

# B AC Motors

S.C. Induction Motor 90W (□90mm)

## 90W Speed Control Induction Motor 90W(□90mm)

### Motor Specification

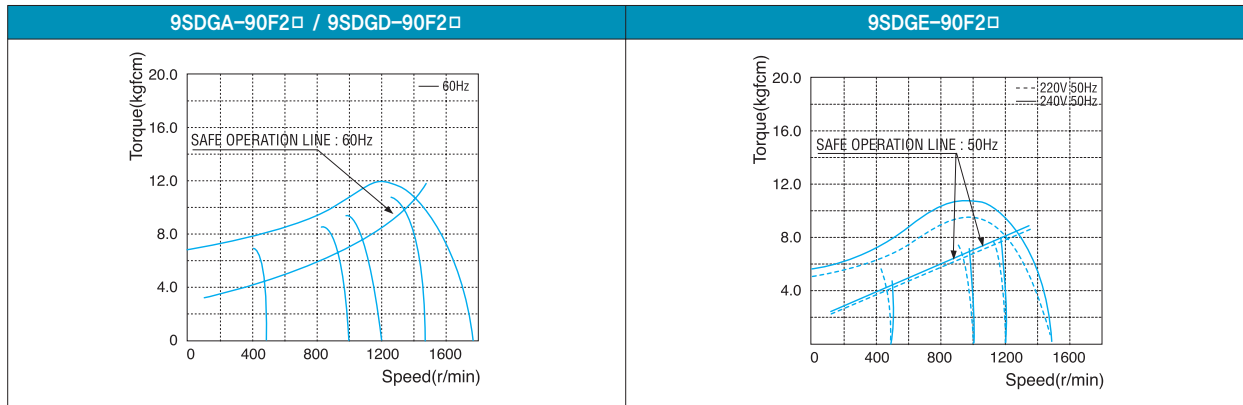
| Model<br>9SDG*-90F2□: Gear Type Shaft<br>9SDD*-90F2: D-Cut Type Shaft<br>9SDK*-90F2: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty  | Speed Range<br>r/min | Starting Torque |       | Permissible Torque |       |         |       | Capacitor<br>μF / VAC |
|-----------------------------------------------------------------------------------------------------|-------------|--------------|-----------------|-------|-------|----------------------|-----------------|-------|--------------------|-------|---------|-------|-----------------------|
|                                                                                                     |             |              |                 |       |       |                      | kgfcm           | N.m   | 1200r/min          |       | 90r/min |       |                       |
|                                                                                                     |             |              |                 |       |       |                      |                 |       | kgfcm              | N.m   | kgfcm   | N.m   |                       |
| 9SDGA-90F2□                                                                                         | 90          | 1φ 110       | 60              | 4     | Cont. | 90-1700              | 6.50            | 0.650 | 6.30               | 0.630 | 3.00    | 0.300 | 20.0 / 250            |
| 9SDGD-90F2□                                                                                         | 90          | 1φ 220       | 60              | 4     | Cont. | 90-1700              | 6.50            | 0.650 | 6.30               | 0.630 | 3.00    | 0.300 | 5.0 / 400             |
| 9SDGE-90F2□                                                                                         | 90          | 1φ 220       | 50              | 4     | Cont. | 90-1400              | 4.60            | 0.460 | 5.40               | 0.540 | 2.20    | 0.220 | 5.0 / 400             |
|                                                                                                     |             | 1φ 240       |                 |       |       |                      | 5.50            | 0.550 | 6.10               | 0.610 | 2.20    | 0.220 |                       |

1) Enter the phase & voltage code in the place \* and enter the model type of attaching Gearbox in the box (□) within the motor model name.

2) All models contain a built-in thermal protector.

3) Gear Type Shaft are for attaching Gearbox and D-Cut & Key Type Shaft are for using motor only.

### Speed-Torque Characteristics



### Max. Permissible Torque at Output Shaft of Gearbox

| Motor Model     | Gearbox Model | r/min   | V    | Hz    | Gear Ratio | 2    | 3    | 3.6  | 5    | 6    | 7.5  | 9    | 12.5 | 15    | 18    | 20    | 25    | 30    | 36    | 40    | 50    | 60    | 75    | 90    | 100   | 120   | 150   | 180   | 200   |       |       |       |
|-----------------|---------------|---------|------|-------|------------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9SDG□<br>-90F2P | 9PBK<br>□BH   | 1200    | 110  | 60    | kgfcm      | 10.5 | 15.7 | 18.8 | 26.1 | 31.4 | 39.2 | 47.1 | 59.1 | 70.9  | 85.1  | 85.7  | 107.1 | 128.5 | 154.2 | 171.4 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |       |       |
|                 |               |         | N.m  | 1.02  | 1.54       | 1.84 | 2.56 | 3.07 | 3.84 | 4.61 | 5.79 | 6.95 | 8.33 | 8.40  | 10.50 | 12.59 | 15.11 | 16.79 | 19.60 | 22.44 | 25.25 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 |       |
|                 |               | 220     | 60   | kgfcm | 10.5       | 15.7 | 18.8 | 26.1 | 31.4 | 39.2 | 47.1 | 59.1 | 70.9 | 85.1  | 85.7  | 107.1 | 128.5 | 154.2 | 171.4 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |       |
|                 |               | N.m     | 1.02 | 1.54  | 1.84       | 2.56 | 3.07 | 3.84 | 4.61 | 5.79 | 6.95 | 8.33 | 8.40 | 10.50 | 12.59 | 15.11 | 16.79 | 19.60 | 22.44 | 25.25 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 | 28.06 |       |
|                 |               | 220/240 | 50   | kgfcm | 10.1       | 15.2 | 18.2 | 25.3 | 30.4 | 38.0 | 45.6 | 57.2 | 68.6 | 82.4  | 83.0  | 103.7 | 124.4 | 149.3 | 165.9 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
|                 |               | N.m     | 0.99 | 1.49  | 1.79       | 2.48 | 2.98 | 3.72 | 4.47 | 5.60 | 6.73 | 8.07 | 8.13 | 10.16 | 12.20 | 14.63 | 16.26 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
|                 | 9PFK<br>□BH   | 1200    | 110  | 60    | kgfcm      | 5.0  | 7.5  | 9.0  | 12.5 | 14.9 | 18.7 | 22.4 | 28.1 | 33.8  | 40.5  | 40.8  | 51.0  | 61.2  | 73.4  | 81.6  | 102.0 | 122.4 | 137.3 | 164.7 | 183.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |       |
|                 |               |         | N.m  | 0.49  | 0.73       | 0.88 | 1.22 | 1.46 | 1.83 | 2.20 | 2.76 | 3.31 | 3.97 | 4.00  | 5.00  | 6.00  | 7.20  | 8.00  | 10.00 | 12.00 | 13.45 | 16.14 | 17.93 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |       |
|                 |               | 220     | 60   | kgfcm | 5.0        | 7.5  | 9.0  | 12.5 | 14.9 | 18.7 | 22.4 | 28.1 | 33.8 | 40.5  | 40.8  | 51.0  | 61.2  | 73.4  | 81.6  | 102.0 | 122.4 | 137.3 | 164.7 | 183.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |       |
|                 |               | N.m     | 0.49 | 0.73  | 0.88       | 1.22 | 1.46 | 1.83 | 2.20 | 2.76 | 3.31 | 3.97 | 4.00 | 5.00  | 6.00  | 7.20  | 8.00  | 10.00 | 12.00 | 13.45 | 16.14 | 17.93 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |       |
|                 |               | 220/240 | 50   | kgfcm | 3.7        | 5.5  | 6.6  | 9.1  | 11.0 | 13.7 | 16.4 | 20.6 | 24.8 | 29.7  | 29.9  | 37.4  | 44.9  | 53.9  | 59.8  | 74.8  | 89.8  | 100.7 | 120.8 | 134.2 | 161.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
|                 |               | N.m     | 0.36 | 0.54  | 0.64       | 0.89 | 1.07 | 1.34 | 1.61 | 2.02 | 2.43 | 2.91 | 2.93 | 3.67  | 4.40  | 5.28  | 5.86  | 7.33  | 8.80  | 10.86 | 12.86 | 14.86 | 17.86 | 20.86 | 20.86 | 20.86 | 20.86 | 20.86 | 20.86 | 20.86 | 20.86 |       |

1) Enter the phase & voltage code in the box (□) within the motor model name. 2) Enter the gear ratio in the box (□) within the Gearbox model name.

3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.

4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.

The actual speed is 2-20% less than the displayed value, depending on the size of the load.

| Motor Model     | Gearbox Model              | r/min | V     | Hz   | Gear Ratio | 3    | 3.6  | 6    | 9    | 12.5 | 15    | 18    | 20    | 25    | 30    | 36    | 50    | 60    | 75    | 90    | 100   | 120   | 150   | 180   | 200   |       |       |
|-----------------|----------------------------|-------|-------|------|------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9SDG□<br>-90F2H | 9HBK□<br>BH<br>9HFK□<br>BH | 1200  | 110   | 60   | kgfcm      | 15.7 | 18.8 | 31.4 | 47.1 | 59.1 | 70.9  | 85.1  | 85.7  | 107.1 | 128.5 | 154.2 | 214.2 | 257.0 | 288.2 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |       |
|                 |                            |       |       |      | N.m        | 1.54 | 1.84 | 3.07 | 4.61 | 5.79 | 6.95  | 8.33  | 8.40  | 10.50 | 12.59 | 15.11 | 20.99 | 25.19 | 28.25 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |
|                 |                            |       | kgfcm | 15.7 | 18.8       | 31.4 | 47.1 | 59.1 | 70.9 | 85.1 | 85.7  | 107.1 | 128.5 | 154.2 | 214.2 | 257.0 | 288.2 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|                 |                            | N.m   | 1.54  | 1.84 | 3.07       | 4.61 | 5.79 | 6.95 | 8.33 | 8.40 | 10.50 | 12.59 | 15.11 | 20.99 | 25.19 | 28.25 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |       |
|                 |                            | kgfcm | 15.2  | 18.2 | 30.4       | 45.6 | 57.2 | 68.6 | 82.4 | 83.0 | 103.7 | 124.4 | 149.3 | 207.4 | 248.9 | 279.1 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|                 |                            | N.m   | 1.49  | 1.79 | 2.98       | 4.47 | 5.60 | 6.73 | 8.07 | 8.13 | 10.16 | 12.20 | 14.63 | 20.33 | 24.39 | 27.35 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |
| 90              | 110                        | 60    | kgfcm | 7.5  | 9.0        | 14.9 | 22.4 | 28.1 | 33.8 | 40.5 | 40.8  | 51.0  | 61.2  | 73.4  | 102.0 | 122.4 | 137.3 | 164.7 | 183.0 | 219.6 | 274.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |       |
|                 |                            |       | N.m   | 0.73 | 0.88       | 1.46 | 2.20 | 2.76 | 3.31 | 3.97 | 4.00  | 5.00  | 6.00  | 7.20  | 10.00 | 12.00 | 13.45 | 16.14 | 17.93 | 21.52 | 26.90 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |       |
|                 | kgfcm                      | 7.5   | 9.0   | 14.9 | 22.4       | 28.1 | 33.8 | 40.5 | 40.8 | 51.0 | 61.2  | 73.4  | 102.0 | 122.4 | 137.3 | 164.7 | 183.0 | 219.6 | 274.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |       |       |
|                 | N.m                        | 0.73  | 0.88  | 1.46 | 2.20       | 2.76 | 3.31 | 3.97 | 4.00 | 5.00 | 6.00  | 7.20  | 10.00 | 12.00 | 13.45 | 16.14 | 17.93 | 21.52 | 26.90 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |       |       |
|                 | kgfcm                      | 5.5   | 6.6   | 11.0 | 16.4       | 20.6 | 24.8 | 29.7 | 29.9 | 37.4 | 44.9  | 53.9  | 74.8  | 89.8  | 100.7 | 120.8 | 134.2 | 161.0 | 201.3 | 241.6 | 241.6 | 241.6 | 241.6 | 241.6 | 241.6 | 241.6 |       |
|                 | N.m                        | 0.54  | 0.64  | 1.07 | 1.61       | 2.02 | 2.43 | 2.91 | 2.93 | 3.67 | 4.40  | 5.28  | 7.33  | 8.80  | 9.86  | 11.84 | 13.15 | 15.78 | 19.73 | 23.67 | 23.67 | 23.67 | 23.67 | 23.67 | 23.67 | 23.67 |       |

| Motor Model     | Gearbox Model      | r/min | V     | Hz   | Gear Ratio | 10   | 12    | 15    | 18    | 25    | 30    | 36    | 50    | 60    |
|-----------------|--------------------|-------|-------|------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9SDG□<br>-90F2W | 9WD□BL/<br>BR/□BRL | 1200  | 110   | 60   | kgfcm      | 51.7 | 60.5  | 72.8  | 83.9  | 110.3 | 124.7 | 145.2 | 142.9 | 122.4 |
|                 |                    |       |       |      | N.m        | 5.06 | 5.93  | 7.13  | 8.22  | 10.80 | 12.22 | 14.22 | 14.00 | 12.00 |
|                 |                    |       | kgfcm | 51.7 | 60.5       | 72.8 | 83.9  | 110.3 | 124.7 | 145.2 | 142.9 | 122.4 | 12.00 |       |
|                 |                    | N.m   | 5.06  | 5.93 | 7.13       | 8.22 | 10.80 | 12.22 | 14.22 | 14.00 | 12.00 | 12.00 |       |       |
|                 |                    | kgfcm | 50.0  | 58.6 | 70.5       | 81.3 | 106.8 | 120.8 | 140.5 | 142.9 | 122.4 | 12.00 |       |       |
|                 |                    | N.m   | 4.90  | 5.74 | 6.90       | 7.96 | 10.46 | 11.84 | 13.77 | 14.00 | 12.00 | 12.00 |       |       |
| 90              | 110                | 60    | kgfcm | 24.6 | 28.8       | 34.7 | 40.0  | 52.5  | 59.4  | 69.1  | 90.0  | 99.0  |       |       |
|                 |                    |       | N.m   | 2.41 | 2.82       | 3.40 | 3.92  | 5.15  | 5.82  | 6.77  | 8.82  | 9.70  |       |       |
|                 | kgfcm              | 24.6  | 28.8  | 34.7 | 40.0       | 52.5 | 59.4  | 69.1  | 90.0  | 99.0  | 9.70  |       |       |       |
| N.m             | 2.41               | 2.82  | 3.40  | 3.92 | 5.15       | 5.82 | 6.77  | 8.82  | 9.70  | 9.70  |       |       |       |       |
| kgfcm           | 18.0               | 21.1  | 25.4  | 29.3 | 38.5       | 43.6 | 50.7  | 66.0  | 72.6  | 7.11  |       |       |       |       |
| N.m             | 1.77               | 2.07  | 2.49  | 2.87 | 3.77       | 4.27 | 4.97  | 6.47  | 7.11  | 7.11  |       |       |       |       |

| Motor Model      | Gearbox Model | r/min | V     | Hz   | Gear Ratio | 7.5  | 10    | 15    | 20    | 25    | 30    | 40    | 50    | 60    | 80    |
|------------------|---------------|-------|-------|------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9SDG□<br>-90F2WH | 9WHD□-030     | 1200  | 110   | 60   | kgfcm      | 39.7 | 51.0  | 71.8  | 90.7  | 104.0 | 121.0 | 148.7 | 170.1 | 163.3 | 132.7 |
|                  |               |       |       |      | N.m        | 3.89 | 5.00  | 7.04  | 8.89  | 10.19 | 11.85 | 14.57 | 16.67 | 16.00 | 13.00 |
|                  |               |       | kgfcm | 39.7 | 51.0       | 71.8 | 90.7  | 104.0 | 121.0 | 148.7 | 170.1 | 163.3 | 132.7 | 16.00 | 13.00 |
|                  |               | N.m   | 3.89  | 5.00 | 7.04       | 8.89 | 10.19 | 11.85 | 14.57 | 16.67 | 16.00 | 13.00 | 13.00 |       |       |
|                  |               | kgfcm | 38.4  | 49.4 | 69.5       | 87.8 | 100.7 | 117.1 | 144.0 | 164.7 | 163.3 | 132.7 | 16.00 | 13.00 |       |
|                  |               | N.m   | 3.77  | 4.84 | 6.81       | 8.61 | 9.86  | 11.48 | 14.11 | 16.14 | 16.00 | 13.00 | 13.00 |       |       |
| 90               | 110           | 60    | kgfcm | 18.9 | 24.3       | 34.2 | 43.2  | 49.5  | 57.6  | 70.8  | 81.0  | 90.0  | 105.6 |       |       |
|                  |               |       | N.m   | 1.85 | 2.38       | 3.35 | 4.23  | 4.85  | 5.64  | 6.94  | 7.94  | 8.82  | 10.35 |       |       |
|                  | kgfcm         | 18.9  | 24.3  | 34.2 | 43.2       | 49.5 | 57.6  | 70.8  | 81.0  | 90.0  | 105.6 | 10.35 |       |       |       |
| N.m              | 1.85          | 2.38  | 3.35  | 4.23 | 4.85       | 5.64 | 6.94  | 7.94  | 8.82  | 10.35 | 10.35 |       |       |       |       |
| kgfcm            | 13.9          | 17.8  | 25.1  | 31.7 | 36.3       | 42.2 | 51.9  | 59.4  | 66.0  | 77.4  | 7.59  |       |       |       |       |
| N.m              | 1.36          | 1.75  | 2.46  | 3.10 | 3.56       | 4.14 | 5.09  | 5.82  | 6.47  | 7.59  | 7.59  |       |       |       |       |

## Motor Images



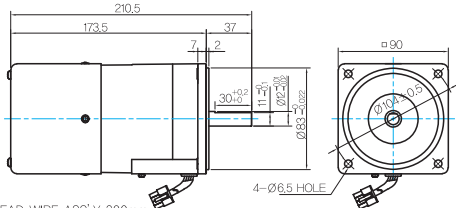
# B AC Motors

## S.C. Induction Motor 90W (□90mm)

### Dimensions

#### MOTOR ONLY

- MOTOR MODEL:  
9SDD□-90F2 (POWERFUL FAN)

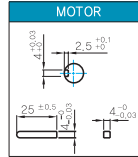


LEAD WIRE ASS'Y 300mm  
MOTOR UL STYLE NO.3271 AWG NO.22  
T,G UL STYLE NO.1430 AWG NO.24

#### MOTOR OUTPUT SHAFT

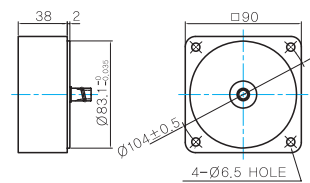
| MODEL      | SPEC |
|------------|------|
| D-CUT TYPE |      |
| 9SDD□-90F2 |      |
| KEY TYPE   |      |
| 9SDK□-90F2 |      |

#### KEY SPEC



#### INTER-DECIMAL GEARBOX

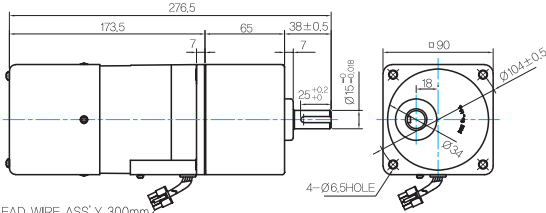
- MODEL: 9XD10□□



#### GEARED MOTOR

##### P TYPE GEARBOX

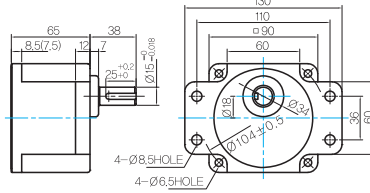
- MOTOR MODEL:  
9SDG□-90F2P (POWERFUL FAN)



LEAD WIRE ASS'Y 300mm  
MOTOR UL STYLE NO.3271 AWG NO.22  
T,G UL STYLE NO.1430 AWG NO.24

- GEARBOX MODEL:  
9PBK□BH

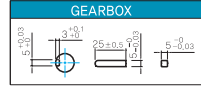
- GEARBOX MODEL:  
9PFK□BH



#### GEARBOX OUTPUT SHAFT

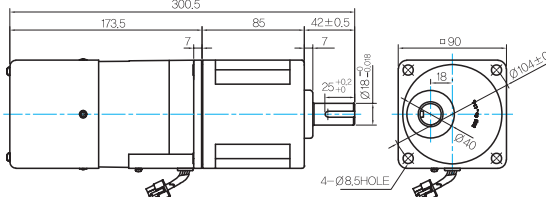
| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |
| 9PBK□BH  |      |
| 9PFK□BH  |      |

#### KEY SPEC



##### H TYPE GEARBOX

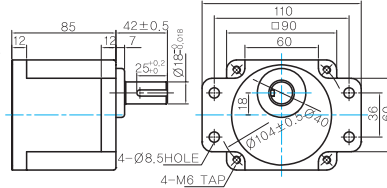
- MOTOR MODEL:  
9SDG□-90F2H (POWERFUL FAN)



LEAD WIRE ASS'Y 300mm  
MOTOR UL STYLE NO.3271 AWG NO.22  
T,G UL STYLE NO.1430 AWG NO.24

- GEARBOX MODEL:  
9HBK□BH

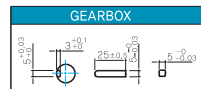
- GEARBOX MODEL:  
9HFK□BH



#### GEARBOX OUTPUT SHAFT

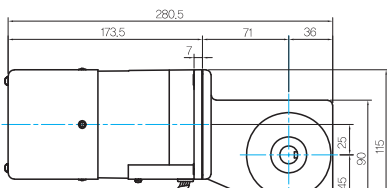
| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |
| 9HBK□BH  |      |
| 9HFK□BH  |      |

#### KEY SPEC



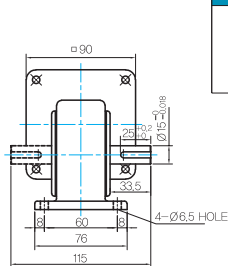
##### W TYPE GEARBOX

- MOTOR MODEL:  
9SDG□-90F2W (POWERFUL FAN)

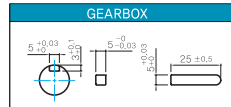


LEAD WIRE ASS'Y 300mm  
MOTOR UL STYLE NO.3271 AWG NO.22  
T,G UL STYLE NO.1430 AWG NO.24

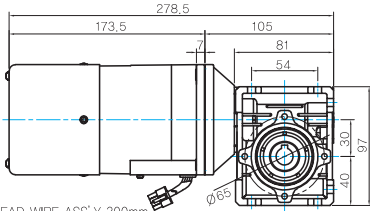
- GEARBOX MODEL:  
9WD□BL/BR/BRL



#### KEY SPEC

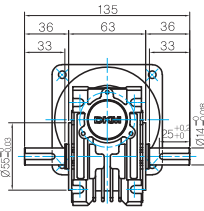


● MOTOR MODEL:  
9SDG□-90F2WH (POWERFUL FAN)

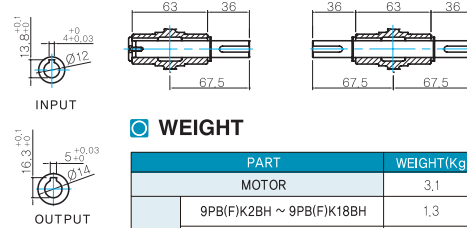


LEAD WIRE ASS'Y 300mm)  
MOTOR UL STYLE NO.3271 AWG NO.22  
T.G UL STYLE NO.1430 AWG NO.24

● GEARBOX MODEL:  
9WHD□-030



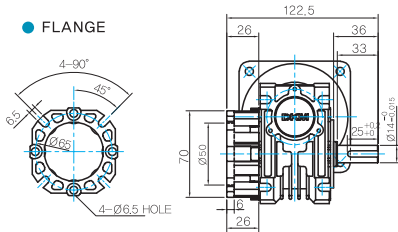
● SHAFT(Unidirectional, Bi-directional)



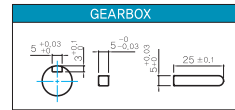
● WEIGHT

| PART     | WEIGHT(kg)                  |      |
|----------|-----------------------------|------|
| MOTOR    | 3.1                         |      |
| GEAR BOX | 9PB(F)K2BH ~ 9PB(F)K18BH    | 1.3  |
|          | 9PB(F)K20BH ~ 9PB(F)K200BH  | 1.4  |
|          | 9HB(F)K3BH ~ 9HB(F)K9BH     | 1.45 |
|          | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5  |
|          | 9HB(F)K20BH ~ 9HB(F)K60BH   | 1.7  |
|          | 9HB(F)K75BH ~ 9HB(F)K200BH  | 1.8  |
|          | 9WD□BL/BR/BRL               | 1.0  |
|          | 9WHD□-030                   | 1.13 |
|          | 9XD10□□                     | 0.5  |

● FLANGE



● KEY SPEC



\* The output flange and shafts are sold separately.

● Connection Diagrams

| FX1000A – Connector Type                                                                                                  | FX1000A – Terminal Type                             |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <p>Direction: Clockwise COM+CW, Counterclockwise COM+CCW<br/>Capacitor: Connect 3-9 or 6-9, according to its capacity</p> |                                                     |
| DSKM–Using Internal Volume                                                                                                | DSKM–Using External Volume                          |
|                                                                                                                           | <p>* External speed setting device (20k Ω 1/4W)</p> |

- At first connect the speed controller with the motor as instructed in connection diagrams. And then input the external power to both of the terminal 'AC' for the rated speed operation. Now you can adjust the main volume to control the output speed of motor.
- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- When using powerful fan (F2 type) attached motor, connect two black wires of the fan to No.1 and No.2 terminals in order to supply power.