

# HELISEM® Mixers

## FRH MODEL

### DATA SHEET

The HELISEM® series offers 5 distinct models - VDA, VRP, VRH, VRG and FRH - with the FRH mounted with a HXP impeller, to support a wide range of open or closed tank applications up to 11m (36ft) diameter (1950 m<sup>3</sup> - 515000 gallons) and viscosities up to 1000 mPas (cP) at 1.3 specific gravity.

The FRH model is a gearmotor driven mixer equipped with the HXP- HP2 impeller with 2 blades. This model was specifically designed for flocculation in water treatment. The HP2 impeller is designed to generate good flow with the least shear possible, making it ideal for flocculation.

The compact FRH model provides energy efficiency in a lightweight mixer with uncompromising results.

#### General Characteristics:

- Agitator with gear drive motor
- Lower shaft provided with a hydrofoil Impeller
- Rated power from 0.18 to 2.2 kW (1/4 to 3 HP)

#### Applications:

- Flocculation
- Separation
- Preparation of solution
- Keeping in suspension
- Dissolution
- Heat Transfer
- Homogenization
- Dilution

#### Materials:

- Wetted Parts – Stainless steel 316L
- Painting PU: RAL 1018 on the drive system

#### Features & Benefits:

- Easy to install and maintain, saving valuable manpower and resources
- Virtually no limitations from the process point of view
- All FRH mixers can rotate during emptying, filling and can be equipped with a frequency inverter

#### Mounting Options:

- Direct Mounting to Gearmotor
- Square baseplate
- Circular baseplate for ASME tank flange

#### Electrical Characteristics\*:

- 50Hz 230V 1 Phase
- 60Hz 230V 1 Phase
- 50Hz 400V 3 Phase
- 60Hz 460V 3 Phase

\*Other voltage options available

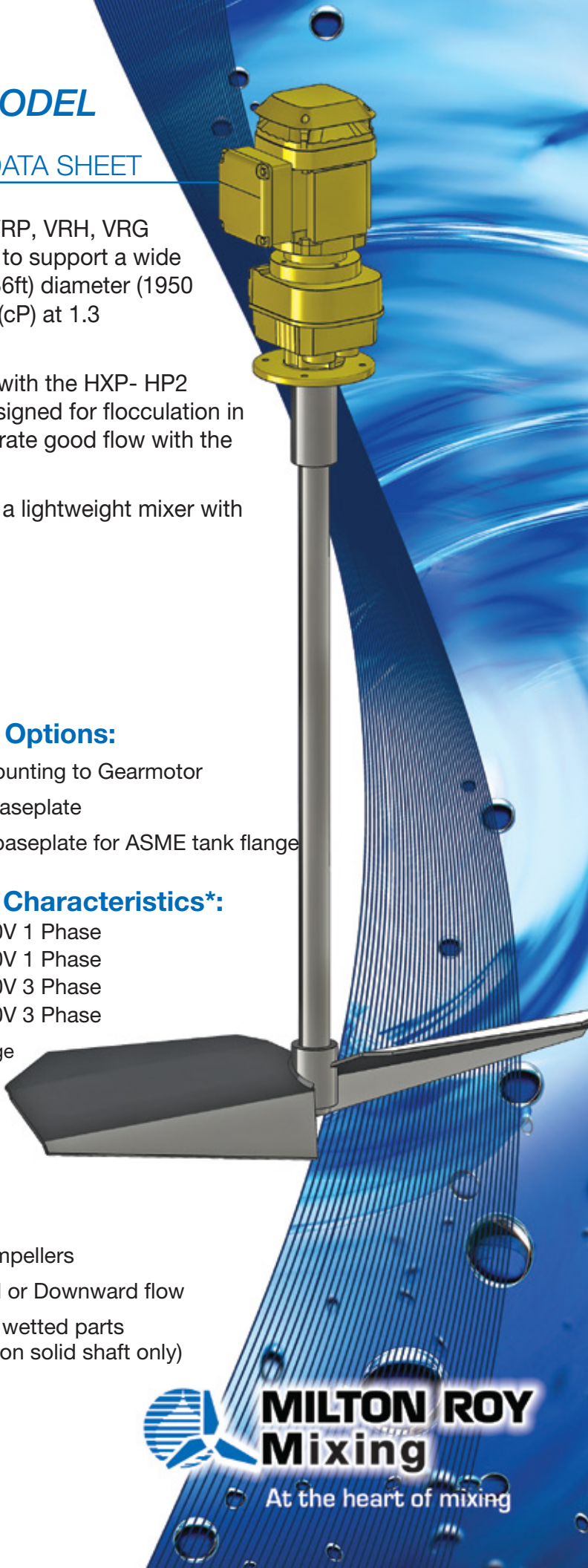
#### Options:

- 1 or 2 impellers
- Upward or Downward flow
- Coated wetted parts (Abcite on solid shaft only)



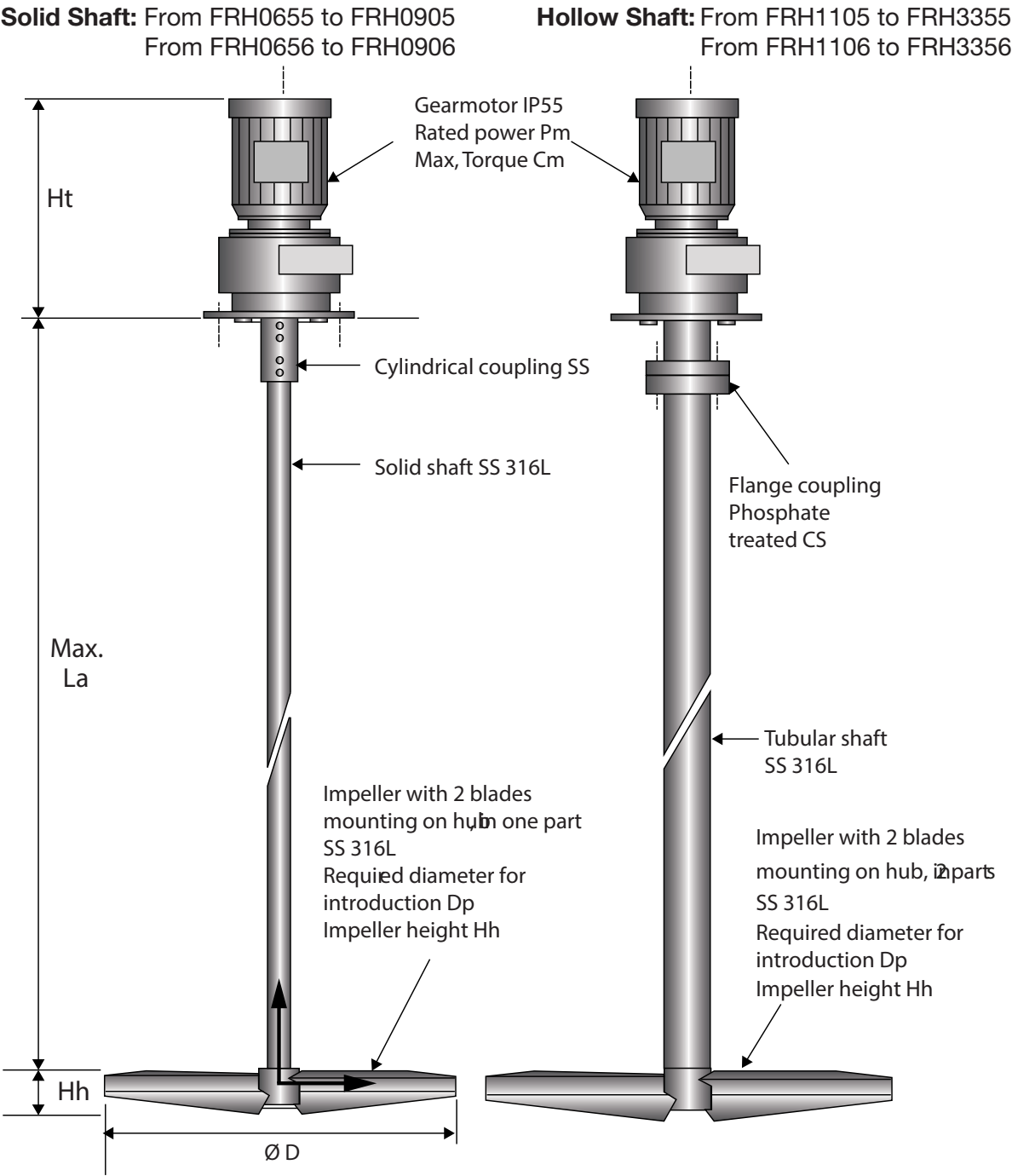
**MILTON ROY**  
**Mixing**

At the heart of mixing



Single Impeller

| Single Impeller Dim. | 50Hz (Metric) |      |      |      |      |      |      |      |      |      | 60Hz IEC (Metric) |      |      |      |      |      |      |      |      |      | 60Hz IEC (Imperial) |      |      |      |      |       |       |       |       |       |       |
|----------------------|---------------|------|------|------|------|------|------|------|------|------|-------------------|------|------|------|------|------|------|------|------|------|---------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| FRH                  | 0655          | 0755 | 0905 | 1105 | 1305 | 1555 | 1855 | 2305 | 2805 | 3355 | 0656              | 0756 | 0906 | 1106 | 1306 | 1556 | 1856 | 2306 | 2806 | 3356 | 0656                | 0756 | 0906 | 1106 | 1306 | 1556  | 1856  | 2306  | 2806  | 3356  |       |
| D                    | mm (in)       | 650  | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350              | 650  | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350                | 25.6 | 29.5 | 35.4 | 43.3 | 51.2  | 61    | 72.8  | 90.6  | 110.2 | 131.9 |
| N                    | rpm           | 57   | 49   | 43   | 31   | 30   | 25   | 21   | 16   | 12   | 11                | 60   | 48   | 38   | 31   | 27   | 25   | 20   | 17   | 14   | 11                  | 60   | 48   | 38   | 31   | 27    | 25    | 20    | 17    | 14    | 11    |
| Pm                   | kW (HP)       | 0.18 | 0.18 | 0.25 | 0.25 | 0.37 | 0.55 | 0.75 | 1.5  | 2.2  | 2.2               | 0.25 | 0.25 | 0.25 | 0.25 | 0.37 | 0.55 | 0.75 | 1.5  | 2.2  | 2.2                 | 0.33 | 0.33 | 0.33 | 0.33 | 0.5   | 0.75  | 1     | 2     | 3     | 3     |
| Weight               | kg (lbs)      | 19   | 21   | 40   | 50   | 72   | 126  | 161  | 285  | 480  | 686               | 20   | 21   | 40   | 50   | 72   | 132  | 161  | 285  | 466  | 686                 | 44   | 46   | 88   | 110  | 159   | 291   | 355   | 628   | 1027  | 1512  |
| Ht                   | mm (in)       | 357  | 357  | 375  | 375  | 414  | 437  | 505  | 601  | 640  | 672               | 375  | 359  | 375  | 375  | 414  | 460  | 505  | 601  | 640  | 672                 | 14.8 | 14.1 | 14.8 | 14.8 | 16.3  | 18.1  | 19.9  | 23.7  | 25.2  | 26.5  |
| Hh                   | mm (in)       | 101  | 116  | 140  | 171  | 202  | 240  | 287  | 357  | 434  | 519               | 101  | 116  | 140  | 171  | 202  | 240  | 287  | 357  | 434  | 519                 | 4    | 4.6  | 5.5  | 6.7  | 8     | 9.4   | 11.3  | 14.1  | 17.1  | 20.4  |
| Dp                   | mm (in)       | 190  | 220  | 265  | 325  | 385  | 460  | 550  | 680  | 830  | 990               | 190  | 220  | 265  | 325  | 385  | 460  | 550  | 680  | 830  | 990                 | 7.5  | 8.7  | 10.4 | 12.8 | 15.2  | 18.1  | 21.7  | 26.8  | 32.7  | 39    |
| Flange               | F130          | F130 | F130 | F130 | F165 | F215 | F215 | F265 | F300 | F300 | F130              | F130 | F130 | F130 | F165 | F215 | F215 | F265 | F300 | F300 | F130                | F130 | F130 | F130 | F165 | F215  | F215  | F265  | F300  | F300  |       |
| Sq. Plate (option)   | P250          | P250 | P250 | P250 | P350 | P350 | P350 | P400 | P500 | P500 | P250              | P250 | P250 | P250 | P350 | P350 | P350 | P400 | P500 | P500 | P250                | P250 | P250 | P250 | P350 | P350  | P350  | P400  | P500  | P500  |       |
| Circ. Plate(option)  | 6"            | 6"   | 6"   | 6"   | 8"   | 10"  | 10"  | 12"  | 12"  | 12"  | 6"                | 6"   | 6"   | 6"   | 8"   | 10"  | 10"  | 12"  | 12"  | 12"  | 6"                  | 6"   | 6"   | 6"   | 8"   | 10"   | 10"   | 12"   | 12"   | 12"   |       |
| Max. La              | mm (in)       | 2000 | 2200 | 2350 | 2500 | 3000 | 3500 | 3800 | 5000 | 6000 | 6000              | 2000 | 2200 | 2350 | 2500 | 3000 | 3500 | 3800 | 5000 | 5500 | 6000                | 78.7 | 86.6 | 92.5 | 98.4 | 118.1 | 137.8 | 149.6 | 196.8 | 216.5 | 236.2 |
| Min. La              | mm (in)       | 500  | 550  | 650  | 750  | 900  | 1050 | 1200 | 1500 | 1850 | 2150              | 550  | 550  | 650  | 750  | 900  | 1050 | 1200 | 1500 | 1850 | 2150                | 21.7 | 21.7 | 25.6 | 29.5 | 35.4  | 41.3  | 47.2  | 59.1  | 72.8  | 84.6  |



## Single Impeller

### 50 Hz Single Impeller

| TYPE    | Model       | Shaft length (mm) |
|---------|-------------|-------------------|
| FRH0655 | FRH0655S200 | 2000              |
| FRH0655 | FRH0655S50  | 500               |
| FRH0755 | FRH0755S220 | 2200              |
| FRH0755 | FRH0755S55  | 550               |
| FRH0905 | FRH0905S235 | 2350              |
| FRH0905 | FRH0905S65  | 650               |
| FRH1105 | FRH1105S250 | 2500              |
| FRH1105 | FRH1105S75  | 750               |
| FRH1305 | FRH1305S300 | 3000              |
| FRH1305 | FRH1305S90  | 900               |
| FRH1555 | FRH1555S350 | 3500              |
| FRH1555 | FRH1555S105 | 1050              |
| FRH1855 | FRH1855S380 | 3800              |
| FRH1855 | FRH1855S120 | 1200              |
| FRH2305 | FRH2305S500 | 5000              |
| FRH2305 | FRH2305S150 | 1500              |
| FRH2805 | FRH2805S600 | 6000              |
| FRH2805 | FRH2805S185 | 1850              |
| FRH3355 | FRH3355S600 | 6000              |
| FRH3355 | FRH3355S215 | 2150              |

### 60 Hz Single Impeller

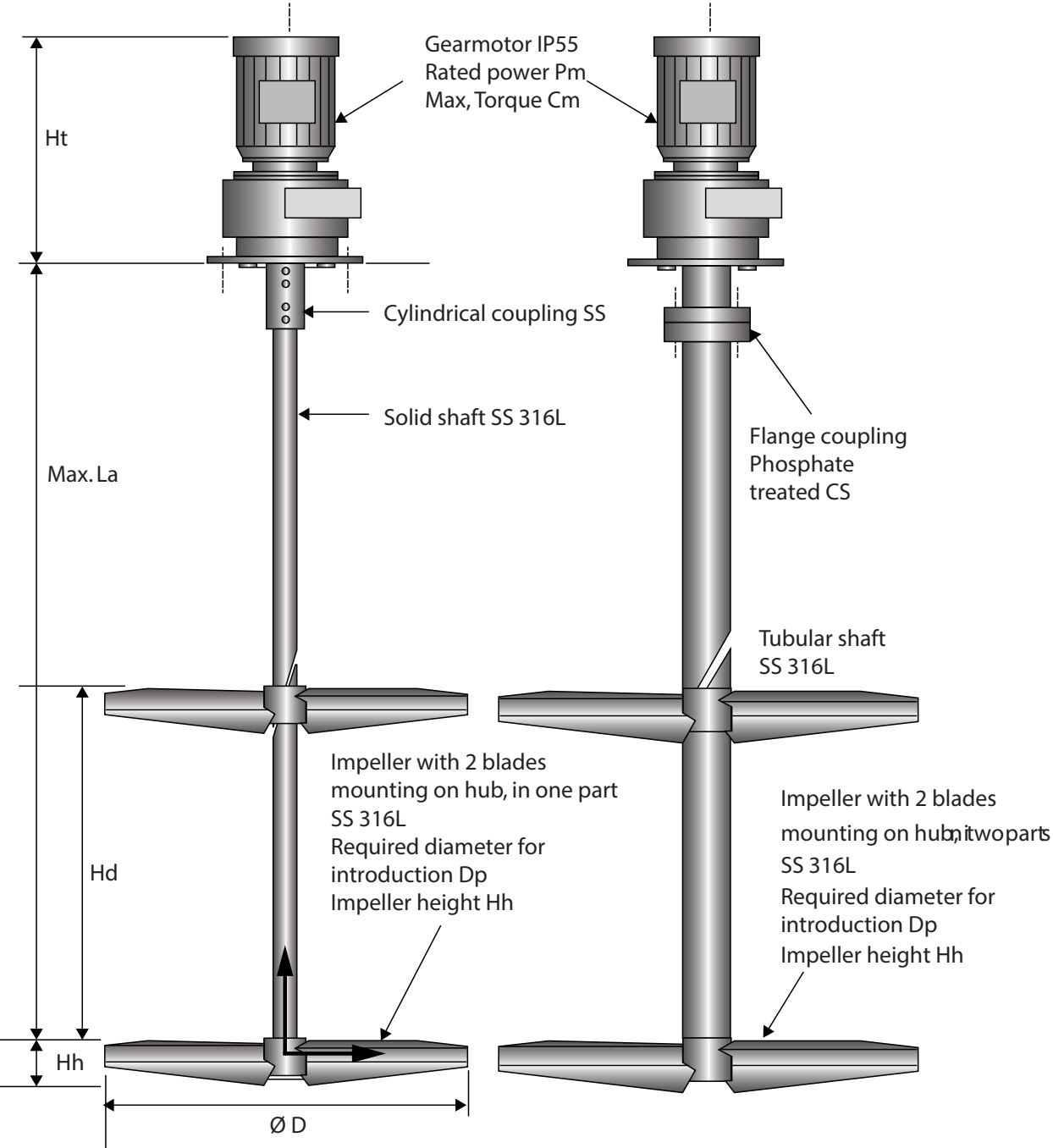
| TYPE    | Model       | Shaft length (mm) | Shaft length (in) |
|---------|-------------|-------------------|-------------------|
| FRH0656 | FRH0656S200 | 2000              | 78.7              |
| FRH0656 | FRH0656S55  | 550               | 21.7              |
| FRH0756 | FRH0756S220 | 2200              | 86.6              |
| FRH0756 | FRH0756S55  | 550               | 21.7              |
| FRH0906 | FRH0906S235 | 2350              | 92.5              |
| FRH0906 | FRH0906S65  | 650               | 25.6              |
| FRH1106 | FRH1106S250 | 2500              | 98.4              |
| FRH1106 | FRH1106S75  | 750               | 29.5              |
| FRH1306 | FRH1306S300 | 3000              | 118.1             |
| FRH1306 | FRH1306S90  | 900               | 35.4              |
| FRH1556 | FRH1556S350 | 3500              | 137.8             |
| FRH1556 | FRH1556S105 | 1050              | 41.3              |
| FRH1856 | FRH1856S380 | 3800              | 149.6             |
| FRH1856 | FRH1856S120 | 1200              | 47.2              |
| FRH2306 | FRH2306S500 | 5000              | 196.8             |
| FRH2306 | FRH2306S150 | 1500              | 59.1              |
| FRH2806 | FRH2806S550 | 5500              | 216.5             |
| FRH2806 | FRH2806S185 | 1850              | 72.8              |
| FRH3356 | FRH3356S600 | 6000              | 236.2             |
| FRH3356 | FRH3356S215 | 2150              | 84.6              |

Dual Impeller

| Dual Impeller Dim.  |          | 50Hz (Metric) |      |      |      |      |      |      |      |      |      | 60Hz IEC (Metric) |      |      |      |      |      |      |      |      |      | 60Hz IEC (Imperial) |       |       |       |       |       |       |       |       |       |
|---------------------|----------|---------------|------|------|------|------|------|------|------|------|------|-------------------|------|------|------|------|------|------|------|------|------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| FR2H                |          | 0655          | 0755 | 0905 | 1105 | 1305 | 1555 | 1855 | 2305 | 2805 | 3355 | 0656              | 0756 | 0906 | 1106 | 1306 | 1556 | 1856 | 2306 | 2806 | 3356 | 0656                | 0756  | 0906  | 1106  | 1306  | 1556  | 1856  | 2306  | 2806  | 3356  |
| D                   | mm (in)  | 650           | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350 | 650               | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350 | 25.6                | 29.5  | 35.4  | 43.3  | 51.2  | 61    | 72.8  | 90.6  | 110.2 | 131.9 |
| N                   | rpm      | 50            | 44   | 36   | 30   | 25   | 22   | 18   | 14   | 11   | 9    | 48                | 45   | 36   | 27   | 25   | 19   | 17   | 14   | 12   | 9    | 48                  | 45    | 36    | 27    | 25    | 19    | 17    | 14    | 12    | 9     |
| Pm                  | kW (HP)  | 0.25          | 0.25 | 0.25 | 0.37 | 0.55 | 0.75 | 1.1  | 1.5  | 2.2  | 2.2  | 0.25              | 0.25 | 0.25 | 0.37 | 0.55 | 0.55 | 1.5  | 2.2  | 2.2  | 2.2  | 0.33                | 0.33  | 0.33  | 0.5   | 0.75  | 0.75  | 2     | 3     | 3     | 3     |
| Weight              | kg (lbs) | 24            | 48   | 60   | 118  | 162  | 254  | 399  | 506  | 698  | 931  | 24                | 48   | 60   | 129  | 168  | 255  | 403  | 511  | 698  | 931  | 53                  | 106   | 132   | 284   | 370   | 562   | 888   | 1127  | 1539  | 2053  |
| Ht                  | mm (in)  | 359           | 359  | 375  | 414  | 449  | 518  | 567  | 640  | 640  | 686  | 359               | 359  | 375  | 414  | 460  | 475  | 601  | 640  | 640  | 686  | 14.1                | 14.1  | 14.8  | 16.3  | 18.1  | 18.7  | 23.7  | 25.2  | 25.2  | 27    |
| Hh                  | mm (in)  | 101           | 116  | 140  | 171  | 202  | 240  | 287  | 357  | 434  | 519  | 101               | 116  | 140  | 171  | 202  | 240  | 287  | 357  | 434  | 519  | 4                   | 4.6   | 5.5   | 6.7   | 8     | 9.4   | 11.3  | 14.1  | 17.1  | 20.4  |
| Dp                  | mm (in)  | 190           | 220  | 265  | 325  | 385  | 460  | 550  | 680  | 830  | 990  | 190               | 220  | 265  | 325  | 385  | 460  | 550  | 680  | 830  | 990  | 7.5                 | 8.7   | 10.4  | 12.8  | 15.2  | 18.1  | 21.7  | 26.8  | 32.7  | 39    |
| Flange              |          | F130          | F130 | F130 | F165 | F215 | F265 | F265 | F300 | F300 | F300 | F130              | F130 | F130 | F165 | F215 | F265 | F265 | F300 | F300 | F300 | F130                | F130  | F130  | F165  | F215  | F265  | F265  | F300  | F300  | F300  |
| Sq. Plate (option)  |          | P250          | P250 | P250 | P250 | P350 | P400 | P400 | P500 | P500 | P500 | P250              | P250 | P250 | P250 | P350 | P400 | P400 | P500 | P500 | P500 | P250                | P250  | P250  | P250  | P350  | P400  | P400  | P500  | P500  | P500  |
| Circ. Plate(option) |          | 6"            | 6"   | 6"   | 8"   | 10"  | 12"  | 12"  | 12"  | 12"  | 12"  | 6"                | 6"   | 6"   | 8"   | 10"  | 12"  | 12"  | 12"  | 12"  | 12"  | 6"                  | 6"    | 6"    | 8"    | 10"   | 12"   | 12"   | 12"   | 12"   | 12"   |
| Max. La             | mm (in)  | 2500          | 3000 | 3000 | 4000 | 5200 | 6000 | 6000 | 6000 | 6000 | 6000 | 2500              | 3000 | 3000 | 4450 | 5200 | 6000 | 6000 | 6000 | 6000 | 6000 | 98.4                | 118.1 | 118.1 | 175.2 | 204.7 | 236.2 | 236.2 | 236.2 | 236.2 | 236.2 |
| Min. La             | mm (in)  | 1150          | 1300 | 1550 | 1900 | 2250 | 2650 | 3150 | 3900 | 4650 | 5500 | 1150              | 1300 | 1550 | 1900 | 2250 | 2650 | 3150 | 3900 | 4650 | 5500 | 45.3                | 51.2  | 61    | 74.8  | 88.6  | 104.3 | 124   | 153.5 | 183.1 | 216.5 |
| Hd                  | mm (in)  | 650           | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350 | 650               | 750  | 900  | 1100 | 1300 | 1550 | 1850 | 2300 | 2800 | 3350 | 25.6                | 29.5  | 35.4  | 43.3  | 51.2  | 61    | 72.8  | 90.6  | 110.2 | 131.9 |

**Solid Shaft:** From FR2H0655 to FR2H0905  
From FR2H0656 to FR2H0906

**Hollow Shaft:** From FR2H1105 to FR2H3355  
From FR2H1106 to FR2H3356



## Dual Impeller

### 50 Hz Dual Impeller

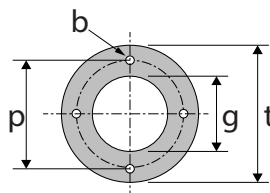
| TYPE     | Model        | Shaft length (mm) |
|----------|--------------|-------------------|
| FR2H0655 | FR2H0655S250 | 2500              |
| FR2H0655 | FR2H0655S115 | 1150              |
| FR2H0755 | FR2H0755S300 | 3000              |
| FR2H0755 | FR2H0755S130 | 1300              |
| FR2H0905 | FR2H0905S300 | 3000              |
| FR2H0905 | FR2H0905S155 | 1550              |
| FR2H1105 | FR2H1105S400 | 4000              |
| FR2H1105 | FR2H1105S190 | 1900              |
| FR2H1305 | FR2H1305S520 | 5200              |
| FR2H1305 | FR2H1305S225 | 2250              |
| FR2H1555 | FR2H1555S600 | 6000              |
| FR2H1555 | FR2H1555S265 | 2650              |
| FR2H1855 | FR2H1855S600 | 6000              |
| FR2H1855 | FR2H1855S315 | 3150              |
| FR2H2305 | FR2H2305S600 | 6000              |
| FR2H2305 | FR2H2305S390 | 3900              |
| FR2H2805 | FR2H2805S600 | 6000              |
| FR2H2805 | FR2H2805S465 | 4650              |
| FR2H3355 | FR2H3355S600 | 6000              |
| FR2H3355 | FR2H3355S550 | 5500              |

### 60 Hz Dual Impeller

| TYPE     | Model        | Shaft length (mm) | Shaft length (in) |
|----------|--------------|-------------------|-------------------|
| FR2H0656 | FR2H0656S250 | 2500              | 98.4              |
| FR2H0656 | FR2H0656S115 | 1150              | 45.3              |
| FR2H0756 | FR2H0756S300 | 3000              | 118.1             |
| FR2H0756 | FR2H0756S130 | 1300              | 51.2              |
| FR2H0906 | FR2H0906S300 | 3000              | 118.1             |
| FR2H0906 | FR2H0906S155 | 1550              | 61                |
| FR2H1106 | FR2H1106S445 | 4450              | 175.2             |
| FR2H1106 | FR2H1106S190 | 1900              | 74.8              |
| FR2H1306 | FR2H1306S520 | 5200              | 204.7             |
| FR2H1306 | FR2H1306S225 | 2250              | 88.6              |
| FR2H1556 | FR2H1556S600 | 6000              | 236.2             |
| FR2H1556 | FR2H1556S265 | 2650              | 104.3             |
| FR2H1856 | FR2H1856S600 | 6000              | 236.2             |
| FR2H1856 | FR2H1856S315 | 3150              | 124               |
| FR2H2306 | FR2H2306S600 | 6000              | 236.2             |
| FR2H2306 | FR2H2306S390 | 3900              | 153.5             |
| FR2H2806 | FR2H2806S600 | 6000              | 236.2             |
| FR2H2806 | FR2H2806S465 | 4650              | 183.1             |
| FR2H3356 | FR2H3356S600 | 6000              | 236.2             |
| FR2H3356 | FR2H3356S550 | 5500              | 216.5             |

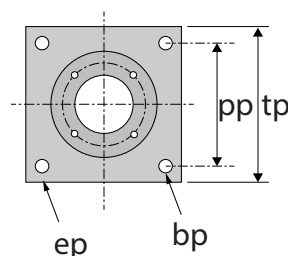
## Mounting:

### Gear Flange



| Type | Metric (mm) |      |      |      |      |      |      | Imperial (in) |      |      |       |       |       |       |
|------|-------------|------|------|------|------|------|------|---------------|------|------|-------|-------|-------|-------|
|      | F130        | F165 | F215 | F265 | F300 | F400 | F500 | F130          | F165 | F215 | F265  | F300  | F400  | F500  |
| b    | 9           | 11   | 13.5 | 13.5 | 17.5 | 17.5 | 17.5 | 0.35          | 0.43 | 0.53 | 0.53  | 0.69  | 0.69  | 0.69  |
| t    | 160         | 200  | 250  | 300  | 350  | 450  | 550  | 6.3           | 7.87 | 9.84 | 11.81 | 13.78 | 17.72 | 21.65 |
| p    | 130         | 165  | 215  | 265  | 300  | 400  | 500  | 5.12          | 6.5  | 8.46 | 10.43 | 11.81 | 15.75 | 19.69 |
| g    | 110         | 130  | 180  | 230  | 250  | 350  | 450  | 4.33          | 5.12 | 7.09 | 9.06  | 9.84  | 13.78 | 17.72 |
| e    | 10          | 12   | 15   | 16   | 20   | 22   | 25   | 0.39          | 0.47 | 0.59 | 0.63  | 0.71  | 0.87  | 0.98  |

### Square Support Plate (optional)



| Type | Metric (mm) |      |      |      |      |      | Imperial (in) |       |       |       |       |       |
|------|-------------|------|------|------|------|------|---------------|-------|-------|-------|-------|-------|
|      | P250        | P350 | P400 | P500 | P600 | P700 | P250          | P350  | P400  | P500  | P600  | P700  |
| bp   | 14          | 14   | 16   | 18   | 18   | 22   | 0.55          | 0.55  | 0.63  | 0.71  | 0.71  | 0.87  |
| pp   | 190         | 280  | 320  | 420  | 500  | 600  | 7.48          | 11.02 | 12.6  | 16.54 | 19.69 | 23.62 |
| tp   | 250         | 350  | 400  | 500  | 600  | 700  | 9.84          | 13.78 | 15.75 | 19.68 | 23.62 | 27.56 |
| ep   | 15          | 15   | 15   | 20   | 20   | 25   | 0.59          | 0.59  | 0.59  | 0.79  | 0.79  | 0.98  |

### ASME B16.5 150# FF Baseplate (optional)

| Type                        | Metric (mm) |     |     |     |     |     | Imperial (in) |       |       |     |       |       |
|-----------------------------|-------------|-----|-----|-----|-----|-----|---------------|-------|-------|-----|-------|-------|
|                             | 6"          | 8"  | 10" | 12" | 18" | 22" | 6"            | 8"    | 10"   | 12" | 18"   | 22"   |
| Outside Diameter            | 279         | 343 | 406 | 483 | 635 | 749 | 11            | 13.5  | 16    | 19  | 25    | 29.5  |
| Diameter of Circle of Holes | 241         | 299 | 362 | 432 | 578 | 692 | 9.5           | 11.75 | 14.25 | 17  | 22.75 | 27.25 |
| Bolt Hole Diameter          | 22          | 22  | 25  | 25  | 32  | 35  | 0.88          | 0.88  | 1     | 1   | 1.25  | 1.38  |
| Number of Holes             | 8           | 8   | 12  | 12  | 16  | 20  | 8             | 8     | 12    | 12  | 16    | 20    |



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