The IMA-S is a hygienically designed integrated servo actuator for the food and beverage processing industry. The IP69K hygienic design features including 316 stainless steel construction, allows for open machine designs and clean-in-place compatibility.

The IMA-S’s unique hygienic integrated design
Features:
• Prevents bacterial growth
• Resists corrosion
• Provides IP69K wash-down protection
• Improves performance, flexibility, and efficiency

TOLOMATIC’S ELECTRIC ROD-STYLE ACTUATORS

<table>
<thead>
<tr>
<th></th>
<th>ERD</th>
<th>RSA</th>
<th>RSX</th>
<th>GSA</th>
<th>IMA</th>
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<tr>
<td>Rod-Style Actuator</td>
<td>Rod-Style Actuator</td>
<td>Rod-Style Actuator</td>
<td>Guided Rod-Style Actuator</td>
<td>Integrated Servo Actuator</td>
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<tr>
<td>Force up to:</td>
<td>35 kN (7,868 lbf)</td>
<td>58 kN (13,039 lbf)</td>
<td>177.9 kN (40,000 lbf)</td>
<td>4.23 kN (950 lbf)</td>
<td>30.6 kN (6,875 lbf)</td>
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<tr>
<td>Speed up to:</td>
<td>1473 mm/sec (58 in/sec)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>760 mm/sec (29.9 in/sec)</td>
<td>3,124 mm/sec (123 in/sec)</td>
<td>1,334 mm/sec (52.5 in/sec)</td>
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<tr>
<td>Stroke Length up to:</td>
<td>1000 mm (39.4 in)</td>
<td>1,524 mm (60 in)</td>
<td>1500 mm (59 in)</td>
<td>914 mm (36 in)</td>
<td>457 mm (18 in)</td>
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<tr>
<td>Screw/Nut Type</td>
<td>Solid, Ball &amp; Roller</td>
<td>Solid, Ball &amp; Roller</td>
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<td>Solid &amp; Ball</td>
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<td>Literature Number:</td>
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<td>3600-4166</td>
<td>2171-4001</td>
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</table>

For complete information see www.tolomatic.com or literature number:

(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)
IMA-S - Hygienic Integrated Servo Actuator

Applications

Slicing, Cutting
- Hygienic design
- Wash-down rated
- High force

Volumetric Filling, Pumping & Dispensing
- Repeatable force
- Smooth velocity
- Infinite positioning

Gating, Sorting, Diverting
- Repeatable positioning
- Product kick-offs
- Compact design
The IMA-S is a hygienically designed integrated servo actuator for the food and beverage processing industry. The hygienic design features all 316 stainless steel construction, IP69K ingress protection, blue seals/o-rings, and hygienic fasteners/cord grips allowing for open machine designs and clean-in-place compatibility. The product line also includes the IMA-SA model which incorporates an internal anti-rotate feature eliminating the need for an external guidance mechanism making it a perfect actuator for applications such as volumetric filling and pumping.
IMA-S: HYGIENIC INTEGRATED SERVO ACTUATOR

OPTIONS:

- Multi-turn absolute encoder, Hiperface, Hiperface DSL, EnDat 2.2
- Resolver
- Incremental encoder

HIGH RESOLUTION FEEDBACK

STAINLESS STEEL DESIGN

- 316 Stainless steel construction
- Superior corrosion resistance

BLUE GASKETS & O-RINGS

- Chemically inert
- Wear resistant
- FDA approved

HYGIENIC CORD GRIPS

- EHEDG (European Hygienic Engineering and Design Group) cord grip eliminates harborage points

FLEXIBLE FEEDBACK & CABLE OPTIONS

- Single (DSL) and dual cable options

MULTIPLE SCREW TECHNOLOGIES

- Ball screws provide efficient motion at an economical price
- Roller screws provide the highest force and longest life

IMA-SA INTERNAL ANTI-ROTATE OPTION

- Provides hygienic, internal anti-rotate feature, eliminating need for external guidance mechanism
- Often used in volumetric filling and pumping applications

DRIVE/ROBOT CONTROLLER COMPATIBILITY

Compatible with the following robot & drive/controller manufacturers:

- Allen Bradley
- Beckhoff
- Bosch Rexroth
- Nidec
- Kollmorgen
- Lenze
- Siemens
- And More

ADDITIONAL OPTIONS

- Brake
- Externally threaded rod end
- Front flange mount
- Rear clevis mount
- Food grade grease
- Hygienic Fasteners
- FDA rod wipers

316 Stainless steel construction
Superior corrosion resistance

Chemically inert
Wear resistant
FDA approved

EHEDG (European Hygienic Engineering and Design Group) cord grip eliminates harborage points

Single (DSL) and dual cable options

Ball screws provide efficient motion at an economical price
Roller screws provide the highest force and longest life

Provides hygienic, internal anti-rotate feature, eliminating need for external guidance mechanism
Often used in volumetric filling and pumping applications

Android
Beckhoff
Bosch Rexroth
Nidec
Kollmorgen
Lenze
Siemens
And More

Brake
Externally threaded rod end
Front flange mount
Rear clevis mount
Food grade grease
Hygienic Fasteners
FDA rod wipers

www.tolomatic.com
IMA-S - Hygienic Integrated Servo Actuator

Performance & Mechanical Specifications:

<table>
<thead>
<tr>
<th>SERIES</th>
<th>STACK</th>
<th>NUT/SCREW</th>
<th>Dynamic Load Rating (mm)</th>
<th>Joint Force</th>
<th>Peak Force</th>
<th>Max. Velocity</th>
<th>Base Inertia</th>
<th>Base Inertia/Stroke</th>
<th>Breakaway Torque</th>
<th>Back Drive Force</th>
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<td>173.47</td>
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</tbody>
</table>

1 Stack winding MV21 / 41
2 Stack winding MV23 / 43
3 Value given is for a zero stroke actuator  † To be determined, visit www.tolomatic.com for up-to-date information
4 In vertical applications an unpowered IMA-S will require a brake to maintain position if the load on the actuator exceeds this value

size.tolomatic.com
for fast, accurate actuator selection.
GET THE EXACT ACTUATOR FOR YOUR APPLICATION REQUIREMENTS AND DUTY CYCLE.

1-800-328-2174
# IMA-S - Hygienic Integrated Servo Actuator

## Performance & Mechanical Specifications:

<table>
<thead>
<tr>
<th></th>
<th>IMA-ST22 (1 STACK, MV21/41)</th>
<th>IMA-ST22 (3 STACK, MV23/43)</th>
<th>IMA-ST33 (1 STACK, MV21/41)</th>
<th>IMA-ST33 (3 STACK, MV23/43)</th>
<th>IMA-SA33</th>
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<tr>
<td><strong>FACE SIZE</strong></td>
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<td>mm 64</td>
<td>mm 89</td>
<td>mm 89</td>
<td>mm 89</td>
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<tr>
<td></td>
<td>in 2.52</td>
<td>in 2.52</td>
<td>in 3.504</td>
<td>in 3.504</td>
<td>in 3.504</td>
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<tr>
<td><strong>STROKE</strong></td>
<td>mm 76.2 to 304.8</td>
<td>mm 152.4 to 457.2</td>
<td>mm 0 to 304.8</td>
<td>mm 0 to 304.8</td>
<td>mm 0 to 304.8</td>
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<tr>
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<td>in 3.0 to 12.0</td>
<td>in 6.0 to 12.0</td>
<td>in 0.0 to 12.0</td>
<td>in 0.0 to 12.0</td>
<td>in 0.0 to 12.0</td>
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<td><strong>BASE WEIGHT</strong></td>
<td>kg 4.8</td>
<td>kg 6.1</td>
<td>kg 10.2</td>
<td>kg 12.5</td>
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<td>lb 10.5</td>
<td>lb 13.4</td>
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<td><strong>WEIGHT PER UNIT OF STROKE</strong></td>
<td>kg/mm 0.0079</td>
<td>kg/mm 0.0079</td>
<td>kg/mm 0.0132</td>
<td>kg/mm 0.0132</td>
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<td>lb/in 0.4408</td>
<td>lb/in 0.7390</td>
<td>lb/in 0.7390</td>
<td>lb/in 0.9690</td>
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<td><strong>Screw Lead Accuracy</strong></td>
<td>mm/300 = 0.051 in/ft = 0.002</td>
<td>mm/300 = 0.010 in/ft = 0.0004</td>
<td>mm = 0.1 in = 0.004</td>
<td>mm = 0.051 in = 0.002</td>
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<td><strong>Temp Range</strong></td>
<td>°C -20 to 40</td>
<td>°C -20 to 40</td>
<td>°F -4 to 104</td>
<td>°F -4 to 104</td>
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## Motor Specifications:

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<td><strong>Winding/Motor Voltage</strong></td>
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<td><strong>Torque Constant (Kt)</strong></td>
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RoHs Compliant Components: ![RoHs Compliant](image)

Performance data was validated using an aluminum face mount plate: IMA22/33 (8.25" x 7.0" x 0.7"); Ambient Temperature = 77°F (25°C); Elevation < 3,281' (1,000 m); Drive specifications: Sinusoidal Commutation and PWM Voltage Source

www.tolomatic.com   Tolomatic Excellence In Motion   IMAS 7
IMA-S - Hygienic Integrated Servo Actuator

**CRITICAL SPEED**

All curves represent properly lubricated and maintained actuators.

**ROLLER SCREW BUCKLING LOAD**

All curves represent properly lubricated and maintained actuators.
**NOTE:** The $L_{10}$ expected life of a ball screw linear actuator is expressed as the linear travel distance that 90% of properly maintained ball screw manufactured are expected to meet or exceed. This is not a guarantee and this graph should be used for estimation purposes only.

The underlying formula that defines this value is:

$$L_{10} = \left( \frac{C}{P_e} \right)^{\frac{1}{3}} \cdot \ell$$

$L_{10}$: Travel life in millions of units (in or mm), where:

- $C$ = Dynamic load rating (lbf) or (N)
- $P_e$ = Equivalent load (lbf) or (N)
- If load is constant across all movements then:
  - actual load = equivalent load
- $\ell$ = Screw lead (in/rev) (mm/rev)

Use the “Equivalent Load” calculation below, when the load is not constant throughout the entire stroke. In cases where there is only minor variation in loading, use greatest load for life calculations.

$$P_e = \sqrt[3]{L_1(P_1)^3 + L_2(P_2)^3 + L_3(P_3)^3 + \ldots + L_n(P_n)^3}$$

Where:

- $P_e$ = Equivalent load (lbf) or (N)
- $P_n$ = Each increment at different load (lbf) or (N)
- $L = $ Total distance traveled per cycle (extend + retract stroke)
  $$[L = L_1 + L_2 + L_3 + \ldots]$$
- $L_n$ = Each increment of stroke at different load (in) or (mm)
RE-LUBRICATION RECOMMENDATION:
IMA-ST33, IMA-SA33: Lubrication requirements for IMA-S electric actuators depend on the motion cycle (velocity, force, duty cycle), type of application, ambient temperature, environmental surrounding and various other factors. For many general purpose applications, Tolomatic ball screw actuators are typically considered lubricated for life unless otherwise specified, such as those actuator models outfitted with a re-lubrication feature. For roller screw or ball screw actuators outfitted with a re-lubrication feature, Tolomatic recommends to re-lubricate the actuator at least once per year or every 1,000,000 cycles, whichever comes first, to maximize service life. For more demanding applications such as pressing, high frequency or other highly stressed applications, the re-lubrication interval for these actuators will vary and will need to be more frequent. In these demanding applications, it is recommended to execute at least 5 full stroke moves every 5,000 cycles of operation (or more frequent if possible) to re-distribute the grease within the actuator.

Re-lubricate with standard Tolomatic Grease #2744-9099 or optional Food grade grease #2733-1303 into the grease zerk located on the rod end.

NOTE: IMA22ST does not accommodate relubrication.

In some applications oil may leak from the grease zerk. In contamination sensitive applications replace grease zerk with plug.

SIDE LOAD CONSIDERATIONS
The IMA-S integrated motor actuator is not meant to be used in applications where side loading occurs. Loads must be guided and supported. Loads should be aligned with the line of motion of the thrust rod. Side loading will affect the life of the actuator.

BRAKE CONSIDERATIONS
An un-powered IMA-S will require a brake to maintain its position if the force on the actuator exceeds Back Drive Force listed in the table on page imas_6.

A brake can be used with the actuator to keep it from backdriving, typically in vertical applications. A brake may be used for safety reasons or for energy savings allowing the actuator to hold position when un-powered. See page imas_15 for ordering information.

NOTE: The optional Spring-Applied / Electronically-Released Brake requires 24V power. Input current rating:
IMA-ST22 - 0.35 Amps;
IMA-S_33 - 0.43 Amps;

Brake Specifications:

<table>
<thead>
<tr>
<th>SERIES</th>
<th>IMA-ST22</th>
<th>IMA-ST33</th>
<th>IMA-SA33</th>
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</thead>
<tbody>
<tr>
<td>ROTOR INERTIA (gm-cm²)</td>
<td>19</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>(oz-in²)</td>
<td>0.052</td>
<td>0.112</td>
<td>0.112</td>
</tr>
<tr>
<td>CURRENT (Amp)</td>
<td>0.35</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>HOLDING TORQUE (N·m)</td>
<td>1.6</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>(in·lb)</td>
<td>14</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>ENGAGE TIME (mSec)</td>
<td>75</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>DISENGAGE TIME (mSec)</td>
<td>20</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>VOLTAGE (Vdc)</td>
<td>24</td>
<td>1-800-328-2174</td>
<td>1-800-328-2174</td>
</tr>
</tbody>
</table>

USE THE TOLOMATIC SIZING AND SELECTION SOFTWARE AVAILABLE ON-LINE AT www.tolomatic.com OR... CALL TOLOMATIC AT 1-800-328-2174. We will provide any assistance needed to determine the proper actuator for the job.
**IMA-S - Hygienic Integrated Servo Actuator**

3D CAD available at www.tolomatic.com

Always use configurated CAD solid model to determine critical dimensions.

---

### Dimensions: Rod End Options

**EXTERNAL THREAD END ROD END (MET)**

12mm Hex Feature Allows for Removal of MET Rod End to Provide Access to Grease Fitting to Lubricate Actuator

"33 Size Actuator Only"

**Dimensions in millimeters**

<table>
<thead>
<tr>
<th>Units</th>
<th>ST22</th>
<th>ST33</th>
<th>SA33</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M16x 1.5-6g</td>
<td>M20x 1.5-6g</td>
<td>M20x 1.5-6g</td>
</tr>
<tr>
<td>B</td>
<td>37.3</td>
<td>44.5</td>
<td>44.5</td>
</tr>
<tr>
<td>C</td>
<td>18.4</td>
<td>28.8</td>
<td>28.8</td>
</tr>
</tbody>
</table>

---

### Dimensions: Mounting Options

**FRONT FLANGE MOUNT (FFG)**

**Dimensions in millimeters**

<table>
<thead>
<tr>
<th>Units</th>
<th>ST22</th>
<th>ST33</th>
<th>SA33</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11.2</td>
<td>15.0</td>
<td>15.0</td>
</tr>
<tr>
<td>B</td>
<td>117.3</td>
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</tr>
<tr>
<td>C</td>
<td>100.0</td>
<td>126.0</td>
<td>126.0</td>
</tr>
<tr>
<td>D</td>
<td>67.3</td>
<td>91.4</td>
<td>91.4</td>
</tr>
<tr>
<td>E</td>
<td>50.0</td>
<td>63.0</td>
<td>63.0</td>
</tr>
<tr>
<td>F</td>
<td>8.7</td>
<td>12.3</td>
<td>12.3</td>
</tr>
</tbody>
</table>

**Dimensions in inches**

<table>
<thead>
<tr>
<th>Units</th>
<th>ST22</th>
<th>ST33</th>
<th>SA33</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.44</td>
<td>0.59</td>
<td>0.59</td>
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<tr>
<td>B</td>
<td>4.62</td>
<td>5.91</td>
<td>5.91</td>
</tr>
<tr>
<td>C</td>
<td>3.94</td>
<td>4.96</td>
<td>4.96</td>
</tr>
<tr>
<td>D</td>
<td>2.65</td>
<td>3.60</td>
<td>3.60</td>
</tr>
<tr>
<td>E</td>
<td>1.97</td>
<td>2.48</td>
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</tr>
<tr>
<td>F</td>
<td>0.34</td>
<td>0.48</td>
<td>0.48</td>
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</tbody>
</table>

---

### Dimensions: Rear Clevis Mount (PCD)

**Dimensions in millimeters**

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<th>Units</th>
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<th>ST33</th>
<th>SA33</th>
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<tbody>
<tr>
<td>G</td>
<td>25.6</td>
<td>31.6</td>
<td>31.6</td>
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<tr>
<td>H</td>
<td>22.0</td>
<td>26.0</td>
<td>26.0</td>
</tr>
<tr>
<td>J</td>
<td>14.1</td>
<td>17.1</td>
<td>17.1</td>
</tr>
<tr>
<td>K</td>
<td>10.036/10,000</td>
<td>12.043/12,000</td>
<td>12.043/12,000</td>
</tr>
<tr>
<td>L</td>
<td>8.1</td>
<td>8.4</td>
<td>8.4</td>
</tr>
<tr>
<td>M1*</td>
<td>3.6</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>M2*</td>
<td>7.4</td>
<td>10.9</td>
<td>10.9</td>
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</table>

**Dimensions in inches**

<table>
<thead>
<tr>
<th>Units</th>
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<th>SA33</th>
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<tr>
<td>G</td>
<td>1.01</td>
<td>1.24</td>
<td>1.24</td>
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<tr>
<td>H</td>
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<td>1.02</td>
</tr>
<tr>
<td>J</td>
<td>0.36</td>
<td>0.67</td>
<td>0.67</td>
</tr>
<tr>
<td>K</td>
<td>0.3957</td>
<td>0.4741</td>
<td>0.4741</td>
</tr>
<tr>
<td>L</td>
<td>0.32</td>
<td>0.33</td>
<td>0.33</td>
</tr>
<tr>
<td>M1*</td>
<td>0.14</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>M2*</td>
<td>0.29</td>
<td>0.43</td>
<td>0.43</td>
</tr>
</tbody>
</table>

* M1 Standard actuator; M2 with HY2G option
IMA-S - Hygienic Integrated Servo Actuator

Selection Guidelines

1. ESTABLISH MOTION PROFILE
   Using the application stroke length, desired cycle time and loads establish the motion profile details.

2. COMPARE OPERATING (PEAK) FORCE AND VELOCITY TO OPERATING REGION
   Calculate the application required operating (peak) force and velocity and compare to tables on pages IMAS_6-7. The calculated force and velocity must fall within the operating region of the actuator.

3. COMPARE SEVERE DUTY (CONTINUOUS) FORCE AND VELOCITY TO SEVERE DUTY REGION
   Calculate the RMS force and velocity required and compare to tables on pages IMAS_6-7. The calculated force and velocity must fall within the severe duty region.

4. CONSIDER SCREW/NUT CHOICES
   Choose roller nuts for its longer life (see Life graph on page IMAS_9) and higher peak loads (see graphs on pages IMAS_6-7). Ball nuts are cost competitive and more efficient (see table on page IMAS_6).

5. VERIFY CRITICAL SPEED OF THE SCREW
   Verify that the application’s peak linear velocity does not exceed the critical speed value for the size and lead of the screw selected.

6. VERIFY AXIAL BUCKLING STRENGTH OF THE SCREW
   Verify that the peak force does not exceed the critical buckling force for the size of the screw selected.

7. MOTOR WINDINGS & VOLTAGES
   Choose motor windings optimized for 230 Vac and 460 Vac voltage busses. The 1 stack motor (MV21-230V & MV41-460V), available for the IMA-S22/33, allows strokes of 3" (76.2mm) vs the minimum 6" (152.4mm) stroke required.

8. CALCULATE LUBRICATION INTERVAL
   See page IMAS_10 for an overview and IMA-S Users Guide (W2700-4016) for complete instructions to calculate lubrication interval.

9. TEMPERATURE
   The IMA-S is intended to operate in an environment with an ambient temperature between -4 to +104°F (-20 to +40°C). Performance should be de-rated if the ambient temperature is above 77°F (25°C). Contact the factory if the ambient temperature does not fit within this range. NOTE: Temperature of the actuator’s body can approach 180°F (82°C) in aggressive applications. Adequate clearance to ensure actuator’s ambient conditions do not rise drastically should be allowed.

10. BRAKE CONSIDERATIONS
    An un-powered IMA-S will require a brake to maintain its position if the force on the actuator exceeds Back Drive Force listed in the table on page IMAS_8.
    A brake can be used with the actuator to keep it from back-driving, typically in vertical applications. A brake may be used for safety reasons or for energy savings allowing the actuator to hold position when un-powered. See page IMAS_15 for ordering information.

11. CHOOSE MOTOR CONNECTORS & FEEDBACK DEVICE
    Connector choice and wiring emulates popular motor manufacturers for compatibility.
    Cable/connector options include:
    • Allen Bradley VP series
    • Tolomatic standard
    • Flying leads
    • Cables are available in 3m, 5m and 10m lengths
    Feedback options include:
    • Incremental Encoder
    • Absolute Encoder, Hiperface, Hiperface DSL, EnDat 2.2
    • Resolver
    Contact Tolomatic for additional motor connectors, feedback combinations and motor files for third party drives.

12. CONSIDER MOUNTING & ROD END OPTIONS
    Examine mounting options dimensional drawings on page IMAS_12. Standard mounting on the IMA-S are 4 tapped holes on the front rod end face of the actuator. Other fixed mounting option is the Front Flange Mount (FFG). Pivoting mount option is the Rear Clevis Mount (PCD).
    Rod End Option is: External Threaded Rod End (MET).
    NOTE: Regardless of the mounting option chosen, care must be taken to ensure that the load is guided and in-line with the force rod’s line of motion. Misalignment of the force rod’s line of motion will cause degradation in the actuator’s expected life.

13. CONSIDER ENVIRONMENTAL RATING AND ANTI-ROTATE OPTIONS
    The environmental rating for a standard IMA-S is IP69K for protection against water and dust ingress. Choose the Anti-Rotate Option (IMA-SA) if required. Call Tolomatic at 1-800-328-2174 for help in determining the best actuator for your application.

www.tolomatic.com

IMAS_13
### APPLICATION DATA WORKSHEET

**Fill in known data. Not all information is required for all applications.**

#### ORIENTATION
- [ ] Horizontal
- [ ] Vertical
- [ ] Incline

#### MOVE PROFILE
**EXTEND**
- Move Distance
  - [ ] inch
  - [ ] millimeters
- Move Time $\text{sec}$
- Max. Speed
  - [ ] in/sec
  - [ ] mm/sec
- Dwell Time After Move
  - [ ] sec

**RETRACT**
- Move Distance
  - [ ] inch
  - [ ] millimeters
- Move Time $\text{sec}$
- Max. Speed
  - [ ] in/sec
  - [ ] mm/sec
- Dwell Time After Move
  - [ ] sec

#### STROKE LENGTH
- Order in mm ONLY
- [ ] millimeters (SM) (Metric)

**NOTE:** If load or force changes during cycle, use the highest numbers for calculations.

#### PRECISION
- Repeatability
  - [ ] inch
  - [ ] millimeters

#### OPERATING ENVIRONMENT
- Temperature, Contamination, Water, etc.

#### CONTACT INFORMATION
- Name, Phone, Email
- Co. Name, Etc.

#### USE THE TOLOMATIC SIZING AND SELECTION SOFTWARE AVAILABLE ON-LINE AT www.tolomatic.com OR... CALL TOLOMATIC AT 1-800-328-2174. We will provide any assistance needed to determine the proper actuator for the job.

**FAX 1-763-478-8080**  **EMAIL help@tolomatic.com**

**STOP**
IMA-S - Hygienic Integrated Servo Actuator

Ordering

**MODEL SELECTION (MUST BE IN THIS ORDER)**

IMA-ST 33 RN05 SM304.8 MV23 CT2A2 N FFG HYG2 HYG3 CR5

**MODEL**
- IMA-ST Stainless IMA Standard
- IMA-SA Stainless IMA Anti-Rotate

**SIZE**
- 22 22 Series Actuator (Anti-Rotate not available)
- 33 33 Series Actuator

**STROKE LENGTH**
- SM _ _ _ Stroke, enter stroke length in millimeters

** BRAKE OPTION**
- N NO Brake
- B Brake

** CABLES**
- CR3 Tolomatic standard 3m flying lead cables, power and feedback
- CR5 Tolomatic standard 5m flying lead cables, power and feedback
- CR10 Tolomatic standard 10m flying lead cables, power and feedback

**NUT / SCREW**
Screw/Nut combinations available

<table>
<thead>
<tr>
<th>22</th>
<th>33</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN05</td>
<td>BN05</td>
<td>Ball Nut, 5 mm lead</td>
</tr>
<tr>
<td>BN10</td>
<td>BN10</td>
<td>Ball Nut, 10 mm lead</td>
</tr>
<tr>
<td>—</td>
<td>BN20</td>
<td>Ball Nut, 20 mm lead</td>
</tr>
<tr>
<td>—</td>
<td>RN04</td>
<td>Roller Nut, 4 mm lead</td>
</tr>
<tr>
<td>—</td>
<td>RN05</td>
<td>Roller Nut, 5 mm lead</td>
</tr>
<tr>
<td>—</td>
<td>RN10</td>
<td>Roller Nut, 10 mm lead</td>
</tr>
</tbody>
</table>

**MOTOR VOLTAGE**
- MV21* 230 Vac, Motor Voltage, 1 Stack Winding
- MV41* 460 Vac, Motor Voltage, 1 Stack Winding
- MV23 230 Vac, Motor Voltage, 3 Stack Winding
- MV43 460 Vac, Motor Voltage, 3 Stack Winding

**ROD END OPTIONS**
- Standard, female, internally threaded rod end
- MET Male Externally Threaded Rod End

**MOTOR SERIES CONNECTORS FEEDBACK DEVICE**
- Cable + Allen Bradley VP Connector CA2 A2 SICK Hiperface DSL
- Allen Bradley Flying Lead FA1 A1 SICK Hiperface
- Allen Bradley Flying Lead FA2 A2 SICK Hiperface DSL
- Cable + Tolomatic Std. VP Connector CT2 A2 SICK Hiperface DSL
- Tolomatic Std. Flying Lead FT1 D1 Incremental

**MOTOR SERIES CONNECTORS FEEDBACK DEVICE**
- Tolomatic Std. Flying Lead FT1 A1 SICK Hiperface
- Tolomatic Std. Flying Lead FT1 H1 Heidenhain Endat 2.2
- Tolomatic Std. Flying Lead FT1 R1 Resolver
- Tolomatic Std. Flying Lead FT2 A2 SICK Hiperface DSL

**REPLACEABLE SEAL CARTRIDGE**

<table>
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<th>IMA-ST22</th>
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<th>IMA-SA33</th>
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<td>Standard</td>
<td>2622-9070</td>
<td>2633-9070</td>
<td>2633-9070</td>
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<tr>
<td>Standard with Rear Clevis Mount (PCD)</td>
<td>2622-9071</td>
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<td>2633-9071</td>
</tr>
<tr>
<td>FDA Rod Wipers (HYG2)</td>
<td>2622-9072</td>
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</tr>
<tr>
<td>FDA Rod Wipers (HYG3) with Rear Clevis Mount (PCD)</td>
<td>2622-9073</td>
<td>2633-9073</td>
<td>2633-9073</td>
</tr>
</tbody>
</table>

**OTHER OPTIONS**
- HYG2 Hygienic Fasteners
- HYG3 FDA Rod Wipers
  *Order none, 1 or both

**STROKE LENGTH**
- N _ _ _ Stroke, enter stroke length in millimeters

**NOTE:** See page imas_7 for stroke min. & max.

**ROD END OPTIONS**
- Standard, female, internally threaded rod end
- MET Male Externally Threaded Rod End

**MOUNTING OPTIONS**
- Standard Face Mount
- FFG Front Range Mount
- PCD Clevis Mount, Rear
- PCDR Clevis Mount, Rear (Rotated 90°)

For custom cable lengths please contact Tolomatic. Lead times will vary.

Contact Tolomatic for Lead Time
Some feedback devices are not compatible with some connectors. Contact Tolomatic for complete motor connector & feedback combination information
The Tolomatic Difference  Expect More From the Industry Leader:

INNOVATIVE PRODUCTS
Unique linear actuator solutions with Endurance Technology™ to solve your challenging application requirements.

FAST DELIVERY
The fastest delivery of catalog products... Built-to-order with configurable stroke lengths and flexible mounting options.

ACTUATOR SIZING
Online sizing that is easy to use, accurate and always up-to-date. Find a Tolomatic electric actuator to meet your requirements.

YOUR MOTOR HERE
Match your motor with compatible mounting plates that ship with any Tolomatic electric actuator.

LIBRARY
Easy to access CAD files available in the most popular formats to place directly into your assembly.

TECHNICAL SUPPORT
Extensive motion control knowledge: Expect prompt, courteous replies to any application and product questions from Tolomatic’s industry experts.

Also Consider These Other Tolomatic Products:

Electric Products
Rod & Guided Rod Style Actuators, High Force Actuators, Screw & Belt Drive Rodless Actuators, Motors, Drives and Controllers
“Foldout” Brochure #9900-9074

Pneumatic Products
Rodless Cylinders: Band Cylinders, Cable Cylinders, Magnetically Coupled Cylinders/Slides; Guided Rod Cylinder Slides
“Foldout” Brochure #9900-9075

Power Transmission Products
Gearboxes: Float-A-Shaft®, Slide-Rite®, Disc Cone Clutch; Caliper Disc Brakes
“Foldout” Brochure #9900-9076

Visit www.tolomatic.com for the most up-to-date technical information