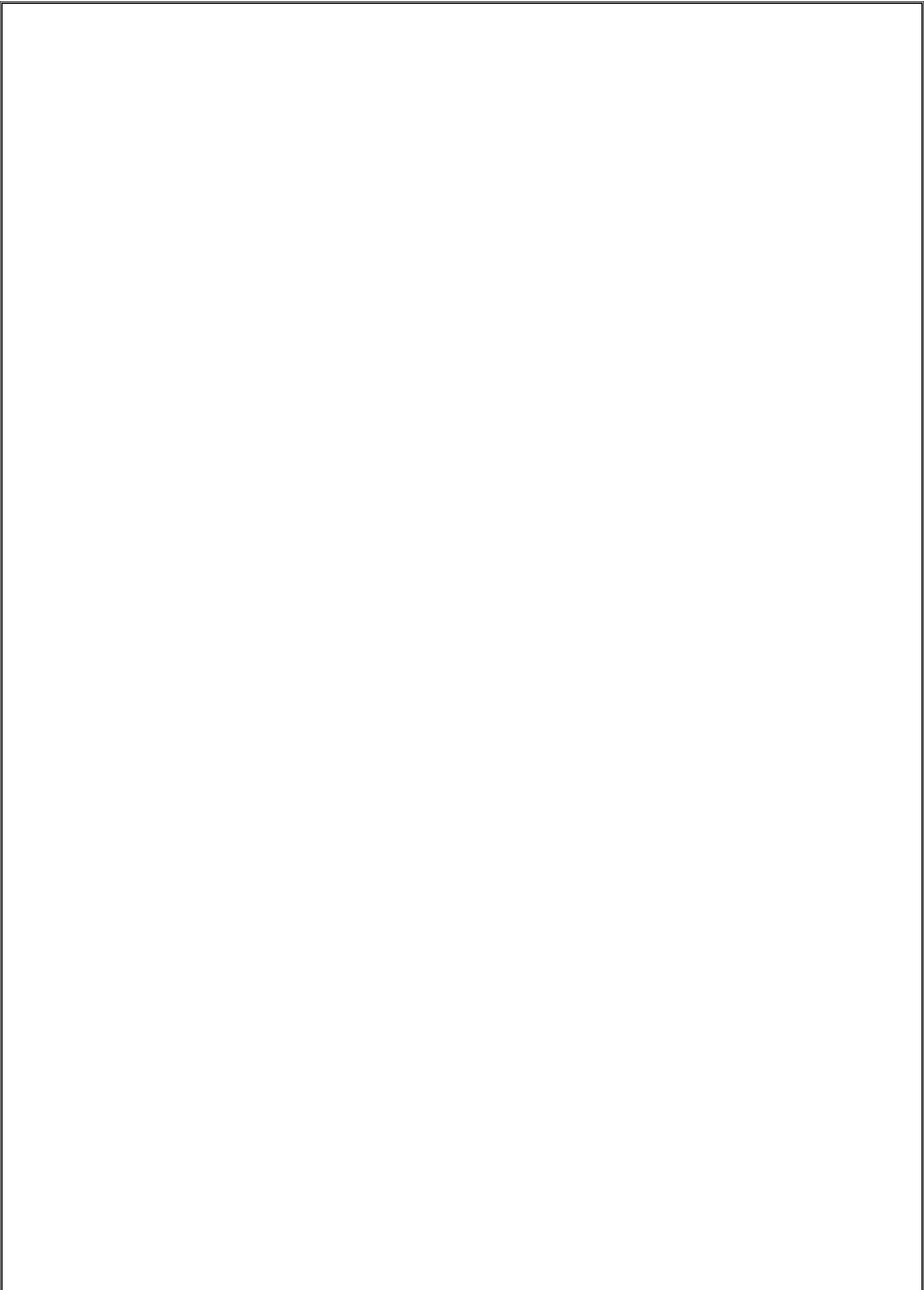
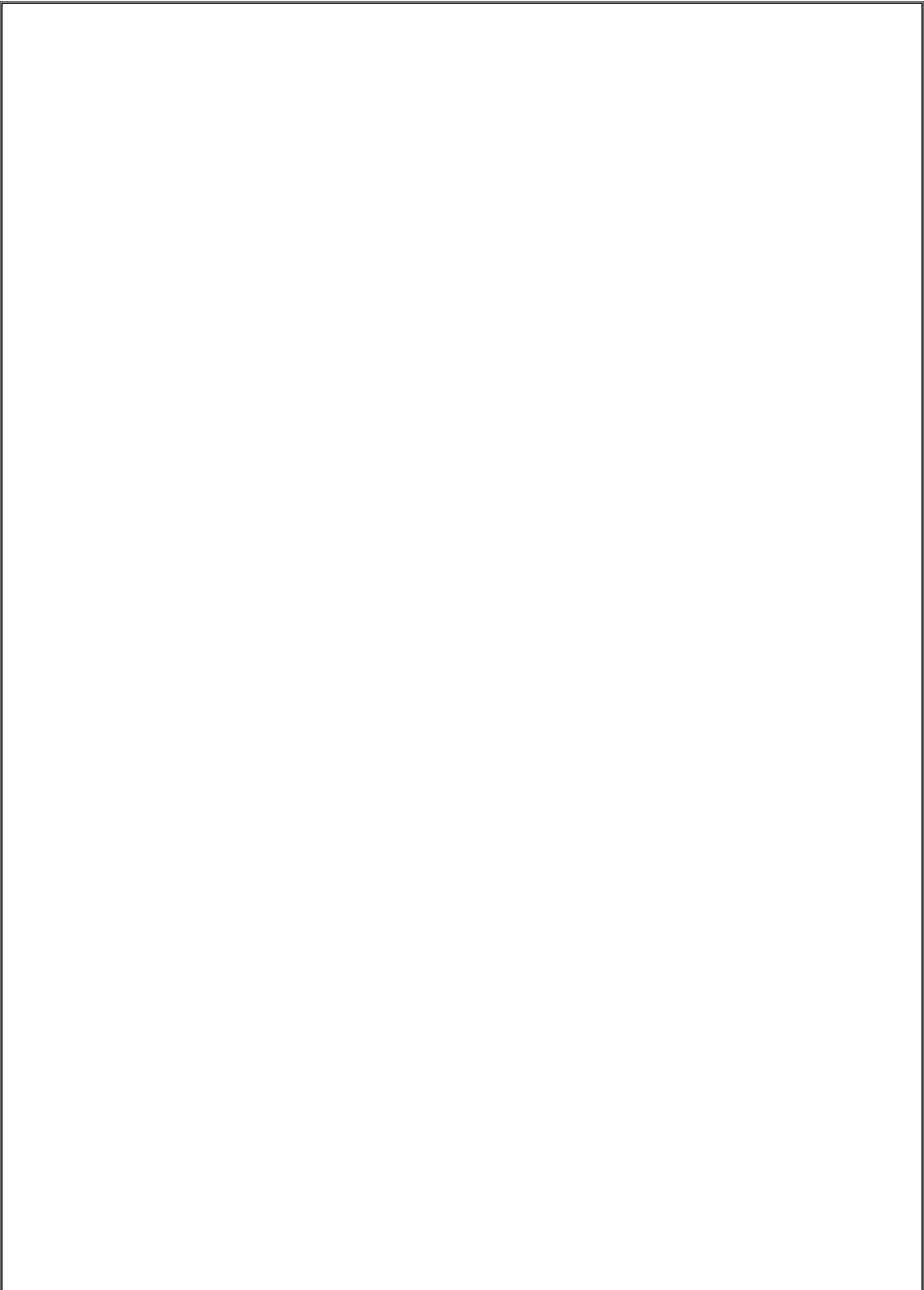


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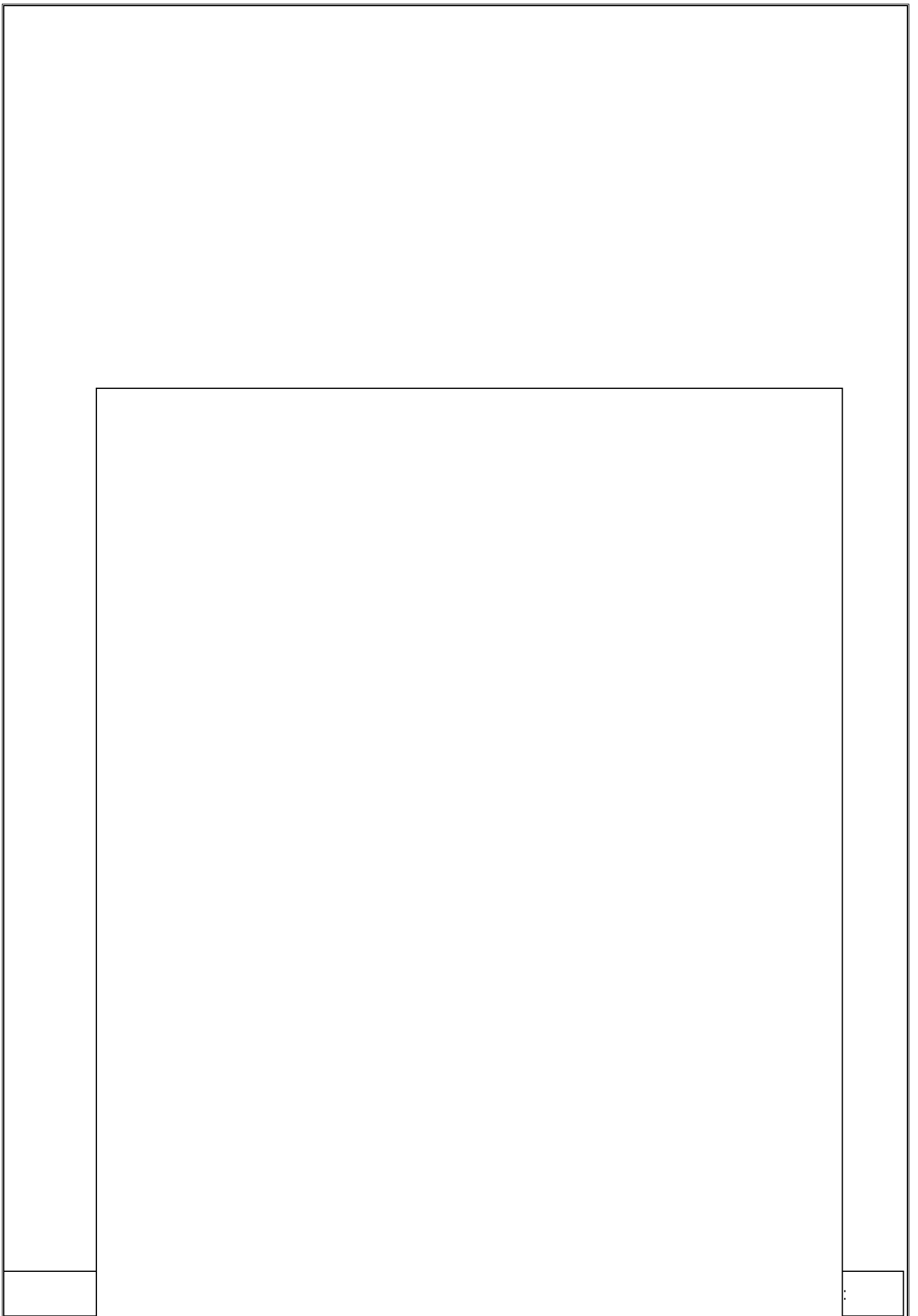
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- 1- IEC 60076: Power transformers
- 2- IEC60076-1: Power transformers, part 1: General
- 3- IEC60076-2: Power transformers, part 2: Temperatures
- 4- IEC60076-3: Power transformers, part 3: Insulation Levels and dielectric tests
- 5- . IEC60076-5: Power transformers, part 5: Ability to withstand short circuit
- 6- IEC60076-8: Power transformers, part 8: Application guide
- 7- IEC354: Lauding guide for oil immersed power trans formers
- 8- Din 42504: transformers , three phase oil immersed transformers with off - circuit tap-changer or with no load tap-changer,2000 to 1000 KVA for 50HZ and-un up to 123KV
- 9- Din 4208: transformers three phase oil immersed transformers with off-circuit tap-changer or with no load tap changer, 12500 to 80000 KVA far 50 MZ and un up to 123KVA
- 10- Din 42566: transformers, Buchholz relays, requirements and testing
- 11- Din 42567: Dehydrating breathers for transformers.
- 12- IEC605511: Determination of transformers and reactor sound levels.
- 13- IEC60060;High-voltage Test Techniques

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:(Type Test)

:(Routine test)

:(Special Test)

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**(Winding Resistance Measurement)**

IEC 60076-1

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**(Measurement voltage ratio and check of voltage vector relationship)**

IEC60076-1

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**(measurement of Impedance voltage)**

IEC60076-1

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**(measurement of load losses)**

IEC76-1

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**(No load loss and current measurement)**

IEC60076-1

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dielectric test

IEC 600 76-3

Induced over voltage test

|          |        |          |
|----------|--------|----------|
|          | AC     |          |
| AC       |        | KV r.m.s |
| KV r.m.s |        |          |
| 50       | (ACSD) | 24 AC    |

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Separature source A.C over voltage test

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AC

|         |         |
|---------|---------|
| AC      |         |
| KV r.ms | KV r.ms |
|         |         |

AC

AC

VP

Type Test

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**Temperatuer Rise Test**

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IEC 60076-2

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A3 A2 A1 (top oil) ( )  
o  
A2 A1

A3 A2 A1 o  
1c A3 A2 A1 o  
A3 A2 A1

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**Lightening Impulse voltage Test**

iec60076

(Iec 60 )

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Iec 60

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(Test with Lightning Impulse chopped on the Tail)

IEC60076-3

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**Short circuit withstand test**

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Thermal Ability to withstand short ( circuit

Iec60076-5

Dynamic Ability to withstand short ( circuit

Iec60076-5

( % )

Oscilogram

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**Measurement of zero-sequence Impedance on three- phase transformers**

Iec60076-1

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**Measurement of transformer and reactor sound level**

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IEC60551-4

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**Measurement of the harmonics on the no load current**

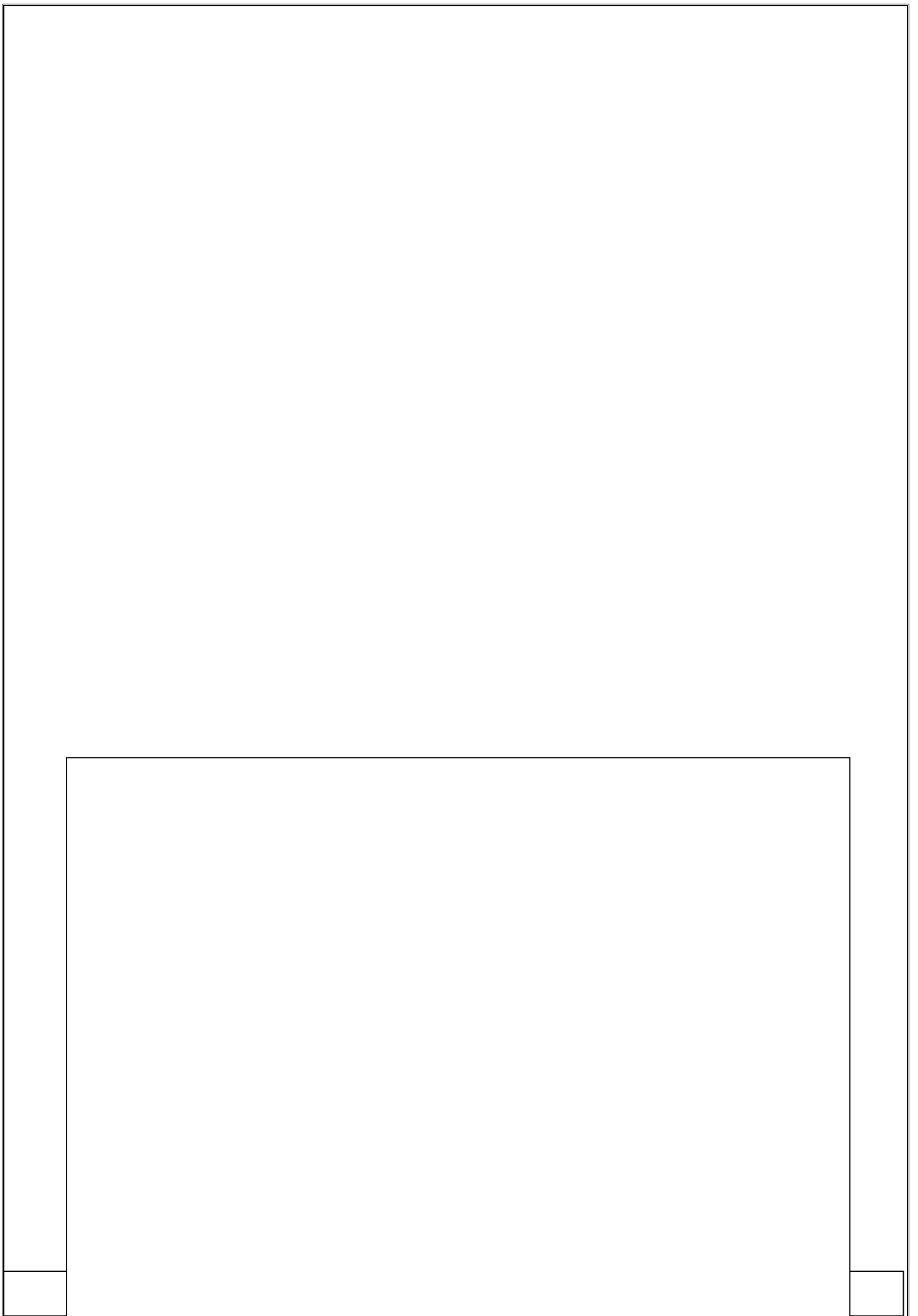
Iec60076-1

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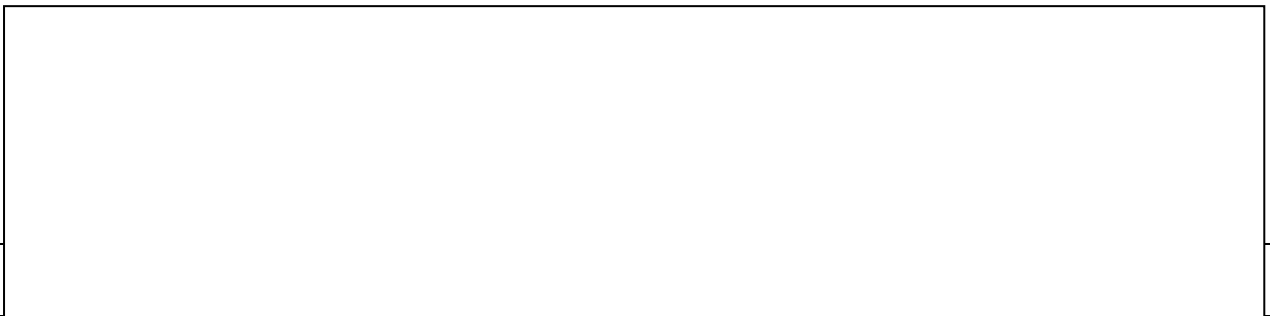
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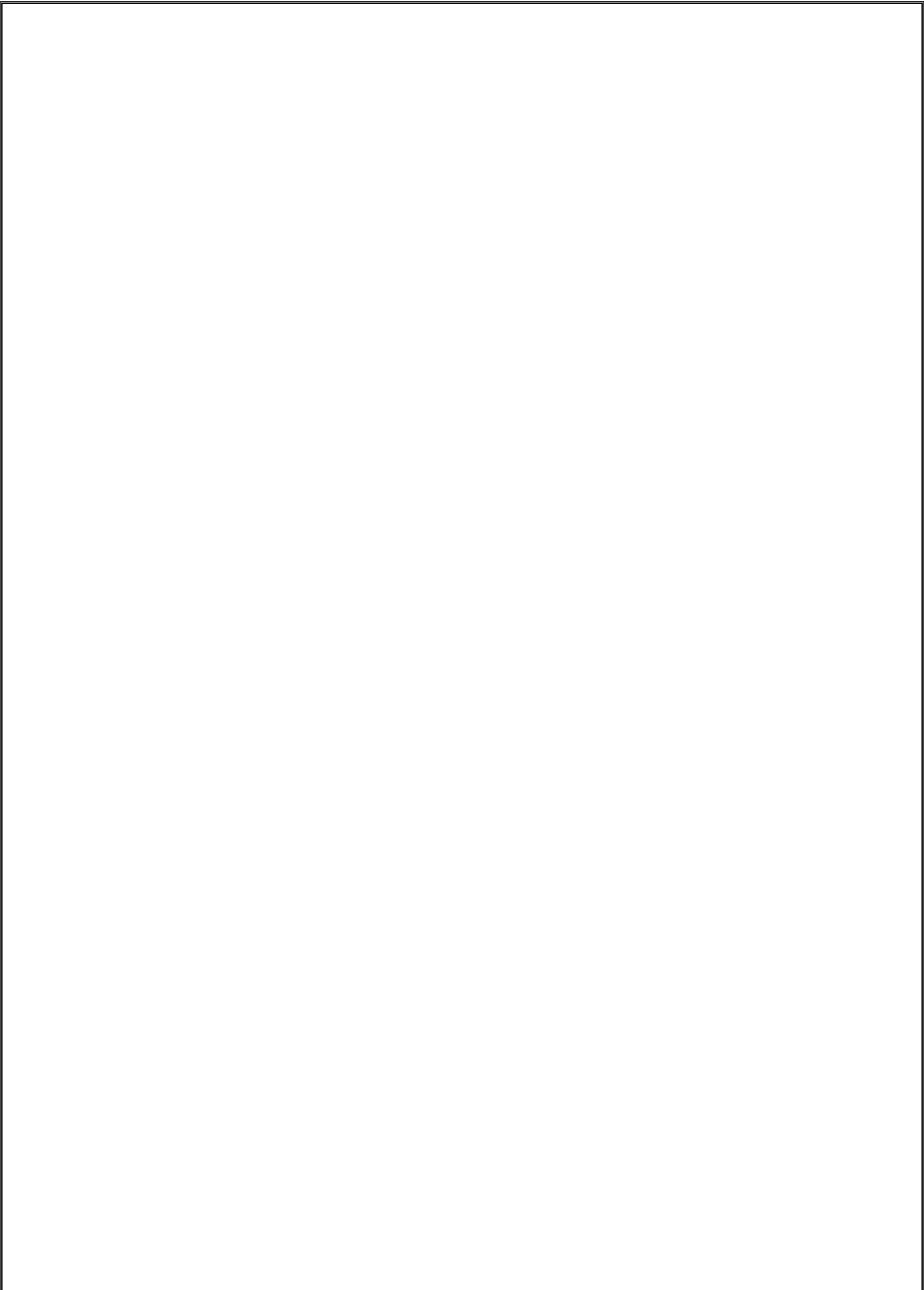
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(Quality Plan)

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S42 1/2

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(SIS559

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63Kv

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(Red Lead )

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ASTM3359

Cross-cut

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4B

63Kv

(Random)

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| R   | W | H |                        |            | (first Layer) | . |
| W   | W | H |                        |            | (Top coat)    | . |
| W   | W | H |                        |            |               | . |
| W   | W | H | Test Method B Class 4B | ASTM-D3359 |               | . |
| <p style="text-align: right;">:</p> <p>S:Witness but spot check ( )H:Hold Point ( )</p> <p>( )X: Required ( )R:Document Review ( )W:Witness Point</p> |   |   |                        |            |               |   |

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| W | W | H | IEC255  | IEC255      |               | . |
| W | W | H |         | ITP-EE-8101 |               | . |
| W | W | H |         |             |               | . |
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S:Witness but spot check

( )H:Hold Point

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( )X: Required

( )R:Document Review

( )W:Witness Point

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| DIN53517    |   |        |  |
| DIN53505    | $70 \pm 5 \text{ ShoreA}$                               |        |  |
| DIN53550    | $1.15 \leq \rho \leq 1.45 \frac{\text{gr}}{\text{m}^3}$ |        |  |
| DIN53517    | $D_v \leq 70\%$   |        |  |
| DIN53509-12 |   | U.V    |  |
| DIN53505    | 10 ShoreA :<br>" " :                                    |        |  |
|             |   | )<br>( |  |
| DIN53521    | (15%) (-2%)   |        |  |
|             | (20%) (0%)  |        |  |
| VDE0370     | $\text{tg} \delta \leq 0.005$                           |        |  |
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| 50KVRMS                     |            | KV(rms) |

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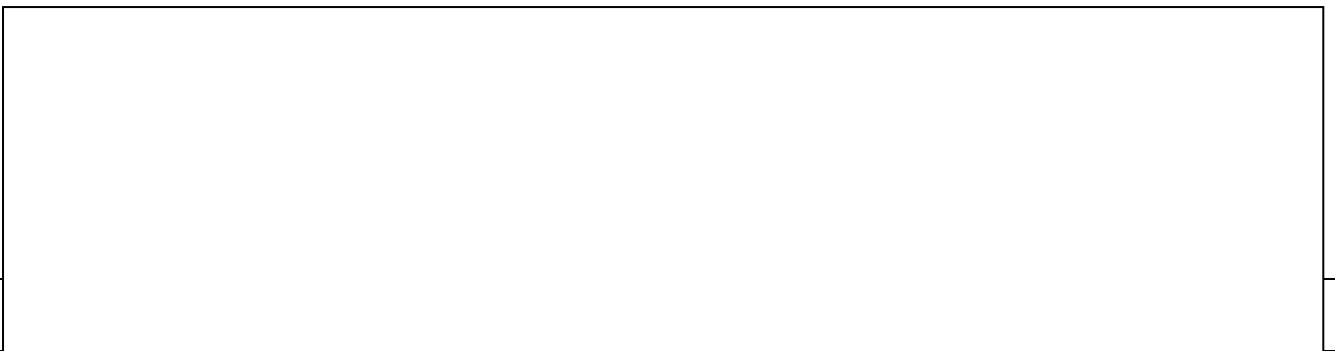
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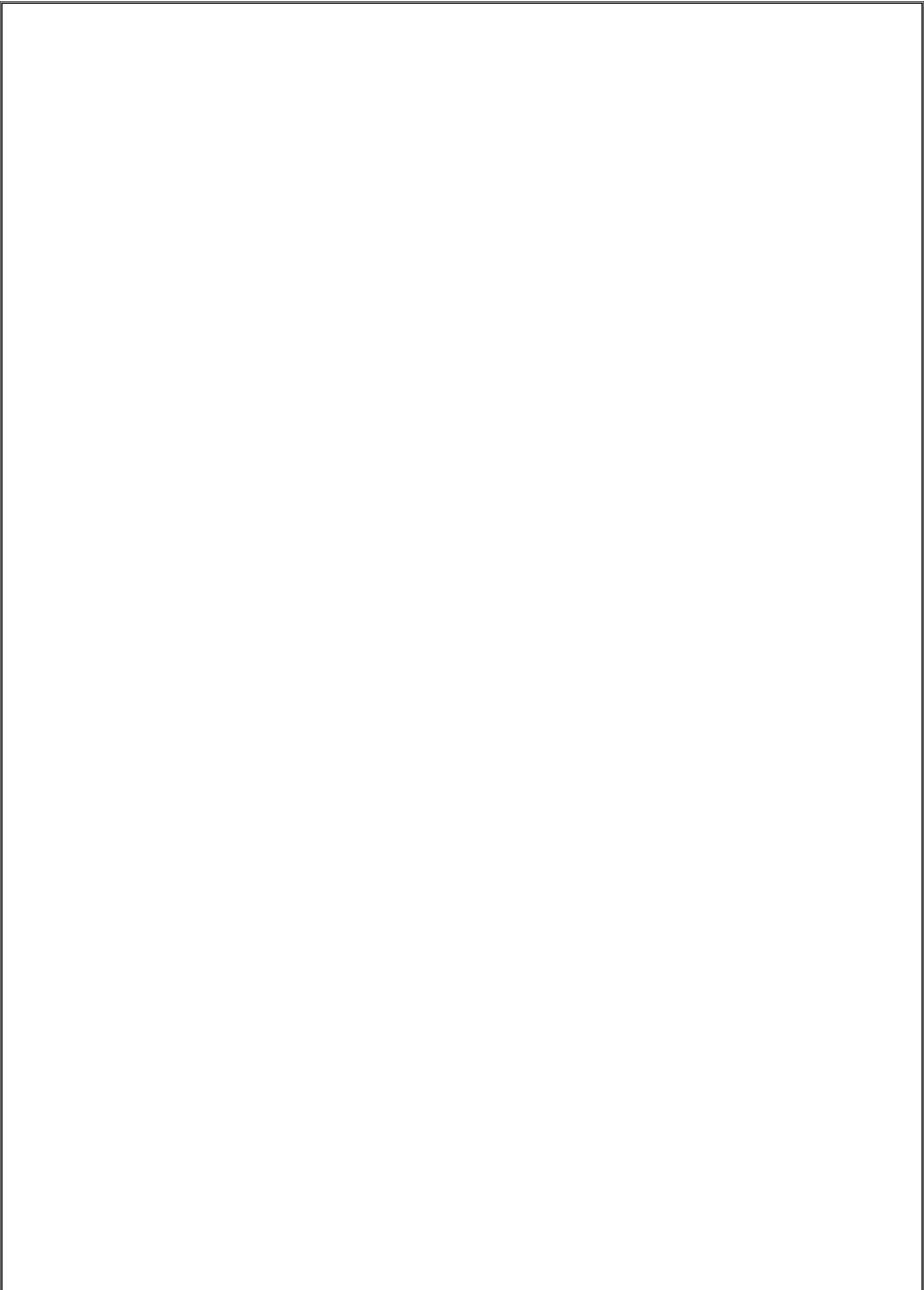
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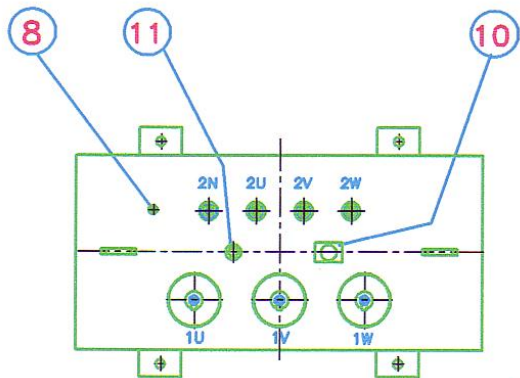
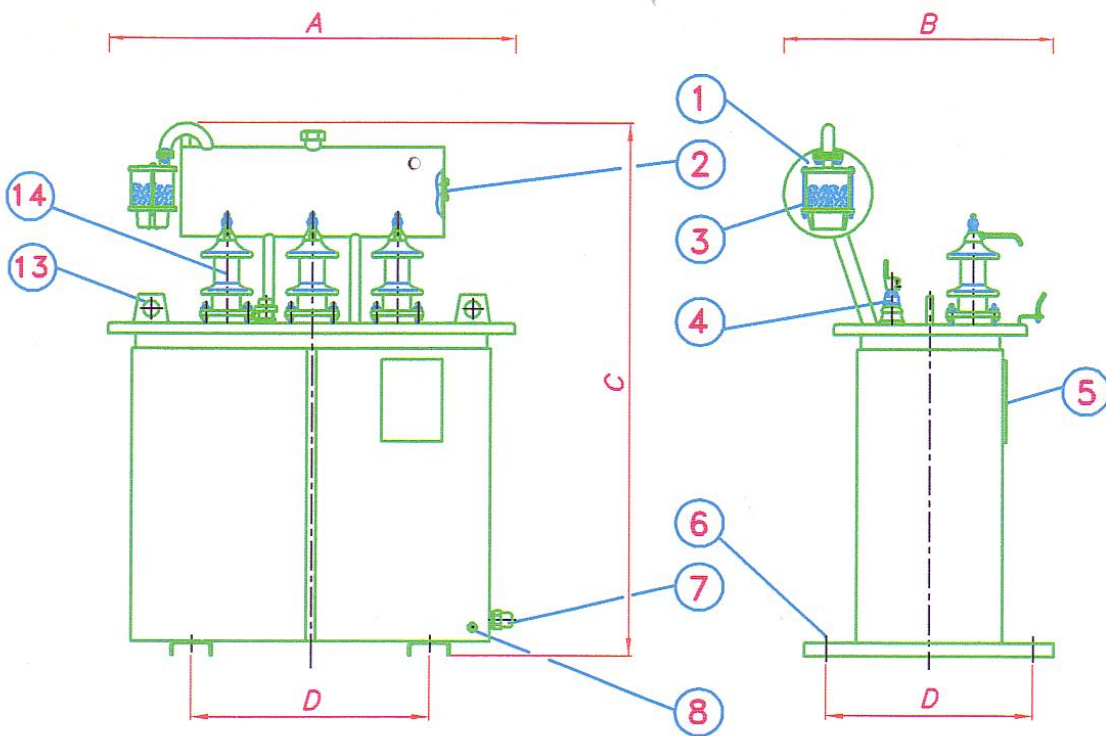
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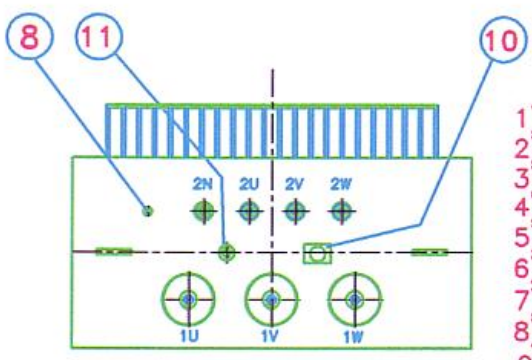
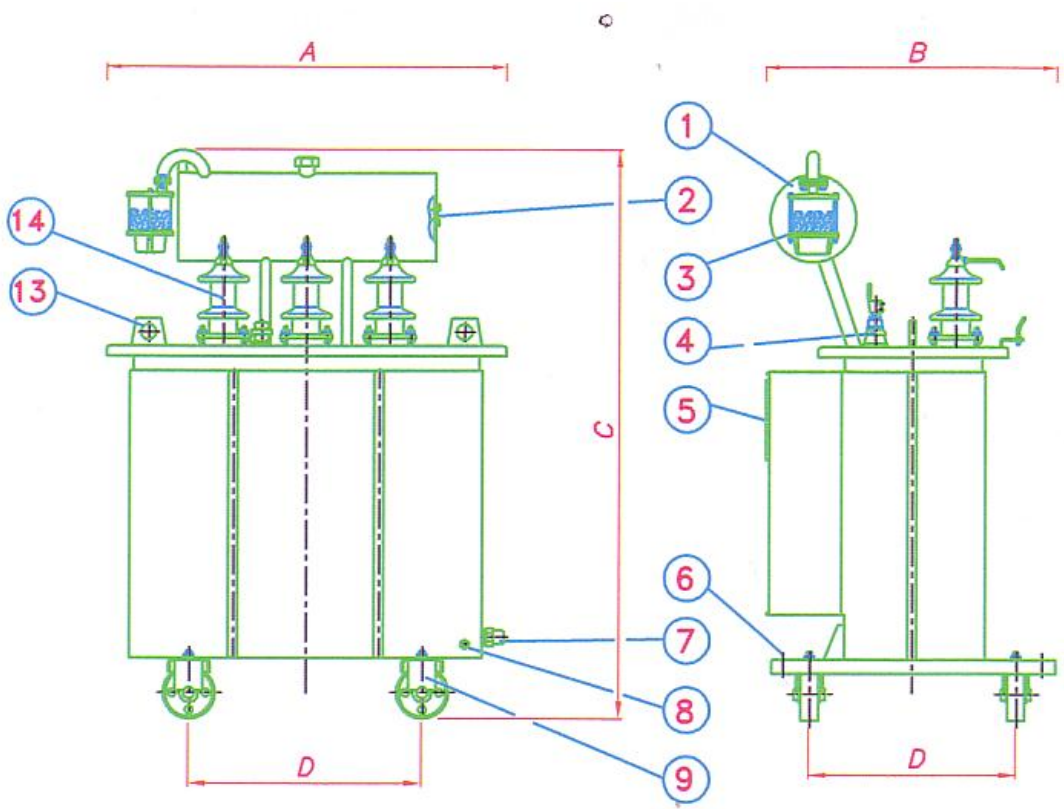


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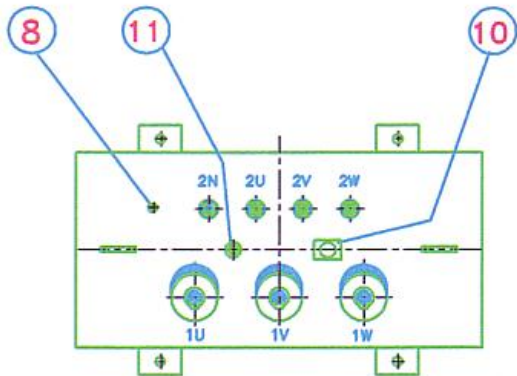
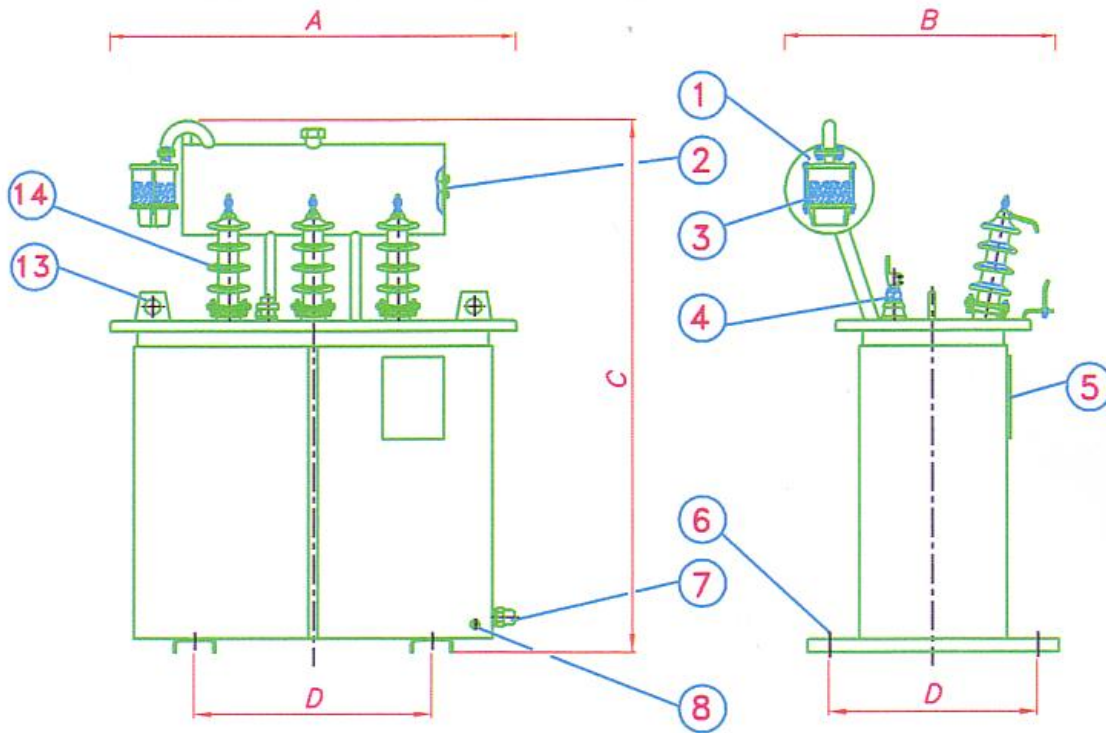
- 1) Conservator
- 2) Magnetic oil level gauge (DIN 42569)
- 3) Dehydrating breather
- 4) LV Bushing (DIN 42530)
- 5) Rating plate
- 6) Pulling lug  $\varnothing 30$
- 7) Oil drain/Sampling device (DIN 42551)
- 8) Earthing terminal M12
- 10) Terminal plate
- 11) Tap changer
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)

| POWER  | A(mm) | B(mm) | C(mm) | D(mm) | W <sub>T</sub> (R10) | W <sub>T</sub> (R20) |
|--------|-------|-------|-------|-------|----------------------|----------------------|
| 25 kVA | 853   | 634   | 1117  | 520   | 355                  | 358                  |



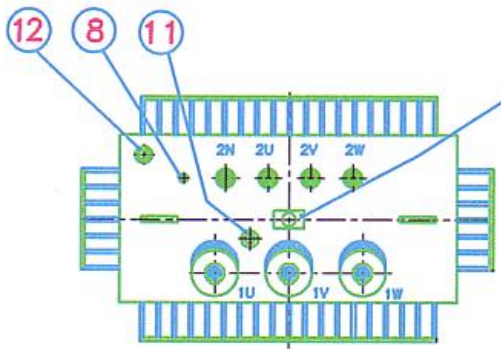
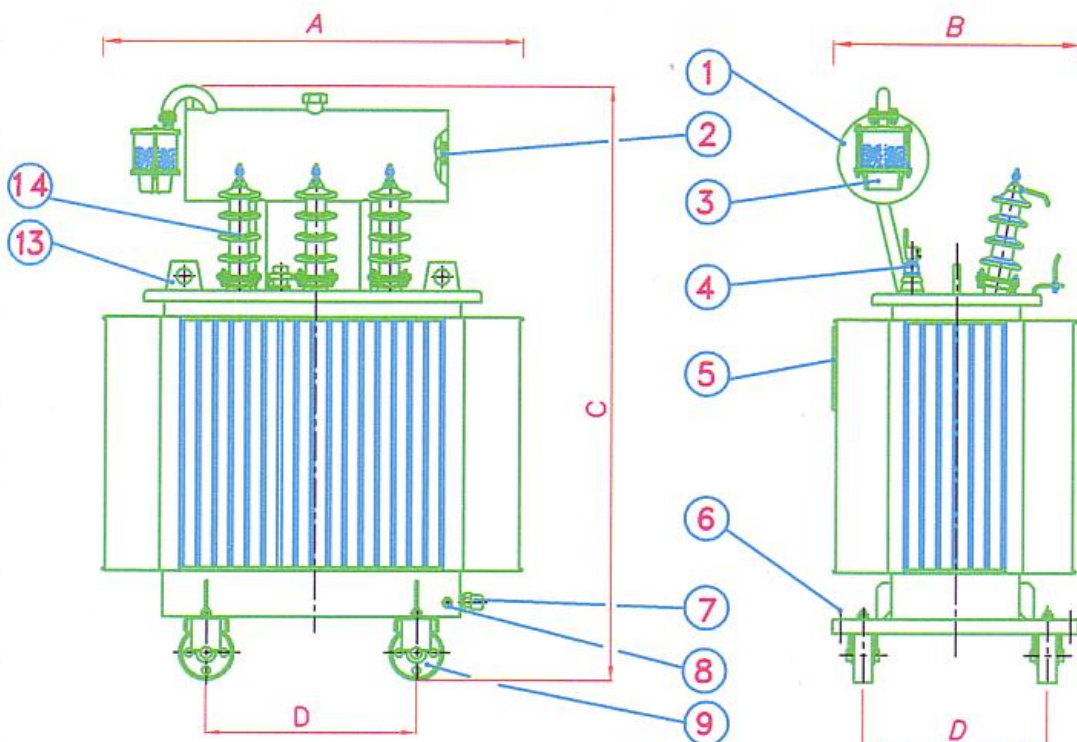
- 1) Conservator
- 2) Magnetic oil level gauge (DIN 42569)
- 3) Dehydrating breather
- 4) LV Bushing (DIN 42530)
- 5) Rating plate
- 6) Pulling lug  $\phi 30$
- 7) Oil drain/Sampling device (DIN 42551)
- 8) Earthing terminal M12
- 9) Bidirectional wheels
- 10) Terminal plate
- 11) Tap changer
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)

| POWER  | A(mm) | B(mm) | C(mm) | D(mm) | W <sub>r</sub> (Kg)<br>R10 | W <sub>r</sub> (Kg)<br>R20 |
|--------|-------|-------|-------|-------|----------------------------|----------------------------|
| 50 kVA | 834   | 690   | 1393  | 520   | 456                        | 460                        |



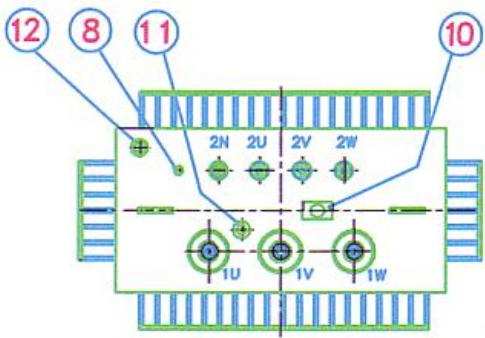
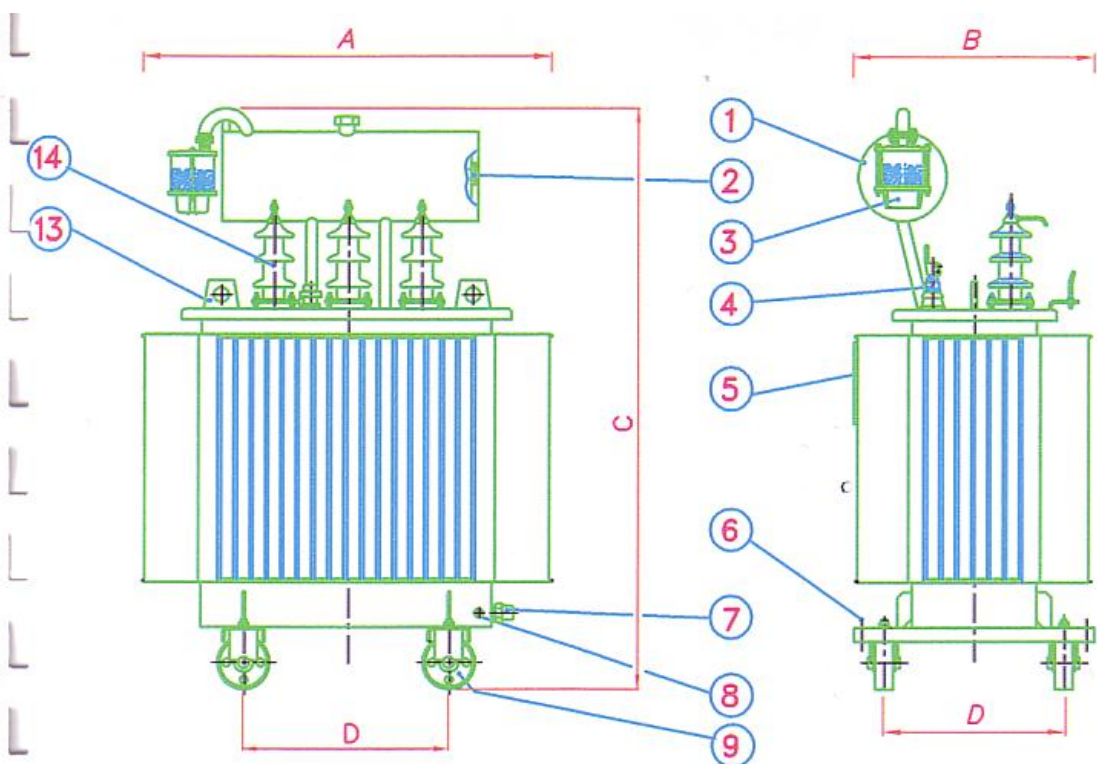
- 1) Conservator
- 2) Magnetic oil level gauge (DIN 42569)
- 3) Dehydrating breather
- 4) LV Bushing (DIN 42530)
- 5) Rating plate
- 6) Pulling lug  $\phi 30$
- 7) Oil drain/Sampling device (DIN 42551)
- 8) Earthing terminal M12
- 10) Terminal plate
- 11) Tap changer
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)

| POWER  | A(mm) | B(mm) | C(mm) | D(mm) | $W_r$ (R30) |
|--------|-------|-------|-------|-------|-------------|
| 25 kVA | 960   | 724   | 1421  | 520   | 462         |



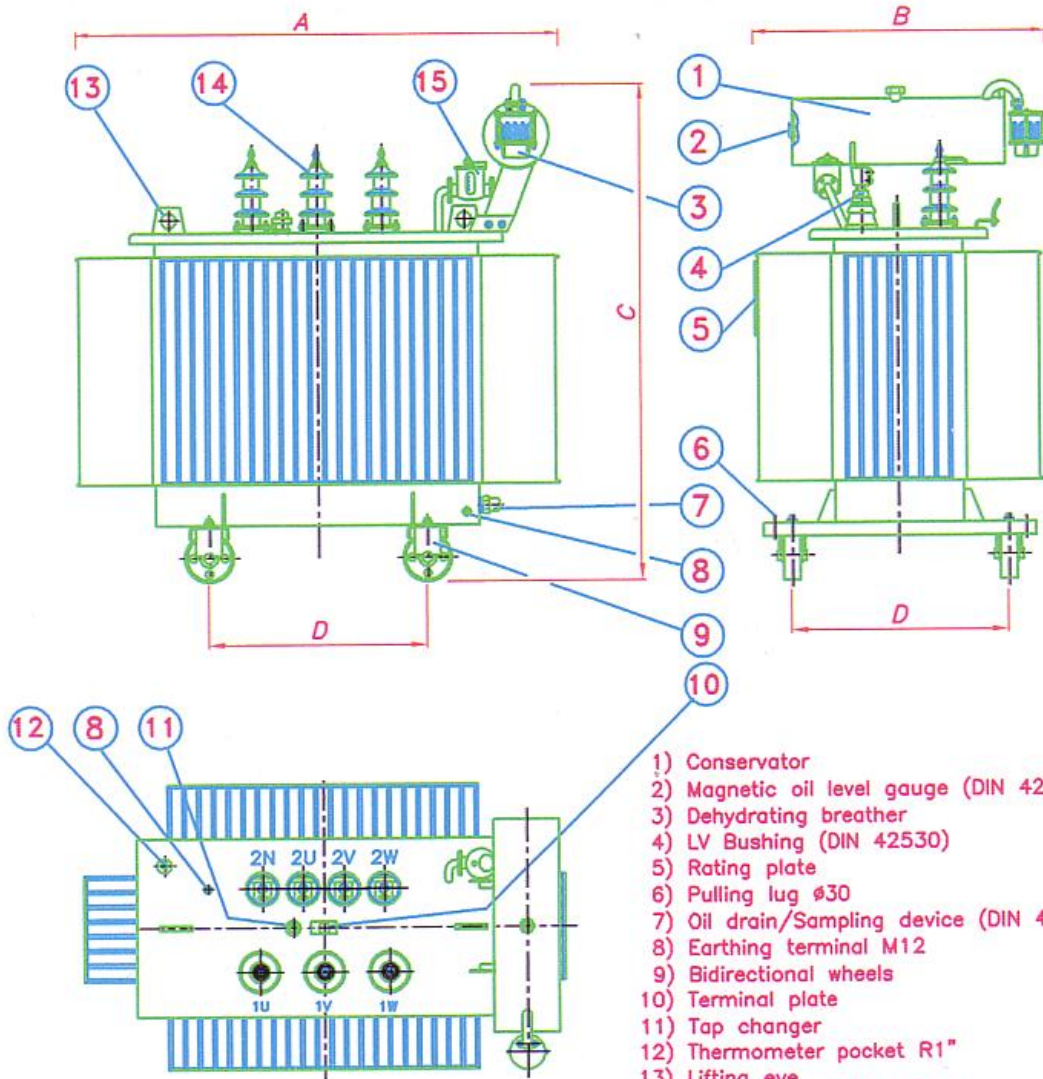
- 1) Conservator
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- 3) Dehydrating breather
- 4) LV Bushing (DIN 42530)
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- 7) Oil drain/Sampling device (DIN 42551)
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- 9) Bidirectional wheels
- 10) Terminal plate
- 11) Tap changer
- 12) Thermometer pocket R1"
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)

| POWER               | 50 kVA<br>R30 | 100 kVA<br>R30 | 125 kVA<br>R30 | 200 kVA<br>R30 |
|---------------------|---------------|----------------|----------------|----------------|
| A(mm)               | 1148          | 1148           | 1078           | 1158           |
| B(mm)               | 768           | 768            | 788            | 726            |
| C(mm)               | 1678          | 1678           | 1668           | 1728           |
| D(mm)               | 520           | 520            | 520            | 520            |
| W <sub>T</sub> (Kg) | 595           | 690            | 814            | 1019           |



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- 7) Oil drain/Sampling device (DIN 42551)
- 8) Earthing terminal M12
- 9) Bidirectional wheels
- 10) Terminal plate
- 11) Tap changer
- 12) Thermometer pocket R1"
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)

| POWER               | 100 kVA |      | 125 kVA |      | 200 kVA |      | 250 kVA |      |      | 315kVA | 400kVA | 500kVA | 630kVA |
|---------------------|---------|------|---------|------|---------|------|---------|------|------|--------|--------|--------|--------|
|                     | R10     | R20  | R10     | R20  | R10     | R20  | R10     | R20  | R30  | R30    | R30    | R30    | R30    |
| A(mm)               | 960     | 960  | 1038    | 1038 | 1098    | 1098 | 1388    | 1388 | 1288 | 1412   | 1382   | 1452   | 1562   |
| B(mm)               | 690     | 690  | 690     | 690  | 694     | 694  | 808     | 808  | 812  | 991    | 1021   | 1098   | 1068   |
| C(mm)               | 1523    | 1523 | 1557    | 1557 | 1659    | 1659 | 1603    | 1603 | 1733 | 1801   | 1921   | 1946   | 1986   |
| D(mm)               | 520     | 520  | 520     | 520  | 520     | 520  | 520     | 520  | 520  | 670    | 670    | 670    | 670    |
| W <sub>t</sub> (Kg) | 604     | 614  | 683     | 688  | 896     | 906  | 1066    | 1073 | 1130 | 1290   | 1558   | 1808   | 2055   |



- 1) Conservator
- 2) Magnetic oil level gauge (DIN 42569)
- 3) Dehydrating breather
- 4) LV Bushing (DIN 42530)
- 5) Rating plate
- 6) Pulling lug  $\varnothing 30$
- 7) Oil drain/Sampling device (DIN 42551)
- 8) Earthing terminal M12
- 9) Bidirectional wheels
- 10) Terminal plate
- 11) Tap changer
- 12) Thermometer pocket R1"
- 13) Lifting eye
- 14) HV Bushing (DIN 42531)
- 15) Buchholz relay (DIN 42566)

| POWER               | 315 kVA |      | 400 kVA |      | 500 kVA |      | 630 kVA |      | 800 kVA |      |      | 1000 kVA |      |      | 1250 kVA |      |      |
|---------------------|---------|------|---------|------|---------|------|---------|------|---------|------|------|----------|------|------|----------|------|------|
|                     | R10     | R20  | R10     | R20  | R10     | R20  | R10     | R20  | R10     | R20  | R30  | R10      | R20  | R30  | R10      | R20  | R30  |
| A(mm)               | 1443    | 1443 | 1616    | 1616 | 1686    | 1686 | 1692    | 1692 | 1818    | 1818 | 2028 | 1952     | 1952 | 2068 | 2087     | 2087 | 2128 |
| B(mm)               | 978     | 978  | 956     | 956  | 1044    | 1044 | 1051    | 1051 | 1089    | 1089 | 1162 | 1152     | 1152 | 1162 | 1277     | 1277 | 1252 |
| C(mm)               | 1639    | 1639 | 1746    | 1746 | 1871    | 1871 | 1926    | 1926 | 2118    | 2118 | 2143 | 2285     | 2285 | 2340 | 2392     | 2392 | 2455 |
| D(mm)               | 670     | 670  | 670     | 670  | 670     | 670  | 670     | 670  | 670     | 670  | 670  | 820      | 820  | 820  | 820      | 820  | 820  |
| W <sub>r</sub> (Kg) | 1197    | 1203 | 1434    | 1445 | 1740    | 1755 | 2023    | 2037 | 2418    | 2425 | 2576 | 3062     | 3063 | 3044 | 3846     | 3833 | 3571 |