

# TV Macro Lenses

Fixed Magnification lenses

| <b>W.D 40-70mm</b>          | 2-40     | 2D-40   | 4-40     | 4D-40   | 6-40     | 6D-40   | 8-40     | 8D-40   | 2-65     | 2D-65   | 4-65     | 4D-65   |
|-----------------------------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Inch                        | 1/2"     | 1/2"    | 1/2"     | 1/2"    | 1/2"     | 1/2"    | 1/2"     | 1/2"    | 2/3"     | 2/3"    | 2/3"     | 2/3"    |
| Magnification               | x2.0     | x2.0    | x4.0     | x4.0    | x6.0     | x6.0    | x8.0     | x8.0    | x2.00    | x2.00   | x4.00    | x4.00   |
| Aperture                    |          |         |          |         |          |         |          |         | F17.9    | F17.9   | F27.8    | F27.8   |
| Depth of Field(mm)          | 0.3      | 0.3     | 0.15     | 0.15    | 0.095    | 0.095   | 0.071    | 0.071   | 0.27     | 0.27    | 0.12     | 0.12    |
| Resolution Power(um)        | 7.0      | 7.0     | 5.0      | 5.0     | 4.8      | 4.8     | 4.8      | 4.8     | 6        | 6       | 4.7      | 4.7     |
| NA                          | 0.050    | 0.050   | 0.070    | 0.070   | 0.070    | 0.070   | 0.070    | 0.070   | 0.056    | 0.056   | 0.072    | 0.072   |
| TV Distortion(Less than)(%) | 0.01     | 0.01    | 0.2      | 0.2     | 0.2      | 0.2     | 0.1      | 0.12    | 0.12     | 0.12    | 0.14     | 0.14    |
| Notes                       | straight | coaxial | straight | coaxial | straight | coaxial | straight | coaxial | straight | coaxial | straight | coaxial |

| 6-65     | 6D-65   | 8-65     | 8D-65   | 0.55-70   | 0.55D-70  | 0.72-70   | 0.72D-70  | 1-70      | 1D-70     | 3-70      | 3D-70     | 5-70      | 5D-70     |
|----------|---------|----------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 2/3"     | 2/3"    | 2/3"     | 2/3"    | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" | 1/2"-2/3" |
| x6.00    | x6.00   | x8.00    | x8.00   | x0.55     | x0.55     | x0.55     | x0.55     | x1        | x1        | x3        | x3        | x5        | x5        |
| F41.7    | F41.7   | F55.6    | F55.6   | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |
| 0.099    | 0.099   | 0.087    | 0.087   | 1.2       | 1.2       | 1.2       | 1.2       | 1.2       | 1.2       | 0.2       | 0.2       | 0.2       | 0.2       |
| 4.7      | 4.7     | 4.7      | 4.7     | 13        | 13        | 13        | 13        | 13        | 13        | 6         | 6         | 6         | 6         |
| 0.072    | 0.072   | 0.072    | 0.072   | 0.025     | 0.025     | 0.025     | 0.025     | 0.025     | 0.025     | 0.063     | 0.063     | 0.063     | 0.063     |
| 0.09     | 0.09    | 0.05     | 0.05    | -0.04     | -0.04     | 0         | 0         | 0         | 0         | 0.2       | 0.2       | 0.2       | 0.2       |
| straight | coaxial | straight | coaxial | straight  | coaxial   | straight  | coaxial   | straight  | coaxial   | straight  | coaxial   | straight  | coaxial   |

| <b>W.D 75mm</b>             | MQM1000   | MQM2000   | MQJ1000   | MQJ2000   | MQK1000   | MQK2000   | MQL1000   | MQL2000   |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Inch                        | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      |
| Magnification               | x2.00     | x2.00     | x4.00     | x4.00     | x6.00     | x6.00     | x8.00     | x8.00     |
| Aperture                    | F13.0     | F13.0     | F26.0     | F26.0     | F38.0     | F38.0     | F59.0     | F59.0     |
| Depth of Field(mm)          | +/-0.2    | +/-0.2    | +/-0.1    | +/-0.1    | +/-0.07   | +/-0.07   | +/-0.06   | +/-0.06   |
| Object Size                 | 3.3 x 4.4 | 3.3 x 4.4 | 1.7 x 2.2 | 1.7 x 2.2 | 1.1 x 1.5 | 1.1 x 1.5 | 0.8 x 1.1 | 0.8 x 1.1 |
| Resolution Power(um)        | 8.0       | 8.0       | 4.0       | 4.0       | 3.0       | 3.0       | 3.0       | 3.0       |
| NA                          | 0.076     | 0.076     | 0.076     | 0.076     | 0.076     | 0.076     | 0.076     | 0.076     |
| TV Distortion(Less than)(%) | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       |
| Image Size                  | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 |
| Notes                       | coaxial   | straight  | coaxial   | straight  | coaxial   | straight  | coaxial   | straight  |

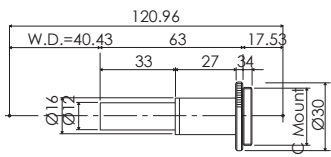
| <b>W.D 90mm</b>             | YRJ5000   | YRJ7000   | YRJ3000   | YJS5000   | YJS6000   | YJS4000   | YJQ4000   | YJQ3000   | YRH4000   | YRH2000   | YRH3000   |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Inch                        | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      | 2/3"      |
| Magnification               | x0.14     | x0.14     | x0.14     | x0.30     | x0.30     | x0.30     | x0.50     | x0.50     | x1.00     | x1.00     | x1.00     |
| Aperture                    | F4.6      | F6.4      | F9.0      | F4.6      | F7.3      | F10.0     | F8.4      | F12.0     | F8.4      | F11.0     | F16.0     |
| Depth of Field(mm)          | +/-5.0    | +/-7.0    | +/-9.0    | +/-1.2    | +/-2.0    | +/-3.0    | +/-0.8    | +/-1.2    | +/-0.3    | +/-0.4    | +/-0.5    |
| Object Size                 | 47 x 63   | 47 x 63   | 47 x 63   | 22 x 29   | 22 x 29   | 22 x 29   | 13 x 18   | 13 x 18   | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 |
| Resolution Power(um)        | 130.0     | 130.0     | 130.0     | 60.0      | 60.0      | 60.0      | 36.0      | 36.0      | 18.0      | 18.0      | 18.0      |
| NA                          | 0.011     | 0.011     | 0.011     | 0.021     | 0.021     | 0.021     | 0.030     | 0.030     | 0.045     | 0.045     | 0.045     |
| TV Distortion(Less than)(%) | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       | 0.1       |
| Image Size                  | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 | 6.6 x 8.8 |
| Notes                       | straight  | straight  | straight  | straight  | straight  | straight  | straight  | straight  | straight  | straight  | straight  |

| <b>W.D 110mm</b>         | 1-110    | 1D-110  | 2-110    | 2D-110  | 4-110    | 4D-110  | 6-110    | 6D-110  | 05-110   | 05D-110 |
|--------------------------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Inch                     | 2/3"     | 2/3"    | 2/3"     | 2/3"    | 2/3"     | 2/3"    | 2/3"     | 2/3"    | 1/2"     | 1/2"    |
| Magnification            | x1.00    | x1.00   | x2.00    | x2.00   | x4.00    | x4.00   | x6.00    | x6.00   | x0.5     | x0.5    |
| Depth of Field(mm)       | 1.3      | 1.3     | 0.440    | 0.440   | 0.22     | 0.22    | 0.19     | 0.19    | 2.4      | 2.4     |
| Resolution Power(um)(um) | 14       | 14      | 9        | 9       | 7        | 7       | 7        | 7       | 16       | 16      |
| NA                       | 0.025    | 0.025   | 0.04     | 0.04    | 0.05     | 0.05    | 0.05     | 0.05    | 0.022    | 0.022   |
| Notes                    | straight | coaxial | straight | coaxial | straight | coaxial | straight | coaxial | straight | coaxial |

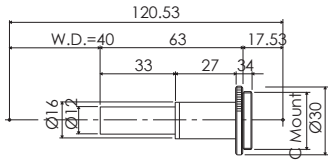
| <b>Over 156mm</b>           | 2-156    | 2D-156  | 1-156    | 1D-156  | 1D-220    | 2D-220    | 3D-220    | 1D-290    | 1D-290    | 3D-290    |
|-----------------------------|----------|---------|----------|---------|-----------|-----------|-----------|-----------|-----------|-----------|
| Inch                        | 2/3"     | 2/3"    | 1/2"     | 1/2"    | 1/2"      | 1/2"      | 1/2"      | 1/2"      | 1/2"      | 1/2"      |
| Magnification               | x2.00    | x2.00   | x1.00    | x1.00   | x1.00     | x2.00     | x3.00     | x1.00     | x2.00     | x3.00     |
| Aperture                    | F25.0    | F25.0   | F16.7    | F16.7   | F20.0     | F33.0     | F43.0     | F20.0     | F33.0     | F43.0     |
| Depth of Field(mm)          | 0.44     | 0.44    | 1        | 1       | 1.24      | 0.67      | 0.41      | 1.24      | 0.67      | 0.41      |
| Object Size(mm)             | -        | -       | -        | -       | 4.8 x 6.4 | 2.4 x 3.2 | 1.6 x 2.1 | 4.8 x 6.4 | 2.4 x 3.2 | 1.6 x 2.1 |
| Resolution Power(um)        | 9        | 9       | 12       | 12      | 14        | 11        | 9.6       | 13        | 11        | 9.6       |
| NA                          | 0.04     | 0.04    | 0.03     | 0.03    | 0.025     | 0.03      | 0.035     | 0.025     | 0.03      | 0.035     |
| TV Distortion(Less than)(%) | 0.03     | 0.03    | 0.05     | 0.05    | 0.1       | 0.1       | 0.1       | 0.15      | 0.15      | 0.15      |
| Notes                       | straight | coaxial | straight | coaxial | coaxial   | coaxial   | coaxial   | coaxial   | coaxial   | coaxial   |

\*Specifications are subject to change without prior notice

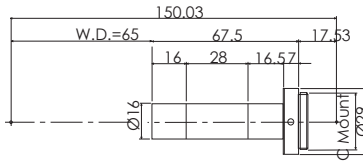
**2-40**



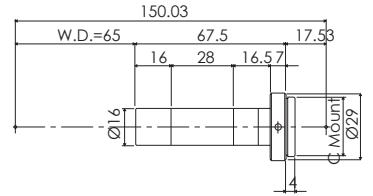
**4-40**



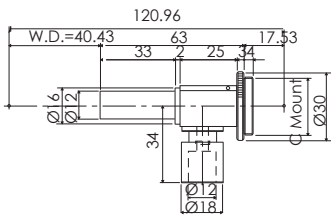
**2-65**



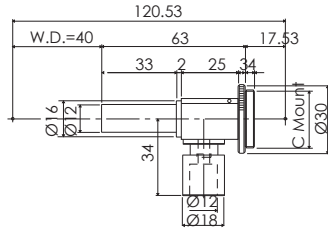
**4-65**



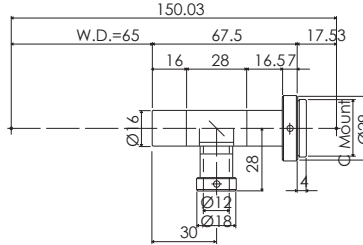
**2D-40**



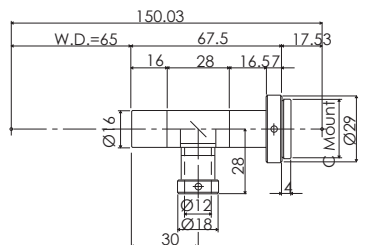
**4D-40**



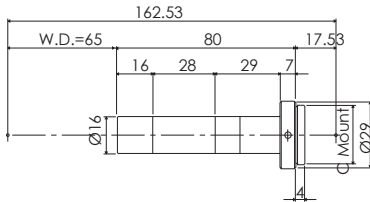
**2D-65**



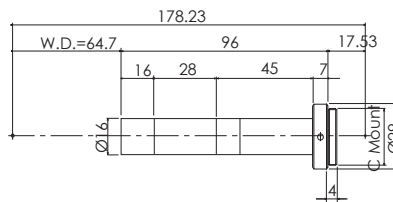
**4D-65**



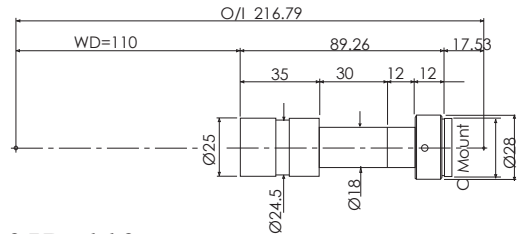
**6-65**



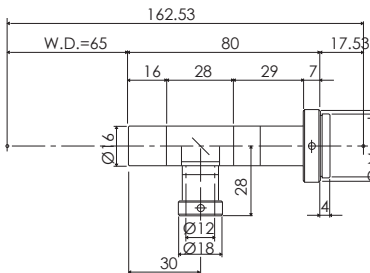
**8-65**



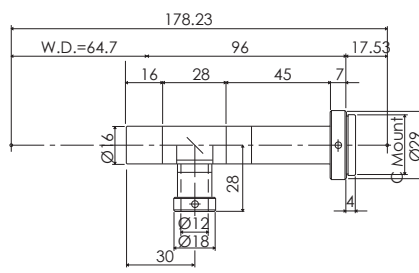
**05-110**



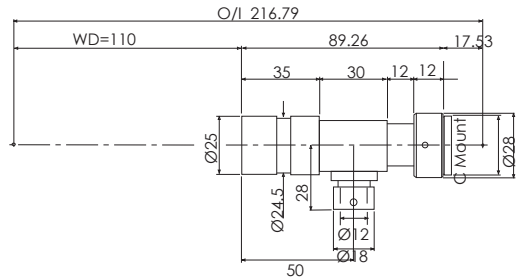
**6D-65**



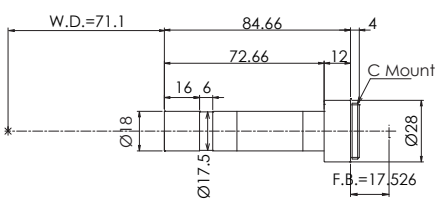
**8D-65**



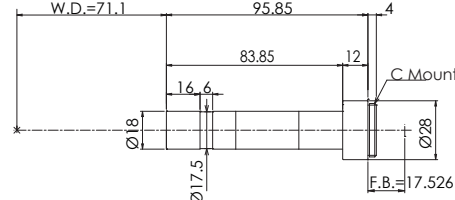
**05D-110**



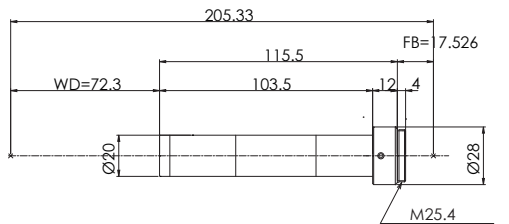
**0.55-70**



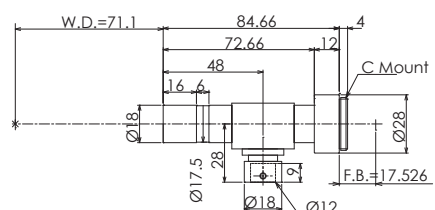
**0.72-70**



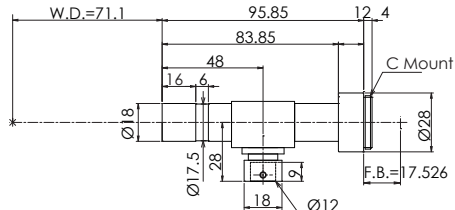
**3-70**



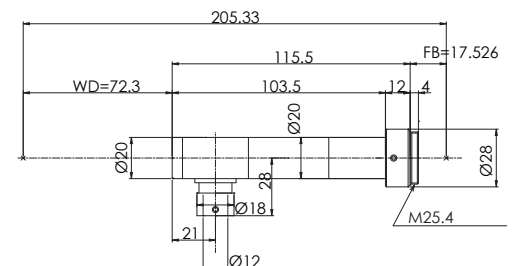
**0.55D-70**



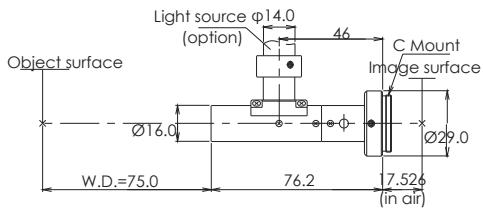
**0.72D-70**



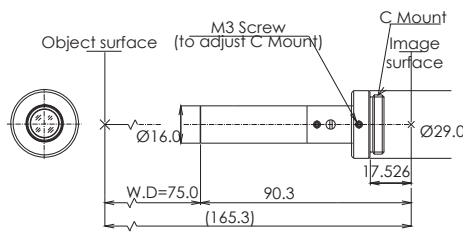
**3D-70**



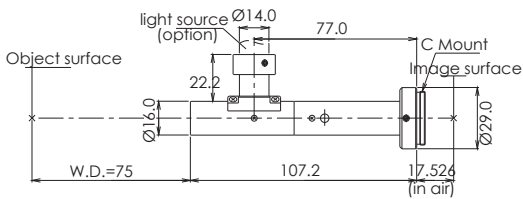
### MQM1000



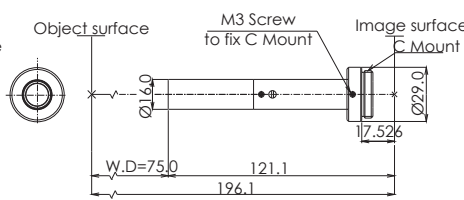
### MQM2000



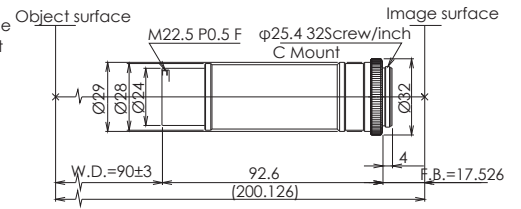
### MQJ1000, MQK1000, MQL1000



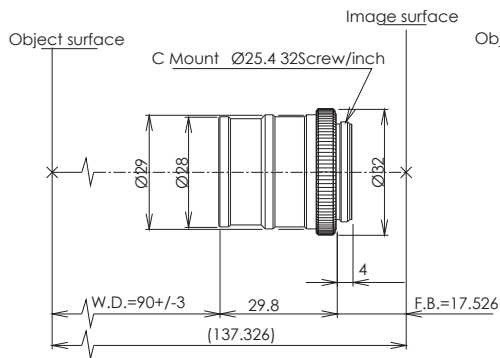
### MQJ2000, MQK2000, MQL2000



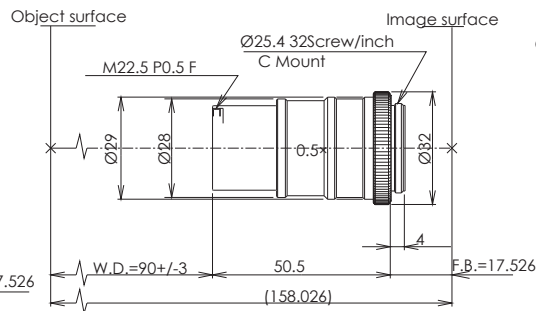
### YRH4000, YRH2000, YRH3000



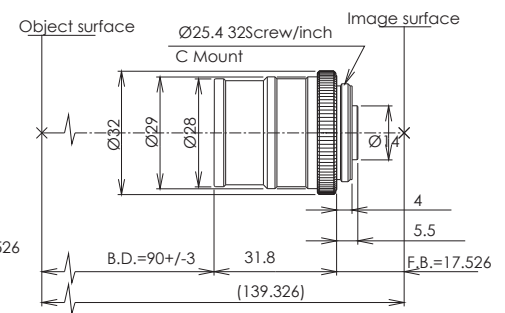
### YJS5000, YJS6000, YJS4000



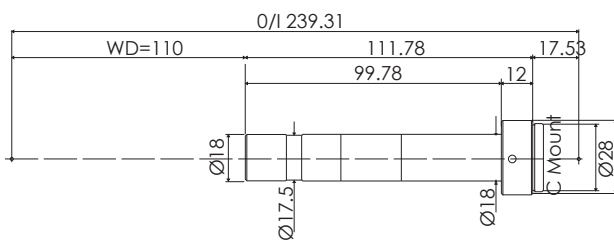
### YJQ4000, YJQ3000



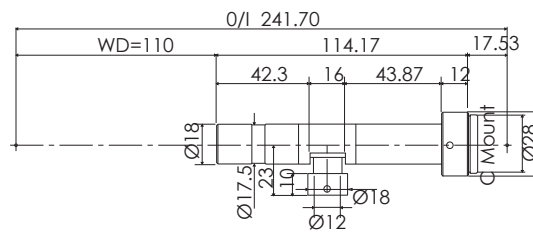
### YRJ5000, YRJ7000, YRJ3000



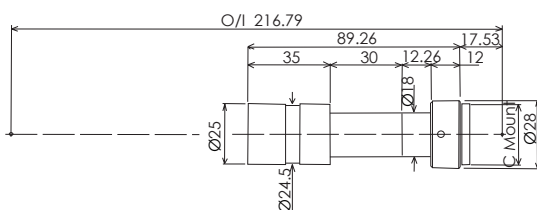
### 6-110



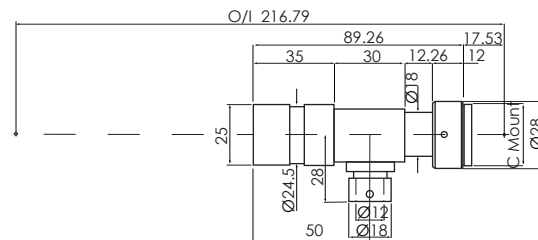
### 6D-110



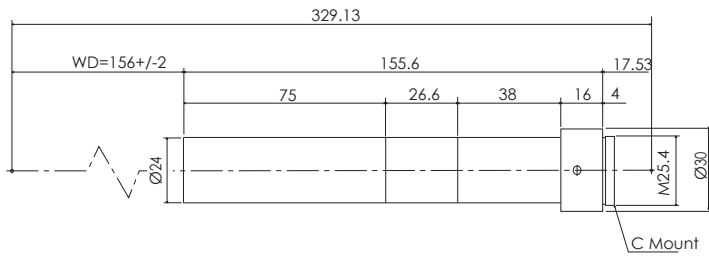
### 05-110



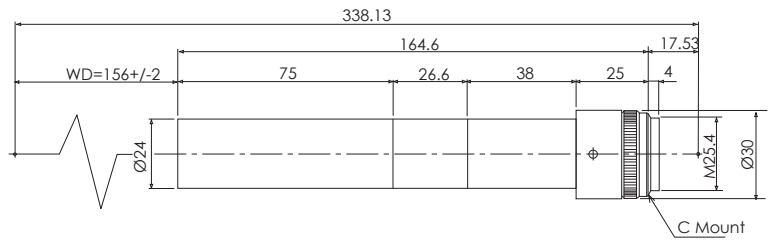
### 05D-110



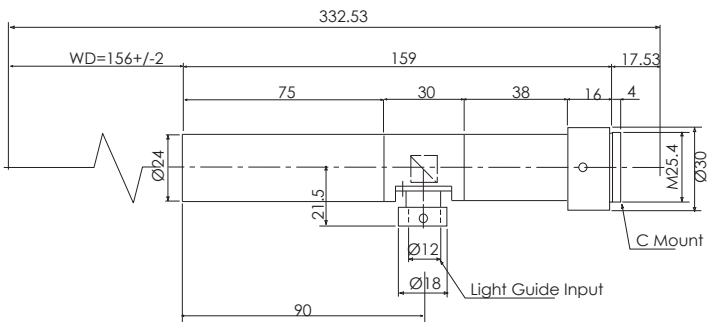
**1-156**



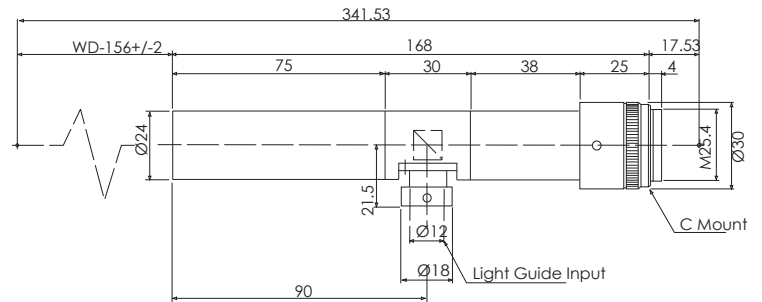
**2-156**



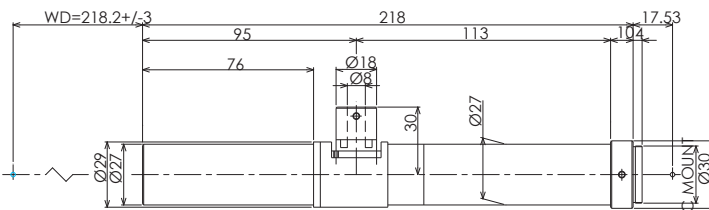
**1D-156**



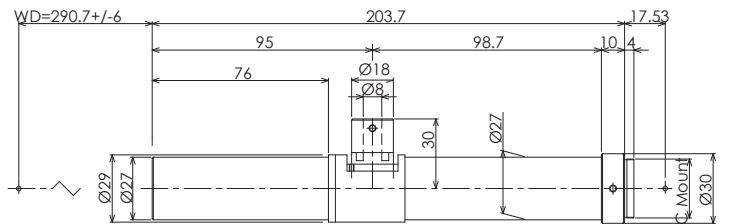
**2D-156**



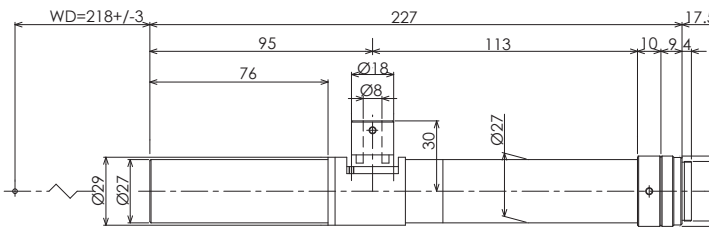
**1D-220**



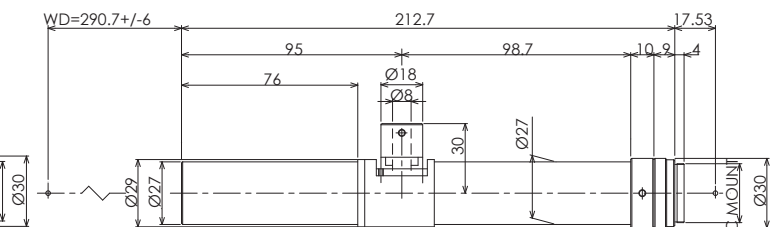
**1D-290**



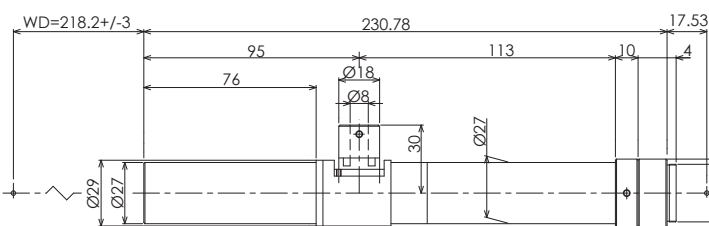
**2D-220**



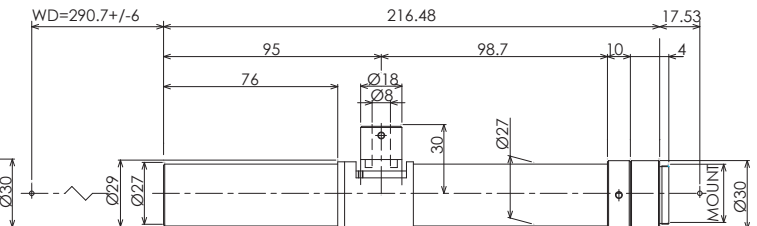
**2D-290**



**3D-220**



**3D-290**

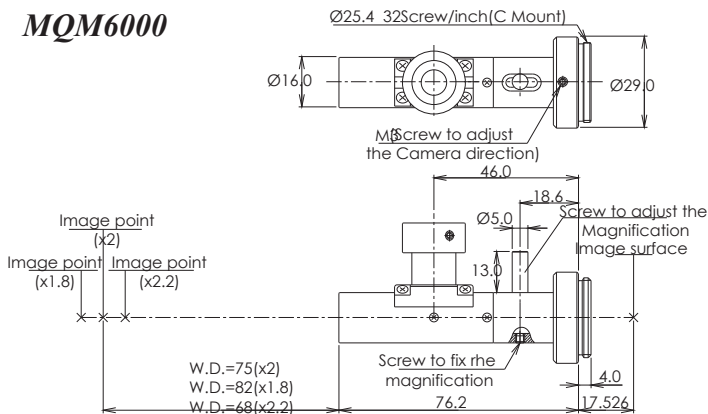


|                            | MQM6000               | MQJ6000               | MQK6000               | MQL6000               | YJSH000           | YRHC000             |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------|---------------------|
| W.D.(mm)                   | 82 - 68               | 84 - 68               | 84 - 67               | 84 - 67               | 120 - 50          | 125 - 92            |
| Inch                       | 2/3"                  | 2/3"                  | 2/3"                  | 2/3"                  | 2/3"              | 2/3"                |
| Magnification              | x1.8 - 2.2            | x3.5 - 4.5            | x5.4 - 6.8            | x7.3 - 9.0            | x0.2 - 0.6        | x0.6 - 1.0          |
| Aperture                   | F12 - 14.5            | F23 - 30              | F36 - 45              | F48 - 60              | -                 | -                   |
| Depth of Field(mm)         | +/-0.2 (x2.00)        | +/0.1 (x4.00)         | +/0.07 (x6.00)        | +/0.06 (x8.00)        | +/14 (x2.00)      | +/2 (x0.60)         |
| Object Size (mm)           | 3.7 x 4.9 - 3.0 x 4.0 | 1.9 x 2.5 - 1.5 x 2.0 | 1.2 x 1.6 - 1.0 x 1.3 | 0.9 x 1.2 - 0.7 x 1.0 | 33 x 44 - 11 x 15 | 11 x 15 - 6.6 x 8.8 |
| Image Size (mm)            | 6.6 x 8.8             | 6.6 x 8.8             | 6.6 x 8.8             | 6.6 x 8.8             | 6.6 x 8.8         | 6.6 x 8.8           |
| Resolution Power( $\mu$ m) | 10 - 8                | 5 - 4                 | 4 - 3                 | 4 - 3                 | 90 - 30           | 30 - 18             |
| NA                         | 0.076                 | 0.076                 | 0.076                 | 0.076                 | -                 | -                   |
| TV Distortion(%)           | 0.20                  | 0.20                  | 0.20                  | 0.20                  | 0.10              | 0.10                |
| Notes                      | coaxial               | coaxial               | coaxial               | coaxial               | straight          | straight            |

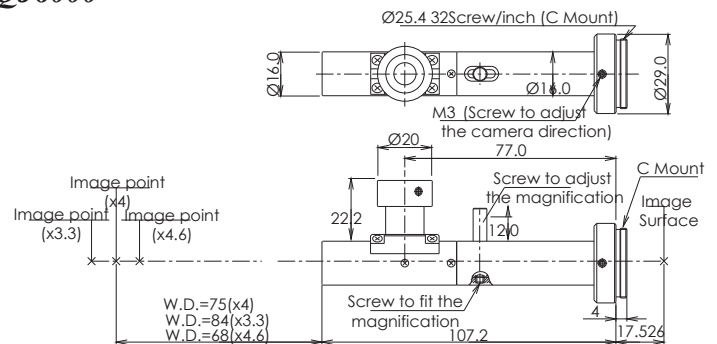
|                             | MRH3000             | MRG3000               | MRK2000               | MRL2000               | MRM2000               | MRP2000               |
|-----------------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| W.D.(mm)                    | 105 - 75            | 105 - 92              | 43 - 36               | 42 - 35               | 40 - 34               | 37 - 32               |
| Inch                        | 2/3"                | 2/3"                  | 1/2"                  | 1/2"                  | 1/2"                  | 1/2"                  |
| Magnification               | x0.65 - 1.0         | x1.0 - 1.5            | x1.5 - 1.9            | x2.0 - 2.4            | x3.0 - 3.5            | x4.5 - 4.8            |
| Aperture                    | F10 - 16            | F11 - 17              | F17 - 21              | F17 - 20              | F19 - 22              | F23 - 24              |
| Depth of Field(mm)          | +/1 (x0.65)         | +/0.4 (x1.00)         | +/0.35 (x1.50)        | +/0.20 (x2.00)        | +/0.10 (x3.00)        | +/0.05 (x4.50)        |
| Object Size (mm)            | 10 x 14 - 6.6 x 8.8 | 6.6 x 8.8 - 4.4 x 5.9 | 3.2 x 4.3 - 2.5 x 3.4 | 2.4 x 3.2 - 2.0 x 2.7 | 1.6 x 2.1 - 1.4 x 1.8 | 1.1 x 1.4 - 1.0 x 1.3 |
| Image Size (mm)             | 6.6 x 8.8           | 6.6 x 8.8             | 4.8 x 6.4             | 4.8 x 6.4             | 4.8 x 6.4             | 4.8 x 6.4             |
| Resolution Power( $\mu$ m)  | 27 - 18             | 18 - 12               | 9 - 7                 | 7 - 5                 | 5 - 4                 | 5 - 4                 |
| NA                          | -                   | 0.045                 | 0.045                 | 0.059                 | 0.079                 | 0.1                   |
| TV Distortion(less than)(%) | 0.10                | 0.10                  | 0.20                  | 0.20                  | 0.20                  | 0.20                  |
| Notes                       | coaxial             | coaxial               | coaxial               | coaxial               | coaxial               | coaxial               |

\*Specifications are subject to change without prior notice

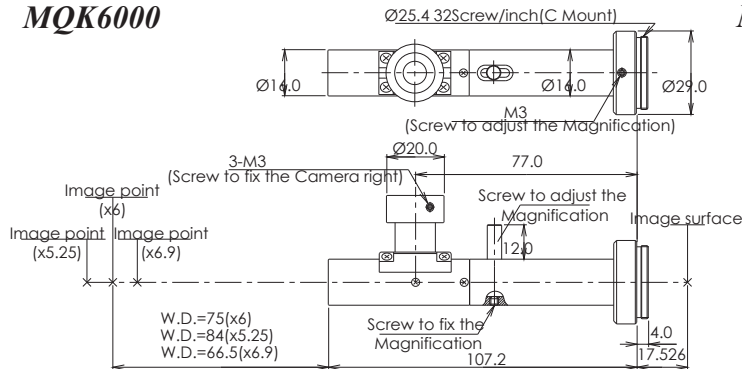
### MQM6000



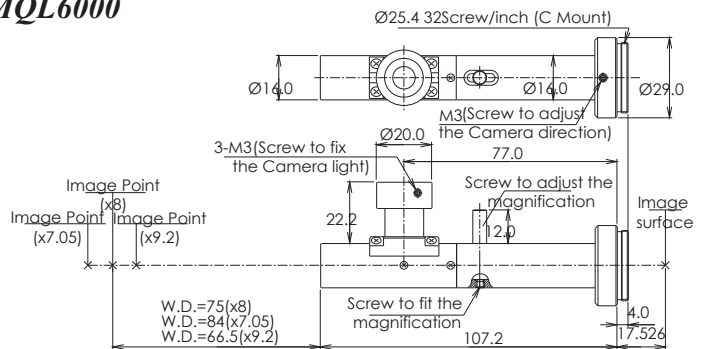
### MQJ6000



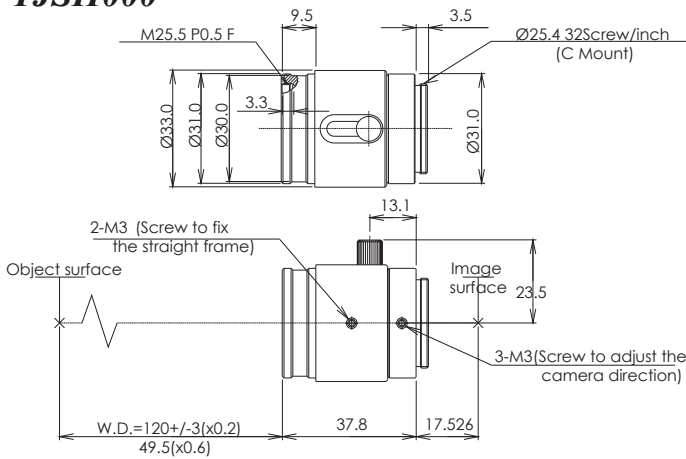
### MQK6000



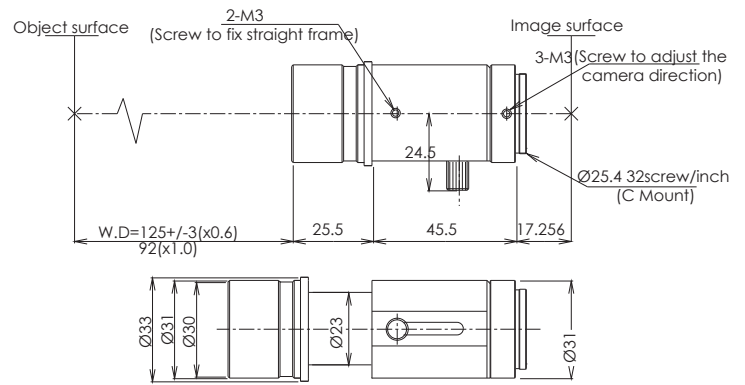
### MQL6000



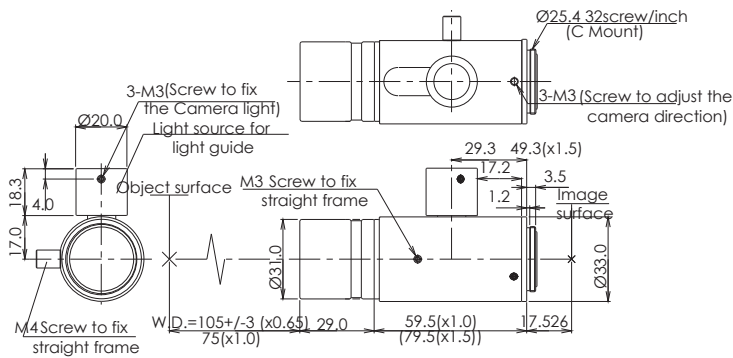
### YJSH000



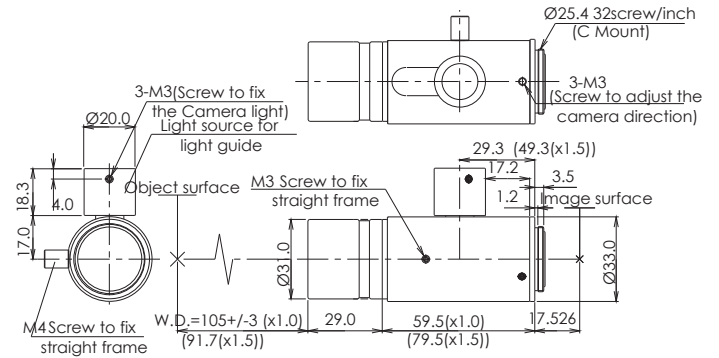
### YRHC000



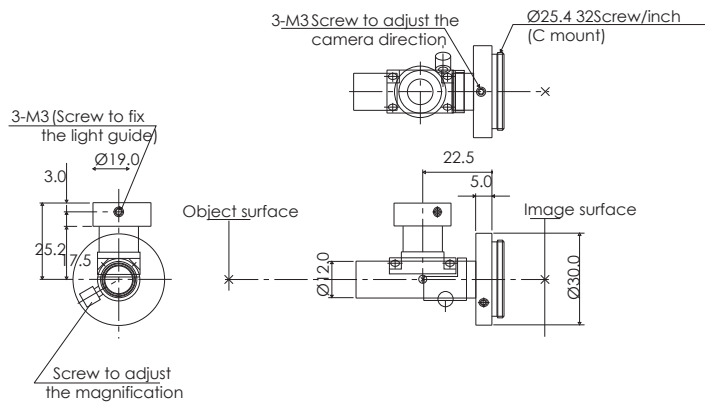
### MRH3000



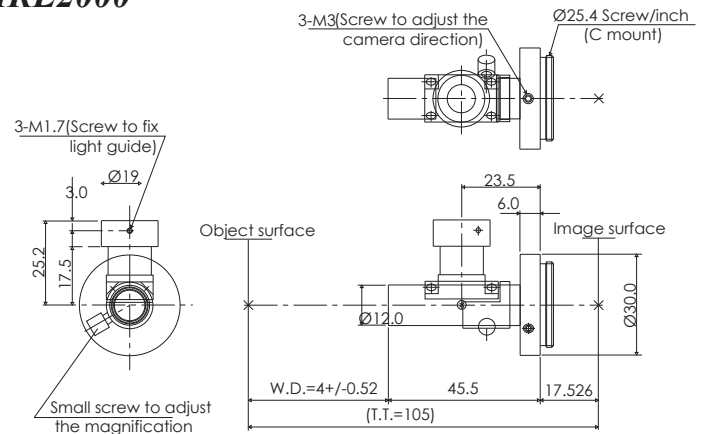
### MRG3000



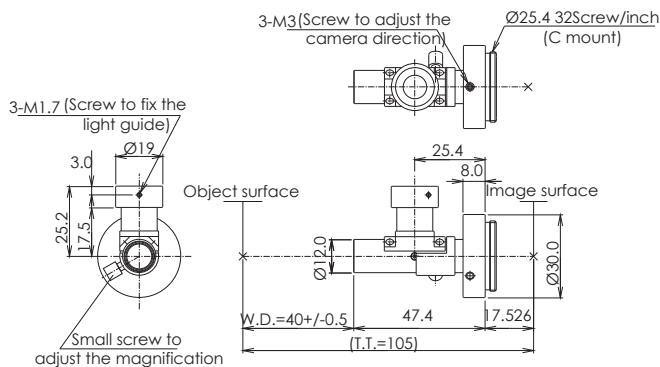
### MRK2000



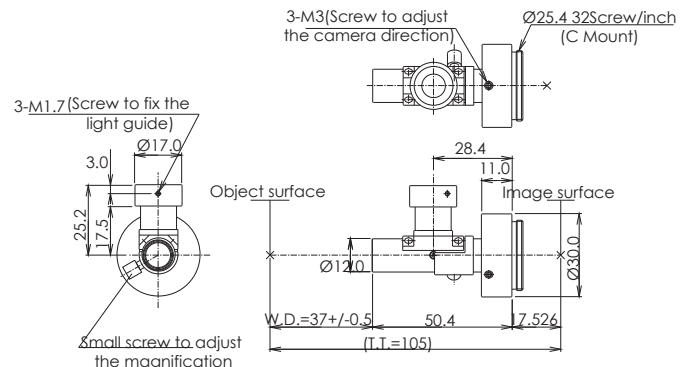
### MRL2000



### MRM2000



### MRP2000

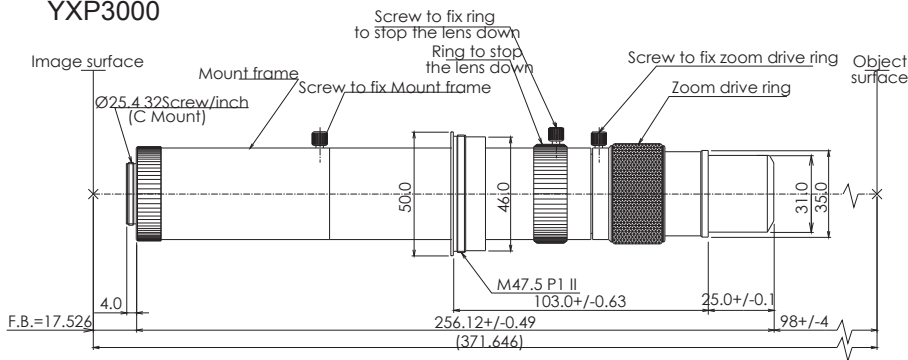


|                                   | YXP3000            | Z075                | Z1                    | Z2                   | Z3                  | Z4                  | Z4D                 | Z4.5                | Z4.5D               | Z2-RA                |
|-----------------------------------|--------------------|---------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| Inch                              | 2/3"               | 2/3"                | 2/3"                  | 2/3"                 | 2/3"                | 2/3"                | 2/3"                | 2/3"                | 2/3"                | 2/3"                 |
| Magnification                     | x0.8 - 4.0         | x0.2 - 0.75         | x0.25 - 1.0           | x0.5 - 2.0           | x0.75 - 3.0         | x0.67 - 4.0         | x0.67 - 4.0         | x0.75 - 4.5         | x0.75 - 4.5         | x0.5 - 2.0           |
| W.D.(mm)                          | 98                 | 150                 | 175                   | 90                   | 56                  | 96                  | 96                  | 90                  | 90                  | 90                   |
| Aperture                          | F12-30             | -                   | -                     | -                    | -                   | -                   | -                   | -                   | -                   | -                    |
| Depth of Field(mm)                | +/-0.5 - 0.1       | +/-2.0 - 0.5        | +/-1.6 - 0.3          | +/-0.7 - 0.2         | +/-0.5 - 0.1        | -                   | -                   | +/-1.78 - 0.13      | +/-1.78 - 0.13      | +/-0.7 - 0.2         |
| Object Size(mm)                   | 8.3x11<br>-1.7x2.2 | 2.4x3.2<br>-6.4x8.5 | 19.2x25.6<br>-4.8x6.4 | 9.6x12.8<br>-2.4x3.2 | 6.4x8.5<br>-1.6x2.1 | 7.1x9.5<br>-1.2x1.6 | 7.1x9.5<br>-1.2x1.6 | 6.4x8.5<br>-1.1x1.4 | 6.4x8.5<br>-1.1x1.4 | 9.6x12.8<br>-2.4x3.2 |
| Image Size(mm)                    | 6.6x8.8            | -                   | -                     | -                    | -                   | -                   | -                   | -                   | -                   | -                    |
| Resolution Power( $\mu\text{m}$ ) | 23-5               | 50-16               | 35-20                 | 25-10                | 20-8                | 15.25-5.59          | 15.25-5.59          | 15.6-4.4            | 15.6-4.4            | 25-10                |
| NA                                | 0.033-0.067        | 0.012-0.018         | 0.003-0.025           | 0.021-0.045          | 0.031-0.068         | 0.022-0.06          | 0.022-0.06          | 0.035-0.05          | 0.035-0.05          | 0.021-0.045          |
| Notes                             | straight           | straight            | straight              | straight             | straight            | straight            | Coaxial             | straight            | Coaxial             | straight             |

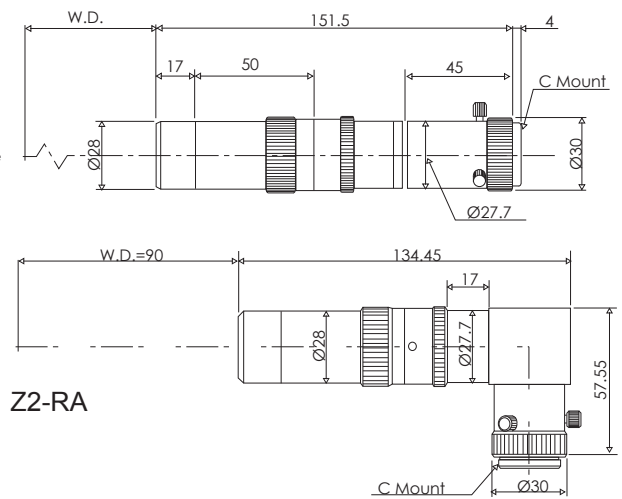
|                                   | Z4.5-RA             | Z6                   | Z04         | Z08            | Z5                  |
|-----------------------------------|---------------------|----------------------|-------------|----------------|---------------------|
| Inch                              | 2/3"                | 2/3"                 | 1/2"        | 1/2"           | 1/2"                |
| Magnification                     | x0.75 - 4.5         | x1 - 6               | x0.13 - 0.4 | x0.75 - 4.5    | x0.6 - 4.8          |
| W.D.(mm)                          | 90                  | 60                   | 200         | 90             | 36                  |
| Aperture                          | -                   | -                    | -           | -              | -                   |
| Depth of Field(mm)                | +/-1.78 - 0.13      | +/-2.3 - 0.02        | +/-21 - 2.4 | +/-37.5 - 0.65 | +/-1.0 - 0.1        |
| Object Size(mm)                   | 6.4x8.5<br>-1.1x1.4 | 4.8x6.4<br>-0.8x1.06 | -           | 46x84<br>-6x8  | 8x10.6<br>-1.0x1.33 |
| Image Size(mm)                    | -                   | -                    | -           | -              | -                   |
| Resolution Power( $\mu\text{m}$ ) | 15.6-4.4            | 10.5-4               | 120-40      | 150-15         | 17-6                |
| NA                                | 0.035-0.05          | 0.032-0.108          | 0.009-0.026 | 0.005-0.04     | 0.015-0.107         |
| Notes                             | straight            | straight             | straight    | straight       | straight            |

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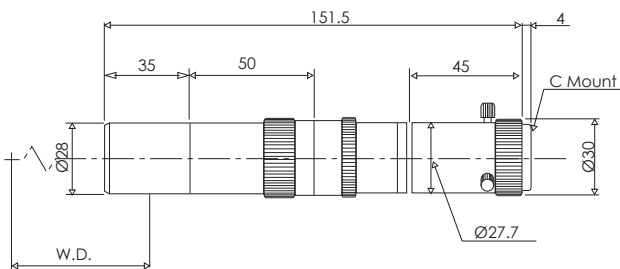
## YXP3000



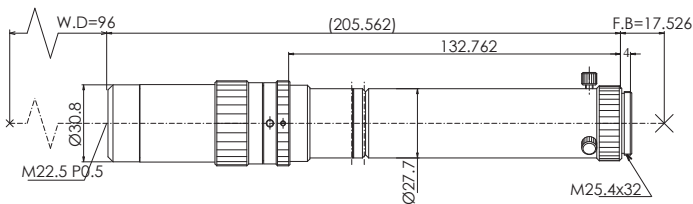
## Z1, Z2, Z3



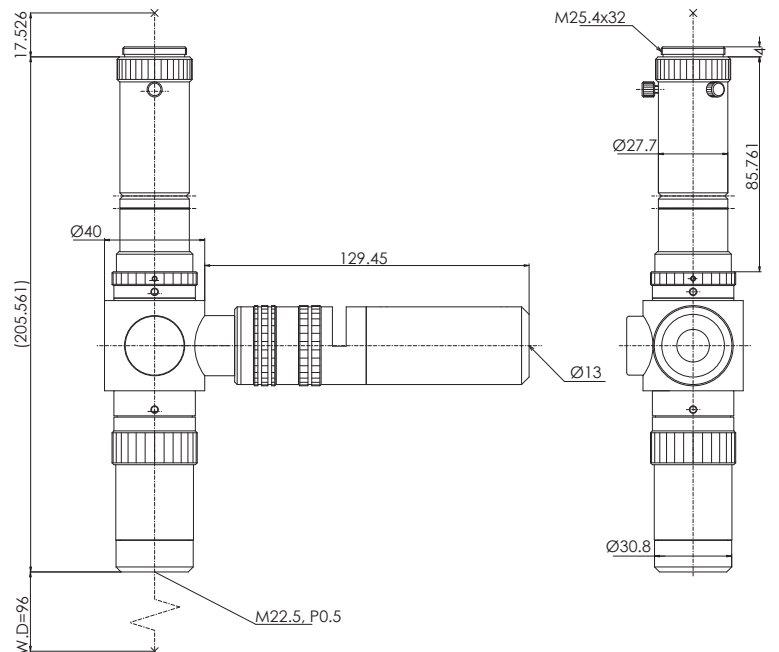
## Z0.75



## Z4



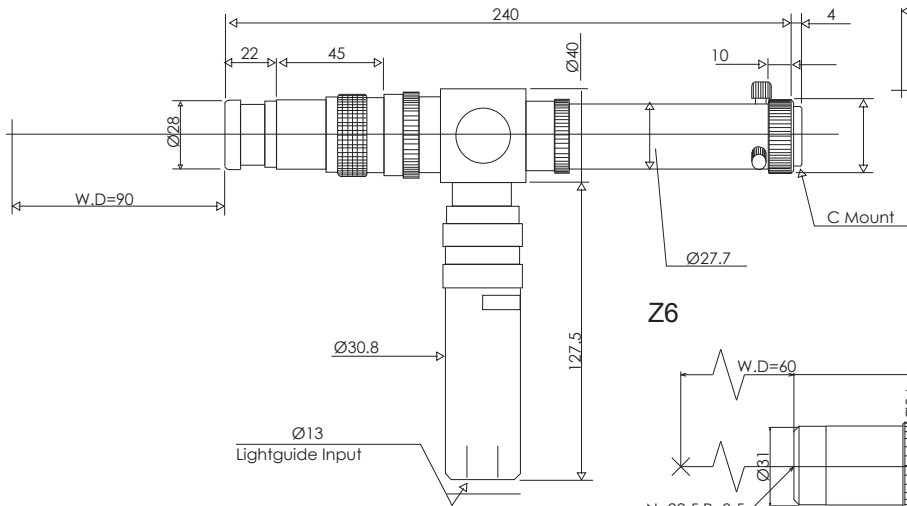
## Z4D



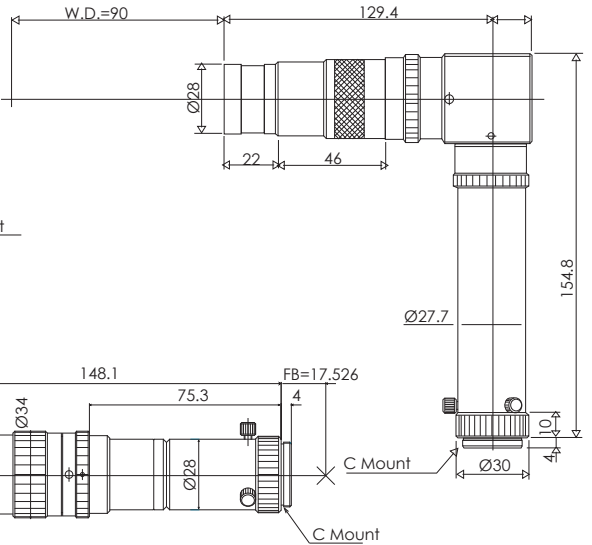
# TV Macro Lenses

Zoom lenses

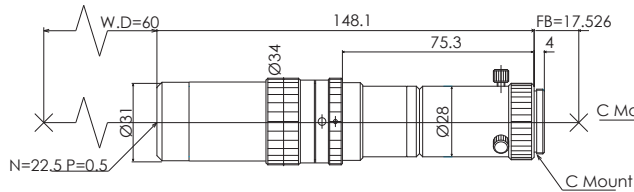
Z4.5D



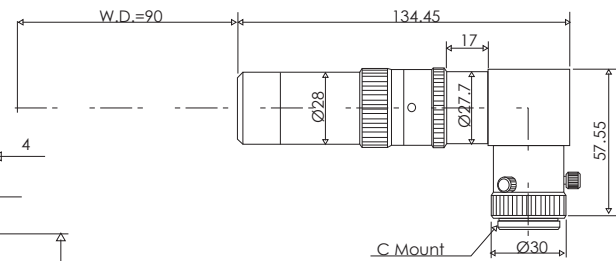
Z4.5-RA



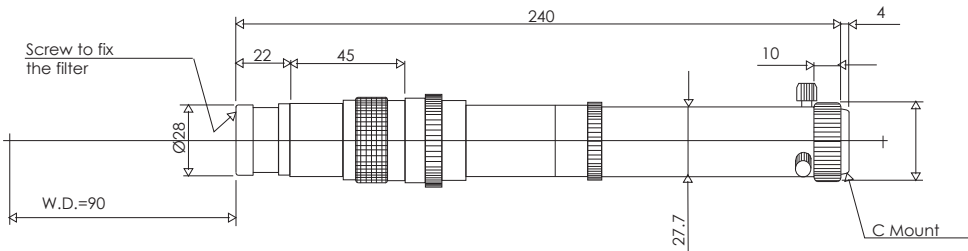
Z6



Z2-RA



Z4.5



# TV Macro Lenses

Megapixels lenses

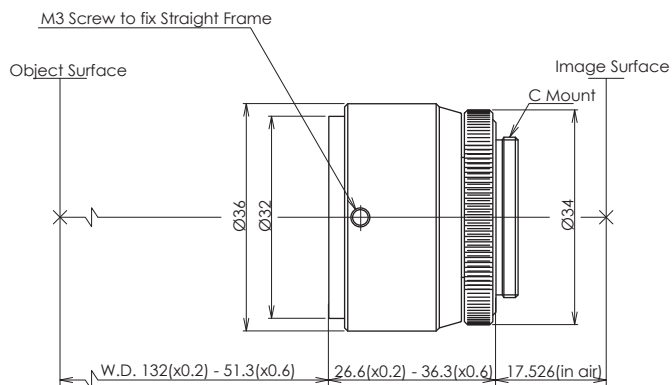
GTVMMP0206 | GTVMMP0610

|                             |                |                 |
|-----------------------------|----------------|-----------------|
| W.D.(mm)                    | 132.0 - 51.3   | 126.1 - 92.6    |
| IMagnification              | x0.2 - 0.6     | x0.6 - 1.0      |
| Aperture                    | F7.4 - 10.2    | F8.0 - 10.0     |
| Depth of Field(mm)          | +/-7 - +/-1    | +/-0.9 - +/-0.4 |
| Object Size(mm)             | 40.0 - 13.3    | 13.3 - 8.0      |
| Resolution Power( $\mu$ m)  | 67 - 22        | 22 - 13         |
| NA                          | 0.0694 - 0.049 | 0.0625 - 0.05   |
| TV Distortion(less than)(%) | 0.1            | 0.1             |
| Notes                       | straight       | straight        |

\* For the 1,500,000 Pixel 1/2 Inch CCD  
High Resolution(More than 1,000 TV lines)  
Almost 0% Distortion

\*Specifications are subject to change without prior notice

GTVMMP0206



GTVMMP0610

