Westinghouse Electric Corporation
Distribution Transformer Division
Underground Distribution Transformer Dept.
Jefferson City, Missouri 65101

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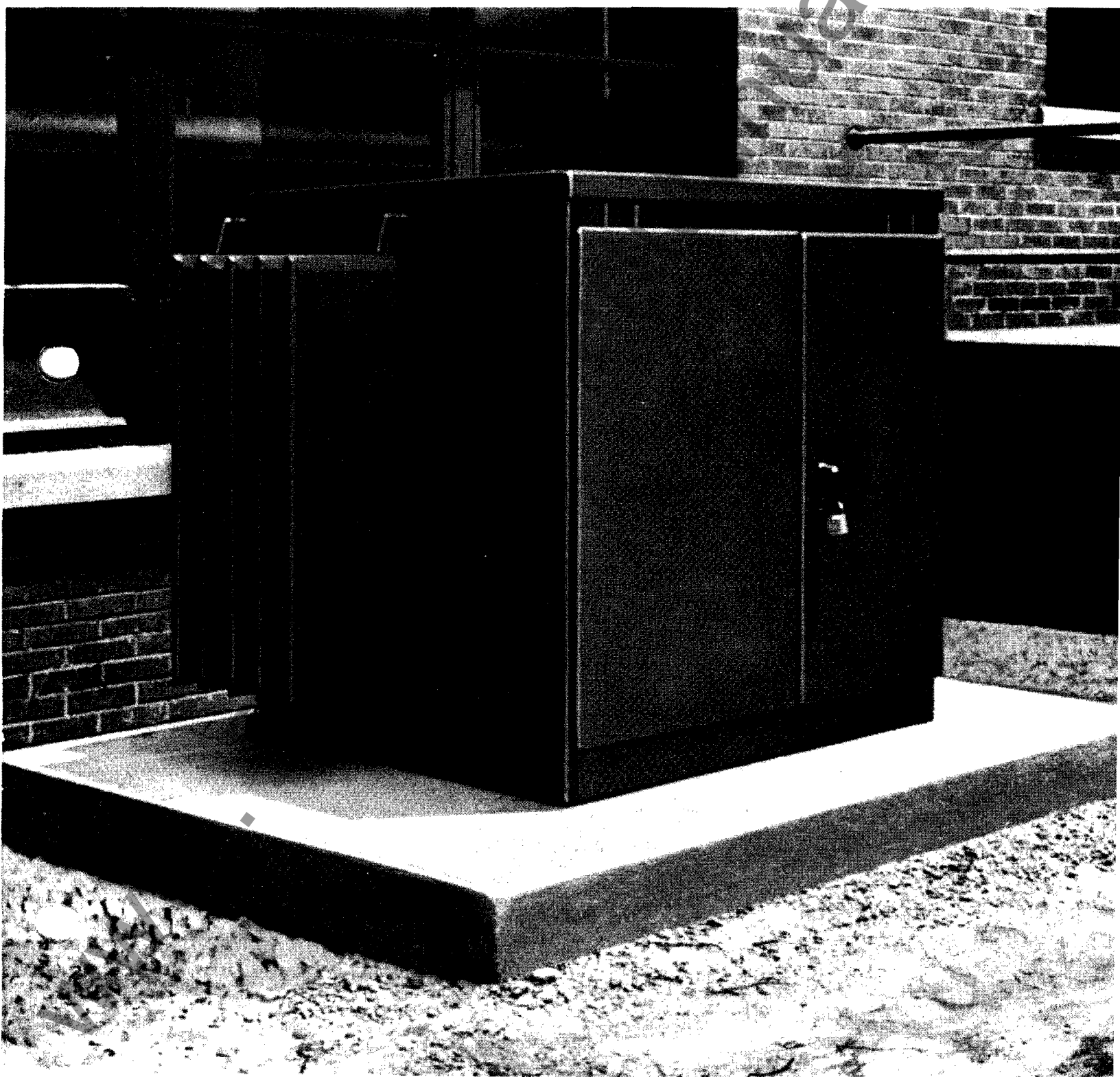
September, 1968
E,D,C/2062/DB

Three-phase, 75-500 KVA

CTP Padmounted Distribution Transformer



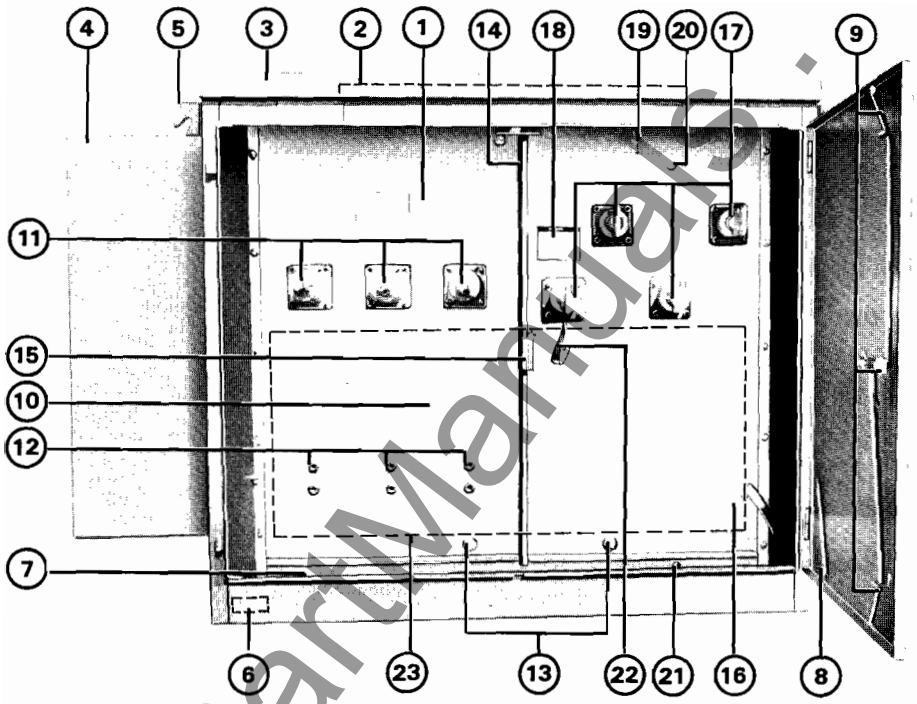
The Westinghouse CTP
Three-Phase Padmounted Transformer

Application

The Westinghouse CTP is an oil-filled, three-phase, commercial padmounted distribution transformer specifically designed for servicing such underground distribution loads as shopping centers, schools, institutions and industrial plants. It is available in both live front and dead front construction, for radial or loop feed applications, with or without taps.

Ratings

- 75 through 500 KVA
- 65°C temperature rise
- Low voltages: 208Y/120, 216Y/125, 460Y/265, 480Y/277, 240 x 480Δ, 480Δ, 240Δ and 240Δ with 120 volt mid-tap in one phase.
- High voltages: 4160 Grd Y/2400 through 34,500 Grd Y/19,900 for Grounded Wye systems; 2400Δ through 16,340Δ for Delta systems; various dual high voltages.
- Taps: All voltages are available with or without taps.
- Insulation classes: 22 KV (150 KV BIL) and below.



Standard Features

(1) Tank
(2) Hand hole bolted onto tank top
(3) Rear-hinged, removable weather cover with front safety brackets
(4) Panel-type tank coolers (225 KVA and above)
(5) Lifting lugs
(6) Recessed jacking pads
(7) Bolted-on terminal compartment (18" deep) with removable front sill
(8) Hinged, lift-off cabinet doors with stop in open position
(9) Three-point terminal compartment locking with padlocking provision
(10) High voltage compartment
(11) Externally-clamped high voltage porcelain bushings with a double eyebolt for 2/0 cable (75-225 KVA) or a single eyebolt for 4/0 cable (300-500 KVA)
(12) Lightning arrester mounting pads
(13) Tank ground pads
(14) High voltage/low voltage compartment barrier
(15) Bolted safety catch between HV/LV compartment barrier and high voltage door
(16) Low voltage compartment
(17) Externally-clamped low voltage bushings with NEMA 4-hole square spade terminals (see "Other Options")
(18) Nameplate
(19) Fill plug and self-actuating pressure relief device
(20) Oil level plug
(21) Drain plug
(22) Removable neutral ground strap
(23) Five-legged core/coil (inside tank)

Other Options

Primary Termination

- Externally-clamped cast epoxy bushing wells
- Externally-clamped cast epoxy bushing wells and loadbreak or non-loadbreak inserts
- Integral loadbreak bushings

Secondary Termination

- Externally-clamped bushings with threaded copper studs to meet REA specifications
- Externally-clamped bushings with 6- or 8-hole spades

Primary Switching

- LBOR oil switch, loop or radial feed
- EFD air switch, loop or radial feed
- Externally-operated tap changer
- Externally-operated series multiple switch

Overcurrent Protection

- Internal primary protective link
- RTE Bay-O-Net① fuse
- Westinghouse draw out loadbreak current limiting fuse
- QR oil secondary circuit breaker
- Internal partial range CL fuse

Overvoltage Protection

- Valve-type lightning arresters, 3-27 KV

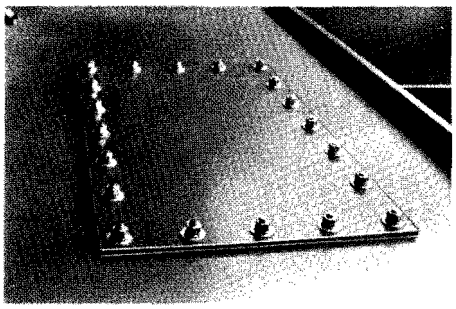
Construction Options

- 24" and 30" deep terminal cabinet
- REA-approved design with pentahead locking bolt
- Drain valve and sampling device
- Mounting plate for CT's or PT's
- Substation accessory groups
- Interphase barrier
- Molded case breakers

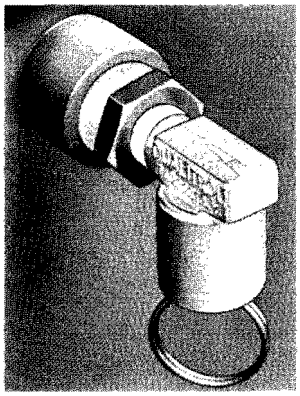
① Trademark of RTE Corp.

Construction Highlights

Tank is all-welded, completely sealed and pressure tested for leaks three times during manufacture. A bolted-on handhole beneath the removable weathercover provides access to internal connections and accessories.

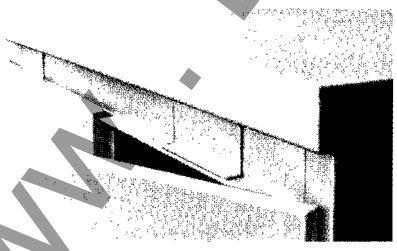


Pressure relief device automatically relieves slow pressure build-up inside the transformer, a condition which could weaken or possibly rupture the tank.

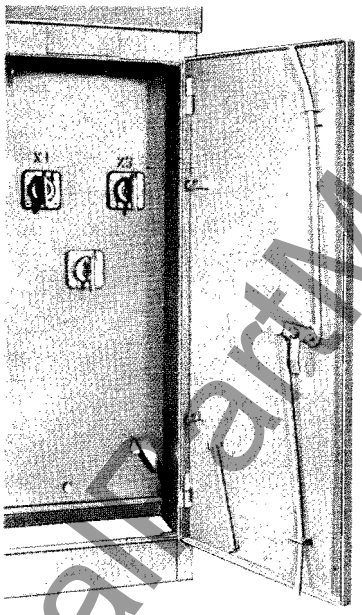


Tamper-resistant safety design discourages unauthorized entry into the transformer and incorporates:

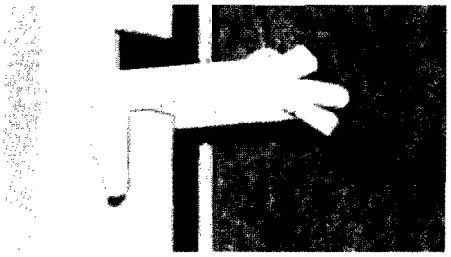
(1) Rear-hinged, removable weathercover denies access to the terminal compartment and tank handhole unless doors are opened first. In addition to wing nuts in the cable compartment, safety brackets, which fit under the lip of each door, keep the weathercover secure.



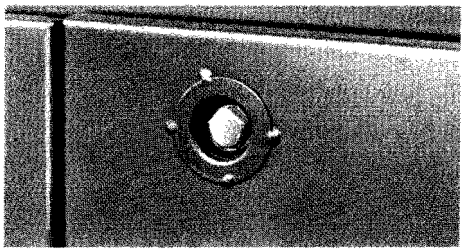
(2) Hinged lift-off terminal compartment doors with open-position stops prevent doors from accidentally swinging closed. The door-latching mechanism with three interior latch points and a single external handle with padlocking provision discourages prying open the doors from any side.



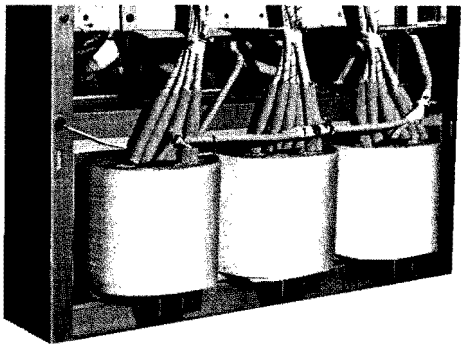
(3) Overlapping doors with bolted safety catch requires that the low voltage door be opened first. A heavy insulating barrier between terminal compartments keeps the high voltage side completely isolated while permitting access to the low voltage side.



(4) An optional recessed pentahead locking bolt to meet REA standards is available.



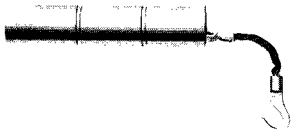
Five-legged core design allows wye-wye connections to minimize the possibility of ferro-resonance. Under fault or unbalanced load conditions, a magnetic path is provided by the outside core legs. This design eliminates the tank heating problem due to stray flux. The design also utilizes the exclusive Westinghouse WESCOR®, with its patented step-lapped core joint forming method. Our coil also incorporates the low-high-low progressively wound design for strong, tight windings which are protected by the Westinghouse INSULDUR® insulating system. Core/coil mechanical strength is provided by the steel frame around the assembly and internal tank wall beam bracing.



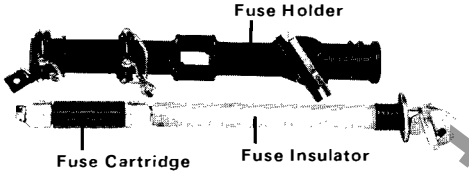
Paint system includes: 1) a nine-stage preparation phase; 2) primer application by the exclusive Westinghouse electrocoating process; 3) intermediate spraying and baking; and 4) final spray painting applications and curing.

High Voltage Fusing Options

The Protective Fuse Link is an internal, oil-immersed, expulsion type fuse consisting of a fiber tube supporting and surrounding a fuse element usually made of copper. They are replaceable through the handhole cover on the transformer tank top. The link is sized to operate only in the event of a winding failure, isolating the transformer from the primary system. Interrupting rating is 3500 amperes at 8.3 KV.



The RTE Bay-O-Net① Fuse Link is an oil-immersed fuse link with an interrupting rating of 4500 amperes at 8.3 KV. It is a hookstick-operable, drawout, loadbreak design available through 15 KV. Two types of fuse links are available-overload-sensing and fault-sensing-and an internal isolation link is supplied in series with the removable link. The fault-sensing link is sized to operate only in the event of a transformer failure; the overload-sensing link is sized for additional protection from secondary system faults or prolonged heavy overload conditions.

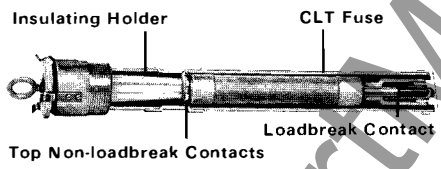


RTE Bay-O-Net① Fuse Assembly

RTE Bay-O-Net① Fuses Installed

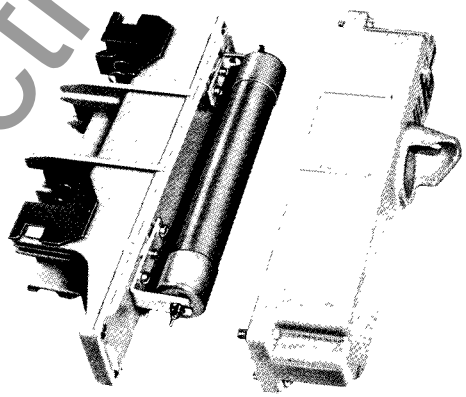
① Trademark of RTE Corp.

The Current Limiting Fuse is a full-range loadbreak device which limits and interrupts high energy, low impedance fault currents up to 25,000 amperes symmetrical, 40,000 amperes asymmetrical, 95 or 125 KV BIL. Such high current faults may generate internal dynamic pressures capable of causing tank rupture. Current limiting fuse protection is especially applicable on distribution systems that have available fault currents in excess of standard protective link interrupting ratings. Through 15 KV, this fuse is available either in a drawout loadbreak drywell ② or in an EFD air loadbreak switch. At 20 KV a partial range internal block-mounted fuse in series with an internal protective link is available.



② Current Limiting Fuse Assembly

② CLT Fuses Installed

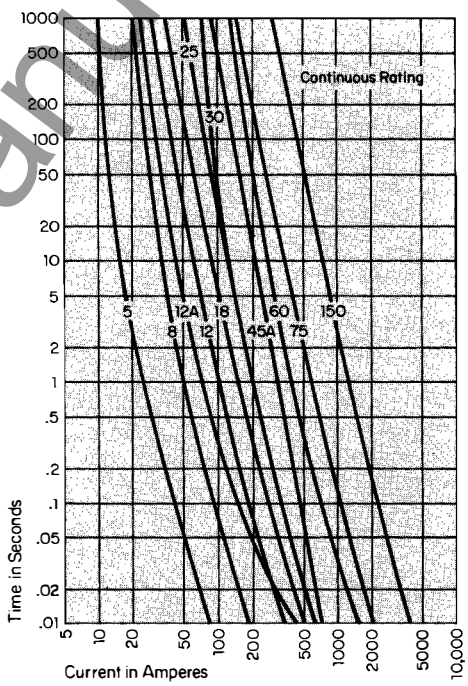


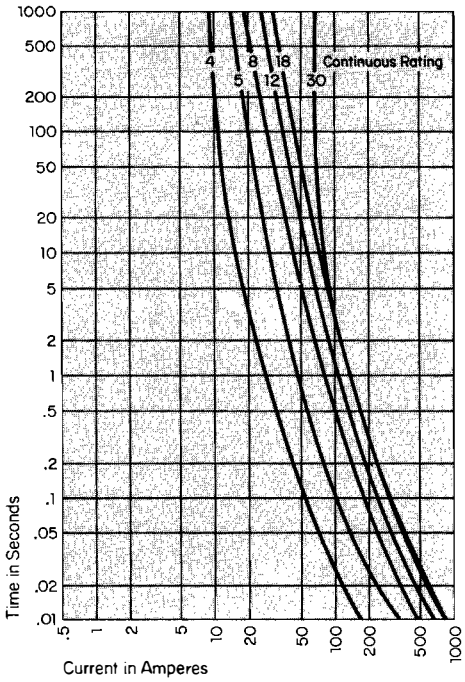
CLT Fuse in EFD Switch Application
(See Page 5 for Installed EFD Switches)

② This product may be used for 3∅ switching provided the steady state voltage across the open contacts, after the loadbreak operation, does not exceed 8.3 Kv at 95 Kv BIL or 15 Kv at 125 Kv BIL. Care should be taken in determining that this requirement is met. It is to be recognized that transformer connections, load configurations, grounding schemes and circuit conditions can affect system voltage.

Fuse Curves

Available Fuses
A. 2400V-5, 12, 18, 25, 30, 75, 90, 150A
B. 4800V-8, 12, 18, 25, 30, 45, 60A
C. 7200V-5, 8, 12, 18, 25, 30, 45A
D. 14400V-4, 5, 8, 12, 18, 30A
E. 19900V-25A (partial range)



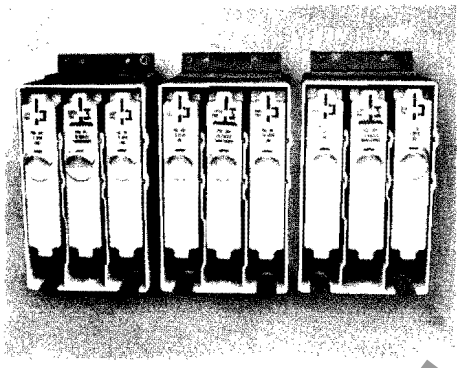


High Voltage Switching Options

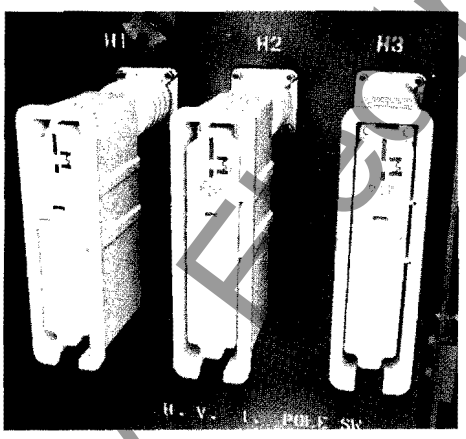
The EFD is an air loadbreak switch available for either radial or loop feed applications. Switching flexibility and safety are made possible by a compact, "dead front" type construction that enables the switch to be externally-mounted on the tank in the terminal compartment. A sealed, silver sand current limiting fuse is normally provided to the switch's transformer connecting pole. High voltage cables are connected to the switch contacts by means of solderless, clamp-type connectors capable of accepting cable sizes ranging from #6 to #4/0.

EFD Switch Ratings

Continuous current	200 A
Loadbreak	200 A
Close-in	5,000 A
Momentary	10,000 A



EFD Switches in Loop Feed Application

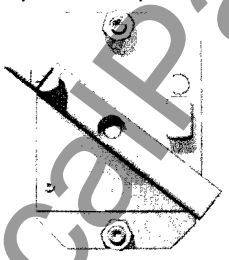


EFD Switches in Radial Feed Application

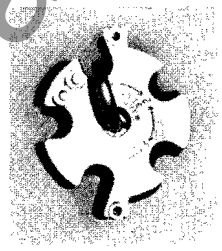
The LBOR is a loadbreak, gang-operated oil switch available for either radial or loop feed switching. The stacked deck rotary switch has a unique, springloaded cam-operated kicker system which provides quick make and break action to the contacts.

LBOR Ratings	Switch Sizes 200 A	300 A
Continuous current	200 A	300 A
Loadbreak	200 A	300 A
Close-in	7,500 A	10,000 A
Momentary	7,500 A	10,000 A

The Tap Changer and Series Multiple Switch. Both are oil-immersed, externally-operable, and are designed for de-energized operation only.



Series Multiple Switch Operating Handle



Tap Changer Operating Handle

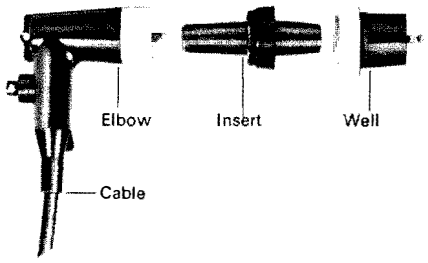
Deadfront Primary Terminators consisting of bushing wells and loadbreak inserts or integral loadbreak bushings are available when required. Combining separable high voltage terminators with a Westinghouse drawout loadbreak current limiting fuse provides the same switching flexibility as an EFD switch or an LBOR switch with current limiting fuses.

CL Fuse Assembly Ratings

Continuous current } Loadbreak }	Same as fuse current rating
Close-in	25,000 A
Momentary	25,000 A

ESNA③ Loadbreak Insert Ratings

Continuous current	200 A
Loadbreak	200 A
Close-in	10,000 A
Momentary	15,000 A

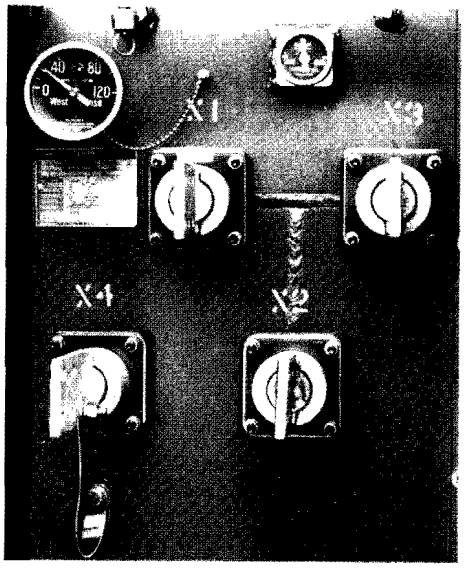


③ Trademark of AMERACE Corp.

Low Voltage Options

The Westinghouse QR Breaker protects against secondary overloads and short circuits. It operates under oil and is usually supplied with primary protective links coordinated with the breaker. It is available in ratings 75 through 150 KVA at all voltages and 225 and 300 KVA at 460 Y/265 and 480 Y/277 only.

The Substation Accessory Group includes an oil gauge, thermometer, pressure-vacuum gauge provision, and a drain valve with sampling device. A pressure-vacuum gauge can also be supplied. These accessories are also available in any combination.



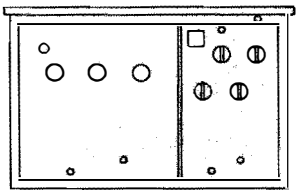
Substation Accessory Group

Weights and Dimensions①

95 KV BIL Radial Feed

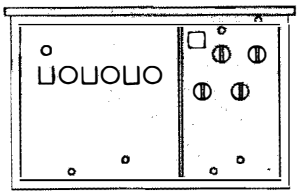
Live front, no drawouts①

KVA	A	B	C	D	E	Wt.
75	40	..	40	19	46	1950
112.5	40	..	40	19	46	2100
150	40	..	50	19	46	2320
225	44	..	50	19	46	2790
300	44	68	56	25	46	3400
500	52	68	56	25	46	4560



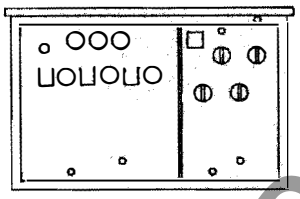
Deadfront, ANSI Part I, no drawouts①

KVA	A	B	C	D	E	Wt.
75	40	..	40	19	46	1950
112.5	40	..	40	19	46	2100
150	40	..	50	19	46	2320
225	44	..	50	19	46	2790
300	44	68	56	25	46	3400
500	52	68	56	25	46	4560



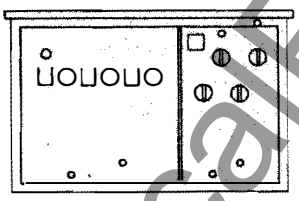
Deadfront, ANSI Part I, Ⓦ drawout CLT's①

KVA	A	B	C	D	E	Wt.
75	48	..	46	25	56	3070
112.5	48	..	46	25	56	3230
150	48	..	46	25	56	3380
225	52	..	56	25	56	3890
300	52	..	56	25	56	4100
500	52	78	56	25	56	4980



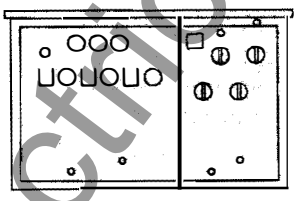
Deadfront, ANSI Part II, no drawouts①

KVA	A	B	C	D	E	Wt.
75	48	..	40	19	62	2770
112.5	48	..	40	19	62	2930
150	48	..	40	19	62	3080
225	48	..	56	25	62	3950
300	48	..	56	25	62	4270
500	52	73	56	25	62	5200



Deadfront, ANSI Part II, Ⓦ CLT's①

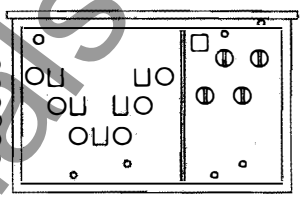
KVA	A	B	C	D	E	Wt.
75	48	..	46	25	62	3320
112.5	48	..	46	25	62	3480
150	48	..	46	25	62	3630
225	52	..	46	25	62	4080
300	52	..	56	25	62	4310
500	52	73	56	25	62	5200



95 KV BIL Loop Feed

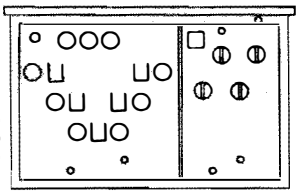
Deadfront, ANSI Part I, no drawouts①

KVA	A	B	C	D	E	Wt.
75	48	..	40	19	56	2570
112.5	48	..	40	19	56	2730
150	48	..	40	19	56	2880
225	52	..	56	25	56	3890
300	52	..	56	25	56	4100
500	52	78	56	25	56	4980



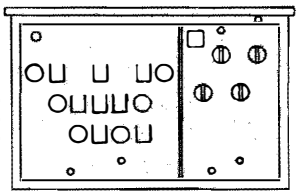
Deadfront, ANSI Part I, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	52	..	46	25	56	3300
112.5	52	..	46	25	56	3450
150	52	..	46	25	56	3600
225	56	..	46	25	56	4030
300	56	..	56	25	56	4350
500	56	78	56	25	56	5180



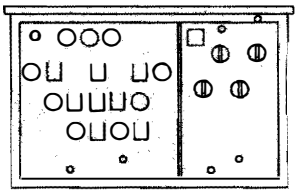
Deadfront, ANSI Part II, no drawouts①

KVA	A	B	C	D	E	Wt.
75	48	..	40	19	62	2770
112.5	48	..	40	19	62	2930
150	48	..	40	19	62	3080
225	56	..	46	25	62	4320
300	56	..	56	25	62	4560
500	56	73	56	25	62	5420

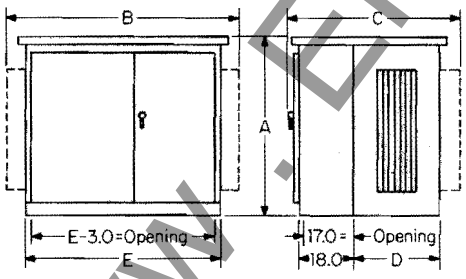


Deadfront, ANSI Part II, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	52	..	46	25	62	3570
112.5	52	..	46	25	62	3730
150	52	..	46	25	62	3880
225	63	..	56	25	62	4760
300	63	..	56	25	62	4990
500	63	84	56	25	62	5910

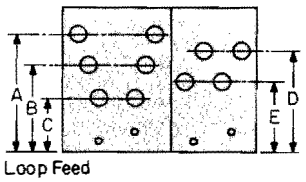


Dimensions

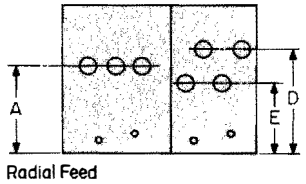


Bushing Heights

Description	KV BIL	KVA	Bushing Height (In.) A	B	C	D	E
ANSI I Radial	95 & 125	75-150	21	..	..	26	20
		225-500	21	..	..	28	20
ANSI I Loop	95 & 125	75-150	33	27	21	26	20
		225-500	33	27	21	28	20
ANSI II Radial	95 & 125	75-150	27	..	..	33	27
		225-500	27	..	..	39	31
ANSI II Loop	95 & 125	75-150	39	33	27	33	27
		225-500	39	33	27	39	31
Live Radial	95 & 125	75-150	24	..	..	28	22
		225-500	30	..	..	35	27
Live Radial	150	75-150	46	..	..	28	22
		225-500	46	..	..	35	27
Dead Radial	150	75-150	27	..	..	33	27
		225-500	27	..	..	35	27



Loop Feed



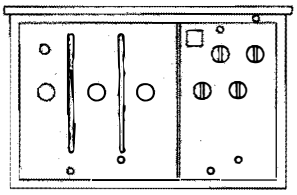
Radial Feed

Weights and Dimensions, Continued

125 KV BIL Radial Feed

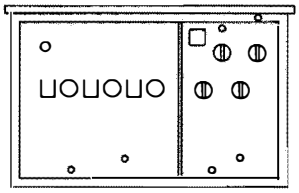
Live front, no drawouts①

KVA	A	B	C	D	E	Wt.
75	40	..	40	19	46	1950
112.5	40	..	40	19	46	2100
150	40	..	50	19	46	2320
225	44	..	50	19	46	2790
300	44	68	56	25	46	3400
500	52	68	56	25	46	4560



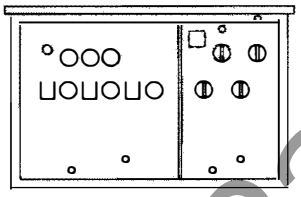
Deadfront, ANSI Part I, no drawouts①

KVA	A	B	C	D	E	Wt.
75	40	..	40	19	56	2220
112.5	40	..	40	19	56	2380
150	40	..	50	19	56	2570
225	48	..	50	19	56	3200
300	48	..	56	25	56	3900
500	52	78	56	25	56	4980



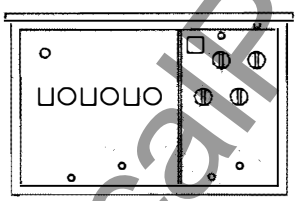
Deadfront, ANSI Part I, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	48	..	46	25	56	3070
112.5	48	..	46	25	56	3230
150	48	..	46	25	56	3380
225	52	..	56	25	56	3890
300	52	..	56	25	56	4100
500	52	78	56	25	56	4980



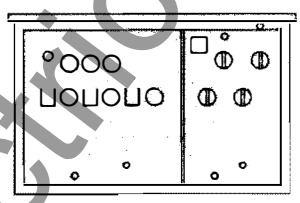
Deadfront, ANSI Part II, no drawouts①

KVA	A	B	C	D	E	Wt.
75	52	..	40	19	70	3260
112.5	52	..	40	19	70	3420
150	52	..	40	19	70	3570
225	52	..	46	25	70	4440
300	52	..	56	25	70	4680
500	63	..	56	25	70	6150

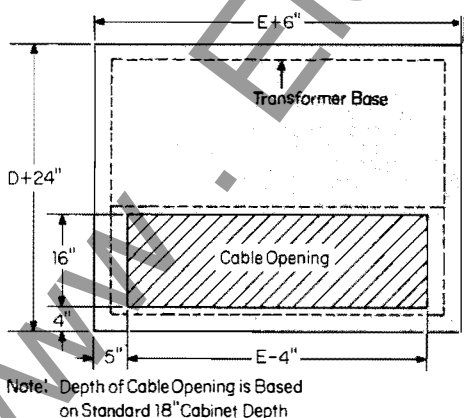


Deadfront, ANSI Part II, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	52	..	46	25	70	3940
112.5	52	..	46	25	70	4090
150	52	..	46	25	70	4240
225	52	..	46	25	70	4440
300	52	..	56	25	70	4680
500	63	..	56	25	70	6150



Recommended Pad Dimensions

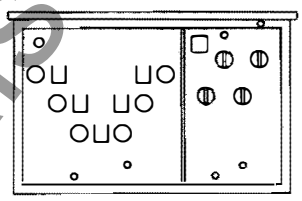


Note: Depth of Cable Opening is Based on Standard 18" Cabinet Depth

125 KV BIL Loop Feed

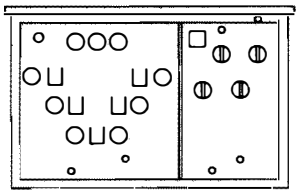
Deadfront, ANSI Part I, no drawouts①

KVA	A	B	C	D	E	Wt.
75	48	..	40	19	56	2570
112.5	48	..	40	19	56	2730
150	48	..	40	19	56	2880
225	52	..	56	25	56	3890
300	52	..	56	25	56	4100
500	52	78	56	25	56	4980



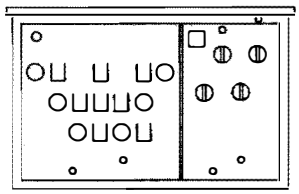
Deadfront, ANSI Part I, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	52	..	46	25	56	3300
112.5	52	..	46	25	56	3450
150	52	..	46	25	56	3600
225	56	..	46	25	56	4030
300	56	..	56	25	56	4350
500	56	78	56	25	56	5180



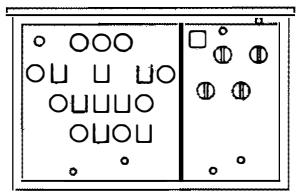
Deadfront, ANSI Part II, no drawouts①

KVA	A	B	C	D	E	Wt.
75	52	..	40	19	70	3260
112.5	52	..	40	19	70	3420
150	52	..	40	19	70	3570
225	56	..	46	25	70	4720
300	56	..	46	25	70	4870
500	63	..	56	25	70	6150



Deadfront, ANSI Part II, Ⓦ CLT's①

KVA	A	B	C	D	E	Wt.
75	52	..	46	25	70	3940
112.5	52	..	46	25	70	4090
150	52	..	46	25	70	4240
225	63	..	46	25	70	5200
300	63	..	46	25	70	5350
500	63	..	56	25	70	6150

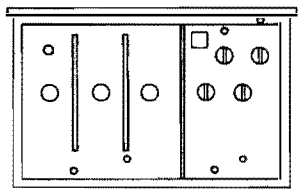


150 KV BIL Radial Feed

Live front, no drawouts①

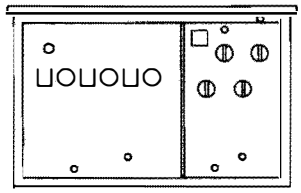
KVA	A	B	C*	D	E	Wt.
75	63	..	52	25	70	4730
112.5	63	..	52	25	70	4880
150	63	..	52	25	70	5040
225	63	..	52	25	70	5240
300	63	..	52	25	70	5380
500	63	..	63	25	70	6180

*24" Deep cabinet required.



Deadfront, no drawouts①

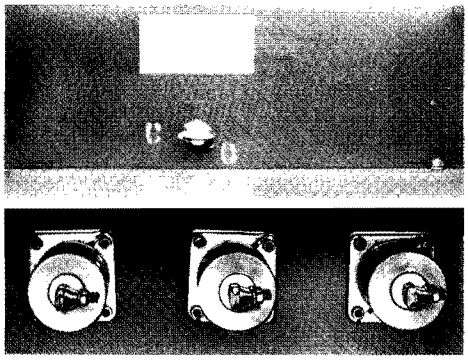
KVA	A	B	C	D	E	Wt.
75	56	..	46	25	70	4210
112.5	56	..	46	25	70	4370
150	56	..	46	25	70	4520
225	56	..	46	25	70	4720
300	56	..	46	25	70	4870
500	63	..	56	25	70	6150

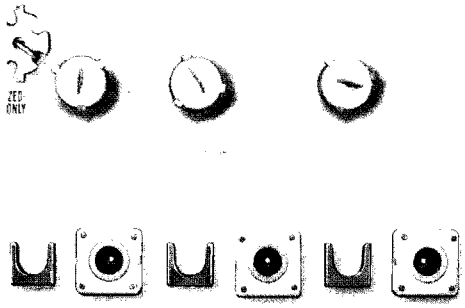


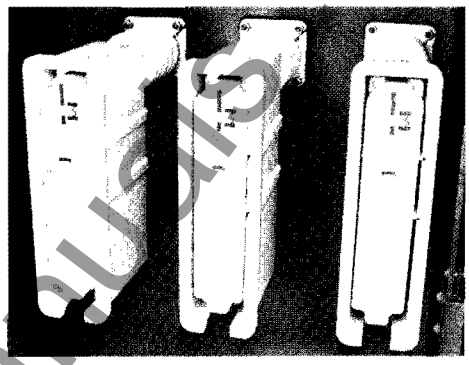
① **Dimensions are approximate and are based on units with or without taps and with the standard 18" deep cable compartment.**
Base dimensions for units with certain additional features are adjusted as follows:
(Height may increase. Refer to Westinghouse if height is critical.)

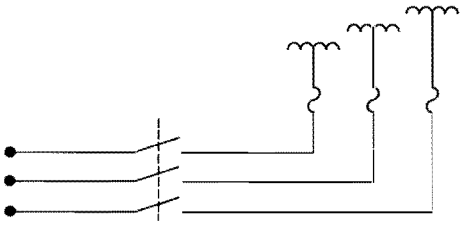
- Dual voltage: For 500 KVA "Radial Feed, Live Front," base width "E" is 56" wide. Base dimensions for all other ratings are not affected.
- RTE Bay-O-Nets: Use Deadfront, no drawouts" base dimensions.
- Radial EFD: Use "Radial Feed, Live Front" base dimensions. Height is 52" for 75-500 KVA. Piggy backed fuses require 24" deep cable compartment.
- LBOR (1 for Radial Feed, 2 for Loop Feed): No change in base dimensions.
- Secondary Oil Breaker: No change in base dimensions.
- Substation Accessories: No change in base dimensions.

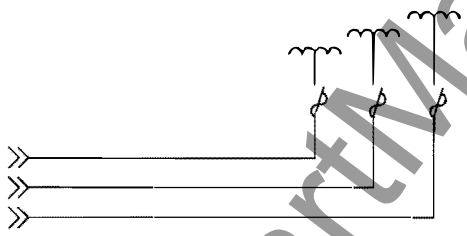
Typical High Voltage Configurations

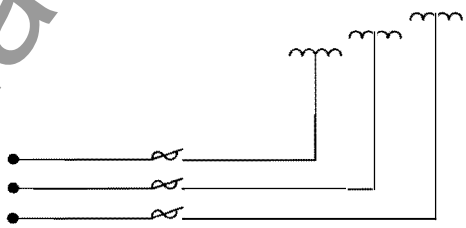








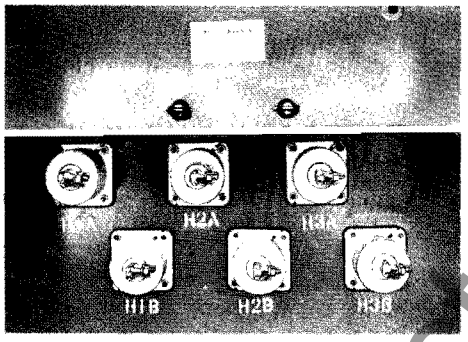


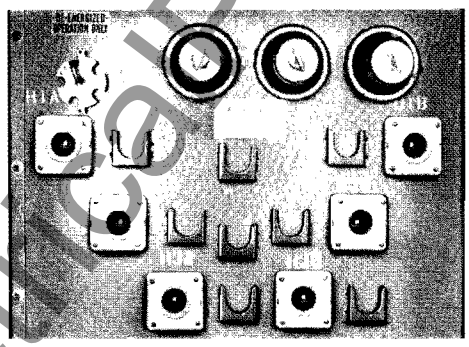


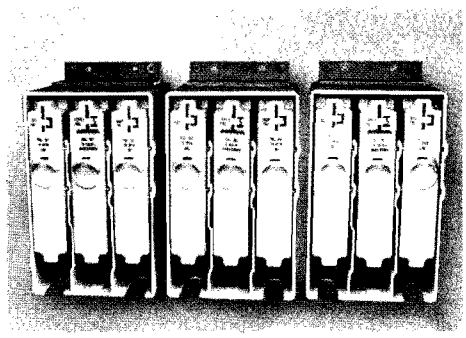
Radial feed, live front with internal protective links and LBOR switching

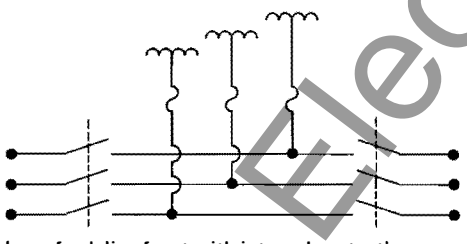
Radial feed, dead front with drawout loadbreak current limiting fuses

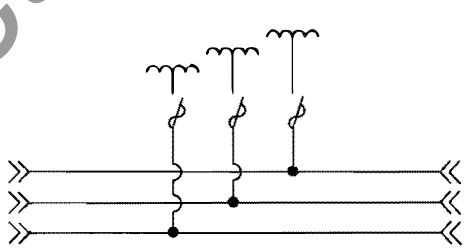
Radial feed with EFD fused switching

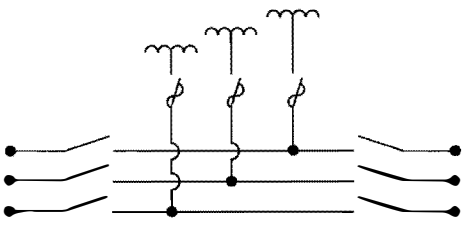












Loop feed, live front with internal protective links and LBOR switching

Loop feed, dead front with drawout loadbreak current limiting fuses.

Loop feed with EFD fused switching

Westinghouse Electric Corporation
Distribution Transformer Division
Underground Distribution Transformer Dept.
Jefferson City, Missouri 65101

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