

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
 BUREAU OF TRAFFIC OPERATIONS
 SUBMITTAL DATA - TRAFFIC CONTROL EQUIPMENT

BID DATE:
 TCD JOB NO. 07069

Submitted By: **TRAFFIC CONTROL DEVICES, INC.** Project No. _____
 Federal Job No. _____
 P.O. BOX 150418 County: _____
 Location: _____
 ALTAMONTE SPRINGS, FL 32715-0418 Sheet: _____
 (407)869- 5300 (Wanda Matos)

PROPOSED EQUIPMENT

ITEM NO.	QUANT.	DESCRIPTION	SPEC S.NO	FDOT CERTIFICATION NO.	APR LVL	REFERENCE	APPROVED	
							YES	NO
101-1	1 LS	Mobilization		N/A				
102-1	1 LS	Maintain Traffic Signals During Const.		N/A				
555-1-2	366 LF	Directional Bore (6" to <12")				Southwire		
		12 THHN Str Copper Blk				Omni		
		2" HDPE SDR 11						
630-1-11	30 LF	Conduit (Aboveground)				Wheatland		
		2 Galv Conduit				Wheatland		
		2 Galv Couplings				Wheatland		
		2 Galv 90 Elbow				Bridgeport		
		2 Gr Bush				Bridgeport		
		2 2H Galv Strap				Bridgeport		
		2" Alum Weather Head						
630-1-12	1636 LF	Conduit (Underground)				Carlton		
		2 SCH 40 PVC Conduit 20ft				Carlton		
		2 PVC 90Deg Elbow				Carlton		
		2 PVC Couplings				Carlton		
		Cement PVC				Carlton		
		2" HDPE SDR 11				Omni		
632-7-1	1 INT	Signal Cable				Independent		
		Signal Cable 16C 14GA				Preformed Line		
		Lashing Rod Orange						
634-4113	1 INT	Span Wire Assembly (2 Wire)(Box)				Joslyn		
		3/4" Sq. Nut				Joslyn		
		3/4" Sq. Washer				Joslyn		
		3/4" x 26" Oval Eye Bolt				Joslyn		
		3/4" x 20" Oval Eye Bolt				Joslyn		
		3/8" Span Wire				FWC		
		7/16" Span Wire				FWC		
		3/8" Strandwise				Reliable		
		7/16" Strandwise				Reliable		

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NOTE:
 ITEMS APPROVED SUBJECT TO
 COMPLIANCE WITH PLANS AND
 SPECIFICATIONS.

* AS REQUIRED TO COMPLETE
 THE PROJECT

Submitted By: Project No. N/A
 TRAFFIC CONTROL DEVICES, INC. Federal Job No. Lake
 P.O. BOX 150418 County: Hartle Rd., Clermont, FL
 ALTAMONTE SPRINGS, FL 32715-0418 Location: 1 of 1
 (407)869-5300 (Wanda Matos) Sheet:

PROPOSED EQUIPMENT

ITEM NO.	QUANT.	DESCRIPTION	SPEC S.NO	FDOT CERTIFICATION NO.	APR LVL	REFERENCE	APPROVED	
							YES	NO
634-5-1	8 LF	Fiberglass Insulator 3/8" Strandwise				Reliable		
635-1-11	10 EA	Fib. Insul. Rod 10' 40000 PSI Pull & Junction Boxes						
635-1-15	1 EA	Pull Box & Lid 13x24x12 Pull & Junction Boxes (Fiber Optic)	635	1014210106	3	Quasite		
639-1-12	1 AS	Pull Box & Lid 13x36x18 Electrical Power Service	635	1014210104	3	Quasite		
		1/2 Galv Conduit				Wheatland		
		1-1/2 Galv Conduit				Wheatland		
		1/2 Galv Couplings				Wheatland		
		1-1/2 Galv Couplings				Wheatland		
		1/2 Galv 90 Elbow				Wheatland		
		1-1/2 Galv 90 Elbow				Wheatland		
		1-1/2x3 Galv Nipples				Bridgeport		
		1/2 2H Galv Strap				Bridgeport		
		1-1/2 2H Galv Strap				Bridgeport		
		1/2 Offset Nipple Cast				Bridgeport		
		1-1/2 Offset Nipple Cast				Bridgeport		
		1/2 Steel Locknuts				Bridgeport		
		1-1/2 Steel Locknuts				Bridgeport		
		1/2 Sealing Locknuts				Bridgeport		
		1-1/2 Sealing Locknuts				Bridgeport		
		1/2 Gr Bush				Bridgeport		
		1-1/2 Gr Bush				Bridgeport		
		2" Alum Weather Head				Bridgeport		
		QO612L100RB N3R Ld Ctr				Square D		
		PK7GTA Grndg Bar Kit				Square D		
		B150 Bolt-On Hub				Square D		
		1-1/2" Hub Mil				Milbank		

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 ALTAMONTE SPRINGS, FL 32715-0418 Sheet: 1 of 1
 (407)869-5300 (Wanda Matos)

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ITEM NO.	QUANT.	DESCRIPTION	SPEC S.NO	FDOT CERTIFICATION NO.	APR LVL	REFERENCE	APPROVED	
							YES	NO
		Metercan				Mililbank		
		6 THHN Str Blk				Southwire		
		5/8x10 CU CL Grd Rod				Apache/Erico/Cadweld		
		GRI-161-L 5/8"				Cadweld		
		70C 5/8 Rod Coupl				Apache/Erico		
		6 THHN Str Copper				Southwire		
639-2-1	25 LF	Electrical Service Wire				Southwire		
		6 THHN Str Blk				Southwire		
641-16148	2 EA	Prest Conc Pole (48' Type N-VII)				Apache/Erico/Cadweld		
		5/8x10 CU CL Grd Rod				Cadweld		
		GRI-161-L 5/8"				Apache/Erico		
		70C 5/8 Rod Coupl				Southwire		
		6 THHN Str Copper				Durastress		
		Type VII New 48'		S641-0601				
641-16152	2 EA	Prest Conc Pole (52' Type N-VII)				Apache/Erico/Cadweld		
		5/8x10 CU CL Grd Rod				Cadweld		
		GRI-161-L 5/8"				Apache/Erico		
		70C 5/8 Rod Coupl				Southwire		
		6 THHN Str Copper				Durastress		
		Type VII New 52'		S641-0601				
650-51311	14 AS	Traffic Signal (3 Sect 1 Way)(STD)						
		3-Sec. Traffic Signal Alum	650	1101161801	1	McCain		
		12" LED Red Ball Insert	659	1305141302	1	LeoTek		
		12" LED Red Arrow Insert	650	1315141301	1	LeoTek		
		12" LED Yellow Ball Insert	650	1306141302	1	LeoTek		
		12" LED Yellow Arrow Insert	650	1316141301	1	LeoTek		
		12" LED Green Ball Insert	650	1307141302	1	LeoTek		
		12" LED Green Arrow Insert	650	1317141301	1	LeoTek		
		Disc. Hanger	659	1025080803	1	Engineered Castings		
		Sig' Flanger Extension Bar 6'	659	1035080801	3	Engineered Castings		

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 Sheet: 1 of 1

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							YES	NO
		Tri-Stud Adj. Hanger	659	1026080801	3	Engineered Castings		
		Saddle Clamp	659	1015080801	3	Engineered Castings		
659-101	6 EA	Signal Head Auxiliaries (Back Plates 3 Sect)						
		3 Sec Backplate Alum	659	1332161801	3	McCain		
660-1109	6 EA	Loop Detector Inductive (Type 9)						
		Loop Detector (Type 9)	660	1351170301	1	Naztec		
660-1110	2 EA	Loop Detector Inductive (Type 10)						
		Loop Detector (Type 10)	660	1355170301	1	Naztec		
660-2102	8 AS	Loop Assembly (Type B)						
		2/C #14 Shielded Cable				Independent		
		1/C XHHW				Southwire		
		Loop Sealant Concrete Pavement	660	1382071401	3	(Strat-A-Flax) Durant		
		Loop Sealant Concrete Asphalt	660	1381071401	3	(Strat-A-Flax) Durant		
660-2106	10 AS	Loop Assembly (Type F)						
		2/C #14 Shielded Cable				Independent		
		1/C XHHW				Southwire		
		Loop Sealant Concrete Pavement	660	1382071401	3	(Strat-A-Flax) Durant		
		Loop Sealant Concrete Asphalt	660	1381071401	3	(Strat-A-Flax) Durant		
663-74-11	4 EA	Vehicle Detector Assem (Optical Type)						
		Opticom 138 Detector Cable				Rainbow		
		3M Opticom 760 Card Rack w/P1 Harness Assembly	660	1370160306	1	3M		
		3M Opticom 711 Detector, Sgl Channel/One Direction	660	1370160306	1	3M		
		3M Opticom 757 Aux. Detector/ Green Sense Harness	660	1370160306	1	3M		
		3M Opticom 754 Phase Selector (4 Channel)	660	1370160306	1	3M		
		3M Opticom Span Wiire Clamps				Pelco		

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 ALTAMONTE SPRINGS, FL 32715-0418 Location: 1 of 1
 (407)869- 5300 (Wanda Matos) Sheet:

PROPOSED EQUIPMENT

ITEM NO.	QUANT.	DESCRIPTION	SPEC S.NO	FDOT CERTIFICATION NO.	APR LVL	REFERENCE	APPROVED	
							YES	NO
670-5111	1 AS	Cntl Assem Act SS Nema Pre (One)	671	1552170301	1	Naztec		
		Cntl Assem 8PH Nema 1	676	1444170301	1	Naztec		
		P-44 TS2 Cabinet Assem	678	1615170301	1	Naztec		
		Cabinet Power Supply (TS2)	678	1617170301	1	Naztec		
		BUS Interface Unit (TS2)	676	1017170301	1	Naztec		
		Surge Arrestor	678	1611170301	1	Naztec		
		TS2 MMU Model 516 w/Setial Port				Carlton		
		2 PVC 90Deg Elbow				Carlton		
		2 PVC Couplings				Carlton		
		2 SCH 40 PVC Conduit 20ft				Carlton		
		5/8x10 CU CL Grd Rod				Apache/Erigo/Cadweld		
		GR1-161-L 5/8"				Cadweld		
		70C 5/8 Rod Coupl				Apache/Erigo		
		6 THHN Str Copper				Southwire		
		5/8"x14 Machine Bolt				Joslyn		
686-101	1 EA	Closed Circuit Television Equip (Camera Assem)						
		Pelco Spectra Series III Dome CCTV				Pelco		
		Camera Power Supply 24vac				Pelco		
		Camera Mounting Bracket				Pelco		
		TCD CCTV Surge Panel				Hammond		
		X676036-00 Cable				Isotec		
699-1-1	8 EA	Sign, Internal Illum (St Name)	659	102720112	1	Pelco		
		Illum M/A Hanger						
		Street Name Sign Arms				Southern Manufacturing		
		LED Illum St Signs 8'x24" Double Sided	700	3891241102	1	Southern Manufacturing		
		LED Illum St Signs 6'x24" Double Sided	700	3891241101	1	Southern Manufacturing		
690-10	6 EA	Signal Head Traffic Assembly Removal		N/A				
690-33-1	24 LF	Pole Removal (Deep Direct Burial)		N/A				
690-50	1 EA	Cntrl Assem Remove		N/A				

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 (407)869- 5300 (Wanda Matos) Sheet: 1 of 1

ITEM NO.	QUANT.	DESCRIPTION	SPEC S.NO	FDOT CERTIFICATION NO.	APR LVL	REFERENCE	APPROVED	
							YES	NO
690-80	1 EA	Span Wire Assembly Remove		N/A				
690-90	1 INT	Conduit & Cabling Remove		N/A				

PROPOSED EQUIPMENT

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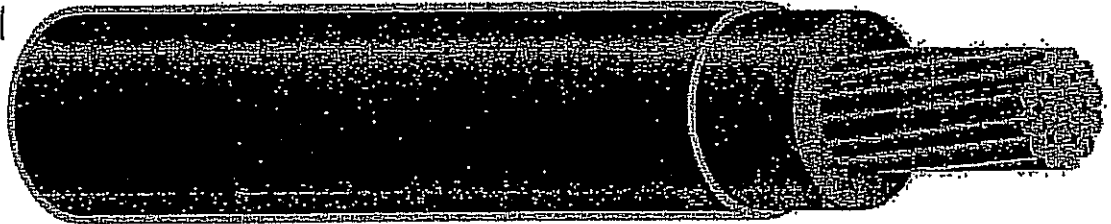
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THHN

600 Volts. Copper Conductor. Thermoplastic Insulation/Nylon Sheath.
 Heat, Moisture, Oil, and Gasoline Resistant 1.
 Sizes 8 AWG and Larger Rated THWN-2. All Stranded Sizes Rated MTW.
 Sizes 14 Through 6 AWG Rated AWM (105 °C).
 Sizes 14 Through 1 AWG Rated VW-1. Size 1/0 AWG and Larger Listed for CT Use.
 Black Size 2 AWG and Larger Listed Sunlight Resistant.

ITEM: 639-1-12 641-16152 670-5-111
 555-1-2' 660-2-102
 641-16148 660-2-106
 639-2-1



APPLICATIONS

Southwire Type THHN or THWN-2* conductors are primarily used in conduit and cable trays for services, feeders, and branch circuits in commercial or industrial applications as specified in the National Electrical Code². When used as Type THHN, conductor is suitable for use in dry locations at temperatures not to exceed 90 °C. When used as Type THWN-2*, conductor is suitable for use in wet or dry locations at temperatures not to exceed 90 °C or not to exceed 75 °C when exposed to oil or coolant. When used as Type MTW, conductor is suitable for use in wet locations or when exposed to oil or coolant at temperatures not to exceed 60 °C or dry locations at temperatures not to exceed 90 °C (with ampacity limited to that for 75 °C conductor temperature per NFPA 79). Conductor temperatures not to exceed 105 °C in dry locations when rated AWM and used as appliance wiring material. Voltage for all applications is 600 volts.

SPECIFICATIONS

Southwire Type THHN or THWN-2* or MTW (also AWM) meets or exceeds all applicable ASTM specifications, UL Standard 83, UL Standard 1063 (MTW), Federal Specification A-A-59544, and requirements of the National Electrical Code.

CONSTRUCTION

Southwire Type THHN or THWN-2* or MTW copper conductors are annealed (soft) copper, insulated with a tough heat and moisture resistant polyvinyl chloride (PVC), over which a nylon (polyamide) or UL-listed equal jacket is applied. Available in black, white, red, blue, green, yellow, brown, orange, and gray. Some colors standard, some subject to economic order quantity. Sizes 1 AWG through 1,000 kcmil available in black only. Conductor sizes 2 AWG and larger listed and marked sunlight resistant in black only.

¹ Oil and gasoline resistant II as defined by Underwriters Laboratories.
² 2002 Edition.
 *rated -2 for 8 AWG and larger only.

"SIZES AS REQUIRED"



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 *Southwire is a registered trademark of Southwire Company.

Conductor		Insulation Thickness (mils)	Jacket Thickness (mils)	Nominal D.D. (mils)		Approx. Net Weight Per 1000 ft. (lbs.)		Allowable Ampacities*			Standard Package
Size (AWG or kcmil)	Num. Strands			SoI.	Str.	SoI.	Str.	60 °C	75 °C	90 °C	
14	19	15	4	102	109	15	16	15	15	15	DNF
12	19	15	4	119	128	23	24	20	20	20	DNF
10	19	20	4	150	161	37	38	30	30	30	DOF
8	19	30	5	--	213	--	62	40	50	55	F
6	19	30	5	--	249	--	95	55	65	75	E
4	19	40	6	--	318	--	152	70	85	95	C
3	19	40	6	--	348	--	188	85	100	110	BC
2	19	40	6	--	378	--	234	95	115	130	C
1	19	50	7	--	435	--	299	110	130	150	B
1/0	19	50	7	--	474	--	371	125	150	170	B
2/0	19	50	7	--	518	--	461	145	175	195	B
3/0	19	50	7	--	568	--	574	165	200	225	B
4/0	19	50	7	--	624	--	717	195	230	260	B
250	37	60	8	--	694	--	850	215	255	290	B
300	37	60	8	--	747	--	1011	240	285	320	B
350	37	60	8	--	797	--	1173	260	310	350	B
400	37	60	8	--	842	--	1333	280	335	380	B
500	37	60	8	--	926	--	1653	320	380	430	B
600	61	70	9	--	1024	--	1985	355	420	475	C
750	61	70	9	--	1126	--	2462	400	475	535	C
1000	61	70	9	--	1275	--	3254	455	545	615	C

Solid construction available in sizes 14 through 10 AWG as Types THHN or THWN or AWM only. Sizes 14 through 8 AWG also suitable for 105°C appliance wiring material (AWM). Sizes 14 and 12 AWG contain four 500 ft. spools per carton. Size 10 AWG contains two 500 ft. spools per carton. *Allowable ampacities shown are for general use as specified by the National Electrical Code, 2002 Edition, section 310.15 unless the equipment is marked for use at higher temperatures the conductor ampacity shall be limited to the following. 60°C - When terminated to equipment for circuits rated 100 amperes or less or marked for size 14 through 1 AWG conductors. MTW wet locations or when exposed to oil or coolant. 75°C - When terminated to equipment for circuits rated over 100 amperes or marked for conductors larger than size 1 AWG. THWN-2 when exposed to oil or coolant. MTW dry locations. 90°C - THHN dry locations. THWN-2 wet or dry locations. For ampacity derating purposes.

STANDARD PACKAGE CODES:
 B - 1000 ft. reel
 C - 500 ft. reel
 D - 2500 ft. spool
 E - 1000 ft. spool
 F - 500 ft. spool
 N - 2000 ft. carton
 Q - 350 ft. carton

RECOMMENDED SAMPLE SPECIFICATIONS:

(MTW or THHN or THWN-2)

Conductors shall be UL-listed Type MTW or THHN or THWN-2* gasoline and oil resistant II, suitable for operations at 600 volts as specified in the National Electrical Code. Sizes 14 through 1 AWG shall be rated VW-1, larger sizes shall be listed for CT use. Sizes 2 AWG and larger listed and marked sunlight resistant in black only. Conductors shall be annealed copper, insulated with high-heat and moisture resistant PVC, jacketed with abrasion, moisture, gasoline, and oil resistant nylon or listed equivalent, as manufactured by Southwire Company or approved equal.

(AWM)

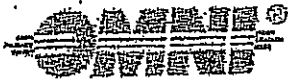
Conductors shall be UL-listed Type THHN or THWN-2* or MTW or AWM, suitable for operation at 600 volts at conductor temperatures not to exceed 105 °C. *rated -2 for 8 AWG and larger only.

ITEM: 639-1-12 639-2-1
 639-2-1 670-5-111
 555-1-2 641-161 52
 641-16-148 660-2-102
 660-2-106



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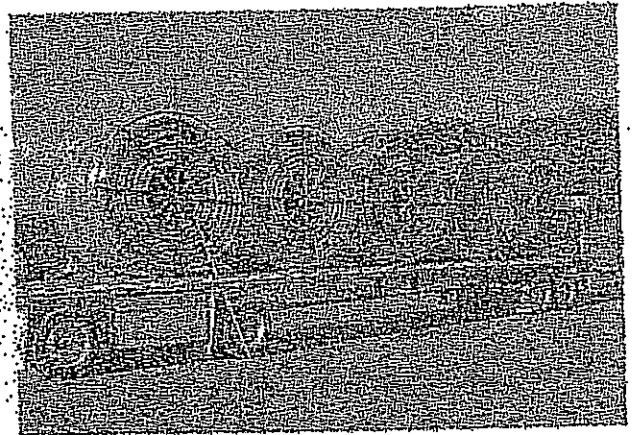
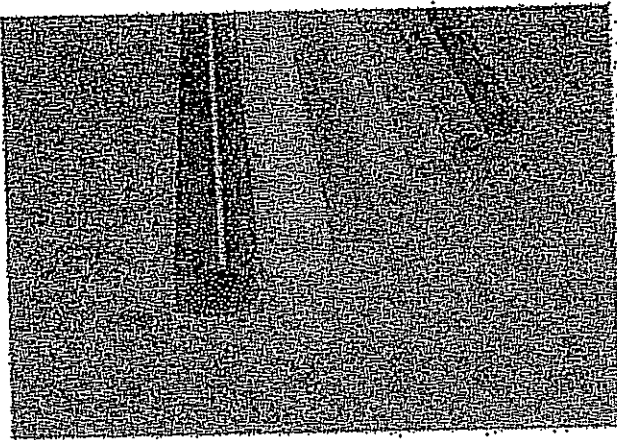
"SIZES AS REQUIRED"



Innerduct & Accessories

INNERDUCT

HDPE SMALL DIAMETER



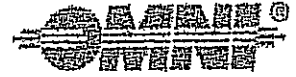
ITEM:
555-1-2
630-1-12

Nominal Duct Size	SDR	Outside Diameter	Nominal Inside	Minimum Wall
1"	13.5	1.315"	1.121"	.097"
1"	11	1.315"	1.077"	.119"
1"	9	1.315"	1.023"	.146"
1"	SCH 40	1.315"	1.049"	.133"
1"	SCH 80	1.315"	0.957"	.179"
1-1/4"	13.5	1.660"	1.414"	.123"
1-1/4"	11	1.660"	1.358"	.151"
1-1/4"	9	1.660"	1.292"	.184"
1-1/4"	SCH 40	1.660"	1.380"	.140"
1-1/4"	SCH 80	1.660"	1.278"	.191"
1-1/2"	13.5	1.900"	1.618"	.141"
1-1/2"	11	1.900"	1.554"	.173"
1-1/2"	9	1.900"	1.478"	.211"
1-1/2"	SCH 40	1.900"	1.380"	.145"
1-1/2"	SCH 80	1.900"	1.278"	.200"
2"	13.5	2.375"	2.023"	.176"
2"	11	2.375"	1.943"	.216"
2"	9	2.375"	1.847"	.264"
2"	SCH 40	2.375"	2.067"	.164"
2"	SCH 80	2.375"	1.939"	.218"

NOTE: SDR SIZES ARE ALSO AVAILABLE

"SIZES AS REQUIRED"

Innerduct & Accessories



INNERDUCT

HDPE SMALL & LARGE DIAMETER



For easy identification in multiple duct runs, HDPE Innerduct comes in a variety of colors including black, white, green, yellow, red, blue and orange. Footage marks are printed on the outer wall every two feet for run length verification. Innerduct is also available with interior or exterior ribs or both. All ribs are longitudinal for less friction when pulling into conduit system or when installing cable. Available with ropes or tapes pre-inserted. Contact your OMNI representative for further information. Note: Dimensions do not include internal or external rib heights where applicable. Other sizes and wall thickness available upon request.

OMNI uses a high density polyethylene compound that is designed specifically for manufacturing telecommunications HDPE duct. The physical properties and attributes are listed within the following table;

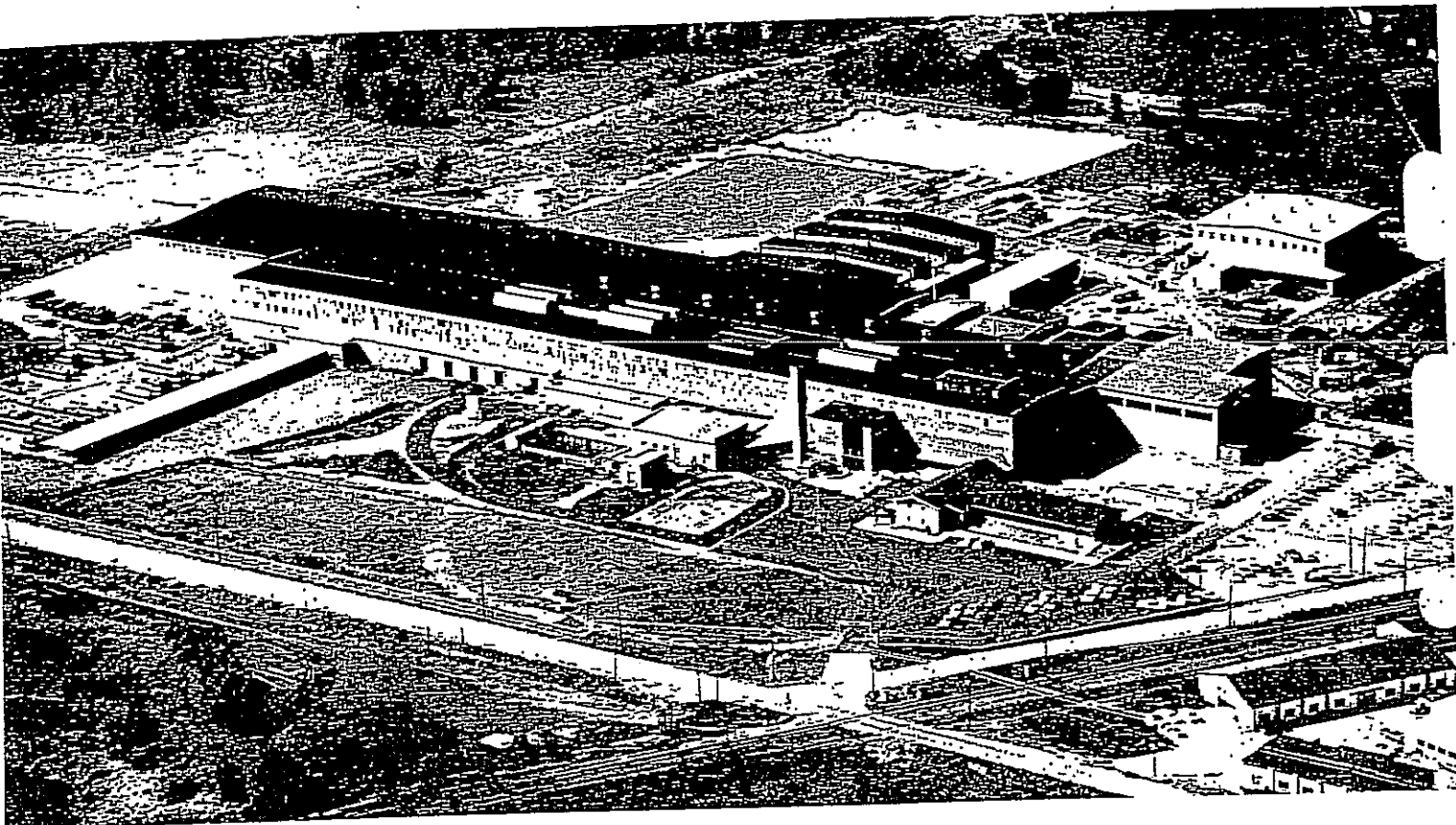
ITEM:

555-1-2

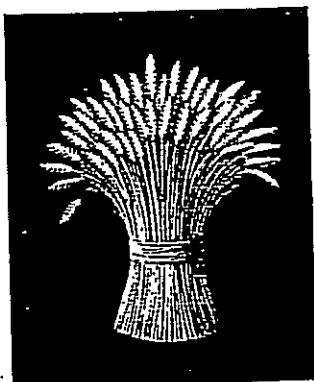
630-1-12

PROPERTY	ASTM TEST METHOD	TYPICAL VALUE
Density	ASTM D 1505	0.946 g/cm ³
Melt Index	ASTM 1238	0.25g/10min
Tensile Strength @ yield	D 638	3250 psi
Tensile Strength @ break	D 638	4600 psi
Ultimate Elongation, %	D 638	>800%
Flexural Modulus, psi	D 790	120,000 psi
Brittleness Temperature	D 746	<-76°C
Hardness-Shore D	D 2240	60
Izod Impact Resistance, 23°C ft-lb/inch	D 256	2.0
ESCR, F0, Hours	D 1693 Condition C	>1500

"SIZES AS REQUIRED"



ITEM: 630-1-11
639-1-12

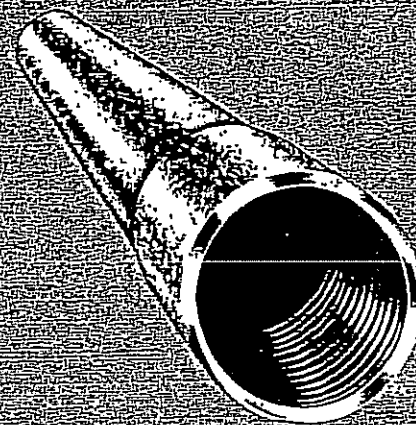


WHEATLAND TUBE COMPANY

Independence Square • Public Ledger Building • Philadelphia, Pa. 19106 (215) 923-3106
Mill: Wheatland, Pa. 16161 (412) 342-6851

"SIZES AS REQUIRED"

dimensions and packaging



Wheatland Rigid Steel Conduit

ITEM: 630-1-11

639-1-12

HOT-DIPPED GALVANIZED CONDUIT

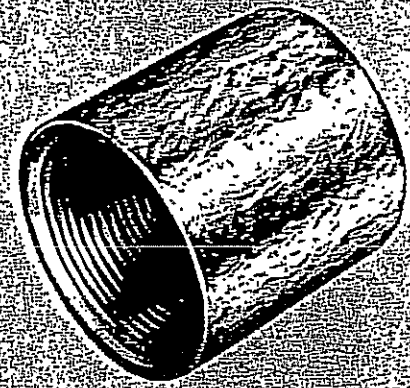
DIMENSIONS

Trade Size (Inches)	Threads per inch	Inside Diameter (Inches)	Outside Diameter (Inches)	Wall Thickness (Inches)	Length without coupling (Feet and Inches)	Underwriters Minimum Wt. per 100 ft. (10 lengths with couplings)
½	14	0.622	0.840	0.109	9-11½	79
¾	14	0.824	1.050	0.113	9-11½	105
1	11½	1.049	1.315	0.133	9-11	153
1¼	11½	1.380	1.660	0.140	9-11	201
1½	11½	1.610	1.900	0.145	9-11	249
2	11½	2.067	2.375	0.154	9-11	332
2½	8	2.469	2.875	0.203	9-10½	527
3	8	3.068	3.500	0.216	9-10½	682.6
3½	8	3.548	4.000	0.226	9-10½	831
4	8	4.026	4.500	0.237	9-10½	972.3
5	8	5.047	5.563	0.258	9-10	1313.6
6	8	6.065	6.625	0.280	9-10	1745.3

PACKAGING "SIZES AS REQUIRED"

Size (Inches)	N.E.M.A. Color Code Thread Protectors	Pieces per Bundle	Quantity per Crane Lift	Feet per Lift	U.L. Weight per Crane Lift
½	Black	10	25 Bundles	2,500	1,975 Lbs.
¾	Red	5	40 Bundles	2,000	2,100 Lbs.
1	Blue	5	25 Bundles	1,250	1,913 Lbs.
1¼	Red	3	34 Bundles	1,020	2,050 Lbs.
1½	Black	3	34 Bundles	1,020	2,540 Lbs.
2	Blue	—	50 Pieces	—	1,660 Lbs.
2½	Black	—	25 Pieces	—	1,318 Lbs.
3	Blue	—	25 Pieces	—	1,707 Lbs.
3½	Black	—	20 Pieces	—	1,662 Lbs.
4	Blue	—	20 Pieces	—	1,945 Lbs.
5	Blue	—	15 Pieces	—	1,970 Lbs.
6	Blue	—	10 Pieces	—	1,745 Lbs.

dimensions and packaging—couplings



Wheatland Rigid Steel Conduit

GALVANIZED CONDUIT COUPLINGS

DIMENSIONS

Trade Size (Inches)	Outside Diameter (Inches)	Length (Inches)	Approx. Wt. per 100 (Pounds)	Trade Size (Inches)	Outside Diameter (Inches)	Length (Inches)	Approx. Wt. per 100 (Pounds)
½	1.010	1 ⅞	12	2½	3.250	3 ¾	168
¾	1.250	1 ⅞	17	3	3.870	3 ¾	208
1	1.525	2	30	3½	4.500	3 ¾	340
1¼	1.869	2 ⅞	37	4	4.875	3 ¾	284
1½	2.155	2 ⅞	52	5	6.000	3 ¾	446
2	2.650	2 ⅞	67	6	7.200	4	728

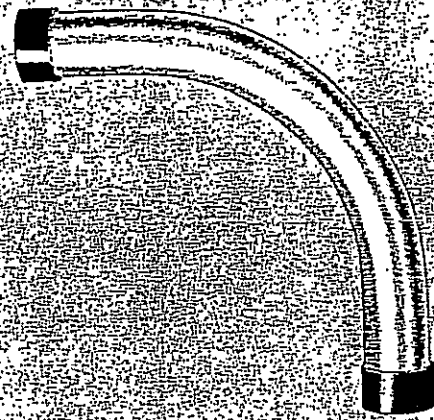
ITEM: 630-1-11
639-1-12

PACKAGING

Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.
½	100 pcs.	1¼	25 pcs.	2½	Bulk	4	Bulk
¾	50 pcs.	1½	25 pcs.	3	Bulk	5	Bulk
1	30 pcs.	2	20 pcs.	3½	Bulk	6	Bulk

"SIZES AS REQUIRED"

standard radius elbows



Wheatland Rigid Steel Conduit

Item: 630-1-11
639-1-12

DIMENSIONS

Standard 45° Elbows				Standard 90° Elbows			
Trade Size (Inches)	Radius (Inches)	Straight End (Inches)	Approx. Wt. per 100 (Pounds)	Radius (Inches)	Offset (Inches)	Straight End (Inches)	Approx. Wt. per 100 (Pounds)
½	4¼	2¼	64	4¼	6½	2¼	75
¾	4½	2¾	94	4½	7¼	2¾	111
1	5¾	2¾	166	5¾	8¾	2¾	195
1¼	7¼	3¼	272	7¼	10¼	3¼	320
1½	8¼	3¾	360	8¼	11¾	3¾	423
2	9½	3¾	570	9½	13¾	3¾	671
2½	10½	5¼	1,015	10½	16¼	5¼	1,288
3	13	5¼	1,536	13	18¾	5¼	1,926
3½	15	8	2,425	15	23	8	2,853
4	16	7¾	2,867	16	23¾	7¾	3,373
5	24	10½	6,280	24	34½	10½	7,388
6	30	14¾	10,444	30	43¾	14¾	12,287

PACKAGING

45° and 90° ELBOWS							
Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.	Size (Inches)	Ctn. Qty.
½	50 pcs.	1¼	20 pcs.	2½	Bulk	4	Bulk
¾	50 pcs.	1½	15 pcs.	3	Bulk	5	Bulk
1	25 pcs.	2	10 pcs.	3½	Bulk	6	Bulk

"SIZES AS REQUIRED"

Rigid and IMC Conduit

Bushings



Used with locknut to terminate threaded rigid or IMC to box. Rounded surface of bushing prevents damage to wire insulation.

UL File No. E9391: 321 thru 332

UL File No. E11259: 321-B thru 330-B

SF File No. LR39354

ITEM: 630-1-11
639-1-12

Plastic - 105°C

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
321	1/2"	100	1000
322	3/4"	100	1000
323	1"	50	500
324	1 1/4"	—	100
325	1 1/2"	—	100
326	2"	—	50
327	2 1/2"	—	25
328	3"	—	25
329	3 1/2"	—	25
330	4"	—	20
331	5"	—	5
332	6"	—	5

Plastic - 150°C

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
321-B	1/2"	100	1000
322-B	3/4"	100	1000
323-B	1"	50	500
324-B	1 1/4"	—	100
325-B	1 1/2"	—	100
326-B	2"	—	50
327-B	2 1/2"	—	25
328-B	3"	—	25
329-B	3 1/2"	—	25
330-B	4"	—	20

Insulated Grounding Bushings With Copper Lugs



Used with locknut to terminate service conduit to cabinet. Solid copper lug provides high conductivity with lower heat rise than conventional solderless lugs.

UL File No. E20412

Zinc Die Cast / Plastic Insulator - 150°C

Catalog Number	Wire Range	Trade Size	Unit Qty.	Std. Pkg. Qty.
351-DC	#14 - #6	1/2"	25	250
352-DC	#14 - #6	3/4"	25	250
353-DC	#14 - #6	1"	25	250
354-DC	#14 - #6	1 1/4"	20	200
355-DC	#8 - #2	1 1/2"	20	200
356-DC	#8 - #2	2"	10	100
357-DC	#6 - #1/0	2 1/2"	2	10
358-DC	#6 - #1/0	3"	2	10
359-DC	#6 - #1/0	3 1/2"	—	5
360-DC	#6 - #1/0	4"	—	5

"SIZES AS REQUIRED"

Malleable Iron

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
900	3/8"	100	1000
901	1/2"	100	1000
902	3/4"	—	100
903	1"	—	100
904	1 1/4"	—	50
905	1 1/2"	—	50
906	2"	—	25
907	2 1/2"	—	25
908	3"	—	10
909	3 1/2"	—	10
910	4"	—	10
912	5"	—	5
913	6"	—	5

Aluminum

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
901-AL	1/2"	100	1000
902-AL	3/4"	—	100
903-AL	1"	—	100
904-AL	1 1/4"	—	50
905-AL	1 1/2"	—	50
906-AL	2"	—	25

One Hole Pipe Straps



Malleable/Aluminum



Steel

To support rigid conduit and IMC to mounting surface.

UL File No. E161206: 904-S thru 908-S

SF File No. LR39354: 900 thru 912; 901-S thru 910-S

Steel

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
901-S	1/2"	50	500
902-S	3/4"	50	500
903-S	1"	50	200
904-S	1 1/4"	25	100
905-S	1 1/2"	25	100
906-S	2"	—	25
907-S	2 1/2"	—	25
908-S	3"	—	25
909-S	3 1/2"	—	10
910-S	4"	—	10

Steel

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1901	1/2"	250	2500
1902	3/4"	150	1500
1903	1"	100	1000
1904	1 1/4"	50	500
1905	1 1/2"	50	500
1906	2"	25	250
1907	2 1/2"	25	100
1908	3"	20	80
1909	3 1/2"	15	60
1910	4"	10	40

Two Hole Pipe Straps



Used to secure rigid conduit or IMC.

UL File No. E161206: 1907 thru 1910

SF File No. LR39354

ITEM: 630-1-11
630-1-12

"SIZES AS REQUIRED"

Service Entrance

Entrance Caps - Clamp-On Type



Clamp type entrance cap for rigid conduit and IMC.

Entrance Cap Hole Sizes:

- 1251: 4 holes 5/16" dia.
- 1252: 2 holes 3/8" dia., 3 holes 7/16" dia.
- 1253: 2 holes 7/16" dia., 3 holes 1/2" dia.
- 1254: 2 holes 7/16" dia., 3 holes 5/8" dia.
- 1255: 1 hole 7/16" dia., 2 holes 5/8" dia., 3 holes 3/4" dia.
- 1256: 1 hole 9/16" dia., 2 holes 3/4" dia., 3 holes 1" dia.
- 1257: 1 hole 1" dia., 3 holes 7/8" dia., 3 holes 1 5/16" dia.
- 1258: 3 holes 1 3/4" dia., 4 holes 1 1/8" dia.
- 1259: 3 holes 1 3/4" dia., 4 holes 1 1/8" dia.
- 1260: 3 holes 1 3/4" dia., 4 holes 1 1/8" dia.

Ⓛ File No. E11259

Aluminum

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1251	1/2"	5	50
1252	3/4"	5	50
1253	1"	—	20
1254	1 1/4"	—	10
1255	1 1/2"	—	5
1256	2"	—	5
1257	2 1/2"	—	1
1258	3"	—	1
1259	3 1/2"	—	1
1260	4"	—	1

PVC Entrance Heads



PVC entrance head for mounting on PVC, rigid, IMC or EMT. Removable EMT adapter sleeve and no-turn square nut allow for fast installation.

Ⓛ File No. E9391

Ⓢ File No. LR74878

PVC

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1251-PVC	1/2"	5	50
1252-PVC	3/4"	5	50
1253-PVC	1"	—	20
1254-PVC	1 1/4"	—	10
1255-PVC	1 1/2"	—	5
1256-PVC	2"	—	5

ITEM: 630-1-11
639-1-12

"SIZES AS REQUIRED"

Carlton® Rigid Nonmetallic Conduit, Fittings & Accessories

Carlton® manufactures the most complete line of nonmetallic conduits and fittings in the electrical industry. Carlton Schedule 40 and Schedule 80 conduits are designed for use aboveground and underground as described in the National Electrical Code. Specify only Carlton conduits and fittings to insure raceway system integrity.

Features

Ease of Installation Nonmetallic conduits are 1/4 to 1/5 the weight of metallic systems, can be installed in less than half the time, and are easily fabricated on the job.

Safety Nonmetallic conduits are nonconductive, assuring a safe system.

Impact Resistant Carlton Schedule 40 and Schedule 80 nonmetallic conduits are resistant to sunlight and are listed for exposed or outdoor usage. The use of expansion fittings allows the system to expand and contract with temperature variations.

Corrosion Resistant Carlton conduits and fittings are nonmetallic and will not rust or corrode.

Carlton nonmetallic Schedule 40 and Schedule 80 conduits and elbows are manufactured to NEMA TC-2, Federal specification WC1094A and UL 651 specifications. Fittings are manufactured to NEMA TC-3, Federal specification WC1094A and UL514B. Both conduit and fittings carry respective UL or ETL Listings and UL or ETL labels.

ITEM: 630-1-12

670-5111

Carlton Schedule 40 Rigid PVC Nonmetallic Conduit (Heavy Wall EPC)

Listed for underground applications encased in concrete or direct burial. Also for use in exposed or concealed applications aboveground. • Sunlight resistant • Rated for use with 90°C conductors • Superior weathering characteristics



Schedule 40 Heavy Wall

With Integral Bell*



Part No.		Nom. Size	Std. Crate Qty.		Wt. Per 100'	Dimensions		
10'	20'		10'	20'		O.D.	I.D.	Wall
49005-010		1/2"	6000'		17	.840	.522	.109
49007-010	49007-020	3/4"	4400'	8800'	23	1.050	.824	.113
49008-010	49008-020	1"	3600'	7200'	34	1.315	1.049	.133
49009-010	49009-020	1 1/4"	3300'	6600'	46	1.660	1.380	.140
49010-010	49010-020	1 1/2"	2250'	4500'	55	1.900	1.610	.145
49011-010	49011-020	2"	1400'	2800'	73	2.375	2.067	.154
49012-010	49012-020	2 1/2"	930'	1860'	124	2.875	2.469	.203
49013-010	49013-020	3"	880'	1760'	163	3.500	3.068	.216
49014-010	49014-020	3 1/2"	630'	1260'	196	4.000	3.548	.226
49015-010	49015-020	4"	570'	1140'	232	4.500	4.026	.237
49016-010	49016-020	5"	380'	760'	315	5.563	5.047	.258
49017-010	49017-020	6"	260'	520'	409	6.625	6.065	.280

Rigid nonmetallic conduit is normally supplied in standard 10' lengths, with one belled end per length. For specific requirements, it may be produced in lengths shorter or longer than 10', with or without belled ends.

Use Schedule 40 Fittings with Schedule 40 and Schedule 80 Conduit.

Notes: 1. Special fittings and conduit sizes will be quoted on request.
2. DON'T FORGET TO ORDER CEMENT.
3. Carlton reserves the right to ship to the nearest unfitted quantity.

"SIZES AS REQUIRED"

www.carlton.com

Rigid Nonmetallic Conduit - Elbows

Schedule 40 Elbows Standard Radius

Available in plain and integral belled end for use with nonmetallic solvent weld fittings.

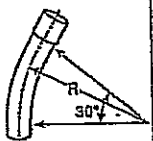
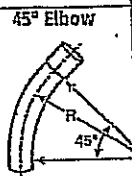
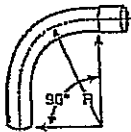


ETL Listed
to UL 651 in
compliance
to the NEC

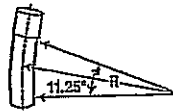
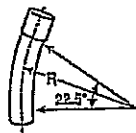


LISTED
E35297

Item	Plain End Part No.	Belled End Part No.	Size	Plain End Std. Ctn. Qty.	Belled End Std. Ctn. Qty.	
90° Elbow	UA9AD	UA9ADB	1/2"	50	50	
	UA9ADR-CAR	UA9ADB	1/2"	25	50	
	UA9AE	UA9AEB	3/4"	25	25	
	UA9AF	UA9AFB	1"	25	25	
	UA9AG	UA9AGB	1 1/4"	20	20	
	UA9AH	UA9AHB	1 1/2"	25	25	
	UA9AJ	UA9AJB	2"	20	20	
	UA9AJ-CAR	UA9AJB	2"	5	20	
	UA9AK-CAR	UA9AKB-CAR	2 1/2"	10	10	
	UA9AL	UA9ALB-CAR	3"	1	5	
	UA9AM	UA9AMB	3 1/2"	1	20	
	UA9AN	UA9ANB	4"	1	1	
	UA9AP	UA9APB	5"	1	1	
	UA9AR	UA9ARB	6"	1	1	
	45° Elbow	UA7AD	UA7ADB	1/2"	50	50
		UA7AE	UA7AEB	3/4"	25	25
		UA7AER-CAR	UA7AEB	3/4"	15	25
		UA7AF	UA7AFB	1"	20	20
UA7AF-CAR		UA7AFB	1"	15	20	
UA7AG		UA7AGB	1 1/4"	20	20	
UA7AH		UA7AHB	1 1/2"	20	20	
UA7AJ		UA7AJB	2"	20	20	
UA7AJ-CAR		UA7AJB-CAR	2"	4	4	
UA7AK		UA7AKB	2 1/2"	20	20	
UA7AK-CAR		UA7AKB-CAR	2 1/2"	5	5	
UA7AL-CAR		UA7ALB	3"	5	25	
UA7AL-CAR		UA7ALB-CAR	3"	5	10	
UA7AM		UA7AMB	3 1/2"	1	20	
UA7AN		UA7ANB	4"	1	20	
UA7AP		UA7APB	5"	1	1	
UA7AR		UA7ARB	6"	1	1	
30° Elbow		UA6AD	UA6ADB	1/2"	50	50
	UA6AE	UA6AEB	3/4"	25	25	
	UA6AF	UA6AFB	1"	25	1	
	UA6AG	UA6AGB	1 1/4"	20	20	
	UA6AH	UA6AHB	1 1/2"	25	1	
	UA6AJ	UA6AJB	2"	20	20	
	UA6AK	UA6AKB	2 1/2"	10	20	
	UA6AL	UA6ALB	3"	1	1	
	UA6AM	UA6AMB	3 1/2"	1	1	
	UA6AN	UA6ANB	4"	1	1	
	UA6AP	UA6APB	5"	1	1	
	UA6AR	UA6ARB	6"	1	1	



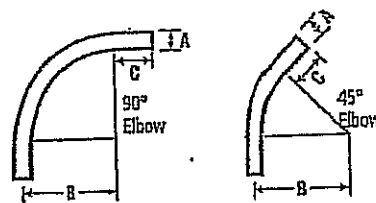
Item	Plain End Part No.	Belled End Part No.	Size	Plain End Std. Ctn. Qty.	Belled End Std. Ctn. Qty.	
22 1/2° Elbow	UA5AD	UA5ADB	3/4"	1	1	
	UA5AE	-	3/4"	1	-	
	UA5AF	-	1"	1	-	
	UA5AG	-	1 1/4"	1	-	
	UA5AH	-	1 1/2"	1	-	
	UA5AJ	UA5AJB	2"	25	1	
	UA5AK	-	2 1/2"	20	-	
	UA5AL	UA5ALB	3"	5	1	
	UA5AM	-	3 1/2"	1	-	
	UA5AN	UA5ANB	4"	1	1	
	UA5AP	UA5APB	5"	1	1	
	UA5AR	UA5ARB	6"	1	1	
	11 1/4° Elbow	UA3AD	-	1/2"	1	-
		UA3AE	-	3/4"	1	-
		UA3AF	-	1"	1	-
UA3AG		-	1 1/4"	1	-	
UA3AH		-	1 1/2"	1	-	
UA3AJ		-	2"	1	-	
UA3AK		-	2 1/2"	1	-	
UA3AL		-	3"	1	-	
UA3AM		-	3 1/2"	1	-	
UA3AN		-	4"	1	-	
UA3AP	-	5"	1	-		
UA3AR	-	6"	1	-		



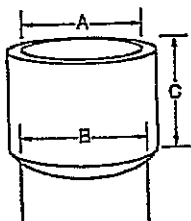
ITEM:

63D-1-12
67D-5111

Standard Radius Elbow Dimensions



Integral Belled End Dimensions



Trade Size	A At Entrance		B At Bottom		C Socket Depth	
	Max.	Min.	Max.	Min.	Max.	Min.
1/2"	.860	0.844	0.844	0.828	1.500	0.652
3/4"	1.074	1.054	1.056	1.036	1.500	0.719
1"	1.340	1.320	1.320	1.300	1.875	0.875
1 1/4"	1.689	1.665	1.667	1.643	2.000	0.938
1 1/2"	1.990	1.906	1.906	1.882	2.000	1.052
2"	2.405	2.381	2.381	2.357	2.000	1.125
2 1/2"	2.905	2.875	2.883	2.853	2.000	1.469
3"	3.530	3.500	3.507	3.477	3.125	1.594
3 1/2"	4.065	3.965	4.007	3.977	3.250	1.687
4"	4.565	4.465	4.506	4.476	3.375	1.750
5"	5.643	5.543	5.583	5.523	3.625	1.937
6"	6.708	6.608	6.644	6.584	3.750	2.125

Size	A	B Min. (Radius)	C Min.
1/2"	1.840	1"	1 1/2"
3/4"	1.050	4 1/2"	1 1/2"
1"	1.315	5 1/4"	1 7/8"
1 1/4"	1.660	7 1/4"	2"
1 1/2"	1.900	8 1/4"	2"
2"	2.375	9 1/2"	2"
2 1/2"	2.875	10 1/2"	3"
3"	3.500	13"	3 1/8"
3 1/2"	4.000	15"	3 1/4"
4"	4.500	16"	3 3/8"
5"	5.563	24"	3 5/8"
6"	6.625	30"	3 3/4"

"SIZES AS REQUIRED"

www.carlon.com

Rigid Nonmetallic Conduit - Couplings



Except where noted by ▶

Expansion Couplings

(For Use with Plus 40° and Plus 80°)

E945 series expansion couplings are designed to compensate for length changes due to temperature variations in exposed conduit runs.



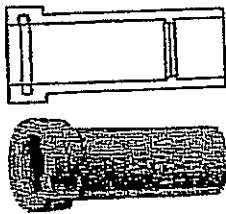
Standard Expansion Couplings

(Expands to a maximum of 6")

Part No.	Size	Std. Ctn. Qty.	Lay Lengths	
			Stop to Stop Total Closed	Stop to Stop Total Open
E945D	1/2	50	12 1/4	18 5/8
E945E	3/4	50	12 3/4	19 1/8
E945F	1	30	12 3/4	19 1/8
E945G	1 1/4	30	12 3/4	19 1/8
E945H	1 1/2	15	13 1/2	19 7/8
E945J	2	15	13 1/2	19 7/8
E945K	2 1/2	10	14 5/100	20 3/8
E945KX (with male adapter)	2 1/2	10	14 5/100	20 3/8
E945L	3	10	16 1/2	23
E945LX (with male adapter)	3	10	16 1/2	23
E945M	3 1/2	5	16 1/2	23
E945N	4	3	18 1/2	24 1/2
E945P	5	3	18 1/2	24 1/2
E945R	6	2	20 1/2	26 1/2

Short Expansion Couplings

(Expands to a maximum of 2")



Part No.	Size	Std. Ctn. Qty.
E955D	1/2	40
E955E	3/4	40
E955F	1	25
E955G	1 1/4	15
E955H	1 1/2	10
E955J	2	6

ITEM: 630-1-12

670-511

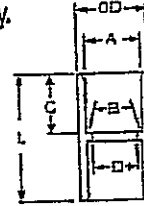
Couplings

Standard Couplings

All socket fittings should be attached using Carlon solvent cement. Using Carlon fittings with Carlon nonmetallic conduit insures system integrity.



Socket type for joining nonmetallic conduit.



Part No.	Size	Std. Ctn. Qty.	A Typical	B	Min. O.D.	Max. O.D.	C Typical	L Typical
E940D	1/2	150	0.852	0.836	0.728	0.761	1 1/8	1 1/2
E940E	3/4	100	1.054	1.046	0.840	0.876	1 1/8	1 3/8
E940F	1	50	1.330	1.310	1.210	1.246	1 1/8	2 1/8
E940G	1 1/4	30	1.677	1.655	1.535	1.571	1 1/8	2 1/8
E940H	1 1/2	25	1.918	1.894	1.755	1.791	1 3/8	2 1/2
E940J	2	30	2.393	2.369	2.190	2.226	1 3/8	2 1/2
E940K-CAR	2 1/2	4	2.890	2.866	2.689	2.725	1 3/8	2 1/2
E940L-CAR	3	5	3.515	3.492	3.375	3.411	1 3/8	3 1/2
E940M-CAR	3 1/2	20	4.015	3.992	3.780	3.816	1 3/8	3 3/4
E940N-CAR	4	5	4.515	4.491	4.265	4.301	1 3/8	3 3/4
E940P-CAR	5	8	5.593	5.553	5.097	5.137	1 3/8	3 3/4
E940R	6	5	6.658	6.614	6.115	6.155	2 1/8	4 5/8

Special Schedule 40 Long Line Couplings



Long Line Couplings

Part No.	Size	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
E941H	1 1/2	40	9 3/4
E941J	2	25	8
E941K	2 1/2	15	8 1/2
E941L	3	15	14
E941N	4	10	15
E941PF	5	4	12
E941RF	6	5	24



Sleeve Coupling (For Repair Work) No Internal Stop

Part No.	Size	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
E948F	1 1/2	25	6
E948J	2	25	5
E948K	2 1/2	25	16
E948L	3	25	13
E948N	4	10	8
E948P	5	14	33
E948R	6	6	16

Special Schedule 40 Swedge Couplings



Part No.	Size	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
E442K	2 1/2	20	13
E442R	6	6	27
E442T	8	2	17

Made in the U.S.A.

"SIZES AS REQUIRED"

ADHESIVES - Cement

ITEM: 630-1-12

670-5111

Carlton Cement

(MSDS sheets available at www.carlon.com)



Standard Grade Clear Solvent Cement with dauber

Part No.	Size	Std. Ctn. Qty.
VC9964	1/2 Pint	10
VC9963	Pint	24
VC9962	Quart	12
VC9961P	Gallon	6

Recommended pipe application and sizes

Recommended for all grades and types of Carlton PVC conduit, duct, wireway and fittings, except Flex-Plus[®] Blue[™] ENT (Electrical Nonmetallic Tubing.)
Up through 6" diameter.

Set-up time (Evaporation Rate)

10°-30°F Not recommended
30°-50°F 5-6 minutes
50°-70°F 3-4 minutes
70°-90°F 1-2 minutes

Recommended installation temperature

40° to 100°F

Lap Shear @ 73°F

2 hrs. 350 psi
16 hrs. 800 psi
72 hrs. 1,500 psi

Viscosity at 75° as manufactured

500-900 cps



Regular Grade Grey Solvent Cement with dauber*

Part No.	Size	Std. Ctn. Qty.
VC9924	1/2 Pint	10
VC9923	Pint	24
VC9922	Quart	12
VC9941P	Gallon	6

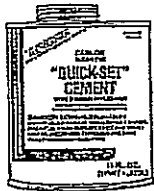
Recommended for all grades and types of Carlton PVC conduit, duct, wireway and fittings, except Flex-Plus[®] Blue[™] ENT (Electrical Nonmetallic Tubing.)
Up through 6" diameter.

10°-30°F Not recommended
30°-50°F 5-6 minutes
50°-70°F 3-4 minutes
70°-90°F 1-2 minutes

40° to 100°F

2 hrs. 350 psi
16 hrs. 800 psi
72 hrs. 1,500 psi

500-900 cps



All-Weather "Quick-Set" Clear Solvent Cement with dauber*

Part No.	Size	Std. Ctn. Qty.
VC9984	1/2 Pint	10
VC9983	Pint	24
VC9982	Quart	12
VC9981P	Gallon	6

Recommended for all grades and types of Carlton PVC conduit, duct, wireway and fittings, except Flex-Plus[®] Blue[™] ENT (Electrical Nonmetallic Tubing.)
Up through 6" diameter.

10°-30°F 4-5 minutes
30°-50°F 3-4 minutes
50°-70°F 1-2 minutes
70°-90°F 1/2-1 1/2 minutes

5° to 100°F

2 hrs. 350 psi
16 hrs. 800 psi
72 hrs. 1,500 psi

400-700 cps



All-Weather ENT Blue "Quick-Set" Solvent Cement with brush*

Part No.	Size	Std. Ctn. Qty.
VC9992	Quart	12
VC9993	Pint	24

Required for use with Flex-Plus[®] Blue[™] ENT (Electrical Nonmetallic Tubing), Riser-Gard[®] & PVC Optic-Gard[®], P&C Flex[®], and Carlton PVC fittings.
Up through 4" diameter.

10°-30°F 4-5 minutes
30°-50°F 3-4 minutes
50°-70°F 1-2 minutes
70°-90°F 1/2-1 1/2 minutes

4° to 100°F

2 hrs. 350 psi
16 hrs. 800 psi
72 hrs. 1,500 psi

400-700 cps



Low VOC Solvent Cement with dauber*

Part No.	Size	Std. Ctn. Qty.
VC91V4	1/2 Pint	10
VC91V3	Pint	24
VC91V2	Quart	12

Recommended for all grades and types of Carlton PVC conduit, duct, wireway and fittings, except Flex-Plus[®] Blue[™] ENT (Electrical Nonmetallic Tubing.)
Up through 6" diameter.
VOC emission of 490 grams/liter per the Bay and South Coast test method.

10°-30°F Not recommended
30°-50°F 5-6 minutes
50°-70°F 3-4 minutes
70°-90°F 1-2 minutes

40° to 100°F

2 hrs. 350 psi
16 hrs. 800 psi
72 hrs. 1,500 psi

500-900 cps



Primer with dauber

Part No.	Size	Std. Ctn. Qty.
VC9903	Pint	24
VC9902	Quart	12
Purple:		
VC9932	Quart	12

Recommended for use with Carlton cement and all types and sizes of Carlton WireSafe[™] wireway.

N/A

5° to 100°F

N/A

N/A

*Meets ASTM D2564

Made in the U.S.A.

IMSA Spec 19-1-1984

IMSA Spec 20-1-1984

Aerial & Duct Signal Cable 600 Volt

ITEM: 632-7-1 SIZES AS REQUIRED



Size	Nominal Outside Diameter (Inches)	Minimum Average Jacket Thickness (Inches)	Approximate Cable Weight (lbs. per M ft.)
2 Cond. No. 14 AWG	.340	.045	52
3 Cond. No. 14 AWG	.350	.045	66
4 Cond. No. 14 AWG	.380	.045	87
5 Cond. No. 14 AWG	.415	.045	103
7 Cond. No. 14 AWG	.445	.045	134
9 Cond. No. 14 AWG	.515	.045	172
10 Cond. No. 14 AWG	.565	.060	197
→ 12 Cond. No. 14 AWG	.615	.060	232
15 Cond. No. 14 AWG	.670	.060	284
→ 16 Cond. No. 14 AWG	.670	.060	299
19 Cond. No. 14 AWG	.705	.060	348
20 Cond. No. 14 AWG	.740	.060	370
24 Cond. No. 14 AWG	.820	.060	435
25 Cond. No. 14 AWG	.820	.060	450
30 Cond. No. 14 AWG	.910	.080	555
37 Cond. No. 14 AWG	.980	.080	668
2 Cond. No. 12 AWG	.390	.045	74
3 Cond. No. 12 AWG	.405	.045	99
5 Cond. No. 12 AWG	.480	.045	152
7 Cond. No. 12 AWG	.560	.060	212
9 Cond. No. 12 AWG	.640	.060	270
12 Cond. No. 12 AWG	.690	.060	344
16 Cond. No. 12 AWG	.800	.060	449
19 Cond. No. 12 AWG	.875	.080	547
24 Cond. No. 12 AWG	1.020	.080	684
25 Cond. No. 12 AWG	1.020	.080	710
30 Cond. No. 12 AWG	1.080	.080	840
37 Cond. No. 12 AWG	1.160	.080	1015

SPECIFICATIONS:

- Conductors — Solid bare copper (unless otherwise Specified by individual customer/user)
- Insulation — Polyethylene, 600 Volt rating
- Color-Code — Per specification
- Conductor Configuration — Cabled conductors
- Shield — None
- Jacket — IMSA 20-1 Black Polyethylene (PE)
— IMSA 19-1 Polyvinyl Chloride (PVC)

Other conductor counts available upon request.



INDEPENDENT CABLE, INC

43 Broad Street, Hudson, MA 01749 • (508) 562-9913

PREFORMED LINE PRODUCTS

LASHING ROD

ITEM: 632-7-1



GALVANIZED STEEL



For use on:
Galvanized Messengered Cable

"SIZES AS REQUIRED"

CATALOG NUMBER	DIAMETER RANGE		UNITS PER CARTON	WT./LES.	LENGTH (FEET)	ROD DIAMETER (INCHES)	COLOR CODE
	MIN.	MAX.					
LR-6100	.400	.439	100	13	5 Ft.	.086	Red
LR-6101	.440	.489	100	13	5 Ft.	.086	White
LR-6102	.490	.539	100	13	5 Ft.	.088	Orange
LR-6103	.540	.589	100	13	5 Ft.	.086	Green
LR-6104	.600	.669	100	17	5 Ft.	.100	Yellow
LR-6105	.670	.749	100	17	5 Ft.	.100	White
LR-6106	.750	.839	100	17	5 Ft.	.100	Red
LR-6107	.840	.939	100	17	5 Ft.	.100	White
LR-6108	.940	1.049	100	17	5 Ft.	.100	Orange
LR-6109	1.050	1.169	100	24	5 Ft.	.119	Green
LR-6110	1.170	1.309	100	24	5 Ft.	.119	Yellow
LR-6111	1.310	1.459	100	24	5 Ft.	.119	White
LR-6112	1.460	1.629	100	37	6 Ft.	.168	Red
LR-6113	1.630	1.849	100	37	6 Ft.	.198	White
LR-6114	1.820	2.039	100	37	6 Ft.	.198	Orange
LR-6115	2.040	2.279	100	52	6 Ft.	.159	Green
LR-6116	2.280	2.539	100	54	6 Ft.	.159	Yellow
LR-6117	2.540	2.839	100	56	6 Ft.	.169	White
LR-6118	2.840	3.179	100	58	6 Ft.	.159	Red
LR-6119	3.160	3.559	50	34	6 Ft.	.172	White
LR-6120	3.560	3.999	50	35	6 Ft.	.172	Orange
LR-6121	4.000	4.479	50	38	6 Ft.	.172	Green
LR-6122	4.480	4.999	50	37	6 Ft.	.172	Yellow
LR-6123	5.000	5.599	50	33	6 Ft.	.172	White
LR-6124	5.600	6.299	50	39	6 Ft.	.172	Red

EXPLANATORY NOTES:

- (1) Refer to General Recommendations, page 1 of this section, for proper circumscribing circle to apply to diameter range.
- (2) Refer to General Recommendations, page 1 of this section, for material selection.

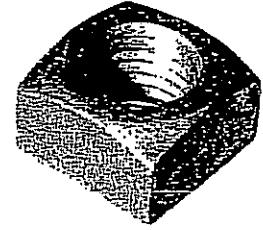
Nuts, Square

ITEM: 634-4113

Hot Dip Galvanized

Square nuts have always been considered safest to use by utility linemen because of their large wrenching surface. Regular nuts are used on all types of threaded bolts and insulator pins, while heavy nuts are used exclusively on anchor rods.

Joslyn square nuts are manufactured in accordance with American National Standards Institute Specifications B18.2.2 and tapped Unified National Coarse Thread Series Class 2B after centrifugal hot dip galvanizing, oversize for galvanized bolts and rods.



REGULAR

Catalog No.	Nominal Size Bolt and Threads per Inch	Approximate Shipping Weight (Lbs. per 100 pcs.)
J8561*	3/8"-16	2.2
J8562*	1/2"-13	5.4
J8563*	5/8"-11	10.2
J8564*	3/4"-10	13.8
J8564-1/2*	7/8"-9	24.3

HEAVY

Catalog No.	Nominal Anchor Rod Diameter (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J8563-1	5/8	12.2
J8564-1	3/4	20.8
J8565-1	1	50.0
J8566	1-1/4	100.0

*ANSI Standard

Nuts, M-F No. 1 Locknuts

Hot Dip Galvanized

The M-F No. 1 Locknut is a free-spinning, square or hexagon locknut that starts freely from either side, and spins into place with the fingers. One-half to a full turn with a wrench locks it securely.

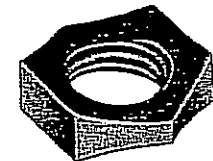
When the arched surface contacts the top of the common nut or bearing surface, wrenching flattens the arch, deflecting the nut threads from their true helix and causing them to firmly grip the bolt threads. The nut takes a permanent set and must be wrenched for further movement.

Catalog No.	Description	Weight per C
J8581 (E)	3/8" Sq.	1.3
J8582 (E)	1/2" Sq.	2.4
J8583 (E)	5/8" Sq.	4.2
J8584 (E)	3/4" Sq.	5.4
J8584-1/2 (E)	7/8" Sq.	8.1
J8585	1" Sq.	10.6
J8582 H	1/2" Hex	1.9
J8583 H	5/8" Hex	3.6
J8584 H	3/4" Hex	4.7

(E) REA Accepted



SQUARE LOCKNUT



HEXAGON LOCKNUT

Pins, Lead Thread Type

Joslyn lead threads are available for 1-inch and 1-3/8-inch pin type insulator thread sizes. The lead threads are tightly bonded to forged crossarm pins and formed steel pole top pins through a process of casting the lead-antimony alloy directly to the pin. A raised ring of lead at the top of the thread minimizes strains from developing when the insulator is tightened. The threads comply to ANSI standards for dimensional and performance requirements. The lead threads on the pins are shipped with an assembled cardboard protective sleeve to prevent damage to the threads during transit and handling.



Pins, Nylon Alloy Thread Type

Patent Pending

Joslyn, Z-series, insulator pins were developed to address environmental concerns associated with the manufacture, handling, and disposal of lead thread pins. Insulator threads for Z-series pins are produced from an advanced J.E.M.[®] (Joslyn Engineered Material) nylon alloy compound. The J.E.M.[®] material is a special nylon alloy blend to assure proper electrical and mechanical performance. The threads are flexible, yet more resilient than lead, offering superior insulator fit and conductor groove alignment.

Joslyn Z-series pins exceed the performance requirements of ANSI C135.22 specifications for lead thread pins. In addition to the ANSI requirements, Joslyn Z-series pins have been subjected to an extensive battery of tests to assure long-term performance in severe service conditions. The additional tests include: horizontal fatigue; aeolian vibration; corona; ultraviolet; and cold temperature impact.



"SIZES AS REQUIRED"

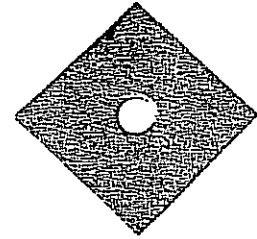
ITEM: 634-4113

Washers, Square

Hot Dip Galvanized

Catalog No.	Size (Inches)	Hole Diameter (Inches)	For Bolt Diameter (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
SQUARE WASHERS				
J1073*+	2 x 2 x 1/8	9/16	1/2	13.0
J1074*	2 x 2 x 1/8	11/16	5/8	13.8
J1075*+	2-1/4 x 2-1/4 x 3/16	11/16	5/8	26.0
J1076+ (E)	2-1/4 x 2-1/4 x 3/16	13/16	3/4	26.8
J1078*	3 x 3 x 3/16	13/16	3/4	48.0
J1079	3 x 3 x 1/4	13/16	3/4	64.0
J1080 (E)	4 x 4 x 3/16	13/16	3/4	87.0
J1082	4 x 4 x 1/4	15/16	3/4 & 7/8	114.0
J1473 (E)	4 x 4 x 1/2	13/16	3/4	232.0
J1081	4 x 4 x 1/2	1-1/8	1	21.6
SQUARE CURVED WASHERS				
J6821*	2-1/4 x 2-1/4 x 3/16	11/16	5/8	26.0
J6822	2-1/2 x 2-1/2 x 3/16	11/16	5/8	33.0
J113*	3 x 3 x 1/4	11/16	5/8	65.0
J6823*	3 x 3 x 1/4	13/16	3/4	56.5
J133+	3-1/4 x 3-1/4 x 1/4	13/16	3/4	76.0
J6828+	3-1/2 x 3-1/2 x 3/8	15/16	7/8	130.0
J6829*	4 x 4 x 1/4	15/16	7/8	117.0

*ANSI Standard + Bell Standard (E) REA Accepted



SQUARE WASHERS



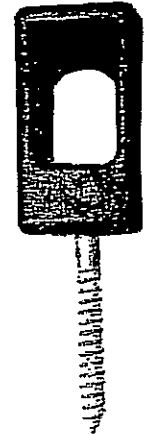
SQUARE CURVED WASHERS

Wireholders, J.E.M.® Nylon Alloy Material

Z-Series with Galvanized Screw

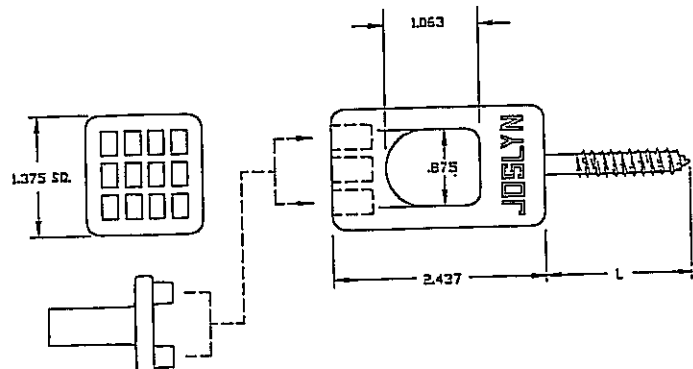
(Patent No. 5,448,018)

Joslyn Z-series wireholders are produced from ultraviolet stabilized nylon alloy compound with reinforced fibers which provide approximately twice the fracture strength as porcelain insulators. The engineered blend material provides insulating properties equal to porcelain. Z-series wireholders eliminate chipping and breaking problems associated with porcelain. The unique design features a square flat top which can be used with a hammer to start installation. The flat top also features an "egg carton" design for indexing an installing tool when using a cordless drill. Each package of Z-wireholders includes a supply of installing tools for use with a 1/2" drive cordless drill to obtain maximum installation efficiency.



Catalog No.	Lag Screw Diameter (Inches)	"L" Length (Inches)	Approximate Weight (Lbs. per 100 pcs.)
J089Z (E)	11/32 (#22)	2-1/4	24
J0893Z	11/32 (#22)	3	26
J0894Z	11/32 (#22)	4	28

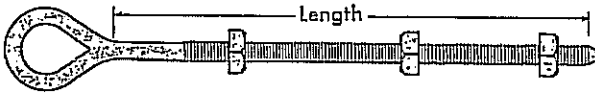
(E) REA Accepted



Bolts, Oval Eye (continued)

ITEM: 634-2113

Hot Dip Galvanized



DOUBLE ARMING EYEBOLTS—5/8 INCH DIAMETER MINIMUM TENSILE STRENGTH 13,550 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J9614 (E)	14	12	204
J9616 (E)	16	14	172
J9618 (E)	18	16	224
J9620 (E)	20	18	244
J9622 (E)	22	20	260
J9624 (E)	24	22	280
J9626 (E)	26	24	300

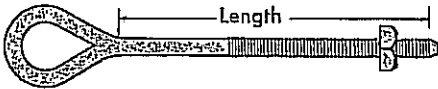
(E) REA Accepted

DOUBLE ARMING EYEBOLTS—3/4 INCH DIAMETER MINIMUM TENSILE STRENGTH 20,050 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J9636 (E)	16	14	300
J9638 (E)	18	16	320
J9640 (E)	20	18	340
J9642 (E)	22	20	360
J9644 (E)	24	22	380
J9646 (E)	26	24	400

(E) REA Accepted

"SIZES AS REQUIRED"



OVAL EYEBOLTS—5/8 INCH DIAMETER MINIMUM TENSILE STRENGTH 13,550 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J9406 (E)	6	4	112
J9408 (E)*	8	4	128
J9409 (E)*	9	4	136
J9410 (E)*	10	6	146
J9412 (E)*	12	6	156
J9414 (E)*	14	6	168
J9416 (E)	16	6	188
J9418 (E)	18	6	212
J9420 (E)	20	6	220

(E) REA Accepted *ANSI Standard

OVAL EYEBOLTS—3/4 INCH DIAMETER MINIMUM TENSILE STRENGTH 20,050 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J9508 (E)	8	4	180
J9510 (E)	10	6	200
J9512 (E)	12	6	220
J9514 (E)	14	6	240
J9516 (E)	16	6	256
J9518 (E)	18	6	280

(E) REA Accepted

ITEM: 634-4-113

GUY and MESSENGER STRAND

Zinc coated, guy or messenger strand is produced to comply with applicable ASTM Specifications A-475 and A-363 in Class A and Class B coating weight.

ELONGATION REQUIREMENTS FOR GRADES OF STRAND

Grade of Strand	Elongation in 24 in. (610 mm), min, percent
Utilities Grade (1) and Common Strand	10
Utilities Grade (2) and Siemens-Martin	8
Utilities Grade (3) and High-Strength	5
Utilities Grade (4) and Extra-High Strength	4

7-WIRE GALVANIZED STEEL STRAND CLASS A AND B COATING

STRAND SIZE INCHES	WIRE SIZE INCHES	NET WEIGHT POUNDS PER 1,000 FT	MINIMUM STRENGTH IN POUNDS
SIEMENS-MARTIN			
1/4	.080	121	3,150
5/16	.104	205	5,350
3/8	.120	273	6,950
7/16	.145	399	9,350
1/2	.165	517	12,100
5/8	.207	813	19,000
HIGH STRENGTH			
3/16	.062	72.9	2,850
1/4	.080	121	4,750
5/16	.104	205	8,000
3/8	.120	273	10,800
7/16	.145	399	14,500
1/2	.165	517	18,800
9/16	.188	671	24,500
EXTRA HIGH STRENGTH			
3/16	.062	72.9	3,990
1/4	.080	121	6,650
5/16	.104	205	11,200
3/8	.120	273	15,400
7/16	.145	399	20,800
1/2	.165	517	26,900
9/16	.188	671	35,000
UTILITIES			
5/16	.109	225	6,000
3/8	.120	273	11,500
7/16	.145	399	18,000
1/2	.165	517	25,000

19-WIRE GALVANIZED STEEL STRAND CLASS A AND B COATING

STRAND SIZE INCHES	WIRE SIZE INCHES	NET WEIGHT POUNDS PER 1,000 FT.	MINIMUM STRENGTH IN POUNDS
SIEMENS-MARTIN			
1/2	.100	504	12,700
9/16	.113	637	16,100
5/8	.125	796	18,100
3/4	.150	1,155	26,200
7/8	.177	1,581	35,900
1	.200	2,073	47,000
HIGH STRENGTH			
1/2	.100	504	19,100
9/16	.113	637	24,100
5/8	.125	796	28,100
3/4	.150	1,155	40,800
7/8	.177	1,581	55,800
1	.200	2,073	73,200
EXTRA HIGH STRENGTH			
1/2	.100	504	26,700
9/16	.113	637	33,700
5/8	.125	796	40,200
3/4	.150	1,155	58,300
7/8	.177	1,581	79,700
1	.200	2,073	104,500

GUY STRAND SUBSTITUTION CHART

SIZE & GRADE	MIN. BREAKING STRENGTH PER ASTM A-475	POTENTIAL SUBSTITUTION	MIN. BREAKING STRENGTH PER ASTM A-475	POTENTIAL SAVINGS
1/2 UTIL	25,000 lbs.	1/2 EHS	26,900 lbs.	2%
1/2 HS	18,800 lbs.	7/16 EHS	20,800 lbs.	22%
1/2 SM	12,100 lbs.	3/8 EHS	15,400 lbs.	43%
7/16 UTIL	18,000 lbs.	7/16 EHS	20,800 lbs.	3%
7/16 HS	14,500 lbs.	3/8 EHS	15,400 lbs.	27%
7/16 SM	9,350 lbs.	5/16 EHS	11,200 lbs.	39%
3/8 UTIL	11,500 lbs.	5/16 EHS ⁽¹⁾	11,200 lbs.	21%
3/8 HS	10,800 lbs.	5/16 EHS	11,200 lbs.	17%
3/8 SM	6,950 lbs.	5/16 HS	8,000 lbs.	20%
5/16 UTIL	6,000 lbs.	1/4 EHS	6,650 lbs.	19%
5/16 SM	5,350 lbs.	1/4 EHS	6,650 lbs.	37%

⁽¹⁾Note: 5/16 EHS has 300 lbs. less breaking strength than 3/8 UTIL.

This chart is not an engineering document. It is designed to show what substitutions might be made and an estimate of the potential cost savings. Specifications should be checked carefully to insure that the size and grade chosen meets all requirements of the design prior to a substitution being made.

R.E.A. APPROVALS

Florida Wire & Cable strand products are approved and listed in R.E.A. Bulletin 43-5, Electrification Borrowers and R.E.A. Specification PE-37, Telecommunications.

"SIZES AS REQUIRED"



Universal Grade Strandvise and Strandlink _____

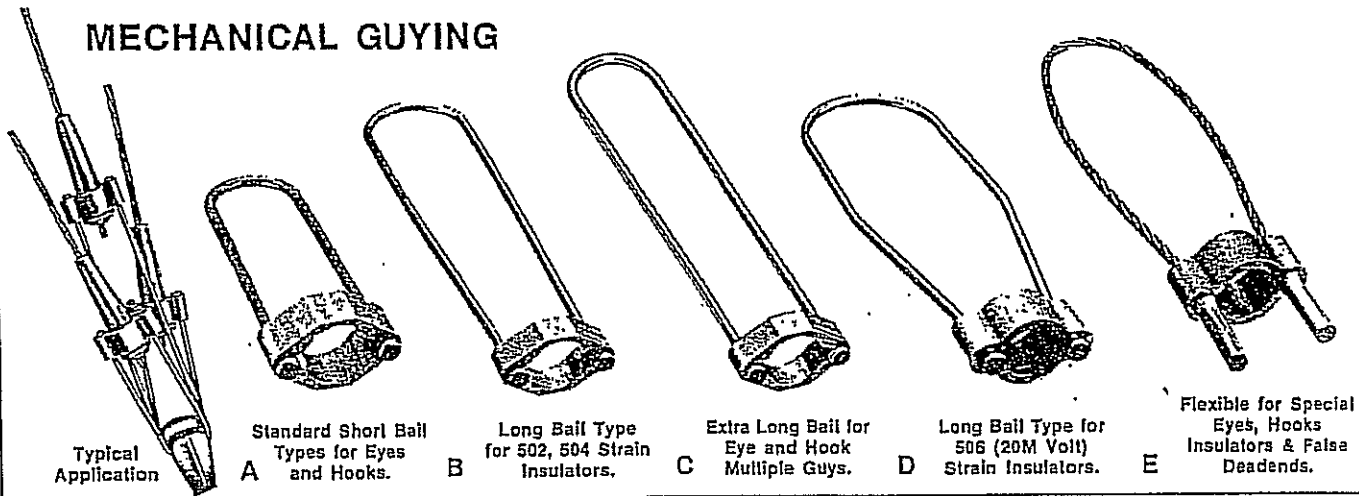
ITEM: 634-4113

634-5-1

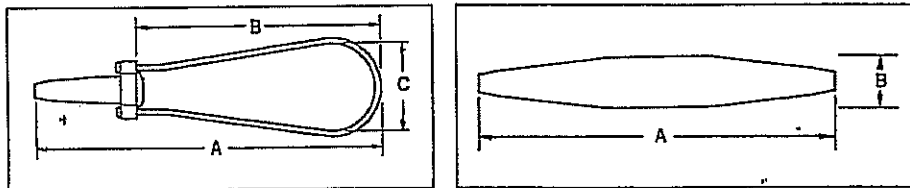
Universal Grade Strandvise and Strandlink - recommended for use on Alumoweld, Betahalume, Aluminized, Copperweld*, E.-Stainless Steel, and Zinc-coated steel wire strand (See Technical Data Section, Page 7)
 *Consult Factory for Information on Application.

AUTOMATIC COMPRESSION FITTINGS

MECHANICAL GUYING



DIMENSIONAL DRAWINGS



"SIZES AS REQUIRED"

	Catalog Number	Bail Type	Wire Range	Dimensions (Inches)		
				A	B	C
3/16"	5039	Link	.140-.215	9.0	1.03	
	5199	A		8.5	4.88	1.63
	5249	B		12.19	7.16	1.50
	5199-L	C		12.31	7.28	1.63
	5255	E		12.88	8.00	1.50
	5261	E		22.88	18.00	1.50
	5267	E		28.63	23.75	1.50

	Catalog Number	Ball Type	Wire Range	Dimensions (Inches)		
				A	B	C
1/4"	5040	Link	.215-.270	8.75	1.13	
	5200	A		9	4.75	1.63
	5250	B		13.13	8.28	2.25
	5250-6	D		12.81	7.75	2.72
	5200-L	C		14	9.13	1.63
	5256	E		20.72	13.22	2.75
	5262	E		23	18	1.50
	5268	E		28.75	23.75	1.50

Reliable Electric/Utility Products 11333 Addison Street/Franklin Park, Illinois 60131/312-455-8010

RELIANCE
COMM/TEC

Universal Strandvise/Strandlink

ITEM: 634-6-1

634-5-1

	Catalog Number	Bail Type	Wire Range	Dimensions (Inches)		
				A	B	C
5/16"	5041	Link	.270-.315	9.28	1.26	
	5201	A		10.22	4.69	1.63
	5251	B		13.66	8.31	2.25
	5251-6	D		13	7.75	2.84
	5201-L	C		16.19	9.69	1.63
	5257	E		14.13	8.50	1.75
	5263	E		24.13	18	1.75
	5269	E		29.88	24.25	1.75

	Catalog Number	Bail Type	Wire Range	Dimensions (Inches)		
				A	B	C
3/8"	5042	Link	.325-.392	12.25	1.45	
	5202	A		12.50	5.75	1.56
	5252	B		13.90	7.14	2.14
	5252-6	D		14.50	7.75	2.63
	5202-L	C		17.75	11.00	1.56
	5258	E		28.75	23.75	1.50
	5264	E		25	18	2
	5270	E		31	24	2

	Catalog Number	Bail Type	Wire Range	Dimensions (Inches)		
				A	B	C
7/16"	5043	Link	.392-.455	12.47	1.59	
	5203	A		14.5	4.38	1.88
	5253	B		15	8	2.08
	5253-6	D		17.02	9.95	2.75
	5203-L	C		19.25	12.13	1.88

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	Catalog Number	Bail Type	Wire Range	Dimensions (Inches)		
				A	B	C
1/2"	5044	Link	.455-.520	12.25	1.70	
	5204	A		16.38	8.69	2.06
	5254	B		17.61	10.11	2.44
	5254-6	D		17.22	9.72	2.75
	5204-L	C		20.72	13.22	2.75

Reducer Type Strandlink,
Universal Grade

"SIZES AS REQUIRED"

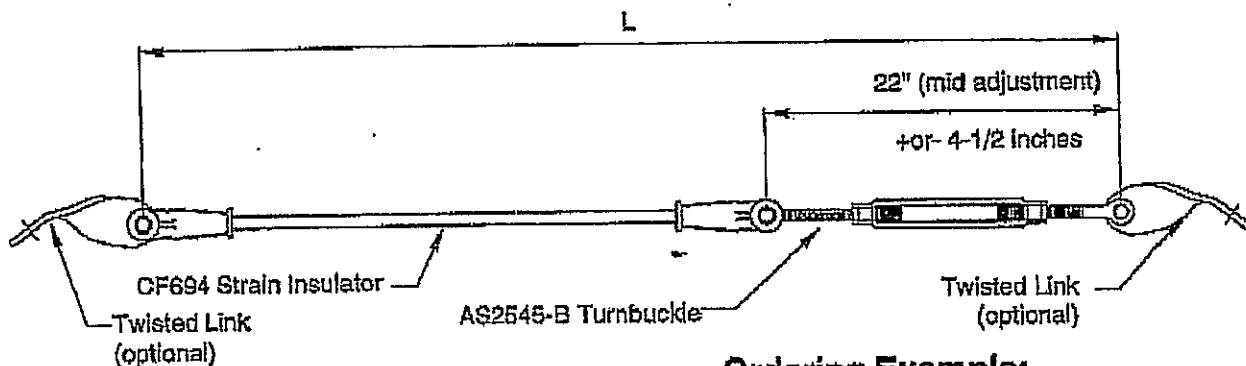
1/4"—3/16"	5086
5/16"—1/4"	5087

Item: 634-S-1

Guy Strains

CF694TB 21,000 lb Adjustable Guying Assembly

The Hughes Brothers Guy Strain and Turnbuckle Assembly is superior to adjustable guy strains incorporating a turnbuckle onto the end of the guy strain. The Hughes assembly allows for adjustment of the turnbuckle without having to unbolt an end of the assembly.



AS2276 series twisted links are ordered separately.

Ordering Example:

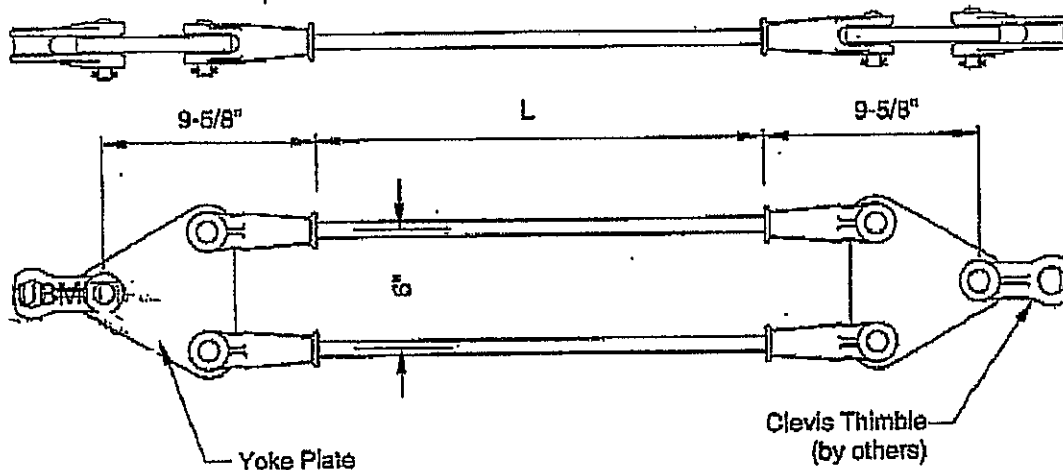
CF694TB-36

Specifies "L" length
Guy Strain type with turnbuckle

F

CF999TT-"L" 60,000 lb Guying Assembly

A 60,000 lb guy strain can be made by combining two CF695 30,000 lb Guy Strains. To order as an assembly, use the stock no. CF999TT-"L". Clevis thimbles, if required, are ordered separately.



Ordering Example: CF999TT-36

F-8

Rigid and IMC Conduit

Conduit Nipples



When used with locknut, conduit nipples serve as a short raceway between enclosures.

UL File No. E9391: Malleable

SF File No. LR39354: Malleable

Malleable Iron

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1102	1/2"	100	1000
1103	3/4"	50	500
1104	1"	25	250
1105	1 1/4"	10	100
1106	1 1/2"	10	100
1107	2"	5	25
1108	2 1/2"	2	10
1109	3"	2	10
1110	3 1/2"	—	5
1111	4"	—	5
1112	5"	—	5
1113	6"	—	5

Malleable Iron / Insulated Throat - 105°C

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1102-I	1/2"	100	1000
1103-I	3/4"	50	500
1104-I	1"	25	250
1105-I	1 1/4"	10	100
1106-I	1 1/2"	10	100
1107-I	2"	5	25
1108-I	2 1/2"	2	10
1109-I	3"	2	10
1110-I	3 1/2"	—	5
1111-I	4"	—	5

Aluminum

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1102-AL	1/2"	100	1000
1103-AL	3/4"	50	500
1104-AL	1"	25	250
1105-AL	1 1/4"	10	100
1106-AL	1 1/2"	10	100
1107-AL	2"	—	25
1108-AL	2 1/2"	—	25
1109-AL	3"	—	10
1110-AL	3 1/2"	—	10
1111-AL	4"	—	10

Conduit Nipples



When used with a locknut, conduit nipples serve as a short raceway between enclosures.

UL File No. E9391

SF File No. LR39354

Zinc Die Cast

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1102-DC	1/2"	100	1000
1103-DC	3/4"	50	500
1104-DC	1"	25	250
1105-DC	1 1/4"	10	100
1106-DC	1 1/2"	10	100
1107-DC	2"	5	50
1108-DC	2 1/2"	—	25
1109-DC	3"	—	10
1110-DC	3 1/2"	—	10
1111-DC	4"	—	10

Zinc Die Cast / Insulated Throat - 105°C

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1102-DCI	1/2"	100	1000
1103-DCI	3/4"	50	500
1104-DCI	1"	25	250
1105-DCI	1 1/4"	10	100
1106-DCI	1 1/2"	10	100
1107-DCI	2"	5	50
1108-DCI	2 1/2"	—	25
1109-DCI	3"	—	10
1110-DCI	3 1/2"	—	10
1111-DCI	4"	—	10

ITEM: 639-1-12

"SIZES AS REQUIRED"

Rigid and IMC Conduit

Offset Nipples



used to offset the axis of raceway 3/4".

File No. E9391: 1520-DC thru 1525-DC

File No. LR39354: All, except 1523

Malleable Iron

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1520	1/2"	20	200
1521	3/4"	10	100
1522	1"	5	50
1523	1 1/4"	5	25
1524	1 1/2"	5	25
1525	2"	2	10

Zinc Die Cast

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
1520-DC	1/2"	20	200
1521-DC	3/4"	10	100
1522-DC	1"	5	50
1523-DC	1 1/4"	10	40
1524-DC	1 1/2"	10	40
1525-DC	2"	5	30

ITEM: 639-1-12

"SIZES AS REQUIRED"

Rigid and IMC Conduit

Pull Elbows Rigid to Rigid



Used for connecting threaded rigid or IMC to form 90° bend. Removable aluminum cover and neoprene gasket facilitate wire pulling.

File No. E9391

Zinc Die Cast

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
81-DC	1/2"	10	100
82-DC	3/4"	5	50
83-DC	1"	5	25
84-DC	1 1/4"	5	20

Locknuts



Steel



Zinc

Used to fasten threaded conduit to opening in a box or enclosure.

File No. E9391: 101-S thru 112-S;
101-DC thru 106-DC

File No. LR39354: 101-S thru 112-S

Steel - Conduit Locknut

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
100	3/8"	200	2000
101-S	1/2"	100	1000
102-S	3/4"	100	1000
103-S	1"	100	500
104-S	1 1/4"	—	100
105-S	1 1/2"	—	100
106-S	2"	—	50
107-S	2 1/2"	—	25
108-S	3"	—	25
109-S	3 1/2"	—	25
110-S	4"	—	25
111-S	5"	—	5
112-S	6"	—	5

Zinc Die Cast - Fitting Locknut

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
101-DC	1/2"	100	1000
102-DC	3/4"	100	1000
103-DC	1"	100	500
104-DC	1 1/4"	—	100
105-DC	1 1/2"	—	100
106-DC	2"	—	50
107-DC	2 1/2"	—	25
108-DC	3"	—	25
109-DC	3 1/2"	—	25
110-DC	4"	—	25

ITEM: 639-1-12

"SIZES AS REQUIRED"

Steel

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
121-S	1/2"	50	200
122-S	3/4"	25	100
123-S	1"	25	100
124-S	1 1/4"	10	50
125-S	1 1/2"	10	50
126-S	2"	10	50
127-S	2 1/2"	5	25
128-S	3"	5	25
129-S	3 1/2"	—	5
130-S	4"	—	5
131-S	5"	—	5
132-S	6"	—	5

Bonding Locknuts



Used in harsh vibration environments to fasten threaded conduit to unthreaded opening in a box or enclosure.

UL File No. E20412: 121-S thru 130-S

Steel / PVC Seal

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
141	1/2"	50	200
142	3/4"	25	100
143	1"	25	100
144	1 1/4"	25	100
145	1 1/2"	25	100
146	2"	25	100
147	2 1/2"	5	25
148	3"	5	25
149	3 1/2"	5	25
150	4"	5	25

Sealing Locknuts



Used to provide raintight seal when fastening threaded conduit to unthreaded opening in a box or enclosure.

UL File No. E191572: 141 thru 146

Zinc Die Cast

Catalog Number	Trade Size	Unit Qty.	Std. Pkg. Qty.
151-DC	1/2"	25	100
152-DC	3/4"	25	100
153-DC	1"	10	50
154-DC	1 1/4"	5	25
155-DC	1 1/2"	2	20
156-DC	2"	2	20
157-DC	2 1/2"	—	10
158-DC	3"	—	5
159-DC	3 1/2"	1	5
160-DC	4"	1	5

Threaded Hubs



To secure threaded rigid service entrance conduit to box or enclosure. Insulated throat rated 105°C. BUNA-N sealing ring completely encircles knockout to prevent contaminants from entering enclosure.

UL File No. E9391: Type 4 - Water Tight

SF File No. LR39354: 151-DC thru 160-DC

ITEM: 639-1-12

"SIZES AS REQUIRED"

QO® Load Centers

Rainproof – Single Phase, Main Lugs, Main Circuit Breaker
Class 1130

Square D
www.squared.com
FOR CURRENT INFORMATION

LOAD CENTERS
1
RAINPROOF

Single Phase Three Wire – 120/240 Vac – UL Listed

Main Lugs (Order QO, QOT, QO-GFI, QO-EPD and QO-PL Branch Circuit Breakers From Pages 1-2 and 1-3.)

Mains Rating Amps	Spaces	A Max. Number Single Pole Circuits	Max. Number of Tandem Circuit Breakers	Total Price (Interior, Box and Cover)	Load Center Box and Interior		Main Wire Size AWG/kcmil		Equipment Ground Bar Kit (Order Separately)		Box No. See Page 1-14	
					Catalog Number	Price	Al	Cu	Catalog No.	Price		
Non-Metallic Enclosure												
Fixed Mains - Factory Installed Main Lugs - 10,000 RMS Sym. Amperes Short Circuit Current Rating												
60	2	4	2	\$ 65.00	QO24L60NRNM	\$ 65.00	#14-4	#14-4	Factory Incl.		1NM	
Metallic Enclosure												
Fixed Mains - Factory Installed Main Lugs - 10,000 RMS Sym. Amperes Short Circuit Current Rating												
40	2	2	0	\$ 71.00	QO24L0RB#	\$ 71.00	#12-6	#14-6	PK3GTA-1	\$ 7.20	1R	
70	2	4	2	83.00	QO24L70RB#	83.00	#12-3	#14-4	PK4GTA	6.90	1R	
100	6	12	6	90.00	QO812L100RB#	90.00	#8-1	Factory Installed	PK7GTA	7.40	2R	
				100.00	QO812L100TRB#	100.00					2R	
				147.00	QO816L100RB#	147.00					2R	
100	6	12	6	110.00	QO812L100RBCU#	110.00	#8-1	PK7GTA	PK7GTA	7.40	2R	
				177.00	QO816L100RBCU#	177.00					2R	
125	4	8	4	95.00	QO142L125GRB#	95.00	#4-2/0		PK7GTA Factory Incl.		15R	
Convertible Mains - Factory Installed Main Lugs - 65,000 RMS Sym. Amperes Maximum Short Circuit Current††												
QOM1 Main Frame Size - Convertible to Main Circuit Breaker - Copper Bus												
125	12	12	0	5181.00	QO112L125GRB	5181.00	#4-2/0	Factory Incl.	PK9GTA	Factory Incl.	3R	
				231.00	QO1224L125GRB	231.00						3R
				276.00	QO1624L125GRB	276.00						4R
				331.00	QO124L125GRB	331.00						4R
Convertible Mains - Factory Installed Main Lugs - 65,000 RMS Sym. Amperes Maximum Short Circuit Current††												
QOM2 Main Frame Size - Convertible to Main Circuit Breaker - Copper Bus												
150	30	30	0	\$372.00	QO130L150GRB	\$372.00	#4-250		PK18GTA	Factory Incl.	6R	
200	12	12	0	305.00	QO112L200GRB	305.00	#4-250	Factory Incl.	PK9GTA	Factory Incl.	5R	
				423.00	QO130L200GRB	423.00					6R	
				453.00	QO13040L200GRB	453.00					6R	
225	42	42	0	831.00	QO142L225GRB	831.00	#4-300		PK23GTA	Factory Incl.	8R	

Single Phase Three Wire – 120/240 Vac – UL Listed

Main Circuit Breaker (Order QO, QOT, QO-GFI, QO-EPD and QO-PL Branch Circuit Breakers From Pages 1-2 and 1-3.)

Mains Rating Amps	Spaces	A Max. Number Single Pole Circuits	Max. Number of Tandem Circuit Breakers	Total Price (Interior, Box and Cover)	Load Center Box and Interior		Main Wire Size AWG/kcmil Al or Cu	Equipment Ground Bar Kit (Order Separately)		Box No. See Page 1-14	
					Catalog Number	Price		Catalog No.	Price		
Convertible Mains - Factory Installed Main Circuit Breaker - 22,000 RMS Sym. Amperes Short Circuit Current Rating											
- Convertible to Main Lugs (see Page 1-5) or Lower Amperage Main Circuit Breaker (see Page 1-4).††											
QOM1 Main Circuit Breaker Frame Size - Copper Bus											
100	12	12	0	5292.	QO112M100RB	5292.	#4-1	Factory Incl.	PK9GTA	\$ 6.50	3R
				320.	QO116M100RB	320.					4R
				358.	QO120M100RB	358.					4R
125	24	24	0	606.	QO124M125RB	606.	#4-2/0		PK15GTA	10.90	4R
Convertible Mains - Factory Installed Main Circuit Breaker - 22,000 RMS Sym. Amperes Short Circuit Current Rating											
- Convertible to Main Lugs (see Page 1-5) or Lower Amperage Main Circuit Breaker (see Page 1-4).††											
QOM2 Main Circuit Breaker Frame Size - Copper Bus											
150	20	30	10	5605.	QO12030M150RB	5605.	#4-250	Factory Incl.	PK18GTA	\$11.90	5R
				712.	QO130M150RB	712.					6R
				606.	QO12040M200RB	606.					#4-250
732.	QO130M200RB	732.	6R								
867.	QO140M200RB	867.	7R								
Feed Thru Main Circuit Breaker With Feed-Thru Lugs 22,000 RMS Sym. Amperes Short Circuit Current Rating†											
125	6	12	8	5393.	CO1612M125FTRB	5393.	#4-2/0		PK12GTA	\$10.00	3R
150	8	16	8	575.	CO1616M150FTRB	575.	#4-4/0		PK15GTA-L	22.20	6R
200	8	16	8	575.	CO1616M200FTRB	575.	#4-4/0		PK15GTA-L	22.20	6R

Above listings thru 200 A mains rating meet Federal Specification W-P-115c as Type 1, Class 2.

- 4 Maximum number of single pole branch circuits utilizing QO and/or QOT circuit breakers.
- 0 UL short circuit current rating depends on lowest interrupting rating of circuit breakers installed.
- * UL Listed 5000 A short circuit current rating for corner grounded Delta systems. Use QO...H circuit breakers only.
- †† Use #10 maximum size wire for GFI circuit breaker.
- † Rated 200 A when using copper wire. Reference NEC Table 310-16 Note 3 when using Al wire.
- ‡ 22,000 AIR main circuit breaker UL Listed for use ahead of QO, QOT, QO-GFI, QO-EPD and QO-PL 10,000 AIR branch circuit breakers to permit their application on systems up to 22,000 Amperes available fault current.
- 70 A Max. branch circuit breaker and 70 A Max. back fed main circuit breaker.
- † Side hinge door device allow 1 1/2" on left side for door to open.
- Copper bus.

ITEM: 639-1-12

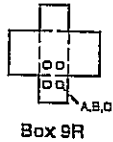
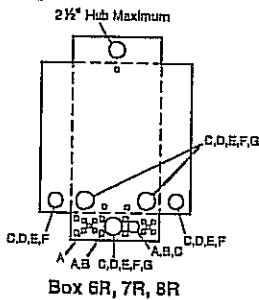
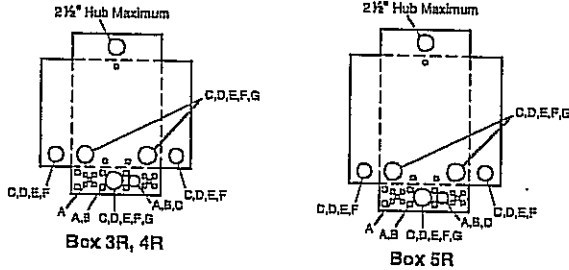
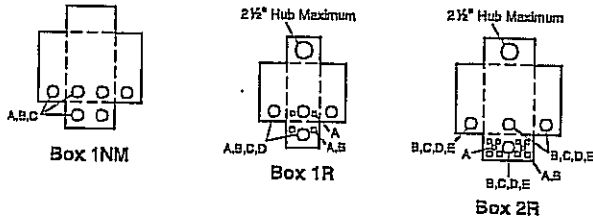
"SIZES AS REQUIRED"

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QO is a Registered Trademark of Square D Company or related companies.

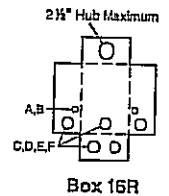
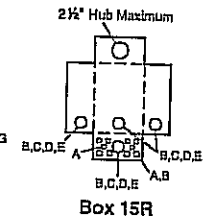
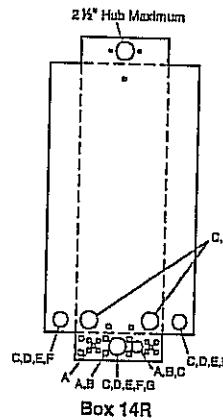
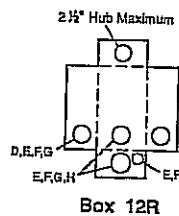
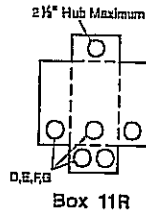
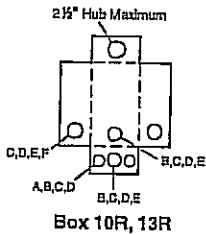
For additional information, reference QO Load Center Catalog 1130CT9501.



1 LOAD CENTER



ITEM: 639-1-12



Enclosure Dimensions

Box No.	Dimensions					
	W		H		D	
	IN	mm	IN	mm	IN	mm
1NM	6.52	166	8.79	223	3.90	99
1RA	4.88	124	9.38	238	4.00	102
2R	8.88	226	12.65	321	4.27	108
3R	14.75	375	18.92	481	4.52	115
4R	14.75	375	22.06	560	4.52	115
5R	14.75	375	26.04	661	4.52	115
6R	14.75	375	29.86	758	4.52	115
7R	14.75	375	33.78	858	4.52	115
8R	14.75	375	37.98	965	4.52	115
9R	4.56	116	6.50	165	3.88	99
10R	8.92	178	13.18	335	4.12	105
11R	7.58	192	23.24	590	4.75	121
12R	9.62	244	26.24	668	5.50	140
13R	8.92	178	16.18	411	4.12	105
14R	14.75	375	38.37	1000	4.52	115
15R	8.88	226	14.80	376	4.27	108
16R	8.55	217	24.75	629	4.18	108

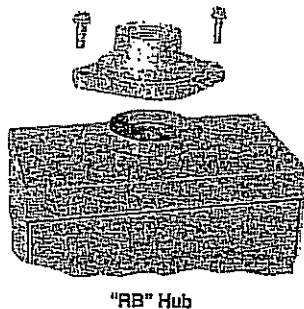
▲ HOME250SPA top endwall has no hub opening.

Knockout Information

Symbol	Knockouts							
	A	B	C	D	E	F	G	H
Conduit Size	½	¾	1	1¼	1½	2	2½	3

Bolt-On Hubs

Square D equipment with "R" or "RB" suffix, designated rainproof NEMA 3R rainproof construction, utilizes bolt-on hubs listed below. "RB" devices will accept ¾" through 2" bolt-on hubs without the use of reducers. Off-center conduit thread openings and elongated mounting holes provide quick and easy adjustment to eliminate costly conduit offsets and bends. Catalog suffix "R" devices require 3" through 4" field cut opening. Hubs are suitable for use with conduit having ANSI standard taper pipe thread.



Bolt-On Hubs UL Listed For "RB" Devices

Conduit Size	¾"	1"	1¼"	1½"	2"	2½"
Hub Cat. No.	B075	B100	B125	B150	B200	B250
Price	\$22.20	\$22.20	\$22.20	\$22.20	\$40.90	\$59.00

Note: Closing cap (catalog number BCAP) is provided factory-installed on each device having "RB" suffix. Price if ordered separately; \$2.50

Bolt-On Hubs UL Listed For Mounting in Field Cut Opening

Conduit Size	3"	3½"	4"	Designed for mounting in field cut opening. Includes gasket and four mounting bolts and nuts.
Hub Cat. No.	B300	B350	B400	
Price	\$124.00	\$200.00	\$245.00	

"SIZES AS REQUIRED"

MILBANK

METER SOCKET ACCESSORIES

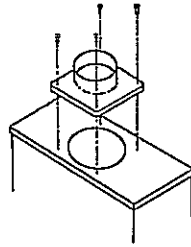
INTERCHANGEABLE UNIT HUBS



HUB CHART

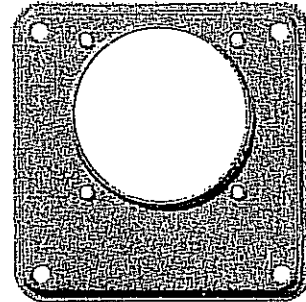
Size Milbank Hughes

S T A N D A R D	1"	A7514	160-9001
	1 1/4"	A7515	160-9002
	1 1/2"	A7516	160-9003
	2"	A7517	160-9004
	2 1/2"	A7518	160-9005
H. D.	3"	A8110	160-9006
	3 1/2"	A8111	160-9007
	4"	A8112	160-9008



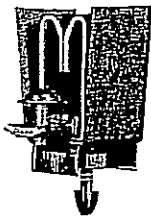
SUFFIX CHART

-O	Plain Top
-RL	Small U.H.O.
-R	Large U.H.O.
-R-RL	Large U.H.O. adapted to small U.H.O.

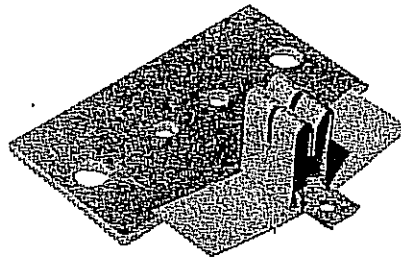


HUB ADAPTER PLATE
(Converts 4" opening to 2 1/2" opening)
Milbank No: S8324
Hughes No: 160-9010

FIFTH TERMINALS



"PLUG-IN" FIFTH TERMINAL
(100-200 Amp.)
Milbank No: 5T8K2
Hughes No: 160-9055



FIFTH TERMINAL FOR RESIDENTIAL APARTMENT SERIES (125-200 Amp.)
Milbank No: K2381
Hughes No: 160-9050

SEALING RINGS

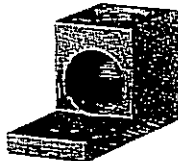


CAPTIVE SCREW ASSEMBLY
Milbank No: K3068
Hughes No: 160-9065

ITEM: 639-1-12

"SIZES AS REQUIRED"

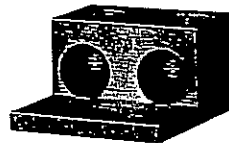
CONNECTOR KITS



SINGLE LUG ASSEMBLY

Hughes	Milbank	(3 per set) - 1Ø
160-9101	K1539	350 MCM (max.)
160-9105	K1540	600 MCM (max.)

For use with 3/8"-16 stud-type units only.



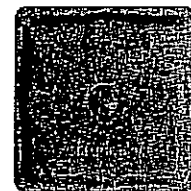
TWIN LUG ASSEMBLY

Hughes	Milbank	(3 per set) - 1Ø
160-9120	K1350	350 MCM (max.)
160-9125	K1541	600 MCM (max.)

Hughes	Milbank	(4 per set) - 3Ø
160-9110	K3082	350 MCM (max.)
160-9115	K3441	600 MCM (max.)

Hughes	Milbank	(4 per set) - 3Ø
160-9130	K3442	350 MCM (max.)
160-9135	K3083	600 MCM (max.)

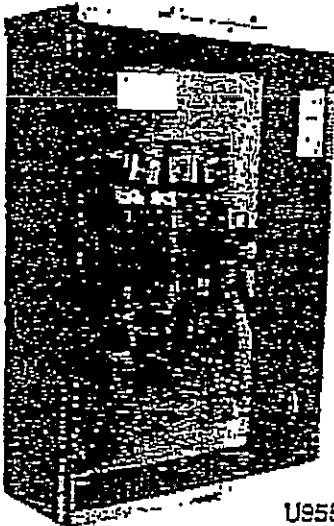
CLOSING COVERS



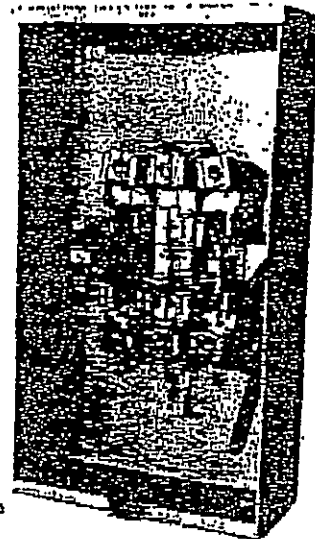
STANDARD CLOSING PLATE
Milbank No: A7551
Hughes No: 160-9015

HEAVY DUTY CLOSING PLATE
Milbank No: S9064
Hughes No: 160-9020

**125 & 200 AMP—5 TERMINAL—JAW CLAMPING
COMMERCIAL—RINGLESS—600 VAC**



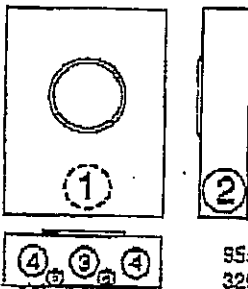
U9551-RL-QG-HSP
(Shown with Cover Plate)



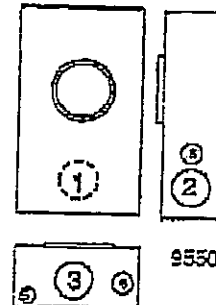
U9550-RL-QG-HSP

ITEM: 639-1-12

"STRES AS REQUIRED"



9551
3296
3505



9550

125 AMP—5 TERMINAL—RINGLESS—1Ø3W

CATALOG NUMBER	SERVICE	HUB	CONNECTORS C/V/L	BY-PASS	DIMENSIONS			CONCENTRIC K.O.'S					
					D"	W"	H"	1	2	3	4	5	6
U3505-RL-TG-HSP	OH/UG	H.O.	#6 - ½"	LEVER	4 ¼"	10"	18 ½"	2	2	2	2	¼"	¼"

200 AMP—5 TERMINAL—RINGLESS—1Ø3W AND 3Ø3W

CATALOG NUMBER	SERVICE	HUB	CONNECTORS C/V/L	BY-PASS	DIMENSIONS			CONCENTRIC K.O.'S					
					D"	W"	H"	1	2	3	4	5	6
U9550-RL-QG-HSP	OH	H.O.	#6-350 kcmil	LEVER	4 ¼"	10"	18 ½"	3	2 ½"	3	—	¼"	¾"
U9551-O-QG-HSP	UG	NONE	#6-350 kcmil	LEVER	4 ¼"	13"	19"	3	2 ½"	3	3	¼"	¼"
U5551-RRL-QG-HSP	OH/UG	H.O.	#6-350 kcmil	LEVER	4 ¼"	13"	19"	3	2 ½"	3	3	¼"	¼"
U3296-RRL-HSP	OH/UG	H.O.	¼"—16 STUD	LEVER	4 ¼"	13"	28 ½"	3	3	3	3	¼"	¼"

ALUMINUM CONSTRUCTION: To order an aluminum box rather than steel, change the catalog number prefix from "U" to "UAP". This designates an aluminum, painted box.

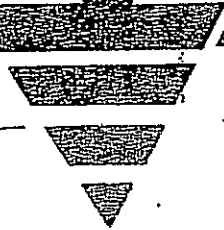
HUBS: For proper hub selection, see hub suffix chart on Accessory page.

CONNECTORS: Extruded aluminum connectors are tin plated. Units are supplied with a quadruplex neutral. For the U3296-RRL stud-type unit, order connector kits separately. Order 2 kits to cover both line and load side. K1539 (350 kcmil) or K1540 (600 kcmil.) See the Accessory page.

BYPASS: Lever supplies clamping action on meter spades and, also operates bypass device.

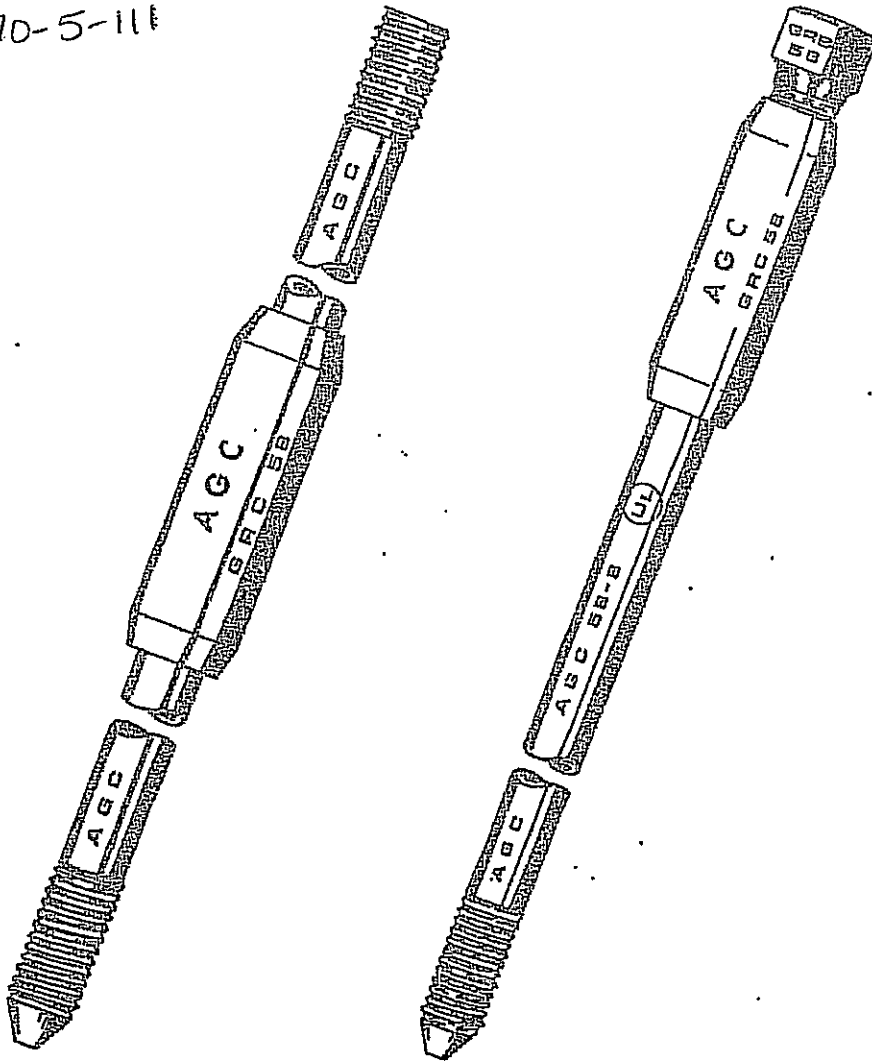


Apache



ITEM: 639-1-12
641-16148
641-16152
670-5-111

COPPER
BONDED
GROUND RODS





Apache Grounding Corporation

A DIVISION OF NASHVILLE WIRE PRODUCTS
308 West High Street • P.O. Box 1180 • Lebanon, TN 37088 • 615-449-1962

ITEM: 639-1-12
641-16148
641-12652
670-5-111

DOT - Florida

To Whom It May Concern:

Apache copperbonded ground rods are manufactured to UL467, latest revision and also ANSI C33.8-1972. The minimum copper thickness at any point is 0.010 inches.

The steel used for this product is made in the U. S. The rods are manufactured in Lebanon, Tennessee.

If additional information is requested, please let us know.

Sincerely,

Kathy Meadors
Sales Manager

Apache Grounding Corporation

308 West High Street • P.O. Box 1180
 Lebanon, Tennessee 37088 • 615-449-1962

ITEM: 639-1-12
 641-16148
 641-16152
 670-5-111

Copper Bonded Sectional Ground Rods

Catalog Number	Nominal Diameter x Length	Standard Bundle	Master Bundle	Weight Per 100
GRS128	1/2" x 8'	5	100	435
GRS128★	1/2" Star x 8'	5	100	552
GRS1210	1/2" x 10'	5	100	544
GRS1210★	1/2" Star x 10'	5	100	690
GRS586	5/8" x 6'	5	100	522
GRS588	5/8" x 8'	5	100	696
GRS5810	5/8" x 10'	5	100	870
GRS348	3/4" x 8'	3	50	1024
GRS3410	3/4" x 10'	3	50	1280
GRS110	1" x 10'	2	25	2300

Apache Grounding Corporation

308 West High Street • P.O. Box 1180
 Lebanon, Tennessee 37088 • 615-449-1962

Driving Stud Bolts for Copper Bonded Sectional Ground Rods

ITEM: 639-1-12
 641-16148
 641-16152
 670-5-111

Catalog Number	Size	Standard Package	Weight Per 100
GRB12	1/2" Stud Bolt	25	15
GRB12★	1/2" Star Stud Bolt	25	16
GRB58	5/8" Stud Bolt	25	23
GRB34	3/4" Stud Bolt	25	35
GRB10	1" Stud Bolt	10	75



Heavy Duty Clamp for Copper Bonded Ground Rods

Catalog Number	Rod Size	Wire Range		Standard Package	Weight Per 100
		Max.	Min.		
GRH12	1/2"	2 str.	10 sol.	100	12
GRH58	5/8"	1/0 str.	8 sol.	100	13
GRH34	3/4"	1/0 str.	8 sol.	100	15
GRH10	1"	4/0 str.	8 sol.	50	25

Couplings for Copper Bonded Sectional Ground Rods

Catalog Number	Size	Standard Package	Weight Per 100
GRC12	1/2" Coupling	25	16
GRC12★	1/2" Star Coupling	25	17
GRC58	5/8" Coupling	25	25
GRC34	3/4" Coupling	25	40
GRC10	1" Coupling	25	95



CABLE TO GROUND ROD

TYPES GR • GT • NT • NX

USING CADWELD "ONE SHOT"® CONNECTIONS

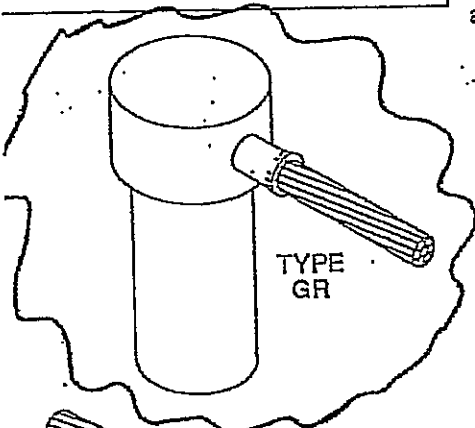
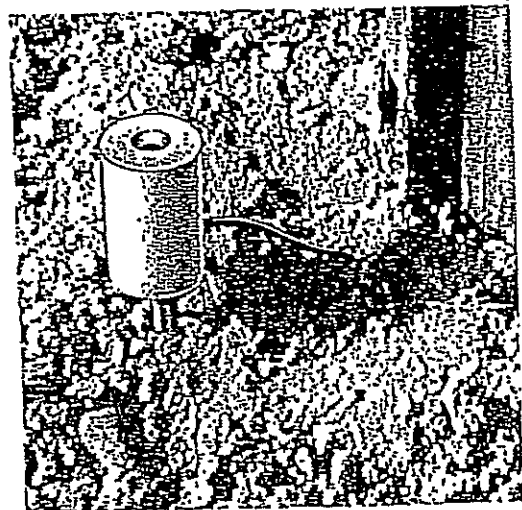
R.E.A. Approved

N E C Approved

The CADWELD "ONE-SHOT" Connection is a ceramic disposable unit replacing the familiar semi-permanent graphite mold and associated Handle Clamp.

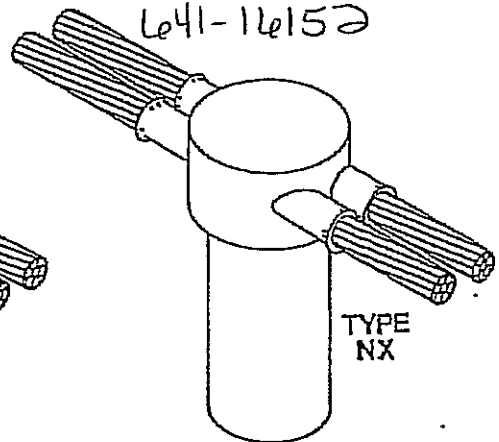
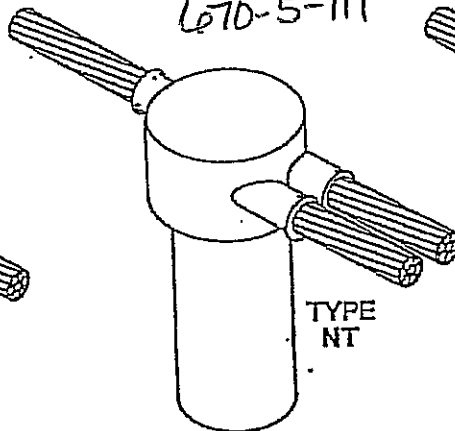
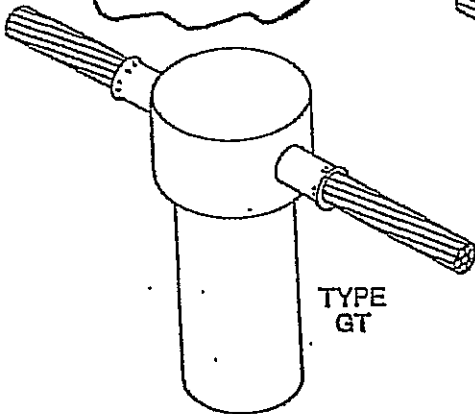
The CADWELD "ONE-SHOT" consists of the ceramic mold which contains:

- the CADWELD Weld Metal
- a metal disk
- a flared sleeve or sleeves
- a cover



ITEM: 639-1-12
670-5-111

641-116148
641-116152



For both plain or threaded copperclad and full size (galvanized steel and stainless steel) rods.

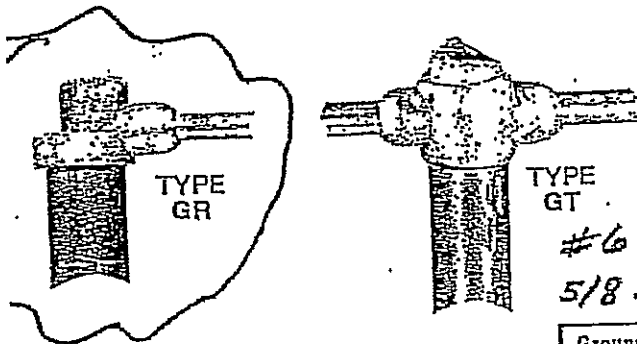
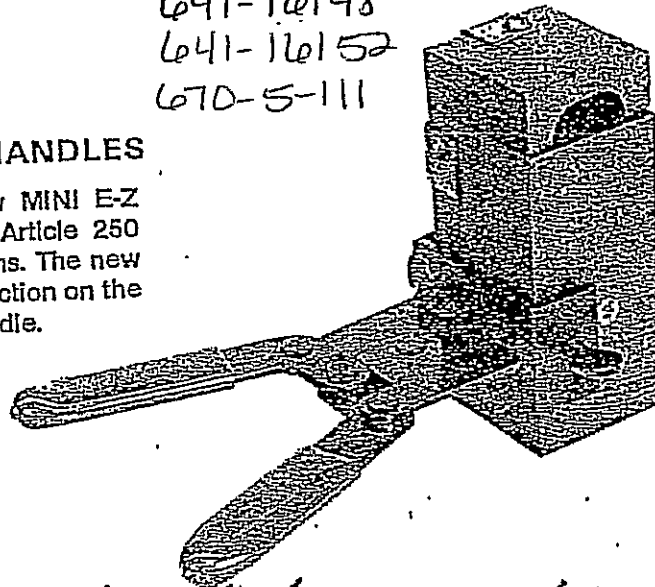
GROUND ROD SIZE	CONDUCTOR SIZE		CONNECTOR CATALOG NUMBER			
	SOLID	STRANDED	TYPE GR	TYPE GT	TYPE NT	TYPE NX
1/2	#5, 8	#8	GR1-141G	GT1-141G	NT1-141G	NX1-141G
	#3, 4	#4, 6	GR1-141L	GT1-141L	NT1-141L	NX1-141L
	#1, 2	#2, 3	GR1-141V	GT1-141V	—	—
5/8	#5, 8	#8	GR1-161G	GT1-161G	NT1-161G	NX1-161G
	#3, 4	#4, 6	GR1-161L	GT1-161L	NT1-161L	NX1-161L
	#1, 2	#2, 3	GR1-161V	GT1-161V	NT1-161V	NX1-161V
	2/0, 1/0	1/0, 1	GR1-162C	GT1-162C	—	—
	—	2/0	GR1-162G	—	—	—
3/4	#5, 8	#8	GR1-181G	GT1-181G	NT1-181G	NX1-181G
	#3, 4	#4, 6	GR1-181L	GT1-181L	NT1-181L	NX1-181L
	#1, 2	#2, 3	GR1-181V	GT1-181V	NT1-181V	NX1-181V
	2/0, 1/0	1/0, 1	GR1-182C	GT1-182C	—	—
	—	2/0	GR1-182G	—	—	—

CABLE TO GROUND ROD GR & GT TYPES

ITEM: 639-1-12
641-16148
641-16152
670-5-111

USING THE NEW MINI E-Z CHANGE HANDLES

CADWELD ground rod connections using the new MINI E-Z CHANGE HANDLES. Ideal for meeting the NEC Article 250 requirements for direct burial ground rod connections. The new Mini E-Z Change Handles provide positive locking action on the mold. Replaces the former spring action Throwing handle.



#6
5/8 SECT. Mold #32
311 #

ORDERING INFORMATION

- ① Insert: A For 1/2" plain (unthreaded) Copper clad rod
B For 1/2" sectional (threaded) Copper clad rod
C For 1/2" Steel galvanized or stainless rod
- ② Insert: 16 For 5/8" Plain (unthreaded) Copper clad rod
31 For 5/8" Steel or sectional (threaded) Copper clad rod
- ③ Insert: 18 For 3/4" Plain (unthreaded) Copper clad rod
33 For 3/4" Steel or sectional (threaded) Copper clad rod

EXAMPLES

#4 Stranded to 1/2" steel rod,
Type GR: GRT-14C1L
#2 Solid to 5/8" plain copper
clad rod, Type GT: GTP-161T

NOTES: The 3rd letter of the welder number denotes the mold price key. Welder Part No. includes mold and Mini E-Z Handle. Mold only (less handles) may be ordered by Welder Part No. - "M." Mini E-Z Handles only may be ordered -
- B399A - Fits all "T" priced molds.
- B399B - Fits all "N" and "P" Priced molds.

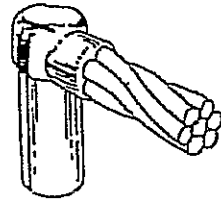
Welder for steel rods are for stainless, stainless clad or galvanized rods.

Ground Rod Size	Wire Size		TYPE GR		TYPE GT	
	Solid	Stranded	Welder Part No.	Weld Metal	Welder Part No.	Weld Metal
1/2"	10		GRT-14①1A	#25	GTT-14①1A	#32
	6,8	8	GRT-14①1G	25	GTT-14①1G	32
		6	GRT-14①1H	25	GTT-14①1H	32
	4	4	GRT-14①1K	25	GTT-14①1K	32
			GRT-14①1L	25	GTT-14①1L	32
	2		GRT-14①1T	32	GTP-14①1T	45
		2	GRT-14①1V	32	GTP-14①1V	45
	1	1	GRP-14①1X	45	GTP-14①1X	65
		1/0	GRP-14①1Y	45	GTP-14①1Y	65
			GRP-14②2C	45	GTP-14②2C	65
5/8"	10		GRT-②1A	32	GTT-②1A	32
	6,8	8	GRT-②1G	32	GTT-②1G	32
		6	GRT-②1H	32	GTT-②1H	32
	4	4	GRT-②1K	32	GTT-②1K	32
			GRT-②1L	32	GTT-②1L	32
	2	2	GRP-②1T	45	GTP-②1T	45
		2	GRP-②1V	45	GTP-②1V	45
	1	1	GRP-②1X	45	GTP-②1X	65
		1/0	GRP-②1Y	45	GTP-②1Y	65
			GRP-②2C	65	GTN-②2C	90
3/4"	10		GRT-③1A	32	GTP-③1A	45
	6,8	8	GRT-③1G	32	GTP-③1G	45
		6	GRT-③1H	32	GTP-③1H	45
	4	4	GRP-③1K	45	GTP-③1K	65
			GRP-③1L	45	GTP-③1L	65
	2	2	GRP-③1T	65	GTP-③1T	65
		2	GRP-③1V	65	GTP-③1V	65
	1	1	GRP-③1X	65	GTP-③1X	65
		1	GRP-③1Y	65	GTP-③1Y	65
		1/0	GRP-③2C	65	GTN-③2C	90

CABLE TO GROUND ROD

GR TYPE

ITEM: 639-1-12
 641-16148
 641-16152
 670-5-111



TYPE GR (Cable lap to top of ground rod) CONNECTIONS—Continued

#6 Sta To

1/2" NOMINAL SIZE
 GROUND RODS USE...

COLUMN 1

1/2" steel rods* or 1/2" sectional
 copper clad rods with a 1/16" rolled thread,

COLUMN 2

1/2" plain (unthreaded) copper
 clad rod,

COLUMN 3

1/2" sectional copper clad rods
 with 1/2" rolled threads.

COPPERWELD DSA Conductor

Rod Size	Cable Size	Mold Part Number			Mold Price	Weld Metal
		Column 1	Column 2	Column 3		
1/2"	7/#10	GRC-149A	GRC-159A	GRC-139A	C	#65
	7/#8	GRC-149B	GRC-159B	GRC-139B	C	90
	7/#7	GRC-149C	GRC-159C	GRC-139C	C	90
	7/#6	GRC-149D	GRC-159D	GRC-139D	C	90
	7/#5	GRC-149E	GRC-159E	GRC-139E	C	90
	19/#9	GRC-149F	GRC-159F	GRC-139F	C	90
	19/#8	GRC-149G	GRC-159G	GRC-139G	C	90

3/4", 3/4" and 1"
 NOMINAL SIZE GROUND
 RODS USE...

COLUMN 4

Copper clad sectional
 (threaded) or plain rods,

COLUMN 5

Steel rods (full size)*

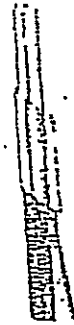
Stainless, stainless clad,
 galvanized, etc.

Rod Size	Cable Size	Mold Part Number		Mold Price	Weld Metal
		Column 4	Column 5		
5/8"	7/#10	GRC-169A	GRC-319A	C	#65
	7/#8	GRC-169B	GRC-319B	C	90
	7/#7	GRC-169C	GRC-319C	C	90
	7/#6	GRC-169D	GRC-319D	C	90
	7/#5	GRC-169E	GRC-319E	C	90
	19/#9	GRC-169F	GRC-319F	C	90
	19/#8	GRC-169G	GRC-319G	C	115
	19/#7	GRC-169H	GRC-319H	C	150
	19/#6	GRC-169J	GRC-319J	C	150
	3/4"	7/#10	GRC-189A	GRC-339A	C
7/#8		GRC-189B	GRC-339B	C	90
7/#7		GRC-189C	GRC-339C	C	90
7/#6		GRC-189D	GRC-339D	C	90
7/#5		GRC-189E	GRC-339E	C	90
19/#9		GRC-189F	GRC-339F	C	90
19/#8		GRC-189G	GRC-339G	C	115
19/#7		GRC-189H	GRC-339H	C	150
19/#6		GRC-189J	GRC-339J	C	150
1"		7/#10	GRC-229A	GRC-379A	C
	7/#8	GRC-229B	GRC-379B	C	150
	7/#7	GRC-229C	GRC-379C	C	150
	7/#6	GRC-229D	GRC-379D	C	150
	7/#5	GRC-229E	GRC-379E	C	150
	19/#9	GRC-229F	GRC-379F	C	150
	19/#8	GRC-229G	GRC-379G	C	200
	19/#7	GRC-229H	GRC-379H	C	200
	19/#6	GRC-229J	GRC-379J	C	200

ITEM: 639-1-12
 641-16148
 641-16152
 670-5-111

COUPLER NUMBER	ROD SIZE	STANDARD FEET	WEIGHT PER 100'
538PT	5/8" x 5' x 18"	10	173
638PT	3/4" x 6' x 18"	10	210

Typical is 15' of #10 Copper wire attached to rod by a Copper Strap and secured with 1/2" x 3/8" x 1/2" steel washer and nut.



COPPER BOND
 PIGTAIL
 GROUND ROD

COUPLER NUMBER	ROD SIZE	STANDARD FEET	WEIGHT PER 100'
SC12	1/2" Nominal	25	15
FSC12 Star	1/2" Full Size	25	17
SC58	5/8" Nominal	25	25
SC34	3/4" Nominal	25	43
SC1	1" Nominal	25	63

High Strength Couplings Threaded bronze chain fitted at both ends for easy driving. Coupling design allows full contact of rod point with butt end of preceding rod. These high strength, corrosion-resistant couplings insure permanent, low resistance copper-to-copper connections.



COUPLINGS
 COPPER BOND
 SECTIONAL
 RODS

COUPLER NUMBER	ROD SIZE	STANDARD FEET	WEIGHT PER 100'
DS12	1/2" Nominal	10	15
FDS12 Star	1/2" Full Size	10	16
DS58	5/8" Nominal	10	20
DS34	3/4" Nominal	10	32
DS1	1" Nominal	10	66

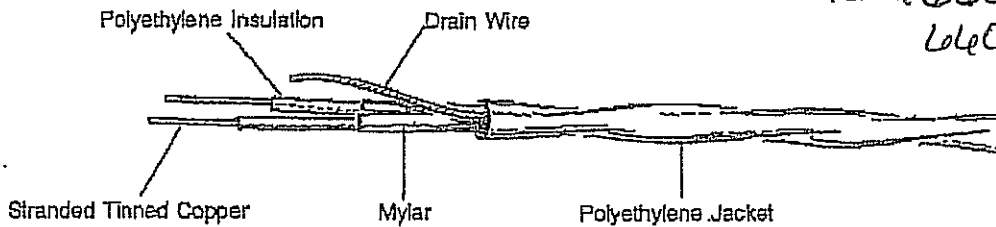


DRIVING SCREWS
 FOR SECTIONAL
 RODS

ERITECH, INC.
 A SUBSIDIARY OF ERICO INTERNATIONAL CORP.

IMSA Spec 50-2-1984

Traffic Signal Loop Detector Cable & Wires Lead-In (Feeder) Cable Two Conductor Shielded



Item: 660-2102
660-2104

Conductor Size (AWG)	Nominal Average Insulation Thickness (Inches)	Minimum Average Jacket Thickness (Inches)	Nominal Outside Diameter (Inches)	Approximate Weight (per M ft.)
18	.030	.030	.293	35
16	.030	.030	.300	39
→ 14	.030	.030	.335	54
12	.030	.030	.378	77

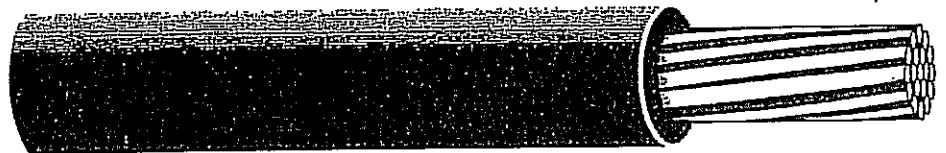


**INDEPENDENT
CABLE, INC**

XHHW

600 Volt. Copper Conductor. Cross-Linked Polyethylene (XLP) Insulation. High-Heat and Moisture Resistant. AWG Sizes 14 Through 8 Also Rated SIS.

ITEM: 660-2102
660-2106



APPLICATIONS

Southwire Type XHHW-2 conductors are primarily used in conduit or other recognized raceways for services, feeders, and branch circuit wiring, as specified in the National Electrical Code¹. XHHW-2 conductors may be used in wet or dry locations at temperatures not to exceed 90°C. Voltage rating for XHHW-2 conductors is 600 volts.

SPECIFICATIONS

Southwire Type XHHW-2 conductors meet or exceed UL standard 44, Federal Specification J-C-30B, and requirements of the National Electrical Code.

CONSTRUCTION

Southwire Type XHHW-2 copper conductors are annealed (soft) copper. Insulation is an abrasion, moisture, and heat resistant cross-linked polyethylene (XLP). AWG sizes 14, 12, and 10 available in black, white, red, blue, yellow, green, orange, brown, purple, and grey.

ALTERNATE CONSTRUCTION

Southwire Type XHHW-2 copper conductors are also available in sizes AWG 1/0 and larger rated for cable tray use and sunlight resistant. Specify XHHW-2 for CT use when requesting quote or ordering.

¹ 1999 Edition.

XHHW

Conductor		Insulation Thickness (mils)	Nominal O.D. (mils)	Allowable Ampacities+			Approx. Net Weight Per 1000' (lbs.)	Standard Package
Size (AWG or kcmil)	No. Strands			60°C	75°C	90°C		
14	7	30	131	15	15	15	18	A
12	7	30	149	20	20	20	26	A
10	7	30	172	30	30	30	40	A
8	7	45	234	40	50	55	66	B
6	7	45	271	55	65	75	100	B
4	7	45	318	70	85	95	150	B
3	7	45	345	85	100	110	186	B
2	7	45	376	95	115	130	231	B
1	19	55	434	110	130	150	292	B
1/0	19	55	473	125	150	170	363	B
2/0	19	55	517	145	175	195	452	B
3/0	19	55	567	165	200	225	565	B
4/0	19	55	623	195	230	260	706	B
250	37	65	691	215	255	290	835	B
300	37	65	744	240	285	320	995	B
350	37	65	793	260	310	350	1155	B
400	37	65	839	280	335	380	1314	B
500	37	65	922	320	380	430	1632	B
600	61	80	1029	355	420	475	1966	C
700	61	80	1098	385	460	520	2283	C
750	61	80	1131	400	475	535	2441	C
1000	61	80	1281	455	545	615	3231	C

+Allowable Ampacities:
 Allowable ampacities shown are for general use as specified by the National Electrical Code, 1999 Edition, section 310-15.
 60°C - When terminated to equipment for circuits rated 100 amperes or less or marked for #14 through #1 conductors.
 75°C - When terminated to equipment for circuits rated over 100 amperes or marked for conductors larger than #1.
 90°C - Wet or dry locations.

STANDARD PACKAGE CODE:
 A - 2500' Reel
 B - 1000' Reel
 C - 500' Reel

RECOMMENDED SAMPLE SPECIFICATIONS:

Conductors shall be UL-listed Type XHHW-2, suitable for operation at 600 volts or less in wet or dry locations, at temperatures not to exceed 90°C. Conductors shall be annealed copper, as manufactured by Southwire Company or approved equal.

ITEM: 6660-2102
 6660-2106

CABLE TRAY RATED RECOMMENDED SAMPLE SPECIFICATIONS:

Conductor shall be UL-listed Type XHHW-2 rated for cable tray use and sunlight resistance. Also, suitable for operation at 600 volts or less in wet or dry locations, at temperatures not to exceed 90°C. Conductors shall be annealed copper, as manufactured by Southwire Company or approved equal.



Wire & Cable

Traffic Signal Lead-in Wires - Non IMSA Spec

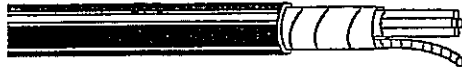
4 cond, 18 AWG, Stranded, Unshielded, Magnetometer



ITEM: 663-74-11

Part No: 18G4CMAGUN
Insulation: .010" PE
Cable Core: Filled with Flooding Compound
Color-Code: Black, Red, White, Green
OD/Weight: .260", 43 lbs./M-ft.
Jacket: .032" Black High Density Polyethylene (PE)

4 cond, 18 AWG, Stranded, Shielded, Magnetometer



"SIZES AS REQUIRED"

Part No: 18G4CMAG
Insulation: .010" PE
Shield: Aluminum/Mylar Tape
Cable Core: Filled with Flooding Compound
Color-Code: Black, Red, White, Green
OD/Weight: .260", 45 lbs./M-ft.
Jacket: .032" Black High Density Polyethylene (PE)

3 cond, 20 AWG, Stranded, Shielded, Opticom



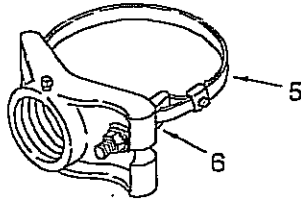
Part No: 20G3COPTICOM
Insulation: .025" PE
Shield: Aluminum/Mylar Tape
Color-Code: Yellow, Blue, Orange
OD/Weight: .250", 42 lbs./M-ft.
Jacket: .045" Black Polyvinyl Chloride (PVC)

Astro-Brac[®]

Mini-Brac Clamp Kits

This unique mount is a smaller version of the Astro-Brac and gives the same kind of universal application. Ideal for side-of-pole or mast arm mountings.

①



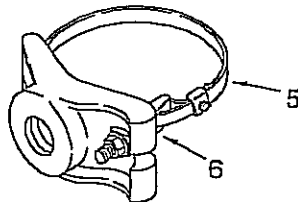
OPTIONS	
THREADS:	1½"-11½" NPS 1½"-11½" NPT
BAND LENGTH:	29" fits 4"-8" dia. pole 42" fits 4"-12" dia. pole
STAINLESS UPGRADE	
PAINT	

ITEM	DESCRIPTION	PART NO.
------	-------------	----------

ASTRO MINI-BRAC CLAMP KIT:

①	Band Mount, 1½"	AB-0121
②	Band Mount	AB-0155
③	Cable Mount, 1½" NPS	AB-0160
④	Cable Mount, 3/4"-14 NPT	AB-0163
5	BAND, 5/8", Stainless	AB-0243
6	CLAMP SCREW KIT, Galv. Screw & Stainless Hdwr.	AB-0303
7	CABLE ASSEMBLY, Mini-Brac, Galv. Screw & Stainless Hdwr.	AB-0336

②



OPTIONS	
THREADS:	3/4"-14 NPT (3M Opticom) 1"-8 NC
BAND LENGTH:	29" fits 4"-8" dia. pole 42" fits 4"-12" dia. pole
STAINLESS UPGRADE	
PAINT	

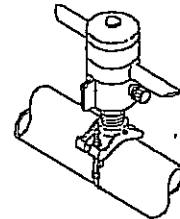
Notes:

1. All assemblies are supplied standard with stainless fasteners and natural aluminum alodine coating. Stainless upgrade to include stainless steel clamp screw where applicable.
2. Please specify options when ordering.

ITEM: 663-74-11

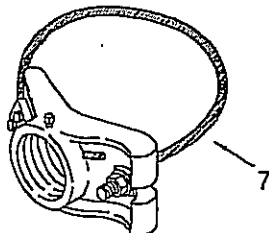
"SIZES AS REQUIRED"

Typical Applications

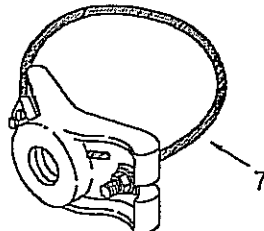


Mast Arm Mounting
Emergency Traffic Signal Sensor

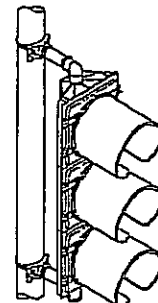
③



④



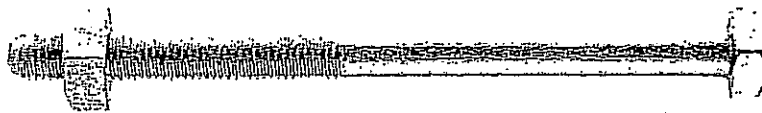
ITEM 3-4 OPTIONS	
CABLE LENGTH:	45" fits 4"-12" dia. pole
PAINT	



Side-of-Pole Mounting
Vehicular or Pedestrian Signals

Bolts, Machine (continued)

Hot Dip Galvanized
Square Head and Square Nut



5/8 INCH DIAMETER—MINIMUM TENSILE STRENGTH 13,550 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J8801-1/2	1-1/2	1-1/4	30.0
J8802	2	1-3/4	34.0
J8802-1/2	2-1/2	2-1/4	38.0
J8803	3	2-3/4	43.5
J8804	4	3	50.0
J8805	5	3	57.0
J8806*+ (E)	6	3	62.0
J8807 (E)	7	4	72.0
J8808* (E)	8	4	82.0
J8809 (E)	9	4	88.0
J8810* (E)	10	6	94.1
J8812* (E)	12	6	108.0
J8814* (E)	14	6	125.0
J8816* (E)	16	6	136.0
J8818* (E)	18	6	152.0
J8820* (E)	20	6	170.0
J8822 (E)	22	6	184.0
J8824 (E)	24	6	200.0

* ANSI Standard + Bell Standard (E) REA Accepted

ITEM: 670-5-111

3/4 INCH DIAMETER—MINIMUM TENSILE STRENGTH 20,050 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J8908* (E)	8	4	118.0
J8910* (E)	10	6	142.0
J8912* (E)	12	6	162.0
J8914* (E)	14	6	188.0
J8916* (E)	16	6	212.0
J8918* (E)	18	6	228.0
J8920 (E)	20	6	252.0
J8922 (E)	22	6	268.0
J8924 (E)	24	6	296.0
J8926 (E)	26	6	316.0

* ANSI Standard (E) REA Accepted

7/8 INCH DIAMETER—
MINIMUM TENSILE STRENGTH 27,700 LBS.

Catalog No.	Bolt Length (Inches)	Thread Length (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J9062	12	6	240.0
J9064* (E)	14	6	264.0
J9066* (E)	16	6	288.0
J9068* (E)	18	6	320.0
J9070 (E)	20	6	345.0
J9072 (E)	22	6	380.0
J9074	24	6	430.0

* ANSI Standard (E) REA Accepted

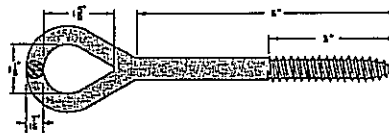
Bolts, Oval Eye

Hot Dip Galvanized

Joslyn Forged Oval Eyebolts are commonly used with thimbles, clevises and other pole line hardware items for overhead guying and deadening.

Regular oval eyebolts are roll threaded and furnished with one square nut. Double Arming eyebolts serve as a combination eye-bolt and double arming bolt. They have cut threads and come complete with three square nuts. Both types have cone points to allow driving without damage to the threads and to make the engaging and threading of nuts quicker and easier. Length is measured from below the eye to the last thread.

The J8930 screw eyebolt has rolled gimlet threads for screwing into trees, poles and crossarms.



SCREW EYEBOLTS

Catalog No.	Bolt Diameter (Inches)	Approximate Shipping Weight (Lbs. per 100 pcs.)
J8930 (E)	1/2	62

(E) REA Accepted

Bolt Diameter (Inches)	Eye I.D. Width x Length (Inches)	Minimum Ultimate Strength (Lbs.)
5/8	1-1/2 x 2	12,400
3/4	1-1/2 x 2	18,300

"SIZES AS REQUIRED"

PH

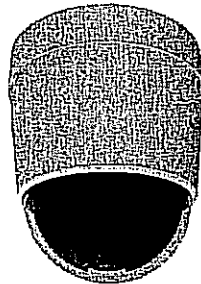
Spectra III™ SE Series Dome Systems

PREMIER INTEGRATED DOME SYSTEM

ITEM: 686-101

Product Features

- Three Auto Focus, High-Resolution Integrated Camera/Optics Packages; Five Back Box Models
- Day/Night, 80X Wide Dynamic Range, and Motion Detection (SD53CBW Series)
- Built-in Back Box Memory
- ExView HAD™ CCD (SD53M22 and SD53C22 Series)
- Window Blanking
- Camera Title Overlay, 20 User-Definable Characters
- Horizontal and Zone Blanking
- RJ-45 Data Port for Software Update and Setup
- On-Screen Compass and Tilt Display
- Multilanguage On-Screen Menus
- Password Protection
- Freeze Frame During Presets
- 7 Alarm Inputs; 2 Programmable Auxiliary Outputs
- Built-in Surge and Limited Lightning Protection



SURFACE MOUNT MODEL



PENDANT MODEL

- Optional UTP Video Converter
- Compatible with Pelco's FS85011 and Third-Party Fiber Optic Transmitters
- Heavy-Duty and Stainless Steel Models Available

Spectra III SE features multiple back box configurations and three auto focus, high-resolution dome drives with programmable software.

Spectra III SE's back box options include an environmental in-ceiling model that is ideal for outdoor soffits, an indoor surface mount, indoor in-ceiling model, and pendant styles for standard and environmental installations. Each back box model features built-in memory to store camera and location-specific dome settings, including labels, presets, patterns, and zones. These settings are automatically downloaded if a new dome drive is installed.

All cameras in Spectra III SE dome drives feature LowLight™ Technology. The day/night model features a 23X lens, built-in motion detection and 80X wide dynamic range imager. Two standard cameras, available in color or black-white, with a 22X lens and EXview HAD™ imager for increased sensitivity.

Spectra III SE dome systems feature many software enhancements that increase performance and make programming and operation easy. Window blanking allows a user to program up to eight, four-sided, user-defined privacy areas. Password protection prevents unauthorized users from changing the system settings.

Other features include an on-screen compass and tilt display; multi-language menus for English, Spanish, Portuguese, Italian, French, and German; optional menus for Russian, Polish, Turkish, and Czechoslovakian; and an RJ-45 data port for software up-loads and on-site setup and programming.

Spectra III SE's variable speed capabilities range from a smooth, fast pan motion of 360 degrees per second to a smooth "creep" speed of 0.1 degree per second. The system is capable of 360 degrees rotation and has an "auto flip" feature that allows the dome to rotate 180 degrees and reposition itself for uninterrupted viewing of any subject that passes directly beneath the dome.

Optional diagnostic/installation tools include a remote monitor kit (IPS-RMK) and a remote monitor cable (IPS-CABLE). These accessories allow the installer to view video, control PTZ, and perform system setup and software upgrades at the installation site. The IPS-RMK is a stand-alone kit consisting of a 5.6-inch TFT-LCD monitor, Palm™ OS compatible handheld and interface cable, carrying case, and the remote monitor cable (IPS-CABLE).

Also available are video conversion modules for applications using unshielded twisted pair (UTP) and fiber. See *OPTIONAL ACCESSORIES* for information.



C2440 / REVISED 1-06

IP66



U.S. Patents 5,931,432; 6,793,415 B2; 6,802,656 B2; 6,821,222 B2



TECHNICAL SPECIFICATIONS

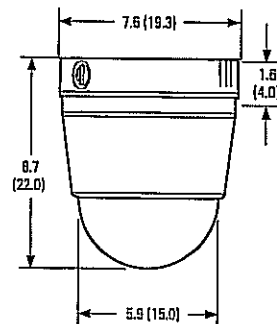
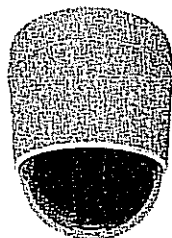
ITEM: 686-101

COMPONENT FEATURES

Back Box and Lower Dome

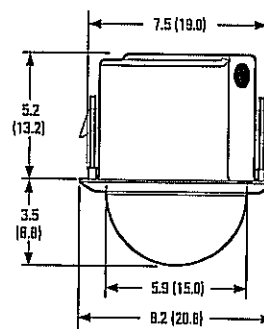
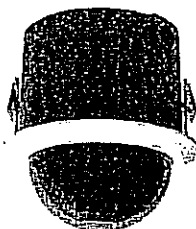
Surface Mount (Indoor)

- Built-in Memory Stores Camera/Dome Settings
- Available in Black or White Finish
- Installs Quickly and Easily to Any Type of Ceiling
- Quick Disconnect to Dome Drive
- Injection-Molded Plastic
- 5.9-Inch Acrylic Bubble



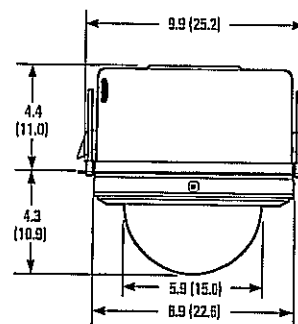
In-Ceiling (Indoor)

- Built-in Memory Stores Camera/Dome Settings
- Single Back Box for Suspended or Hard Ceiling Applications
- Requires 5.25-Inch Space Above Ceiling and 3.25 Inches Below
- 5.9-Inch Acrylic Bubble
- Minimum Ceiling Thickness 0.5-Inch; Maximum 1.75 Inches
- Quick Disconnect to Dome Drive
- Meets NEMA Type 1, IP40 Standards
- Aluminum Construction
- Suitable for Use in Environmental Air Handling Spaces



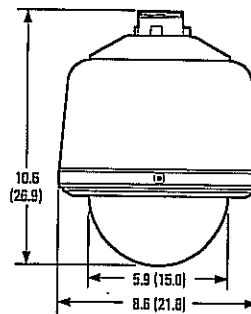
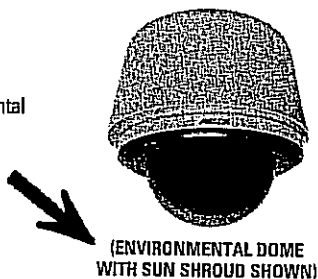
Environmental In-Ceiling

- Built-in Memory Stores Camera/Dome Settings
- Single Back Box for Hard Ceiling Applications
- Requires 4.4-Inch Space Above Ceiling and 4.3 Inches Below
- Includes Heater and Fan
- Minimum Ceiling Thickness 0.5-Inch; Maximum 1.75 Inches
- 5.9-Inch Acrylic Bubble
- Quick Disconnect to Dome Drive
- Meets NEMA Type 4X, IP66 Standards
- Aluminum Construction



Standard and Environmental Pendant

- Standard and Environmental Models
- Built-in Memory Stores Camera/Dome Settings
- Standard Pendant Available in Black or Gray Finish; Environmental Pendant Gray Finish Only
- Quick Disconnect to Dome Drive
- Meets NEMA Type 4X, IP66 Standards
- Aluminum Construction
- 5.9-Inch Acrylic Bubble
- Environmental Model Includes Sun Shield, Fan, and Heater



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

ITEM: 686-101

Dome Drive

- 150 Presets, 131 User-Definable and 19 Predefined
- $\pm 0.1^\circ$ Preset Accuracy
- Multilanguage Menus (English, Spanish, Portuguese, Italian, French, and German)
- Alternate Language Files (Includes Russian, Polish, Turkish, and Czechoslovakian) Available as Optional Software Upload
- RJ-45 Data Port for Software Update and Setup
- On-Screen Compass, Tilt, and Zoom Display
- Password Protection
- 360°/sec Pan Preset Speed and 200°/sec Tilt Preset Speed
- Rotating Discreet Liner with Sealed Fixed Bubble
- Window Blanking – Up to Eight, Four-Sided, User-Defined Shapes
- Eight Zones (programmable in size) Can Be Labeled with Up to 20 Characters Each or Set to Output Blank Video
- Seven Alarm Inputs
- One Auxiliary (Form C) Relay Output and One Open Collector Auxiliary Output (can be alternately programmed to operate upon alarm)
- Programmable Locations of Labels and On-Screen Displays
- Action on Alarm – Alarms can be individually programmed for three priority levels, to initiate a stored pattern, or to go to an associated preset when received
- Resume After Alarm – Allows the dome to return to a previously programmed state after alarm acknowledgement or to its previous position before alarm
- Patterns – Up to four, on-screen, user-defined programmable patterns. Includes pan, tilt, zoom, and preset functions
- Proportional Pan and Tilt – Continually decreases pan and tilt speeds in proportion to depth of zoom
- Variable Scan Speed – Scan speed can be programmable between 1-40°/sec
- Pan Motion Allows 0.1-150°/sec Pan Speed
- Programmable Limit Stops for Auto/Random/Frame Scan Modes
- Auto-sensing Protocol (Coaxitron®, RS-422 P and D); Accepts Competitive Control Protocol with Optional Translator Card
- Digital Position and Zoom Control and Feedback Via D Protocol
- Built-in Menu System for Setup of Programmable Functions
- "Auto Flip" Rotates Dome 180° at Bottom of Tilt Travel
- Programmable Zoom Speeds

MECHANICAL (Dome Drive Only)

Pan Movement	360° continuous pan rotation
Vertical Tilt	Unobstructed +2° to -92°
Manual Pan/Tilt Speeds	
Pan	0.1°-80°/sec manual operation, 150°/sec Turbo
Tilt	0.1°-40°/sec manual operation
Preset Speeds	
Pan	360°/sec
Tilt	200°/sec
	For variable-speed operation an appropriate controller is required. (With non-variable speed control, Spectra III® pan/tilt speed is 20°/sec)

ELECTRICAL

Input Voltage	18-30 VAC; 24 VAC nominal
Input Power	25 VA nominal (without heater); 70 VA nominal (with heater)
Fuse	1.25 A
Auxiliary Outputs	2
Alarm Inputs	7

GENERAL

Construction		
Back Box		
Surface Mount	Plastic	
In-Ceiling	Aluminum	
Pendant	Aluminum	
Dome Drive	Aluminum, thermo plastic	
Bubble	Acrylic	
Light Attenuation		
Smoked	1/2 F-stop light loss	
Clear	Zero light loss	
Chrome	2 F-stops light loss	
Gold	2 F-stops light loss	
Cable Entry (Back Box)		
In-Ceiling and	0.75-inch conduit fitting	
Surface Mount	Through 1.5-inch NPT pendant mount	
Pendant	<u>Unit</u>	<u>Shipping</u>
Weight (approximate)		
Back Box		
Surface Mount	0.7 lb (0.32 kg)	2 lb (0.90 kg)
In-Ceiling	1.5 lb (0.68 kg)	2 lb (0.90 kg)
Environmental		
In-Ceiling	2.1 lb (0.95 kg)	3 lb (1.36 kg)
Standard Pendant	2.4 lb (1.09 kg)	4 lb (1.81 kg)
Environmental Pendant	3.5 lb (1.59 kg)	5 lb (2.27 kg)
Dome Drive	2.4 lb (1.09 kg)	4 lb (1.81 kg)
Lower Dome		
Surface Mount	0.4 lb (0.18 kg)	1 lb (0.45 kg)
In-Ceiling	0.2 lb (0.09 kg)	1 lb (0.45 kg)
Pendant and		
Environmental		
In-Ceiling	0.6 lb (0.27 kg)	2 lb (0.90 kg)
Environment		
Surface Mount	Indoor	
In-Ceiling	Indoor	
Environmental In-Ceiling	Outdoor	
Pendant, Standard and Environmental	Indoor/outdoor	
Operating Temperature		
Surface Mount and	32° to 122°F (0° to 50°C)	
Indoor In-Ceiling	(Assumes no wind chill factor)	
Standard Pendant	113°F (45°C) absolute maximum;	
Maximum	95°F (35°C) sustained maximum	
Minimum	25°F (-4°C) sustained minimum	
Environmental		
In-Ceiling and		
Environmental Pendant	(Assumes no wind chill factor)	
Maximum	140°F (60°C) absolute maximum;	
Minimum	122°F (50°C) sustained maximum	
	-60°F (-51°C) absolute minimum; prevents	
	icing at sustained minimum of -50°F (-45°C);	
	de-ices 0.1 inch (2.5 mm) within 3 hours after	
	power-up	

Effective Projected Area (EPA)

72 square inches (without mount)
118 square inches (with IWM Series mount)

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class B
- UL Listed
- UL Listed to Canadian safety standards
- Complies with Argentine compliance requirements under Res: 92/98
- FCC, Class B
- U.S. Patents 5,931,432; 6,793,415 B2; 6,802,656 B2; 6,821,222 B2

Meets the following standards:

- NEMA Type 4X, IP66 when installed properly (BB53-F-E, BB53-PB, BB53-PG, and BB53-PG-E)
- NEMA Type 1, IP40 (BB53-SMW, BB53-SMB and BB53-F)

TECHNICAL SPECIFICATIONS

ITEM: 686-101

CAMERA/OPTICS

	Day/Night (23X)	Color (22X)	Black-White (22X)
Signal Format	NTSC (DD53CBW) PAL (DD53CBW-X)	NTSC (DD53C22) PAL (DD53C22-X)	EIA (DD53M22) CCIR (DD53M22-X)
Scanning System	2:1 Interlace	2:1 Interlace	2:1 Interlace
Image Sensor	1/4-inch CCD	1/4-inch EXview HAD™ CCD	1/4-inch EXview HAD™ CCD
Effective Pixels			
NTSC	724 (H) X 494 (V)	768 (H) X 494 (V)	768 (H) X 494 (V)
PAL	724 (H) X 582 (V)	752 (H) X 582 (V)	752 (H) X 582 (V)
Horizontal Resolution			
NTSC	>470 TV Lines	>470 TV Lines	>500 TV Lines
PAL	>470 TV Lines	>460 TV Lines	>500 TV Lines
Lens	F1.6 (f = 3.6-82.8 mm optical)	F1.6 (f = 4-88 mm optical)	F1.6 (f = 4-88 mm optical)
Zoom	23X optical, 10X digital	22X optical, 12X digital	22X optical, 12X digital
Zoom Speed (optical range)	2.9/4.2/5.8 seconds	2.4/3.9/6.3 seconds	2.4/3.9/6.3 seconds
Horizontal Angle of view	54° at 3.6 mm wide zoom; 2.5° at 82.8 mm telephoto zoom	47° at 4.0 mm wide zoom; 2.2° at 88 mm telephoto zoom	47° at 4.0 mm wide zoom; 2.2° at 88 mm telephoto zoom
Focus	Automatic with manual override	Automatic with manual override	Automatic with manual override
Maximum Sensitivity @35 IRE			
NTSC/EIA	0.08 lux at 1/2 sec (color) 0.3 lux at 1/60 sec shutter (B-W) 0.013 lux at 1/2 sec (B-W)	0.02 lux at 1/2 sec shutter	0.005 lux at 1/2 sec shutter
PAL/CCIR	0.08 lux at 1/1.5 sec (color) 0.3 lux at 1/50 sec shutter (B-W) 0.013 lux at 1/1.5 sec (B-W)	0.02 lux at 1/1.5 sec shutter	0.005 lux at 1/1.5 sec shutter
Sync System	Internal/AC line lock, phase adjustable via remote control, V-Sync	Internal/AC line lock, phase adjustable via remote control, V-Sync	Internal/AC line lock, phase adjustable via remote control, V-sync
White Balance	Automatic with manual override	Automatic with manual override	—
Shutter Speed	Automatic (electronic iris)/Manual	Automatic (electronic iris)/Manual	Automatic (electronic iris)/Manual
NTSC	1/2 - 1/30,000	1/2 - 1/30,000	1/2 - 1/30,000
PAL	1/1.5 - 1/30,000	1/1.5 - 1/30,000	1/1.5 - 1/30,000
Iris Control	Automatic Iris Control with manual override	Automatic Iris Control with manual override	Automatic Iris Control with manual override
Gain Control	Automatic/OFF	Automatic/OFF	Automatic/OFF
Video Output	1 Vp-p, 75 ohms	1 Vp-p, 75 ohms	1 Vp-p, 75 ohms
Video Signal to Noise	>50 dB	>50 dB	>48 dB
Wide Dynamic Range	80X	—	—

WINDOW BLANKING

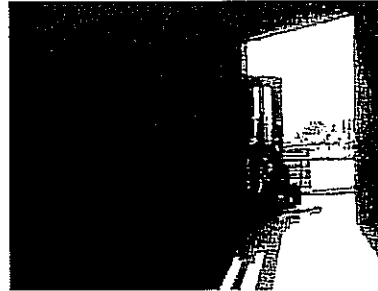
Window blanking allows a user to program up to eight, four-sided, user-defined areas that cannot be viewed by the operator of the dome system. A blanked area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.



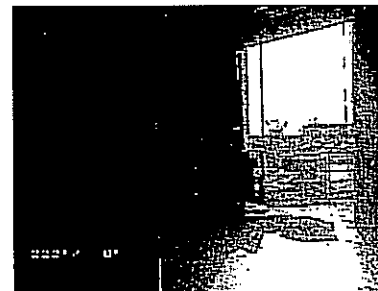
BEFORE



AFTER



BEFORE



AFTER

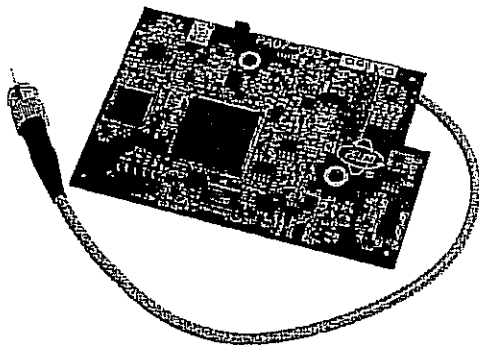
WIDE DYNAMIC RANGE

The Wide Dynamic Range (WDR) setting balances the brightest and darkest sections of a scene to produce a picture that provides more detail. The range from the darkest to the brightest sections of the scene is 60X more when WDR is ON than when OFF.

OPTIONAL ACCESSORIES

DDS-FM	Fixed camera mount adapter. Interchangeable with all Spectra III dome drives.
IPS-RMK	Remote monitor kit. Stand-alone kit consisting of a 5.6-inch TFT-LCD monitor, Palm™ OS compatible handheld, cables and carrying case. Allows viewing of camera video, local PTZ control, system setup, and system software upgrades at any installed dome.
IPS-CABLE	Remote monitor cable and software kit consisting of the Spectra III remote monitor interface cable and necessary software for use with a PC (Windows® 95, 98, Me, 2000), Palm™ OS compatible handheld or iPaq™ Series Pocket PC. See www.pelco.com for a list of compatible devices.
IPS-RDPE-2*	Remote data port. 24 VAC, wall/pole mount video/data breakout box. Allows ground-level control/programming and Spectra III OS software upgrades when used with the IPS-RMK or IPS-CABLE.
TXB Series*	Translator boards for AD Manchester, Bosch (Philips, Burtle), Sensomatic, Vicon, and NTCIP protocols.
VC-UTP	Converts video for use with unshielded twisted pair (UTP); maximum distance to passive receiver 500 feet (152 m). Plugs into TXB connector in Spectra back box. Coaxitron-ready when used with passive receiver. Works with all major suppliers of UTP modules. Not for use in conjunction with TXB boards.
FS85011*	Fiber transmitter sends one unidirectional composite video channel and one bidirectional data channel over one multimode or single-mode fiber optical cable.

*If TXB or FS85011 boards are installed, remote upload of system software will not be possible.



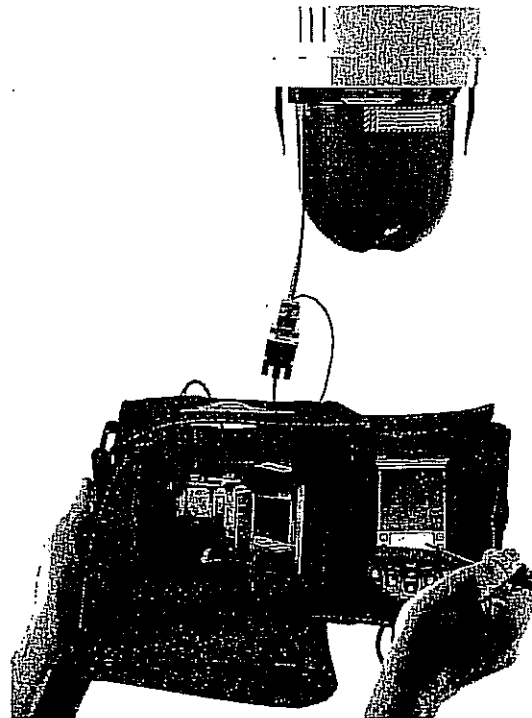
FS85011 FIBER MODULE

RECOMMENDED MOUNTS

ITEM: 686-101

Surface Mount Domes	
PASMB	Pendant adapter for surface mount dome, black
SD53SM-P	2' x 2' drop ceiling panel for BB53-SMW and BB53T-SMW series back boxes. Replaces 2' x 2' ceiling tile. Aluminum construction.
In-Ceiling Domes	
SD5-P	2' x 2' drop ceiling panel, aluminum construction. Replaces 2' x 2' ceiling tile.
SCA1	Support rails for BB53-F; for use in ceiling tile applications.
Pendant Domes	
BB5-PCA-BK**	Pendant conduit adapter, black
BB5-PCA-GY**	Pendant conduit adapter, gray
IWM Series	Wall mount, with or without integral 24 VAC, 100 VA transformer. Black or gray finish. Can be adapted for corner, parapet or pole applications.
MRCA	Ceiling mount, black
MRWA	Wall mount, black
PP434B	Parapet roof mount
PP350/PP351	Parapet wall/roof mount
SWM Series	Compact wall mount, black or gray finish. Can be adapted for corner or pole applications.

**Not suitable for use with heavy-duty, pressurized, or stainless steel Spectra domes.



IPS-RMK REMOTE MONITOR KIT



SYSTEM MODELS AND RELATED PRODUCTS

ITEM: 686-101

SYSTEM MODEL NUMBERS

Type	Back Box Color	Lower Dome	23X Day/Night*	22X Color*	22X Black-White*
Surface Mount	White	Smoked	SD53CBW-SMW-0	SD53C22-SMW-0	SD53M22-SMW-0
		Clear	SD53CBW-SMW-1	SD53C22-SMW-1	SD53M22-SMW-1
		Chrome	SD53CBW-SMW-2	SD53C22-SMW-2	SD53M22-SMW-2
		Gold	SD53CBW-SMW-3	SD53C22-SMW-3	SD53M22-SMW-3
	Black	Smoked	SD53CBW-SMB-0	SD53C22-SMB-0	SD53M22-SMB-0
		Clear	SD53CBW-SMB-1	SD53C22-SMB-1	SD53M22-SMB-1
		Chrome	SD53CBW-SMB-2	SD53C22-SMB-2	SD53M22-SMB-2
		Gold	SD53CBW-SMB-3	SD53C22-SMB-3	SD53M22-SMB-3
In-Ceiling, Indoor	Black	Smoked	SD53CBW-F0	SD53C22-F0	SD53M22-F0
		Clear	SD53CBW-F1	SD53C22-F1	SD53M22-F1
		Chrome	SD53CBW-F2	SD53C22-F2	SD53M22-F2
		Gold	SD53CBW-F3	SD53C22-F3	SD53M22-F3
In-Ceiling, Environmental**	Black	Smoked	SD53CBW-F-E0	SD53C22-F-E0	SD53M22-F-E0
		Clear	SD53CBW-F-E1	SD53C22-F-E1	SD53M22-F-E1
Pendant, Standard	Black	Smoked	SD53CBW-PB-0	SD53C22-PB-0	SD53M22-PB-0
		Clear	SD53CBW-PB-1	SD53C22-PB-1	SD53M22-PB-1
		Chrome	SD53CBW-PB-2	SD53C22-PB-2	SD53M22-PB-2
		Gold	SD53CBW-PB-3	SD53C22-PB-3	SD53M22-PB-3
	Lt. Gray	Smoked	SD53CBW-PG-0	SD53C22-PG-0	SD53M22-PG-0
		Clear	SD53CBW-PG-1	SD53C22-PG-1	SD53M22-PG-1
		Chrome	SD53CBW-PG-2	SD53C22-PG-2	SD53M22-PG-2
		Gold	SD53CBW-PG-3	SD53C22-PG-3	SD53M22-PG-3
Pendant, Environmental**	Lt. Gray	Smoked	SD53CBW-PG-E0	SD53C22-PG-E0	SD53M22-PG-E0
		Clear	SD53CBW-PG-E1	SD53C22-PG-E1	SD53M22-PG-E1

*For PAL and CCIR models add "-X" suffix to part number. (Example: SD53C22-PG-E0-X)

**Environmental dome systems include a heater, fan, and the environmental pendant also includes a sun shield.

COMPONENT MODEL NUMBERS

Back Box	Dome Drive	Lower Dome***
BB53-SMB Surface mount, black	DD53CBW Day/Night (NTSC) camera (23X)	LD53SMB-0 Smoked, surface, black
BB53-SMW Surface mount, white	DD53CBW-X Day/Night (PAL) camera (23X)	LD53SMB-1 Clear, surface, black
BB53-F In-ceiling, black	DD53C22 Color (NTSC) camera (22X)	LD53SMB-2 Chrome, surface, black
BB53-F-E In-ceiling, black, environmental	DD53C22-X Color (PAL) camera (22X)	LD53SMB-3 Gold, surface, black
BB53-PB Pendant mount, black, standard	DD53M22 Black-White (EIA) camera (22X)	LD53SMW-0 Smoked, surface, white
BB53-PG Pendant mount, gray, standard	DD53M22-X Black-White (CCIR) camera (22X)	LD53SMW-1 Clear, surface, white
BB53-PG-E Pendant mount, gray, environmental	DD5-FM Removable, fixed mount bracket only (camera and lens not included). Interchangeable with all Spectra III dome drives.	LD53SMW-2 Chrome, surface, white
		LD53SMW-3 Gold, surface, white
		LD5F-0 Smoked, in-ceiling
		LD5F-1 Clear, in-ceiling
		LD5F-2 Chrome, in-ceiling
		LD5F-3 Gold, in-ceiling
		LD53PB-0 Smoked, pendant, black
		LD53PB-1 Clear, pendant, black
		LD53PB-2 Chrome, pendant, black****
		LD53PB-3 Gold, pendant, black****

Notes:


To order a fixed mount dome system refer to the component models above and select one each of the following: back box (BB53-F), dome drive (DD5-FM), plus choice of lower dome (LD5F-0, LD5F-1, LD5F-2 or LD5F-3).

For environmental applications, you must order an environmental back box (BB53-F-E) or (BB53-PG-E).

DD5-FM is ideal for use with Pelco's CCC1380/CCC1390/MCC1380 Series cameras with selected Pelco lenses.

***Use the pendant lower domes with the environmental in-ceiling and environmental pendant back boxes.

****Not recommended for outdoor use due to possible light reflections.

 Indicates change or addition.



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TECHNICAL SPECIFICATIONS

MODELS

WCS1-4	Outdoor camera power supply, 100/120/240 VAC input. One 24/26/28 VAC output, total current capacity of 4 A (100 VA).
WCS4-20	Outdoor multiple camera power supply, 120/230 VAC input. Four fused 24/28 VAC outputs, total current capacity of 20 A (480 VA).
WCS4-20B	Same as WCS4-20 except has circuit breakers.

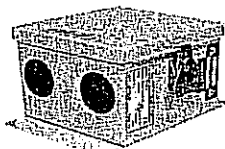
Product Capacity Chart

A partial list of compatible products and the number of units that may be powered by each power supply are listed below. Capacity is based on the VA rating of each product to be used with the power supply.

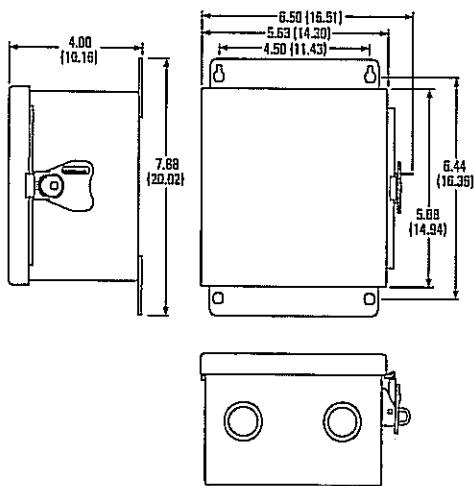
Product	Power Supply Model	
	WCS1-4 (100 VA)	WCS4-20/WCS4-20B (480 VA)
CCD Camera (12 VA max)	1	4
Indoor Spectra® (25 VA)	1	4
Outdoor Spectra® (70 VA)	1	4
Outdoor DF5 (62 VA)	1	4
Esprit® (70 VA)	1	4

MECHANICAL

Cable Entry Hole plugs for 0.75-inch (1.9 cm) conduit
Latch Stainless steel link-lock latch; can be secured with padlock (not supplied)



WCS1-4 POWER SUPPLY



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

ITEM: 686-101

ELECTRICAL

Input Voltage	
WCS1-4	100/120/240 VAC, 50/60 Hz
WCS4-20/WCS4-20B	120 or 230 VAC, 50/60 Hz
Output Voltage	
WCS1-4Z	4/26/28 VAC
WCS4-20/WCS4-20BZ	4/28 VAC
Output Fuse/ Circuit Breaker Ratings	
WCS1-4	4 A*
WCS4-20/WCS4-20B	8 A*
Input Connectors	Screw-type barrier strips
Output Connectors	Screw-type barrier strips; WCS4-20B is suitable for Class 2 wiring
Input Wire Size	12-16 gauge solid wire
Output Wire Size	
WCS1-4	16-20 gauge solid or stranded wire
WCS4-20/-20B	16-22 gauge solid or stranded wire

The following are the recommended maximum distances (transformer to load) and are calculated with a 10-percent voltage drop. (Ten percent is generally the maximum allowable voltage drop for AC-powered devices.) Distances are calculated in feet; values in parentheses are meters.

Recommended Wiring Distance Chart

Input Voltage	Total VA Consumed	Wire Gauge					
		20 AWG (0.5 mm ²)		18 AWG (1.0 mm ²)			
24 VAC	25	113	(34)	180	(55)	207	(67)
	50	56	(17)	90	(27)	143	(43)
	70	41	(12)	64	(19)	102	(31)
26 VAC	25	133	(40)	212	(64)	337	(103)
	50	66	(20)	105	(32)	168	(51)
	70	49	(15)	78	(24)	124	(38)
28 VAC	25	155	(47)	246	(75)	392	(119)
	50	77	(23)	122	(37)	195	(59)
	70	55	(17)	88	(27)	135	(41)

GENERAL

Environment	Outdoor
Construction	Aluminum
Finish	Gray polyester powder coat
Unit Weight	
WCS1-4	6.4 lb (2.9 kg)
WCS4-20/4-20B	16.2 lb (7.3 kg)
Shipping Weight	
WCS1-4	8 lb (3.6 kg)
WCS4-20/4-20B	18 lb (8.1 kg)

CERTIFICATIONS/RATINGS

- CE
- UL Listed
- UL Listed to Canadian safety standards
- China Compulsory Certification
- Meets NEMA Type 4X and IP66 standards

*Individual output cannot exceed this rating, and the total of all outputs cannot exceed the overall rating of the power supply (see the Models section).

Indicates change or addition.



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TECHNICAL SPECIFICATIONS

ITEM: 686-101

MODELS

SWM-BK	Compact wall mount with cable feedthrough, black finish.
SWM-GY	Same as SWM-BK except gray finish

RELATED PRODUCTS

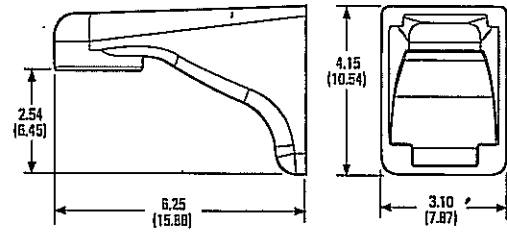
SWM-CA	Corner adapter, gray finish
SWM-CA24	Same as SWM-CA except has internal transformer to convert 120 or 230 VAC input to 24 VAC
SWM-PA-BK	Pole adapter with stainless steel hardware, black finish
SWM-PA-GY	Same as SWM-PA-BK except gray finish

ELECTRICAL (SWM-CA24 ONLY)

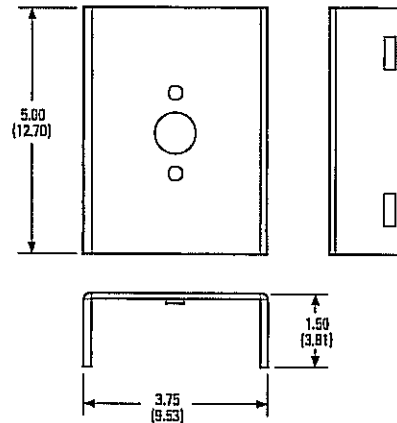
Input Power	120/230 VAC, 50/60 Hz switchable
Output Power	24 VAC (100 VA transformer)
Circuit Protection	One 1.6A, 120 VAC fast-acting fuse or one 500 mA, 230 VAC slow-blow fuse

GENERAL

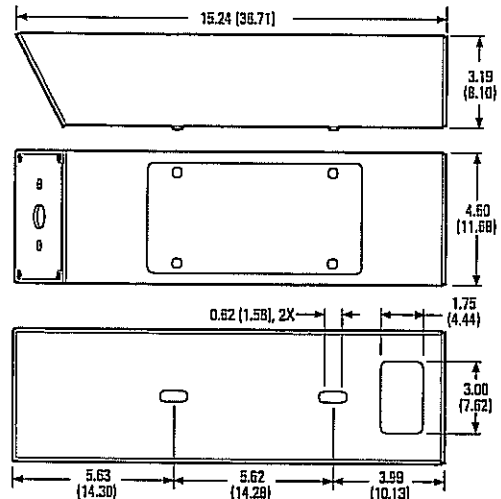
Mounting Method	Wall mount	Mount is secured by a set screw to a mounting plate that is attached to the mounting surface with two fasteners (not supplied) no greater than 1/4-inch diameter.										
Corner adapter	Adapter is attached to a vertical load-bearing surface with two 3/8-inch (0.95 cm) diameter stainless steel bolts of appropriate length (not supplied). Includes hardware to attach SWM mount.											
Pole adapter	Adapter is attached to a pole with two stainless steel straps (supplied). Straps fit 4-inch (10.16 cm) to 8-inch (20.32 cm) diameter pole. (Includes hardware to attach mounting plate.)											
Cable Entry	Via cable feedthrough hole in mount adapters											
Maximum Load	10 lb (4.5 kg)											
Environment	Indoor/outdoor											
Operating Temperature (SWM-CA24 only)	-50° to 120°F (-46° to 49°C)											
Effective Projected Area (EPA) SWM-BK and SWM-GY	-12 square inches											
Construction	Wall mount: Cast aluminum Adapters: Aluminum											
Finish	SWM-GY, SWM-CA, SWM-CA24, SWM-PA-GY: Gray polyester powder coat SWM-BK, SWM-PA-BK: Black polyester powder coat											
Weight	<table border="0"> <tr> <th>Unit</th> <th>Shipping</th> </tr> <tr> <td>SWM-BK, SWM-GY</td> <td>1.1 lb (0.50 kg) 2 lb (0.91 kg)</td> </tr> <tr> <td>SWM-CA</td> <td>3.95 lb (1.79 kg) 5 lb (2.27 kg)</td> </tr> <tr> <td>SWM-CA24</td> <td>7.32 lb (3.32 kg) 9 lb (4.08 kg)</td> </tr> <tr> <td>SWM-PA-BK, SWM-PA-GY</td> <td>0.7 lb (0.32 kg) 2 lb (0.91 kg)</td> </tr> </table>	Unit	Shipping	SWM-BK, SWM-GY	1.1 lb (0.50 kg) 2 lb (0.91 kg)	SWM-CA	3.95 lb (1.79 kg) 5 lb (2.27 kg)	SWM-CA24	7.32 lb (3.32 kg) 9 lb (4.08 kg)	SWM-PA-BK, SWM-PA-GY	0.7 lb (0.32 kg) 2 lb (0.91 kg)	
Unit	Shipping											
SWM-BK, SWM-GY	1.1 lb (0.50 kg) 2 lb (0.91 kg)											
SWM-CA	3.95 lb (1.79 kg) 5 lb (2.27 kg)											
SWM-CA24	7.32 lb (3.32 kg) 9 lb (4.08 kg)											
SWM-PA-BK, SWM-PA-GY	0.7 lb (0.32 kg) 2 lb (0.91 kg)											



SWM-GY DIMENSION DRAWING



SWM-PA-GY POLE ADAPTER DIMENSION DRAWING



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

SWM-CA CORNER ADAPTER DIMENSION DRAWING

Indicates change or addition.



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TECHNICAL SPECIFICATIONS

ITEM: 686-101

MODELS

IWM-BK

Wall mount with cable feedthrough for use with Spectra, DF5, and DFB Series pendant domes; black finish.

IWM-GY

Same as IWM-BK except gray finish.

IWM24-BK

Wall mount with cable feedthrough for use with Spectra, DF5, and DFB Series pendant domes; includes integral 24 VAC, 100 VA transformer; black finish.

IWM24-GY

Same as IWM24-BK except gray finish.

IDM4018

Wall mount with removable front end cap and feedthrough capabilities for use with Spectra, DF5, and DFB Series pendant domes.

ELECTRICAL

(IWM24 Series Only)

Input Power

120/240 VAC, 50/60 Hz, switchable via an internal slide switch

Output Power

24 VAC, 100 VA transformer

Fuse

One 1.6 A, 120 VAC, fast acting
One 500 mA, 240 VAC, fast acting

GENERAL

Suggested Mounting

Method

IWM Series

Secure with four 3/8-inch fasteners (not supplied) suitable for the mounting surface

IDM4018

Secure with four 5/16-inch fasteners (not supplied) suitable for the mounting surface

Dome Mounting

Dome screws directly into mount

Cable Entry

IWM Series and IDM4018

One cable feedthrough hole in mounting plate

IWM24 Series

Two cable feedthrough holes in mounting plate; can accommodate 1/2-inch (1.27 cm) conduit fittings or PG13.5 liquid-tight gland fittings. One 3/4-inch (1.91 cm) conduit opening on the bottom of mount arm for flexible metal conduit connectors

Maximum Load

75 lb (34 kg)

Effective Projected Area (EPA)

IWM Series

-48 square inches

IDM4018

-54 square inches

Construction

IWM Series

Cast aluminum

IDM4018

5052H32 Aluminum

Finish

IWM-BK

Black polyester powder coat

IWM-GY

Gray polyester powder coat

IWM24-BK

Black polyester powder coat

IWM24-GY

Gray polyester powder coat

IDM4018

Gray polyester powder coat

Environment

Indoor/outdoor

Unit Weight

IWM Series

2.46 lb (1.12 kg)

IWM24 Series

6.58 lb (2.98 kg)

IDM4018

4.00 lb (1.81 kg)

Shipping Weight

IWM Series

7 lb (3.17 kg)

IWM24 Series

11 lb (4.98 kg)

IDM4018

6 lb (2.71 kg)

CERTIFICATIONS/RATINGS

- CE compliant (IWM24-BK and IWM24-GY only)
- UL Listed (IWM Series only)
- UL Listed to Canadian safety standards (IWM Series only)
- Meets NEMA Type 4 Standards (IWM Series only)

OPTIONAL MOUNT ADAPTERS

Corner

CM400

Corner mount adapter; use with IDM4018 and IWM Series

Pole

PA402

Pole mount adapter; use with IDM4018 and IWM Series

Parapet

PP300L/PP301L

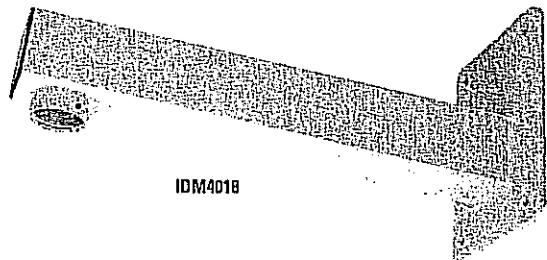
Parapet corner adapter; use with IWM-GY (Spectra and DF5 pendant domes only)

PP400

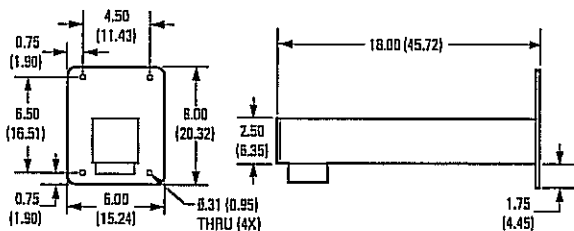
Parapet wall adapter; use with IDM4018 and IWM Series

PP434B

Rooftop parapet adapter; use with IDM4018 and IWM Series



IDM4018



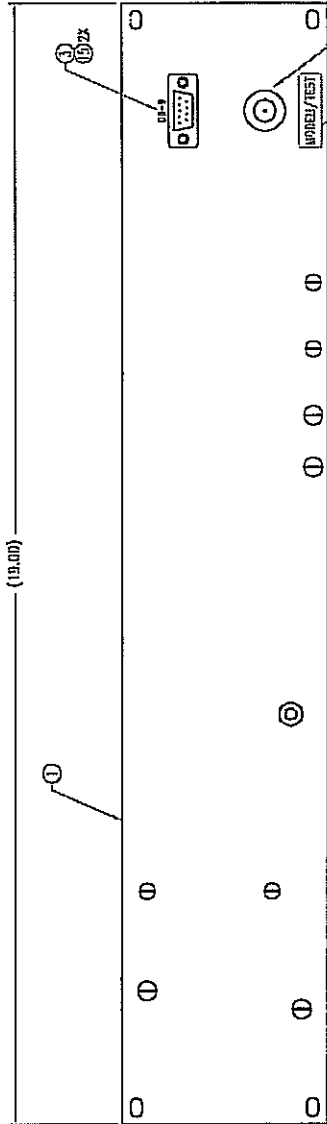
NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.



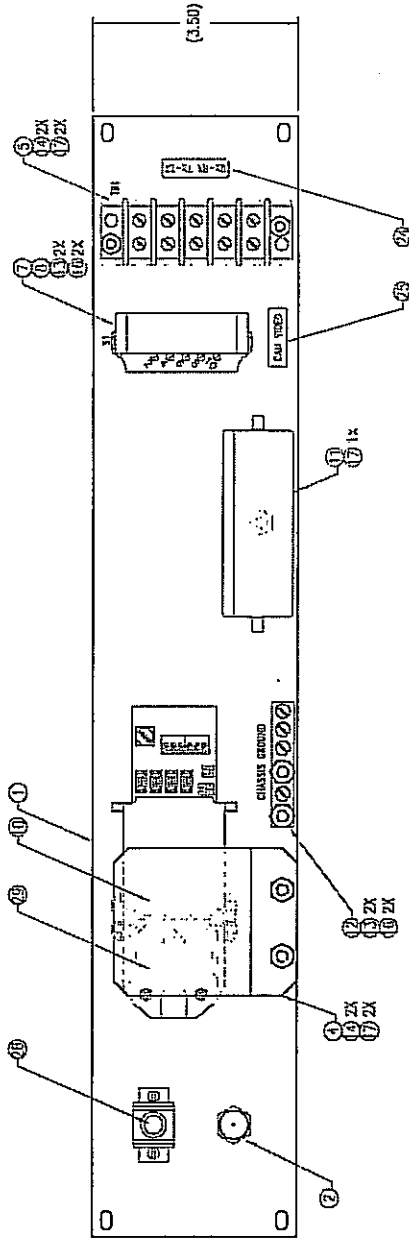
PART NUMBER
00004007

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TBD	BLANK PANEL, 3.5"
2	1	TBD	BNC CONNECTOR
3	1	TBD	BNC CONNECTOR
4	1	TBD	Mounting BRACKET (FOR RS485/RS232)
5	1	TBD	375 DOUBLE ROW BARRIER TERMINAL STRIP (5 SCREW TERMINAL)
6	0	TBD	375 DOUBLE ROW BARRIER TERMINAL STRIP (4 SCREW TERMINAL)
7	1	PC642C-0200	VIDEO SURGE SUPPRESSOR
8	1	PC318	VIDEO SURGE SUPPRESSOR SOCKET
9	0	10A-4	TECHIES, VIDEO DISTRIBUTION ADAPTER
10	1	48C52PZ	VIDEO ELECTRONICS, RS485/RS232 CONVERTER
11	1	CK16-DURCY	VIDEO, COAXIAL SURGE SUPPRESSOR
12	1	TBD	VIDEO BNC, 6-POSTION
13	4	TBD	SCREW, 6-32 X 5/8"
14	4	TBD	SCREW, 6-32 X 3/4"
15	2	TBD	WAFER, HEX #4
16	4	TBD	WAFER, HEX #6
17	5	TBD	WAFER, HEX #8
18	0	TBD	LABEL, VIDEO OUT
19	1	TBD	LABEL, VIDEO/TEST
20	0	TBD	LABEL, LOCK/VIDEO
21	0	TBD	LABEL, LOCK
22	0	TBD	LABEL, REMOTE
23	0	TBD	LABEL, RS485/RS232
24	1	TBD	LABEL, CAMERA
25	0	TBD	LABEL, CAMERA
26	0	TBD	PLASTIC GROUNDWELT
27	1	485PS	VIDEO ELECTRONICS, POWER SUPPLY 12VDC
28	1	TBD	VIDEO-9
29	1	TBD	VIDEO-25 + 1000



FRONT VIEW



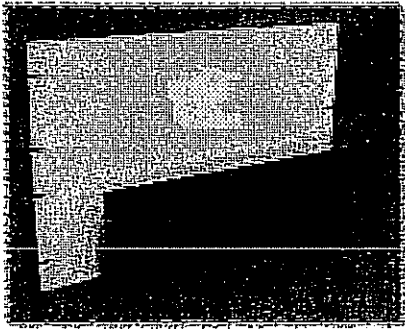
REAR VIEW

ITEM: 686-101

THIS IS THE PROPERTY OF TRAFFIC CONTROL DEVICES, INC.
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IF NOT SUBMITTED TO OUTSIDE PARTIES FOR
EXAMINATION WITHOUT OUR CONSENT, IT SHALL BE USED
ONLY AS A MEANS OF REFERENCE TO DO WORK ORDERED
OR FURNISHED BY US. DO NOT SCALE DRAWING.

TRAFFIC CONTROL DEVICES P.O. BOX 160418 500 W. FRANKLIN AVE. ALMAYORITE SPRINGS, FLORIDA 32714	REV	1 OF 2
MISCELLANEOUS COMPONENTS PANEL ASSEMBLY	A	00004007
TRAFFIC CONTROL DEVICES P.O. BOX 160418 500 W. FRANKLIN AVE. ALMAYORITE SPRINGS, FLORIDA 32714	REV	1 OF 2

REVISION	DATE	DESCRIPTION	BY	APP'D
A		RELEASED		
REVISED	DATE	DESCRIPTION	BY	APP'D



- Standard, flat 19" rack panels
- Choice of either aluminum (lightweight & easy to machine) or steel (stronger & less expensive)
- Painted versions finished in a tough smooth powder paint finish
- Smooth paint finish for easy labelling
- Unfinished aluminum version is white paper covered on one side to protect finish - also used as a surface for a machining template
- Requires mounting hardware

ITEM: 686-101

ALUMINUM RACK PANELS (0.125" Thick)

Part Number				Panel Height		No. of Slots
Black Smooth	Beige Smooth	ASA61 Grey Smooth	Unfinished	Inches	Units	
PBPA19001BK2	PBPA19001CG2	PBPA19001GY2	PBPA19001UNF	1.75	1	4
PBPA19003BK2	PBPA19003CG2	PBPA19003GY2	PBPA19003UNF	3.50	2	4
PBPA19005BK2	PBPA19005CG2	PBPA19005GY2	PBPA19005UNF	5.25	3	4
PBPA19007BK2	PBPA19007CG2	PBPA19007GY2	PBPA19007UNF	7.00	4	4
PBPA19008BK2	PBPA19008CG2	PBPA19008GY2	PBPA19008UNF	8.75	5	4
PBPA19010BK2	PBPA19010CG2	PBPA19010GY2	PBPA19010UNF	10.50	6	8
PBPA19012BK2	PBPA19012CG2	PBPA19012GY2	PBPA19012UNF	12.25	7	8
PBPA19014BK2	PBPA19014CG2	PBPA19014GY2	PBPA19014UNF	14.00	8	8
PBPA19015BK2	PBPA19015CG2	PBPA19015GY2	PBPA19015UNF	15.75	9	8
PBPA19017BK2	PBPA19017CG2	PBPA19017GY2	PBPA19017UNF	17.50	10	8
PBPA19019BK2	PBPA19019CG2	PBPA19019GY2	PBPA19019UNF	19.25	11	8
PBPA19021BK2	PBPA19021CG2	PBPA19021GY2	PBPA19021UNF	21.00	12	8
PBPA19022BK2	PBPA19022CG2	PBPA19022GY2	PBPA19022UNF	22.75	13	8
PBPA19024BK2	PBPA19024CG2	PBPA19024GY2	PBPA19024UNF	24.50	14	10
PBPA19026BK2	PBPA19026CG2	PBPA19026GY2	PBPA19026UNF	26.25	15	10
PBPA19028BK2	PBPA19028CG2	PBPA19028GY2	PBPA19028UNF	28.00	16	12
PBPA19029BK2	PBPA19029CG2	PBPA19029GY2	PBPA19029UNF	29.75	17	12
PBPA19031BK2	PBPA19031CG2	PBPA19031GY2	PBPA19031UNF	31.50	18	12

STEEL RACK PANELS (14 Gauge, 0.075" Thick)

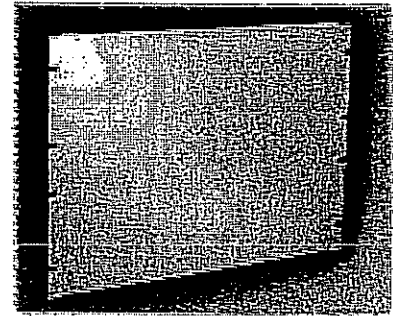
Part Number			Panel Height		No. of Slots
Black Smooth	Beige Smooth	ASA61 Grey Smooth	Inches	Units	
PBPS19001BK2	PBPS19001CG2	PBPS19001GY2	1.75	1	4
PBPS19003BK2	PBPS19003CG2	PBPS19003GY2	3.50	2	4
PBPS19005BK2	PBPS19005CG2	PBPS19005GY2	5.25	3	4
PBPS19007BK2	PBPS19007CG2	PBPS19007GY2	7.00	4	4
PBPS19008BK2	PBPS19008CG2	PBPS19008GY2	8.75	5	4
PBPS19010BK2	PBPS19010CG2	PBPS19010GY2	10.50	6	8
PBPS19012BK2	PBPS19012CG2	PBPS19012GY2	12.25	7	8
PBPS19014BK2	PBPS19014CG2	PBPS19014GY2	14.00	8	8
PBPS19015BK2	PBPS19015CG2	PBPS19015GY2	15.75	9	8
PBPS19017BK2	PBPS19017CG2	PBPS19017GY2	17.50	10	8
PBPS19019BK2	PBPS19019CG2	PBPS19019GY2	19.25	11	8
PBPS19021BK2	PBPS19021CG2	PBPS19021GY2	21.00	12	8
PBPS19022BK2	PBPS19022CG2	PBPS19022GY2	22.75	13	8
PBPS19024BK2	PBPS19024CG2	PBPS19024GY2	24.50	14	10
PBPS19026BK2	PBPS19026CG2	PBPS19026GY2	26.25	15	10
PBPS19028BK2	PBPS19028CG2	PBPS19028GY2	28.00	16	12
PBPS19029BK2	PBPS19029CG2	PBPS19029GY2	29.75	17	12
PBPS19031BK2	PBPS19031CG2	PBPS19031GY2	31.50	18	12

Accessories



- Standard, 19" rack panels
- Lighter and stronger than flat steel panels due to top & bottom fold combined with thinner gauge steel
- Top and bottom fold of 0.50" for added strength
- Tough smooth powder paint finish
- Smooth paint finish for easy labelling
- Requires mounting hardware

ITEM: 686-101

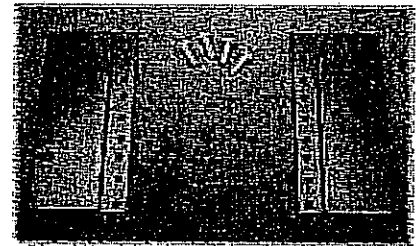


FOLDED STEEL RACK PANELS (16 Gauge, 0.060" Thick)

Part Number			Panel Height		No. of Slots
Black Smooth	Beige Smooth	ASAG1 Grey Smooth	Inches	Units	
PBFS19001BK2	PBFS19001CG2	PBFS19001GY2	1.75	1	4
PBFS19003BK2	PBFS19003CG2	PBFS19003GY2	3.50	2	4
PBFS19005BK2	PBFS19005CG2	PBFS19005GY2	5.25	3	4
PBFS19007BK2	PBFS19007CG2	PBFS19007GY2	7.00	4	4
PBFS19008BK2	PBFS19008CG2	PBFS19008GY2	8.75	5	4
PBFS19010BK2	PBFS19010CG2	PBFS19010GY2	10.50	6	8
PBFS19012BK2	PBFS19012CG2	PBFS19012GY2	12.25	7	8
PBFS19014BK2	PBFS19014CG2	PBFS19014GY2	14.00	8	8
PBFS19015BK2	PBFS19015CG2	PBFS19015GY2	15.75	9	8
PBFS19017BK2	PBFS19017CG2	PBFS19017GY2	17.50	10	8
PBFS19019BK2	PBFS19019CG2	PBFS19019GY2	19.25	11	8
PBFS19021BK2	PBFS19021CG2	PBFS19021GY2	21.00	12	8
PBFS19022BK2	PBFS19022CG2	PBFS19022GY2	22.75	13	8
PBFS19024BK2	PBFS19024CG2	PBFS19024GY2	24.50	14	10
PBFS19026BK2	PBFS19026CG2	PBFS19026GY2	26.25	15	10
PBFS19028BK2	PBFS19028CG2	PBFS19028GY2	28.00	16	12
PBFS19029BK2	PBFS19029CG2	PBFS19029GY2	29.75	17	12
PBFS19031BK2	PBFS19031CG2	PBFS19031GY2	31.50	18	12

PANEL WIDTH ADAPTORS

- "PA" series converts standard 19" rack panel equipment to 23" rack mount
- "PBAS" series converts standard 19" rack panel equipment to 24" rack mount
- Sold in pairs
- Finished in rugged powder paint
- Standard EIA punched
- Requires mounting hardware



Converts 19" Equipment
To 23" Rack Mount

Part Number	Panel Height	
	Inches	Units
PA2319001BK1	1.75	1
PA2319003BK1	3.50	2
PA2319005BK1	5.25	3

Converts 19" Equipment
To 24" Rack Mount

Part Number		Panel Height	
Black Smooth	Beige Smooth	Inches	Units
PBAS19001BK2	PBAS19001CG2	1.75	1
PBAS19003BK2	PBAS19003CG2	3.50	2
PBAS19005BK2	PBAS19005CG2	5.25	3
PBAS19007BK2	PBAS19007CG2	7.00	4
PBAS19008BK2	PBAS19008CG2	8.75	5
PBAS19010BK2	PBAS19010CG2	10.50	6
PBAS19012BK2	PBAS19012CG2	12.25	7
PBAS19014BK2	PBAS19014CG2	14.00	8

Accessories



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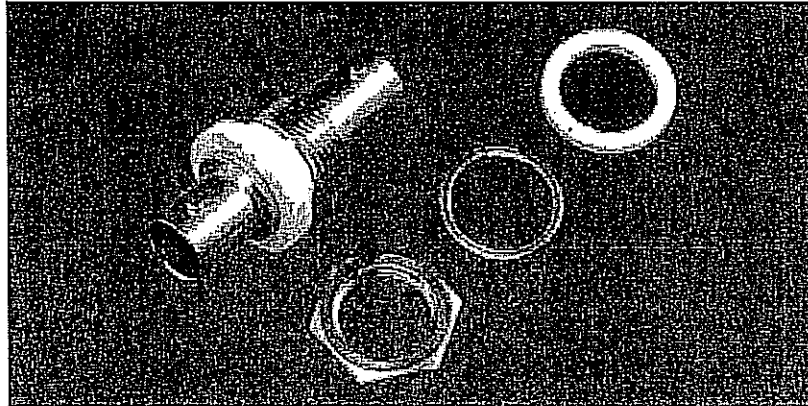
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Part number:	27-8471
Description:	BNC DUAL CHASSIS MOUNT ISOLATED
Product Family:	PCB & Chassis Mount
Standard Pack:	10
Mounting Hole Size:	1/2 TO 5/8 INCH
Gender:	BNC FEMALE TO BNC FEMALE
Impedance:	50 OHM
Interface:	BNC

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Item: 686-101

EMERSON
Network Power



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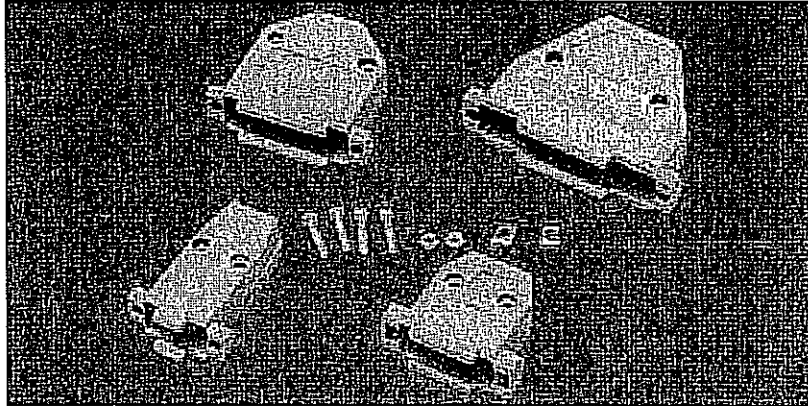
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Product Details

- [OEM/ Custom Capabilities](#)
- [Competitor Cross Reference](#)
- [Catalog Request Form](#)
- [Cable Assembly Request Form](#)
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Part number: 40-9725H
Description: DB25 STANDARD PLASTIC HOOD,GRAY
Product Family: Standard Plastic Hoods
Standard Pack: 25
For Cables: UP TO 7/16 INCH
Interface: FOR 25 PIN D-SUB CONNECTOR
Outer Casing: PLASTIC
Color: GRAY

EMERSON
Network Power

ITEM: 6086-101

ITEM: 686-101

D-SUB HOODS



NETWORK SOLUTIONS

- Aim Electronics offers a wide variety of colors and styles for all D-sub connectivity needs.
- Available in plastic, metalized plastic, and heavy duty metal.
- Strain relief grommets are available in 3 sizes 9, 15 and 25, to correctly match the proper D-sub size.
- All hoods are available in 25 piece bulk bags or quantities of 6 per box for blister pack.
- To make a part number packaged simply add a "P" to the end of the part number.

D-SUB HOODS PLASTIC, METALIZED, HEAVY METAL



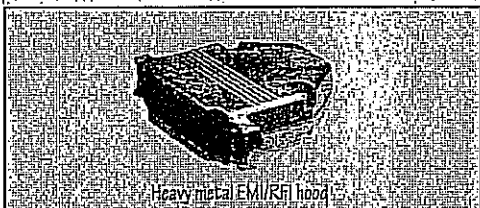
Standard Plastic Hood with clamp strain relief

Aim #	Description
40-9709H	9 pin hood
40-9715H	15 pin hood
40-9725H	25 pin hood
40-9737H	37 pin hood
40-9750H	50 pin hood
40-9709HG	9 pin hood with grommets
40-9715HG	15 pin hood with grommets
40-9725HG	25 pin hood with grommets
40-9737HG	37 pin hood with grommets
40-9750HG	50 pin hood with grommets



Plastic hood with screw strain relief

Aim #	Description
40-9709HX	9 pin hood
40-9715HX	15 pin hood
40-9725HX	25 pin hood



Heavy metal EMI/RFI hood

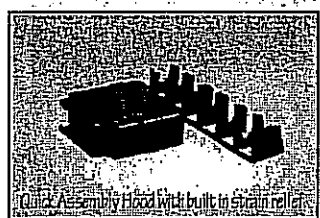
Aim #	Description
40-9709HM	9 pin hood
40-9715HM	15 pin hood
40-9725HM	25 pin hood
40-9709HMG	9 pin hood with grommets
40-9715HMG	15 pin hood with grommets
40-9725HMG	25 pin hood with grommets



Metalized Plastic Hood with clamp strain relief

Aim #	Description
40-9709HS	9 pin hood
40-9715HS	15 pin hood
40-9725HS	25 pin hood
40-9709HSG	9 pin hood w/ grommets
40-9715HSG	15 pin hood w/ grommets
40-9725HSG	25 pin hood w/ grommets

Aim #	Description
40-9325G	25 pin hood with grommets
40-9309G	9 pin hood with grommets
40-9315G	15 pin hood with grommets



Quick Assembly Hood with built in strain relief

Aim #	Description
40-9709HQ	9 pin hood
40-9715HQ	15 pin hood
40-9725HQ	25 pin hood

See page 62 for available hardware

FYI

*for the packaged version of any hood on this page simply add a "P" to the end of the part number.

D-SUB MINIATURE SOLUTIONS

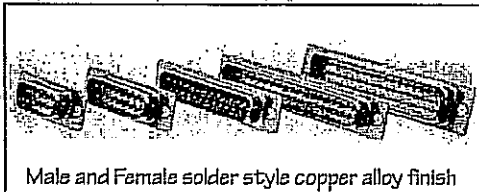
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NETWORK SOLUTIONS

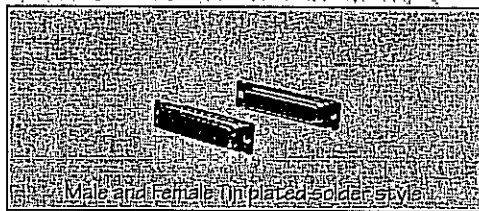
D-SUB CONNECTORS

- Aim electronics offers a high performance low cost D-subminiature connector with two different plating options available and either solder or crimp contacts.
- All Aim D-subminiatures incorporate a thermoplastic insulator UL94/V-0 flame retardant rated.
- Contacts are Copper or Tin alloy with gold plating on Nickel. All male connectors are pressfit style with grounding indents to assure connection every time.



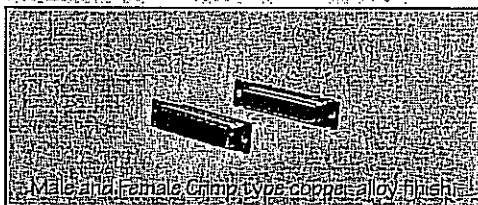
Male and Female solder style copper alloy finish

Aim #	Description
40-9709M	9 pin male
40-9715M	15 pin male
40-9725M	25 pin male
40-9737M	37 pin male
40-9750M	50 pin male
40-9709S	9 pin female
40-9715S	15 pin female
40-9725S	25 pin female
40-9737S	37 pin female
40-9750S	50 pin female



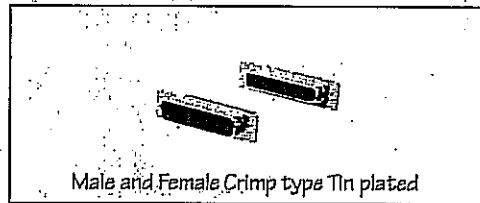
Male and Female Tin plated solder style

Aim #	Description
40-9509M	9 pin male
40-9515M	15 pin male
40-9525M	25 pin male
40-9509S	9 pin female
40-9515S	15 pin female
40-9525S	25 pin female



Male and Female Crimp type copper alloy finish

Aim #	Description
40-9809M	9 pin male
40-9815M	15 pin male
40-9825M	25 pin male
40-9809S	9 pin female
40-9815S	15 pin female
40-9825S	25 pin female



Male and Female Crimp type Tin plated

Aim #	Description
40-9909M	9 pin male
40-9915M	15 pin male
40-9925M	25 pin male
40-9909S	9 pin female
40-9915S	15 pin female
40-9925S	25 pin female

FYI

*for the package version of any connector on this page simply add a "P" to the end of the part number.

D-SUB CONNECTORS TIN & COPPER ALLOY FINISH

D-SUBMINIATURE SOLUTIONS

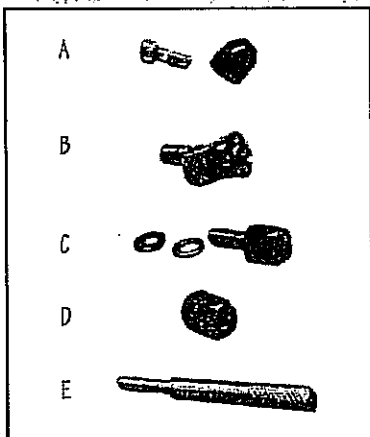
ITEM: 686-101

D-SUB HARDWARE



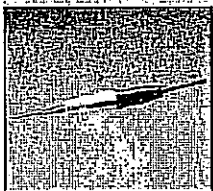
NETWORK SOLUTIONS

- Aim offers a complete line of D-sub hardware.
- All hardware on this page is Brass Body with Nickel Plating.
- For the package version of any item on this page simply add a "P" to the end of the part number.

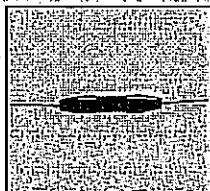


Aim #	Description
A 40-98440M	Male screw retainer (1SET)
40-98440M-C	Male screw retainer (100)
B 40-98441M	Male screw retainer (1SET)
40-98441M-C	Male screw retainer (100)
C 40-98440F	Female screw retainer .300 thread (1 SET)
40-98440F-C	Female screw retainer .300 thread (100)
40-98440F	Female screw retainer .500 thread (1 SET)
40-98440F-C	Female screw retainer .500 thread (100)
D 40-98443N	Hex stand off (1 SET)
40-98440F-C	Hex stand off (100)
E 40-9844T	Thumb screw (1 SET)
40-9844T-C	Thumb screw (100)

D-SUB HARDWARE



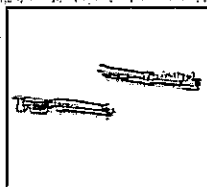
40-9865 Insertion Extraction tool for standard D-sub pins



40-9427T Insertion Extraction tool for High Density pins



Aim #	Description
40-9856M	D-sub pins (100)
40-9856MK	D-sub pins (5,000) 5,000 piece on tape and reel
40-9866S	D-sub female pins (100)
40-9866SK	D-sub female pins (5,000)



Aim #	Description
40-9428M	male high density pins (100)
40-9428F	female high density pins (100)



40-9215EH Locking Post kit (1 Set)



40-9215EL Slide Locking kit (1 Set)

D-SUBMINIATURE SOLUTIONS

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PART #



Product	Description	Image
PRECISION RF ASSEMBLIES		
RFC-1111	BNC MALE / BNC MALE RG-58A/U 12"	Image Coming Soon
RFC-1112	BNC MALE / BNC MALE RG-58A/U 24"	Image Coming Soon
RFC-1113	BNC MALE / BNC MALE RG-58A/U 36"	Image Coming Soon
RFC-1114	BNC MALE / BNC MALE RG-58A/U 5'	Image Coming Soon
RFC-1115	BNC MALE / BNC MALE RG-58A/U 7'	Image Coming Soon
RFC-1116	BNC MALE / BNC MALE RG-58A/U 10'	Image Coming Soon
RFC-1121	BNC MALE / BNC MALE RG-59B/U 12"	Image Coming Soon
RFC-1122	BNC MALE / BNC MALE RG-59B/U 24"	Image Coming Soon
RFC-1123	BNC MALE / BNC MALE RG-59B/U 36"	Image Coming Soon
RFC-1124	BNC MALE / BNC MALE RG-59B/U 5'	Image Coming Soon
RFC-1125	BNC MALE / BNC MALE RG-59B/U 7'	Image Coming Soon
RFC-1126	BNC MALE / BNC MALE RG-59B/U 10'	Image Coming Soon

ITEM: 686-101

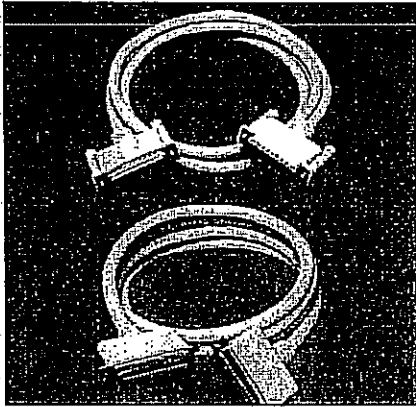


NETWORK SOLUTIONS

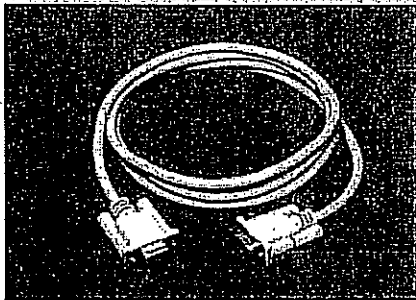
D-SUB CABLE ASSEMBLIES

ITEM: 686-101

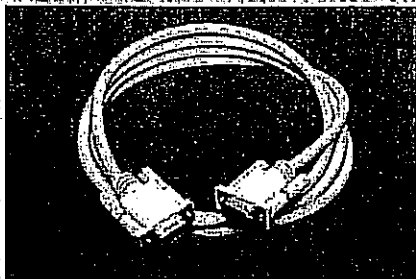
- AIM offers a complete line of fully shielded hook up cables.
- Each cable incorporates 100% foil with a braid drain soldered to each end.



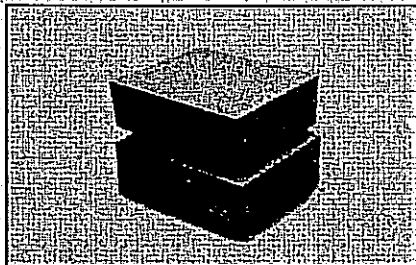
AIM #	Description
30-9506MM	6 foot D-25 male to D-25 male
30-9510MM	10 foot D-25 male to D-25 male
30-9525MM	25 foot D-25 male to D-25 male
30-9506FF	6 foot D-25 female to D-25 female
30-9510FF	10 foot D-25 female to D-25 female
30-9525FF	25 foot D-25 female to D-25 female
30-9506MC	6 foot D-25 male to 36 Centronics male
30-9510MC	10 foot D-25 male to 36 Centronics male
30-9525MC	25 foot D-25 male to 36 Centronics male
30-9506CC	6 foot 36 Centronics male to 36 Centronics male
30-9510CC	10 foot 36 Centronics male to 36 Centronics male
30-9525CC	25 foot 36 Centronics male to 36 Centronics male



AIM #	Description
30-9506-77	6 foot D-9 female to D-9 female
30-9510-77	10 foot D-9 female to D-9 female
30-9506-29	6 foot D-25 female to D-9 female
30-9510-29	10 foot D-25 male to D-9 female
30-1BM10	10 foot D-9 male to High Density 15 male
30-9506-88	6 foot D-9 male to D-9 male
30-9510-88	10 foot D-9 male to D-9 male
30-9506-99	6 foot D-9 male to D-9 female
30-9510-99	10 foot D-9 male to D-9 female



AIM #	Description
30-1506MF	6 foot High Density 15 male to High Density 15 female
30-1510MF	10 foot High Density 15 male to High Density 15 female
30-1506MM	6 foot High Density 15 male to High Density 15 male
30-1510MM	10 foot High Density 15 male to High Density 15 male
30-1506FF	6 foot High Density 15 female to High Density 15 female
30-1506FF	6 foot High Density 15 female to High Density 15 female
30-9510-2H	10 foot Dual Headed Ladlink Cable 20 D25 & 09 female to D 25/09 female



AIM #	Description
30-9575-2	D9 Female - 1 in 2 out or 2 out 1 in
30-9585-2	D25 Female - 1 in 2 out or 2 out 1 in
30-9585-4	D25 Female - 1 in 4 out or 4 out 1 in
30-9590-2	RJ11(4c) 2 in 2 out or 2 out 1 in
30-9595-2	Centronics 36 - 1 in 2 out or 2 out 1 in
30-9595-4	Centronics 36 - 1 in 4 out or 4 out 1 in
30-9586-2	BNC Female - 1 in 2 out or 2 out 1 in

All above cables come poly bagged with a header card

FULLY SHIELDED MOLDED CABLE ASSEMBLIES

D-SUBMINIATURE SOLUTIONS



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Category > Power Products > Transformers > Power > Chassis Mount

no image available

Allied

TRANSFORMER, LOW POWER, 115V, 50/60HZ, 24.0VCT @2.000A, LEADS

ITEM: 686-101

[Catalog Page #900](#)

ROHS Compliant part

Mfr Part#: 6K222HF
Allied Stk#: 227-0680

Manufacturer:

Allied

Description:

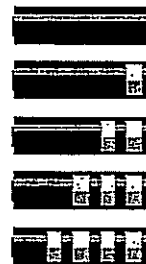
TRANSFORMER, LOW POWER, 115V, 50/60HZ, 24.0VCT @2.000A, LEADS

Allied transformers are specially built to Allied Electronics' high standard for quality, stability and long-term performance. Laminated cores are silicon iron electrical grade steel. Insulation is non-corrosive Class A. Temperature rating of 105°C continuous operation. Superior permeability at high inductances, with low coil loss. Coils of high quality film insulated copper magnet wire. PVC leads are fast stripping

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and provide protection from oil, ozone and abrasion. Semi-gloss enamel finished cold rolled steel covers provide good appearance and protection to coils on some models. Compare prices and specifications and you will find that Allied transformers are your best buy.

- 10% Output Voltage Tolerance
- 1500 Volts RMS Isolation
- Lead Wire Termination
- Meets Nafta Requirements

ITEM: 686-101

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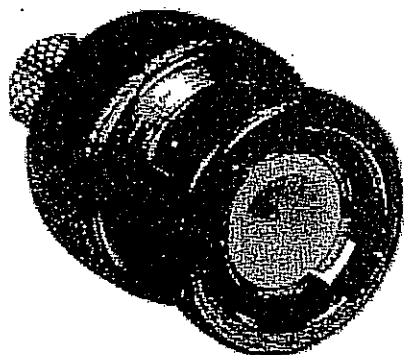
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Category > Interconnect, Wire & Cable > Coaxial / RF Connectors and Adapters > BNC



Emerson Network Power

connector, rf coaxial, bnc 3-piece stright crimp plug for rg/u 59, 62 cable

ITEM: 686-101

[View larger image](#)

[Datasheet](#)

[Catalog Page #244](#)

ROHS Compliant part

Mfr Part#: 27-9100
Allied Stk#: 510-9100

Manufacturer:

Emerson Network Power

Description:

connector, rf coaxial, bnc 3-piece stright crimp plug for rg/u 59, 62 cable

These connectors meet or exceed military specification, but are intended for commercial use only.

Working voltage : 500_{RMS} at sea level. Frequency Range : 50 Ohm — 0-4 GHz; 75 Ohm — 0-2 GHz

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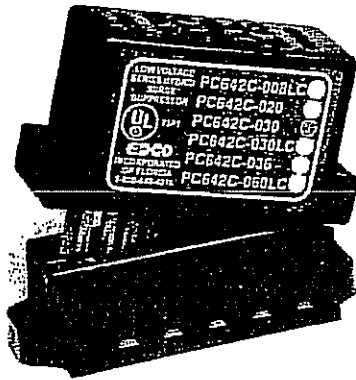
<< Click on the "Reviews" tab to the left

with low reflection. **Materials : Body** — zinc; **Contact** — brass; **Insulation** — delrin or teflon.
Plating : Body — nickel; **Contact** — gold.

ITEM: 6086-101

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The PC642 Series surge suppressor is a dual pair (four wire) module implementing three-stage hybrid technology. This module addresses over voltage transients with gas tubes and silicon avalanche components. In addition, sneak and fault currents are mitigated with resettable fuses (PTCs). The PTCs increase resistance several orders of magnitude when over currents exceed safe levels. A normal state resumes when over currents are removed. The ability to self restore in this manner significantly increases suppressor performance and survivability.

The PC642 card edge module is gold-plated, double sided and is designed to mate with the PCB1B gold-plated female terminal connector. When snapped together, the data circuits "pass thru" the protector in a serial fashion from the four "Field Side" terminals to the four "Electronics Side" terminals. Terminals 1 or 10 of the PCB1B must be attached to Building Approved ground per EDCO Technical Bulletin # 2015.

ITEM: 6086-101

FEATURES

- Lightning Protection for Low Voltage Data Signal Lines
- Three-Stage Protection
- Sneak/Fault Current Protection
- Resettable Fusing - PTCs
- Low Capacitance Option ♦
- Plug-in Module
- Fast Response Time
- UL 497B Listed



SPECIFICATIONS

Peak Surge Current (10 times):
 8 x 20µs..... 10kA
 10 x 700µs..... 500A per line

Life Expectancy:
 8 x 20µs (2000A)..... >100 occurrences
 10 x 700µs (400A)

Response Time..... <1 nanosecond

Voltage Clamp 8, 15, 20, 30, 36, 43, 50, 60
 Technology..... SAD Hybrid

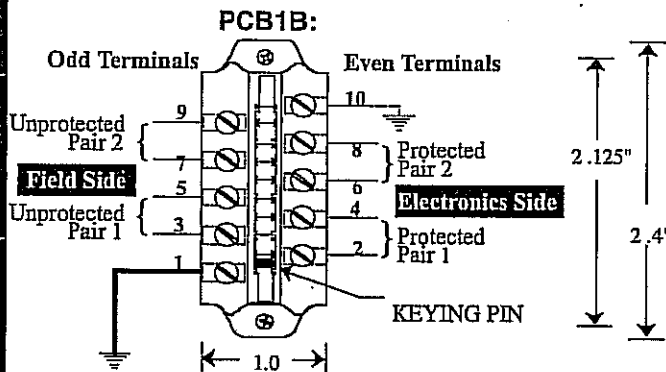
Resistance (depending on model)..... 4.7Ω to 15Ω per line

Capacitance (average):
 Standard Models..... 1500pf
 Low Capacitance Models..... 50pf

Operating Temperature..... -40°C to +85°C

Weight..... 2 oz.

TERMINAL ASSIGNMENTS



Ground Terminal 1 or 10 to Building Approved Ground

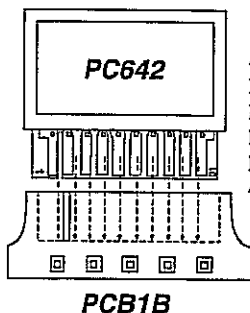
Dimensions PC642 & PCB1B:

HxWxL..... 1.8" x 1.0" x 2.4"

Caution: The hybrid design of this product includes series resistance. Do not place this product in service on any signal line capable of supplying more than 150 milliamperes continuously.

♦ Wire wound resistors are used instead of PTCs on low capacitance models (PC642C-___ LC).

ORDERING INFORMATION



APPLICATION:

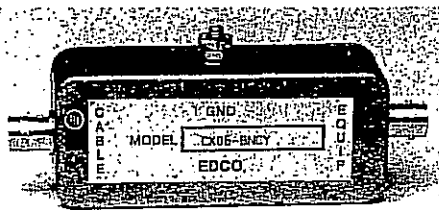
- RS485, RS422: PC642C-008LC & PCB1B
- RS423, Token Ring: PC642C-008LC & PCB1B
- RS232: PC642C-020 & PCB1B
- E-NET, 10 BASE T: PC642C-030LC & PCB1B
- 4-20 ma: PC642C-036 & PCB1B

PC642C-020D

VOLTAGE CLAMP

8 Volts	0	0	8
15 Volts	0	1	5
20 Volts	0	2	0
30 Volts	0	3	0
36 Volts	0	3	6
43 Volts	0	4	3
50 Volts	0	5	0
60 Volts	0	6	0

- no suffix: stage 2 clamp, each line-to-ground
- D: stage 2 clamp, line-to-line only
- X: stage 2 clamp, line-to-line and each line-to-ground
- LC: low capacitance option, stage 2 clamp, line-to-line and each line-to-ground



ITEM: 6086-101

The CX Series Surge Suppressor is a single Coax Line Protector implementing three-stage hybrid technology. This Protector addresses over voltage transients with gas tubes and silicon avalanche devices. In addition, sneak and fault currents are mitigated with new solid state resettable fuses – PTCs.

The CX Series is designed specifically for CCTV, DATA and AUDIO applications, offering two connector types BNC & F.

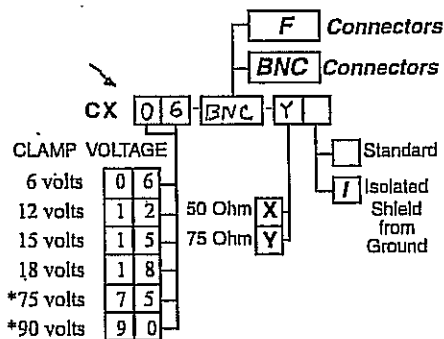
FEATURES

- Sneak / Fault Current Protection
- Low Insertion Loss
- Shielded Case



Use CX-06-BNCY For
Std. CCTV Applications

ORDERING INFORMATION



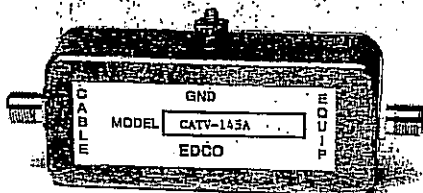
*These Models are not UL Listed

SPECIFICATIONS

Peak Surge Current (8x20µs)	5kA
Technology	Hybrid, Solid State
Attenuation	0.1db @ 10Mhz
Response Time	<1 nanosecond
Protection	LiGe-to-ground
Shield to Ground	(isolated shield models)
Clamp Voltage	Selectable (see ordering)
Connectors	BNC, F
Impedance	50 or 75 Ohms
Temperature	-40°C to +85°C
Humidity	0-95% non-condensing
Dimensions (LxWxH)	4.5" x 1.5" x 1.25"
UL Listed	UL 497B

CATV-145A

Cable Modem Protection



The CATV-145A application is specifically designed for lightning protection on Coax Cable TV Systems. The protector is easily installed with standard type F coax connectors. A ground wire must be attached to the unit. The CATV-145A offers low loss even at frequencies approaching 500 Mhz. This is important for error-free data communication applications.

SPECIFICATIONS

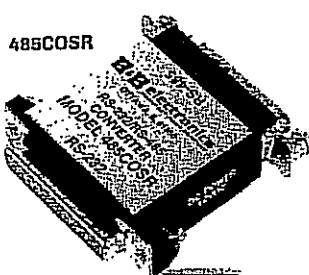
Attenuation	0.1db @ 500Mhz
Response Time	100ns @ 10kv/µs
Spark-over Voltage	750 volts @ 10kv/µs typ.
Surge Handling (1 time)	5 kA (8x20µs)
Connector	Type F
Dimensions (LxHxW)	4.5" x 1.5" x 1.25"
Weight	4 oz.
Matching Z	75 Ohms
UL Listed	UL 497B

FEATURES

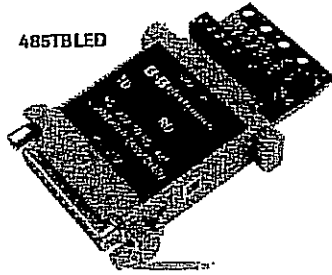
- Automatic Recovery
- Low Insertion Loss
- Easily Installed
- Shielded Case



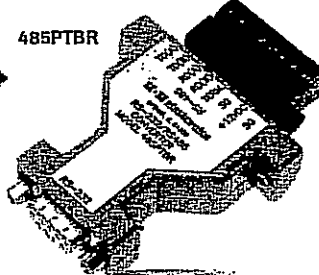
NON-ISOLATED CONVERTERS



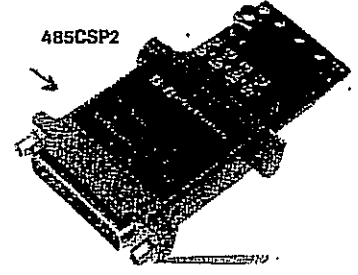
485COSR



485TBLED



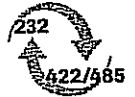
485PTBR



485CSP2

Non-isolated RS-232 to RS-485

These converters are perfect for applications that don't require isolation or port-powered capability. All models include Automatic Send Data Control, eliminating the need for software modification.



Model **485COSR** is an economical converter that supports both 2-wire and 4-wire RS-485 communications. There is also provision for constant enable of the receiver during transmit for full duplex operation.

Model **485TBLED** is one of our most popular models with data traffic LEDs, RS-422/485 support, and either Automatic Send Data Control or software driver control.

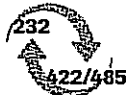
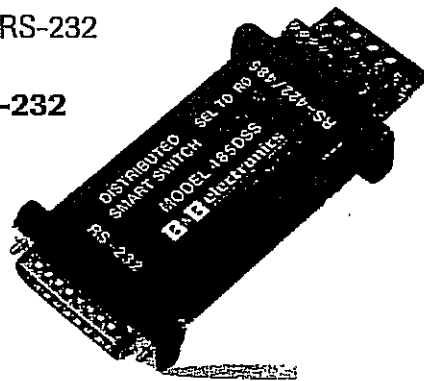
Model **485PTBR** has a convenient terminal block that quickly unplugs from the converter for ease of wiring.

Model **485CSP2** features both surge controlled and fused data lines on the RS-422/485 side plus all the features of model 485TBLED.

ITEM: 686-101

Model No.	RS-232 Connector	RS-485 Connector	Power Supply	Special Features
485COSR	DB25 female	DB25 male	485PS	For 2- or 4-wire RS-485. Full duplex operation possible.
485TBLED	DB25 female	Terminal block	485PS2	Data flow LEDs. SDC or software driver control. Suits RS-422 systems, too.
485PTBR	DB9 female	Pluggable terminal block	485PS2	Quick disconnect. Can also be set to 4-wire full duplex RS-485
485CSP2	DB25 female	Fused terminal block	485PS2	Built-in surge protection and replaceable fuses on RS-485 side. LEDs show traffic. For 2- or 4-wire RS-485 or RS-422.
4F125	125mA fuses for Model 485CSP2 (kit of four)			
485PS	120 VAC to 12 VDC @ 100 mA power supply			
485PS2	120 VAC to 12 VDC @ 100 mA power supply			

Network "dumb" RS-232 devices with this **addressable RS-232 to RS-422/485 converter**

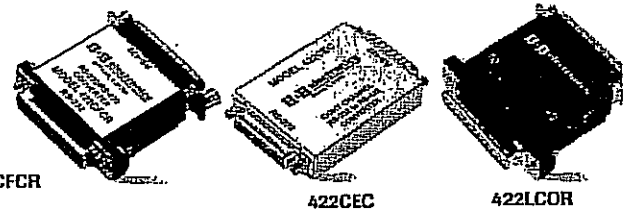


Model **485DSS** allows RS-232 devices to be placed on an RS-422 or RS-485 network and individually controlled. A Model 485DSS converter is placed at each device you wish to contact. A host PC with RS-422 or RS-485 capability can then connect to each node at a unique address from 0 to 255. Once a node is selected and the connection made, any type of monitoring, control or programming information can be exchanged.

A QuickBASIC demonstration program with source code is included. RS-232 connector is DB25M, RS-485 connector is a terminal block. Requires an external 12 VDC power supply.

- Network normally "dumb" RS-232 devices
- Three commands control the network: connect, disconnect, status
- Host PC can be 4-wire RS-422, 2 or 4-wire RS-485 (standard types)

Model No.	Description
485DSS	Addressable RS-232 to RS-422/485 converter
485PS2	120 VAC to 12 VDC @ 100 mA power supply



422CFCR

422CEC

422LCOR

2, 4 and 8 channel RS-232 to RS-422 converters



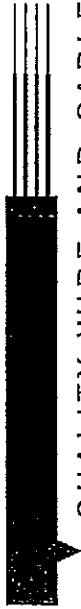
These converters allow your computer to communicate up to 4,000 feet by converting the RS-232 signal to RS-422.

If the peripheral to be connected has an RS-422 interface, only one converter is required. If both the data transmitting equipment and data receiving equipment use only RS-232, then two converters will be required, one at each end of the data line.

These models all have DB25 female connectors on the RS-232 side and DB25 male connectors on the RS-422 side. Models **422LCOR** and **422CFCR** require the **422PS** external 12 VDC power supply. Model **422CEC** requires the **422PS3** external 12 VDC power supply.

- Model **422LCOR** converts two signals and has LEDs to indicate data traffic
- Model **422CFCR** converts four channels.
- Model **422CEC** converts eight channels.

Model No.	Description
422LCOR	2 Channels, with LED traffic indicators
422CFCR	4 Channels, supports TD, RD, RTS, CTS
422CEC	8 Channels, supports TD, RD, RTS, CTS, DTR, DSR, DCD, spare
422PS	120 VAC to 12 VDC @ 100 mA power supply with power jack plug
422PS3	120 VAC to 12 VDC @ 500 mA power supply with power jack plug



ITEM: 6086-101

ISOTEC PART/QUOTE NUMBER: X676036-00
 CUSTOMER PART NUMBER:

DESCRIPTION: COMPOSITE, 8 CONDUCTORS, 3 ELEMENTS; 20 AWG 1 CONDUCTORS SOLID BARE COPPER, .058" FOAMED POLYETHYLENE, 95% BARE COPPER BRAID, .032" PVC JACKET BLACK; 22 AWG 2 PAIRS (EACH PAIR SHIELDED), 730 TINNED COPPER, .008" POLYETHYLENE, ALUMINUM POLYESTER SHIELD, 24 AWG 732 TINNED COPPER COMMON DRAIN, .020" PVC JACKET GRAY; 16 AWG 3 CONDUCTORS 26/30 BARE COPPER, .015" PVC, .005" NYLON, OVERALL .040" PVC JACKET BLACK (UL) CL3

CONDUCTOR/PAIR COUNT:	1 CONDUCTOR	SEE I222EPSP-50	3 CONDUCTORS	FOOTAGE MARKERS:	ASCENDING & DESCENDING
GAUGE & STRANDING:	20 AWG 1C SOLID BC	22 AWG 7/30 TC	16 AWG 26/30 BC	JACKET THICKNESS:	.040"
D.C. RESISTANCE	SEE I201V59-00	SEE I222EPSP-50	SEE I161TFFN	JACKET COLOR:	BLACK
PRIMARY INSULATION TYPE:	SEE I201V59-00	SEE I222EPSP-50	SEE I161TFFN	JACKET MATERIAL:	PVC
INSULATION THICKNESS:	SEE I201V59-00	SEE I222EPSP-50	SEE I161TFFN	RIPCORD:	YES
COLOR CODE:	BLACK	SEE I222EPSP-50	BLACK, ORANGE, WHITE	NOMINAL O.D.:	.500"
SHIELD:	SEE I201V59-00	SEE I222EPSP-50	N/A	VOLTAGE RATING:	300V
TAPE:	SEE I201V59-00	SEE I222EPSP-50	N/A	TEMP. RATING:	60C
DRAIN WIRE:	SEE I201V59-00	SEE I222EPSP-50	N/A	UL TYPE OR STYLE:	CL3
CAP. COND. TO COND.:	SEE I201V59-00	SEE I222EPSP-50	N/A	PACKAGING:	TBA
CAP. COND. TO SHIELD:	SEE I201V59-00	SEE I222EPSP-50	N/A	COPPER WEIGHT:	35.82 LBS/MFT
JACKET TYPE:	PVC	PVC	N/A	SHIPPING WEIGHT:	130 LBS/MFT
JACKET COLOR:	BLACK	GRAY	N/A		
DIAMETER:	.242"	.182"	.102"		
OVERALL PRINT LEGEND:	ISOTEC, INC. 20 AWG RG 59/U CCTV, 22 AWG 2PR EPS, 16 AWG 3C TFFN (UL) CL3				

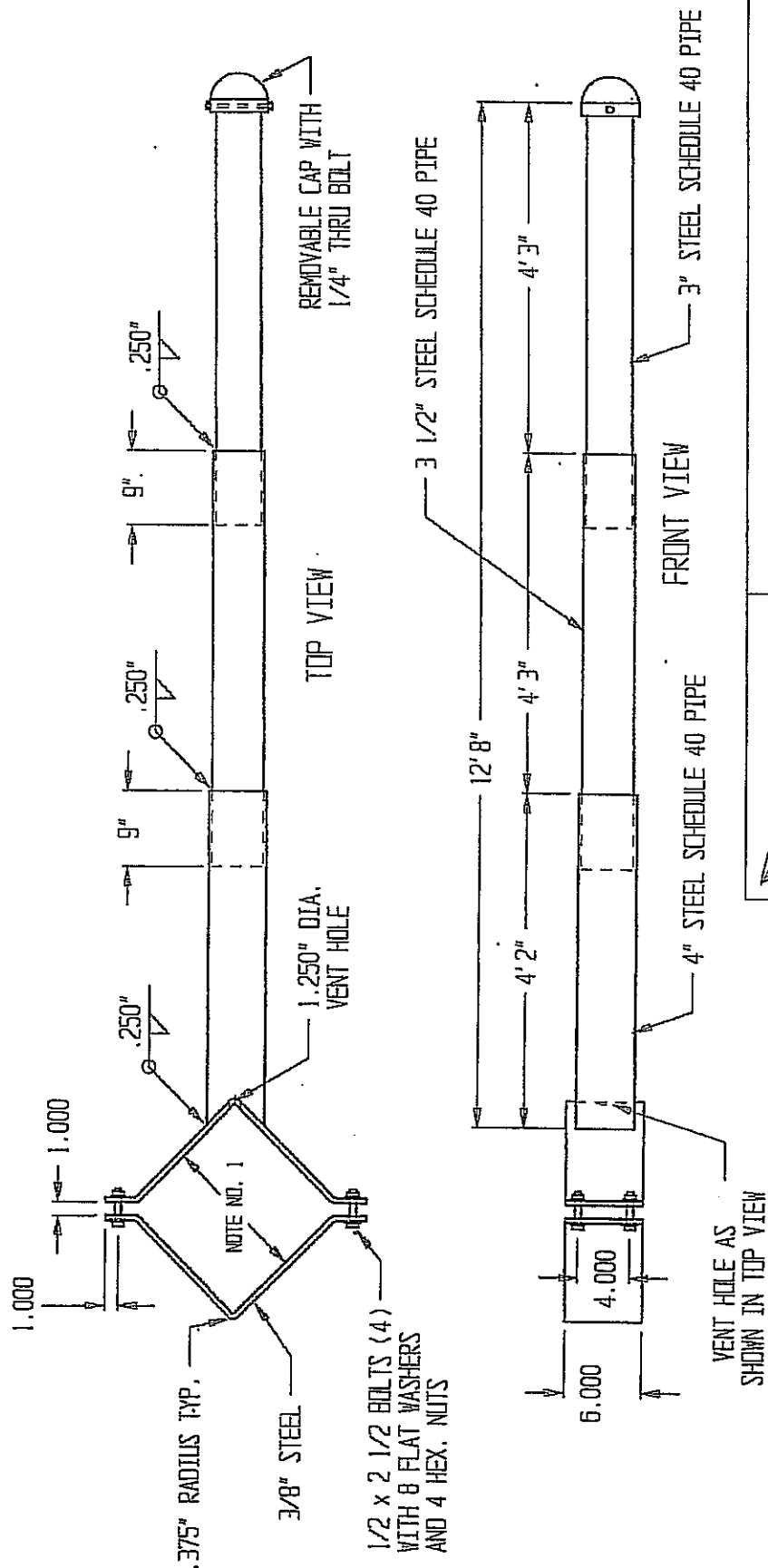
NOTES: Shipping Tolerance: +/- 10%
 Length Tolerance: +/- 10%
 Random/Odd Length Tolerance: May ship up to 15% of order total on random/odd lengths.
 All wall thickness and diameter as well as electrical information is nominal.


ACCEPTANCE OF ABOVE DESIGN: _____ DATE: _____

Isotec makes every effort to provide accurate specifications. Printing errors are subject to correction. Standard product specifications are subject to change without notice. Contact your Isotec sales person for current specifications. Material will not be release to production until sign spec is confirm.

ITEM: 699-1-1

- NOTES:
1. CONTRACTOR SHALL SUPPLY DIMENSION OF POLE AND MOUNTING HEIGHT TO SOUTHERN MFG. CO. FOR FABRICATION.
 2. STREET NAME SIGN ARM SHAFT TO BE SCHEDULE 40 STEEL PIPE, ASTM A500 GRADE C.
 3. CLAMP MATERIAL TO BE ASTM DESIGNATION A36. (36.00 KSI MINIMUM YIELD STRENGTH).
 4. ARM TO BE GALVANIZED TO ASTM DESIGNATION A123.
 5. ACCESSORIES TO BE HOT DIP GALVANIZED TO ASTM DESIGNATION A153.
 6. CLAMP CONNECTING BOLTS HIGH STRENGTH A325 AND GALVANIZED TO ASTM DESIGNATION A153.
 7. CAST STREET NAME SIGN ARM END CAP SECURED IN PLACE WITH 3 SET SCREWS AND 1 THRU BOLT.
 8. MAST ARM WEIGHT IS 194 LBS.



 SOUTHERN MFG. CO. 501 HERNDON AVE. ORLANDO, FLORIDA 32803 SINCE 1936 (407) 894-8851		FOR: SOUTHERN MFG. CO.
ITEM: TAPERED MAST ARM FOR ILLUMINATED STREET SIGN MOUNTING		
DWG. BY: S. SHEPARD	SIZE: A	REV.: 3 1/13/98
DATE: 2/21/96	CHK. BY:	SCALE: NOT TO SCALE
SHEET: 1 OF 1		SHEET: 1 OF 1