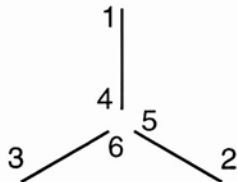


TERMINAL MARKINGS AND CONNECTIONS THREE-PHASE MOTORS—SINGLE SPEED

NEMA NOMENCLATURE—6 LEADS

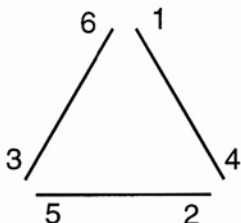
SINGLE VOLTAGE EXTERNAL WYE CONNECTION

| L1 | L2 | L3 | JOIN |
|----|----|----|-------|
| 1 | 2 | 3 | 4&5&6 |



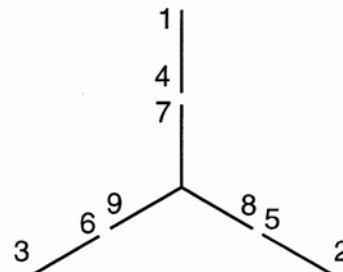
SINGLE VOLTAGE EXTERNAL DELTA CONNECTION

| L1 | L2 | L3 |
|-----|-----|-----|
| 1,6 | 2,4 | 3,5 |



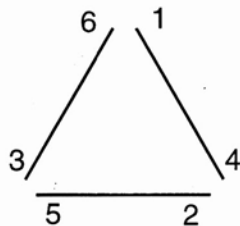
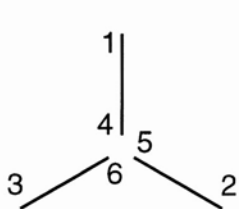
NEMA NOMENCLATURE—9 LEADS

DUAL VOLTAGE WYE-CONNECTED



| VOLTAGE | L1 | L2 | L3 | JOIN |
|---------|-----|-----|-----|-------------|
| LOW | 1,7 | 2,8 | 3,9 | 4&5&6 |
| HIGH | 1 | 2 | 3 | 4&7,5&8,6&9 |

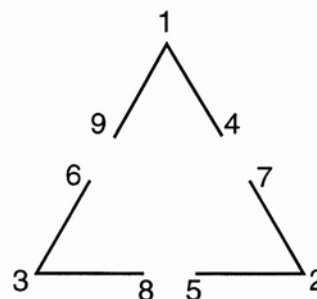
SINGLE AND DUAL VOLTAGE WYE-DELTA CONNECTIONS



SINGLE VOLTAGE

| OPERATING MODE | CONNECTION | L1 | L2 | L3 | JOIN |
|----------------|------------|-----|-----|-----|-------|
| START | WYE | 1 | 2 | 3 | 4&5&6 |
| RUN | DELTA | 1,6 | 2,4 | 3,5 | — |

DUAL VOLTAGE DELTA-CONNECTED



| VOLTAGE | L1 | L2 | L3 | JOIN |
|---------|-------|-------|-------|-------------|
| LOW | 1,6,7 | 2,4,8 | 3,5,9 | — |
| HIGH | 1 | 2 | 3 | 4&7,5&8,6&9 |

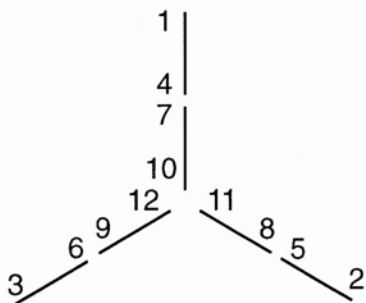
DUAL VOLTAGE*

| VOLTAGE | CONNECTION | L1 | L2 | L3 | JOIN |
|---------|------------|-----|-----|-----|-------|
| HIGH | WYE | 1 | 2 | 3 | 4&5&6 |
| LOW | DELTA | 1,6 | 2,4 | 3,5 | — |

*Voltage Ratio: 1.732 to 1.

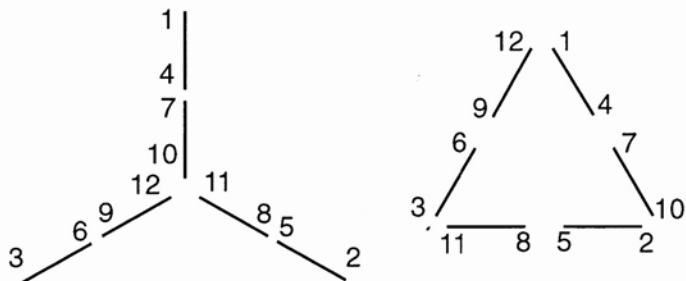
NEMA NOMENCLATURE-12 LEADS

DUAL VOLTAGE EXTERNAL WYE CONNECTION



| VOLTAGE | L1 | L2 | L3 | JOIN |
|---------|-----|-----|-----|--------------------------|
| LOW | 1,7 | 2,8 | 3,9 | 4&5&6, 10&11&12 |
| HIGH | 1 | 2 | 3 | 4&7,5&8,6&9, 10&11&12 |

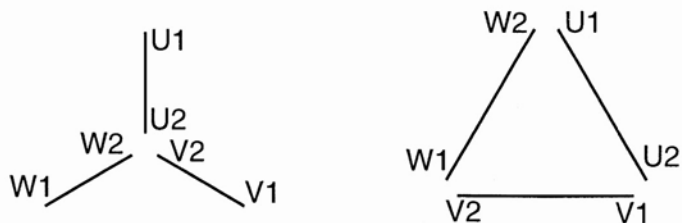
DUAL VOLTAGE WYE-CONNECTED START DELTA-CONNECTED RUN



| VOLT. | CONN. | L1 | L2 | L3 | JOIN |
|-------|-------|--------------|--------------|--------------|--------------------------|
| LOW | WYE | 1,7 | 2,8 | 3,9 | 4&5&6, 10&11&12 |
| | DELTA | 1,6,7, 12 | 2,4,8, 10 | 3,5,9, 11 | — |
| HIGH | WYE | 1 | 2 | 3 | 4&7,5&8,6&9, 10&11&12 |
| | DELTA | 1,12 | 2,10 | 3,11 | 4&7,5&8,6&9 |

IEC NOMENCLATURE-6 LEADS

SINGLE AND DUAL VOLTAGE WYE-DELTA CONNECTIONS



SINGLE VOLTAGE

| OPER. MODE | CONN. | L1 | L2 | L3 | JOIN |
|------------|-------|-------|-------|-------|----------|
| START | WYE | U1 | V1 | W1 | U2&V2&W2 |
| RUN | DELTA | U1,W2 | V1,U2 | W1,V2 | — |

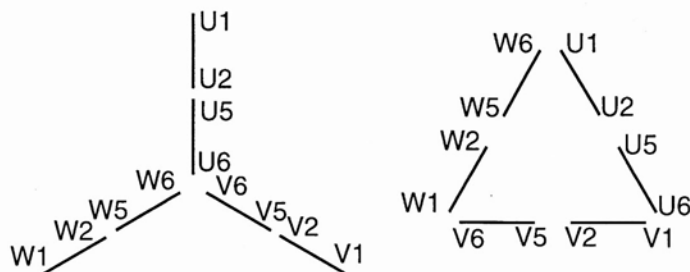
DUAL VOLTAGE*

| VOLT. | CONN. | L1 | L2 | L3 | JOIN |
|-------|-------|-------|-------|-------|----------|
| HIGH | WYE | U1 | V1 | W1 | U2&V2&W2 |
| LOW | DELTA | U1,W2 | V1,U2 | W1,V2 | — |

*Voltage Ratio: 1.732 to 1.

IEC NOMENCLATURE-12 LEADS

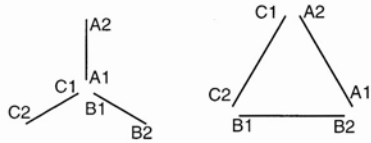
DUAL VOLTAGE WYE-CONNECTED START DELTA-CONNECTED RUN



| VOLT. | CONN. | L1 | L2 | L3 | JOIN |
|-------|-------|-----------------|-----------------|-----------------|--------------------------------|
| LOW | WYE | U1,U5 | V1,V5 | W1,W5 | U2&V2&W2, U6&V6&W6 |
| | DELTA | U1,U5, W2,W6 | V1,V5, U2,U6 | W1,W5, V2,V6 | — |
| HIGH | WYE | U1 | V1 | W1 | U2&U5,V2&V5, W2&W5,U6&V6&W6 |
| | DELTA | U1,W6 | V1,U6 | W1,V6 | U2&U5,V2&V5, W2&W5 |

NOMENCLATURE FORMERLY USED IN GREAT BRITAIN—6 LEADS

SINGLE AND DUAL VOLTAGE WYE-DELTA CONNECTIONS



SINGLE VOLTAGE

| OPERATING MODE | CONNECTION | L1 | L2 | L3 | JOIN |
|----------------|------------|-------|-------|-------|----------|
| START | WYE | A2 | B2 | C2 | A1&B1&C1 |
| RUN | DELTA | A2,C1 | B2,A1 | C2,B1 | — |

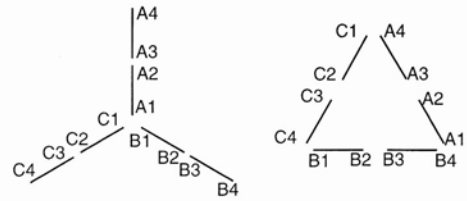
DUAL VOLTAGE*

| VOLTAGE | CONNECTION | L1 | L2 | L3 | JOIN |
|---------|------------|-------|-------|-------|----------|
| HIGH | WYE | A2 | B2 | C2 | A1&B1&C1 |
| LOW | DELTA | A2,C1 | B2,A1 | C2,B1 | — |

*Voltage ratio: 1.732 to 1.

NOMENCLATURE FORMERLY USED IN GREAT BRITAIN—12 LEADS

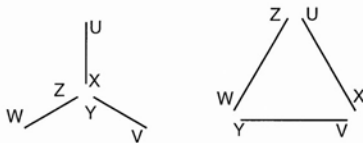
DUAL VOLTAGE WYE- CONNECTED START DELTA-CONNECTED RUN



| VOLTAGE | CONNECTION | L1 | L2 | L3 | JOIN |
|---------|------------|--------------|--------------|--------------|-----------------------------|
| LOW | WYE | A4,A2 | B4,B2 | C4,C2 | A3&B3&C3, A1&B1&C1 |
| | DELTA | A4,A2, C1,C3 | B4,B2, A1,A3 | C4,C2, B1,B3 | — |
| HIGH | WYE | A4 | B4 | C4 | A3&A2,B3&B2, C3&C2,A1&B1&C1 |
| | DELTA | A4,C1 | B4,A1 | C4,B1 | A3&A2,B3&B2, C3&C2 |

NOMENCLATURE FORMERLY USED IN EUROPE—6 LEADS

SINGLE AND DUAL VOLTAGE WYE-DELTA CONNECTIONS



SINGLE VOLTAGE

| OPERATING MODE | CONNECTION | L1 | L2 | L3 | JOIN |
|----------------|------------|-----|-----|-----|-------|
| START | WYE | U | V | W | X&Y&Z |
| RUN | DELTA | U,Z | V,X | W,Y | — |

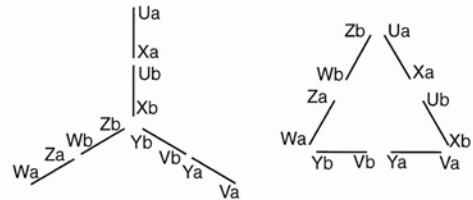
DUAL VOLTAGE*

| VOLTAGE | CONNECTION | L1 | L2 | L3 | JOIN |
|---------|------------|-----|-----|-----|-------|
| HIGH | WYE | U | V | W | X&Y&Z |
| LOW | DELTA | U,Z | V,X | W,Y | — |

*Voltage ratio: 1.732 to 1.

NOMENCLATURE FORMERLY USED IN GERMANY—12 LEADS

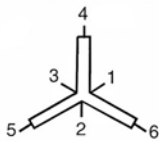
DUAL VOLTAGE WYE- CONNECTED START DELTA-CONNECTED RUN



| VOLTAGE | CONNECTION | L1 | L2 | L3 | JOIN |
|---------|------------|--------------|--------------|--------------|-----------------------------|
| LOW | WYE | Ua,Ub | Va,Vb | Wa,Wb | Xa&Ya&Za, Xb&Yb&Zb |
| | DELTA | Ua,Ub, Za,Zb | Va,Vb, Xa,Xb | Wa,Wb, Ya,Yb | — |
| HIGH | WYE | Ua | Va | Wa | Xa&Ub,Ya&Vb, Za&Wb,Xb&Yb&Zb |
| | DELTA | Ua,Zb | Va,Xb | Wa,Yb | Xa&Ub,Ya&Vb, Za&Wb |

TERMINAL MARKINGS AND CONNECTIONS THREE-PHASE MOTORS—TWO SPEED, SINGLE WINDING

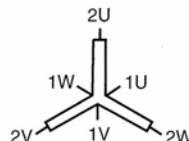
NEMA NOMENCLATURE—6 LEADS CONSTANT TORQUE CONNECTION



Low-speed horsepower is half of high speed horsepower.*

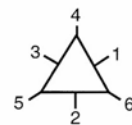
| SPEED | L1 | L2 | L3 | | TYPICAL CONNECTION |
|-------|----|----|----|------------|--------------------|
| HIGH | 6 | 4 | 5 | 1&2&3 JOIN | 2 WYE |
| LOW | 1 | 2 | 3 | 4-5-6 OPEN | 1 DELTA |

IEC NOMENCLATURE—6 LEADS CONSTANT TORQUE CONNECTION



| SPEED | L1 | L2 | L3 | | TYPICAL CONN. |
|-------|----|----|----|---------------|---------------|
| HIGH | 2W | 2U | 2V | 1U&1V&1W JOIN | 2 WYE |
| LOW | 1U | 1V | 1W | 2U-2V-2W OPEN | 1 DELTA |

CONSTANT HORSEPOWER CONNECTION

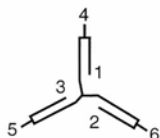


Horsepower is the same at both speeds.*

| SPEED | L1 | L2 | L3 | | TYPICAL CONNECTION |
|-------|----|----|----|------------|--------------------|
| HIGH | 6 | 4 | 5 | 1-2-3 OPEN | 1 DELTA |
| LOW | 1 | 2 | 3 | 4&5&6 JOIN | 2 WYE |

*CAUTION: On European motors horsepower variance with speed may not be the same as shown above.

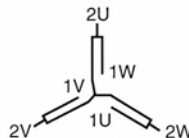
VARIABLE TORQUE CONNECTION



Low-speed horsepower is one-fourth of high-speed horsepower.*

| SPEED | L1 | L2 | L3 | | TYPICAL CONNECTION |
|-------|----|----|----|------------|--------------------|
| HIGH | 6 | 4 | 5 | 1&2&3 JOIN | 2 WYE |
| LOW | 1 | 2 | 3 | 4-5-6 OPEN | 1 WYE |

VARIABLE TORQUE CONNECTION



| SPEED | L1 | L2 | L3 | | TYPICAL CONN. |
|-------|----|----|----|---------------|---------------|
| HIGH | 2W | 2U | 2V | 1U&1V&1W JOIN | 2 WYE |
| LOW | 1U | 1V | 1W | 2U-2V-2W OPEN | 1 WYE |