Powerline Equipment Identification Pocket Guide

CDF/PG&E Fire Prevention Partnership

In Accordance with Public Resources Code 4292
March 27, 2001
CDF/PGE Partnership Project - Executive Committee

Andrea E. Tuttle - CDF Director
John J Tennant - State Fire Marshal
Dave Driscoll - CDF Northern Region Chief
Tim Turner - CDF Southern Region Chief
Shan Bhattacharya - PG&E VP Engineering and Planning
Jeff Butler - PG&E VP Operations, Maintenance and Construction
Alynn Delisle - PG&E Director Vegetation Management

This Powerline Equipment Identification Pocket Guide was prepared by:

Robert Loggins - PG&E VC Project Manager

This document is produced for the CDF/PGE Fire Prevention Partnership.

This document may not be reproduced without written permission of the CDF and/or the Partnership Project.

© March 2001
This Pocket Guide contains photographs of power line equipment used by Pacific Gas and Electric Company, Southern California Edison and other electric utilities of California. It is expected that all personnel who make condition inspections and surveys, inspections of power lines, or who prescribe hazard reduction work or other fire prevention measures will be familiar with the contents of this Guide.

This Pocket Guide is only to be used as a ready-reference tool for identifying power line equipment in the field. It is a companion to the complete Power Line Fire Prevention Field Guide, which also contains the statutes and minimum fire prevention standards necessary to minimize wildland fires that may be caused by the operation and maintenance of electrical power lines. It is expected that all personnel using this Pocket Guide will first be thoroughly familiar with the contents of the Field Guide.

This guide was developed as a mutual undertaking by the California Department of Forestry and Fire Protection and the Pacific Gas and Electric Company. Its purpose is to provide information to the personnel of the fire service agencies and electrical operators for identification of power lines and power line equipment within the areas of their respective jurisdiction and franchise responsibilities.

This Pocket Guide is not to be used as a substitute for proper training, but as a reference tool for personnel already familiar with the subject.
Table of Contents ........................................ 1
Time by Location when Powerline Hazard Reduction Standards are applicable ......................... 2
PRC 4292 Clearing Requirements .................... 3
PRC 4292 Exemptions .................................... 4
Pole Clearing Example ................................... 5
Non-Exempt Pole Identification ....................... 6
Non-Exempt Equipment ................................. 7
Exempt Equipment ..................................... 25
Distribution Construction ............................. 51
Index ................................................................ 59
Time of Year by Location when Powerline Hazard Reduction Standards are Applicable

- **MAY 1 - NOV 15**
- **APR 15 - NOV 30**
- **JAN 1 - DEC 31**

PRC 4292-4293
14 CCR 1252-1253
PRC 4292 Clearing Requirements

From 8 feet to Horizontal Plane of Highest Point of Conductor Attachment:
Remove Dead, Diseased or Dying Limbs and Foliage from Living, Sound Trees and Dead, Diseased or Dying Trees.

From 0 - 8 feet Above Ground Level:
Remove Flammable Trash, Debris or other Materials, Grass, Herbaceous and Brush Vegetation and Limbs and Foliage of Living Trees up to a Height of 8 feet.

Ground Level:
Remove Flammable Materials

Outer Circumference of Pole (or Tower):

Ground Level (Base of Cylindrical Space):
Exemptions to Minimum Clearance Provisions - PRC 4292

The minimum clearance provisions of PRC 4292 are not required around poles and towers, including line junction, corner and dead end poles and towers:

(a) Where all conductors are continuous over or through a pole or tower; or

(b) Where all conductors are not continuous over or through a pole or tower, provided, all conductors and subordinate equipment are of the types listed below and are properly installed and used for the purpose for which they were designed and manufactured:

1. Compression connectors.
2. Automatic connectors.
3. Parallel groove connectors.
4. Hot line tap or clamp connectors that were designed to absorb any expansion or contraction by applying spring tension on the main line or running conductor and tap connector.
5. Fargo GA 300 series piercing connectors designed and manufactured for use with tree wire.
6. Flat plate connectors installed with not less than two bolts.
7. Tapered C-shaped member and wedge connectors.
8. Solid blade single-phase bypass switches and solid blade single-phase disconnect switches associated with circuit reclosers, sectionalizers and line regulators.
9. Equipment that is completely sealed and liquid filled.

(c) On the following areas, if fire will not propagate thereon:

1. Fields planted to row crops.
2. Plowed or cultivated fields.
3. Producing vineyards that are plowed or cultivated.
4. Fields in nonflammable summer fallow.
5. Irrigated pasture land.
6. Orchards of fruit, nut or citrus trees that are plowed or cultivated.
7. Christmas tree farms that are plowed or cultivated.
8. Swamp, marsh or bog land.

(d) Where vegetation is maintained less than 30.48 cm (12 inches) in height, is fire resistant, and is planted and maintained for the specific purpose of preventing soil erosion and fire ignition.
Pole Clearing Example
Non-Exempt Pole Identification

Yellow Reflective Tag
1.5” X 5.5”

Various Shape Tags – Indicate type of clearing

Pole Number

Pacific Gas and Electric Company

EDISON

SOUTHERN CALIFORNIA

PG&E

6
Subject to PRC 4292 clearance requirements
Universal Fuse
Open Link Fuse
Enclosed Cutout
Solid Blade Disconnect
Solid Blade Disconnects

600 amp disconnect

4kV Bayonet
In-Line Disconnect
Lightning Arrester
Non-Porcelain Lightning Arrester
Lightning Arrester
Lightning Arrester
Hot Tap Clamp

Note: Some hot tap clamps are exempt. See page 42.
Split Bolt Connector

Note: Under certain conditions, split bolts are exempt. See page 44.
Fargo Connector
LM Connector
Grasshopper Air Switch
Transmission Air Switch
Transmission Air Switch
Not subject to PRC 4292 clearance requirements

Exempt Equipment
Non-Expulsion Fuse
Liquid Filled Fuse
SMU-20 Fuse
S&C Fault TamerFuse
600 Amp KPF Air Switch

Note: Exemption does not apply in SDG&E’s Service Territory
Underarm Sidebreak Switch
S&C Underarm Sidebreak Switch
S&C Omni-Ruptor Switch
S&C Scada-Mate Switch
Recloser
Sectionalizer
Voltage Regulator
Capacitor Bank
Parallel Groove Connector
Parallel Groove Connectors
Note: Some Hot Tap Clamps are non-exempt. See page 18.
Piercing Tap Clamp
Note: Split bolts are ONLY exempt when idle on the line.

See page 19 for non-exempt split bolts.

Idle Split Bolt Connectors
Wedge Connector
Compression Connector
Bolted Flat Plate Connector
Automatic Deadend
Line Splices
Automatic Splices
Vertical Construction
Triangular Construction
Alley Arm
Construction
Crossarm Construction
Cable Riser w/ Cable Terminator
Animal Protection – Raptor Perch
Animal Protection – Squirrel Guard
Table of Contents ................................................... 1
600 Amp KPF Air Switch .............................................30
Animal Protection ................................................... 57, 58
Automatic Deadend ................................................... 48
Automatic Splice ................................................... 50
Bolted Flat Plate Connector ........................................ 47
Cable Riser ............................................................ 56
Capacitor Bank ....................................................... 38
Compression Connector ............................................. 46
Connectors
  Bolted Flat Plate ................................................... 47
  Compression ........................................................ 46
  Fargo ...................................................................... 20
  Hot Tap Clamp ....................................................... 18, 42
  LM ........................................................................ 21
  Parallel Groove ....................................................... 40, 41
  Split Bolt .............................................................. 19, 44
  Wedge .................................................................... 45
Construction
  Alley Arm .............................................................. 54
  Crossarm .............................................................. 55
  Triangular ............................................................. 53
  Vertical ................................................................. 52
Deadend
  Automatic ............................................................. 48
Disconnect
  In-line ..................................................................... 13
  Solid Blade ............................................................ 11, 12
Enclosed Cutout W/ Universal Fuse ............................. 10
Fargo Connector ......................................................... 20
Fire Hazard Season ......................................................... 2

Fuses

Enclosed Cutout w/ Universal ........................................... 10
Liquid Filled ....................................................................... 27
Non-Expulsion .................................................................... 26
Open Link ........................................................................... 9
S&C Fault Tamer ............................................................. 29
SMU-20 ............................................................................. 28
Universal ............................................................................ 8

Grasshopper Air Switch ....................................................... 22
Hot Tap Clamp (exempt) ..................................................... 42
Hot Tap Clamp (non-exempt) ............................................. 18
Idle Split Bolt Connector (exempt) ..................................... 44
In-Line Disconnect ................................................................ 13
Lightning Arrester .............................................................. 14,15,16,17
Line Splice .......................................................................... 49
Liquid-Filled Fuse .............................................................. 27
LM Connector ....................................................................... 21
Non-Exempt Pole Identification ........................................... 6
Non-Expulsion Fuse ............................................................ 26
Open Link Fuse .................................................................... 9
PRC 4292 Clearing Requirements ........................................ 3
PRC 4292 Exemptions .......................................................... 4
Parallel Groove Connector ................................................... 40, 41
Piercing Tap Clamp ............................................................. 43
Pole Clearing Example ........................................................ 5
Recloser .............................................................................. 35
S&C Fault Tamer Fuse ........................................................ 29
S&C Omni-Ruptor Switch .................................................... 33
S&C Scada-Mate Switch ....................................................... 34
S&C Underarm Sidebreak Switch ........................................ 32
Sectionalizer .......................................................... 36
SMU-20 Fuse ....................................................... 28
Solid Blade Disconnect ...................................... 11, 12
Splices
  Automatic .......................................................... 50
  Line .................................................................. 49
Split Bolt Connector (non-exempt) ....................... 19
Split Bolt Connector (exempt) .............................. 44
Switches
  Grasshopper ..................................................... 22
  KPF Air ............................................................ 30
  S&C Omni-Ruptor ............................................. 33
  S&C Scada-Mate ............................................... 34
  Transmission .................................................... 23, 24
  Underarm Sidebreak ........................................ 32
Transformer ........................................................ 39
Transmission Air Switch ..................................... 23, 24
Underarm Sidebreak Switch ............................... 31
Universal Fuse .................................................... 8
Voltage Regulator ............................................... 37
Wedge Connector ............................................... 45