

06

SUPPORT & PROTECTIVE PRODUCTS

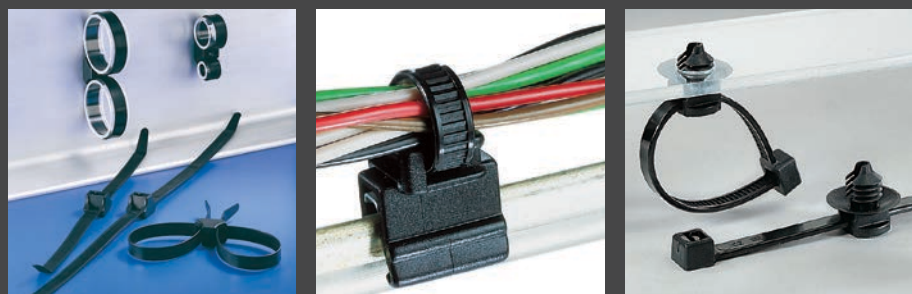
PRODUITS DE FIXATION
ET DE PROTECTION

PRODUCTOS DE SOPORTE
Y PROTECCIÓN

- 76 Nylon Cable Ties
- 80 Mounting Bases & Installation Tools
- 83 Heat Shrink Tubing
- 88 Heat Guns & Torches
- 90 Tube and Loom
- 92 Clamps, Clips & Grommets

WIRE & CABLE MANAGEMENT IS VITAL IN TODAY'S VEHICLES AND EQUIPMENT. GROTE'S SELECTION OF SUPPORT & PROTECTIVE PRODUCTS PROVIDE OPTIONS FOR ALL TYPES OF APPLICATIONS. EVERYTHING TO PROPERLY AFFIX, HANG, WRAP, BUNDLE AND SECURE EQUIPMENT'S CRITICAL POWER DELIVERY WIRES AND CABLES IN EQUIPMENT AND VEHICLES IS ALL RIGHT HERE. YOU NEED IT, GROTE'S GOT IT!





Protect critical wire and cable systems in your vehicle. Reduce downtime and maintenance costs with Grote's Support and Protective products.

NYLON CABLE TIES



- Made of general purpose (PA66) Polyamide 6.6 nylon material
- UL flame rating 94V-2
- Provides flexible bundling and mounting options for wire, cable and multiple size hoses
- Absorbs vibration, insulates cables and provides abrasion protection
- Black ties are U.V. coated and provide superior protection from drying out and cracking
- Continuous operating temperature -40°C (-40°F) to 85°C (185°F)
- Use Grote's ergonomic and mechanical cable tie tools for an easy effective application (83-6527, 83-6528) on page 81
- Made in North America



FEDERAL ASTM SPECIFICATIONS: D-4066PA0111 | FDA SPECIFICATIONS: CFR177.1500

LIGHT DUTY TIES



83-6004

PACK OF 25	PACK OF 100	PACK OF 1000	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
83-6000	83-6000-3		4.10" (104mm)	.10" (2.5mm)	0.75" (19mm)	18 lbs	White
83-6001	83-6001-3		4.10" (104mm)	.10" (2.5mm)	0.75" (19mm)	18 lbs	Black
83-6004	83-6004-3		8.10" (205mm)	.10" (2.5mm)	2.00" (51mm)	18 lbs	White
83-6005	83-6005-3		8.10" (205mm)	.10" (2.5mm)	2.00" (51mm)	18 lbs	Black

STANDARD TIES



83-6019

PACK OF 25	PACK OF 100	PACK OF 1000	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
	83-6006	83-6006-3	5.80" (147mm)	.14" (3.5mm)	1.25" (32mm)	40 lbs	White
	83-6007	83-6007-3	5.80" (147mm)	.14" (3.5mm)	1.25" (32mm)	40 lbs	Black
85-6018	83-6018	83-6018-3	7.60" (193mm)	.18" (4.5mm)	2.00" (51mm)	50 lbs	White
85-6019	83-6019	83-6019-3	7.60" (193mm)	.18" (4.5mm)	2.00" (51mm)	50 lbs	Black
85-6020	83-6020	83-6020-3	11.10" (282mm)	.18" (4.5mm)	3.00" (76mm)	50 lbs	White
85-6021	83-6021	83-6021-3	11.10" (282mm)	.18" (4.5mm)	3.00" (76mm)	50 lbs	Black
85-6026	83-6026	83-6026-3	14.60" (371mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	White
85-6025	83-6025	83-6025-3	14.60" (371mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	Black

HEAVY TIES



83-6029

PACK OF 25	PACK OF 100	PACK OF 1000	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
	83-6017	83-6017-3	9.00" (228mm)	.30" (7.6mm)	2.00" (50.8mm)	120 lbs	White
	83-6016	83-6016-3	9.00" (228mm)	.30" (7.6mm)	2.00" (50.8mm)	120 lbs	Black
85-6028	83-6028	83-6028-3	15.00" (381mm)	.30" (7.6mm)	4.00" (101mm)	120 lbs	White
85-6029	83-6029	83-6029-3	15.00" (381mm)	.30" (7.6mm)	4.00" (101mm)	120 lbs	Black

EXTRA HEAVY DUTY TIES

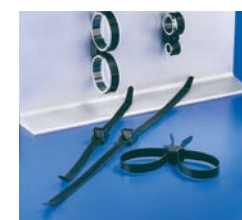
PACK OF 25	PACK OF 50	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
	83-6121	24.00" (609mm)	.34" (8.6mm)	7.20" (183mm)	175 lbs	White
85-6120	83-6120 NEW	24.00" (609mm)	.34" (8.6mm)	7.20" (183mm)	175 lbs	Black
	83-6118	36.00" (914mm)	.34" (8.6mm)	11.00" (279mm)	175 lbs	White
	83-6119	36.00" (914mm)	.34" (8.6mm)	11.00" (279mm)	175 lbs	Black
	83-6122	48.50" (1,233mm)	.34" (8.6mm)	14.50" (368mm)	175 lbs	White
	83-6123 NEW	48.50" (1,233mm)	.34" (8.6mm)	14.50" (368mm)	175 lbs	Black



85-6120

RELEASABLE DUAL CLAMP TIES

- Made of general purpose (PA66HIR) Polyamide 6.6 high impact nylon material
- UL flame rating 94-HB, good UV resistance
- Unique one piece design with the 1/4" mounting head centered on the strap
- Can reduce the need to carry numerous clamps and other mounting devices
- Is releasable and extremely flexible for tough to reach areas
- Continuous operating temperature -40°C (-40°F) to 110°C (230°F)



FEDERAL ASTM SPECIFICATIONS: D-4066PA0151

PACK OF 10	PACK OF 50	LENGTH	WIDTH	BUNDLE DIA. (EACH SIDE)	STRENGTH	MOUNTING HOLE	COLOR
85-6040	83-6040	13.0" (331mm)	.50" (12.7mm)	1.3" (33.02mm)	150 lbs	.250" (6.35mm)	Black
85-6041	83-6041	19.2" (489mm)	.50" (12.7mm)	2.3" (58.42mm)	150 lbs	.250" (6.35mm)	Black



83-6040

RELEASABLE TIES

PACK OF 25	PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
	83-6012	7.60" (193mm)	.18" (4.5mm)	1.90" (48mm)	50 lbs	White
	83-6013	7.60" (193mm)	.18" (4.5mm)	1.90" (48mm)	50 lbs	Black
	83-6022	14.60" (371mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	White
85-6023	83-6023	14.60" (371mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	Black
85-6163	83-6163	22.40" (569mm)	.49" (12.5mm)	5.90" (150mm)	250 lbs	Black



83-6023

SCREW MOUNT TIES

PACK OF 25	PACK OF 50	PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	MOUNTING HOLE	COLOR
85-6104		83-6104	8.00" (203mm)	.18" (4.5mm)	1.90" (48mm)	50 lbs	#10	White
		83-6105	7.60" (193mm)	.18" (4.5mm)	1.90" (48mm)	50 lbs	#10	Black
		83-6107	11.50" (292mm)	.18" (4.5mm)	3.00" (76mm)	50 lbs	#10	Black
		83-6027	14.50" (368mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	#10	White
		83-6108	14.50" (368mm)	.18" (4.5mm)	4.00" (101mm)	50 lbs	#10	Black
	83-6037	83-6116	15.75" (400mm)	.30" (7.6mm)	4.00" (101mm)	120 lbs	.250"	White
	83-6117		15.75" (400mm)	.30" (7.6mm)	4.00" (101mm)	120 lbs	.250"	Black



83-6104



NYLON CABLE TIE ASSORTMENT



- Made of general purpose (PA66) Polyamide 6.6 nylon material
- Assortment of most popular ties; available in white, U.V. resistant black, assorted colors
- Compact and attractive polybag packaging with a clear view of all the products inside

PART #	PACK SIZE	COLOR
83-6506	125	White
83-6507	125	Black

Includes 25 x 4" & 8" (18lb); 25 x 8", 11" & 15" (50lb)

PART #	PACK OF	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH
83-6514	50	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs
83-6559 NEW	50	11.1" (205mm)	.18" (4.6mm)	3.0" (76mm)	50 lbs

Includes 10 x Blue, Yellow, Green, Orange and Red

CABLE TIE ASSORTMENT CANISTER



- Assortment of light to standard duty nylon cable ties
- 10 different cable ties ranging from 4" to 12" and in various colors
- 100 of each of the cable ties (total 1,000 pieces)
- Convenient storage canister
- Ideal use; at home, the garage or workshop

PART #	PACK OF	LENGTHS	STRENGTH	COLORS
83-6600	1,000	4", 6", 8", 12"	18lb-50lb	Yellow, Blue, Red, Green, White

COLOR TIES



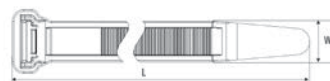
Color Ties help to ease wire identification

PACK OF 25	PACK OF 1000	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
85-6030	83-6030-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Red
85-6031	83-6031-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Orange
85-6032	83-6032-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Blue
85-6033	83-6033-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Yellow
85-6034	83-6034-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Green
85-6035	83-6035-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Purple
85-6036	83-6036-3	7.6" (193mm)	.18" (4.6mm)	2.0" (51mm)	50 lbs	Gray

WIDE STRAP CABLE TIE



- Made of general purpose (PA66HIRHS) Polyamide 6.6 high impact, heat-stabilized nylon
- UL flame rating 94-HB, excellent UV resistance
- Continuous operating temp: -40°C (-40°F) to 110°C (230°F)
- The wide strap tie minimizes pinching on soft bundles
- Features a low profile head to provide compact bundling
- Accommodates a large bundle diameter range .375" (9.5mm) – 4.125" (104.7mm)



FEDERAL ASTM SPECIFICATIONS: D-4066PA0161

PACK OF 25	PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
85-6042	83-6042	9.1" (231mm)	.5" (12.7mm)	2.25" (57mm)	120 lbs	Black
85-6043	83-6043	15.1" (244mm)	.5" (12.7mm)	4.12" (104mm)	120 lbs	Black



FIR TREE

MOUNT & CABLE TIE ASSEMBLIES

- Made of general purpose (PA66HS) Polyamide 6.6 nylon heat-stabilized material
- UL flame rating 94V-2 cable tie; 94-HB mount – excellent UV resistance
- Provides low insertion force and high extraction force
- Continuous operating temperature -40°C (-40°F) to 105°C (221°F) cable tie; -40°C (-40°F) to 110°C (230°F) mount



FEDERAL ASTM SPECIFICATIONS: D-4066PA0121

PUSH MOUNT

- Fir tree design grips to inside of a hole for materials like sheet metal, wood and cast iron
- Panel thickness range: .052"-.280" (1.32mm-7.0mm)

PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
83-6045	8.27" (210mm)	.18" (4.57mm)	1.90" (48mm)	50 lbs	Black



DOMED FIR TREE

MOUNT & CABLE TIE ASSEMBLY

- The domed head tie provides a tight rattle-free installation and outside serrated strap has ribs designed for convoluted tubing. Dome also keeps out dust and liquids
- Panel thickness range: .250"-.280" (6.3mm-7.0mm)

PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
83-6048	6.69" (170mm)	.20" (5.1mm)	1.22" (31mm)	45 lbs	Black



FIR TREE

MOUNT & CABLE TIE ASSEMBLY

- Cable mount can slide along the cable tie for easy assembly. Fir tree design grips to inside of a hole for materials like sheet metal, wood, and cast iron.
- Popular on trailer manufacturing
- Panel thickness range: .028"-.193" (.75mm-3.0mm)

PACK OF 100	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
83-6046	8.00" (203mm)	.18" (4.6mm)	1.75" (44.5mm)	50 lbs	Black



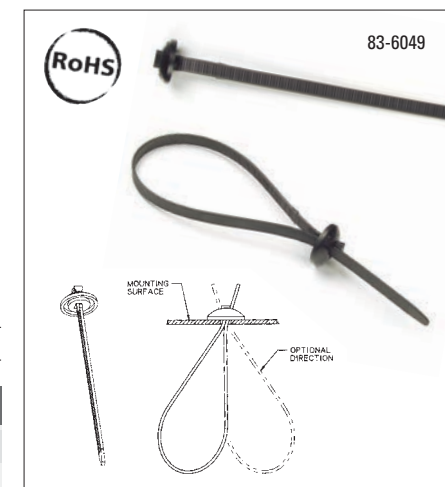
BUTTON HEAD CABLE TIE

- Made of general purpose (PA66HIRHS) Polyamide 6.6 high impact, heat stabilized nylon
- UL flame rating 94-HB, excellent UV resistance
- Continuous operating temperature -40°C (-40°F) to 110°C (230°F)

- The buttons tie provides parallel entry and exit through the button head.
- With teeth on both sides of the strap it can be installed through bi-directional looping clockwise or counter-clockwise.
- Standoff tabs prevent tie head from seating into the button head
- Pilot bushings protect strap from abrasion
- Popular OEM product – reducing part numbers and labor time

FEDERAL ASTM SPECIFICATIONS: D-4066PA0161

PACK OF 50	LENGTH	WIDTH	BUNDLE DIAMETER	STRENGTH	COLOR
83-6049	9.63" (244mm)	.22" (5.6mm)	2.62" (66.7mm)	105 lbs	Black
83-6052	15.00" (578mm)	.30" (7.6mm)	4.33" (110mm)	130 lbs	Black





EDGE CLIP & CABLE TIE ASSEMBLIES

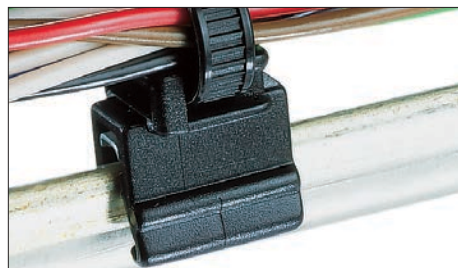


- Made of general purpose (PA66HIRHS) Polyamide 6.6 high impact, heat stabilized nylon
- UL flame rating 94V-2 cable tie; 94-HB mount – excellent UV resistance
- Continuous operating temperature -40°C (-40°F) to 110°C (230°F)

- The edge clip is designed to route bundles by securing to the edge of plastic or metal rails without the need for a mounting hole
- The clips are easy to secure and are extremely economical
- Comes complete with cable tie and edge clip
- Panel thickness range: .039"-.117" (1mm-3mm)

FEDERAL ASTM SPECIFICATIONS: D-4066PA0161

PACK OF 25	PACK OF 100	LENGTH	BUNDLE DIAMETER	STRENGTH	MOUNT STYLE	COLOR
85-6063	83-6063	7.9" (200mm)	1.80" (45mm)	50 lbs	Top	Black



HEAVY DUTY MOUNTS



- Made of general purpose (PA66HIRHS) Polyamide 6.6 high impact, heat stabilized nylon material; UL flame rating 94-HB, excellent UV resistance
- Continuous operating temperature -40°C (-40°F) to 110°C (230°F)

- When used with a cable tie, eliminates the need to carry multiple sizes of clamps
- Provides quick and easy service in the field; replace the cable tie only
- Has an excellent heat ratio and commonly used near an engine block
- Can accommodate up to .5" wide cable ties
- Contains a small tab inside the mounting hole that allows you to pre-install the mount on a stud before securing with a washer and a nut
- Additional sizes available upon request

FEDERAL ASTM SPECIFICATIONS: D-4066PA0161

PACK OF 25	PACK OF 100	MOUNTING HOLE	LENGTH	WIDTH	MAX TORQUE	COLOR
85-6060	83-6060	.187" (4.8mm)	.76" (19.3mm)	2.25" (57mm)	115 lb - in.	Black
85-6061	83-6061	.250" (6.4mm)	.76" (19.3mm)	2.25" (57mm)	115 lb - in.	Black
85-6062	83-6062	.312" (8.0mm)	.76" (19.3mm)	2.25" (57mm)	115 lb - in.	Black



CABLE TIE MOUNTING BASES



- Made of general purpose (PA66) Polyamide 6.6 nylon material; rubber-based adhesive
- Accommodates 18-50 lb cable ties

PART #	LENGTH	WIDTH	MOUNTING STYLE/HOLE	PACK	COLOR
83-6030	0.75" (19.05mm)	0.75" (19.05mm)	4-Way with adhesive, #6	50	White
83-6032	0.75" (19.05mm)	0.75" (19.05mm)	4-Way with adhesive, #6	50	Black
83-6031	1.00" (25.4mm)	1.00" (25.4mm)	4-Way with adhesive, #8	50	White
83-6033	1.00" (25.4mm)	1.00" (25.4mm)	4-Way with adhesive, #10	50	Black

CABLE TIE TENSION AND CUTTER "GUN STYLE" TOOL

- Cable tie tension and cut-off tools reduce operator fatigue and speed assembly
- Ergonomic design ideally fits the operators hand
- Cushion grip for comfort
- Quick tension adjustability for a flush "cut-off"
- Equipped with a hook for easy hanging

MILITARY SPECIFICATIONS: MS90387-1 (83-6527), MS90387-2 (83-6528)

83-6527 For 18-50 lb Ties
 83-6528 For 18-250 lb Ties



CABLE TIE TENSION AND CUTTER "TWISTER" TOOL

- Compact tensioning tool enables cinching and cutting
- For cable ties ranging from 18lbs-50lbs tensile strength
- Twisting action leaves a clean edge to prevent chaffing of wires
- Lightweight ergonomic design
- 7" long

83-6509



Did You Know?



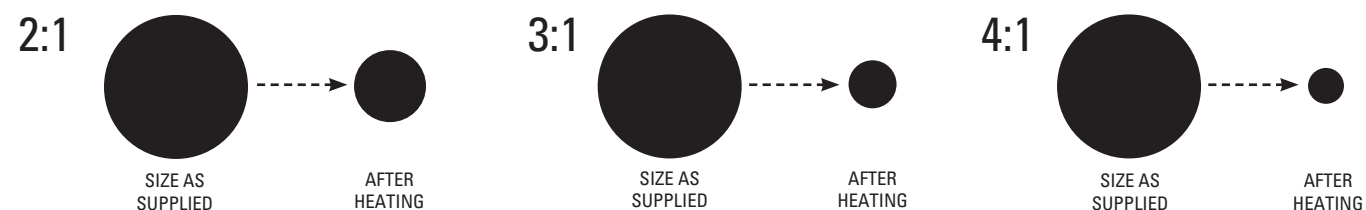
CABLE TIES WILL ABSORB AND RELEASE MOISTURE AS THE ATMOSPHERE CHANGES!

Grote recommends the following information to ensure the most reliable and efficient cable tie application:

- Straps should be stored in an unopened bag in a storage environment at (70°F and 50% humidity)
- Installation temperature should be at or greater than (32°F and 40% humidity)
- Over tightening of the strap can cause stress on the pawl and greater potential of failure



SHRINK RATIO



POLYOLEFIN HEAT SHRINKABLE TUBING

Product Line	SWT	DWT	FDWA	FDWA-CLEAR	HWA	DWA
Type	Single Wall	Dual Wall	Dual Wall	Dual Wall	Dual Wall	Dual Wall
Shrink Ratio	2 to 1	3 to 1	3 to 1	3 to 1	3 to 1	4 to 1
Outer Wall Construction	Thin/Flexible	Semi-Rigid	Flexible	Flexible	Rigid	Semi-Rigid
Inner Wall Construction	N/A	Encapsulant Lined	Adhesive Lining	Adhesive Lining	Adhesive Lining	Adhesive Lining
Minimum Shrink Temp.	70°C (158°F)	125°C (257°F)	80°C (176°F)	80°C (176°F)	90°C (195°F)	110°C (230°F)
Operating Temperature	-55°C (135°C)	-55°C (110°C)	-40°C (110°C)	-40°C (110°C)	-55°C (110°C)	-40°C (130°C)
Moisture Resistance	Low	Medium	High	High	High	High
Flame Retardancy	Good		Excellent		Excellent	Excellent
Abrasion Protection	Good	Excellent	Excellent	Excellent	Excellent	Excellent
Strain Relief & Insulation	Good	Excellent	Excellent	Excellent	Excellent	Excellent
Mil Spec	23053/5 Class 1, 3	20353/4 Class 1	23053/4 Class 3		23053/15 Class 1	
ROHS	Yes	Yes	Yes	Yes	Yes	Yes
Other	Lead/Halogen Free	Lead/Halogen Free		Lead/Halogen Free		

* Custom lengths and additional materials available upon request

ADHESIVE LINED, DUAL WALL

4:1 SHRINK RATIO, DWA

Dual Wall is designed to meet automotive industry requirements for environmental sealing and electrical insulation. It has a dual wall construction. The outer jacket is semi-rigid, radiation cross-linked polyolefin that is flame retardant and provides strain relief and abrasion protection. The inner layer is a unique hot-melt adhesive designed to adhere to all major automotive wire and terminal insulations. The adhesive forms an effective barrier against fluids and moisture; protects harnesses from corrosion and water wicking and covers a wide temperature range. This product is an OEM approved product.

SPECS / APPROVALS: UL E85381RECOGNIZED, 600 V, 125° C



SIZE	LENGTH	PACK	WIRE SIZE	PART #
1/16" - 3/16" (.225")	6"	6	22-12 GA	84-5006
1/16" - 3/16" (.225")	6"	20	22-12 GA	84-5006-3
1/16" - 3/16" (.225")	48"	6	22-12 GA	84-5006-48
3/16" - 1/4" (.293")	6"	6	20-10 GA	84-5007
3/16" - 1/4" (.293")	6"	20	20-10 GA	84-5007-3
3/16" - 1/4" (.293")	48"	6	20-10 GA	84-5007-48
1/4" - 3/8" (.427")	6"	6	16-8 GA	84-5008
1/4" - 3/8" (.427")	6"	20	16-8 GA	84-5008-3
1/4" - 3/8" (.427")	48"	6	16-8 GA	84-5008-48
1/2" - 5/8" (.700")	6"	6	8-1/0 GA	84-5009
1/2" - 5/8" (.700")	6"	10	8-1/0 GA	84-5009-3
1/2" - 5/8" (.700")	48"	6	8-1/0 GA	84-5009-48

"HOT MELT" HEAT SHRINK TUBING

Minimum shrink temperature:
110°C (230°F)
 Minimum full recovery temperature:
135°C (275°F)
 Operating temperature range:
-40°C to 130°C (-40°F to 266°F)



ADHESIVE LINED, DUAL WALL

4:1 SHRINK RATIO, DWA

- 40, 6", Black Dual Wall Heat Shrink pieces
- 6 compartment re-closable box
- Re-order chart on inside cover

PART #	FEATURES	SIZE	QUANTITY
83-6535	84-5006	1/16" - 3/16"	12
	84-5007	3/16" - 1/4"	12
	84-5008	1/4" - 3/8"	10
	84-5009	1/2" - 5/8"	6

"HOT MELT" HEAT SHRINK TUBING KIT



83-6535



HEAT SHRINK TUBING

FLEXIBLE, ADHESIVE LINED, DUAL WALL

Minimum shrink temperature:
 80°C (176°F)
 Minimum full recovery temperature:
 125°C (257°F)
 Operating temperature range:
 -40°C to 110°C (-40°F to 230°F)

* Remains semi-flexible post-heat



3:1 SHRINK RATIO, FDWA & FDWA-CLEAR

Flexible Dual Wall is an adhesive lined heat shrink tubing that provides moisture resistance, strain relief and electrical insulation for splices, terminations, breakouts and mechanical connections. The outer wall is semi-rigid, cross-linked polyolefin, while the inner wall is an adhesive lining that flows with the application of heat. This moisture resistant tubing provides flexibility to insulate and protect irregular shape products. It also provides rugged protection from chemicals, abrasion, vibration and flexing.

SPECS / APPROVALS: UL E35586, 600 V, 125°C | CSA LR31929, 600 V, 125°C



SIZE	LENGTH PER PIECE	PACK	WIRE SIZE	BLACK PART #	CLEAR PART #
1/8"	6"	6	22-18 GA	84-4015	84-5029
1/8"	6"	20	22-18 GA	84-4015-3	
1/8"	48"	6	22-18 GA	84-4015-48	
3/16"	6"	6	20-12 GA	84-4016	84-5030
3/16"	6"	20	20-12 GA	84-4016-3	
3/16"	48"	6	20-12 GA	84-4016-48	
1/4"	6"	6	16-10 GA	84-4017	84-5031
1/4"	6"	20	16-10 GA	84-4017-3	
1/4"	48"	6	16-10 GA	84-4017-48	
3/8"	6"	6	12-8 GA	84-4018	84-5032
3/8"	6"	20	12-8 GA	84-4018-3	
3/8"	48"	6	12-8 GA	84-4018-48	
1/2"	6"	6	8-4 GA	84-4019	84-5033
1/2"	6"	20	8-4 GA	84-4019-3	
1/2"	48"	6	8-4 GA	84-4019-48	
3/4"	6"	6	4-2/0 GA	84-4020	84-5034
3/4"	6"	10	4-2/0 GA	84-4020-3	
3/4"	48"	6	4-2/0 GA	84-4020-48	
1"	6"	6	1-4/0 GA	84-4021	84-5035
1"	6"	10	1-4/0 GA	84-4021-3	
1"	48"	6	1-4/0 GA	84-4021-48	

HEAT SHRINK TUBING KIT

FLEXIBLE, ADHESIVE LINED, DUAL WALL

3:1 SHRINK RATIO, FDWA

- 50, 6", Black Flexible Dual Wall Heat Shrink pieces
- 6-compartment re-closable box; Re-order chart on inside cover



83-6537

PART #	FEATURES	SIZE	QUANTITY
83-6537	84-4015	1/8"	12
	84-4016	3/16"	12
	84-4017	1/4"	12
	84-4018	3/8"	6
	84-4019	1/2"	6
	84-4020	3/4"	2

DUAL WALL

HEAT SHRINK TUBING

3:1 SHRINK RATIO, DWT

Dual Wall is an encapsulant-lined heat shrink tubing that provides moisture resistance, strain relief and electrical insulation for splices, terminations, breakouts and mechanical connections. The outer wall is semi-rigid, cross-linked encapsulant lined, while the inner wall is a meltable encapsulant lining that flows with the application of heat. This moisture resistant tubing provides rugged protection from chemicals, abrasion, vibration and flexing.

SPECS / APPROVALS: UL E85381, 600 V, 125°C | MILITARY AMS-DTL-23053/4 CLASS 1



SIZE	LENGTH PER PIECE	PACK	WIRE SIZE	BLACK PART #	RED PART #
1/8"	6"	6	22-18 GA	84-4006	84-6106
1/8"	6"	20	22-18 GA	84-4006-3	84-6106-3
1/8"	48"	6	22-18 GA	84-4006-48	84-6106-48
1/8"	48"	50	22-18 GA	88-4006	
3/16"	6"	6	20-12 GA	84-4005	84-6105
3/16"	6"	20	20-12 GA	84-4005-3	84-6105-3
3/16"	48"	6	20-12 GA	84-4005-48	84-6105-48
3/16"	48"	50	20-12 GA	88-4005	
1/4"	6"	6	16-10 GA	84-4000	84-6100
1/4"	6"	20	16-10 GA	84-4000-3	84-6100-3
1/4"	48"	6	16-10 GA	84-4000-48	84-6100-48
1/4"	48"	50	16-10 GA	88-4000	
3/8"	6"	6	12-8 GA	84-4001	84-6101
3/8"	6"	20	12-8 GA	84-4001-3	84-6101-3
3/8"	48"	6	12-8 GA	84-4001-48	84-6101-48
3/8"	48"	50	12-8 GA	88-4001	
1/2"	6"	6	8-4 GA	84-4002	84-6107
1/2"	6"	20	8-4 GA	84-4002-3	84-6107-3
1/2"	48"	6	8-4 GA	84-4002-48	84-6107-48
1/2"	48"	50	8-4 GA	88-4002	
3/4"	6"	6	4-2/0 GA	84-4003	84-6103
3/4"	6"	10	4-2/0 GA	84-4003-3	84-6103-3
3/4"	48"	6	4-2/0 GA	84-4003-48	84-6103-48
3/4"	48"	30	4-2/0 GA	88-4003	
1"	6"	6	1-4/0 GA	84-4004	84-6104
1"	6"	10	1-4/0 GA	84-4004-3	84-6104-3
1"	48"	6	1-4/0 GA	84-4004-48	84-6104-48
1"	48"	20	1-4/0 GA	88-4004	





HEAT SHRINKABLE TUBING KITS

DUAL WALL

3:1 SHRINK RATIO, DWT

- 50, 6", Dual Wall Heat Shrink Pieces
- 6-compartment re-closable plastic box
- Re-order chart on inside cover



83-6502

83-6505

PART #	FEATURES	QUANTITY
83-6502	Black Tubing	50
83-6505	Red and Black Tubing	50

HEAT SHRINK TUBING

ADHESIVE LINED, HEAVY WALL

3:1 SHRINK RATIO, HWA

Dual Wall is designed for insulating, protecting and sealing electrical connections and low voltage cables. It provides insulation thickness equal to or greater than standard wire insulation. Heavy wall shrink tubing provides an environmental seal and is highly resistant to impact and abrasion. Longer lengths and sizes available upon request.

SPECS / APPROVALS: UL E1 15664



INSIDE DIAMETER	LENGTH PER PIECE		PACK	PART #
	PRE HEAT	POST HEAT		
.750" (19mm)	.220" (5.6mm)	48"	1	84-4030
1.100" (28mm)	.375" (9.5mm)	48"	1	84-4031
1.500" (38mm)	.500" (12mm)	48"	1	84-4032



HEAT SHRINK TUBING

DUAL WALL

3:1 SHRINK RATIO

Dual Wall is an encapsulant-lined heat shrink tubing that provides moisture resistance, strain relief and electrical insulation for splices, terminations, breakouts and mechanical connections. The outer wall is semi-rigid, cross-linked polyolefin, while the inner wall is a meltable polyolefin that flows with the application of heat. This moisture resistant tubing provides rugged protection from chemicals, abrasion, vibration and flexing. Meets UL #486D requirements.

SPECS / APPROVALS: CSA C22.2 | UL 486D | MILITARY DTL-23053/15, CLASS 2



SIZE	LENGTH PER PIECE	PACK	WIRE SIZE	BLACK PART #	RED PART #
1/2"	1.5"	10	6-2 GA	84-9561	84-9562
3/4"	1.5"	10	4-1/0 GA	84-9563	84-9564
1 1/8"	1.5"	10	2/0-250mcm	84-9565	84-9566



84-9564

SINGLE WALL

HEAT SHRINK TUBING

2:1 SHRINK RATIO, SWT

Single Wall is cost effective tubing that insulates and protects electrical connections. It also provides a flexible option for wire bundling. It is made of cross-linked polyolefin and provides good protection from abrasion and moisture. Meets UL VW-1 and CSA OFT flame-retardancy.

SPECS / APPROVALS: CSA LR31929 VW-1, 600 V, 125°C
 UL E35586 VW-1, 600 V, 125°C | MILITARY AMS-DTL-23053/5, CLASSES 1 AND 3

SIZE	LENGTH PER PIECE	PACK	BLACK PART #	RED PART #	BLUE PART #	YELLOW PART #
1/8"	6"	6	84-5010	84-4013		
1/8"	100'	Spool	83-4999			
3/16"	6"	6	84-5011	84-4007	84-5020	
3/16"	100'	Spool	83-5000			
1/4"	6"	6	84-5012	84-4008	84-5019	84-5025
1/4"	100'	Spool	83-5001			
3/8"	6"	6	84-5013	84-4009	84-5022	84-5024
3/8"	100'	Spool	83-5002			
1/2"	6"	6	84-5014	84-4011	84-5021	
1/2"	100'	Spool	83-5003			
3/4"	6"	6	84-5015	84-4010	84-5023	
3/4"	100'	Spool	83-5004			
1"	6"	6	84-5016			

* Custom lengths and colors available upon request

Minimum shrink temperature:
 70°C (158°F)
 Minimum full recovery temperature:
 90°C (194°F)
 Operating temperature range:
 -55°C to 135°C (-67°F to 275°F)



SINGLE WALL

HEAT SHRINKABLE TUBING KIT, BLACK

2:1 SHRINK RATIO, SWT

- 50, 6", Black Single Wall Heat Shrink Pieces
- 6-compartment re-closable plastic box
- Re-order chart on inside cover

PART #	FEATURES	SIZE	QUANTITY
83-6545	84-5010	1/8"	12
	84-5011	3/16"	12
	84-5012	1/4"	8
	84-5013	3/8"	6
	84-5014	1/2"	6
	84-5015	3/4"	6



83-6545

SINGLE WALL

HEAT SHRINK TUBING ASSORTMENT

PART #	FEATURES	SIZE	QUANTITY
83-6533	Black	1/4" x 6"	3
		3/8" x 6"	2
		1/2" x 6"	2



83-6533

FLAMELESS HEAT GUN



- Portable, self igniting, multi function heat tool; 7 1/2" long
- Cordless & flameless; OEM approved
- Comes with an attachable heat deflector, cooling tray and replacement orifice
- The wide nozzle has a high output long life catalyst
- Ready to use in 15 seconds; adjustable heat settings
- Gas container capacity: 20 ml
- Recommended butane: Triple Refined
- Continuous Operating Temperature: 250°C to 500°C (480°F to 930°F)
- Maximum Temperature Rating: 750°C (1400°F)

83-6508

HEAT GUN



- Two heat settings; 120 Volt, 10 AMP
- Lightweight (1 lb)
- 3-wire ground cord set
- UL and cUL listed
- Thermoplastic casing
- Minimum Temperature Rating: 260°C (500°F)
- Maximum Temperature Rating: 538°C (1000°F)

83-6501

HANDS-FREE HEAT TOOL



- Hands-free slide lock for continuous use and instant operation
- Ergonomic handle design ensures a non-slip grip
- Removable base for table-top or hand-held use
- 60 minute continuous run time with full charge
- Gas adjustment wheel provides adjustable, long blue torch flame
- Unique shutter lever to easily extinguish ignition flame
- Instant off safety switch
- 1300°C (2500°F)

83-6525

BUTANE POWERED MICRO TORCH



- Compact palm size is perfect for tool kits and field service kits
- Produces an adjustable, wind resistant flame with temperatures up to 1300°C /2500°F, perfect for many microtorch applications
- Built in safety lock with improved easy to use self-ignition system
- Meets consumer products safety commission (CPSC) child safety requirements
- Powered by refillable "fuel cell" (included) with flame adjustment lever
- Built in fuel level viewing window
- Use with Master Ultratane butane for best performance
- Pinpoint flame is perfect for soldering, desoldering, heating shrinking and terminating heating lighting and many other applications
- Patent pending

83-6500



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SPLIT FLEX CONVOLUTED TUBING



- Provides excellent chemical protection. Allows flexible routing of wire, cable, hoses
- Protects hoses, wire and cables from extreme heat and abrasion
- Helps reduce noise and protects wires from stones and other harmful debris
- Slit opening allows for easy installation of wires
- The slit snaps closed after installation to maintain its protective properties
- Applications: Automotive, Truck, Bus, Trailer, Marine, R.V., OE harness manufacturing

NYLON SPLIT LOOM

- Made of lightweight, black nylon material, with grey striping
- Continuous operating temperature -40°C (-40°F) to 125°C (257°F)
- FMVSS 302 Flame Rating

PRODUCT SPECS: FORD: WSS-M4D933-A1, ES-XU5T-14A099-AA
 CHRYSLER: MS-DB41 CPN 4059 | ASTM: D4066PA283

SIZE	LENGTH	PACK	PART #	SIZE	LENGTH	PACK	PART #
1/4"	50' (15.2m)	Bag	83-8030	5/8"	500' (152m)	Box	83-8033-3
1/4"	500' (152m)	Box	83-8030-3	3/4"	50' (15.2m)	Bag	83-8034
3/8"	50' (15.2m)	Bag	83-8031	3/4"	500' (152m)	Box	83-8034-3
3/8"	500' (152m)	Box	83-8031-3	1"	50' (15.2m)	Bag	83-8035
1/2"	50' (15.2m)	Bag	83-8032	1"	300' (91.4m)	Box	83-8035-3
1/2"	500' (152m)	Box	83-8032-3	1.5"	150' (45.7m)	Box	83-8036-3
5/8"	50' (15.2m)	Bag	83-8033	2"	100' (30.4m)	Box	83-8037-3

POLYETHYLENE SPLIT LOOM

- Made of lightweight, black polyethylene (PE) material
- Continuous operating temperature -40°C (-40°F) to 93°C (200°F) * **NEW**

SIZE	LENGTH	PACK	PART #	SIZE	LENGTH	PACK	PART #
1/4"	10' (3.0m)	Bag	83-6999	1/2"	50' (15.2m)	Bag	83-8001
1/4"	25' (7.6m)	Bag	83-8013	1/2"	100' (30.4m)	Spool	*83-8001-S
1/4"	50' (15.2m)	Bag	83-8003	1/2"	500' (152m)	Box	83-8001-3
1/4"	100' (30.4m)	Spool	*83-8003-S	5/8"	50' (15.2m)	Bag	83-8007
1/4"	500' (152m)	Box	83-8003-3	5/8"	100' (30.4m)	Spool	*83-8007-S
3/8"	8' (2.43m)	Bag	83-7000	5/8"	500' (152m)	Box	83-8007-3
3/8"	25' (7.6m)	Bag	83-8010	3/4"	5' (1.52m)	Bag	83-7002
3/8"	50' (15.2m)	Bag	83-8000	3/4"	50' (15.2m)	Bag	83-8002
3/8"	100' (30.4m)	Spool	*83-8000-S	3/4"	100' (30.4m)	Spool	*83-8002-S
3/8"	500' (152m)	Box	83-8000-3	3/4"	500' (152m)	Box	83-8002-3
7/16"	12' (3.6m)	Bag	83-8018	1"	5' (1.52m)	Bag	83-6998
7/16"	50' (15.2m)	Bag	83-8014	1"	50' (15.2m)	Bag	83-8004
7/16"	500' (152m)	Box	83-8014-3	1"	300' (91.4m)	Box	83-8004-3
1/2"	7' (2.13m)	Bag	83-7001	1 1/2"	150' (45.7m)	Box	83-8005-3
1/2"	25' (7.6m)	Bag	83-8011	2"	100' (30.4m)	Box	83-8009-3

SPLIT LOOM INSTALLATION TOOL



- Loom tool allows for easy insertion of singular or multiple wires to split loom
- Ergonomic design, saves valuable time

- 83-6990 1/4" – 7/16" Size Range
- 83-6991 1/2" – 5/8" Size Range
- 83-6992 3/4" – 7/8" Size Range
- 83-6993 1" – 1 1/2" Size Range



SPIRAL WRAP – SPOOLED



- Made of lightweight Polyethylene material
- Black spiral wrap is U.V. resistant
- Provides wire and cables from abrasion and allows flexible routing options
- Continuous operating temperature: -60°C (-76°F) to 88°C (190°F)

MILITARY SPECS: MIL I-631D, MIL P-21922A (BLACK ONLY) | FED SPEC: LP390 (BLACK AND NATURAL)

SIZE	MIN/MAX BUNDLE DIAMETER	LENGTH	BLACK	NATURAL
1/4"	.187" (4.75mm) – 2" (50.8mm)	100' (30.5m)	83-9008	83-9003
3/8"	.312" (7.92mm) – 3" (76.2mm)	100' (30.5m)	83-9009	83-9000
1/2"	.375" (9.52mm) – 4" (102mm)	100' (30.5m)	83-9007	83-9001
3/4"	.750" (19.1mm) – 5" (127mm)	100' (30.5m)	83-9010	83-9002
1"	1.00" (25.4mm) – 7" (178mm)	100' (30.5m)	83-9011	83-9004



NON METALLIC LOOM



- Used to protect wire harnesses, fuel lines, battery cables, control rods, vacuum lines and anywhere extreme heat or harsh chemicals are present
- Made of lightweight, non-metallic flexible conduit
- Constructed with the highest grade PET (Polyethylene Terephthalate) yarn and filled with PET monofilament
- Asphalt coating resists oil and fuel, water and other harsh chemicals
- Provides superior abrasion protection and crush resistance
- Extremely flexible and excellent for shock and noise reduction
- Continuous operating temperature -60°C (-76°F) to 163°C (325°F)
- Made in North America
- Custom lengths and split options available by request

INDUSTRY SPECS: FORD: ESB-M3L38-A, ESF-M3L45-A, ESB-M99H96-A | GENERAL MOTORS: GM-675M, GM-676M, GM-677M, GM-678M | CHRYSLER: MS-542, MS-J29-31 | MILITARY: HH-T-791 A,B,C SAE J562A

SIZE	LENGTH	COLOR	PART #
1/4"	100' (30.5m)	Black	87-1000
5/16"	100' (30.5m)	Black	87-1008
3/8"	100' (30.5m)	Black	87-1001
1/2"	100' (30.5m)	Black	87-1002
3/4"	100' (30.5m)	Black	87-1007



ELECTRICAL TAPE

- General purpose vinyl insulating tape
- Excellent resistance to abrasion, moisture and other weather conditions
- 3/4" x 60' black
- Maximum temperature rating -10°C (14°F) to 80°C (176°F)
- CSA 22.2

- 83-7029 1 Pack
- 83-7029-3 10 Pack



83-7029



RUBBER INSULATED STEEL CLAMPS



- Black EPDM extruded material reduces vibration and has excellent heat resistance
- G-60 galvanized steel is resistant to acids, oxidizing, chemicals and weathering
- Ideal for securing wire loom, cables and hydraulic hoses
- Maximum temperature rating -40°C (-40°F) to 148°C (300°F)
- Made in North America; additional bulk sizes available

FEDERAL ASTM SPECIFICATIONS: D2000 M3 BA710 A14 B13 C12 F17 Z1

I.D. SIZE	WIDTH	MOUNTING HOLE	PACK OF 10	PACK OF 100
1/4" (6.4mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8000	83-8100
3/8" (9.5mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8001	83-8101
1/2" (12.7mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8002	83-8102
5/8" (15.9mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8003	83-8103
3/4" (19.1mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8004	83-8104
7/8" (22.2mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8005	83-8105
1" (25.4mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8006	83-8106
1 1/4" (31.7mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8007	83-8107
2" (50.8mm)	5/8" (15.8mm)	3/8" (9.52mm)	84-8008	83-8108

VINYL INSULATED CLAMPS



- Black Plastisol (PVC) dip coating provides excellent resistance to acids, salts & moisture
- Self extinguishing & excellent resistance to impact, vibration and abrasion
- G-60 galvanized steel is resistant to acids, oxidizing, chemicals and weathering
- Ideal for securing wire loom, split flex tubing, cables and hydraulic hoses
- Maximum temperature rating -40°C (-40°F) to 93°C (200°F)
- Made in North America; additional bulk sizes available

I.D. SIZE	WIDTH	MOUNTING HOLE	PACK OF 5	PACK OF 10	PACK OF 15	PACK OF 100
1/4" (6.4mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7007	83-7007	
3/8" (9.5mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7010	83-7010	
1/2" (12.7mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7008	83-7008	
5/8" (15.9mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7018	83-7018	
3/4" (19.1mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7009	83-7009	
7/8" (22.2mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7019	83-7019	
1" (25.4mm)	1/2" (12.7mm)	1/4" (6.35mm)		84-7020	83-7036	
1 1/4" (31.7mm)	1/2" (12.7mm)	1/4" (6.35mm)	84-7021		83-7037	
1 1/2" (38.1mm)	1/2" (12.7mm)	1/4" (6.35mm)	84-7022		83-7038	
2" (50.8mm)	1/2" (12.7mm)	1/4" (6.35mm)	84-7023		83-7039	

NYLON CLAMPS



- Made of general purpose (PA66) Polyamide 6.6 nylon material
- Ideal for securing wire, cable and hydraulic hoses
- Continuous operating temperature -40°C (-40°F) to 85°C (185°F)

I.D. SIZE	WIDTH	MOUNTING HOLE	PACK OF 10	PACK OF 100
1/4" (6.4mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7003	83-7003
5/16" (8.0mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7014	83-7014
3/8" (9.5mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7011	83-7011
1/2" (12.7mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7004	83-7004
5/8" (15.9mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7012	83-7012
3/4" (19.1mm)	1/2" (12.7mm)	.203" (5.2mm)	84-7005	83-7005

CHASSIS CLIPS

- Made of heat treated spring steel with black corrosion resistant finish
- Clamps snap in place and securely hold wires, cables and hoses

I.D. SIZE	DIMENSIONS	PACK SIZE	PART #
3/16"	1/2" wide x 1 1/4" long x 3/16" deep	15	84-7033
1/4"	1/2" wide x 1 1/2" long x 1/4" deep	100	NEW 83-7034
1/4"	1/2" wide x 1 1/2" long x 1/4" deep	15	84-7034
3/8"	1/2" wide x 1 1/2" long x 1/2" deep	15	84-7035



NYLON BUSHINGS

- Easy snap in style nylon bushings
- Protects wire and cables from chaffing and vibration
- Lightweight and easy to install; 1/8" thickness

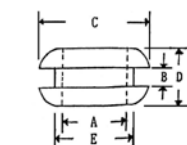
I.D. SIZE	MOUNTING HOLE	PACK SIZE	PART #
3/8"	1/2"	10	84-8050
5/8"	3/4"	100	83-8051
5/8"	3/4"	10	84-8051
3/4"	1"	10	84-8052



RUBBER GROMMETS

- Protect wires from chafing against drilled holes
- Also available in bulk sizes

INSIDE DIA. SIZE (A)	GROOVE WIDTH (B)	OVERALL WIDTH (C)	OVERALL THICKNESS (D)	GROOVE DIAMETER (E)	PACK SIZE	PART #
1/8" (3.1mm)	1/16" (1.5mm)	11/32" (8.7mm)	3/16" (4.7mm)	1/4" (6.4mm)	30	83-7020
3/16" (4.7mm)	1/16" (1.5mm)	7/16" (11.1mm)	7/32" (5.5mm)	5/16" (7.9mm)	30	83-7021
1/4" (6.4mm)	1/16" (1.5mm)	9/16" (14.2mm)	1/4" (6.4mm)	3/8" (9.5mm)	30	83-7022
5/16" (7.9mm)	1/16" (1.5mm)	5/8" (15.9mm)	1/4" (6.4mm)	7/16" (11.1mm)	30	83-7023
3/8" (9.5mm)	1/16" (1.5mm)	5/8" (15.9mm)	1/4" (6.4mm)	1/2" (12.7mm)	30	83-7024
25/64" (9.9mm)	1/8" (3.1mm)	27/32" (21.4mm)	3/8" (9.5mm)	21/32" (16.6mm)	30	83-7025
1/2" (12.7mm)	1/16" (1.5mm)	3/4" (19.2mm)	9/32" (5.2mm)	5/8" (15.9mm)	30	83-7026
5/8" (15.9mm)	1/16" (1.5mm)	1 1/8" (28.5mm)	9/32" (5.2mm)	7/8" (22.2mm)	30	83-7027
11/16" (17.4mm)	1/16" (1.5mm)	1 5/16" (33.3mm)	3/8" (9.5mm)	1" (25.4mm)	30	83-7028



RUBBER GROMMET ASSORTMENT

- 30 assorted grommets
- 10 each (1/4", 1/8" & 3/8")

83-7006

