mounting height

    _____

    _____ m

    (from centre of cable drum to deposit of cable)

12. Drive of cable drum by springs ☐
    counterweight ☐
    electric motor ☐

13. Operating voltage and type of current for drum motor

    _____

    _____ V

14. How often does the device travel per hour?

    _____

    _____ /h

15. Working (operating) time in hours per day

    _____

    _____ /h

16. Travelling or lifting speed

    _____

    _____ m/min

17. Acceleration

    _____

    _____ s

18. Deposit of cable
    between the tracks ☐
    outside the tracks ☐

19. Direction of pay out
    to the right ☐
    to the left ☐
    (always seen from slipring body)

20. Arrangement of the cable drum (drawings see page 41)

A	☐	E	☐
B	☐	F	☐
C	☐	G	☐
D	☐	H	☐

21. Extraordinary surrounding influences

    Mounting height more than 1000m above sea level NN _____
    or in mines _____
    humidity _____ %
    strong vibration yes ☐
    Explanation _____

    _____

    no ☐

    Force of sound in dB acc. to DIN 45633
    Bl. 1 _____

    Ambient temperature in °C
    from _____
    to _____

    Surrounding air
    Sand dust ☐
    Coal dust ☐
    Salt water ☐
    Other surroundings or areas of installation

    _____

    _____

22. Finish

    Primed and finished acc. to RAL 7031 (normal design) ☐
    Hot dip galvanizing ☐
    Sandblasting ☐
    Other surface treatment

    _____

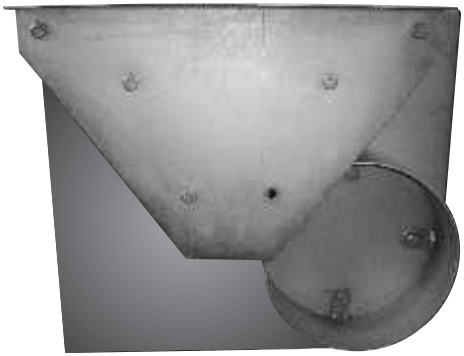
    _____

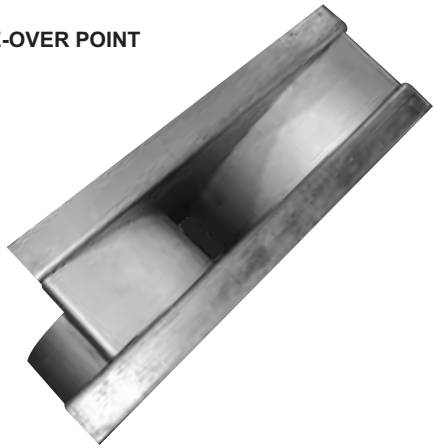
    For larger cable drums and motor drums we ask you to send us a drawing or sketch showing installation and mounting conditions.

Further questionnaires can be received on request.

4.6 CABLE REELS - Centre Feed and Guides

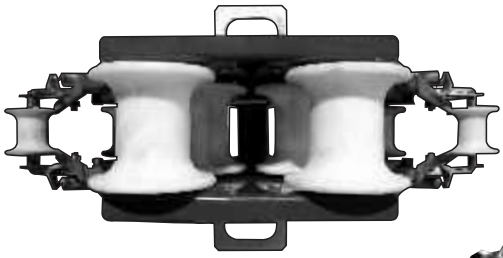
CENTRE FEED CHANGE-OVER POINT



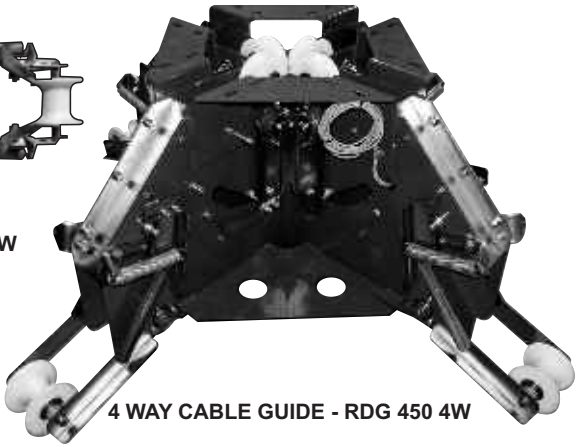


CABLE GUIDE - D100CG (100mm WHEEL)
CABLE GUIDE - D250CG (250mm WHEEL)
CABLE GUIDE - D450CG (450mm WHEEL)

CABLE GUIDE - D600/250CG



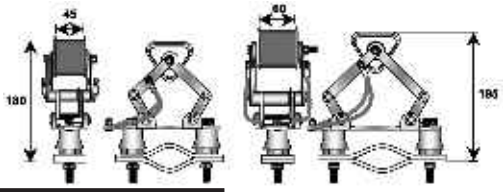
2 WAY CABLE GUIDE - RDG 450 2W



4 WAY CABLE GUIDE - RDG 450 4W

5.1 CURRENT COLLECTORS

CURRENT COLLECTORS FOR COPPERHEAD RAILS & FIXED WIRES

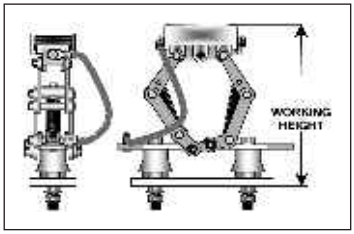


ROTATABLE TRIANGULAR CARBONS

TYPE	CAPACITY A	PICK UP SHOES		WIDTH mm	WEIGHT kg	WORKING HEIGHT	CARBON WIDTH
		Material	Dimensions mm				
DD1	60	Graphite carbon	60x48	95	1.85	150+-25	45
DD	100	Graphite carbon	60x65	105	2.56	145+-40	60

TYPE DA
PANTOGRAPH MEDIUM DUTY

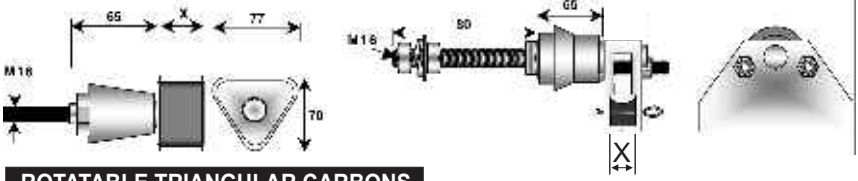
TYPE DSV
SHORT BOOM HEAVY DUTY



FIXED POSITION FLAT CARBONS

TYPE	AMP	MASS kg	MOUNTING BOLTS Dia x centres	WORK HEIGHT mm	PRESSURE kg	59 x 48 CARBON
DA1	100	3.5	M12 x 85	200 +- 30	4.5	100 x 50 x 20
DA2	200	8.5	M16 x 70	260 +- 45	10.5	140 x 80 x 30
DA4	400	9	M16 x 110	290 +- 55	11.3	140 x 100 x 30
DA8	800	12	M16 x 110	290 +- 55	11.3	140 x 100 x 30
DSV PH	400	13	M16 x 70	280 +- 60	7	PHOSPHBRONZE

CURRENT COLLECTORS FOR LOOSE WIRE INSTALLATIONS



ROTATABLE TRIANGULAR CARBONS

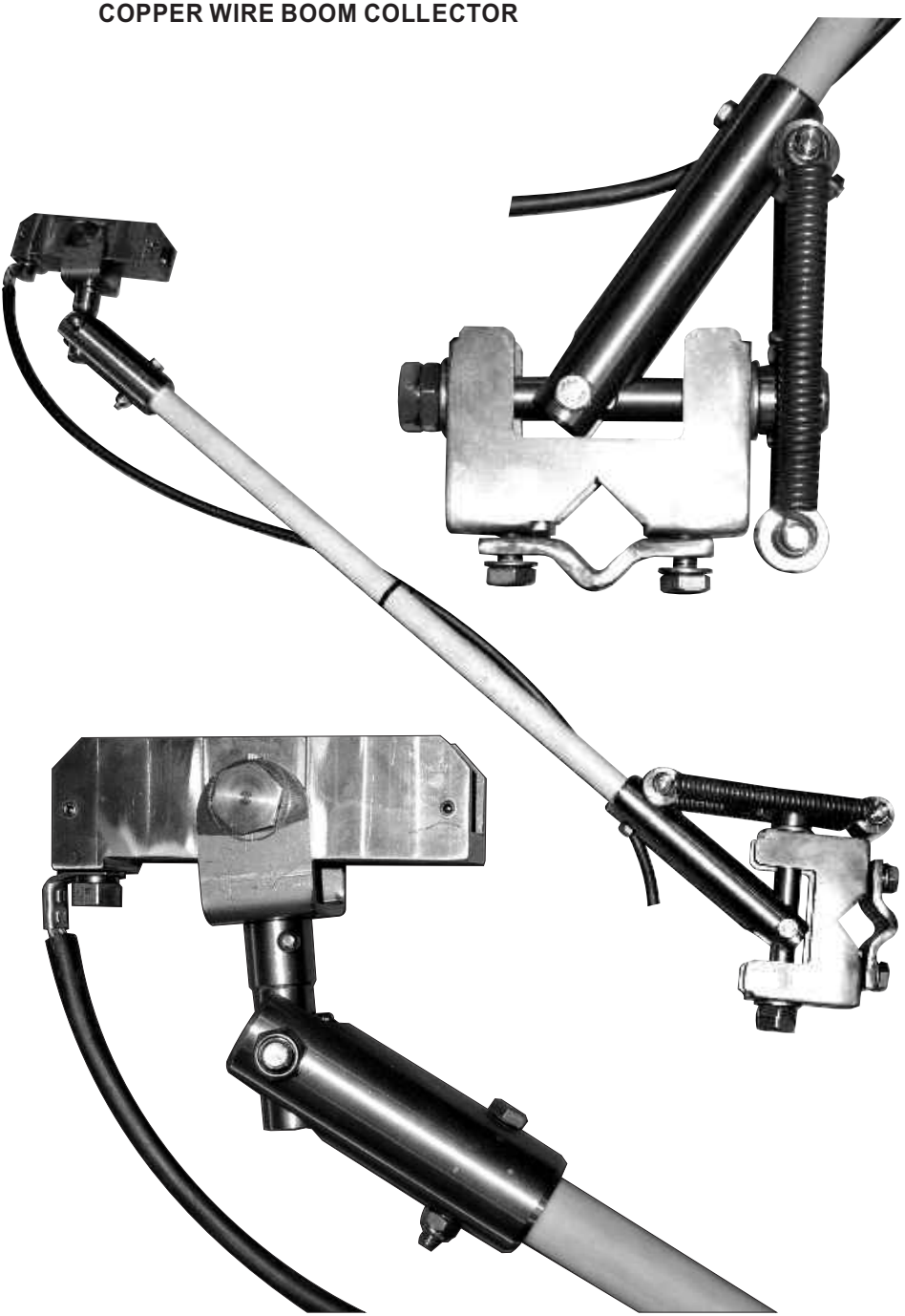
5-BWT2		
CARBON TYPE	X mm	Amp
A	19.05	45A
B	22.22	52A
C	25.4	60A
D	28.57	67A
E	31.75	76A

FLAT CARBON SHOE

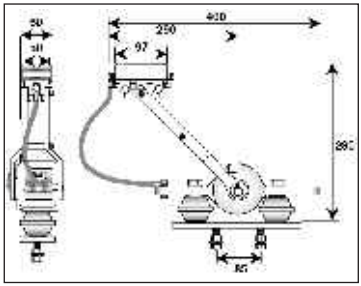
TYPE	X mm	Amp
5-BWI3Z	16	64A
5-BWI3U	24	96A
5-BWI3XV	20	80A

5.1 CURRENT COLLECTORS

COPPER WIRE BOOM COLLECTOR

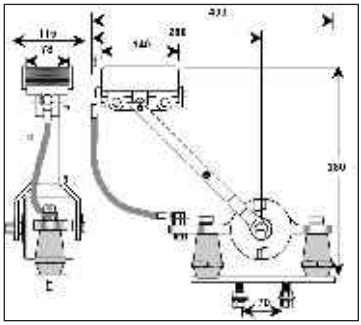


5.1 CURRENT COLLECTORS



BSV1

Type	5-SCC/100
Capacity	100A
Weight	5.2kg
Mounting bolts	M12x85
Working height	200+-50
Carbon pressure	3.4kg
Carbon size	100x20x50



BSV2

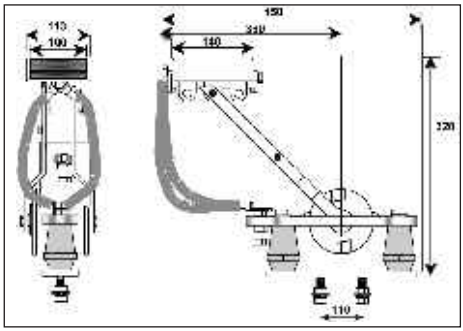
Type	5-SCC/200
Capacity	200A
Weight	9.3kg
Mounting bolts	M16x110
Working height	250+-60
Carbon pressure	7kg
Carbon size	140x80x30

Also available with bronze shoe for earthing purposes.

BSV2x2

Type	5-SCC/200-2
Capacity	400A
Weight	11.2kg
Mounting bolts	M16x110
Working height	250+-60
Carbon pressure	7kg
Carbonsize	2x140x80x30

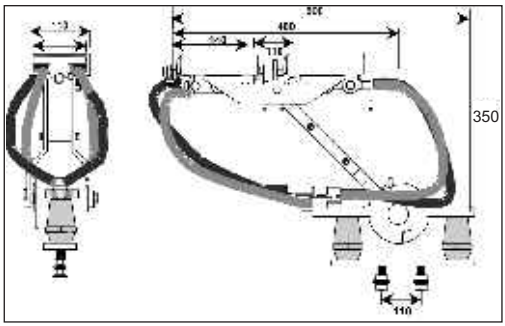
Also available with bronze shoe for earthing purposes.



BSV4

Type	5-SCC/400
Capacity	400A
Weight	11.72kg
Mounting bolts	M16x110
Working height	280+-60
Carbon pressure	8kg
Carbon size	140x100x30

Also available with bronze shoe for earthing purposes.

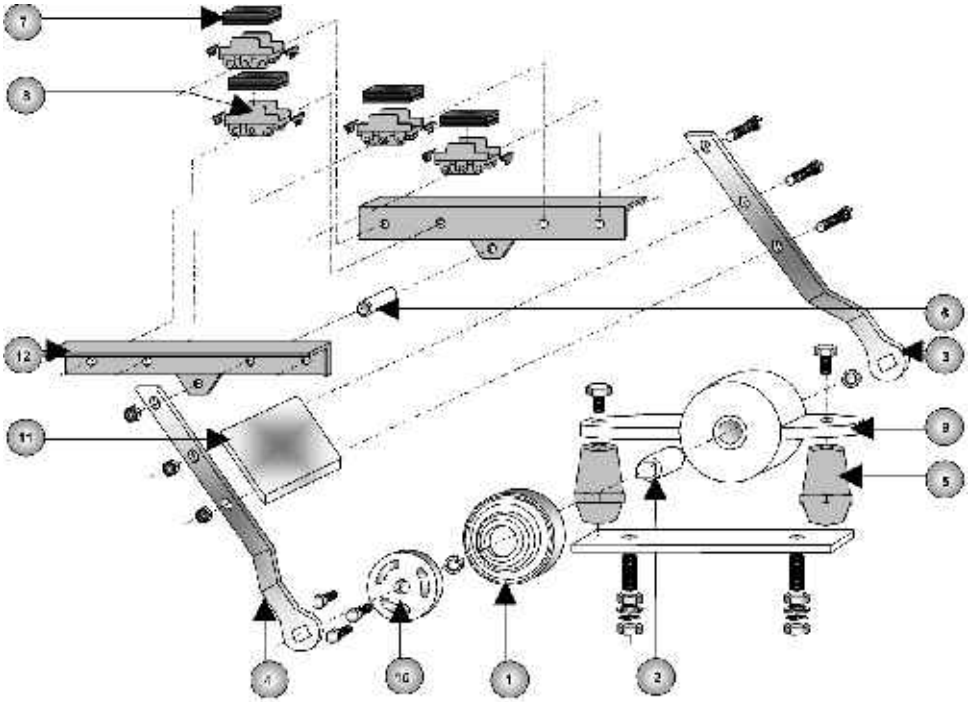


BSV8

Type	5-SCC/800
Capacity	800A
Weight	15.34kg
Mounting bolts	M16x110
Working height	280+-60
Carbon pressure	8kg
Carbon size	140x100x30

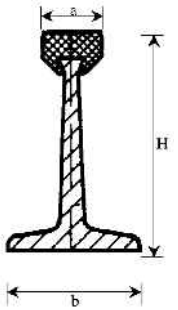
Note: Type 5-SCC/1600 also available, c/w 4 carbon brushes

5.1 CURRENT COLLECTORS



NR	DESCRIPTION	5-SCC/100	5-SCC/200	5-SCC/400	5-SCC/800	5-SCC/1600
1	Collector spring	5-SCC/100-1	5-SCC/200-1	5-SCC4/00-1	5-SCC/800-1	5-SCC/1600-1
2	Spring bolt	5-SCC/100-2	5-SCC/200-2	5-SCC/400-2	5-SCC/800-2	5-SCC/1600-2
3	Arm Right	5-SCC/100-3	5-SCC/200-3	5-SCC/400-3	5-SCC/800-3	5-SCC/1600-3
4	Arm Left	5-SCC/100-4	5-SCC/200-4	5-SCC/400-4	5-SCC/800-4	5-SCC/1600-4
5	Insulators	5-SCC/100-5	5-SCC/200-5	5-SCC/400-5	5-SCC/800-5	5-SCC/1600-5
6	Spacer tubes (set)	5-SCC/100-6	5-SCC/200-6	5-SCC/400-6	5-SCC/800-6	5-SCC/1600-6
7	Carbon brush	5-SCC/100-7	5-SCC/200-7	5-SCC/400-7	5-SCC/800-7	5-SCC/1600-7
8	Carbon holder	5-SCC/100-8	5-SCC/200-8	5-SCC/400-8	5-SCC/800-8	5-SCC/1600-8
9	Spring housing	5-SCC/100-9	5-SCC/200-9	5-SCC/400-9	5-SCC/800-9	5-SCC/1600-9
10	Spring housing lid	5-SCC/100-10	5-SCC/200-10	5-SCC/400-10	5-SCC/800-10	5-SCC/1600-10
11	Spacer block				5-SCC/800-11	5-SCC/1600-11
12	Support bracket				5-SCC/800-12	5-SCC/1600-12
13	Leads	5-SCC/100-13	5-SCC/200-13	5-SCC/400-13	5-SCC/800-13	5-SCC/1600-13

5.2 STEEL-COPPERHEAD RAILS

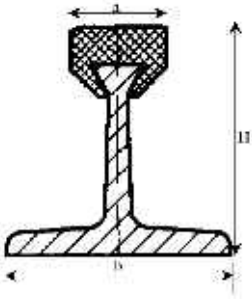


TYPE	COPPER CROSS SECTION Sq mm	STEEL CROSS SECTION Sq mm	EQUIVAL TOTAL COPPER CON-DUCTOR Sq mm	H mm	a mm	b mm	WEIGHT Kg/m	MAX CONTIN - UOUS AMPS
5-RC20/ 14	14	150	36	31	6.5	20	1.24	220
5-RC20/ 25	25	150	47	33	8	20	1.34	256
5-RC20/ 50	50	150	72	34	10	20	1.57	327
5-RC20/100	100	150	122	38.5	12	20	2.02	444

Standard lengths: 7m

Main application: Conductor system for hoists and monorails, down-shop and cross travel supply for lightcranes.

Best applicable collectors: DD1, DD and DA

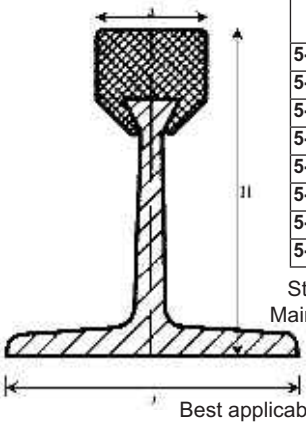


TYPE	COPPER CROSS SECTION Sq mm	STEEL CROSS SECTION Sq mm	EQUIVAL TOTAL COPPER CON-DUCTOR Sq mm	H mm	a mm	b mm	WEIGHT Kg/m	MAX CONTIN - UOUS AMPS
5-RC35/ 30	30	265	69	32	14.2	35	2.34	320
5-RC35/ 50	50	265	89	33.1	14.6	35	2.52	410
5-RC 35/100	100	265	139	36.0	15.3	35	2.97	529
5-RC 35/150	150	265	189	38.3	17.3	35	3.42	632
5-RC 35/200	200	265	239	40.8	17.3	35	3.87	724

Standard lengths: 7m

Main application: Conductor system for heavy monorails, down-shop and cross travel supply for medium duty cranes.

Best applicable collectors: 5-SCC/100,5-SCC/200,5-SCC/400,5-SCC/800



TYPE	COPPER CROSS SECTION Sq mm	STEEL CROSS SECTION Sq mm	EQUIVAL TOTAL COPPER CON-DUCTOR Sq mm	H mm	a mm	b mm	WEIGHT Kg/m	MAX CONTIN - UOUS AMPS
5-RC45/ 50	50	355	102	43.1	14.6	45	3.23	495
5-RC45/100	100	355	152	46.0	15.3	45	3.68	620
5-RC45/150	150	355	202	48.3	17.3	45	4.13	728
5-RC45/200	200	355	252	50.8	17.3	45	4.58	826
5-RC45/300	300	355	452	56.3	17.6	45	5.48	1000
5-RC45/400	400	455	452	59.3	19.6	45	6.38	1156
5-RC45/500	500	355	552	64.3	19.6	45	7.28	1299
5-RC45/600	600	355	652	65.0	23.2	45	8.18	1432

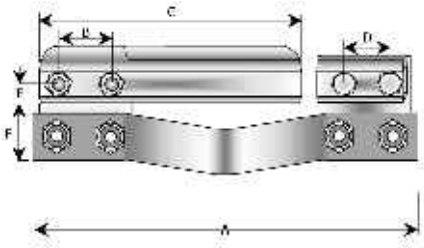
Standard lengths: 7m

Main application: Down-shop and cross travel supply for heavy cranes, loading bridges, coking machinery, rapid transit systems etc.

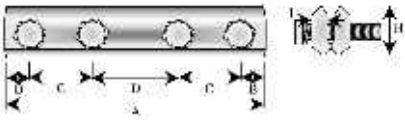
Best applicable collectors: 5-SCC/100,5-SCC/200,5-SCC/400,5-SCC/800

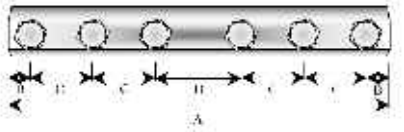
5.3 COPPERHEAD RAIL ACCESSORIES

Expansion joint gap = 19mm @ 25° C

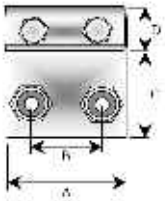


EXPANSION SECTION							
PART NUMBER	A	B	C	D	E	F	Noof Leaves
5-XJ35/50	240	30	160	30	13	43	4
5-XJ35/100	240	30	160	30	13	43	8
5-XJ35/150	240	30	160	30	13	43	13
5-XJ35/200	240	30	160	30	13	43	17
5-XJ45/50	240	30	160	30	18	50	8
5-XJ45/100	240	30	160	30	18	50	8
5-XJ45/150	240	30	160	30	18	50	8
5-XJ45/200	240	30	160	30	18	50	17
5-XJ45/300	240	30	160	30	18	50	17
5-XJ45/400	240	30	160	30	18	50	17
5-XJ45/500	240	30	160	30	18	50	17
5-XJ45/600	240	30	160	30	18	50	50
5-XJ45/800	240	30	160	30	18	50	50
5-XJ45/1600	240	30	160	30	18	50	50

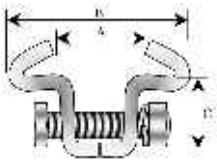




RIGID JOINTS						
PART NUMBER	A	B	C	D	H	I
5-RJ20/14-100/4	100	12	20	35	26	4
5-RJ35/30-200/6	190	15	30	40	25	8
5-RJ45/50-200/6	190	15	30	40	33	7.5

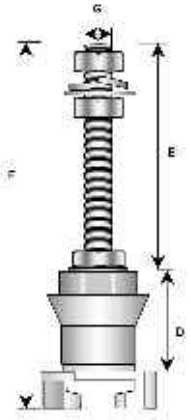


FEEDER CLAMP				
PART NUMBER	A	B	C	D
5-FC35/30-300	61	30	43	23.5
5-FC45/50-200	60	30	40	35
5-FC45/300-800	60	30	40	35

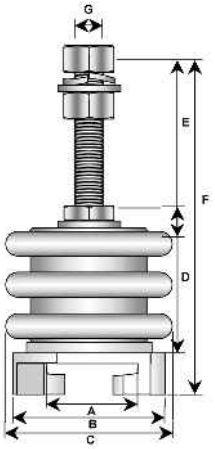


LOCATINGCLAMPS			
PART NUMBER	A	B	C
5-LCP20	18	44	43
5-LCP35	18	44	40
5-LCP45	18	44	40

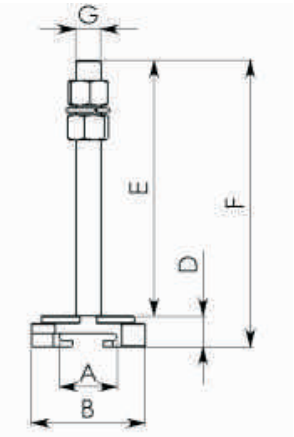
5.3 COPPERHEAD RAIL ACCESSORIES



5-IGP20



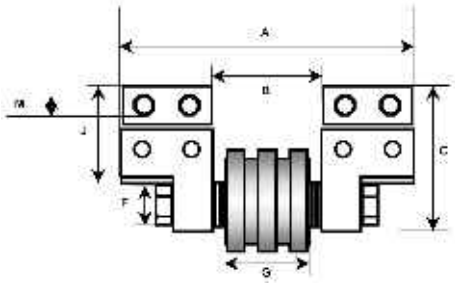
5-IGP35 and 5-IGP45

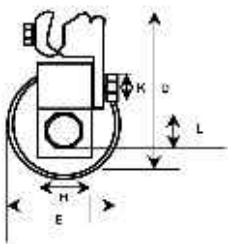


Earth Rail Support
5-IGP35E 5-IGP45E

INSULATORS							
PART NUMBER	**A**	**B**	**C**	**D**	**E**	**F**	**G**
5-IGP20	22	50	32	69	94	163	M12
5-IGP35	37	73	80	55	90	180	M16
5-IGP45	54	87	80	55	90	180	M16

High heat to 550°C ceramic insulators						
5-IGP35HT	37	73	80	55	90	180
5-IGP45HT	54	87	80	55	90	180





HOSPITAL BAY INSULATOR													
Part Number	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
5-HBI/35	190	70	100	120	80	36	55	35	120	62	M10	M16	M8
5-HBI/45	200	76	105	130	80	32	50	40		74	M10	M16	M10

Rail gap = 10 mm

5.4 INSTALLATION OF COPPERHEAD RAIL

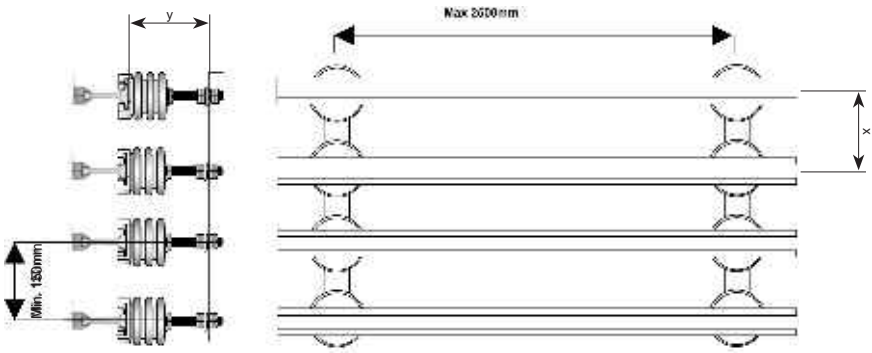


Fig. A

1. Install mounting brackets to I beam or girder, either vertically as Fig. A or horizontally with copper cap facing downwards

Mounting Bracket Spacing:	RC20 Rail and high temperature sections	2 meter
	RC35 + 45 Rail	2.5 meter
Rail Spacing 'X':	to 550V	150 mm
	over	250 mm
Check alignment:	90° to mounting face and parallelity of the bracket spacing.	

2. Secure insulators/rail supports to brackets (in accordance with the mounting instructions) leaving bolts hand tight. For general arrangement see Fig A.
   When placing the conductors into the insulators, make sure that the bayonet clamp on the insulator does not lock down tight onto the rail. Check the height settings from the mounting bracket to the insulator head rail seat (dimension 'y') are precisely the same throughout the system. The rail must be able to move through the insulator bayonet clamp to allow for expansion and contraction. Check this after tightening down the insulators. The rail must not be restricted at any point otherwise it may buckle when in operation.

3. Connect the Rails by rigid or expansion joints using the holes provided at the ends of the 7m sections. See Fig. B + C on Pg 48
   With longer runs use an expansion joint after every 6 standard lengths of 7 m = 42m intervals.
   For special heat environment and strong temperature fluctuations reduce these intervals.
   For gap setting see diagram and example on Pg 48 Fig. D

   Provide an extra insulator/rail support either side of the expansion joint - maximum 250 mm eitherside.

5.4 INSTALLATION OF COPPERHEAD RAIL SYSTEM

Expansion Gap Calculation

The chart shows orientation lines for the different conductor rails, considering 42m expansion joint intervals. For gap setting move the orientation line in parallel up to the point presenting the anticipated maximum ambient temperature. Then connect point of actual ambient temperature during installation to the right until intersecting with the orientation line. Follow the vertical axis downward to read the air gap dimension in mm.

Example:

Ambient temperature 25ºC

Air gap F-rail = 19mm	Steel rail with copper cap
Air gap C-rail = 24mm	Solid copper rail
Air gap A-rail = 32mm	Aluminium rail with copper cap

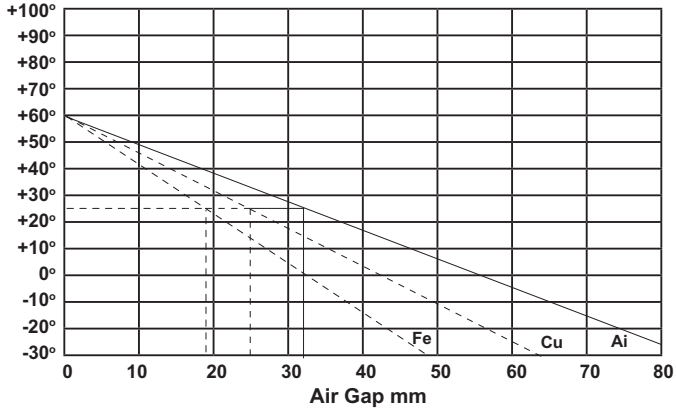


Fig. D

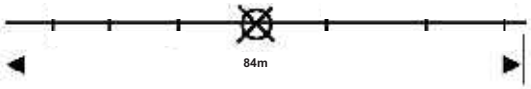


Fig. B

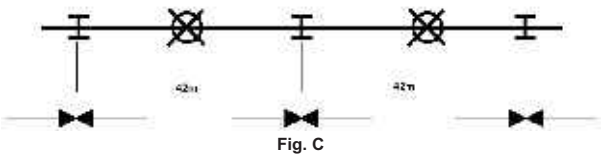


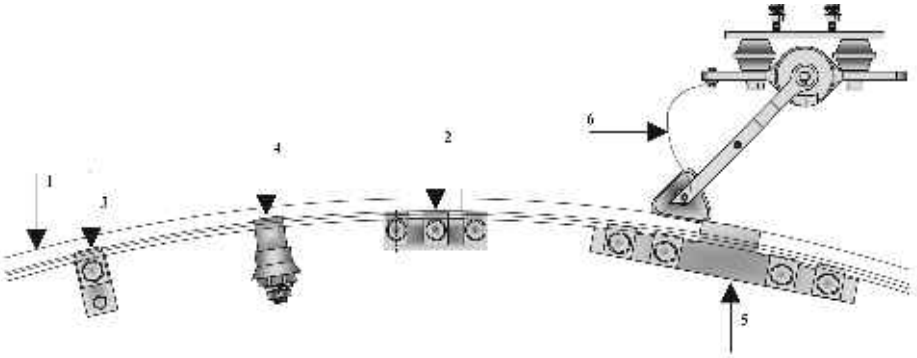
Fig. C

insulator with securing clamp
Rigid joints
Expansion joints

4. Anchor rails for controlled directional movement, by fitting two locating clamps around the centre insulator of the run or in the centre between two expansion joints (see Fig. B + C).

5. Install feeder clamps at feed points. Bolt to web of rail and braze to copperhead. (For improved conductivity). For short systems centerfeed power supply is recommended.

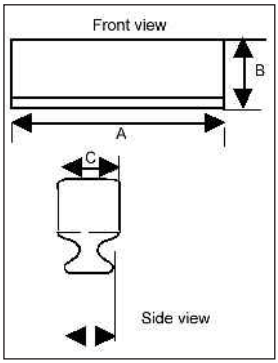
5.5 KILN SLIPRINGS & ACCESSORIES



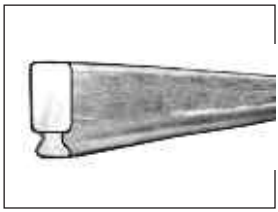
These sliprings are designed specifically for use on rotary Kilns that operate in example: Iron and steel industry, paper industry, cement manufacturers industry.

1

5-KSR/0100 Slipring segment

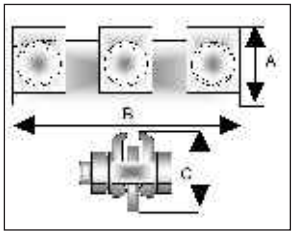


Material: Cu bar (3.6m long)
A = 3.6
B = 26
C = 10
D = 8



2

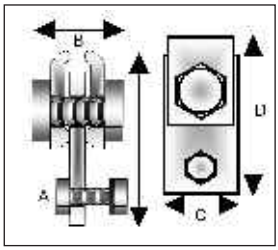
5-KSR/0200 Joint set



Material: Joint plate c/w tool Holders

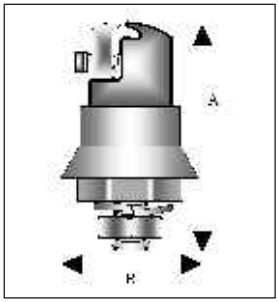
(30x5x160 DIN 1768 E-CU F30)
A = 140
B = 32
C =45

5.5 KILN SLIPRINGS & ACCESSORIES



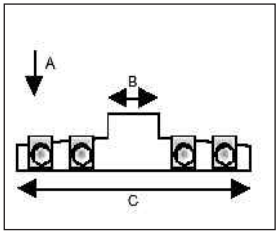
3
5-KSR/0300
FEEDER CLAMP

A = 60
B = 35
C = 30
D = 50



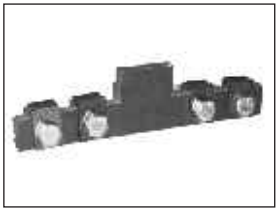
4
5-KSR/0400
Rail holder

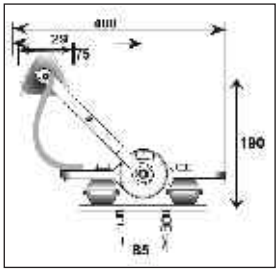
A = 130
B = 60



5
5-KSR/0500
Insulated joint for 5-KSR/3000

A = Rail
B = 50
C = 226





6
5-SCC100-T
Current collector 100A c/w triangular carbon brush

Type:5-SCC/100-T
Capacity: 100A
Carbon size: 65

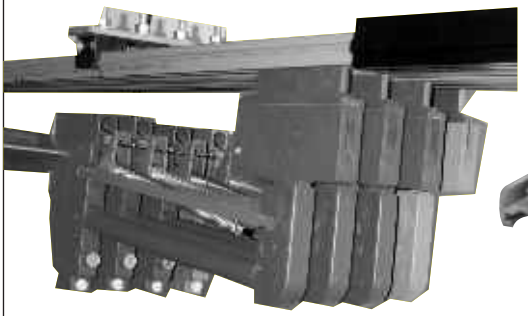
Grippa
SAFE-LINE SERIES

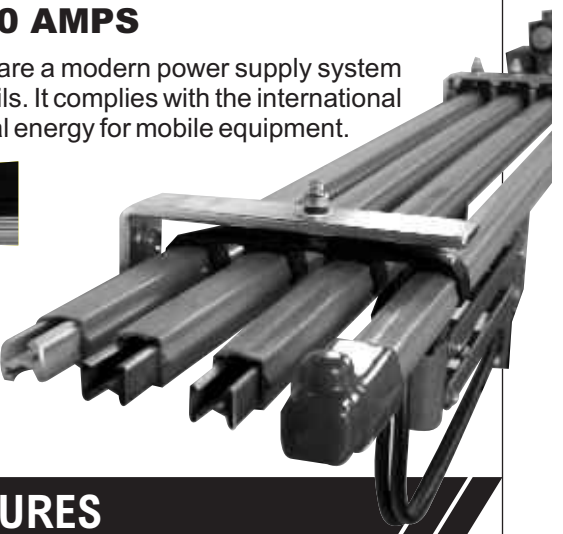
INSULATED CONDUCTOR BAR SYSTEM

Available in *Galvanised Steel*, *Aluminium/Stainless Steel* or *Copper* and a specific set for *Mining Applications*

60-2000 AMPS

Grippa Safeline conductor rail systems are a modern power supply system using single pole insulated conductor rails. It complies with the international safety regulations and supplies electrical energy for mobile equipment.





FEATURES

Touch-proof, no exposed live parts
Easy installation
Bolted Joint
1 Pole / 4 Pole Hanger
Insulating Cover shaped to shed water and dust
60 to 2000 Amps. Conductor in same standard
Collector 25A / 100A / 250A
No Expansion Joints up to 150m long system
Track Configuration: Straight or Curved
Suitable for Indoor / Outdoor Installation

HELP! Which system must I use?

An accurate choice of conductors can be made when all the following information is known:

- The type of current single or three phase AC; continuous (DC)
- The maximum current power and duty cycle
- The allowable volt drop for the machines being supplied
- The ambient temperature
- Environment (dusty, coastal, humid, acidic etc.)

Please contact us to for expert advice!

SAFE-LINE W

LIGHT-MEDIUM DUTY: 60-400 AMPS

SAFE-LINE W: TECHNICAL DATA

FACTOR "K"						
	Duty / Ta	100%	80%	60%	40%	20%
Standard cover	35°C	1.000	1.118	1.291	1.581	2.236
	40°C	0.905	1.011	1.168	1.430	2.023
	45°C	0.798	1.892	1.030	1.261	1.784
	55°C	0.674	0.754	0.870	1.066	1.508
High Temperature Cover	65°C	0.775	0.866	1.000	1.225	1.732
	75°C	0.707	0.791	0.913	1.118	1.581
	85°C	0.632	0.707	0.816	1.000	1.414

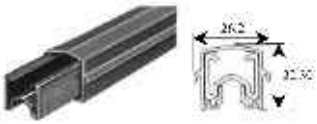
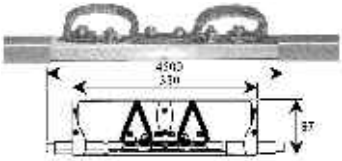
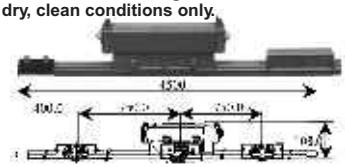
I = nominal current x K

The maximum permissible continuous current rating of the conductor bar depends on the duty factor of the cranes and the maximum ambient temperature Ta. It can be established using the formula.

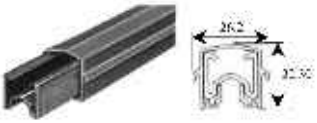
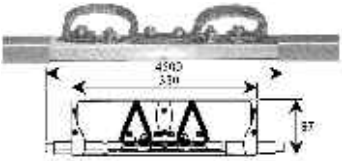
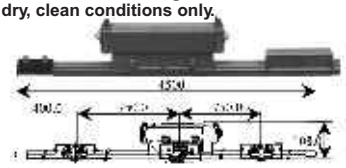
CONDUCTOR BAR COVER	STANDARD
Material	PVC
Dielectirc strength	A80KV/cm
Surface resistivity	1011
Volume resistivity	>1015 /cm
Maximum operating temperature	80°C
Minimum operating temperature	-30°C
Flame-test	Self extingushing
Oxygen index	54%
Specific density	1.5 g/cm²

CONDUCTOR BAR	GALVANISED STEEL				COPPER			ALUMINIUM/ STAINLESS STEEL		
Normal current	60A	100A	125A	150A	160A	250A	400A	200A	315A	400A
Cross sectional area	50mm²	63mm²	93mm²	93mm²	50mm²	63mm²	93mm²	104mm²	120mm²	156mm²
Maximum system voltage (AC) (contact safeline for other voltages) (DC) (contact safeline for other voltages)	600V				600V			600V		
Resistance R (for DC) at 35°C (/m) Impedance Z (for AC) at 35°C (/m)	0.003584 0.003604	0.002867 0.002891	0.001933 0.001968	0.001780 0.001718	0.000342 0.000364	0.000274 0.000300	0.000184 0.000221	0.000301 0.000325	0.000261 0.000288	0.000199 0.000234
Maximum allowable ambient temperature for 100% duty cycle	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
Bar length (mm)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Support pitch Standard	1500mm	11500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm
Minium pitch centers Standard Lateral	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm
Expansion sections: not required runs less than	150m	150m	150m	150m	150m	150m	150m	150m	150m	150m
Minimum bending radius (Horizontal Only)	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m

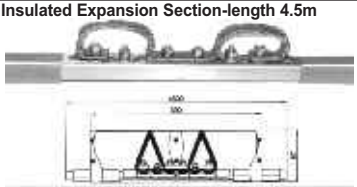
SAFE-LINE W: GALVANISED STEEL

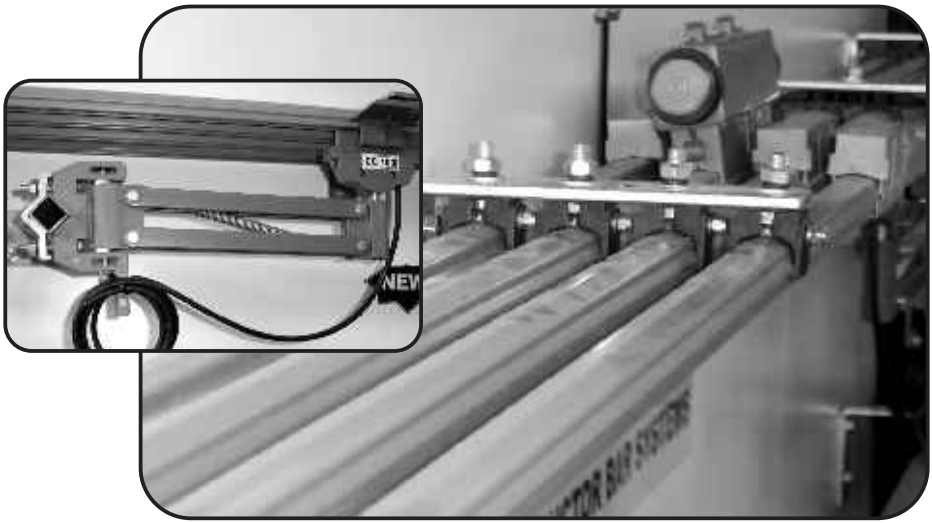
	GALVANISED STEEL	60 Amp Part #	100 Amp Part #	125 Amp Part #
Insulated Conductor Bar-length 4.5m 	Phase Rail, Standard Heat Cover	INWG-60O	INWG-100O	INWG-125O
	Earth Rail, Standard Heat Cover	INWG-60G	INWG-100G	INWG-125G
	Phase Rail, Medium Heat Cover	INWGHT-60O	INWGHT-100O	INWGHT-125O
	Earth Rail, Medium Heat Cover	INWGHT-60G	INWGHT-100G	INWGHT-125G
	Weight (kg)	2.41	2.86	3.89
Insulated Expansion Section-length 4.5m 	Phase Expansion, Standard Heat Cover	INWG-EJ60O	INWG-EJ100O	INWG-EJ125O
	Earth Expansion, Standard Heat Cover	INWG-EJ60G	INWG-EJ100G	INWG-EJ125G
	Phase Expansion, Medium Heat Cover	INWGHT-EJ60O	INWGHT-EJ100O	INWGHT-EJ125O
	Earth Expansion, Medium Heat Cover	INWGHT-EJ60G	INWGHT-EJ100G	INWGHT-EJ125G
	Weight (kg)	3.54	3.97	5.03
Isolation Section-length 4.5m. For use in dry, clean conditions only. 	Phase Isolation, Standard Heat Cover	INWG-IS60O	INWG-IS100O	INWG-IS125O
	Earth Isolation, Standard Heat Cover	INWG-IS60G	INWG-IS100G	INWG-IS125G
	Phase Isolation, Medium Heat Cover	INWGHT-IS60O	INWGHT-IS100O	INWGHT-IS125O
	Earth Isolation,, Medium Heat Cover	INWGHT-IS60G	INWGHT-IS100G	INWGHT-IS125G
	Weight (kg)	2.71	3.16	4.19

SAFE-LINE W: COPPER

	COPPER	160 Amp Part #	250 Amp Part #	400 Amp
Insulated Conductor Bar-length 4.5m 	Phase Rail, Standard Heat Cover	INWC-160O	INWC-250O	INWC-400O
	Earth Rail, Standard Heat Cover	INWC-160G	INWC-250G	INWC-400G
	Phase Rail, Medium Heat Cover	INWCHT-160O	INWCHT-250O	INWCHT-400O
	Earth Rail, Medium Heat Cover	INWCHT-160G	INWCHT-250G	INWCHT-400G
	Weight (kg)	2.67	3.12	4.38
Insulated Expansion Section-length 4.5m 	Phase Expansion, Standard Heat Cover	INWC-EJ160O	INWC-EJ250O	INWC-EJ400O
	Earth Expansion, Standard Heat Cover	INWC-EJ160G	INWC-EJ250G	INWC-EJ400G
	Phase Expansion, Medium Heat Cover	INWCHT-EJ160O	INWCHT-EJ250O	INWCHT-EJ400O
	Earth Expansion, Medium Heat Cover	INWCHT-EJ160G	INWCHT-EJ250G	INWCHT-EJ400G
	Weight (kg)	3.81	4.27	5.53
Isolation Section-length 4.5m. For use in dry, clean conditions only. 	Phase Isolation, Standard Heat Cover	INWC-IS160O	INWC-IS250O	INWC-IS400O
	Earth Isolation, Standard Heat Cover	INWC-IS160G	INWC-IS250G	INWC-IS400G
	Phase Isolation, Medium Heat Cover	INWCHT-IS160O	INWCHT-IS250O	INWCHT-IS400O
	Earth Isolation,, Medium Heat Cover	INWCHT-IS160G	INWCHT-IS250G	INWCHT-IS400G
	Weight (kg)	2.97	3.42	4.68

SAFE-LINE W: ALUMINIUM / S/S STEEL

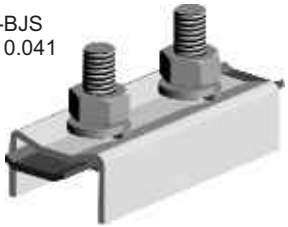
	ALUMINIUM / STAINLESS STEEL	200 Amp Part #	315 Amp Part #	400 Amp Part #
Insulated Conductor Bar-length 4.5m 	Phase Rail, Standard Heat Cover	INWA-200O	INWA-315O	INWA-400O
	Earth Rail, Standard Heat Cover	INWA-200G	INWA-315G	INWA-400G
	Phase Rail, Medium Heat Cover	INWAHT-200O	INWAHT-315O	INWAHT-400O
	Earth Rail, Medium Heat Cover	INWAHT-200G	INWAHT-315G	INWAHT-400G
	Weight (kg)	2.1	2.3	
Insulated Expansion Section-length 4.5m 	Phase Expansion, Standard Heat Cover	INWA-EJ200O	INWA-EJ315O	INWA-EJ400O
	Earth Expansion, Standard Heat Cover	INWA-EJ200G	INWA-EJ315G	INWA-EJ400G
	Phase Expansion, Medium Heat Cover	INWAHT-EJ200O	INWAHT-EJ315O	INWAHT-EJ400O
	Earth Expansion, Medium Heat Cover	INWAHT-EJ200G	INWAHT-EJ315G	INWAHT-EJ400G
	Weight (kg)	2.23	2.43	
Isolation Section-length 4.5m. For use in dry, clean conditions only. 	Phase Isolation, Standard Heat Cover	INWA-IS200O	INWA-IS315O	INWA-IS400O
	Earth Isolation, Standard Heat Cover	INWA-IS200G	INWA-IS315G	INWA-IS400G
	Phase Isolation, Medium Heat Cover	INWAHT-IS200O	INWAHT-IS3150O	INWAHT-IS400O
	Earth Isolation,, Medium Heat Cover	INWAHT-IS200G	INWAHT-IS315G	INWAHT-IS400G
	Weight (kg)	2.4	2.6	



SAFE-LINE W: COMPONENTS COMMON TO ALL SYSTEMS

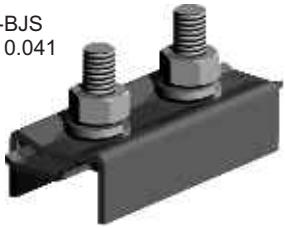
Steel Joint

Part #: INW-BJS
Weight (kg): 0.041



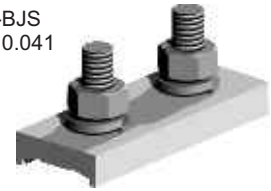
Copper Joint

Part #: INW-BJS
Weight (kg): 0.041



Aluminium Joint

Part #: INW-BJS
Weight (kg): 0.041



Joint Cover

Part #'s:
INW-JCO - Phase, **Standard**
INWHT-JCO - Phase, **Medium Heat**
Weight (kg): 0.027

Joint Cover

Part #'s:
INW-JCG - Earth, **Standard**
INWHT-JCG - Earth, **Medium Heat**
Weight (kg): 0.027

Hanger - 4 Pole

Part #: INW-4PH
Weight (kg): 0.057

Hanger - 3 Pole

Part #: INW-3PH
Weight (kg): 0.044

STANDARD SUPPORT SPACING: 1500mm

Hanger - 1 Pole

Part #: INW-SPH
Weight (kg): 0.030

Hanger - 1 Pole

Part #: INW-SPH-I
Weight (kg): 0.12
with
Insulator

Hanger - 1 Pole

Part #: INW-SSI
Weight (kg): 0.13
Stainless Steel
with
Insulator

SAFE-LINE W: COMPONENTS COMMON TO ALL SYSTEMS

Anchor Clamp

Part #: INW-AC2
Weight (kg): 0.046

Anchor Clamp - Insulated

Part #: INW-AC2-I
Weight (kg): 0.14

Bracket - 13mm, Single

Part #: IN31099
Weight (kg): 0.4

Bracket - 13mm, Double

Part #: IN310898
Weight (kg): 0.80

13mm square, 400mm long for use with 25A collector.

Bracket - 25mm, Single

Part #'s: IN310991
Weight (kg): 0.75

Bracket - 25mm, Double

Part #'s: IN310992
Weight (kg): 1.50

25mm square, 400mm long for use with 100A & 250A collectors.

End Cover

Part #: INW-EC
Weight (kg): 0.020
(Supplied unassembled)

End Power Feed

Part #: INW-EF
Weight (kg): 0.037
(Supplied unassembled)

Joint Power Feed

Part #:
INW-LF1 - Up to 250A
INW-LF2 - Up to 400A
INW-LF1 - Medium Heat, Up to 250A
INW-LF2 - Medium Heat, Up to 400A
Weight (kg): 0.179

Transfer Cap

Part #: INW-TC
Weight (kg): 0.110

SAFE-LINE W: COMPONENTS COMMON TO ALL SYSTEMS

Collector - 100A

SD Phase
Part #: INW1-CC100R
Weight (kg): 0.392

Collector - 100A

SD Earth
Part #: INW1-CC100G
Weight (kg): 0.392

Collector - 100A

SP Phase
Part #: INW2-CC100R
Weight (kg): 0.392

Collector - 100A

SP Earth
Part #: INW2-CC100G
Weight (kg): 0.392

Collector - 250A

Phase
Part #'s: INW-CC250
Weight (kg): 0.392

Pickup Guide

Typical
Please consult us.

Shoe & Holder - 25A

SD Earth
Part #: INW-CCS25
Weight (kg): 0.000

Shoe & Holder - 50/100A

SD Earth
Part #: INW1-CCS100
Weight (kg): 0.240

Shoe & Holder - 25A

SP Earth
Part #: INW2-CCS100
Weight (kg): 0.240

Shoe & Holder - 25A

SD Earth
Part #: INW-CCS250
Weight (kg): 0.240

Grippa SAFE-LINE W

for MINING & HEAVY DUTY INDUSTRIAL APPLICATIONS

Hanger - 1 Pole

Part #: INWM-SPH
Weight (kg): 0.030

Hanger - 2 Pole

Part #: INWM-2PH
Weight (kg): 0.030

Bolt Joint

Part #: INWM-BJC
Weight (kg): 0.030

Expansion Joint

Part #: INWM-EJO
Weight (kg): 0.030

Anchor Transfer Cap

Part #: INWM-ATC
Weight (kg): 0.030

Anchor Device

Part #: INWM-AC
Weight (kg): 0.030

Mechanical Fuse

Part #: INWM-MF
Weight (kg): 0.030

Collector - 250A

Part #: INWM-CC250MF
Weight (kg): 0.030

Mechanically Fused

Joint Cover

Part #: INWM-JC
Weight (kg): 0.030

Power Feed

Part #: INWM-LF
Weight (kg): 0.030

Grippa SAFE-LINE V

HEAVY DUTY: 500-2000 AMPS

SAFE-LINE V: TECHNICAL DATA

FACTOR "K"						
	Duty / Ta	100%	80%	60%	40%	20%
Standard cover	35°C	1.000	1.118	1.291	1.581	2.236
	40°C	0.905	1.011	1.168	1.430	2.023
	45°C	0.798	1.892	1.030	1.261	1.784
	55°C	0.674	0.754	0.870	1.066	1.508
High Temperature Cover	65°C	0.775	0.866	1.000	1.225	1.732
	75°C	0.707	0.791	0.913	1.118	1.581
	85°C	0.632	0.707	0.816	1.000	1.414

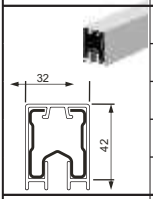
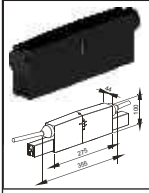
I = nominal current x K

The maximum permissible continuous current rating of the conductor bar depends on the duty factor of the cranes and the maximum ambient temperature Ta. It can be established using the formula.

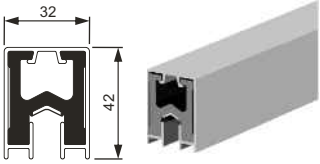
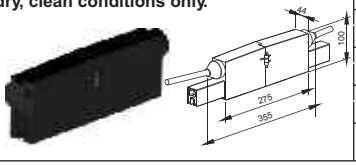
CONDUCTOR BAR COVER	STANDARD
Material	PVC
Dielectirc strength	A80KV/cm
Surface resistivity	1011
Volume resistivity	>1015 /cm
Maximum operating temperature	80°C
Minimum operating temperature	-30°C
Flame-test	Self extingushing
Oxygen index	54%
Specific density	1.5 g/cm²

CONDUCTOR BAR	ALUMINIUM/ STAINLESS STEEL			COPPER				
Normal current	500A	800A	1000A	500A	800A	1000A	1250A	2000A
Cross sectional area (mm²)	252	430	528	116	196	240	286	540
Maximum system voltage (AC) (contact safeline for other voltages) (DC) (contact safeline for other voltages)	600V			600V				
Resistance R (for DC) at 35°C (/m) Impedance Z (for AC) at 35°C (/m)	0.000097 0.000157	0.000074 0.000144	0.000051 0.000137	0.000104 0.000106	0.000057 0.000136	0.000033 0.000127	0.000022 0.000094	0.00011 0.000061
Maximum allowable ambient temperature for 100% duty cycle	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
Bar length (mm)	4500	4500	4500	4500	4500	4500	4500	4500
Support pitch Standard	2250mm	2250mm	2250mm	2250mm	2250mm	2250mm	2250mm	2250mm
Minium pitch centers Sandard Lateral	80mm 100mm	80mm 100mm	80mm 100mm	80mm 100mm	80mm 100mm	80mm 100mm	80mm 100mm	80mm 100mm
Expansion sections: not required runs less than	200m	200m	200m	200m	200m	200m	200m	200m
Minimum bending radius (Horizontal Only)	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m

SAFE-LINE V: COPPER

	COPPER	500 Amp Part #	800 Amp Part #	1000 Amp Part #	1250 Amp Part #	2000 Amp Part #
	Phase Rail, Standard Heat Cover	INVC-500O	INVC-800O	INVC-1000O	INVC-1250O	INVC-2000O
	Earth Rail, Standard Heat Cover	INVC-500G	INVC-800G	INVC-1000G	INVC-1250G	INVC-2000G
	Phase Rail, Medium Heat Cover	-	-	-	-	-
	Earth Rail, Medium Heat Cover	-	-	-	-	-
	Weight (kg)	2.41	2.41	2.41	2.86	3.89
	Phase Expansion, Standard Heat Cover	INVC-EJ500O	INVC-EJ800O	INVC-EJ1000O	INVC-EJ1250O	INVC-EJ2000O
	Earth Expansion, Standard Heat Cover	INVC-EJ500G	INVC-EJ800G	INVC-EJ1000G	INVC-EJ1250G	INVC-EJ2000G
	Phase Expansion, Medium Heat Cover	-	-	-	-	-
	Earth Expansion, Medium Heat Cover	-	-	-	-	-
	Weight (kg)	3.54	3.54	3.54	3.97	5.03
	Joint Assembly - Copper	INVC-BJ500	INVC-BJ800	INVC-BJ1000	INVC-BJ1250	INVC-BJ2000
	Joint Cover	INV-JC	INV-JC	INV-JC	INV-JC	INV-JC
	Power Feed Assembly	INVC-BJF500	INVC-BJF800	INVC-BJF1000	INVC-BJF1250	INVC-BJF2000
	Power Feed Cover	INV-LFC	INV-LFC	INV-LFC	INV-LFC	INV-LFC
	Weight (kg)	2.71	2.71	2.71	3.16	4.19

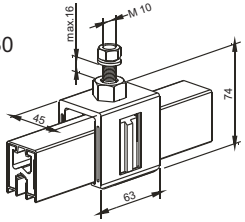
SAFE-LINE V: ALUMINIUM

	ALUMINIUM	500 Amp Part #	800 Amp Part #	1000 Amp Part #
Insulated Conductor Bar-length 4.5m 	Phase Rail, Standard Heat Cover	INVA-500O	INVA-800O	INVA-1000O
	Earth Rail, Standard Heat Cover	INVA-500G	INVA-800G	INVA-1000G
	Phase Rail, Medium Heat Cover	-	-	-
	Earth Rail, Medium Heat Cover	-	-	-
	Weight (kg)	2.67	3.12	4.38
Insulated Expansion Section-length 4.5m 	Phase Expansion, Standard Heat Cover	INVA-EJ500O	INVA-EJ800O	INVA-EJ1000O
	Earth Expansion, Standard Heat Cover	INVA-EJ500G	INVA-EJ800G	INVA-EJ1000G
	Phase Expansion, Medium Heat Cover	-	-	-
	Earth Expansion, Medium Heat Cover	-	-	-
	Weight (kg)	3.81	4.27	5.53
Isolation Section-length 4.5m. For use in dry, clean conditions only. 	Joint Assembly - Aluminium	INVA-BJ500	INVA-BJ800	INVA-BJ1000
	Joint Cover	INV-JC	INV-JC	INV-JC
	Power Feed Assembly	INVA-BJF500	INVA-BJF800	INVA-BJF1000
	Power Feed Cover	INV-LFC	INV-LFC	INV-LFC
	Weight (kg)	2.97	3.42	4.68

SAFE-LINE V: COMPONENTS COMMON TO ALL SYSTEMS

Hanger - 1 Pole

Part #: INV-SPH
Weight (kg): 0.030



Hanger - 1 Pole

Part #: INV-SPH-I
Weight (kg): 0.12
with
Insulator

Anchor Clamp

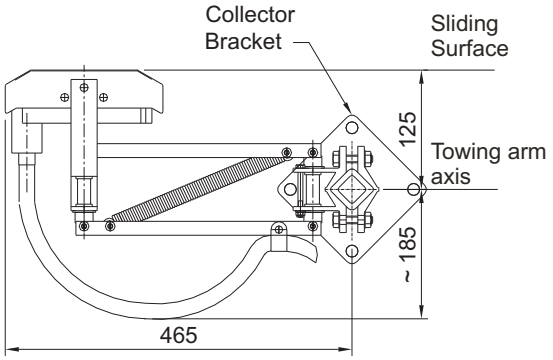
Part #: INV-AC
Weight (kg): 0.40

End Cover

Part #: INV-EC
Weight (kg): 0.80

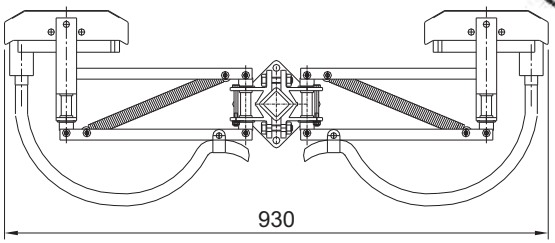
Collector - 250A

Part #'s: INV-CC250
Weight (kg): 0.392



Collector - 2x250A

Part #: INV-CC250-2
Weight (kg): 0.800



5.7 MINING CONDUCTOR BAR SECTION

CONDUCTOR BAR COVER	STANDARD	MEDIUM HEAT
Material	PVC	BAYBLEND
Dielectric strength	180 KV/cm	240 KV/cm
Surface resistivity	$10^{11}\Omega$	$>10^{14}\Omega$
Volume resistivity	$>10^{15}\Omega$/cm	$>10^{16}\Omega$/cm
Vicat softening temperature (never expose PVC cover to temperatures in excess of 80°C)	84°C	120°C
Flame-test	Self extinguishing	Self extinguishing
Oxygen index	54%	24%
Specific density	1.5 g/cm³	1.15 g/cm³

CONDUCTOR BAR	COPPER			ALUMINIUM / STAINLESS STEEL
Nominal current	500A	800A	1150A	630A
Cross sectional area	115mm²	171mm²	339mm²	277mm²
Maximum system voltage				
(AC) (contact Insul-8 for other voltages)	1000V	1000V	1000V	1000V
(DC) (contact Insul-8 for other voltages)	1000V	1000V	1000V	1000V
Resistance R (for DC) at 20°C (Ω/m)	0.000149	0.000100	0.000051	0.000113
Impedance Z (for AC) at 20°C (Ω/m)	0.000189	0.000154	0.000127	0.000162
Maximum allowable ambient temperature for 100% duty cycle	25°C	25°C	25°C	25°C
Bar length	4.5m	4.5m	4.5m	4.5m
Support pitch Standard	1500mm	1500mm	1500mm	1500mm
Lateral	1125mm	1125mm	1125mm	1125mm
Minimum pitch centres Standard	60mm	60mm	60mm	60mm
Lateral	60mm	60mm	60mm	60mm
Expansion sections: not required for runs less than	150m	150m	150m	150m
Minimum bending radius: (horizontal only)	1.5m	1.5m	1.5m	1.5m

Railway Shore Supply

Electric Mining Vehicles

6.1 PENDANT CONTROLLERS

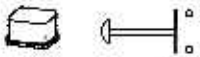
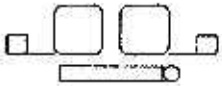
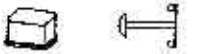
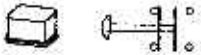
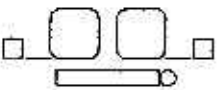
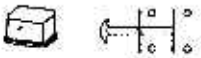
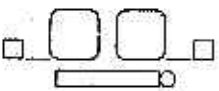
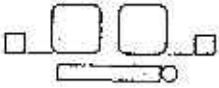
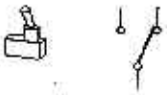
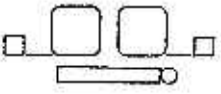
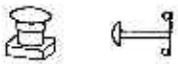
TYPES FOR BRIDGE CRANES AND FOR BUILDING CRANES, IN WATERTIGHT BOX, PROTECTION IP 65

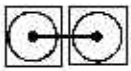
Main features

* External body in thermoplastic material with high resistance to shocks.
* Temperature range: -30ºC to +70ºC.
* Buttons with indication or symbol - indelible international symbols
* Double opening silver contacts
* Possibility to mount a mechanical interlock between two button's elements.
* Stop button with assured opening of the contacts.

Execution for bridge crane	**Type PKP**
Execution for building crane	**Type PKE**

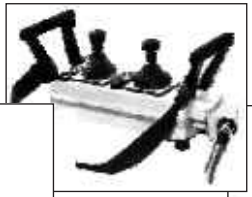
6.1 PENDANT CONTROLLERS

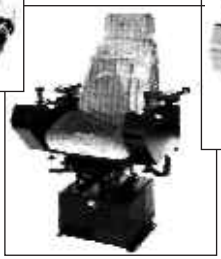
CODE NO	COMPONENTS	SPECIAL COMPOSITION SCHEME
6-001 N open button - yellow		
6-002 N closed button - red		
6-003 NO+NC button - black		
6-004 Key switch c/w contact		
6-005 Progressive 2 NO contacts		
6-006 Single pole switch		
6-007 Single pole change over		
6-008 Mushroom button		
6-010 E10 signal lamp		
6-011 Closing plug		
6-012 Mechanical interlock		
6-13 Mechanical interlock between two progressive closing buttons		



MechanicalInterlock indication

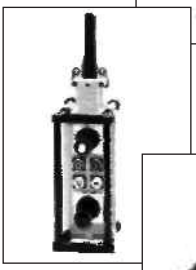
6.2 JOYSTICK CONTROLLERS



MASTER CONTROLLERS

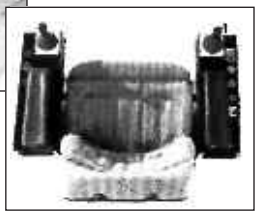
Control devices for cranes, conveyor systems, ship building and industrial applications per IEC 947, EN 60947, VDE 0660, CSA and UL standards.



Controllers

Joystick controllers for AC and DC main switches and cam controllers, direct wired or remote controlled.

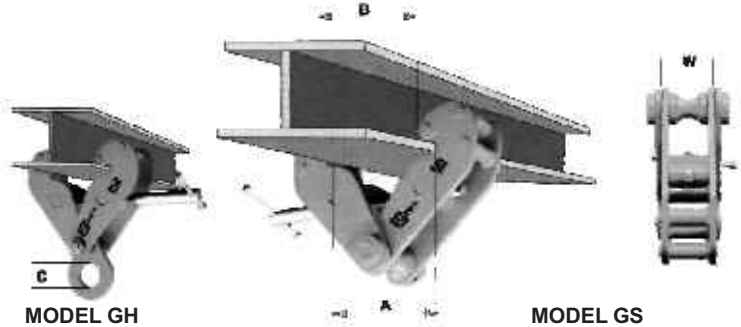
Circuit breakers and porcelain insulated changeover switches per customer specifcations

7.1 GIRDER CLAMPS

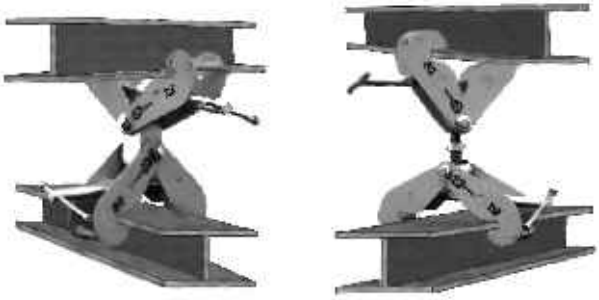
ALSO AVAILABLE IN STAINLESS STEEL

ADJUSTABLE GIRDER CLAMPS



MODEL GH **MODEL GS**

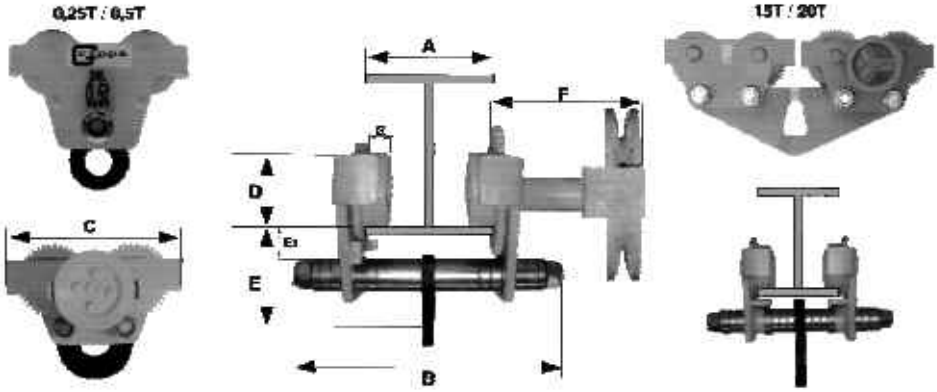
MODEL	SWL(kg)	APERTURE		WIDTH"W" mm	HOLE"C" mm
		"A"mm	"B"mm max		
GC1GS	1000	50-180	160	75	-
GC2GS	2000	75-250	250	85	
GC3GS	3000	85-300	300	95	
GC5GS	5000	100-365	300	100	
GC10GS	10000	200-500	350	165	
GC20GS	20000	200-550	450	210	-
GC1GH	1000	50-180	160	75	35
GC2GH	2000	75-250	200	85	52
GC3GH	3000	100-320	255	95	75
GC5GH	5000	100-365	300	100	75
GC10GH	10000	200-450	350	165	110
GC20GH	20000	200-550	450	210	120



90° FIXED POSITION MODEL FDE		ADJUSTABLE RADIAL AND HEIGHT POSITION MODEL ADE	
MODEL	SWL(kg)	MODEL	SWL(kg)
GC2FDE	2000	GC2ADE	2000
GC3FDE	3000	GC3ADE	3000
GC5FDE	5000	GC5ADE	5000

7.2 BEAM CRAWLS

ALSO AVAILABLE IN STAINLESS STEEL & SPARK PROOF OPTIONS



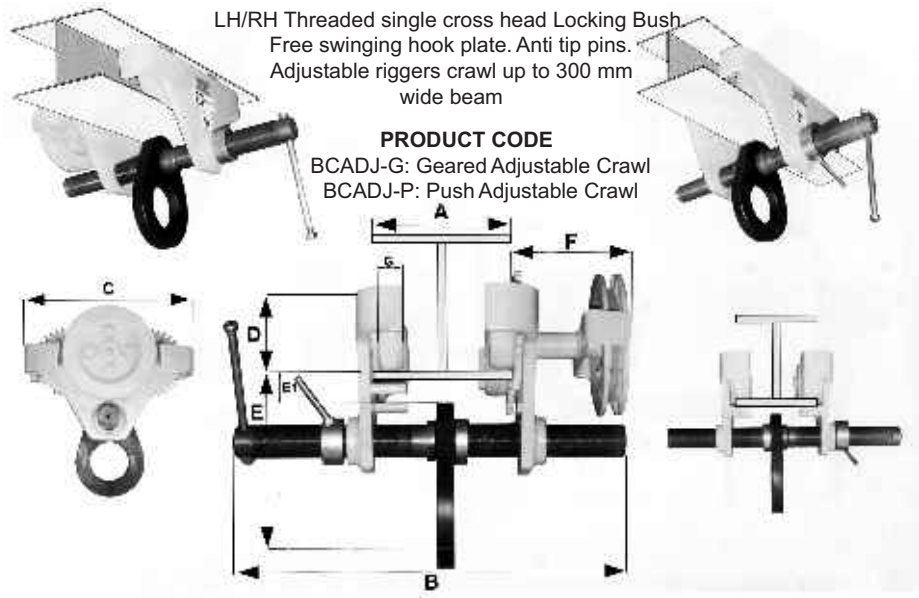
SWL CAPACITY/ MODEL		250KG	500KG	1T	2T	3T	5T	10T	15/20T
		DIMENSIONS mm							
'A" BEAM WIDTH RANGE	R1	50-75	50-75	76-140	90-153	100-166	126-166	154-192	154-192
	R2	76-143	76-143	141-210	154-216	167-210	167-210	193-229	193-229
	R3	-	-	211-305	217-305	211-305	211-305	230-305	230-305
'B" OVERALL CROSSHEAD WIDTH	R1	150	150	240	260	295	305	380	380
	R2	240	240	305	325	340	350	420	420
	R3	-	-	400	410	435	445	495	495
'C" OVERALL LENGTH GEARED/PLAIN TROLLEY		162	200	256	330	333	382	500	
'D" RUNNER TREAD DIAMETER		45	55	65	90	90	110	145	145
'E" HEADROOM-RUNNER TREAD TO SUSPENSION PLATE SEAT		105	108	80	89	114	114	238	258
'E1" HEADROOM-RUNNER TREAD TO SPACER		12	15	22	21	24	22	73	68
'F" EDGE OF RUNNER-FLANGE TO OUTSIDE OF CHAIN WHEEL		-	-	135	138	138	144	230	230
'G" TREAD WIDTH		18	18	19	25	25	30	48	48
MINIMUM RADIUS OF TRACK CURVE (METER)		0.75	0.75	1.5	1.5	1.5	1.8	3.0	ON REQUEST ONLY

7.3 ADJUSTABLE BEAM CRAWLS (GRIPPA TYPE)

LH/RH Threaded single cross head Locking Bush.
Free swinging hook plate. Anti tip pins.
Adjustable riggers crawl up to 300 mm wide beam

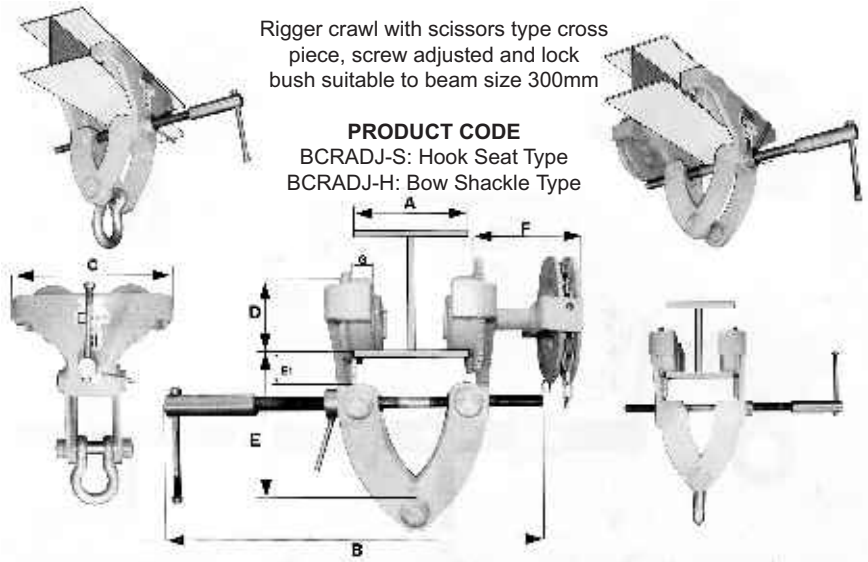
PRODUCT CODE

BCADJ-G: Geared Adjustable Crawl
BCADJ-P: Push Adjustable Crawl



S.W.L CAPACITY	1t	2t	3t	5t
"A" Beam width range	45-280	65-280	70-300	90-300
"B" Overall Crosshead Length	440	450	460	485
"C" Overall Length of Trolley	260	330	330	385
"D" Runner Tread Diameter	65	90	90	110
"E" Headroom - Runner Tread to Suspention Plate Seat	150	150	190	220
"E1" Headroom - RunnerTreadto Topof Hook Plate Assy	45	30	35	45
"F"EdgeofRunner Flange to Outside of Chain Wheel	140	140	140	145
"G" Tread Width	19	25	25	30
Minimum Radius of Track Curve (Curve)	1.5	1.5	1.5	1.8

7.3 ADJUSTABLE BEAM CRAWLS (RIGGING CRAWL)



Rigger crawl with scissors type cross piece, screw adjusted and lock bush suitable to beam size 300mm

PRODUCT CODE
BCRADJ-S: Hook Seat Type
BCRADJ-H: Bow Shackle Type

S.W.L CAPACITY	1t	2t	3t	5t
Type	**GS GH**	**GS GH**	**GS GH**	**GS GH**
"A" Beam width range	70-270	75-270	105-300	110-300
"B" Overall Crosshead Length	510	520	530	560
"C" Overall Length of Trolley	260	330	330	380
"D" Runner Tread Diameter	65	90	90	110
"E" Headroom - Runner Tread to Suspention Plate Seat	210-130 280-210	190-120 280-220	230-170 340-270	250-170 360-280
"E1" Headroom - Runner Tread to Topof CrossBolt Assy.	50	35	65	70
"F"EdgeofRunner Flange to Outside of Chain Wheel	140	140	145	145
"G" Tread Width	19	25	25	30
Minimum Radiusof Track Curve (Curve)	1.5	1.5	1.5	1.8

8.1 INDUSTRIAL SNATCH BLOCKS

- From 0,5 Ton to 10 Ton

	WLL	Rope Seat Ø	Rope Size
SB05	0.5t	80	>10
SB1	1t	105	>12
SB2	2t	125	>16
SB3	3t	165	>20
SB5	5t	215	>25
SB7.5	7.5t	255	>30
SB10	10t	300	>35

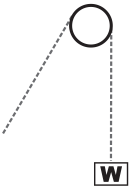
8.2 STEEL WIRE ROPE BLOCK

EYE TYPE STEEL WIRE ROPE BLOCK

STEEL WIRE ROPE END BLOCK
(HOOK TO HOOK)

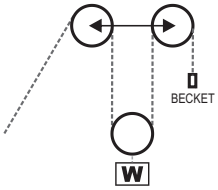
GUIDE TO SELECTION OF BLOCKS

SINGLE WHIP



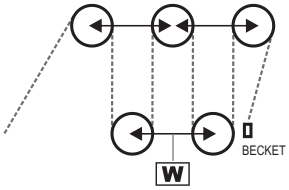
P=108% of W

DOUBLE SINGLE



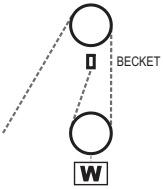
P=39% of W

TREBLE DOUBLE



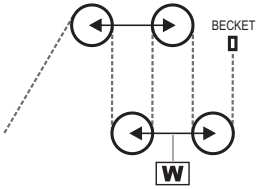
P=25% of W

SINGLE SINGLE



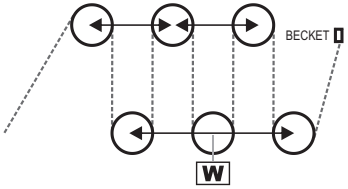
P=56% of W

DOUBLE DOUBLE



P=30% of W

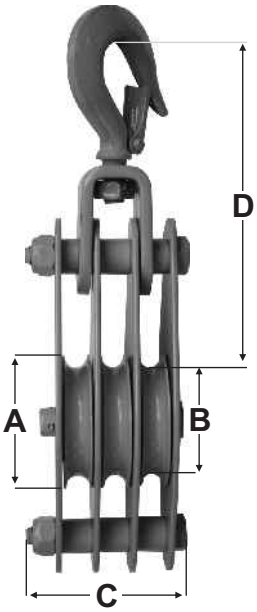
TREBLE TREBLE



P=22% of W

8.3 MANILLA ROPE BLOCK

SINGLE **DOUBLE** **TRIPLE**



Part Number	Rope size	Seaves	Recom. WLL	SWLL on Hook	A	B	C	D	E
MRB10S	10	1	75 Kg	500 Kg	68	55	58	165	80
MRB10D	10	2	200 Kg	500 Kg	68	55	64	165	80
MRB10T	10	3	300 Kg	500 Kg	68	55	83	165	80
MRB12S	12	1	200 Kg	500 Kg	88	72	73	180	100
MRB12D	12	2	500 Kg	500 Kg	88	72	83	180	100
MRB12T	12	3	800 Kg	1000 Kg	88	72	108	190	100
MRB16S	16	1	300 Kg	500 Kg	100	80	85	183	110
MRB16D	16	2	800 Kg	1000 Kg	100	80	101	190	110
MRB16T	16	3	1200 Kg	1500 Kg	100	80	120	195	110
MRB20S	20	1	450 Kg	500 Kg	116	90	100	198	130
MRB20D	20	2	1300 Kg	1500 Kg	116	90	110	208	130
MRB20T	20	3	1800 Kg	2000 Kg	116	90	150	223	130
MRB22S	22	1	700 Kg	1000 Kg	148	118	120	226	160
MRB22D	22	2	1800 Kg	2000 Kg	148	118	138	230	160
MRB22T	22	3	2850 Kg	3000 Kg	148	118	154	238	160
MRB24S	24	1	1000 Kg	1000 Kg	TBA	TBA	TBA	TBA	TBA
MRB24D	24	2	2850 Kg	3000 Kg	TBA	TBA	TBA	TBA	TBA
MRB24T	24	3	4275 Kg	5000 Kg	TBA	TBA	TBA	TBA	TBA
MRB32S	32	1	1375 Kg	1500 Kg	TBA	TBA	TBA	TBA	TBA
MR32DT	32	2	3660 Kg	5000 Kg	TBA	TBA	TBA	TBA	TBA
MRB32T	32	3	5500Kg	7500 Kg	TBA	TBA	TBA	TBA	TBA
MRB38S	38	1	1830 Kg	2000 Kg	TBA	TBA	TBA	TBA	TBA
MRB38D	38	2	4090 Kg	5000 Kg	TBA	TBA	TBA	TBA	TBA
MRB38T	38	3	7330 Kg	7500 Kg	TBA	TBA	TBA	TBA	TBA

8.4 RUNNING OUT BLOCKS

Wheel Dia: 100mm
250mm
450mm
600 mm

For Overhead Cable Installation

*** WHEELS MATERIAL OPTIONS:** - Cast Aluminium
- Shatterproof Polyurethane

RB100 - Open Hook

RB250 - Trunnion Hook

RB450 - Safety Hook

RB600 - Safety Hook

Code	Wheel Dia	Cable Seat Dia	Max Cable Dia	WLL
RB100OH/SLH	100	75	16	150 Kg
RB250SLH/TB	250	210	30	500 Kg
RB450SLH/TB	450	330	30	1000 Kg
RB6003TSLH	600	460	50	3000 Kg
RB6007TSLH	600	460	50	7000 Kg

9.1 LEVER HOISTS

$1^1/_2$ Ton

We can offer a full range of quality light lifting products suited to the customer's application and requirements.

Safe Working Load ranges for the lever hoists are:

- 0.25 ton,
- 0.5 ton, 0.75 ton, 1 ton,
- 1.5 ton, 3 ton
- and 6ton

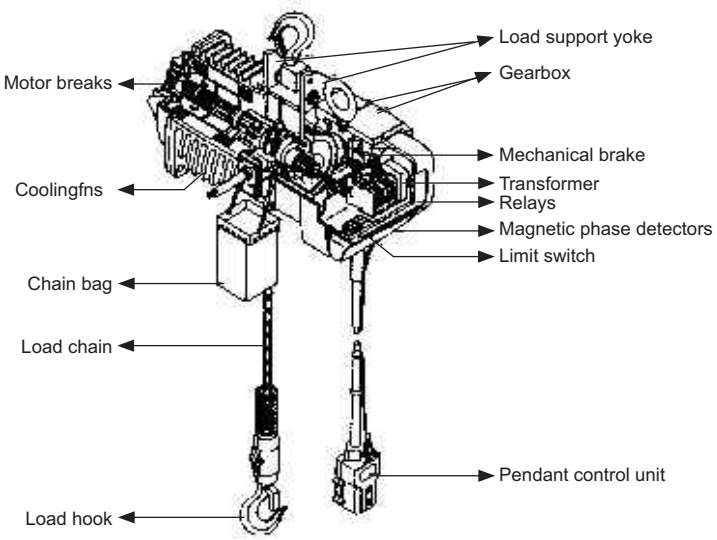
7.8 MANUAL CHAIN HOISTS

Safe Working Load ranges for the chan hoist are:

- 0.5 ton,
- 1 ton,
- 1.6 ton,
- 2 ton,
- 2.5 ton,
- 3.2 ton,
- 5 ton,
- 10 ton,
- and 20 ton

9.2 ELECTRIC CHAIN HOISTS

ELECTRIC CHAIN HOIST STRUCTURE



Safe Working Loads capacity as specified below, given different duty ratings, liftings, speeds, single or dual speeds

Normal Cpacity (m.ton)	Model		Lifting Speed (m/min)60HZ		Lifting motor(KW)		Duty Rating (%)	Load Chain Fall Lines	G.W. (kg)
	Single Speed	Dual Speed	Single Speed	Dual Speed	Single Speed	Dual Speed			
0.5-L	PS-005L	PS-005LD	8.0	8.0/2.6	1.25	1.25/0.41		1	65
0.5-H	PS-005H	PS-005HD	13.5	13.5/4.5				1	67
1-L	PS-010L	PS-010LD	5.6					1	67
1-H	PS-010H	PS-010HD	8.0	8.0/2.6				1	67
2-L	PS-020L	PS-020LD	2.8		2.2	2.2/0.73		2	77
2-H	PS-020H	PS-020HD	4.0	4.0/1.3			45	2	77
3-L	PS-030L	PS-030LD	1.8	1.8/0.6				3	109.5
3-H	PS-030H	PS-030HD	2.6	2.6/0.9				3	109.5
2-S	PS-020S	PS-020SD	7.9	7.9/2.6				1	140.5
3-S	PS-030S	PS-030SD	5.2	5.2/1.7	3.75	3.75/1.25		2	160.5
5-S	PS-050S	PS-050SD	3.2	3.2/1.0				2	172.5
7.5-S	PS-075S	PS-075SD	2.1	2.1/0.7				3	200
10-S	PS-100S	PS-100SD	3.2	3.2/1.0	3.75X2	3.75X2/	1.25X5	4	372

10 RUBBER BUFFERS

STUD MOUNTED RUBBER BUFFERS

PART NUMBER	SIZE DIA X LENGTH	STUD
RBSM43X25	43 X 25	6MM
RBSM50X50	50 X 50	10 MM
RBSM80X80	80 X 80	10 MM
RBSM81X67	81 X 67	12 MM
RBSM100X85	100 X 85	12 MM
RBSM100X100	100 X 100	12 MM
RBSM127X107	127 X 107	12 MM
RBSM123X125	123 X 125	12 MM
RBSM150X150	150 X 150	12 MM
RBSM122X185	122 X 185	12 MM
RBSM125X190	125 X 190	12/16 MM
RBSM200X160	200 X 160	12/20 MM
RBSM200X230	200 X 230	14/16/20 MM
RBSM200X270	200 X 270	14/16/20 MM
RBSM240X250	240 X 250	16 MM

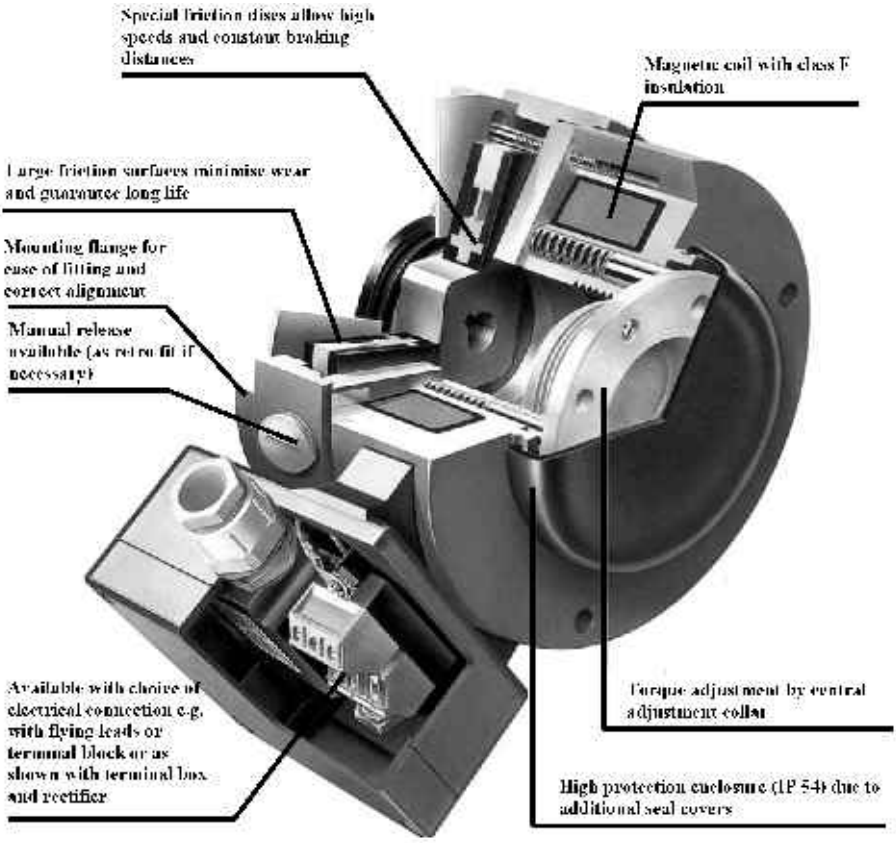
PLATE MOUNTED RUBBER BUFFERS

PART NUMBER	SIZE DIA X LENGTH	PLATE SIZE	PITCH	HOLES
RBPM100X100	100 X 100	125 X 125	100 MM	13 MM
RBPM150X150	150 X 150	200 X 200	160 MM	17 MM
RBPM125X125	125 X 125	150 X 150	12 MM	16 MM
RBPM200X160	200 X 160	250 X 250	200 MM	21 MM
RBPM200X230	200 X 230	250 X 250	200 MM	16 MM
RBPM200X280	200 X 280	250 X 250	200 MM	16 MM
RBPM125X69	125 X 69	160 X 160	130 MM	16 MM
RBPM240X250	240 X 250	250 X 250	250 MM	16 MM

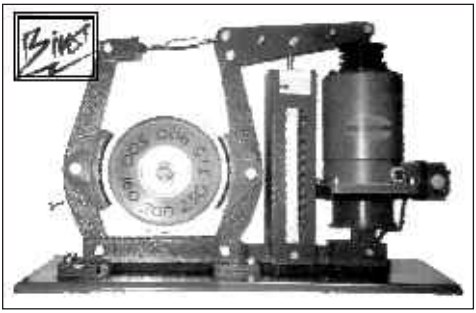
11.1 BRAKES - ELECTROMAGNETIC DISC BRAKES

The spring applied electro-magnetic brake has proved itself in a great many applications. Designed for DC operation it can, with integral rectifier, be used with an AC single phase supply. Braking is effected by spring pressure with brake release being by way of the electro-magnetic feld. Brake is therefore “fail safe”. If required, brake can be manually operated (optional).

This brake is available in 6 sizes to cover braking torques from 8 to 360 Nm. All versions have the advantage of torque adjustment by means of a central adjusting collar. The brake design makes for easy modification to suit particular requirements e.g. to ccept tacho drive, flame or explosion proofng for mine duties or increased corrosion resistance. It can also be fitted with a micro switch to control brake operation.



11.2 BRAKES - ELECTROMAGNETIC DRUM BRAKES



OPERATING PRINCIPLES
- Spring applied braking
- Releasing using electromagnetic Actuator.
- Adjustable braking torque

CONSTRUCTION
- Brake spring and brake lifter laterally positioned
- Brake shoe lifter with single web construction
- Synchronous releasing mechanism

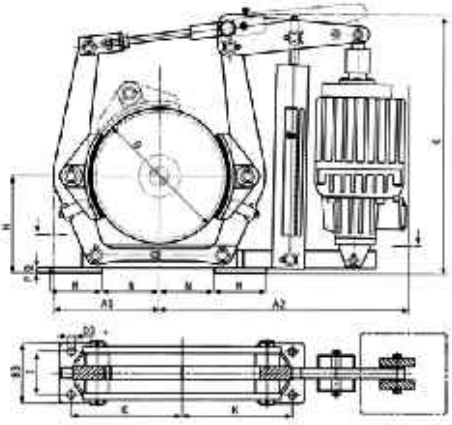
SPECIAL CHARACTERISTICS OF THE BRAKE TYPE BINSI

- All requirements of DIN 15435 are fulfilled, therefore assured interchange ability.
- High braking torque independent of the direction of rotation due to optimised lever geometry in connection with increased stiffness of the base plate and brake shoe lever.
- Good lateral stability of the brake due to widened base of the brake shoe lever.
- Synchronous releasing mechanism and brake shoe clamps guarantee a self-adjusting con
  - stant gap on the brake linings.
- Increased safety due to tension bar structured with small stress concentration:
  - Encased tension bar threads enable an easy adjustment of the brake even under adverse operating conditions.
- Bolts made of electroplated steel and box bearings increase their reliability of operation and life of brake, all standard parts are galvanised.
- Enclosed spring tube protects the brake spring against damage.
- Simple adjustment of braking torque, easy to read torque scale.
- Changing of the brake shoes without dismantling the brake is possible.
- Brake shoes according to DIN 15435 casted of light metal and boxed with steel bushes.
- Brake linings, bonded type with co-effcient of friction of 0.4
- Finish - Pacifc blue
- Options and accessories.:
  - Compensating shims
  - Automatic wear adjustment (AWA)
  - Brake lining riveted or bonded & riveted.
  - Other brake lining qualities available.
  - Time delay mechanism on request.
  - Electromagnetic actuator available in 100% and 40% duty cycles.
  - Special construction of assembly in hanging and horizontal positions.
  - Limit switches and control devices for releasing position, brake lining wear temperature etc.
  - Dust covers.

Brake units ftted with standard silicon rectifier attachment. Units are available with built-in silicon rectifier suitable for direct AC mains connections of 380 or 525V three phase. Brake operating coils are wound for 168 and 220V DC respectively.

Brake units with Force voltage silicon rectifier attachment. This rectifier unit is a special force voltage type, which for a limited period supplies the brake with its nominal DC operating voltage.
This reduces the normal brake release time by 40%.

11.2 ELECTROMAGNETIC DRUM BRAKES



TECHNICAL DATA (dimensions in mm)

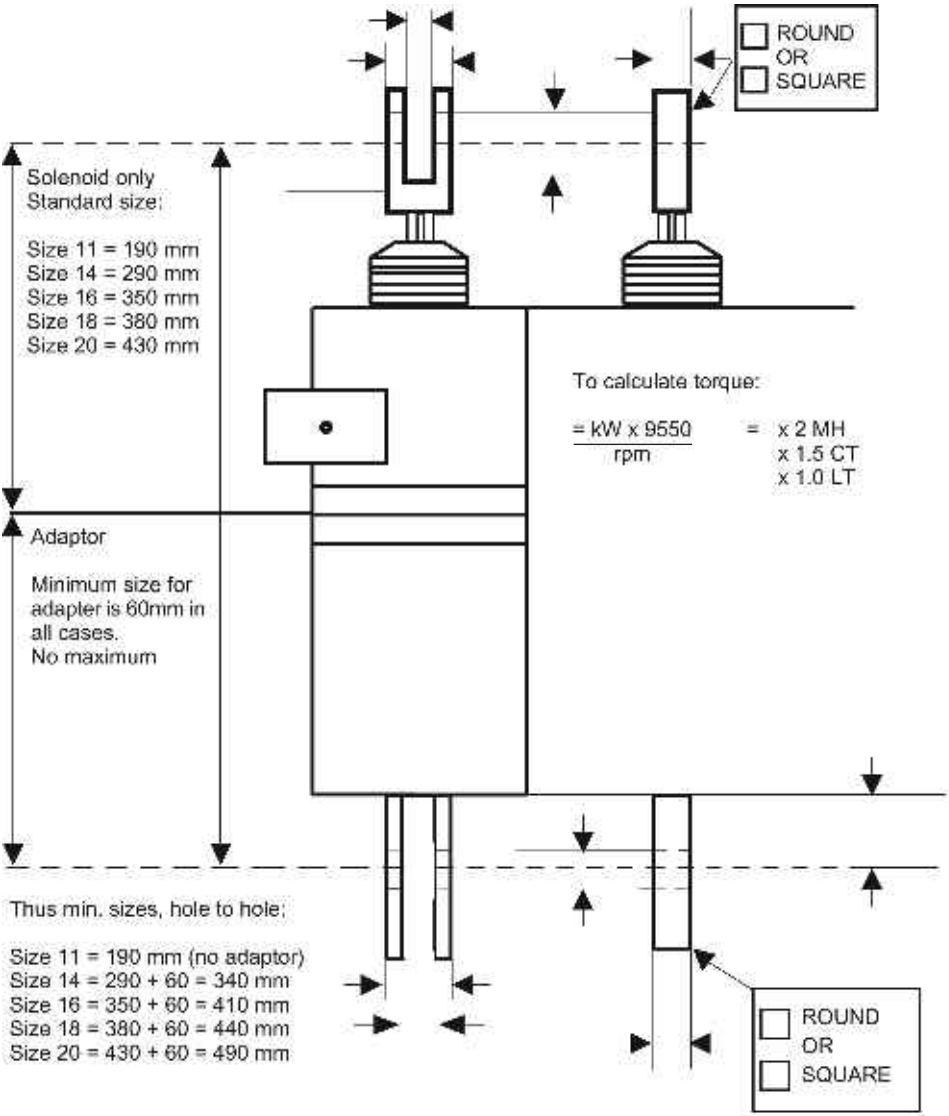
D1	Binsi	Braking Torque Nm	A1 max	A2 max	B max	C max	B1	B2	B3	D3	H	I	K	M	N	P	T	WEIGHT Kg*
160	160-14	55-230	145	385	160	400	66	55	90	12	130	55	120	70	75	8	78	22
200	200-14	85-400	180	430	160	475	75	70	80	14	160	55	145	90	85	10	105	36
250	250-14	100-850	210	485	160	510	130	90	110	18	190	65	180	80	119	10	140	51
315	315-14	75-1050	260	625	160	620	165	110	127	18	230	80	220	100	140	10	151	74
	315-16	90-1700	260	645	175	620	165	110	127	18	230	80	220	100	140	10	151	87
400	400-14	100-1100	322	760	160	710	175	140	160	22	280	100	270	120	178	12	190	119
	400-16	100-1800	322	770	180	710	175	140	160	22	280	100	270	120	178	12	190	130
	400-18	125-2750	322	780	200	710	175	140	160	22	280	100	270	120	178	12	190	139
500	500-14	200-1400	395	845	200	787	220	184	190	22	340	130	325	150	205	16	235	177
	500-16	200-2200	395	855	200	787	220	184	190	22	340	130	325	150	205	16	235	190
	500-18	200-3400	395	865	200	787	220	184	190	22	340	130	325	150	205	16	235	197
	500-20	200-5400	395	875	220	787	220	184	190	22	340	130	325	150	205	16	235	220

**** Excluding actuator.***

Single acting Actuator Type: 41054 ... E with Mounting Flange & Terminal box

Size	Max stroke	More than 4 operations per second						4 operations per second					
		Force	Mag Stroke Time	Return Time		Input Power		Mag	Stroke Time	Return Time		Input Power	
				DC Switched	AC Switched		Type 41054			DC Switched	AC Switched		Type 41054
S mm	FN	t1 ms	T2 ms	t2 ms	P20 W	P20 WA	fN	Ti ms	t2 ms	t2 ms	P20 W	P20 WA	
14	50	250	600	180	500	160	215	300	500	160	425	260	375
16	60	340	650	210	-	235	-	440	550	190	-	380	-
18	65	500	770	260	-	270	-	650	630	230	-	450	-
20	70	750	850	320	-	360	-	1000	700	280	-	615	-

11.3 INFO FOR REPLACEMENT OF THRUSTER



Voltage: _____ Motor Kw: _____

Brake Torque: _____ Motor RPM: _____

Brake Drum OD: _____ Drum Coupling: _____

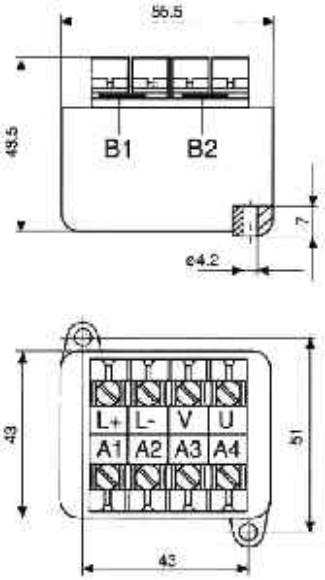
11.4 RECTIFIERS

Type 32 173 50 C
Two Phase Recitifer
with Force Voltage feature
Protection to DIN 40 050: IP 00

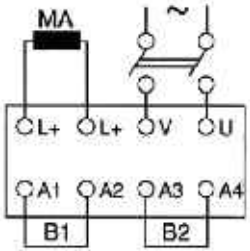
Binsi Rectifer:

525V = 32 173 50 E28
380V = 32 173 50 E20

Dimensions (mm)

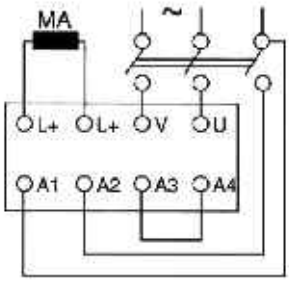


Connection Diagrams



For Normal Field Decay

MA = Equipt. Operating Coil
B1 = Bridge

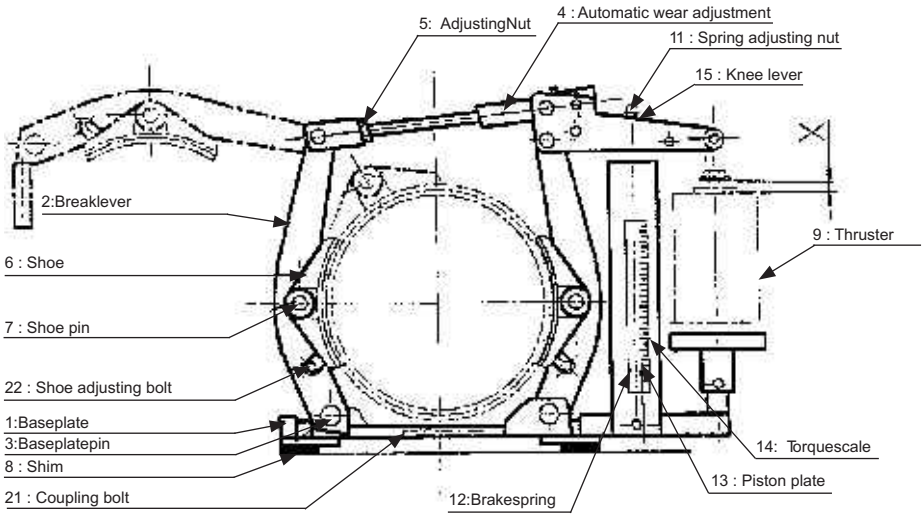


For Fast Field Decay

11.5 BINSI DRUM BRAKE
MOUNTING, ADJUSTMENT & MAINTENANCE

1. Installation

- Remove base plate pin (3), swing arm (2) upwards and push brake over the brake drumshaft.
  For reinstallation of brake arm, insert the coupling bolt (21) of the synchronous lifting mechanism again into the bore of the brake arm, mount the base plate pin (3) again and secure it via circlip.
- (De-energise the brake and) adjust it towards sides and height so that the brake drum axis is in the middle between the brake and shoes (6) and that the brake drum protrudes uniformly at both sides of the brake shoes.
- Underlay the base plate (1) with suitable shims and tighten it with screws at the connecting construction.



Dimension'X'

Brake Drum	Dim 'X (mm)	Brake Drum	Dim 'X (mm)
160 - 14	10	400 - 14	20
200 - 14	15	400 - 16	20
250 - 14	15	400 - 18	20
315 - 14	20	500 - 16	20
315 - 16	20	500 - 18	25
		500 - 20	30

2. Adjustment

2.1 Braking torque

- De-energise brake.
- By turning the spring adjustment nut (11), pretension the brake spring (12) unit the upperedge of he piston plate (13) shows the required value on the braking torque scale(14).

2.2 Lifting gap

- Engage brake, i.e. de-energise lifting device,
- Lift the rubber shroud covering the top of the solenoid, exposing the top of the lift - ing rod and the locking washer.
- Y turning the connecting rod at the nut (5) adjust the reserve stroke (X) of approx.

  'X' must be checked due to shoe wear and adjustment on connecting rod.
  Refer to table for dimension (X)

- Energise lifting devices
- The gap between the rake shoes and the drum (shoe clearance gap Y) should be 0,3 mm. Check using feeler gauge.
- The shoe clearance gap must be uniform and the same size at both shoes, if not, the brake has to be adjusted again.

3. Maintenance

3.1 Control of the brake lining wear

The reserve stroke at the lifting device (X) decreases with increasing lining wear and must therefore be regularly controlled and readjusted.
If the reserve stroke at the lifting device has decreased to the half of the desired value, the brake must be readjusted as described under 2,2,

3.2 Replacement of the brake shoes

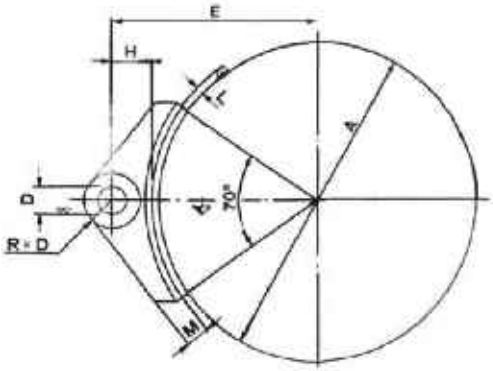
When reaching the minimum lining thickness of approx. 3 to 5 mm, the worn-out brake linings must be replaced. For this purose, the brake must not be dismantled if the following instructions are adhered to:

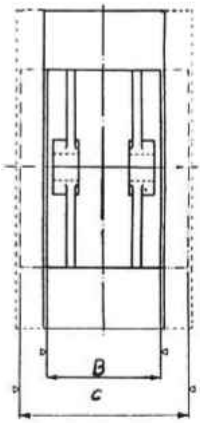
- Energise Lifting Device.
- Release brake shoe pin (7) after removing the cotter pin/circlips and pivot the brake shoe (6) out upwards.
- Open the brake by turning at the nut (5) of the connecting rod so that the new brake shoe can be installed in reverse sequence.
- Readjust lifting gap as per item 2.2.
- Control adjustment of braking torque (item 2.1) and correct it if necessary.

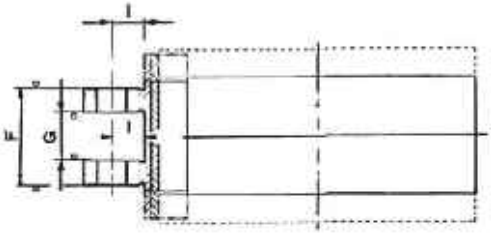
Attention

Brakes with new brake lining need a running process in order to get an adequate contact pattern of the friction surface and to reach the full braking torque. The braking effect can be reduced in this phase and an increased wear of brake lining can occur.

11.6 BRAKE SHOES





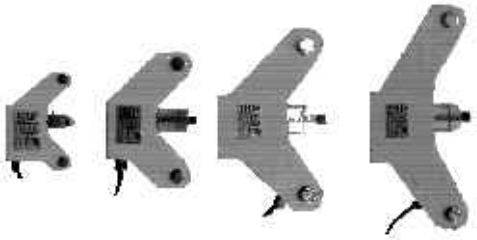


Size	A	B	C	D D10	E	F -Q2	G -Q2	H	I	L	M Max	Mass Kg	
160	160	55	85	16	115	52	28	29	23	6	13	0,65	0,80
200	200	70	105	20	140	65	35	32	24	8	17	1,15	1,45
250	250	90	135	25	170	80	40	37	29	8	22	2,15	2,60
315	315	110	165	30	212	100	50	44,5	34,5	10	25	3,90	4,80
400	400	140	210	35	260	125	62	50	40	10	30	6,00	7,45
500	500	180	270	40	320	160	80	58	46	12	33	10,6	13,3
630	630	225	335	45	390	200	100	63	51	12	38	17,6	21,7
710	710	225	380	50	440	224	112	70	51	15	40	24,5	31,2

Siteeco Brake Shoes are manufactured according to DIN 15435. They are cast from Lm25 aluminium Alloy, which gives them durability and makes them easy to handle due to their lightweight. The mounting holes are steel bushed to give them a long life.

The brake linings are made from Rolform Ferodo type HG1 with a friction coefficient of 0.4.

12.1 CRANE LOAD LIMITER SWITCH



MODEL				
1800	3500	8000	800F	18000F

MODEL REF AND LOAD RANGE KGS	ROPE RANGE	LENGTH A mm	HEIGHT B mm	WIDTH M mm
1800	4-16	150	115	42
3500	5-20	220	140	65
4200	5-22	220	140	65
8000	14-24	310	175	90
8000F	25-32	410	180	85
12000F	25-32	410	180	85
18000F	25-50	435	190	120

FEATURES

1800-8000 Aluminium cast and tempered housing, with wear parts manufactured from high tensile steel

8000F-18000F Fabricated steel housing, with wear parts manufactured from high tensile steel. Housings are powder coated and steel components cadmium plated for corrosion resistance.
Load springs are manufactured to DIN 2092 and DIN 2093 with the housing components precision machined to ensure consistent repeatability to calibrated settings. The construction has been tested to 4 times the load rating without distortion to the assembly.

ELECTRICS Contactor block conforms to Ip66

CALIBRATION The overload protector can be supplied either precalibrated or set to load on site, by qualified personnel.

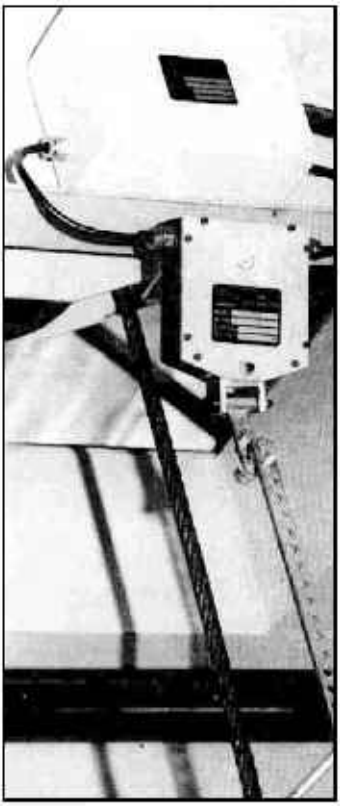
ON INSTALLATION IT IS IMPORTANT TO TORQUE THE ROPE CLAMP BOLTS TO THE SETTING SPECIFIED ON THE NAMEPLATE

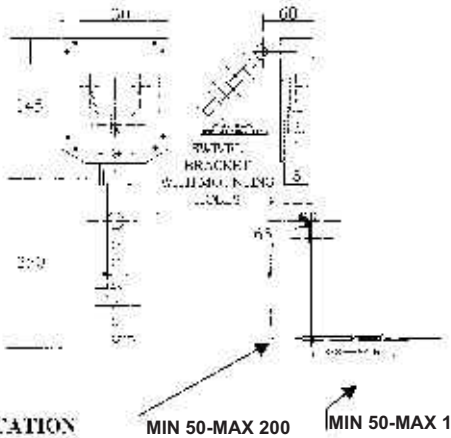
SELECTION OF THE OVERLOAD PROTECTOR
Information required for the selection of the correct unit:
1) SAFE WORKING LOAD OF CRANE
2) NUMBER OF ROPE FALLS
3) DIAMETER OF ROPE
4) TYPE OF ROPE - STANDARD OR NON SPIN
5) GENERAL-EXCESSIVE WEIGHT ON HOOK CONFIGURATION

TRANSMITTER AND RECEIVER UNITS CAN BE FITTED FOR SINGLE FALL AND SPECIAL APPLICATIONS

OVERLOAD LIMITERS ALSO AVAILABLE FOR ELECTRIC CHAIN HOISTS

12.2 SIDE PULLING PREVENTION DEVICE





SPECIFICATION

MATERIALS

Steel used on BS4360 Grade 43A

PAINTING

The device is degreased and pickled to remove mill scale, then phosphated to defence specification DEF-29-A (SA603). Finally coated with sintered epoxy powder and cured at 200°C for 30 minutes to a dry film thickness - 150 microns.

PLATING

Cadmium plated parts are yellow dipped to give good appearance and protection against rust.

FIXING

Can be fitted to any crane or hoist either on fixed or moving rope

SIZE

A very compact unit normally fitted above the moving range of the bottom block and not interfering with the range of lift.

ELECTRICAL PANEL

Electrical switchgear is housed in compact robust panel to Ip55. The box is moulded from self-extinguishing PVC. Panel size is 220mmx 167mm x 105mm.

OPERATION

All cranes and hoists are designed for vertical lift only. The SIDE PULLING PREVENTION DEVICE (S.P.P.D.) ensures that this design feature is adhered to.

If side pulling is attempted with S.P.P.D. fitted the direction of side pull and the hoisting motion will be stopped. The operator now has to move the crane in the opposite direction to the side pull until the load is positioned directly under the crane hook. When this occurs, all the motions will once again be operational. The operator is therefore forced to use the crane or hoist in the manner for which it was designed i.e. verticallifting. The electrical panel is provided with time delays so as to prevent themo - tions being interrupted when crane is travelling without load.

12.3 ABS-E ANTI COLLISION DEVICE

THE MUST HAVE SOLUTION WHEN USING MULTIPLE CRANES

FEATURES:

- **Rope Change Function**
- **Display External Trips ie Final Limit / Load Limit**
- **Measure and display distance in mm**
- **Display Hook speed**
- **Detect Overspeed**
- **RS Connector available**

TECHNICAL SPECIFICATIONS:

- **Temperature:85°C**
- **Speed:3600 Rpm**
- **Supply Voltage:12VDC / 300mA**
- **Revolutions:4096:1**
- **Switching: 12A/250VAC - 8A/30VDC**
- **Shaft Load:<2.2Kg**

The ABS-E Anti Collision device was designed with the intention to assist in the protection of users and operators of overhead cranes against the collision risks between two or more cranes, utilizing the same crane bay (One unit per crane will be sufficient for communication between all cranes in the bay). When there is the risk of a collision, the ABS-E device takes control over the crane's motions using a three step prevention process. The first step is sounding the alarm. The second step is slowing the crane down and the third step is to stop the crane in order to avoid the collision

What makes this unit unique is the fact that it's easy to install, easy to set up and has the ability to be locked via a password, allowing only the responsible technician to make any adjustments. The setup process consists of a set of variables, unique to each installation that is programmed via the 3 button keypad.

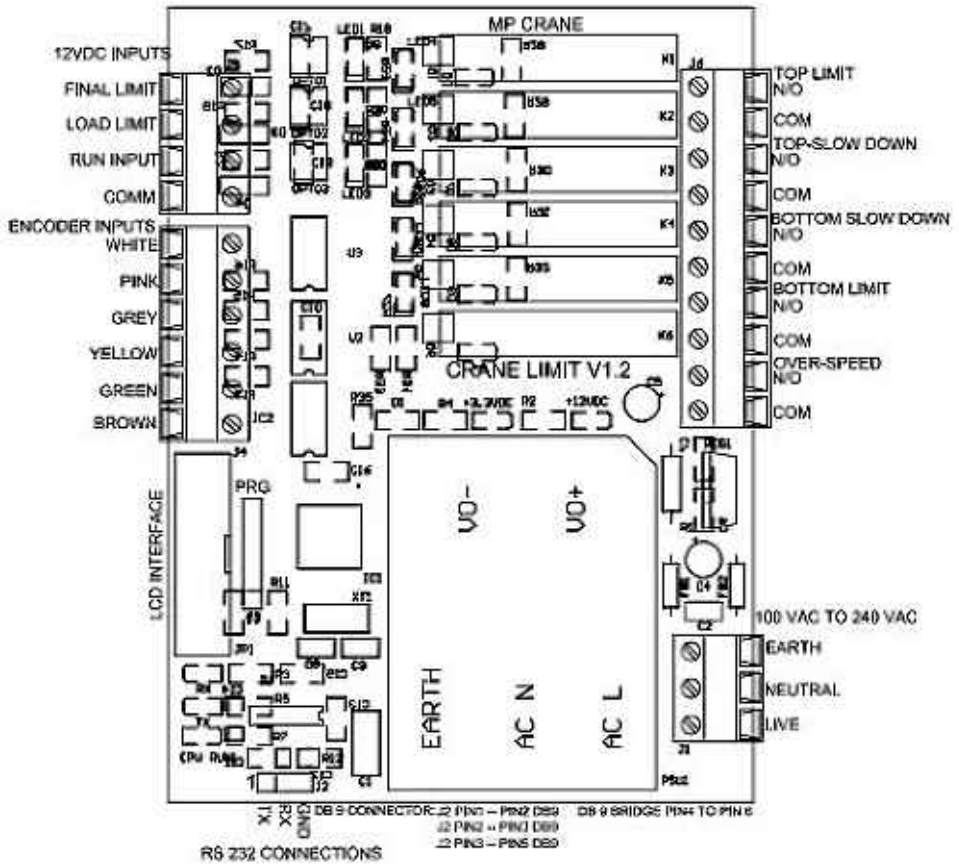
Programming of the unit consists of inserting answers to the questions displayed on the LCD display and neglecting the answers not relevant to your application.

The unit's top and bottom housings are machined from solid aluminium to ensure strength, durability and protection from the environment. There is an absolute encoder installed inside the bottom part that is connected to the electronic PCB. The unit is fitted with an additional backup battery to allow for communication with other cranes while the crane is locked out or isolated for maintenance. Although the unit is fitted with an absolute encoder, all settings will be kept in the units memory during power failures and normal operation will resume when the power is restored.

The bearing housings are machined into the bottom part and houses two bearings, secured by a circlip. The drive shaft is manufactured from stainless steel. The one end is connected to the encoder inside the bottom part and the drive end of the shaft visible on the outside of the bottom part is equipped with a failsafe rigid type coupling.

The unit is fitted with a heavy duty noise tolerant RF Transceiver with a range of 600 meters. The unit has a 32 bit unique ESN in every module (4 billion different combinations available) allowing for an unlimited number of modules to communicate with each other without any interference.

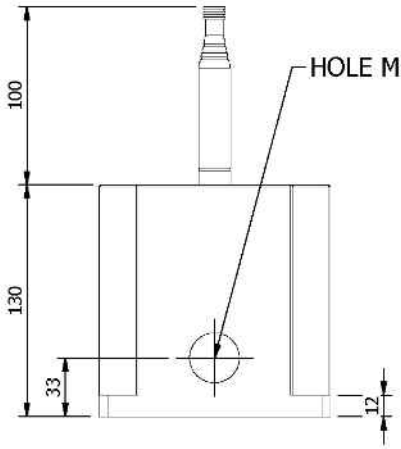
12.3 ABS-E ANTI COLLISION DEVICE

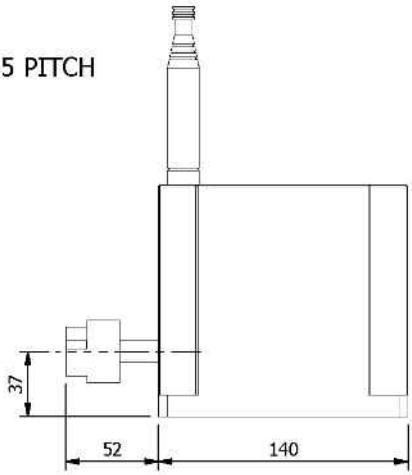


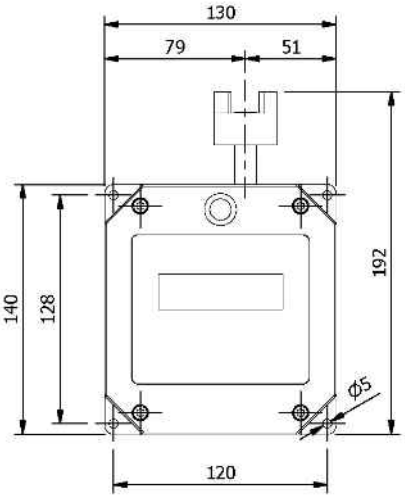
PARTS LIST:

1. Bottom part
2. Shaft
3. Bearing Set
4. Coupling
5. Circlip
6. Encoder
7. 8x M3 Cap Screws
8. 4x M5 Stainless Steel Cap Screws
9. Size 0 Compression Gland
10. Control Card
11. Ribbon Cable
12. Top Part
13. Display Board (LCD)
14. Key Pad
15. RF Transeiver

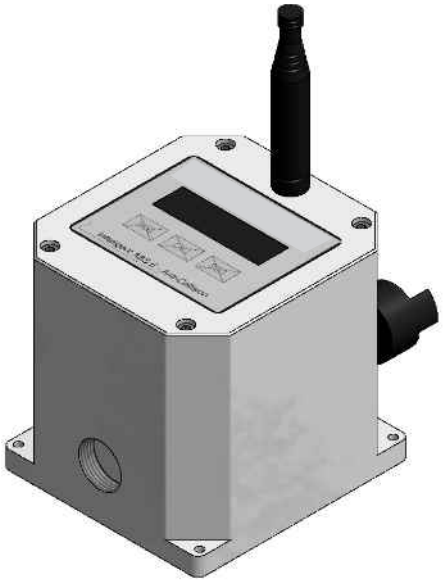
12.3 ABS-E ROTARY LIMIT SWITCH







TOP VIEW



ANTI-COLLISION

12.4 ABS-E ROTARY LIMIT SWITCH

A MUST HAVE SOLUTION FOR ALL HOT METAL CRANES

FEATURES:

- **Rope Change Function**
- **Display External Trips ie Final Limit / Load Limit**
- **Measure and display distance in mm**
- **Display Hook speed**
- **Detect Overspeed**
- **RS Connector available**

TECHNICAL SPECIFICATIONS:

- **Temperature:85°C**
- **Speed:3600 Rpm**
- **Supply Voltage:100-240VAC Input**
- **Revolutions:4096:1**
- **Switching: 6A / 250VAC**
- **Shaft Load:<2.2Kg**

The ABS-E rotary crane limit was designed to be the go to product in overhead crane and hoist safety and protection. Experience with sub standard products and legacy technology was the driving force behind the creation of the ABS-E limit.

What makes this unit unique is the fact that is very consumer friendly and easy to set up. It works on the premise of answering a few simple questions or performing simple actions, where the unit will then do the necessary calculations and programming.

The unit can be used as a top and bottom limit in hoisting applications, with a slowdown and stop function, as well as a limiting device on the long and cross travel motions of a crane or hoist, again with slowdown and stop functionality.

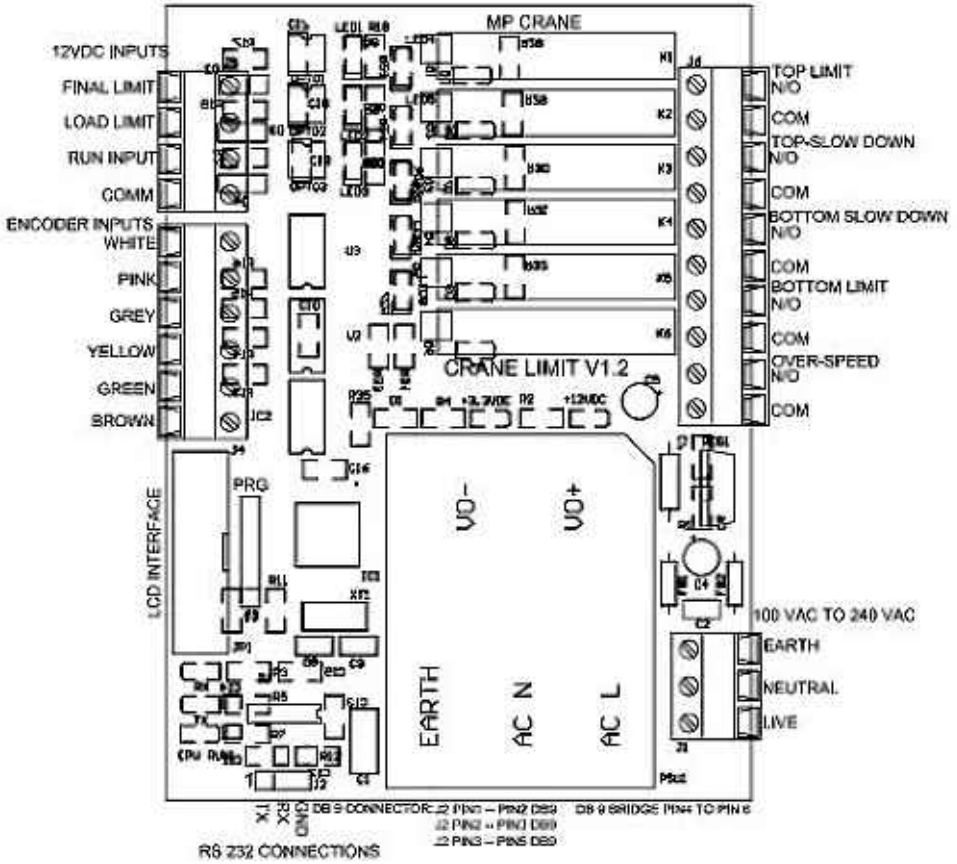
After extensive research and in-house testing, various test installations were done at different sites and under different operational circumstances where various external and environmental factors came in to play. The limit exceeded all expectations and was praised for its sound structural design and easy installation and setup process.

The unit's top and bottom housings are machined from solid aluminium to ensure strength, durability and protection from the environment. There is an absolute encoder installed inside the bottom part that is connected to the electronic PCB. The bearing housings are machined into the bottom part and houses two bearings, secured by a circlip.

The drive shaft is manufactured from stainless steel. The one end is connected to the encoder inside the bottom part and the drive end of the shaft visible on the outside of the bottom part is equipped with a failsafe rigid type coupling.

The top part of the unit is fitted with a liquid crystal display that consists of a three button keypad used for the setup process.

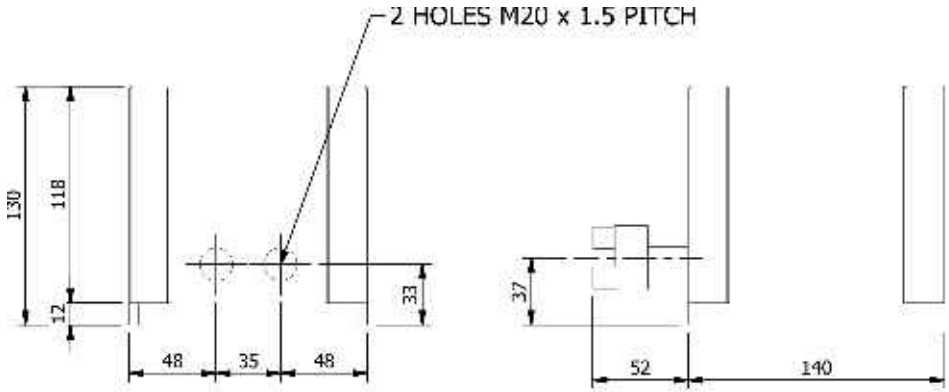
12.4 ABS-E ROTARY LIMIT SWITCH

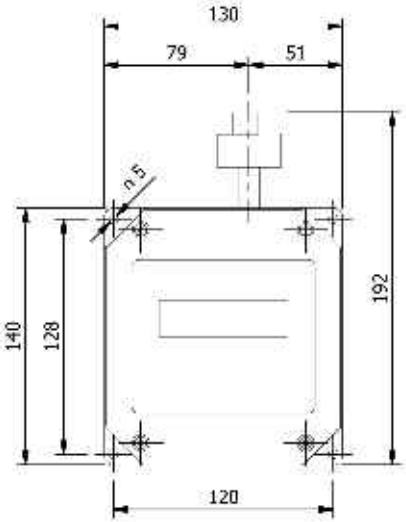


PARTS LIST:

1. Bottom part
2. Shaft
3. Bearing Set
4. Coupling
5. Circlip
6. Encoder
7. 8x M3 Cap Screws
8. 4x M5 Stainless Steel Cap Screws
9. Size 0 Compression Gland
10. Control Card
11. Ribbon Cable
12. Top Part
13. Display Board (LCD)
14. Key Pad
15. RF Transeiver

12.4 ABS-E ROTARY LIMIT SWITCH





13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

TRANSMITTER:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Lower Section 	**BE 021-00051**	THE-EC/40 transmitter housing lower section with battery compartment
Transmitter Upper Section 	**BE 021-00081**	THE-EC/40 transmitter housing upper section with switches and joysticks for 3 motors
Transmitter Front Section	**VK NUMBER**	THE-EC/40 transmitter housing upper section without switches and joysticks. With upper label, customer specific engraved & drilled.
Transmitter Front Section 	**MT 009-00397**	THE-EC/40 transmitter housing upper section without switches, joysticks, engraving and drilling.
Key Switch 	**LE 001-00001**	Key switch with cap.
Key Cap 	**BE 022-00067**	Spare key with black cap. Locking code: ED 00001
Mushroom Head Switch 	**LE 001-00028**	Mushroom Head STOP switch with sealing Ø 16mm. including contact block and Mushroom Head switch.

13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

TRANSMITTER:		
PART:	PART NUMBER:	DESCRIPTION:
Mushroom Head Switch 	**BT 055-00106**	Mushroom Head STOP switch with sealing Ø 22,5mm.
Push Button 	**LE 001-00005**	Push Button round; 22,5mm with contact block
Push Button 	**LE 001-00005**	Push Button, square with Frame
Selector Switch 	**LE 001-00011**	Selector Switch: 22,5mm T-R-T
	LE 001-00020	Selector Switch: 22,5mm R-R-R
	LE 001-00012	Selector Switch: 22,5mm R-R
		*** R = Maintained / T = Momentary**
Rotary Switch 	**BT 050-00021**	Rotary Switch 12 Position maintained Locking: 2-pol.
Switch Button 	**BT 059-00029**	Switch Button for BT 050-00021
Transmitter RF-Unit	**VK NUMBER**	Transmitter-RF
Transmitter RF-Unit	**VK NUMBER**	EAS-Transmitter-RF

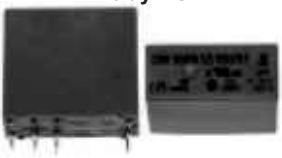
13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

TRANSMITTER:		
PART:	PART NUMBER:	DESCRIPTION:
Joystick 	**LE 001-00007**	Dual axis Joystick 2 x 6-0-6, analogue V14
Joystick 	**BT 052-00120**	Dual axis Joystick 2 x 6-0-6, analogue V14 with Deadman Contact and Encoder
Rubber Boot 	**BT 052-00107**	Rubber Boot for Joystick V14 and V20
VARIO-Board 	**BE 001-0214**	EC/40 VARIO-Board
Back Pack Board 	**BE 001-02139**	EC/40 VARIO-back pack board
LED Display Board 	**BE 001-02114**	LED Display Board
LED Display Label 	**HT 002-00208**	for LED Window 27x42x0,6mm transparent foil Self Adhesive

13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

RECEIVER:		
PART:	PART NUMBER:	DESCRIPTION:
Receiver-RF-Unit 	**VK NUMBER**	Receiver-RF-Unit
Receiver-RF-Unit 	**VK NUMBER**	EAS Receiver-RF-Unit
Receiver Motherboard 	**BE 001-02320**	EC/40 Motherboard
Processor Board 	**BE 001-02079**	EC/40 Processor Board
Relay Board 	**BE 001-02389**	EC/48 relay board VSL socketed
Relay Board	**BE 001-02081**	Relay Board Unsocketed
Relay KO 	**BE 041-00075**	Relay KO DC24V Make break contacts mechanical interlocked

13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

RECEIVER:		
PART:	PART NUMBER:	DESCRIPTION:
Relay K1 - K16 	**BT 041-00076**	1-Pole 24VDC
HAN64 Inset 	**BE 003-00247**	Fully wired potential interlocked with inset 0001 and 3 relay boards
HAN64 Inset 	**BE 003-00250**	Fully wired potential interlocked with inset 0002 and 2 relay boards
HAN64 Flange 	**BE 011-00034**	Flange Standard for HAN 64
Shock Mount 	**MT 006-00048**	Shock absorber for receiver BN 781072

13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Railing 	**LE 001-000024**	Transmitter Railing with screws
Waist Belt 	**MT 006-00199**	Waist belt for transmitter TH-ZB/TG-EC-002
Body Harness 	**BE 023-00062**	Body harness for transmitter TH-ZB/TS-EC-001
Shoulder Belt 	**MT 006-00224**	Shoulder Harness for transmitter TH-ZB/TG-001
Inscription Label	**VK NUMBER**	Upper Plate Customised Label
Antenna 	**BT 087-00034**	Multiflex Antenna c/w TNC Plug 70cm Range TH-ZB/AN-07-MF-TNC
Antenna 	**BT 087-00035**	Multiflex Antenna c/w BNC Plug 70cm Range TH-ZB/AN-07-MF-BNC

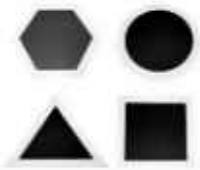
13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Antenna 	**BT 087-00011**	External Whip Antenna for receiver 70cm Range TH-ZB/AN-07-S
Connection Plug 	**BT 076-00022**	Connection Plug for External Whip Antenna, RF cable RG58/BNC for BT 087-00011
Antenna Cable 	**BE 004-00014**	Coaxial Cable for Antenna 8mm RF Cable RG58/BNC TH-ZB/AK-58-08-BNC
Antenna Cable 	**BT 076-00073**	Coaxial Cable for Antenna 8mm RF Cable RG58/TNC TH-ZB/AK-58-05-TNC
Battery 	**BT 923-00044**	NiCd Battery 0,6Ah RED TH-ZB/NC-06-001
Battery 	**BT 923-00075**	NiCd Battery 1,6Ah GREY TH-ZB/NC-16-001

13. RADIO REMOTE CONTROLLERS

13.1 SPARE PARTS LIST - TH-EC/40-02 UNITS

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Battery Charger 	**BE 023-00065**	Standard Battery Charger 230V 50Hz TH-ZB/LG-06-002
Battery Compartment 	**BE 023-00041**	Compartment for Battery
Battery Charger 	**BE 23-00078**	Process Controlled Charger 230V AC Input Power 0,6 - 1,6Ah TH-ZB/PLG-16-003
	BE 23-00079	Process Controlled Charger 115V AC Input Power 0,6 - 1,6Ah TH-ZB/PLG-16-004
Direction Signs 	**HT 002-00197**	1 Set of 4 different Direction Signs Plastic Material TH-OS/40-1
Direction Signs 	**HT 002-00315**	1 Set of 4 different Direction Labels Self-adhesive Foil TH-OS/40-02

13. RADIO REMOTE CONTROLLERS

13.2 EXCALIBUR (6-8 Push Buttons) OVERVIEW

Handheld radio remote control transmitter in an innovative, ergonomic housing with advanced dual-processor technology for increased safety. Globally deployable for cranes, lifting equipment and machines.

FEATURES

- High safety-class through redundant hardware and software architecture
- Approvals and frequencies for worldwide deployment
- System coniguration via external TransKey
- Customized layout
- 6 or 8 2-step push buttons
- Compatible with multiple receivers
- Compact, ergonomic design
- Approvals and frequencies for many countries
- Sophisticated and proven safety concept for complying with EN ISO 13849-1
- Customer-speciic programming possible
- Can be matched with different receivers
- One-piece elastic mat with integrated push buttons and shock protection
- Impact-resistant plastic housing

TECHNICAL DATA AND SPECIFICATIONS

RF		
Frequency range	335 MHz 418 MHz 433 MHz 447 MHz 869 MHz 915 MHz	(< 1 mW ERP) (< 10 mW ERP) (< 10 mW ERP) (< 10 mW ERP) (< 5 mW ERP) (FCC part 15)
Transmission speed	4.8 to 20 kbit/s	
Transmitter power	< 10 mW (within the permitted limits)	
Receiver sensitivity	-107 dBm	
Modulation	FM	
RF channel spacing	12.5 kHz; 25 kHz and others	
Antenna	Internal	

MECHANICAL DATA	
Weight	Approx. 290 g
Dimensions (L x W x H)	180 x 64 x 39 mm
Housing	SB plastic, standard colour silver/red, integrated fall protection
Operating temperature	-20° to +60° C

ELECTRONIC DATA	
Digital circuitry	Dual-processor technology
System addresses	24 bits = 16 million addresses
Power safe mode	Automatic shutdown (conigurable: 0 – 30 minutes)
Power supply	Rechargeable battery, NiMH, 3.6 V / 1500 mAh
Autonomy	> 12 h at 100% uninterupted use

13. RADIO REMOTE CONTROLLERS

13.2 EXCALIBUR (6-8 Push Buttons) OVERVIEW

STANDARDS COMPLIANCE	
Protection class	IP 65
Safety standard	EN ISO 13849-1 Performance Level d EN ISO 13849-2

OPERATION and INDICATION	
Actuators ct24-ET/6 Actuators ct24-ET/8	6 push buttons (2-step) 8 push buttons (2-step)
TransKey™	System coniguration, address and RF channel
Indication	5 Multi-LED, status, low voltage
Accoustic indication	Low voltage indication

ACCESSORIES	
Batteries	2 x Re-chargeable batteries 3.6 V / 1500 mAh
Battery charger	Processor-controlled charger incl. adapter cradle, changing system on the primary side for international use
Labelling	Self-adhesive marking labels

13. RADIO REMOTE CONTROLLERS

13.2.1 EXCALIBUR SPARE PARTS LIST

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Housing 	**BE 024-00011**	Transmitter Housing Upper section for Transmitter with **6 push buttons**
Transmitter Housing 	**BE 024-00012**	Transmitter Housing Upper section for Transmitter with **8 push buttons**
Transmitter Housing 	**BE 024-00013**	Transmitter Housing Upper section for Transmitter with **10 push buttons**
Transmitter Housing 	**BE 024-00014**	Transmitter Housing Upper section for Transmitter with **12 push buttons**

13. RADIO REMOTE CONTROLLERS

13.2.1 EXCALIBUR SPARE PARTS LIST

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Housing 	**BE 024-00015**	Transmitter Housing lower section for transmitter with **6/8 push buttons**
Transmitter Housing 	**BE 023-00041**	Transmitter Housing lower section for transmitter with **10/12 push buttons**
Keyboard Cover 	**MT 006-00426**	Keyboard Cover for transmitter with **6/8 push buttons without** arrows
Keyboard Cover 	**MT 006-00433**	Keyboard Cover for transmitter with **6/8 push buttons with** arrows
Keyboard Cover 	**MT 006-00427**	Keyboard Cover for transmitter with **10/12 push buttons without** arrows
Keyboard Cover 	**MT 006-00434**	Keyboard Cover for transmitter with **10/12 push buttons with** arrows
Transmitter Board 	**BE 001-02624**	Transmitter Board **6/8 push buttons** including Keypad

13. RADIO REMOTE CONTROLLERS

13.2.1 EXCALIBUR SPARE PARTS LIST

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Board 	**BE 001-02625**	Transmitter Board **10/12 push buttons** including Keypad
RF Module 	**BE 001-02554**	RF Module without RF Connector **869 MHz**
RF Module 	**BE 001-02600**	RF Module without RF Connector **418 MHz**
RF Module 	**BE 001-02602**	RF Module without RF Connector **447 MHz**
RF Module 	**BE 001-02623**	RF Module without RF Connector **433 MHz**
Housing Screw 	**MT 003-00031**	Housing Screws TORX 30x12

13. RADIO REMOTE CONTROLLERS

13.2.1 EXCALIBUR SPARE PARTS LIST

ACCESSORIES:		
PART:	PART NUMBER:	DESCRIPTION:
TransKey 	**BE 005-00014**	TransKey Pair with address code **VK number required!**
Battery 	**BE 923-00116**	Battery NiMH 3,6 V, 1600 mAh for Excalibur Transmitter
Charger Cradle 	**BE 023-00110**	Charger Cradle for Excalibur Battery
Battery Charger 	**BT 097-00352**	Standard Battery Charger for LRC & Excalibur incl. power cord with “EU”-main plug
Belt Strap 	**MT 006-00432**	Belt Strap for Excalibur Transmitter
Labeling Sheet 	**HT 002-00375**	Standard Labeling Sheet 1 for Transmitter Housing upper section

13. RADIO REMOTE CONTROLLERS

13.3 LRC-L1 OVERVIEW

Highly versatile transmitter unit for cranes, lifting equipment and machines. Advanced dual-processor electronics protected in an ergonomic and robust housing for demanding radio remote control solutions in industrial environments.

FEATURES

- For control of motors with digital or analogue drive systems
- Displays important feedback information onto a graphic LCD or via status LEDs
- High safety-class through redundant hardware and software architecture
- Approvals and frequencies for worldwide deployment
- Housing made of high impact-resistant polycarbonate resin
- Compatible with a number of receiver units, featuring various interface options
- Tilt switch option as operator safety feature
- System coniguration via easy accessible TransKey (RFID)
- Tandem and multi-transmitter/ -receiver operation

TECHNICAL DATA AND SPECIFICATIONS

RF		
Frequency range	335 MHz 418 MHz 433 MHz 447 MHz 869 MHz 915 MHz	(< 1 mW ERP) (< 10 mW ERP) (< 10 mW ERP) (< 10 mW ERP) (< 5 mW ERP) (FCC part 15)
Transmission speed	4.8 to 20 kbit/s	
Transmitter power	< 10 mW (within the permitted limits)	
Receiver sensitivity	-107 dBm	
Modulation	FM	
RF channel spacing	12.5 kHz; 25 kHz and others	
Antenna	Internal	

MECHANICAL DATA	
Weight	Approx. 3.5 lbs (1.6kg)
Dimensions (L x W x H)	320 x 255 x 185 mm
Housing	*Lexan EXL® polycarbonate resin, standard color red/grey
Operating temperature	-20° to +60° C

ELECTRONIC DATA	
Commands	Up to 55 digital commands + STOP Up to 8 analogue commands
Digital circuitry	Dual-processor technology
System addresses	24 bits = 16 million addresses
Energy-saving Mode	Automatic shutdown (conigurable: 0 – 30 minutes)
Power supply	Rechargeable battery, NiMH, 4.8 V / 1600 mAh
Autonomy	> 12 h at 100% uninterupted use

* Trademark of SABIC Innovative Plastics IP BV

13. RADIO REMOTE CONTROLLERS

13.3 LRC-L1 OVERVIEW

STANDARDS COMPLIANCE	
Protection class	IP 65
Safety standard	EN ISO 13849-1 Performance Level d

ACCESSORIES	
Batteries	2 x Re-chargeable batteries NiMH 4.8 V / 1600 mAh
Battery charger	Processor-controlled charger incl. adapter cradle 100 - 240 V AC, 50 - 60 Hz

OPERATION and INDICATION	
Layout	Customer-specific, up to 3 joy-sticks, maximum 6 steps
TransKey™	System coniguration, address and RF channel
Indication	Status-LED = 4 Multi-LEDs
Buzzer	Low voltage indication
Graphic LCD	128 x 64 dots, backlight white (graphic LCD optional)

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Housing 	**BE 024-00102**	LRC-M1 Transmitter Housing lower section with battery compartment
Transmitter Housing 	**BE 024-00109**	LRC-L1 Transmitter Housing lower section with battery compartment
Transmitter Housing	**VK NUMBER**	Transmitter Housing upper section **without display** without operating elements customer-specific drilled and labeled
Transmitter Housing	**VK NUMBER**	Transmitter Housing upper section **with display** without operating elements customer-specific drilled and labeled
Key Switch & Key 	**LE 001-00053**	Key Switch with Key **Comprises:** BT 055-00282 key BT 055-00280 key switch BT 055-00310 contact block

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Spare Key 	**BT 055-00282**	Spare key with black cap for BT 055-00280
Push Button 	**LE 001-00045**	Push Button round, 12mm incl. contact block for lateral mounting **Comprises:** BT 055-00316 Push Button BT 055-00317 Protection Cover
Push Button 	**LE 001-00046**	Push Button round, 12mm incl. contact block **Comprises:** BT 055-00313 Push Button BT 055-00314 Protection Cover
Joystick 	**LE 001-00054**	Joystick V20 incl. gasket, dual-axis
Joystick 	**LE 001-00055**	Joystick V20.1 incl. gasket, dual-axis
Knob for Joystick	**BT 052-00161**	Knob for Joystick

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Rubber Boot 	**BT 052-00171**	Rubber Boot for Joystick V20
Push Button Guard 	**MT 009-00620**	Guard for Push Button, round, suitable for LE 001-00045 for lateral mounting
Toggle Switch 	**BT 047-00063**	Toggle Switch not mechanically locked 2 pole circuitry **3 Positions:** centre position maintained 2 positions momentary
	BT 047-00066	Toggle Switch not mechanically locked 2 pole circuitry **2 Positions:** 2 positions maintained
	BT 047-00067	Toggle Switch not mechanically locked 2 pole circuitry **3 Positions:** 3 positions maintained
	BT 047-00083	Toggle Switch not mechanically locked 2 pole circuitry **2 Positions:** centre position maintained 1 position momentary
	BT 047-00084	Toggle Switch not mechanically locked 2 pole circuitry **3 Positions:** centre position maintained 2 positions momentary
	BT 047-00085	Toggle Switch not mechanically locked 2 pole circuitry **3 Positions:** centre position maintained 1 position maintained 1 position momentary

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Rubber Cap 	**BT 047-00098**	Rubber cap for toggle switch Minimum order quantity 10 pieces
Sealing Ring 	**BT 052-00043**	Sealing Ring for Toggle Switch Minimum order quantity 10 pieces
Stop Switch 	**LE 001-00037**	STOP Switch, **22 mm** **Comprises:** BT 055-00309 stop switch BT 055-00310 contact block assembly instruction
Stop Switch 	**LE 001-00028**	STOP Switch, **16 mm** **Comprises:** BT 055-00251 stop switch BT 055-00252 contact block
Rotary Selector Switch 	**LE 001-00041**	Rotary Selector Switch, 16 mm, **R-R-R** **Comprises:** BT 055-00**322** rotary selector switch BT 055-00318 contact block BT 055-00319 locking

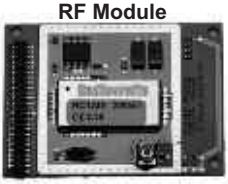
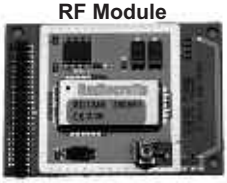
13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Rotary Selector Switch 	**LE 001-00042**	Rotary Selector Switch, 16 mm, **R-R** **Comprises:** BT 055-00**320** rotary selector switch BT 055-00318 contact block BT 055-00319 locking
	LE 001-00043	Rotary Selector Switch, 16 mm, **T-R-T** **Comprises:** BT 055-00**325** rotary selector switch BT 055-00318 contact block BT 055-00319 locking
	LE 001-00044	Rotary Selector Switch, 16 mm, **R-R-T** **Comprises:** BT 055-00**323** rotary selector switch BT 055-00318 contact block BT 055-00319 locking
	LE 001-00047	Rotary Selector Switch, 16 mm, **T-R-R** **Comprises:** BT 055-00**324** rotary selector switch BT 055-00318 contact block BT 055-00319 locking
	LE 001-00048	Rotary Selector Switch, 16 mm, **R-T** **Comprises:** BT 055-00**321** rotary selector switch BT 055-00318 contact block BT 055-00319 locking
Rotary Selector Switch 	**LE 001-00008**	Rotary Selector Switch, 16 mm, **R-R** **Comprises:** BT 055-00**307** rotary selector switch BT 055-00270 contact block
	LE 001-00014	Rotary Selector Switch, 16 mm, **T-R-T** **Comprises:** BT 055-00**311** rotary selector switch BT 055-00270 contact block
	LE 001-00016	Rotary Selector Switch, 16 mm, **R-R-R** **Comprises:** BT 055-00**308** rotary selector switch BT 055-00270 contact block
Push Button 	**LE 001-00015**	Push Button, Round, 16 mm Incl. Contact Block **Comprises:** BT 055-00312 push button with rubber cap BT 055-00270 contact block

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Board 	**BE 001-02735**	Transmitter Board
LRC Transmitter Board 	**2PCA-7625-G101**	LRC Transmitter Board for SDR RF Unit
RF Module 	**BE 001-02655**	RF Module with RF Connector **869 MHz**
RF Module 	**BE 001-02656**	RF Module with RF Connector **418 MHz**
RF Module 	**BE 001-02657**	RF Module with RF Connector **447 MHz**
RF Module 	**BE 001-02658**	RF Module with RF Connector **433 MHz**

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Antenna Board 	**BE 001-02729**	Antenna Board for Transmitter with MMCX Plug Frequency: **400-490 MHz**
	BE 001-02731	Antenna Board for Transmitter with MMCX Plug Frequency: **869-915 MHz**
LED Display 	**BE 024-00104**	LED Display Module for **LRC-M1**
LED Display 	**BE 024-00110**	LED Display Module for **LRC-L1**
LCD Display 	**BE 024-00105**	LCD Display Module for **LRC-M1**
LCD Display 	**BE 024-00111**	LCD Display Module for **LRC-L1**

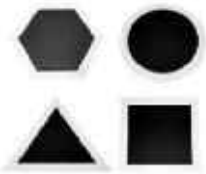
13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Transmitter Railing 	**BE 024-00106**	Railing for Transmitter Housing **LRC-M1**
	BE 024-00108	Railing for Transmitter Housing **LRC-L1**
Railing Bracket 	**MT 006-00481**	Bracket for Railing 37x30x4 mm
Inscription Label 	**System Number**	Inscription Label Customer Specific VK Number required!
Waist Belt 	**MT 006-00295**	Waist Belt for LRC / MINI Tranmitter
Body Harness 	**BE 023-00093**	Body Harness for LRC / MINI Transmitter
	BE 023-00145	Body Harness for LRC Mini Transmitter **with padded straps** (No photo!)
Transkey 	**BE 005-00014**	Transkey Pair with Address Code VK Number required!

13. RADIO REMOTE CONTROLLERS

13.3.1 LRC-L1 SPARE PARTS LIST

SPARE PARTS:		
PART:	PART NUMBER:	DESCRIPTION:
Battery 	**BE 023-00122**	
Battery 	**1BAT-7706-A201**	Battery NiMH 6 V / 2000 mAh for LRC with SDR RF Unit
Battery Charger 	**BT 097-00352**	Standard Battery Charger for LRC / Excalibur battery incl. power cord with “EU”-main plug
Charger Cradle 	**BE 023-00121**	Charger Cradle for LRC Battery
Direction Labels 	**HT 002-00197**	1 Set of 4 different Direction Labels **Plastic material**
Direction Labels 	**HT 002-00315**	1 Set of 4 different Direction Labels **Self-adhesive Foil**

About Us

Mpumalanga Crane Services, based in Middelburg Mpumalanga, has been the innovative material handling equipment leader in the province since being established in 2000, specifically in comprehensive sales and service of overhead cranes, electric chain hoists and wire rope hoists. From the start, Mpumalanga Crane Services has had a strong focus on its customers and service delivery as we started out by doing work for local small businesses and quickly attracted larger industrial clients.

We currently provide services to Eskom, Samancor, Evraz Highveld Steel, Xstrata, Vanchem and Transalloys, to name a few. The private sector also forms part of our client base as we provide services to all SME's in the surrounding region.

Mpumalanga Crane Services is the leader in providing maintenance and product solutions for all major brands of overhead material handling equipment. We work closely with our customers to create innovative solutions that drive costs down, track expected maintenance and increase your productivity.

We are also ISO9001 accredited with regards to quality management.

So whether you're looking for ways to modernize existing equipment, design a hoist or monorail system or in the market to purchase a new crane, contact us for the solutions to all your material handling needs. We are available 24 hours a day, 7 days a week.

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