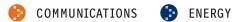


Wildlife Protection Products



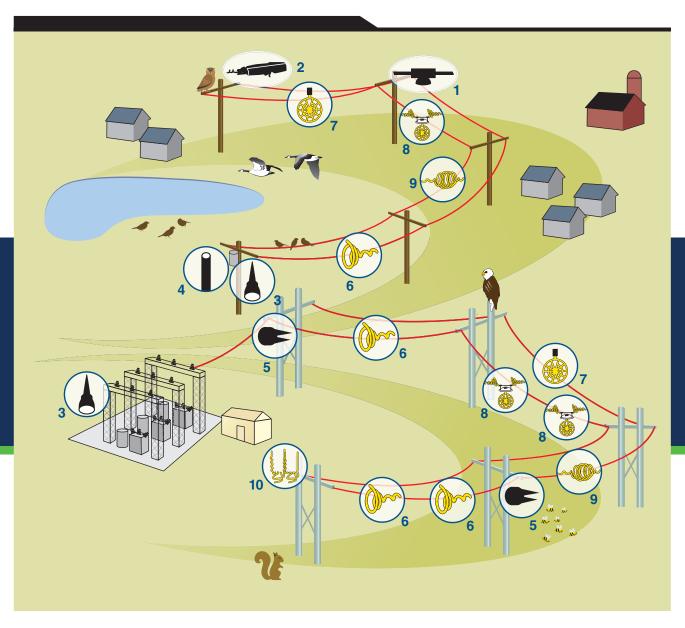








Wildlife Protection and Deterrent Hardware Solutions







Wildlife Protection Products

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Wildlife Protection

With the power grid expansion across the globe, the impact on wildlife populations became evident. As migratory bird collisions with power lines and other wildlife interactions with power equipment increased, Preformed Line Products worked with the Power Companies to develop product solutions to mitigate wildlife interactions.

Preformed Line Products (PLP) is committed to protecting wildlife by working with the Utility Companies to design and manufacture wildlife protection products that aid in reducing wildlife mortalities from interaction with power lines, structures and equipment.

Power Reliability

Wildlife-related outages impact power reliability, a key metric in the industry. Wildlife interactions is one of the top causes of power loss, behind Mother Nature and equipment failures. Loss of power by wildlife is estimated to cost the Utility companies millions in revenue in cost of repair, customer outages and regulatory fines.

Preformed Line Products is committed to improving power reliability by working with the Utility Companies to develop and deliver wildlife protection products that aid in reducing outages caused by wildlife.

PROTECT

PROTECT wildlife from incidental electrocution by covering critical electrical components.



Did you know
that the Migratory
Bird Treaty Act requires
utilities to protect against
injuring or killing endangered species like the
Bald Eagle?







Did you know that nearly 10% of power outages are caused by wildlife interactions with power lines or equipment?



RAPTOR PROTECTOR™

© Jerry Liguori

PLP's RAPTOR PROTECTOR COVER

(RPC) is designed to provide protection from incidental avian contact with overhead distribution lines. It provides an economical means of reducing bird fatalities and line outages. It is easily installed over single or double pin/post tie top C, F, and J Neck insulators and on conductors up to 1.10". For double pin insulators, the RPC can accommodate 6.5" – 22" center to center distances. The heavy angle RPC can be used on angles up to 30°. The horizontal trunnion and vertical trunnion are available for vise top and trunnion style insulators.









RAPTOR PROTECTOR™

4 Styles



Features

- Lightweight
- Fully UV Stabilized
- Long service life without deterioration of material
- 35 kV dielectric strength
- Low profile
- Unobtrusive appearance
- Minimized wind loading

Application

- Installs on single insulator in seconds
- Easily installed by hand or hot stick
- Designed to ensure a positive lock on conductor
- Modifiable for use on double cross arm construction
- Covers available for C, F, J-Neck, Vise Top and Trunnion style insulators

RAPTOR PROTECTOR						
PLP Catalog Number	Description	Diameter Range (in) Max.	Overall Length (in)	Max. Line Angle	Color	
	Tangent Co	ver				
RPC-0800-S			42"		Black	
RPC-0800	Tangent Cover	1.10	80"	10°	Black	
RPC-0801-S	langent cover	1.10	42"	10	Gray	
RPC-0801			80"		Gray	
	Heavy Ang	le				
RPC-0810-S			42"		Black	
RPC-0810	Heavy Angle	1.10	80"	30°	Black	
RPC-0811-S	neavy Angle		42"		Gray	
RPC-0811			80"		Gray	
	Horizontal Trui	nnion				
RPC-0820-S			42"		Black	
RPC-0820	Horizontal Trunnion	1.25	80"	10°	Black	
RPC-0821-S	Horizoniai Irunnion		42"	10-	Gray	
RPC-0821			80"		Gray	
	Vertical Trunr	nion				
RPC-0830-S			42"		Black	
RPC-0830	Vertical Trunnion	1.25	80"	10°	Black	
RPC-0831-S	vertical frummon	1.20	42"	10	Gray	
RPC-0831			80"		Gray	

Four pins (RPP-0840) included with each kit. Contact PLP for other available options.

NOTE: The RAPTOR PROTECTOR is not a completely insulating covering and should not be used to protect humans from electrical shock.



The RAPTOR PROTECTOR Dead-

End Cover is designed to provide protection from incidental avian contact with overhead distribution lines. It provides an economical means of reducing bird fatalities and line outages while being easily installed over Dead-end terminations.

The RAPTOR PROTECTOR Dead-End Cover is lightweight, offers little wind resistance and is easily and quickly installed by hand or by hot stick. It is designed to remain in its applied location and will not move along the conductor under Aeolian vibration or other motion. This product comes with a pigtail attachment to hold the cover in place over the termination and an anti-lift block to keep the RAPTOR PROTECTOR Dead-End Cover on the termination.

RAPTOR PROTECTOR™ Dead-End Cover





The RAPTOR PROTECTOR is manufactured from low density polyethylene (LLDPE) possessing excellent environmental stress crack resistance and is fully UV stabilized.

RAPTOR PROTECTOR™ Dead-End Cover



Features

- Lightweight
- Low profile
- Unobtrusive appearance
- Covers a wide range of conductors and dead-end hardware
- Long service life without deterioration of material
- 35 kV dielectric strength
- Easily installed by hand or hot stick
- Includes pigtail and lift prevention block
- Fully UV Stabilized
- Low temperature impact resistant
- Installs on conductor and over dead-end configuration in seconds

- Quick modification for a custom fit
- Two cover sizes accommodate large and small configurations of dead-end hardware
- Lift prevention block keeps the cover shell from lifting off the conductor and hardware
- Patented

RAPTOR PROTECTOR Dead-end SMALL					
PLP Catalog Number	Overall Length (in)	Range (in)	Color		
RPC-0850B-0295	30"	.175295"	Black		
RPC-0850G-0295	30	.175295	Gray		
RPC-0850B-0400	30"	.296400"	Black		
RPC-0850G-0400	30	.290400	Gray		
RPC-0850B-0540	30" .401540"	Black			
RPC-0850G-0540	30	.401540	Gray		
RPC-0850B-0730	001	E44 700	Black		
RPC-0850G-0730	30"	.541730"	Gray		

RAPTOR PROTECTOR Dead-end LARGE						
PLP Catalog Number	Overall Length (in)	Range (in)	Color			
RPC-0860B-0730	30"	.541730"	Black			
RPC-0860G-0730	30	.541730	Gray			
RPC-0860B-0920	30" .731920"	Black				
RPC-0860G-0920	30	.731920	Gray			
RPC-0860B-1100	30"	.921 - 1.100"	Black			
RPC-0860G-1100	30	.921 - 1.100	Gray			
RPC-0860B-1300	001	1 101 1 000	Black			
RPC-0860G-1300	30"	1.101 - 1.300"	Gray			

Contact PLP for other available options.

NOTE: The RAPTOR PROTECTOR is not a completely insulating covering and should not be used to protect humans from electrical shock.



RAPTOR PROTECTOR™

Accessories for Applications



BUSHING COVERS

Prevent outages and protect wildlife with PLP's **Bushing Covers**. The Bushing Covers are designed to reduce the number of outages experienced on the utility's distribution system by insulating transformer bushings, lighting arrestors, capacitors and switching equipment from incidental contact by various animals.

PLP Bushing Covers are made from a light gray, high dielectric, plastisol compound that is a minimum of 100 mils thick. This material contains ultraviolet stabilizers and fungicides and has a dielectric strength of 240 V/mil. Plastisol guards are secured to the bushings of transformers or similar equipment so that the energized components are covered for a reasonable distance or the insulating medium





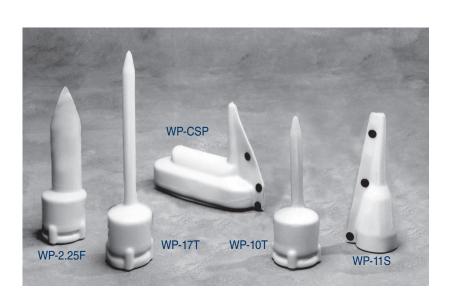
separates energized components from grounded components in areas open to animal contact.



BUSHING COVERS

Features

- Lightweight
- One-piece design
- Installed in seconds by hand
- Variety of shapes for various transformer configurations
- Modifiable for larger/ smaller stinger wires



WILDLIFE PROTECTORS							
PLP Catalog Number	Description	Carton Quantity	Height (in)	Width (in)	Length (in)	Tap Wire Opening (in)	
WP-10T	Single bushing transformer and capacitor. Covers a maximum of 7.5" of tap wire. Locating tabs hold the guard on the first skirt of the insulator.	25	11.75	3.75	3.75	up to 0.75	
WP-17T	Single bushing transformer and capacitor. Covers a maximum of 12.5" of tap wire. Locking tabs hold the guard on the first skirt of the insulator.	25	17.00	3.75	3.75	up to 0.75	
WP-11S	Existing tap retrofit. Apply through slit edge and hold guard in place with the fasteners provided.	25	11.00	3.50	3.50	0.40	
WP-CSP	Completely Self-Protected (CSP) transformers. Designed as retrofit. Designed to protect both primary bushing and lighting arrestor.	25	8.75	3.50	12.25	0.40	
WP-2.25F	Single bushing transformer. Covers 2.25" OD current limiting fuse bolted to bushing. Bottom of the double dipped tip indicates point of install for fuse. Locking tabs hold guard on first skirt of the insulator.	25	12.75	3.75	3.75	cut as needed	

PROTECTOR TUBING

Protector Tubing protects
energized lines from faults due
to incidental contact caused by various
types of wildlife. The durable EPDM
tubing is a minimum of 125 mils thick
with a dielectric strength of 500 V/mil
and has excellent resistance to ozone
and petroleum based solvents.

- Tubing slit configuration permits easy installation on existing conductor
- Overlapping profile follows bends and turns in the conductor without risk of splitting open exposing energized wire
- New profile provides for a wider ranging of conductor applications
- Ideal for transformer stinger wires and arrestor connections to prevent the electrocution of birds of prey
- Available in continuous rolls. Contact PLP with your requirements.
- Not for the protection of human contact



PROTECTOR TUBING				
PLP Catalog Number	Conduct	Length (ft)		
	Min. (in)	L		
PT-0375	0.162	0.375	8	
PT-0625	0.376	0.625	8	
PT-0938	0.626	0.938	8	
PT-1300	0.939	1.300	8	



POLE PLUG





The POLE PLUG is designed to close

existing holes in steel and composite utility poles or other equipment.

Closing unused holes reduces or eliminates whistling due to the wind.

The plug also provides an economical means of reducing the incidents of insect infestations. This can drastically reduce injury to lineman and loss of productivity.

Features

- Fully UV stabilized
- Resistant to environmental stress cracking
- Installs in seconds
- Can be installed with standard hot stick tools if required
- Positive snap in lock
- One piece design
- Lightweight
- Eliminate/reduce pole whistling

- Eliminate/reduce insect or wildlife infestation
- Covers a wide range of hole diameters
- Long service life without material deterioration
- Compatible with steel or composite poles with wall thickness of 1/4" (9/16" to 1-1/8" diameter), 3/8" or less (1/2" diameter), or 1/2" or less (3" diameter)

POLE PLUG					
PLP Catalog Number	Hole Size (in)	Color			
PP-0625B	9/16" and	Black			
PP-0625G	5/8"	Gray			
PP-0750B	11/16" and	Black			
PP-0750G	3/4"	Gray			
PP-0813B	13/16"	Black			
PP-0813G	13/10	Gray			
PP-0875B	7/8" and	Black			
PP-0875G	15/16"	Gray			
PP-1000B	1"	Black			
PP-1000G	'	Gray			

POLE PLUG					
PLP Catalog Number	Hole Size (in)	Color			
PP-1125B	1-1/8"	Black			
PP-1125G	1-1/0	Gray			
PP-1250B	1-1/4"	Black			
PP-1250G	1-1/4	Gray			
PP-1375B	1-3/8"	Black			
PP-1375G	1-3/0	Gray			
PP-1500B	1-1/2"	Black			
PP-1500G	1-1/2	Gray			
PP-3000B	3"	Black			
PP-3000G	J	Gray			

DIVERT

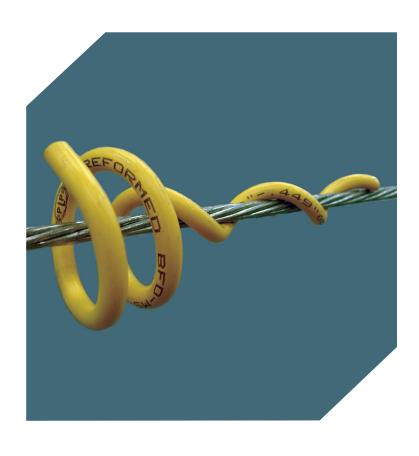


BIRD-FLIGHT™ Diverter

The BIRD-FLIGHT Diverter (BFD)

is designed to make overhead lines and guyed structures visible to birds and provides an economical means of reducing the hazard to both lines and birds. For low and medium voltage construction, the BFD is applied to the phase conductors (bare or jacketed). For high voltages, it is typically used on the shield wire.

The BIRD-FLIGHT Diverter is light-weight, offers little wind resistance and is easily and quickly applied by hand or by hot stick. The positive grip on the conductor is designed to ensure that the BFD remains in the applied position and cannot move along the span under Aeolian vibration or other motion. The diverter section increases the visible profile of the cable or conductor to a degree necessary to alert wildlife, but avoids an undesirably bulky outline and increased loading on the line.



The plastic BFD is manufactured from rigid high impact polyvinyl chloride (PVC) possessing excellent chemical resistance and tensile strength properties. The BFD will retain good physical characteristics over a range of extreme temperatures. Aging tests confirm that the material does not deteriorate in function or appearance from the effects of severe weather conditions. Industrial fumes

and salt water can not seriously degrade the properties of rigid PVC.

The Aluminum BFD is manufactured from a high strength, corrosive resistant aluminum alloy material. It is designed for use on conductors operated at elevated temperatures (up to 250°C).

BIRD-FLIGHT™ Diverter

BIRD-FLIGHT Diverters are designed to offer the following advantages:

- Increased conductor/strand profile to enhance visibility where bird flight paths are present
- Economical and easily applied
- Lightweight
- No moving parts to wear out
- Long service life without deterioration of material properties
- Minimal wind resistance
- Manufactured from gray or yellow high impact PVC with UV protection (Contact PLP for other color/voltage options).





For use on: Bare and Jacketed Conductors and Strand

Catalog Number	Catalog Number	Conductor Range inches (mm)		Overall Length inches	Outer Diameter of Diverter Coil	Color
(YELLOW)	(GRAY)	Min	Max	(mm)	inches (mm)	Code
BFD-MS-3331	BFD-MS-3346	.175 (4.4)	.249 (6.3)	8.00 (203)	2.25 (57)	Black
BFD-MS-3155	BFD-MS-2921	.250 (6.4)	.349 (8.9)	8.50 (216)	2.50 (64)	Blue
BFD-MS-3164	BFD-MS-3355	.350 (8.9)	.449 (11.4)	9.50 (241)	2.75 (70)	Brown
BFD-MS-11135	BFD-MS-11060	.350 (8.9)	.449 (11.4)	12.37 (314)	4.25 (108)	Brown
BFD-MS-3341	BFD-MS-3366	.450 (11.4)	.599 (15.2)	14.50 (368)	4.25 (108)	Green
BFD-MS-3344	BFD-MS-3371	.600 (15.2)	.770 (19.6)	17.00 (432)	4.25 (108)	Purple
BFD-MS-3345	BFD-MS-3376	.771 (19.6)	.858 (21.8)	15.00 (381)	4.25 (108)	Red
BFD-MS-3405	BFD-MS-11699	.859 (21.8)	.942 (23.9)	16.50 (419)	4.50 (114)	Orange
BFD-MS-11111	BFD-MS-12290	.971 (24.7)	1.121 (28.5)	15.50 (394)	5.13 (130)	Pink
	High Te	mperature B	IRD-FLIGHT	[™] Diverter		
BFD-MS-11543		0.800	0.850	26.00	4.00	Pink
BFD-MS-12679	Aluminum	1.100	1.150	37.00	4.00	Purple
BFD-MS-12645	Aluminum	1.300	1.350	43.00	4.00	Red
BFD-MS-12687		1.565	1.635	54.00	4.00	Black

SWAN-FLIGHT[™] Diverter

The Preformed Line Products SWAN-FLIGHT Diverter (SFD) is designed for use on conductor/strand to create greater visibility for avian flight paths on overhead lines and tower down guys. Offering little wind resistance, the SFD reduces hazards to both lines and birds. For construction up to 230kV, the SFD can be applied to phase conductors (bare or jacketed). For EHV voltages, it is typically installed on the shield wire.

The SWAN-FLIGHT Diverter is light-weight, offers little wind resistance and is easily and quickly applied. The positive grip on the conductor ensures that the SFD remains in the applied location and cannot move along the span under Aeolian vibration or other motion. The diverter section increases the visible profile of the cable to a degree necessary to alert wildlife, but avoids an undesirably bulky outline and increased loading on the line.



The SWAN-FLIGHT Diverter (SFD) is manufactured from rigid high impact polyvinyl chloride (PVC) possessing excellent chemical resistance and tensile strength properties. The SFD will retain good physical characteristics over a range of extreme temperatures.

Aging tests confirm the material does not deteriorate

in function or appearance from the effects of severe weather conditions. Industrial fumes and salt water cannot seriously degrade the properties of rigid PVC. For application on phase conductors above 345kV, contact PLP for recommendations.

SWAN-FLIGHT[™] Diverter



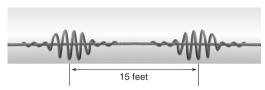
Features:

- Increased conductor profile to provide increased visibility where large, slow moving bird flight paths are present
- Economical and easily applied
- Lightweight
- Long service life without deterioration of material properties
- Minimal wind resistance
- Manufactured from gray or yellow high impact PVC with UV protection



Spacing:

For optimal results, spacing distances are generally recommended at 15' intervals, depending upon local conditions. Since wind resistance is very limited, sufficient SWAN-FLIGHT Diverters can be used to ensure adequate visibility without creating stresses on the line. When marking adjacent spans, overall visibility is improved by staggering the placement between the spans.



SWAN-FLIGHT Diverter - Product Data							
PLP Catalog	Conductor Range (Inches)		Overall Length	Diameter of Diverter Coil	Diameter of PVC Rod	Approx. Weight	Color Code
Nullibei	Min	Max	(Inches)	(Inches)	(Inches)	(lbs)	Code
SFD-0445	0.175	0.249	20	7.0	0.375	0.40	Black
SFD-0635	0.250	0.349	23	7.0	0.375	0.46	Blue
SFD-0890	0.350	0.449	25	7.5	0.375	0.50	Brown
SFD-1140	0.450	0.599	35	8.0	0.375	0.70	Green
SFD-1520	0.600	0.770	38	8.0	0.500	1.40	Purple
SFD-1960	0.771	0.858	38	8.0	0.500	1.40	Red
SFD-2220	0.859	0.942	40	8.0	0.500	1.50	Orange
SFD-2460	0.943	1.121	40	8.0	0.500	1.50	Pink
SFD-2700	1.122	1.306	40	8.0	0.500	2.00	Gray*
SFD-3035	1.307	1.530	46	8.0	0.500	2.00	Black

^{*}Gray is the standard color. For yellow, add "-Y" after the catalog number.

Add suffix –B to the catalog number for black semi-conductive layer for applications @ 230kV (i.e.: SFD-2460-B). The SWAN-FLIGHT Diverter should not be applied on phase conductors energized at voltages of 345kV and above.



RAPTOR CLAMP™ Diverter, OWL and RAPTOR CLAMP™ LED Diverter



The RAPTOR CLAMP™ Diverter and OWL are alternatives to the BIRD-FLIGHT Diverter and the SWAN-FLIGHT Diverter in making overhead power lines visible to birds of all sizes. They provide cost beneficial means of reducing hazards to both power lines and birds. For low and medium voltage construction up to 40 kV, they can be applied to phase conductors (bare or jacketed). For higher voltages, they are usually installed on the overhead shield wire.

The yellow flapper is injection molded, UV stabilized plastic, while the attachment clamp is constructed of high strength UV stabilized engineered composite plastic for maximum strength and clamping force. All fasteners and springs are grade 316 stainless steel.





OWL

RAPTOR CLAMP™ Diverter, and OWL



RAPTOR CLAMP Diverter, RAPTOR CLAMP LED Diverter and OWL					
PLP Catalog	Diameter Range (In)		Weight		
Number	Min	Max	(lbs)		
RAPTOR-Y	0.1	1.5	0.40		
RAPTOR-LED	0.1	1.5	1.10		
OWL-0445	0.175	0.249	1.10		
OWL-0635	0.250	0.349	1.10		
OWL-0890	0.350	0.449	1.20		
OWL-1140	0.450	0.599	1.70		
OWL-1520	0.600	0.700	1.70		

BIRD PERCH Deterrent

The BIRD PERCH Deterrent (BPD) is designed to eliminate roosting areas on structures that are electrocution hazards or over equipment to keep it free from bird contamination. BIRD PERCH Deterrents provide an economical means of reducing avian fatalities, line outages and equipment flashovers while being easily installed over the structural support.

The BIRD PERCH Deterrent is lightweight, offers little wind resistance and
is quickly installed without the need for
attachment hardware. The deterrents
are designed to lock into place, preventing any movement on the structure.
The BIRD PERCH Deterrent is manufactured from outdoor grade polyvinyl
chloride (PVC) possessing excellent
chemical resistance and strength
properties and will retain good physical
characteristics over a range of extreme

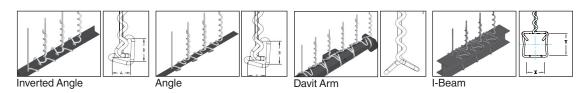


temperatures. Industrial fumes and salt water won't degrade these properties.

A minimum of two BIRD PERCH
Deterrent's are required to ensure
proper application. Each has approximately an 8" spacing between the
uprights. To calculate the number of
BIRD PERCH Deterrents required,
measure the distance to be covered
and divide by 8".

BIRD PERCH Deterrent





BIRD PERCH Deterrent						
PLP Catalog Number	Description	Crossarm Dimensions w x h Inches (cm)	Carton Qty			
BPD-XARM	BIRD PERCH Deterrent Crossarm	3.25"w x 4.25"h (8.3 x 10.8 cm)	16			
BPD-A22	BIRD PERCH Deterrent Angle	2"w x 2"h (5.0 x 5.0 cm)	24			
BPD-IA22	BIRD PERCH Deterrent Inverted Angle	2"w x 2"h (5.0 x 5.0 cm)	24			
BPD-A25	BIRD PERCH Deterrent Angle	2.5"w x 2.5"h (6.3 x 6.3 cm)	24			
BPD-IA25	BIRD PERCH Deterrent Inverted Angle	2.5"w x 2.5"h (6.3 x 6.3 cm)	24			
BPD-A225	BIRD PERCH Deterrent Angle	2"w x 2.5"h (5.0 x 6.3 cm)	24			
BPD-IA225	BIRD PERCH Deterrent Inverted Angle	2"w x 2.5"h (5.0 x 6.3 cm)	24			
BPD-W6I	BIRD PERCH Deterrent I-Beam	6"w x 6"h (15.2 x 15.2 cm)	16			
BPD-W10I	BIRD PERCH Deterrent I-Beam	10"w x 10"h (25.4 x 25.4 cm)	16			
BPD-HD64	BIRD PERCH Deterrent Heavy Duty Crossarm	6"w x 4"h (15.2 x 10.2 cm)	16			
BPD-HD55	BIRD PERCH Deterrent Heavy Duty Crossarm	5"w x 5"h (12.7 x 12.7 cm)	16			
BPD-DAVIT	BIRD PERCH Deterrent Davit Arm	Universal	24			
BPD-HD3585	BIRD PERCH Deterrent Heavy Duty Crossarm	3-1/2"w x 8-1/2"h (8.8 x 8.8 cm)	16			
BPD-HD5777	BIRD PERCH Deterrent Heavy Duty Crossarm	5-3/4"w x 7-3/4"h (14.6 x 14.6 cm)	16			

NOTE: BIRD PERCH Deterrent's should not be used if nesting of large birds is prevalent. Yellow versions are available – contact PLP.



APPLICATION PROCEDURES

FEATURED PRODUCTS:

SP3065 RAPTOR PROTECTOR™ for Single & Double Insulator Supports

SP3203 RAPTOR PROTECTOR™ Articulating Angle

SP3155 RAPTOR PROTECTOR™ Horizontal Trunnion

SP3156 RAPTOR PROTECTOR™ Vertical Trunnion

SP3204 RAPTOR PROTECTOR™ Dead-end Cover

SP2805 BIRD-FLIGHT™ Diverters

SP3053 BIRD-FLIGHT™ Aluminum Diverters

SP3081 SWAN-FLIGHT™ Diverters

SP3143 BIRD PERCH Deterrent for Structural Steel

SP3189 BIRD PERCH Deterrent for Distribution Crossarms.

SP3196 BIRD PERCH Deterrent for Inverted Structural Steel

SP3219 BIRD PERCH Deterrent for I-Beams

SP2759 Bushing Cover (WP-2.25F)

SP2959 Bushing Cover (WP-11S, WP-CSP, WP10T, WP-17T)

SP2824 Protector Tubing

SP3093 POLE PLUG

SP3371 RAPTOR CLAMP™ LED Diverter and

RAPTOR CLAMP™ Diverter-Y

SP3372 OWL Series

Application Procedures are available on www.preformed.com.

Easily find products by searching the product name or SP number.

JERRY LIGUORI, photographer and author, has authored three books on raptor identification; Hawks From Every Angle, Hawks at a Distance (Princeton Univ. Press, NJ), and The Crossley ID Guide: Raptors (Crossley Books, NJ with R. Crossley and B. Sullivan). His accomplishments include numerous articles on raptors, and he has conducted research regarding all aspects of raptor biology, life history, identification, and general behavior. He is active with Hawkwatch International. His studies have taken him across most of North America, researching raptor biology, life history, identification, migration, and general behavior. ...And taking beautiful photographs.



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