

Westinghouse



Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Network Price Modifications

	Page Number
General information	1
Ordering information	1
Insulating liquid	1
Voiding of warranties	1
Exchange allowance	1
Negotiation data	1, 2
Final base price determination	2
Electrical characteristics	3
Accessories and location	4, 5
Terminal designations— vector relations	5
Mechanical characteristics	3
Tests	2
Current table	3
Base prices { Standard	6
{ Non-standard	6
Price modifications { Electrical	7-10
{ Mechanical	11-20

General Information

These pricing instructions cover the various types of transformers used in ac secondary network systems. The range of ratings and types of equipment available are listed as follows:

Type:

- Liquid (oil or Inerteen)
- Ventilated dry type
- Nitrogen filled or C₄F₈ gas filled dry type

Kva:

- 300—2500 (3 phase)
- 100— 833 (1 phase)

Voltage:

- 5—34.5 Kv (liquid)
- 5—15.0 Kv (dry type)

Service:

- Subway
- Vault

Prices determined from these pricing instructions may be used for estimating purposes and thereby eliminate a large number of the requests to the Power Transformer Division for preliminary prices. However, in so doing, a copy of the letter quoting the estimating prices must be sent to the Power Transformer Division at Sharon to serve as an indicator of possible future business. **All final prices** must be obtained from the Power Transformer Division at Sharon.

Ordering Information

When entering an order on the Power Transformer Division for any of the network ratings listed herein, care should be taken to include complete information in the order write-up. Shipments quoted on negotiations are based on minimum time required to manufacture the units after receipt of complete information. To facilitate design, drafting, shop information, and actual manufacturing, the following information must appear in the order write-up; such as—

Number of Units

Kva

Phase

Frequency

Hv Ratings

1. Rated voltage and taps
2. Delta or wye connected rated voltage

Lv Rating

1. Rated voltage

Type

1. Liquid (oil or Inerteen) 65°C rise
2. Ventilated dry 80°C rise
3. Gas filled dry 150°C rise

Service

1. Subway—periodic submersion
2. Vault—occasional submersion

Hv Switch

1. 3-position disconnecting and grounding
2. 2-position disconnecting
3. 2-position grounding

Hv Entry

1. List complete cable information
 - (a) Single or three conductor (and size)
 - (b) Type of insulation
 - (c) Protective covering
 - (d) O.D. of insulation or protective covering
2. Top or bottom entrance

Wiping Sleeve

1. Copper spun brazed on or removable
2. Where single sleeve is used
 - (a) Straight or 45 degree
 - (b) Vent plug in sleeve required

Vector Relation

1. Standard
2. Non-standard (furnish sketch)

Spare Gaskets

Spare gaskets, one for the Lv throat and one for the cover handhole are normally supplied with each unit. Spare gaskets will also be supplied at no additional charge, one per shop order for the Hv terminal chamber and one per shop order for Hv switch compartment if specially requested as a separate item on the transformer order write-up.

Insulating Liquid

The insulating liquid (oil or Inerteen) is normally shipped in the tank with the transformer. No omission allowance will be made where customer's requirements call for omission of the oil or Inerteen.

Warranties

Standard Warranty — See SP 47-000
Special Warranty — See Rule 39 and Rule 40

Voiding of Warranties

It should be noted that if network transformers of Westinghouse manufacture are operated with other than Wemco "C" oil or Westinghouse approved oil, our standard warranty is void in cases of trouble traceable to oil. Also if non-flammable network transformers of Westinghouse manufacture are operated with other than "Inerteen" our standard warranty is void in case of trouble traceable to non-flammable liquid.

Accelerated or Delayed Payments

See Rule 41.

Exchange Allowance

An exchange allowance for old transformers in connection with the purchase of new network transformers is not permitted.

Delivery

See Rule 42.

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Negotiation Data

When corresponding with Sharon on negotiations, it is necessary to give complete identifying data.

Units required to match other Westinghouse units in an existing system, need only be identified by shop order or serial number. For all other units delays in quotations can be avoided by listing the following information:

Number of units

Kva

Cooling

(Oil, Inerteen, ventilated dry, gas filled dry)

Type

(Vault or subway)

Temperature Rise

(65°C, 55°C, 80°C or 150°C)

Phase

(1 or 3 phase)

Frequency

(60 cycles or other)

Hv rating

(Rated voltage and taps)
(Delta or wye)

Lv rating

(Nominal voltage)
(Delta or wye)

Vector Relation

(Standard or non-standard)

Impedance

Wye operation

(State how neutral is to be brought out)

Accessories

(If any other than standard are required, list the accessories and any special locations)

Dimensions

Refer to Sharon Plant

Delivery

(Advise required shipment)

Final Price Determination

A. Definition of Standard: A standard network transformer is one which meets the electrical and mechanical description of the USA Standard C57.12.40.

The definition of standard has been expanded to include ventilated dry-type and gas filled dry-type transformers. Both Section A and Section B, USA Standards are covered in the pricing rules. Only Section A standards are covered in the descriptive summary. For Section B standards, refer to USA standards for secondary network transformers.

B. Standard or Special: Determine whether or not the network transformer can be priced as a standard unit. The following procedure is suggested:

1. Check standard base price lists, pages 8 and 9 for allowable
 - a. Hv rating and taps
 - b. Lv rating
 - c. Kva rating
 - d. Impedance
 - e. Sound level

2. Check drawing on page 5 for allowable accessories and their location.

3. Check drawings on page 5 for allowable vector relations.

4. Check Type and Electrical Modifications, pages 7 to 10.

5. Check Mechanical Modifications, pages 11 to 20.

Reference can also be made to USA Standard C57.12.40 for secondary network transformers.

C. High Voltage Termination: To either the standard or non-standard base price make an addition for the applicable termination of the primary cable. Rules 25 to 28 inclusive will apply.

D. Percentage Additions: Percentage additions applicable from electrical and/or mechanical modifications are to be made to the selected base price. Total the individual percentage adders and make one multiplication to the selected base price. The resulting dollar addition (dropping all cents) must be added to the base price.

E. Dollar Additions: Dollar additions applicable from electrical and/or mechanical modifications are to be made to the selected base price.

F. Deductions: No deductions are allowed from any prices for the omission of standard accessories.

G. Packing for Overseas Shipment: Where packing for overseas or export shipment is involved, add 5% to the price and drop all cents. Export packing does not include weather proofing or special preservative treatment.

Standard Tests

The following tests will be made on all transformers except as specifically stated below. The numbers shown do not necessarily indicate the sequence in which the tests will be made. All tests will be made in accordance with the latest revision of United States Standard Test Code C57.12.90.

1. Resistance measurements of all windings on the rated voltage connection of each unit and at the tap extremes of one unit only of a given rating on an order.

2. Ratio tests on the rated voltage connection and on all tap connections.

3. Polarity and phase-relation tests on the rated voltage connection.

4. No load loss at rated voltage on the rated connection.

5. Exciting current at rated voltage on the rated voltage connection.

6. Impedance and load loss at rated current on the rated voltage connection of each unit and on the tap extremes of one unit only of a given rating on an order.

7. Temperature test:

A. Temperature test or tests will be made on one unit only of an order covering one or more units of a given rating. Tests will be made only when there is not available a record of a temperature test, made in accordance with USA Standards, on duplicate or essentially duplicate unit.

Tests, when made, will be made under conditions specified in American Standards for transformers.

B. Subject to the limitations of the preceding paragraph (A), when a transformer is supplied with auxiliary cooling equipment to provide one additional Kva rating, temperature tests will be made on both nameplate Kva ratings.

8. Applied potential tests.

9. Induced potential tests.

Field Testing

For dc tests at the factory, use the ac factory test value times 1.41.

For ac or dc acceptance tests in the field, use the factory test value times .75.

For field ac or dc periodic tests for one minute, use the factory test value times .65. All dc and ac test values given above are based on a time duration of one minute. For five minute tests, multiply one minute tests by 90 per cent.

With the disconnecting switches, either two position or three position, in the open position the cable can be tested periodically in the field with dc for five minutes as follows:

Switch Rating	Liquid	Air
15 Kv Switches	45000 Volts	43700 Volts
25 Kv Switches	65000 Volts
33 Kv Switches	82500 Volts

Network Transformers

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300-2500 Kva

Electrical Characteristics

Network transformers are designed for high potential tests in accordance with USA Standards. The following tabulation gives the 60 cycle ac one minute factory tests corresponding to the different winding voltage classifications:

Types and Temperature Rise

Oil—OA Self-cooled (OISC), 65°C rise at 3300 ft. alt. Subway Type

Inerteen—OA Self-cooled (IISC)

65°C rise at 3300 ft. alt. Subway Type

Vent. Dry Type—AA Self-cooled

80°C rise at 3300 ft. alt.

Gas Filled Dry Type—AA Self-cooled

150°C rise at 3300 ft. alt.

Winding Voltage

	Original Factory Test 60 Cycles 1 Minute Ac			
	Liquid Filled or Gas Filled		Gas Filled or Ventilated Dry Type	
	Applied Test: Kv	BIL Kv	Applied Test: Kv	BIL Kv
1200 and Less	10	30	4	10
4160 to 5000 Incl.	19	60	12	25
7200 and 7500.	26	75	19	35
11500 to 14400 Incl.	34	95	31	50
22900 and 24000.	50	150	..	..
26400 and 34400.	70	200	..	..

Standard High Voltages

ASA Standard	BIL Kv	High Voltage		
		Rating	Taps with 216Y/125 L. V.	Taps with 480Y/277 L. V.
5 Kv Class				
Section A	60	4160 GrdY/2400 & 4160 Delta	4056/3952/3848/3744	4368/4264/4056/3952
Section A	60	4330 GrdY/2500 & 4330 Delta	4222/4114/4006/3898	4547/4438/4228/4113
Section A	60	5000 Delta	4875/4750/4625/4500	5250/5125/4875/4750
8.66 Kv Class				
Section A	75	7200 Delta	7020/6840/6660/6480	7560/7380/7020/6840
Section A	75	7500 Delta	7313/7126/6939/6752	7875/7687/7313/7125
15 Kv Class				
Section A	95	11500 Delta	11213/10926/10639/10352	12075/11787/11213/10925
Section A	95	12000 Delta	11700/11400/11100/10800	12600/12300/11700/11400
Section A	95	12500 Delta	12190/11875/11565/11250	13125/12812/12188/11875
Section A	95	13000 GrdY/7500	12675/12350/12025/11700	13650/13325/12675/12350
Section A	95	13200 Delta	12870/12540/12210/11880	13860/13530/12870/12540
Section A	95	13200 GrdY/7620	12870/12540/12210/11880	13860/13530/12870/12540
Section A	95	13750 Delta	13406/13063/12719/12375	14437/14094/13406/13063
Section A	95	13750 GrdY/7940	13406/13063/12719/12375	14437/14094/13406/13063
Section A	95	14400 Delta	14040/13680/13320/12960	15120/14760/14040/13680
Section B	95	13750 Delta	13578/13406/13234/13063	13578/13406/13734/13063

25 Kv Class

Section A	150	22900 Delta	24100/23500/22300/21700	24100/23500/22300/21700
Section A	150	24000 Delta	25200/24600/23400/22800	25200/24600/23400/22800

34.5 Kv Class

Section A	200	34400 Delta	36200/35300/33500/32600	36200/35300/33500/32600
Section B	200	27060 Delta	26730/26400/26070/25740	26730/26400/26070/25740

Impedance

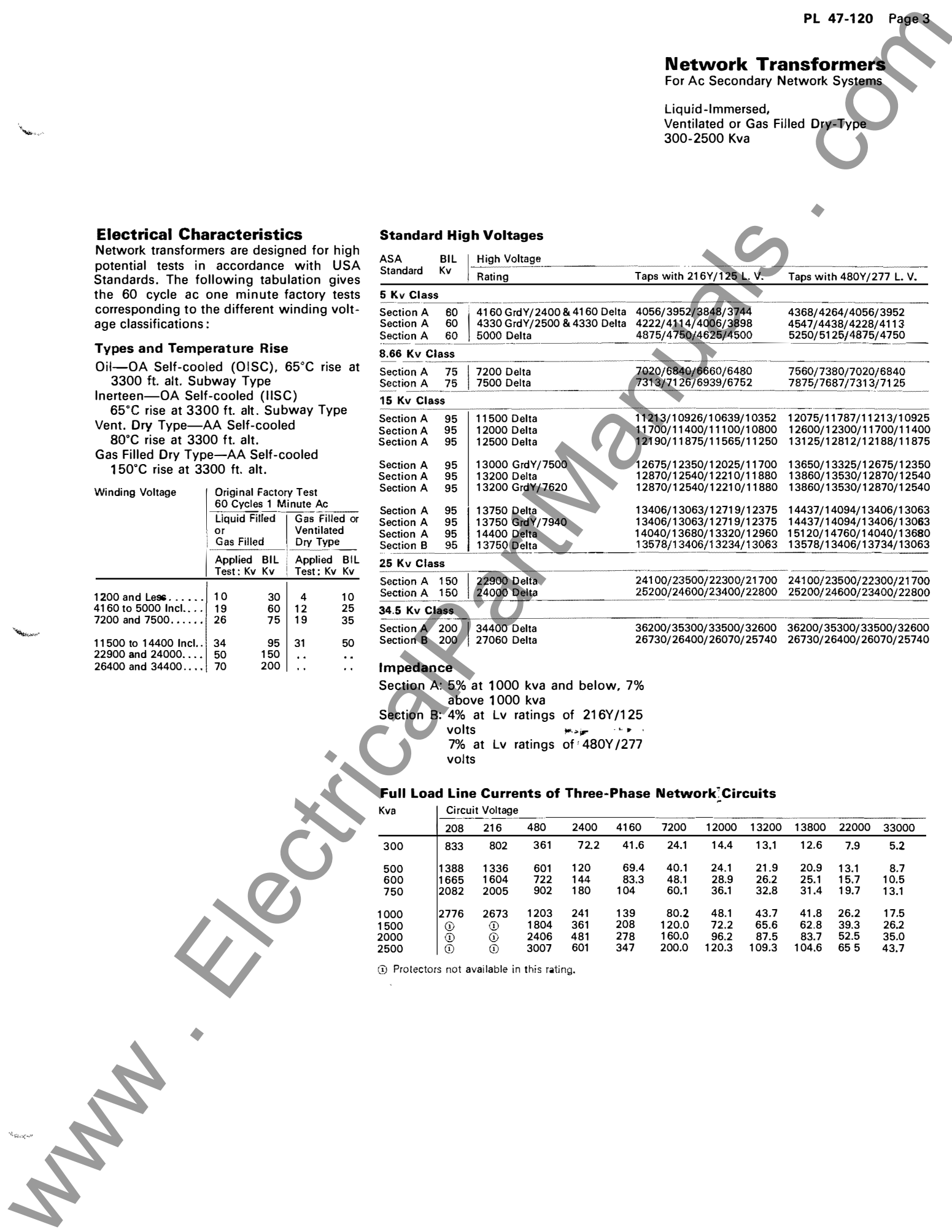
Section A: 5% at 1000 kva and below, 7% above 1000 kva

Section B: 4% at Lv ratings of 216Y/125 volts
7% at Lv ratings of 480Y/277 volts

Full Load Line Currents of Three-Phase Network Circuits

Kva	Circuit Voltage										
	208	216	480	2400	4160	7200	12000	13200	13800	22000	33000
300	833	802	361	72.2	41.6	24.1	14.4	13.1	12.6	7.9	5.2
500	1388	1336	601	120	69.4	40.1	24.1	21.9	20.9	13.1	8.7
600	1665	1604	722	144	83.3	48.1	28.9	26.2	25.1	15.7	10.5
750	2082	2005	902	180	104	60.1	36.1	32.8	31.4	19.7	13.1
1000	2776	2673	1203	241	139	80.2	48.1	43.7	41.8	26.2	17.5
1500	①	①	1804	361	208	120.0	72.2	65.6	62.8	39.3	26.2
2000	①	①	2406	481	278	160.0	96.2	87.5	83.7	52.5	35.0
2500	①	①	3007	601	347	200.0	120.3	109.3	104.6	65.5	43.7

① Protectors not available in this rating.



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Standard Accessories and Equipment

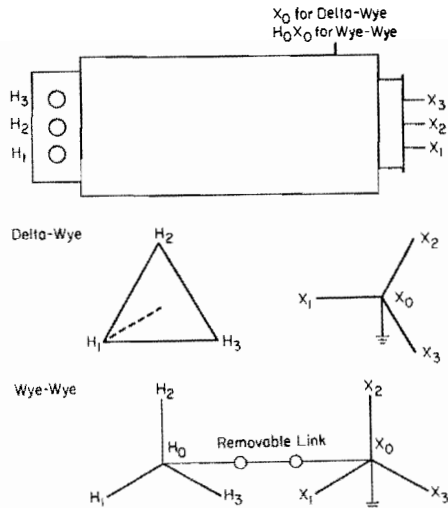
Item No.	Accessory	Liquid Filled	Ventilated Dry Type	Gas Filled Dry Type
1	Combination drain and bottom filter valve	One inch globe type	None	½ inch bottom drain with plug and fitting
2	Liquid level gauge	Magnetic type	None	None
2A	Provision only for air test	½ inch opening with ½ inch pipe plug	None	½ inch valve near top for air test
3	Dial type thermometer without alarm contacts	4½ inch direct stem mounted in closed well	None	None
4	Liquid filling and upper filter press connection	1 inch plugged opening in cover	None	None
5	Tap changer (de-energized)	Operates under 2 inch NPT plug in cover	Stub taps on HV coil	Stub taps on HV coil
6	Transformer sub base	1 ½ inch high bars parallel to long axis of transformer with corners left blank for jacking	Channel base determined by size of transformer	Same as liquid
7	Handhole (either welded or gasketed)	For mtg. pressure relief device or disconnecting neutral for tests	None	For access to low voltage neutral connection also 3 handholes on side of case for access to HV stubbed tap connections
8	Lifting lugs	4-lifting hooks	4-removable lifting eyes	4-removable lifting eyes
9	Provision for thermometer alarm	Available	None	None
10	Tanks— Tank wall Tank tubes Tank cover Tank bottom	Subway ¾ in. ¾ in. ½ in. ½ in.	Vault ¾ in. ¾ in. ½ in. ½ in.	.078 in. ¾ in. ½ in.
11	Tank finish	Subway black	Light grey	Subway black
12	Low voltage bushings	Type RFW ext. replacable bushing sealed to tank and mtd. in a flanged throat suitable for connecting to network protector. RFG gasketed bushings optional	Bus bar through Micarta® plate	Inert arc welded low voltage bushing
12A	Low voltage bushing connectors	Provided	Provided	Provided
13	Shipping guard over L. V. terminals	Provided	Provided	Provided
14	Low voltage neutral connection	Located on right side of tank near top when facing low voltage end	Located on end of enclosure on right side of throat near top of case when facing low voltage end	Located on end of tank on right side of throat near top of case when facing low voltage end
15	Nameplate	Yes	Yes	Yes
16	Provision for auto call alarm	½ inch NPT pipe fitting centered over a vertical cooler	None	None
17	Provision for grounding tank (external)	Pad threaded for two ½ inch, 13 standard cap screws	Same as liquid	Same as liquid
18	High voltage neutral	When connected wye on HV, windings will have HV neutral conn. to LV neutral internally with prov. for disconn. for testing	Same as liquid	Same as liquid
19	Provision for jacking	3 inch clear space under corners of case 1½ inch high	Jacking boss under each corner	Same as liquid
20	Wiping sleeves	Copper spun brazed on or removable, either 3 conductor or single conductor	Same as liquid	Same as liquid

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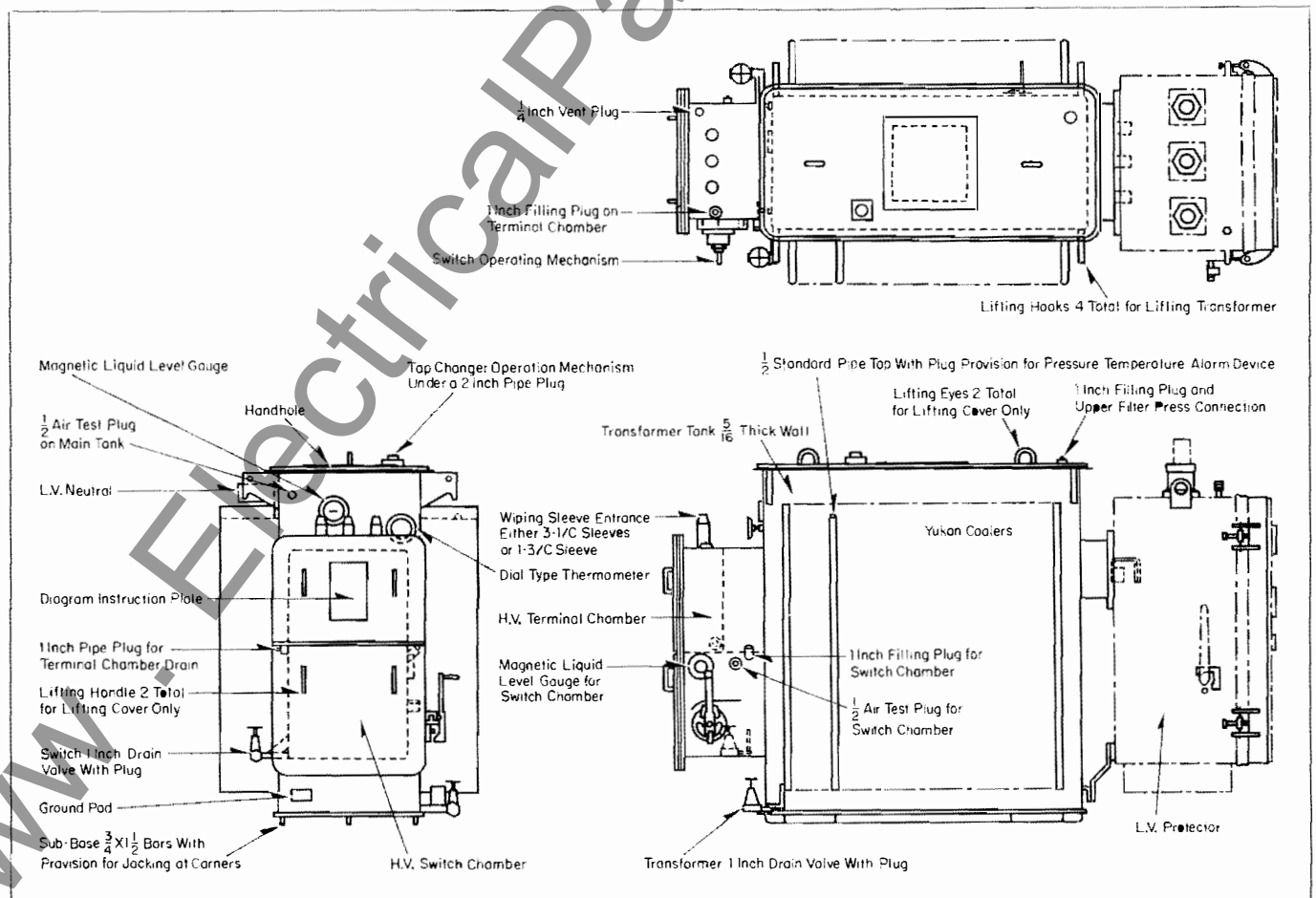
Network Transformers For A-c Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Terminal Designation



Accessories and Location



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Table A

Dry Type Base prices for use with Rule 1, Page 7.
5 Kv Class — 25 Kv BIL, 8.66 Kv Class — 35 Kv BIL, 15 Kv Class — 50 Kv BIL.

Kva	Sound Level DB	Losses		Standard		Non-standard	
		No Load	Total	216Y/125	480Y/277	216Y/125	480Y/277
300	58	Refer to	Refer to	\$ 5617	\$ 5617	\$ 6010	\$ 6010
500	60	Westing-	Westing-	7225	7225	7730	7730
600	62	house	house	.....	.....	8836	8571
750	64			9093	8820	9730	9438
1000	64			10666	10346	11413	11071
1500	65			①	14171	①	15163
2000	66			①	16676	①	17843
2500	68			①	21181	①	22664

① Units not available this rating. Must add from Rule 1, Page 7.

Example: 500 Kva, Inerteen Filled, 55°C Rise, 3 Phase, 60 Cycle, Vault Type, Unit high voltage-15 Kv Class with 10% impedance, low voltage-216Y/120 the base price in the table would be adjusted as follows before dollar adders are made:

Special Base (Due to impedance) **\$7,730**
 Inerteen..... +12%
 55°C..... + 5%
 10% Impedance..... + 5%
 Vault Type..... - 3%
 Net Adder..... +19% × 1.19
 Adjusted Base Price..... **\$9,198**

Note: Price includes low voltage throat, but does not include any high voltage entrance or switch. An entrance with switch from Rule 30 or without switch from Rule 31 must be added.

Table B

Oil Filled, Subway Type, 65°C Rise, Base Prices.

Kva	Sound Level DB	Losses		USA C57.12.40 Section A or B			
		No Load	Total	Standard		Non-standard	
				216Y/125	480Y/277	216Y/120	480Y/277

5 Kv Class — 60 Kv BIL, 1000 Kva and Below
8.66 Kv Class — 75 Kv BIL, 15 Kv Class — 95 Kv BIL.

300	56	1100	3700	\$ 5617	\$ 5617	\$ 6010	\$ 6010
500	56	1500	5800	7225	7225	7730	7730
600	58	2350	7050	.....	.....	8836	8571
750	58	2350	7500	9093	8820	9730	9438
1000	58	2650	9900	10666	10346	11413	11071
1500	60	3500	14600	①	14171	①	15163
2000	61	4000	18500	①	16676	①	17843
2500	62	4500	22500	①	21181	①	22664

25 Kv Class, 150 Kv BIL

300	55	1380	4400	.....	.....	7421	7421
500	56	1950	6300	8520	8520	9116	9116
600	58	2650	7550	.....	.....	10014	9714
750	58	2650	8750	10212	9906	10927	10599
1000	58	3300	10500	11816	11462	12643	12264
1500	60	4300	15400	①	15386	①	16463
2000	61	5500	19400	①	18956	①	20283
2500	62	6200	23900	①	22526	①	24103

34.5 Kv Class, 200 Kv BIL

500	56	2180	6880	9235	9235	9881	9881
600	58	2900	8100	.....	.....	10848	10523
750	58	2900	9400	11063	10731	11837	11492
1000	58	3650	11500	12786	12402	13681	13271
1500	60	4600	16300	①	16586	①	17747
2000	61	5900	19900	①	20386	①	21813
2500	62	6400	24700	①	24186	①	25879

① Units not available this rating.

Note: Prices above (Table B) are for Oil, 65°C, Subway Type. For Inerteen, see Rule 1, Page 7. For 55°C Rise, see Rule 3, Page 7. For Vault Type, see Rule 31, Page 16.

Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Type and Electrical Modifications

Rule No.	Description	Page No.
13	Altitude	10
2	Frequency	7
3	Heating	7
4	Impedance	7
1	Inerteen	7
6	Kva rating	8
7	Neutral	8
7	High voltage neutral	8
7	Low voltage neutral	8
5	Over-excitation	8
8	Series multiple connection	8
14	Single-phase transformers	10
12	Sound level requirements	10
9	Taps and tap range	9
10	Tests	9
15	Triplex transformers	10
1	Type modifications	7
1	Inerteen filled	7
1	Ventilated dry type	7
1	Gas filled dry type	7
11	Voltage classes and ratings	9

Type Modifications

Rule 1: Types of Transformer (A01)

Base prices apply to oil filled transformers (Table B, page 6) and dry type transformers (Table A, page 6). For the various types of coolants add:

	Standard	Non-standard
Add to oil filled base prices		
1. Oil filled (65°C rise)	0%	0%
2. Inerteen filled (65°C rise)	12%	12%
Sound levels and losses for Inerteen filled units same as oil filled units		
Add to dry type base prices		
3. Ventilated dry type (150°C rise)	12%	12%
4. Ventilated dry type (80°C rise)	18%	18%
5. C ₄ F ₈ gas filled dry type (150°C rise ²)	107½%	107½%
Dry types available 15 kv H.V. and below only		
For losses refer to Power Transformer Division		
For sound levels see rule 12.		

Electrical Modifications

Rule 2: Frequency (A02)

Base prices apply to 60 cycle transformers. Transformers for frequencies other than 60 cycles:

	Standard	Non-standard
59 to 56 cycles	Not available	No addition
55 to 46 cycles	Not available	15%
45 to 36 cycles	Not available	25%
35 to 24 cycles	Not available	60%

Rule 3: Heating¹ (A03)

A. The continuous kva ratings are normally based on a temperature rise of 65°C for liquid immersed—80°C or 150°C for ventilated air cooled—150°C for gas filled dry type above 30°C average ambient and an altitude not exceeding 3300 feet. For other temperature rises add in line with the following tabulation:

Ventilated Dry Degrees C Rise	Gas Filled Dry Degrees C Rise	Liquid Filled Degrees C Rise		
80	150	150	65	
..	..	..	55	5%
75	140	140	..	Not available
70	130	130	50	Not available
65	115	115	45	Not available
60	100	100	40	Not available
55	85	85	35	Not available

B. If it is specified that the transformer shall operate continuously, at rated rise, in ambient temperatures which exceed standard ambient at 30°C average and 40°C maximum in any 24 hour period, the following additions apply. Note increased ambient conditions of Insuldur[®] system in C below.

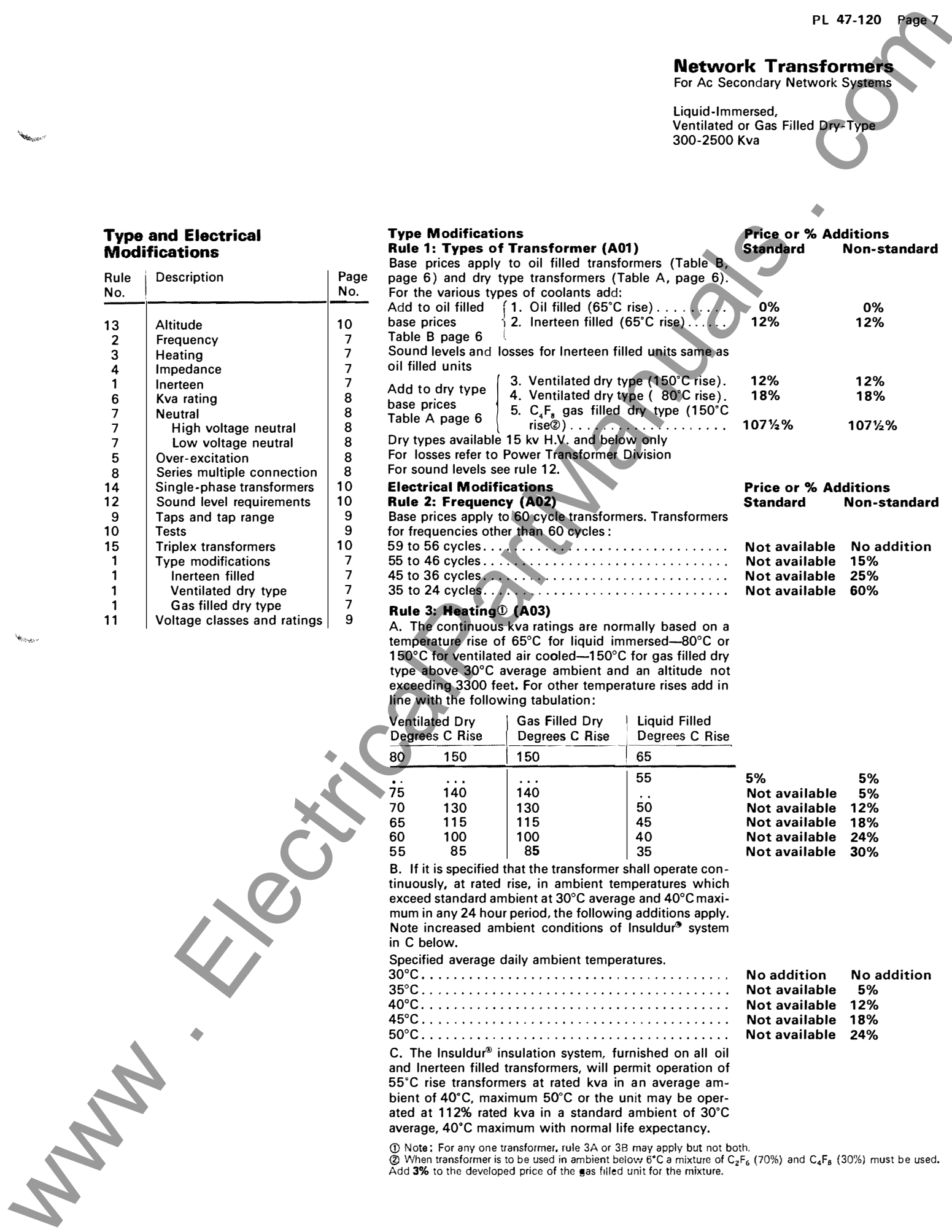
Specified average daily ambient temperatures.

30°C	No addition	No addition
35°C	Not available	5%
40°C	Not available	12%
45°C	Not available	18%
50°C	Not available	24%

C. The Insuldur[®] insulation system, furnished on all oil and Inerteen filled transformers, will permit operation of 55°C rise transformers at rated kva in an average ambient of 40°C, maximum 50°C or the unit may be operated at 112% rated kva in a standard ambient of 30°C average, 40°C maximum with normal life expectancy.

¹ Note: For any one transformer, rule 3A or 3B may apply but not both.

² When transformer is to be used in ambient below 6°C a mixture of C₂F₆ (70%) and C₄F₈ (30%) must be used. Add 3% to the developed price of the gas filled unit for the mixture.



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Electrical Modifications, Continued

Rule 4: Impedance (A04)

The standard impedances for network transformers are as follows :

- Part A:
 1000 Kva and below—5%
 1001 Kva and above—7%

- Part B:
 216Y/125 low voltage—4%
 480Y/277 low voltage—7%

For impedances other than listed above, make additions as follows :

	Price or % Standard	Additions Non-standard
Part A and Part B : 3.0% to 4.49% 1000 Kva and below	Not available	10%
1001 Kva and above	Not available	Not available
4.5% to 7.0% 1000 Kva and below	Not available	No addition
1001 Kva and above	Not available	No addition
7.01% to 10% All rating	Not available	5%

Where series multiple connections are specified, the impedance guarantee will be on the series connection.

The standard impedance tolerance is plus or minus 7½%. Where a tolerance of plus or minus 5% to plus or minus 7% is required, add. **Not available 5%**

Rule 5: Overexcitation (A05)

When transformers are required suitable for operation at rated Kva at voltages exceeding 105% of maximum voltage (tap or rated voltage) : For each 5% voltage range or fraction thereof in excess of standard 5% range add..... **Not available 6%**

Rule 6: Kva Rating (A06)

A. Standard ratings are listed in the price tabulations. For intermediate ratings use next higher special base list price..... **Intermediate Ratings Not available Select price of next higher rating**

Rule 7: Neutral (A07)

A standard transformer has the low-voltage neutral solidly grounded to the tank with an external blade terminal located as indicated on page 5.

On standard wye-wye connected transformers, the high-voltage and low-voltage neutrals are connected together internally by a removable link, solidly grounded to the tank with an external blade terminal located as indicated on page 5.

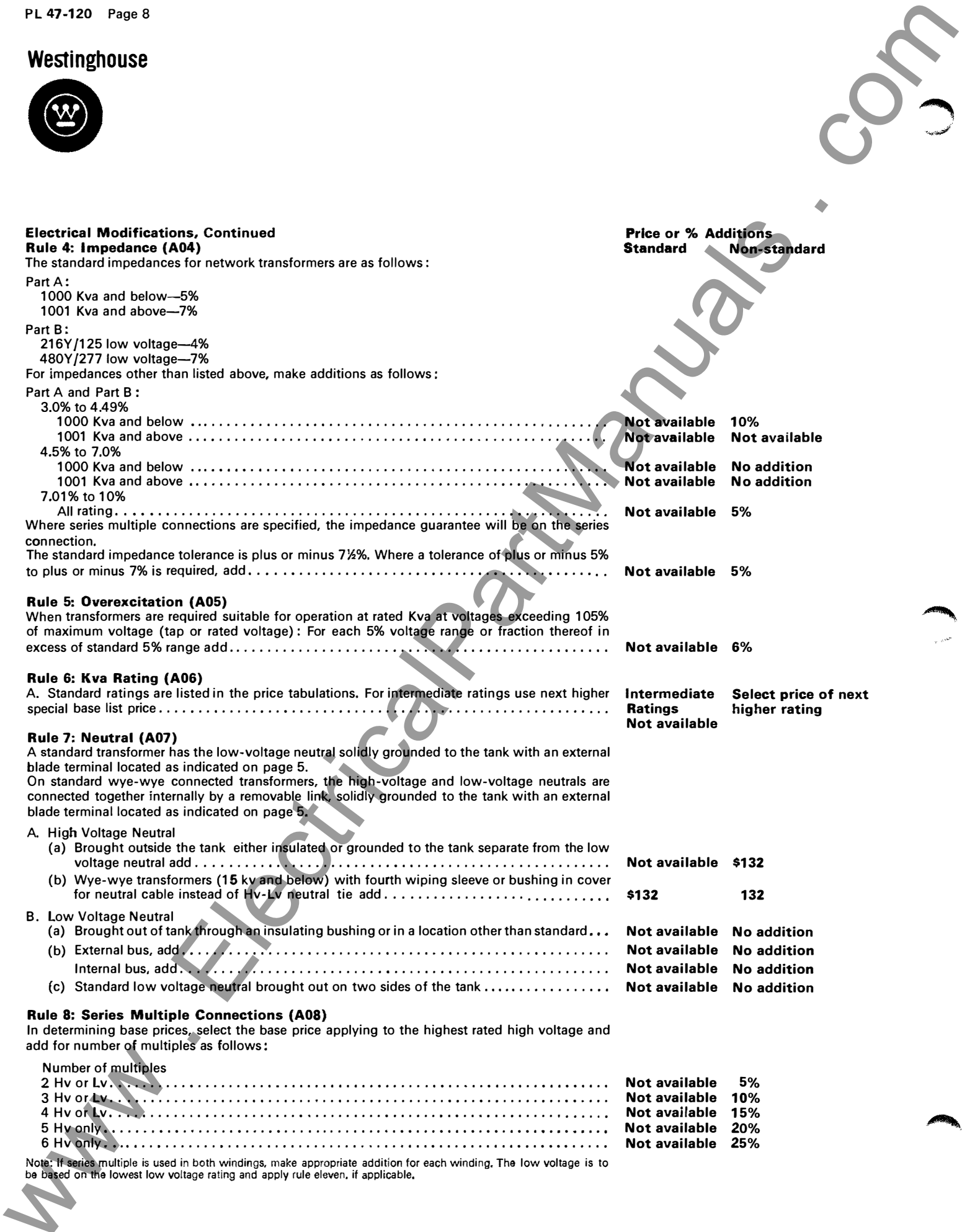
A. High Voltage Neutral (a) Brought outside the tank either insulated or grounded to the tank separate from the low voltage neutral add	Not available	\$132
(b) Wye-wye transformers (15 kv and below) with fourth wiping sleeve or bushing in cover for neutral cable instead of Hv-Lv neutral tie add	\$132	132
B. Low Voltage Neutral (a) Brought out of tank through an insulating bushing or in a location other than standard...	Not available	No addition
(b) External bus, add.....	Not available	No addition
Internal bus, add.....	Not available	No addition
(c) Standard low voltage neutral brought out on two sides of the tank	Not available	No addition

Rule 8: Series Multiple Connections (A08)

In determining base prices, select the base price applying to the highest rated high voltage and add for number of multiples as follows :

Number of multiples		
2 Hv or Lv	Not available	5%
3 Hv or Lv	Not available	10%
4 Hv or Lv	Not available	15%
5 Hv only	Not available	20%
6 Hv only	Not available	25%

Note: If series multiple is used in both windings, make appropriate addition for each winding. The low voltage is to be based on the lowest low voltage rating and apply rule eleven, if applicable.



Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Rule 9: Taps and Tap Range (A09)

Network transformers are normally provided with four taps as given in the general descriptive information for the units.

	Standard Price or % Addition	Nonstandard Price or % Addition
A. For each three-phase tap to terminal board or tap changer in excess of four, add	Not available	2%
B. For each low voltage tap lead brought out of tank for each phase do not make a further addition from Rule 9A, but make an addition of	Not available	4%
C. If omission of taps is specified on transformers listed with taps, deduct	4%	4%
D. Tap Range Tap range is calculated from the following formula : % tap range = $\frac{(\text{Max. tap HV} - \text{min. tap HV}) \times 100}{\text{Max. tap HV}} \text{ plus } \frac{(\text{Max. tap LV} - \text{min. tap LV}) \times 100}{\text{Max. tap LV}}$		
Where tap range exceeds 10%, make an addition for each 5% or fraction of 5% of range above 10% total.	Not available	3%
E. The number of taps for series multiple is the number of multiple tap voltages times the number of multiples plus series taps which do not coincide with the multiple taps.		
F. When an additional load at mid tap is required from one phase, the total pricing KVA will be 3 times the reduced capacity rating added to the 3 phase capacity rating of the transformer. Also add per rule 9-B	Not available	Select price of next higher rating where total Kva results in intermediate rating
G. If mid tap in one phase is specified without stated KVA, do not increase transformer rating. Loading on transformer must be reduced by 3 times the loading on the tap. Also add for taps from Rule 9-B	Not available	Price specified Kva rating

Rule 10: Tests (A10)

A. For sound level test	\$402	\$402
B. Power factor test—add, per transformer	344	344
C. Temperature test—for each transformer to be tested, (Do not add for the standard test on the first transformer on a multiple unit order) add (Certified tests on the design will be furnished without charge.)	402	402
D. Impulse test: USA Standard test on Hv winding	688	688
NEMA front of wave test	Not available	Not available

Rule 11: Voltage Classes and Ratings (A11)

A. Optional voltage ratings for either the high voltage, low voltage or both may be selected within the range listed below. Where high voltage option is selected, a total of not more than 5 voltages within 10% may be specified and any one may be named as rated. For this modification, add

Insulation class	Range of optional Hv rating
5 Kv	2160 through 5000
8.66 Kv	6600 through 8660
15 Kv	11000 through 14750
25 Kv	16400 through 24600
34.5 Kv	25700 through 36200

B. High voltage class—The price selected is determined by the highest available voltage, provided insulation tests conform with USA Standards from tabulation below. If tests higher than USA Standards are required, select special base price corresponding to special test class required.

Hv Range Delta or Wye	BIL		Kv Class for Pricing
	Liquid or Gas Filled	Ventilated Dry	
2150— 5000	60	25	5
5001— 8667	75	35	8.66
8668—15000	95	50	15
15001—25000	150	No available	25
25001—34500	200	Not available	34.5

Note: Where liquid transformers 5001-8667 volts are specified for 95KV BIL, or dry type transformers 5001-8667 volts are specified for 50KV BIL, use 15KV special base price and add

Not available 5%

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Electrical Modifications, Continued

Rule 11: Voltage Classes and Ratings, (A11) Continued

C. Low voltage class—Standard transformers may have a low voltage of 208Y or 216Y or 480Y. For other low voltages from 201 to 600 volts

D. Low-low voltage—If low voltage ratings 100 to 201 volts delta or 173Y/100 to 346Y/201 are specified on ratings 1001 Kva and above

E. Low voltage insulation class—The standard basic insulation level or dielectric test on low voltage are as follows:

Low Voltage	Insulation Voltage Class	BIL		60 Cycle Test	
		Liquid	Dry	Liquid	Dry
216Y/125	1.2 Kv	30	10	10 Kv	4 Kv
480Y/277	1.2 Kv	30	10	10 Kv	4 Kv

For other Lv BIL or insulation **Not available** **Not available**

Price or % Additions
Standard **Non-standard**

Not available **No addition**

Not available **4%**

Rule 12: Special Sound Level Requirements (A12)

Standard network transformers have the following guaranteed audible sound level (in decibels)

Kva	Liquid-Filled		Ventilated Dry	Gas Filled Dry
	Guarantee	Normal Average	Guarantee	Guarantee
300	55	49	58	57
500	56	51	60	59
600	57	53	62	62
750	58	53	64	63
1000	58	55	64	63
1500	60	57	65	64
2000	61	58	66	65
2500	62	59	68	66

When purchasers specifications call for audible sound levels below the values shown in the guarantee columns above, make the following price additions:

- Liquid-Filled and Gas Filled Dry Type:**
For each decibel below the value shown in the guarantee column above (maximum reduction —10 decibels) add **2%** **2%**
- Ventilated Dry Type:**
 - For a reduction of 8 decibels or less below the value shown in the guarantee column above add: 500 Kva & below **\$201** **\$201**
501 Kva thru 2500 Kva **333** **333**
 - For reductions in excess of 8 decibels **Not available** **Refer to division**
- If test values are to be given on units after construction, add**
For sound level test from rule 10-A.

Rule 13: Altitude (A13)

Standard ratings are based on operation at an altitude not exceeding 3300 ft. If other altitudes are specified, the following price addition applies:

3301— 5940 ft.	Not available	5%
5941—10730 ft.	Not available	10%
10731—18300 ft.	Not available	15%

Rule 14: Single Phase Network Transformers (A14)

To price a single-phase network transformer (167 through 500 Kva), determine the base price of a three-phase network transformer of equivalent construction and with equivalent features but three times the Kva of the single-phase unit and the same line voltage using nonstandard price rules. Multiply the price so obtained by .4. Price so obtained is the price of the single-phase unit. Losses listed in price table do not apply.

Rule 15: Wye-Wye Operation (A15)

When Y-Y operation is specified and other than a conventional three-legged core-type transformer is required suitable construction (with standard impedance) can be supplied.

No addition **No addition**

When it is required that the removable internal neutral tie link on a Y-Y connected transformer be omitted and a fourth cable entrance provided, add.

132 **132**

Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Mechanical Modifications Index

Rule No.	Modification	Page No.
28	Alarm Control Devices	13
18	Bases—Special Dimension	11
31A&D	Bottom Entry	15
30	Bottom Entry	14
35B	Bushing Hoods Lv	18
31C	Bushings Hv	15
32	Cable Connectors Hv	15
19	Cooling—Auxiliary	12
33	Compound or Cable Oil	15
17	Delta-Wye Terminal Board	11
30	Expansion Tank	16
30B-2	Exciting Current Switches	16
23	Gas Absorbers	12
25	Gauges	13
30C	Grounding Switch Connection	16
21	Hangers	12
30B-7	Interlocks	16
20	Jack Bosses	12
30B-2	Mag-Break	16
30B-6	Peep Hole Lens	16
30B-5	Phasing out Hv Cable	16
31B&H	Potheads	17
22	Pressure Relief Diaphragm	12
18B	Pressure Test	11
37	Protector Mounted at Factory	20
16	Purchaser's Spec— Nonstandard	11
38	Reactors	20
31E	Rubber Covered Cable	15
27	Sampling and Pressure Test Kit	13
26	Sampling Devices	13
18	Tank Modifications	11
30	Switch: Prices—USA Standards— Part A	14
30D	Prices—USA Standards— Part B	13
30D	Mounted Inside Tank	15
30B-1	Nonstandard Current Rating	14
30C-6	Operation—Nonstandard	14
30B-8	Provision for	14
24	Tap Changer	12
30	Termination Facilities—Hv— with Switch	16
31A	Terminal Chamber without Switch	15
31	Terminal Chamber Modifications	15
35	Terminal Facilities—Lv	18
31	Terminations without Switch—Hv	15
28B	Thermometer Well	13
29	Valves	13
31B	Wiping Sleeves	15

Mechanical Modifications General

Rule 16: Nonstandard Purchaser's Specifications (A16)

When purchaser's specifications require special materials, special type of construction and/or special methods of manufacture, requiring highly detailed engineering or detailed shop procedures, make an addition of

Price or % Additions
Standard **Non-standard**

Not available **7½%**

Rule 17: Delta-Wye Terminal Board (A17)

If delta-wye terminal board is specified:

- 1. On high voltage **Not available** **2%**
- 2. On low voltage **Not available** **2%**

Tank and Fittings

Rule 18: Tank Modifications (A31)

Tanks are regularly supplied of copper bearing steel the following maximum guarantees:

- Tank wall thickness maximum ¼"
- Tank bottom thickness maximum ½"
- Tank cover thickness maximum ½"
- Cooler thickness Prices cover

Tank construction equivalent to the duty specified for subway service with cooler of corrosion resistant material equal to or greater than that called for in the standards but not necessarily limited to tubular construction.

A. Vault Type

For ¾" or ⅜" cooler thickness for vault service, deduct

3% **3%**

B. Special bases—Standard network transformer bases have a maximum height of 1½". The sub-base bars run parallel to long axis of the tank.

1. For sub-base, height above 1½" with a maximum height of 8", add as follows:

- Part A construction
- Part B vault construction

\$172 **\$172**
No addition **No addition**
No addition **No addition**

2. Provisions for rolling in any direction

C. Special strength tanks—Where sealed dry type or liquid filled transformers are required to have an internal pressure test of 15 pounds per square inch or withstand an external pressure of 15 pounds per square inch, add to base list price.

Not available **2%**

D. Special material thickness—Where extra thickness tank or coolers is called for, add to base list price. (Refer to Power Transformer Division for maximum increase possible, but in no case over 50% increase)

Not available **7½%**

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Mechanical Modifications, Continued
Tank and Fittings, Continued

Rule 19: Auxiliary Cooling (A01)

Special base prices apply to self-cooled oil, air, and inerteen-filled network transformers.

A. Water-cooled transformers having self-cooled rating without water and 133% of self-cooled rating with 40°C water and operated in 40 C ambient will be priced from special base list price of a self-cooled network transformer of the 100% self-cooled rating with the following list additions:

Oil filled only **Not available** **25%**

B. Network transformers with provision only for water-cooling coils will be the same price as network transformers with cooling coils.

Not available **See Rule 19 A**

C. Forced air cooling. Use special base list price and the following additions apply:

1. Forced air cooling equipment to give 133% rated capacity for ventilated dry type network transformers only automatically controlled by TRA relay.

Apply price addition **Not available** **\$1548**

2. Forced air cooling equipment to give 115% rated capacity on liquid-filled transformers, 600 KVA and above.

Not available **1548**

3. Forced air cooling on gas filled dry type network transformers.

Not available **Not available**

D. For provision for future addition of forced air cooling equipment on liquid-filled units consisting of a well for control and tapped holes for brackets to support four fans maximum with no increase in internal parts to carry increased rating, add per transformer.

Not available **86**

Rule 20: Jack Bosses (A37)

If jack bosses 3/4" maximum height from floor are specified, add.

No addition **No addition**

Rule 21: Hangers (A24)

A. If welded or bolted on hangers for suspension mounting are specified: 500 Kva
 750 or 1000 Kva.

\$ 115 **115**
546 **546**

B. If provision only for future suspension mounting is specified consisting of tapped bosses.

58 **58**

Rule 22: Pressure Relief Diaphragm (A38)

If pressure relief diaphragm on oil-filled transformers are specified, add.

150 **150**

Rule 23: Gas Absorbers (Inerteen) (A21)

Gas absorbers are not regularly supplied. They are designed to absorb the gas generated by the arc disintegration of 5 per cent of the total.

1000 Kva and smaller **803** **803**

1001—2000 Kva. **1147** **1147**

Rule 24: Tap Changer (A29)

Tap changer control is normally supplied through a plugged opening in the transformer cover operated by means of a wrench.

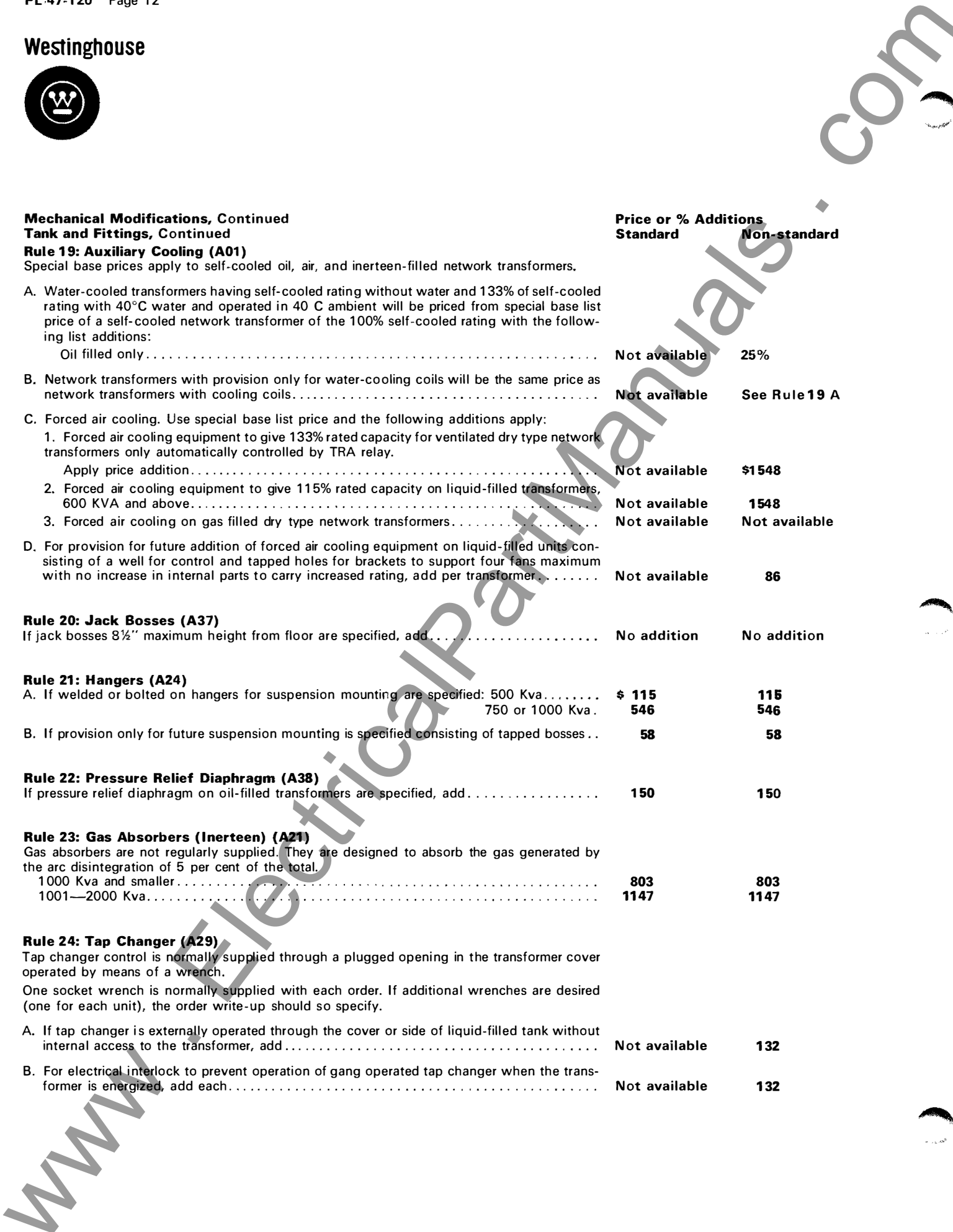
One socket wrench is normally supplied with each order. If additional wrenches are desired (one for each unit), the order write-up should so specify.

A. If tap changer is externally operated through the cover or side of liquid-filled tank without internal access to the transformer, add.

Not available **132**

B. For electrical interlock to prevent operation of gang operated tap changer when the transformer is energized, add each.

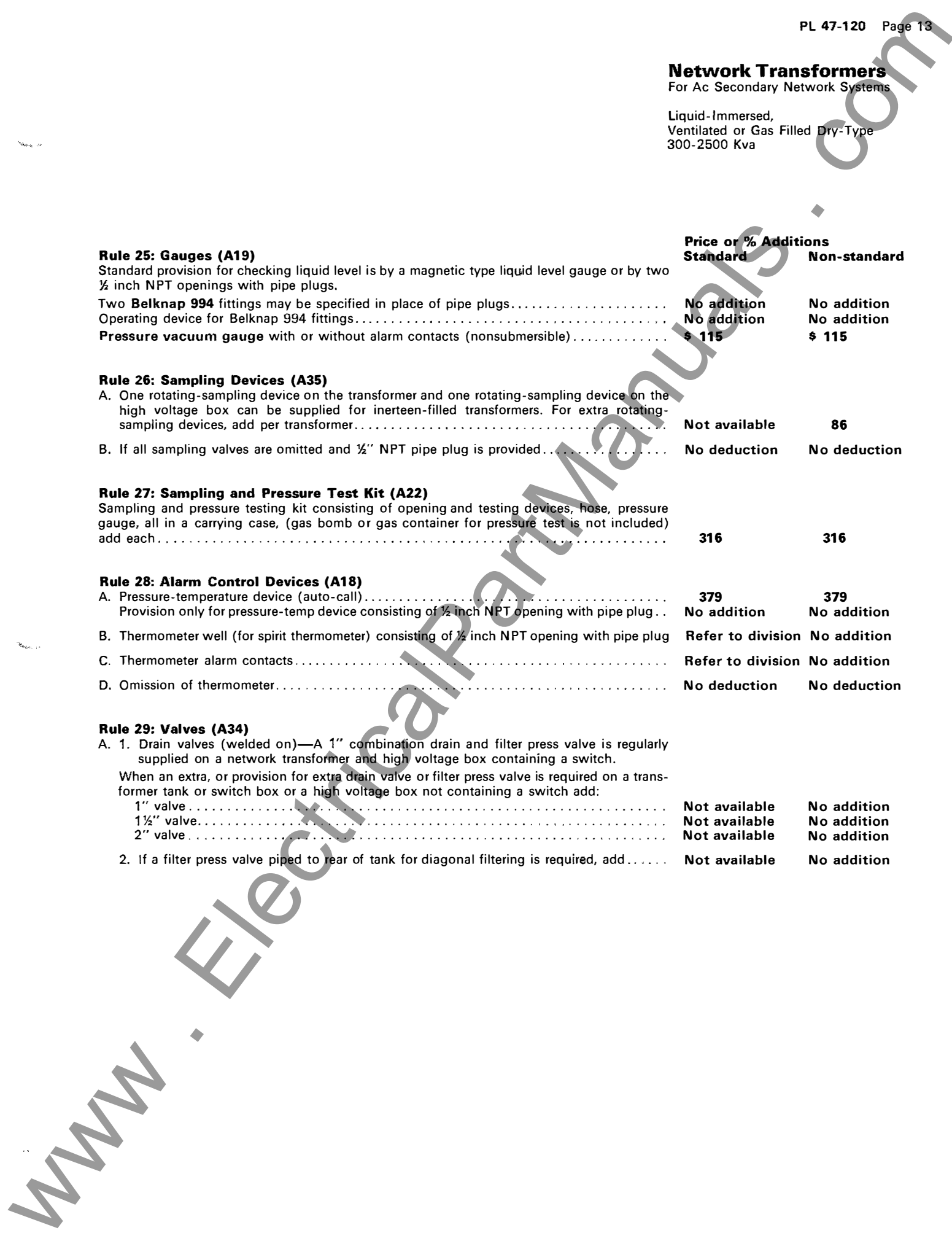
Not available **132**



Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

	Price or % Additions Standard	Non-standard
Rule 25: Gauges (A19)		
Standard provision for checking liquid level is by a magnetic type liquid level gauge or by two ½ inch NPT openings with pipe plugs.		
Two Belknap 994 fittings may be specified in place of pipe plugs.....	No addition	No addition
Operating device for Belknap 994 fittings.....	No addition	No addition
Pressure vacuum gauge with or without alarm contacts (nonsubmersible).....	\$ 115	\$ 115
Rule 26: Sampling Devices (A35)		
A. One rotating-sampling device on the transformer and one rotating-sampling device on the high voltage box can be supplied for inerteen-filled transformers. For extra rotating-sampling devices, add per transformer.....	Not available	86
B. If all sampling valves are omitted and ½" NPT pipe plug is provided.....	No deduction	No deduction
Rule 27: Sampling and Pressure Test Kit (A22)		
Sampling and pressure testing kit consisting of opening and testing devices, hose, pressure gauge, all in a carrying case, (gas bomb or gas container for pressure test is not included) add each.....	316	316
Rule 28: Alarm Control Devices (A18)		
A. Pressure-temperature device (auto-call).....	379	379
Provision only for pressure-temp device consisting of ½ inch NPT opening with pipe plug..	No addition	No addition
B. Thermometer well (for spirit thermometer) consisting of ½ inch NPT opening with pipe plug	Refer to division	No addition
C. Thermometer alarm contacts.....	Refer to division	No addition
D. Omission of thermometer.....	No deduction	No deduction
Rule 29: Valves (A34)		
A. 1. Drain valves (welded on)—A 1" combination drain and filter press valve is regularly supplied on a network transformer and high voltage box containing a switch. When an extra, or provision for extra drain valve or filter press valve is required on a transformer tank or switch box or a high voltage box not containing a switch add:		
1" valve.....	Not available	No addition
1½" valve.....	Not available	No addition
2" valve.....	Not available	No addition
2. If a filter press valve piped to rear of tank for diagonal filtering is required, add.....	Not available	No addition



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Mechanical Modifications, Continued

High Voltage Facilities

Rule 30: High Voltage Termination Facilities with Switch (A25)

This rule covers all permissible HV terminal facilities for both Section A and Section B, USA Standard transformers. Section A standard switches are not applicable to Section B transformers. Section B switches may not be used on Section A transformers.

A. Pricing of Section A, USA Standard C57-12.40, HV terminal facilities with switch.

Standard disconnecting and cable grounding switches are normally supplied for disconnecting and grounding the HV feeder cable supplying power to the network transformers.

Features of the switches normally supplied are as follows:

1. 3-pole, 3-position disconnecting and cable grounding.
2. Switch box welded to narrow end of main tank.
3. Terminal chamber suitable for top cable entrance.
4. Sequence of operation, "open-closed-ground."
5. Entrance through brazed on wiping sleeves.
6. Drain valve, filling plug, magnetic liquid level gauge, provision for pressure test, and one electrical interlock to prevent operation of switch when transformer is energized.

High voltage dead break switch prices—Including high voltage terminal chamber mounted on top of switch for top entry and including one three conductor or three single conductor wiping sleeves, either brazed-on or bolted-on.

1. Oil, Inerteen or ventilated dry type.

(a) Three position, disconnect and cable grounding; two position, disconnect or two position grounding for oil, Inerteen, or ventilated dry type transformers add:

	Standard	Non-standard
15 Kv and below.....	\$1930	\$1930
25 Kv liquid only.....	2660	2660
34.5 Kv liquid only.....	3890	3890

(b) Three position selector switch; feeder transfer with total of two (one each feeder) three conductor cable entrances or six single conductor entrances add:

15 Kv and below.....	Not available	2930
25 Kv liquid only.....	Not available	3730
34.5 Kv liquid only.....	Not available	5030

(c) Additional cable entrance:

For each additional three conductor or each three single conductor entrance, add:

15 Kv and below.....	Not available	476
25 Kv (liquid only).....	Not available	505
34.5 Kv (liquid only).....	Not available	574

2. Gas Filled dry type.

(a) Three position, disconnect and cable grounding; two position, disconnect or two position, grounding switch for GAS FILLED DRY TRANSFORMER, add:

15 Kv and below.....	2070	2070
25 Kv.....	Not available	Not available
34.5 Kv.....	Not available	Not available

(b) Three position selector switch with total of two (one per feeder) three conductor cable entrances or six single conductor entrances, add:

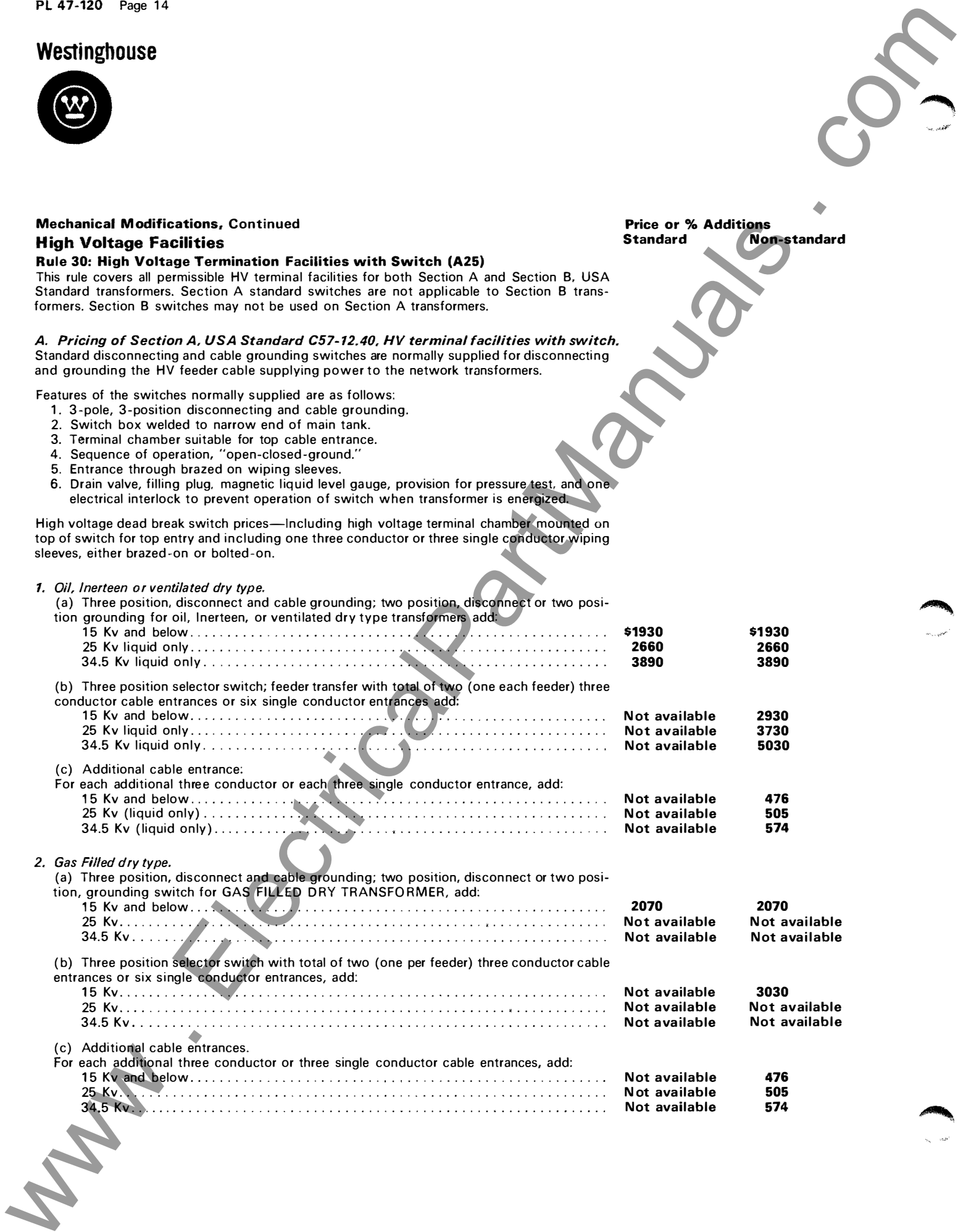
15 Kv.....	Not available	3030
25 Kv.....	Not available	Not available
34.5 Kv.....	Not available	Not available

(c) Additional cable entrances.

For each additional three conductor or three single conductor cable entrances, add:

15 Kv.....	Not available	476
25 Kv.....	Not available	505
34.5 Kv.....	Not available	574

Price or % Additions
Standard Non-standard



Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Rule 30: High Voltage Termination Facilities with Switch (A25), Continued

B. Optional modifications for which separate additions are required.

1. Higher current rating switches

Switches are normally 200 Amperes. If higher capacity switch is required, 15 Kv and below, add to switch price:

400 Amperes.....	Not available	\$ 459
600 Amperes.....	Not available	1147

Higher capacity switches are not available above 15 Kv.

2. Switches to break exciting current.

When a switch is required to break exciting current, an extra interlock is required to prevent breaking load current. The interlock is supplied from the network protector with leads being brought through the protector mounting throat. Quick-break mechanism is supplied for rapidly extinguishing the arc. For this arrangement, add to switch price.....

\$ 230	230
--------	-----

3. Provisions for alternate cable entrance.

When only one set of cables are to be connected at one time and openings are provided in the sides of the Hv terminal chamber with cover plates to permit an alternate choice of entrance by interchanging with the top plate which has wiping sleeves and where only one entrance will be used at a time, add as follows:

(a) Entry provision in one side.....	Not available	115
(b) Entry provisions in two sides.....	Not available	230
(c) If provision is made for use of one 3-phase or 3 single-phase conductors, but both entrances are in standard location on top of terminal chamber; this may be done by providing a larger opening for the center cable with the other two openings standard size.....	115	115
(d) Pothead entrance in terminal chamber for 3 single conductor cables from above.....	172	172

4. Provision for terminating rubber covered cable.

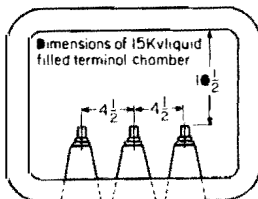


FIG. A

(a) In compound filled terminal chamber having same dimensions as liquid chamber (see fig. A) with termination on clamp-type connectors, 15 Kv and below, three single conductor entry through packing gland or stuffing box, add to switch price.....

No addition	No addition
-------------	-------------

(b) In air insulated terminal chamber with bayonet connectors, terminal chamber same dimensions as liquid (see fig. A) 15 Kv and below, three single conductor entry through packing gland or stuffing box, add to switch price....

No addition	No addition
-------------	-------------

5. Phasing out the high voltage cable.

(a) Provision can be made for phasing out the high voltage cable by supplying pipe outlets. In top of high voltage box when entry is at the bottom.....

Not available	No addition
No addition	No addition

Near top of high voltage box cover when entry is at top.....

(b) If pipe outlets are not desired, the 3-position disconnecting and grounding switch can be provided with a sequence grounding feature, enabling first—A phase to be grounded, then A and B phase and then A, B, and C phases, add each switch.....

86	86
----	----

6. Peep Hole Lens.

One large or three small lens for viewing switch blades may be provided in switch chamber cover.....

86	86
----	----

7. Interlocks.

(a) One electrical interlock is regularly supplied with each switch. For each extra interlock beyond that required for normal functioning of switch.

Dead-break type, add.....	132	132
Mag-break type, add.....	Not available	132

(b) For electrical interlock lead entrance chamber mounted on outside of Hv box containing a switch and arranged for either conduit connection or wiping sleeve (interlock not included) add each.....

Not available	132
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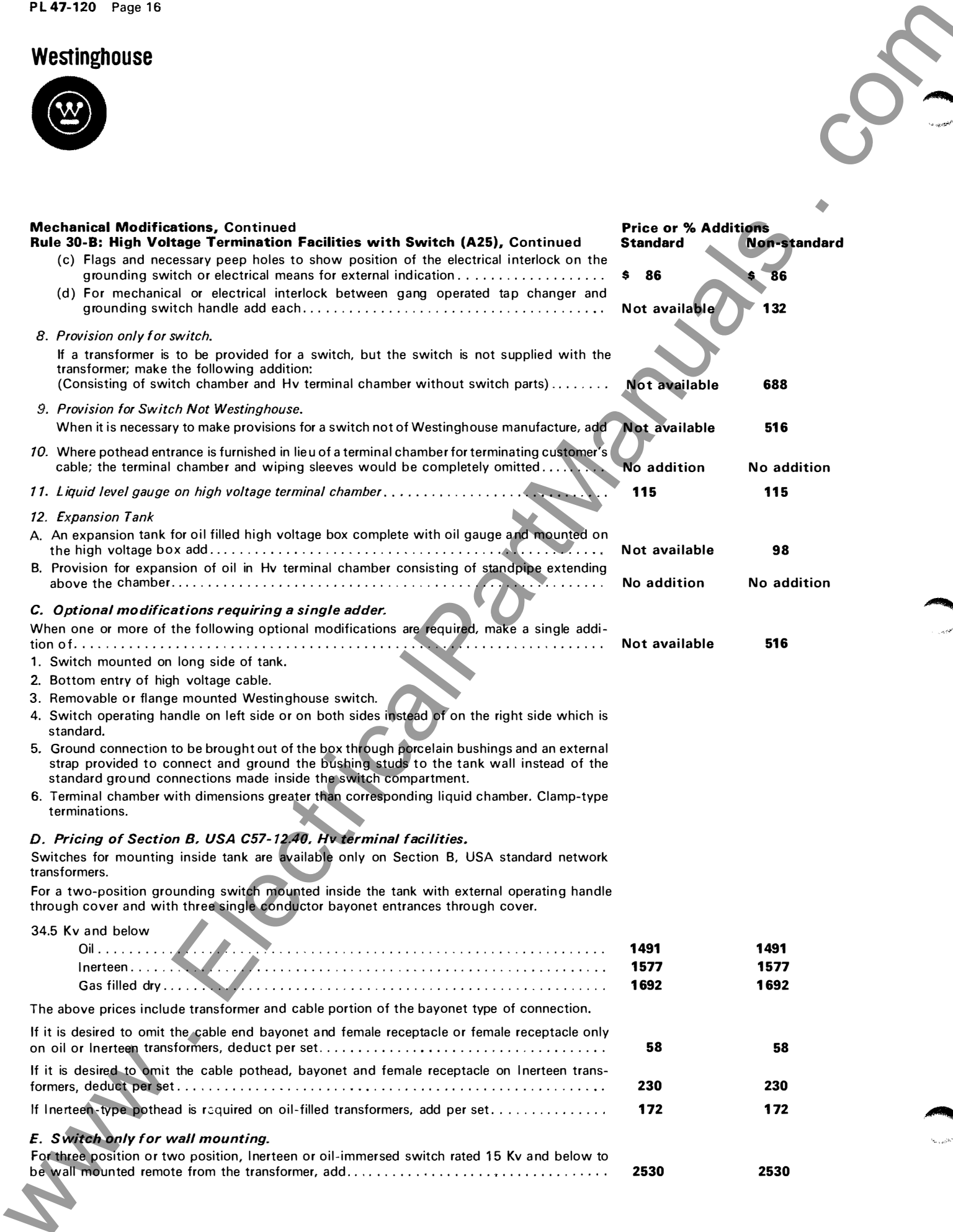
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Mechanical Modifications, Continued

Rule 30-B: High Voltage Termination Facilities with Switch (A25), Continued

	Price or % Additions Standard	Non-standard
(c) Flags and necessary peep holes to show position of the electrical interlock on the grounding switch or electrical means for external indication	\$ 86	\$ 86
(d) For mechanical or electrical interlock between gang operated tap changer and grounding switch handle add each	Not available	132
8. Provision only for switch.		
If a transformer is to be provided for a switch, but the switch is not supplied with the transformer; make the following addition: (Consisting of switch chamber and Hv terminal chamber without switch parts)	Not available	688
9. Provision for Switch Not Westinghouse.		
When it is necessary to make provisions for a switch not of Westinghouse manufacture, add	Not available	516
10. Where pothead entrance is furnished in lieu of a terminal chamber for terminating customer's cable; the terminal chamber and wiping sleeves would be completely omitted	No addition	No addition
11. Liquid level gauge on high voltage terminal chamber	115	115
12. Expansion Tank		
A. An expansion tank for oil filled high voltage box complete with oil gauge and mounted on the high voltage box add	Not available	98
B. Provision for expansion of oil in Hv terminal chamber consisting of standpipe extending above the chamber	No addition	No addition
C. Optional modifications requiring a single adder.		
When one or more of the following optional modifications are required, make a single addition of	Not available	516
1. Switch mounted on long side of tank.		
2. Bottom entry of high voltage cable.		
3. Removable or flange mounted Westinghouse switch.		
4. Switch operating handle on left side or on both sides instead of on the right side which is standard.		
5. Ground connection to be brought out of the box through porcelain bushings and an external strap provided to connect and ground the bushing studs to the tank wall instead of the standard ground connections made inside the switch compartment.		
6. Terminal chamber with dimensions greater than corresponding liquid chamber. Clamp-type terminations.		
D. Pricing of Section B, USA C57-12,40, Hv terminal facilities.		
Switches for mounting inside tank are available only on Section B, USA standard network transformers.		
For a two-position grounding switch mounted inside the tank with external operating handle through cover and with three single conductor bayonet entrances through cover.		
34.5 Kv and below		
Oil	1491	1491
Inerteen	1577	1577
Gas filled dry	1692	1692
The above prices include transformer and cable portion of the bayonet type of connection.		
If it is desired to omit the cable end bayonet and female receptacle or female receptacle only on oil or Inerteen transformers, deduct per set	58	58
If it is desired to omit the cable pothead, bayonet and female receptacle on Inerteen transformers, deduct per set	230	230
If Inerteen-type pothead is required on oil-filled transformers, add per set	172	172
E. Switch only for wall mounting.		
For three position or two position, Inerteen or oil-immersed switch rated 15 Kv and below to be wall mounted remote from the transformer, add	2530	2530



Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Rule 31: High Voltage Terminations without Switch (A25)

	Price or % Standard	% Additions Non-standard
A. High voltage terminal chamber welded on end of Hv tank without provision for switch, one 3 conductor or three single conductor wiping sleeves. Choice of top or bottom entry (not reversible).		
1. Without phase separation barriers.		
15 Kv and below.....	\$ 640	\$ 640
25 Kv.....	688	688
34.5 Kv.....	688	688
2. With phase separation barriers.		
15 Kv and below.....	Not available	688
25 Kv.....	Not available	1032
3. For each additional 3 conductor or 3 single conductor entry.		
15 Kv and below.....	230	230
25 Kv.....	287	287
B. Wiping sleeves or potheads in tank cover may be provided without switch or terminal chamber.		
15 Kv and below..... (25 and 34.5 Kv not available)	172	172
C. High voltage bushings.		
1. In top of Hv terminal chamber in place of wiping sleeves (15 Kv and below only)...	Not available	172
2. In cover of transformer where no switch is provided (15 Kv and below only).....	172	172
3. Elastimold® bushings without connectors (15 Kv and below only).....	172	172
D. High voltage terminal chamber.		
1. Bolted on so that either top or bottom entry can be effected by reversing the terminal chamber, add to terminal chamber price.....	Not available	516
2. If terminal chamber is welded on and provision is made for alternate entrance in bottom or side, entry may be provided by furnishing openings with cover plates which may be interchanged with top plate to permit using alternate entrance, but only one set of cables to be connected. For each such entry (bottom and/or sides), add to terminal chamber price.....	115	115
E. Provision for terminating rubber covered cable.		
In compound filled terminal chamber having same dimensions as liquid chamber (see fig. B) with termination on clamp-type connectors, 15 Kv and below, three single conductor entry through packing gland or stuffing box, add to terminal price.....	No addition	No addition
F. High voltage bayonets for terminating lead covered cable, add to terminal chamber price...	172	172
G. If high voltage terminal chamber is required on long side of tank, add to terminal chamber price.....	Not available	287
H. High voltage throat—If high voltage throat only is provided, add.....	Not available	516
I. Liquid level gauge on high voltage terminal chamber.....	115	115

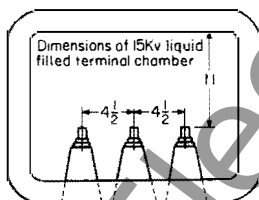


FIG. B

Rule 32: Hv Cable Connectors (A27)

Connectors are normally supplied in Hv terminal chamber. If omitted..... No deduction No deduction

Rule 33: Filling Compound or Cable Oil (A28)

Compound or cable oil is not regularly supplied. Compound is most frequently used for filling the terminal chamber. When called for on the order, compound or cable oil will be supplied.... No addition No addition

Westinghouse



Mechanical Modifications, Continued

Rule 34: Phase and Feeder Identification Holders (A45)

If holders for feeder-bank tags and phase-terminal identification is required on USAS section B transformers add

Price or % Additions	
Standard	Non-standard
\$ 58	\$ 58

Low Voltage Facilities

Rule 35: Low Voltage Terminal Facilities (A39)

A. The standard network transformer is equipped with a throat for mounting a network protector.

1. Omission of low voltage throat—if low voltage throat is to be omitted	Not available	No addition
2. Section A: USA Standards. Low voltage throat on long side of tank	Not available	No addition
3. Section B: USA Standards. Bushings on long side of tank, vault type only	No addition	No addition
4. Oversize throat with 11 inch low voltage bushing spacing on USAS Section B Transformers	230	230

B. The standard low voltage bushings are provided with flexible connectors with standard drilling per USA Standard C57.12.40.

1. Moles mounted on low voltage bushing in place of the flexible connectors, add	402	402
2. Clamp-type terminals added to the flexible connectors, add: 1600 amps or less	115	115
1601 amps or above	230	230
3. If flexible connectors are omitted	No deduction	No deduction
4. Spade type terminal supplied in lieu of standard flexible connector	No addition	No addition
5. Hood over the neutral or low voltage bushing list price (A-20)	Not available	No addition
If the neutral is adjacent to the low voltage bushings permitting the hood over all the bushings, add	Not available	No addition

Rule 36: Low Voltage Terminal Chamber (A40)

When a protector is not to be used at present, a low voltage terminal chamber can be furnished for bolting to a standard or non-standard network transformer. Welded on chambers are available only on non-standard network transformers.

A. Low voltage terminal chamber bolted to throat with wiping sleeve or packing gland entrance with standard flexible connectors or spade type terminals.

1600 Amps or less	734	734
1601 Amps or above	975	975

B. Low voltage terminal chamber bolted to low voltage throat with wiping sleeve or packing gland entrance with clamp type terminals added to the flexible connectors.

1600 Amps or less	918	918
1601 Amps or above	1365	1365

C. Low voltage terminal chamber bolted to low voltage throat with low voltage stud substituted for the wiping sleeves.

1600 Amps or less	826	826
1601 Amps or above	1365	1365

D. Low voltage terminal chamber bolted to throat with low voltage stud bushings having clamp type terminals substituted for the wiping sleeves.

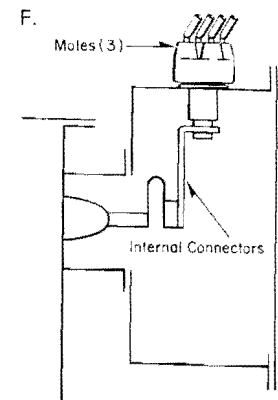
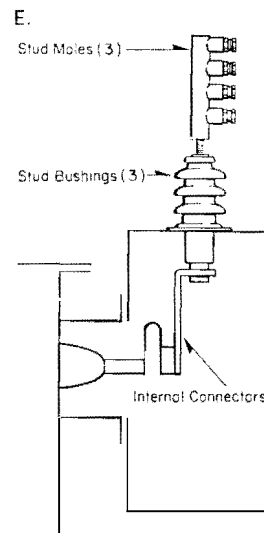
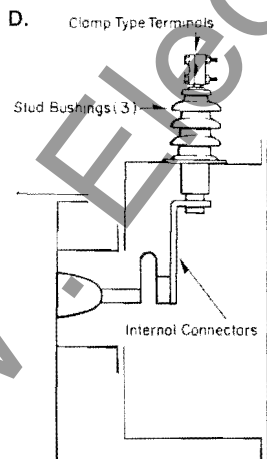
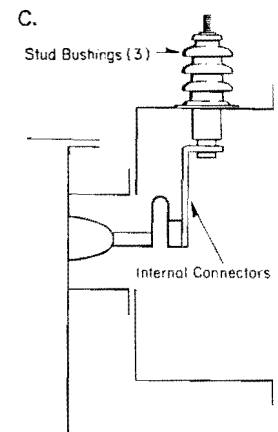
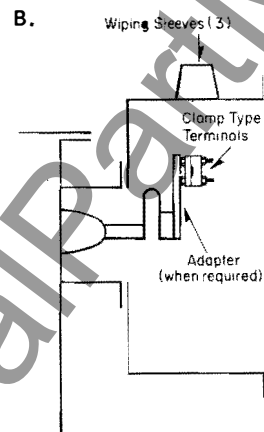
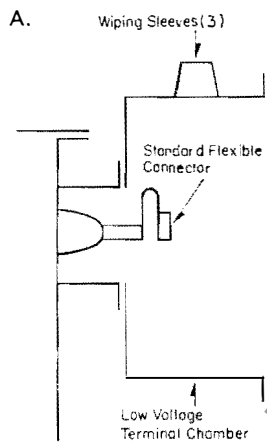
1600 Amps or less	1009	1009
1601 Amps or above	1755	1755

Network Transformers
For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Low Voltage Facilities, Continued
Rule 36: Continued

	Price or % Additions Standard	Non-standard
E. Low voltage terminal chamber bolted to throat with stud moles mounted on low voltage stud bushings.		
1600 Amps or less.....	\$1468	\$1468
1601 Amps or above.....	2047	2047
F. Low voltage terminal chamber bolted to throat with moles mounted directly on top of chamber without stud bushings.		
1600 Amps or less.....	1468	1468
1601 Amps or above.....	1755	1755



Network Transformers

For Ac Secondary Network Systems

Liquid-Immersed,
Ventilated or Gas Filled Dry-Type
300-2500 Kva

Low Voltage Facilities, Continued

Rule 37: Protector Mounted at Factory (A30)
Prices are based on transformers and protectors being shipped separately. If they are shipped mounted together, from the factory, add mounting charge of

	Price or % Additions	
	Standard	Non-standard
	\$ 344	\$ 344

Rule 38: Reactors (A32)
Three-phase assembly (including end frames) of cable-type reactors on 216Y/125 volt network transformer. Location on outside of transformer tank.

To increase reactance 1% add	230	230
To increase reactance 2% add	459	459
To increase reactance 3% add	688	688
To increase reactance 4% add	918	918
To increase reactance 5% add	1147	1147

The above prices also apply for reactors sold separately without transformers.

Conditions of Sale

Rule 39: Special Warranty (in Addition to Standard Warranty in SP 47-000) (A41)

To meet purchaser's specifications and/or terms and conditions that require the manufacturer to be liable during the warranty period for the direct cost^③ of:

- Removing a Transformer from Service
- Transportation to the Factory or Repair Facility and Return to Site
- Re-installation on Site

Add to the Total Net Price for Each Transformer **2%**

The Westinghouse liability for a., b. and c. above, under this special warranty will not exceed 50% of the price of the warranted apparatus.

^③Expense for removing adjacent apparatus, fire walls, installing spare transformers, incremental costs of supplying temporary service, etc., is not included.

Rule 40: Extended Warranty (A42)

The Westinghouse standard warranty period for power transformers covers a period of 12 months from the date of shipment.

When purchaser's specification calls for a period over 24 months but not over 36 months from date of shipment; add to the total net price for each transformer . . . **1%**

When purchaser's specification calls for a period over 36 months but not over 36 months from date of shipment; add to the total net price for each transformer . . . **3%**

It is Westinghouse policy not to extend the warranty period beyond 36 months from date of shipment.

Rule 41: Accelerated or Delayed Payments (A43)

The standard terms of payment are net within 30 days from date of invoice.

There will be no reduction in price for payments more favorable to Westinghouse than the standard terms.

When a purchaser's specification requires any portion of payment to be withheld beyond the standard period or if payments are not made in conformance with the standard terms, the final net price of the transformer will be increased by a time price differential equal to 1% per month or fraction thereof on the unpaid balance.

Rule 42: Delivery (A44)

F.O.B.-P/S-Frt./Ppd: This apparatus is sold f.o.b. point of shipment, freight prepaid, and included in the price. When the purchaser's specification calls for f.o.b. common carrier point nearest first destination (F.O.B.-P/D-Frt/Ppd.) add to the total Net Price for each transformer **1%**

In event of shipping loss or damage:

1. Notification must be given to the Westinghouse location from which the shipment originated within 72 hours of delivery;
2. Written notations of apparent loss and damage must be made on the carrier's delivery receipt;
3. Concealed damage must be immediately reported to the delivering carrier with a request for an inspection.

Further Information:

Description: See Descriptive Bulletin 47-150
Plazatran, See PL 47-121
SPOT Network - Balancing Coil-B-9458

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