coated steel inserts provide superior corrosion-resistant mounting threads

one piece hardened ground jaw guides provide high precision and durability

internal lubrication for extended life without maintenance

-V1 option replaces all shock pads, seals, and wipers with fluoroelastomer for enhanced chemical resistance

wipers and rack covers protect from external contamination

shock pads minimize shock loads increasing life

all fasteners are corrosion-resistant

proximity switches available for sensing jaw position

fluoropolymer composite bushings provide longevity, and are contamination and impact resistant

replaceable drive link reduces potential of catastrophic damage to drive train

-Z1 option provides fully coated, corrosion-resistant jaw guides and driving racks for extreme environments

motor speed reducer with precision gear train is lubricated for rated life

motor speed reducer can be easily repositioned into any of four orientations
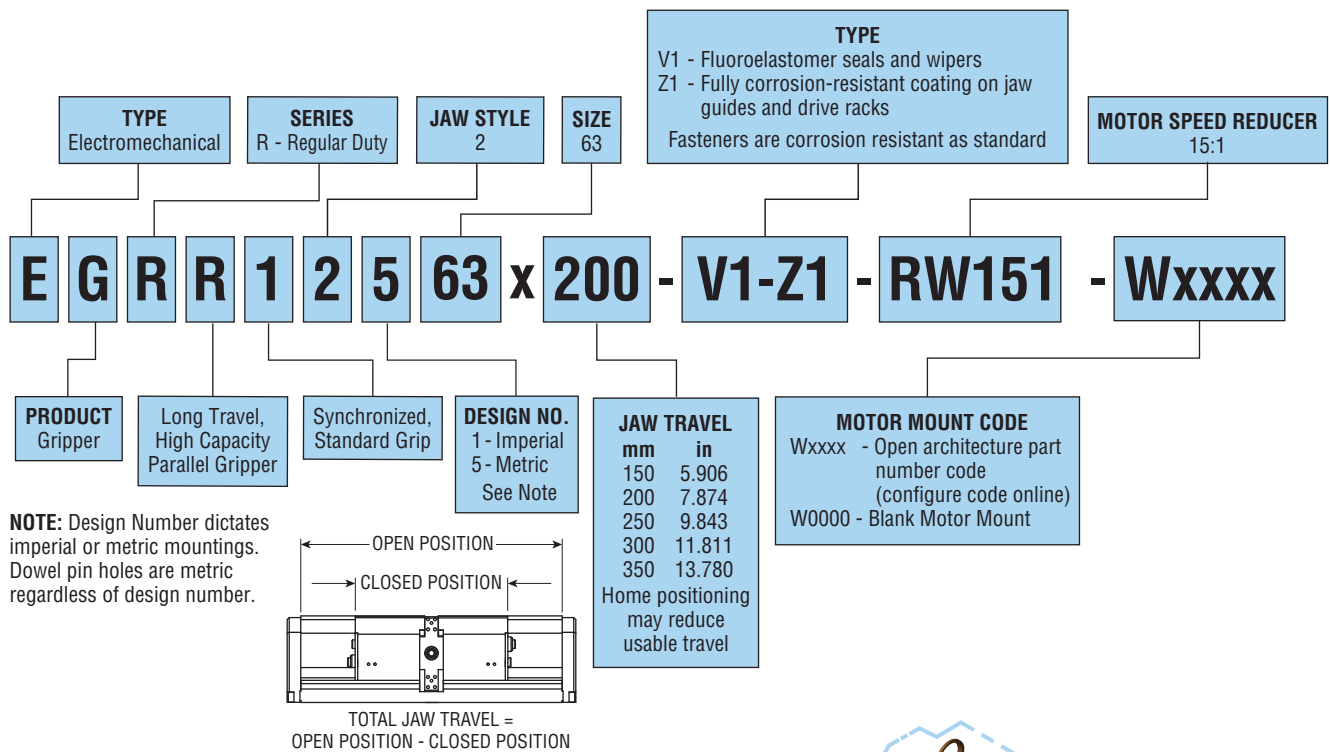
Your Motor
Your Way

Major Benefits

- Servo motor control provides acceleration, velocity, and position feedback.

- Compact design provides high grip force, large moment capacities, long jaw travel, and low overall weight for applications with limited space.

- Rugged construction withstands high impact and shock loads in demanding industrial environments.

- Three large diameter jaw guides spanning the length of the gripper provide stable jaw travel, long allowable tooling length, and high moment capacities.

- Robust rack and pinion jaw drive provides repeatable jaw positioning.

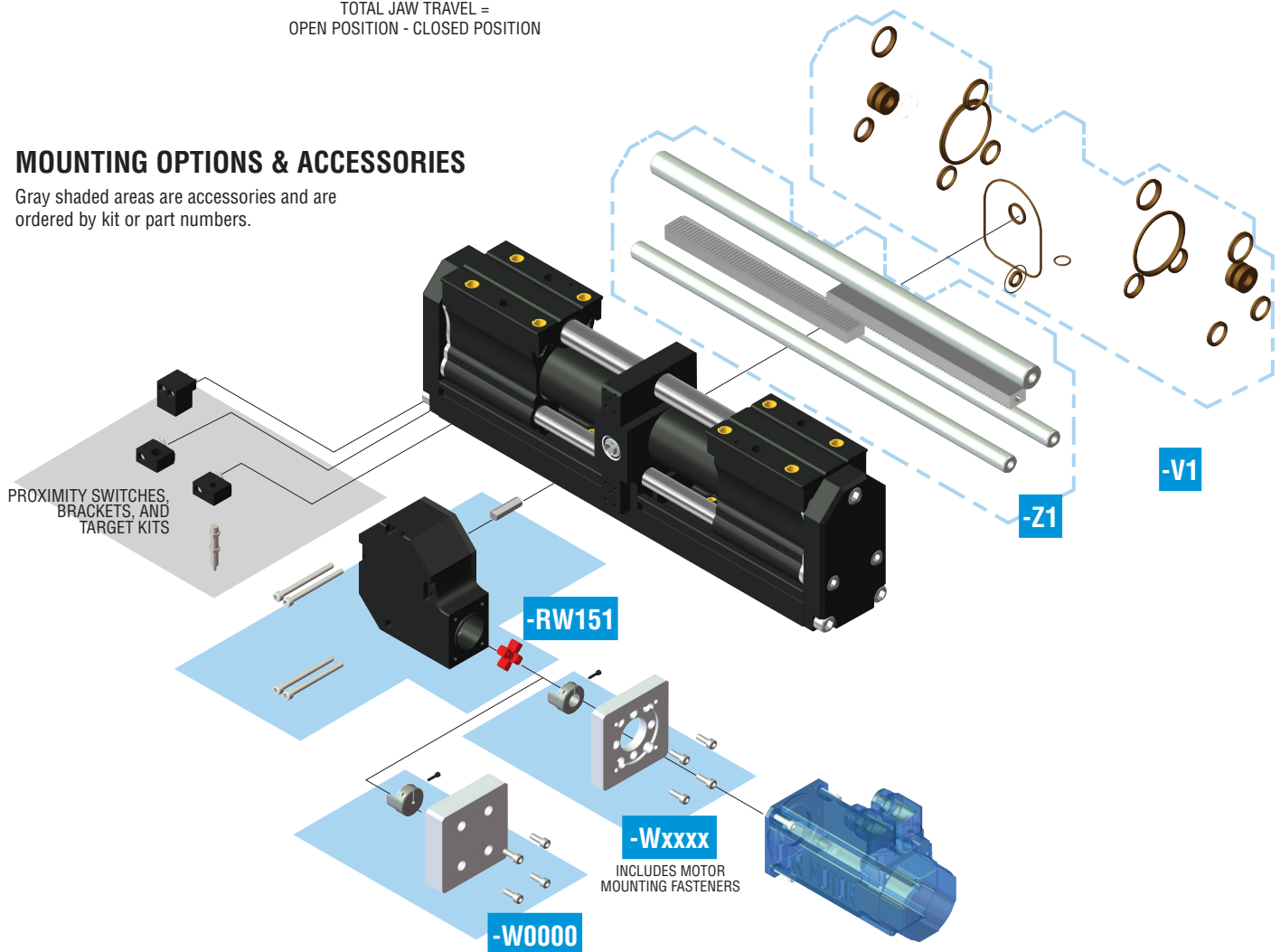- *Your Motor, Your Way* allows motor and controls flexibility at no additional cost.

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TYPE
Electromechanical

SERIES
R - Regular Duty

JAW STYLE
2

SIZE
63

TYPE
V1 - Fluoroelastomer seals and wipers
Z1 - Fully corrosion-resistant coating on jaw guides and drive racks
Fasteners are corrosion resistant as standard

MOTOR SPEED REDUCER
15:1

E G R R 1 2 5 63 x 200 - V1-Z1 - RW151 - Wxxxx

PRODUCT
Gripper

Long Travel, High Capacity Parallel Gripper

Synchronized, Standard Grip

DESIGN NO.
1 - Imperial
5 - Metric
See Note

JAW TRAVEL

mm	in
150	5.906
200	7.874
250	9.843
300	11.811
350	13.780

Home positioning may reduce usable travel

MOTOR MOUNT CODE
Wxxxx - Open architecture part number code (configure code online)
W0000 - Blank Motor Mount

NOTE: Design Number dictates imperial or metric mountings. Dowel pin holes are metric regardless of design number.

OPEN POSITION
CLOSED POSITION

TOTAL JAW TRAVEL =
OPEN POSITION - CLOSED POSITION

MOUNTING OPTIONS & ACCESSORIES

Gray shaded areas are accessories and are ordered by kit or part numbers.

PROXIMITY SWITCHES, BRACKETS, AND TARGET KITS

-V1

-Z1

-RW151

-Wxxxx
INCLUDES MOTOR MOUNTING FASTENERS

-W0000

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SPECIFICATIONS		SERIES EGRR
INPUT TORQUE	Without Motor Speed Reducer	2.9 Nm min to 43.2 Nm max [26 in-lb min to 382 in-lb max]
	With RW151 Motor Speed Reducer	0.3 Nm min to 3.8 Nm max [2.3 in-lb min to 34 in-lb max]
INPUT RUNNING SPEED	Without Motor Speed Reducer	400 rpm max
	With RW151 Motor Speed Reducer	6000 rpm max
JAW GRIP SPEED*		50 mm/sec max [2 in/s max]
OPERATING TEMPERATURE		-28° to +82° C [-20° to 180° F]
RATED LIFE		5 million cycles minimum
GRIP REPEATABILITY		Within 0.05 mm [.002 inch] of original centered position
LUBRICATION		Factory lubricated for rated life
MAINTENANCE		Field repairable (except reducer)

* Jaw grip speed is speed which jaws contact gripped workpiece. Jaws may operate at faster speeds, but must decelerate to grip speed prior to grip.

| MODEL NUMBER	TOTAL JAW TRAVEL TRAVEL TOLERANCE		GRIPPER WEIGHT						FULL TRAVERSE TIME FACTOR** CF	GRIP FORCE FACTOR GF*	
	+4.8 +2.1	+ 0.189 + 0.084	WITHOUT MOTOR SPEED REDUCER		WITH MOTOR SPEED REDUCER		WITH REDUCER & M1095 MOTOR			METRIC	IMPERIAL
	mm	in	kg	lb	kg	lb	kg	lb			
EGRR12-x-63 x 150	150	5.906	12.8	28.2	14.9	32.8	18.3	40.2	1057	937	23.8
EGRR12-x-63 x 200	200	7.874	15.3	33.7	17.4	38.3	20.8	45.7	1410		
EGRR12-x-63 x 250	250	9.843	18.2	40.1	20.3	44.7	23.7	52.1	1762		
EGRR12-x-63 x 300	300	11.811	20.5	45.1	22.5	49.7	25.9	57.1	2115		
EGRR12-x-63 x 350	350	13.780	22.7	50.1	24.8	54.7	28.2	62.1	2467		

 * Grip force varies with tooling length
**Time factors assume a total jaw acceleration and deceleration of 1G (0.5 G per jaw) to and from jaw running speed

MODEL NUMBER	JAW TRAVEL FACTOR JT				JAW TRAVEL DIRECTION TRAVEL DIRECTION WITH SPECIFIED INPUT SHAFT ROTATION			
	WITHOUT MOTOR SPEED REDUCER		WITH RW151 MOTOR SPEED REDUCER		WITHOUT MOTOR SPEED REDUCER		WITH RW151 MOTOR SPEED REDUCER	
	METRIC	IMPERIAL	METRIC	IMPERIAL	CW	CCW	CW	CCW
EGRR12-x-63 x 150	127.674	5.027	8.512	0.335	Open	Close	Close	Open
EGRR12-x-63 x 200								
EGRR12-x-63 x 250								
EGRR12-x-63 x 300								
EGRR12-x-63 x 350								

MAXIMUM ALLOWABLE FORCES AND MOMENTS

MODEL NUMBER	Fa		Mx		My		Mz	
	N	lb	Nm	in-lb	Nm	in-lb	Nm	in-lb
EGRR12-x-63 x 150	15570	3500	880	8000	715	6500	715	6500
EGRR12-x-63 x 200	15570	3500	990	9000	825	7500	825	7500
EGRR12-x-63 x 250	15570	3500	990	9000	825	7500	825	7500
EGRR12-x-63 x 300	15570	3500	990	9000	825	7500	825	7500
EGRR12-x-63 x 350	15570	3500	990	9000	825	7500	825	7500
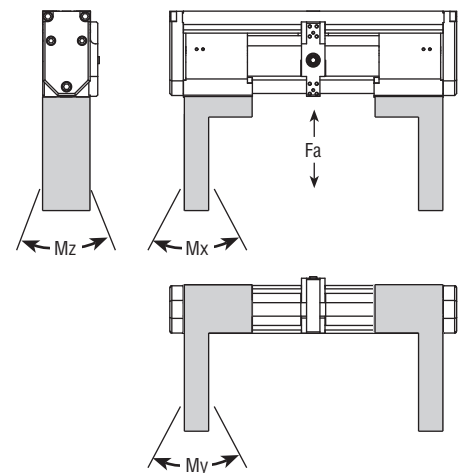
Fa: Total for both jaws
Mx: Allowable moment per jaw, measured from jaw mounting surface
My: Allowable moment per jaw, measured from geometric center of jaw
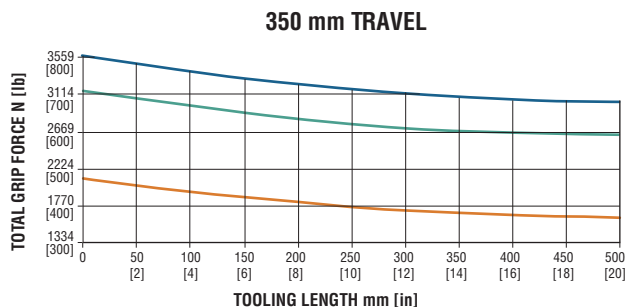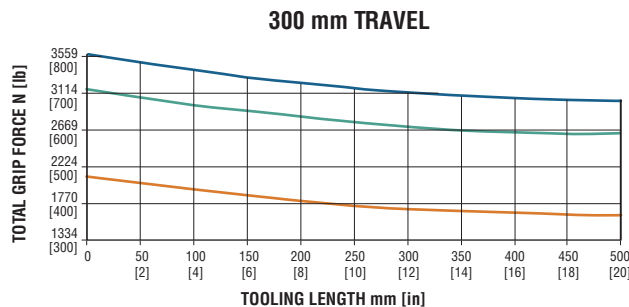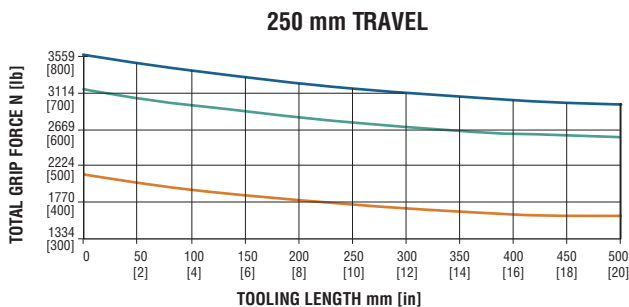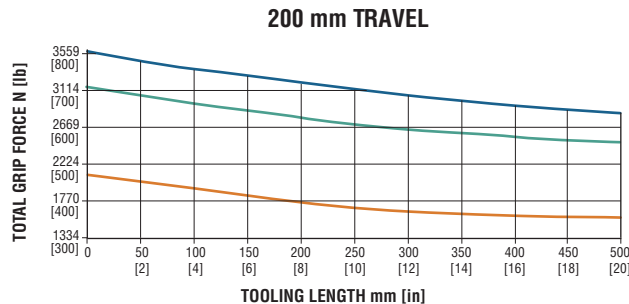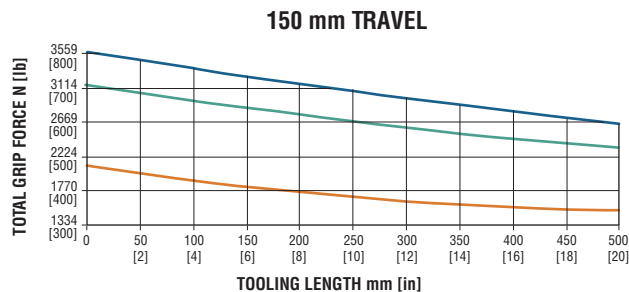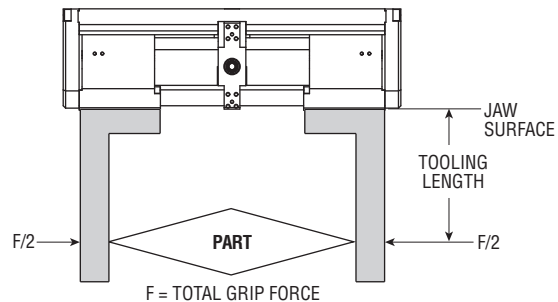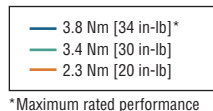**Mz:** Allowable moment per jaw, measured from jaw mounting surface

When calculating the value for Fa, include weight of tooling, part weight, acceleration, and external forces. When calculating values for Mx, My, and Mz, include the grip force per jaw, part weight, external forces, and acceleration as applicable.

⚠ **MOMENT VALUES ASSUME THE USE OF ALL THREADED MOUNTING HOLES.**

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GRIP FORCE

Total gripping force relative to tooling length is shown below at the stated torque applied to the motor speed reducer input shaft. Grip force per jaw equals the total grip force divided by two. The graphs also indicate the maximum tooling length and maximum rated grip force for each gripper size.

Legend:
- 3.8 Nm [34 in-lb]*
- 3.4 Nm [30 in-lb]
- 2.3 Nm [20 in-lb]

*Maximum rated performance

JAW SURFACE
TOOLING LENGTH
F/2 — PART — F/2
F = TOTAL GRIP FORCE

150 mm TRAVEL

200 mm TRAVEL

250 mm TRAVEL


300 mm TRAVEL

350 mm TRAVEL

TOOLING LENGTH FACTOR

Jaw tooling should be designed so that the grip point is as close to the jaw surface as possible. As the grip point is moved away from the jaw surface, the applied moment causes jaw friction to increase, resulting in reduced effective grip force. The grip force factor (G_F) values given in the table are for zero tooling length (jaw surface).

The maximum load that grippers can handle will vary based on: size of the part being picked up, shape of the part, texture of the part, speed at which the part is transferred, shape of the fingers, etc. PHD recommends that the fingers of jaws be tooled or machined to conform to the shape of the part being gripped.

TOOLING LENGTH DERATING FACTOR
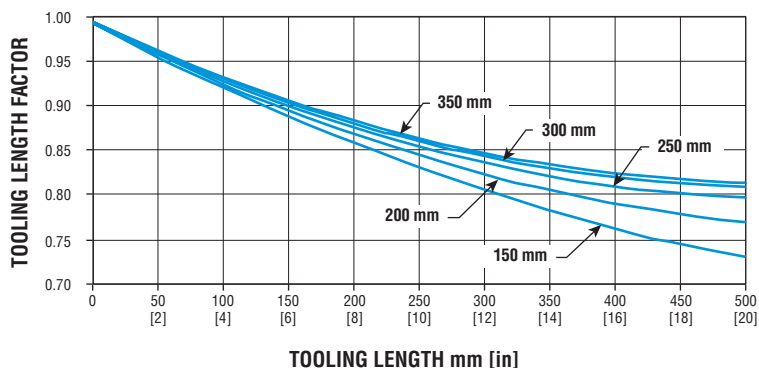
GRIP FORCE EQUATIONS:

METRIC: TOTAL GRIP FORCE (N) = (Torque [Nm] x G_F) x Tooling Length Factor

IMPERIAL: TOTAL GRIP FORCE (lb) = (Torque [in-lb] x G_F) x Tooling Length Factor

GRIP FORCE CALCULATION EXAMPLE:

Gripper: Series EGRR Size 63 x 200
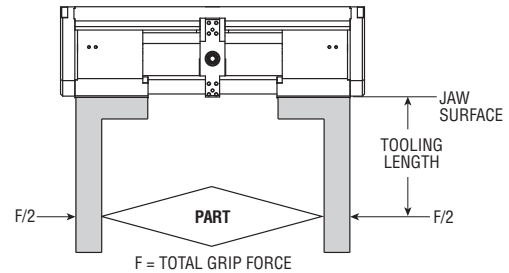**Common Parameters:**
    Input Torque = 3.4 Nm [30 in-lb]
    Tooling Length = 254 mm [10 in]

1. **Determine Grip Force Factor G_F** = 937 [23.8] (from table on page 82)

2. **Determine Tooling Length Factor** = 0.84 [0.84] (from Tooling Length Factor graph on page 83)

3. **Total Grip Force Calculations:**

    For Standard Unit: EGRR12-5-63 x 200 [EGRR12-1-63 x 200]

    Total Grip Force = 3.4 Nm x 937 x 0.84 = 2676 N [30 in-lb x 23.8 x 0.84 = 600 lb]

FULL TRAVERSE TIME

Full traverse time is the shortest time possible for the jaws to completely traverse the total travel of the gripper. Use PHD Sizing Software to calculate the motion time for your specific motion profile. Full traverse time assumes that the jaws are accelerated at 1 G (0.5 G per jaw) up to the motor running speed, then travel at the motor running speed until decelerated at 1 G (0.5 G per jaw) to rest.

FULL TRAVERSE TIME EQUATION:

TIME (sec) = [C_{F1} ÷ Running Speed (rpm)] + [Running Speed (rpm) ÷ 69120]

FULL TRAVERSE TIME CALCULATION EXAMPLE:

Gripper: Series EGRR Size 63 x 200

Common Parameters:
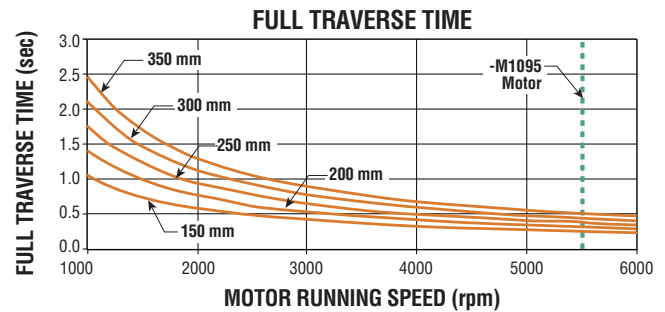
    Motor Running Speed = 5500 rpm

1. **Determine Time Factors:**

    C_F = 1410 (from table on page 82)

2. **Release Time Calculations:**

    For Standard Unit: EGRR12-5-63 x 200 [EGRR12-1-63 x 200]

    Open or Close Time = [1410 ÷ 5500 rpm] + [5500 rpm ÷ 69120] = 0.336 sec

JAW TRAVEL EQUATIONS:

The jaw travel equation relates the rotation of the gripper or motor speed reducer input shaft to the linear travel of the jaws.

METRIC: TOTAL JAW TRAVEL (mm) = Input Shaft Rotation (rev) x J_T

IMPERIAL: TOTAL JAW TRAVEL (in) = Input Shaft Rotation (rev) x J_T

JAW TRAVEL CALCULATION EXAMPLE:

Gripper: Series EGRR Size 63 x 200 -RW151 -W0000

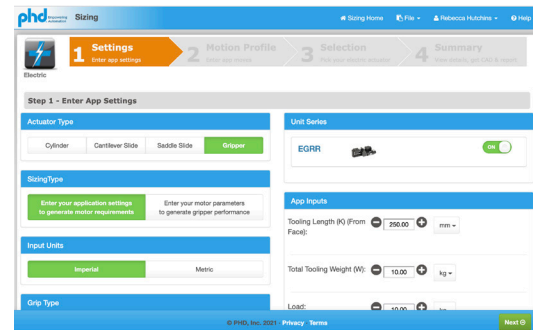**Common Parameters:**

    Motor Rotation = 2 rev

1. **Determine Jaw Travel Factor J_T** = 8.512 [0.335] (from table on page 82)

2. **Jaw Travel Calculations:**

    For Standard Unit: EGRR12-5-63 x 200 -RW151 -W0000 [EGRR12-1-63 x 200 -RW151 -W0000]

    Total Jaw Travel = 2 rev x 8.512 = 17.024 mm [2 rev x 0.335 = 0.670 in]

JAW SURFACE
TOOLING LENGTH
F/2 — PART — F/2
F = TOTAL GRIP FORCE

FULL TRAVERSE TIME

FULL TRAVERSE TIME (sec) vs MOTOR RUNNING SPEED (rpm)

350 mm, 300 mm, 250 mm, 200 mm, 150 mm, -M1095 Motor

Series EGRR Sizing Software

Engineering requirements, concept and detail design

size.phdinc.com

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B1
K2
209.8 [8.260]
159.0 [6.260]
108.2 [4.260]
60.0 [2.3620]

③

④

② 45.0 [1.773]

88.9 [3.500]

①

4X Ø 8.0 x 19.0 ⊔ (H7)
[0.31525 +0.00030/-0.00030 x 0.750 ⊔]
DOWEL PIN HOLE

16X M8 x 1.25 x 19.0 ⊔
[3/8-16 x 0.750 ⊔]
(THREADED INSERTS)

10X MANUFACTURING HOLES
(CONSULT PHD FOR MORE INFORMATION)

⚠ **MOMENT CAPABILITY REQUIRES USE OF ALL THREADED MOUNTING HOLES**

92.2 [3.630]

8X M6 x 1-6H ⊔16.0 [0.630] MIN

⑤ 13.0 [0.512]

FOR PROXIMITY SWITCH MOUNTING, SEE ACCESSORIES SECTION FOR DIMENSIONS

89.0 [3.504]
61.5 [2.420]
127.0 [5.000]

25.4 [1.000]

J1

⑥

2X 25.1 [0.990]

44.2 [1.740]

JAW DRIVE SOCKET
SEE DETAIL FOR DIMENSIONS

2.9 [0.113]
58.7 [2.311]
90 [3.543]

₵

92.2 [3.630]

158.8 [6.250]

161.9 [6.375]

88.9 [3.500]

Ø 13.00 ± 0.013
Ø [0.5118 ±0.0005]
DRIVE LOCATING BOSS

J9 ₵
Ø 25.4 [1.000]
(PRIMARY JAW GUIDE)

₵ 60.0 [2.362]

J5

J4

2X Ø 19.1 [0.750]
(SECONDARY JAW GUIDE)

8X M12 x 1.75 x 25.0 ⊔
[1/2-13 x 1.000 ⊔] THD
(THREADED INSERTS)

A OPEN*
A CLOSED*

4X Ø 12.0 x 15.9 ⊔ (H7)
[0.47295 +0.00040/-0.00030 x 0.625 ⊔]
DOWEL PIN HOLE

2X MANUFACTURING HOLES
(CONSULT PHD FOR MORE INFORMATION)

DRIVE SOCKET
10.03 MIN HEX x 19.0 ⊔
[0.3949 MIN HEX x 0.750 ⊔]

DETAIL

DRIVE LOCATING BOSS USED
TO LOCATE MATING DRIVE
ELEMENTS TO GRIPPER
Ø 13.5 h8
[Ø 0.5310 ± 0.0005]

LETTER DIM	TOTAL JAW TRAVEL									
	150		200		250		300		350	
	mm	in	mm	in	mm	in	mm	in	mm	in
MIN. TRAVEL PER JAW	75.0	2.953	100.0	3.937	125.0	4.921	150.0	5.906	175.0	6.890
A CLOSED *	120.0	4.724	139.8	5.504	139.8	5.504	280.0	11.024	330.0	12.992
A OPEN *	270.0	10.630	339.8	13.379	389.8	15.347	580.0	22.835	680.0	26.772
B1	439.8	17.314	539.8	21.251	660.8	26.016	760.8	29.953	860.8	33.890
J1	105.1	4.136	130.0	5.120	165.6	6.518	190.6	7.504	215.6	8.487
J4	66.0	2.598	90.0	3.544	90.0	3.544	90.0	3.544	90.0	3.544
J5	33.0	1.299	45.0	1.772	45.0	1.772	45.0	1.772	45.0	1.772
J9	47.0	1.850	56.9	2.240	56.9	2.240	127.0	5.000	152.0	5.984
K2	320.0	12.598	380.0	14.960	380.0	14.960	590.0	23.228	590.0	23.228

NOTES:
1) DESIGNATED ₵ IS CENTERLINE OF UNIT
2) ALL DIMENSIONS ARE REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED
3) IMPERIAL INFORMATION SHOWN IN [ ] OR SHOWN IN COLUMNS DESIGNATED in
4) NUMBERS IN ◯ INDICATE POSITIONS
5) *A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION
   *A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION

Z1 CORROSION-RESISTANT

Corrosion-resistant coating on jaw guides and drive racks provides enhanced environmental protection.

V1 FLUORO-ELASTOMER SEALS

Fluoro-elastomer shock pads, seals, and wipers are available to achieve material compatibility with certain fluids. Material compatibility should be checked with the fluid manufacturer for proper application. This option includes Series GRR -V9 fluoro-elastomer seals and jaw guide wipers option.
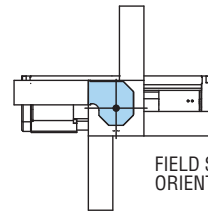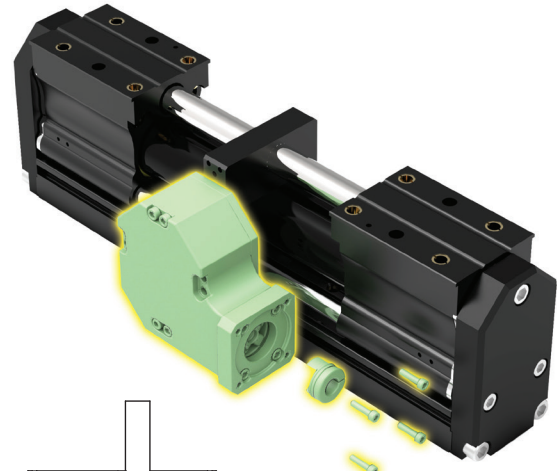
RW151 MOTOR SPEED REDUCER

A 15:1 drive ratio motor speed reducer is installed onto the gripper. The reducer is factory lubricated for the rated life of the gripper. The motor speed reducer provides a convenient means of matching the output torque and shaft speed of many motors to the input requirements of the gripper.

The reducer must be ordered with a motor mounting code. See page 95 for details.
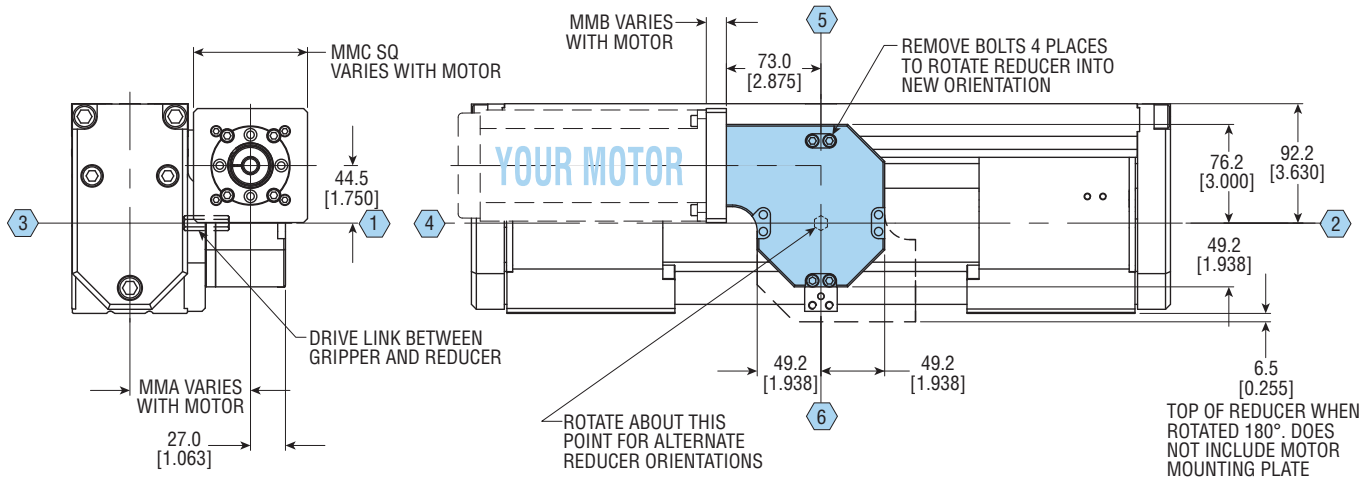
Motor mounting fasteners and motor coupling are supplied unassembled along with assembly instructions.

Use **-W0000** motor mount code to order a motor mount intended for customer modification. See page 87.

The reducer can be easily removed from the gripper for ease of motor installation and field rotated into one of four positions.

FIELD SELECTABLE REDUCER ORIENTATIONS

MMC SQ VARIES WITH MOTOR

MMB VARIES WITH MOTOR

73.0 [2.875]

REMOVE BOLTS 4 PLACES TO ROTATE REDUCER INTO NEW ORIENTATION

44.5 [1.750]

YOUR MOTOR

76.2 [3.000]

92.2 [3.630]

49.2 [1.938]

DRIVE LINK BETWEEN GRIPPER AND REDUCER

MMA VARIES WITH MOTOR

27.0 [1.063]

49.2 [1.938]

49.2 [1.938]

6.5 [0.255]

TOP OF REDUCER WHEN ROTATED 180°. DOES NOT INCLUDE MOTOR MOUNTING PLATE

ROTATE ABOUT THIS POINT FOR ALTERNATE REDUCER ORIENTATIONS

OPTION	MMA				MMB				MMC SQUARE			
	STANDARD		OVERSIZED		STANDARD		OVERSIZED		STANDARD		OVERSIZED	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Wxxxx*	93.6	3.685	111.6	4.394	11.0 MIN	0.433 MIN	11.0 MIN	0.433 MIN	88.0	3.465	130	5.118
W0000	93.6	3.685	–	–	22.6	0.890	–	–	88.0	3.465	–	–

NOTES:
1) ALL DIMENSIONS ARE SHOWN IN mm [in] AND ARE REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED
2) OPTION Wxxxx MUST BE ORDERED WITH OPTION RW151
3) REDUCER IS SUPPLIED PREASSEMBLED IN ORIENTATION SHOWN, CUSTOMER MAY ROTATE INTO PREFERRED ORIENTATION AFTER RECEIPT
4) WHEN (-W0000) IS SPECIFIED, COUPLER IS SUPPLIED WITH UNFINISHED SHAFT BORE AND MOTOR MOUNTING PLATE IS SUPPLIED WITH DIMENSIONS SHOWN WITHOUT MOTOR MOUNTING FASTENERS
5) * Wxxxx CONFIGURED ONLINE

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Wxxxx MOTOR MOUNT CODE

Your Motor, Your Way customizable motor mounting is generated by PHD's extensive motor database at www.config.phdinc.com. Users may select their compatible motor of choice from the pre-populated motor database. In the event the chosen motor is not in the database, they may enter necessary motor features to generate the PHD motor mount code.

The tailored motor mounting components are included with the specified driver and shipped in kit form.

Your Motor Your Way

Select your compatible motor of choice from the pre-populated motor database!

Step 1 - Online Actuator Sizing - size.phdinc.com
- Input your application data.
- The sizing software will tell you which actuator and motor performance parameters are needed for your application.

Step 2 - Motor Selection
- Based on the performance requirements determined by online sizing, select an appropriate motor from your preferred motor manufacturer.

Step 3 - CAD Configurator - config.phdinc.com
- Select your motor from the drop down menus or request a new motor if the preferred motor is not on the list.
- The generated motor mount code for the compatible motor will complete the ordering data necessary to download 3D CAD model or order the actuator tailored to your specific application.

# ACCESSORIES: Series EGRR Heavy Duty Gripper

DRIVE LINK

A single drive link couples the output of the motor speed reducer to the input socket of the gripper. The link is intended to mechanically fail reducing catastrophic damage to the gripper and motor speed reducer if maximum torque is exceeded.

DRIVE LINK KIT

PART NUMBER	DESCRIPTION
88157-0000	Used with Standard Motor Mounting Flange
88157-0018	Used with Oversize Motor Mounting Flange

Kit includes one drive link and installation instructions
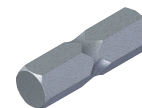
PROXIMITY SWITCHES - EXTERNAL

This accessory provides for the external mounting of 8 or 12 mm threaded round metal sensing inductive proximity switches. Multiple switches may be mounted using multiple brackets. Proximity switches, targets, and mounting brackets are ordered separately. See the Switches and Sensors section of the main catalog for complete switch specifications.

NOTE: Target and bracket kits do not interchange with Series GRR Grippers Design 1 [5].
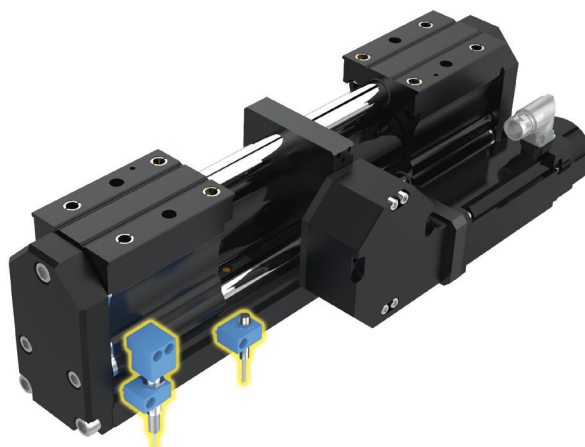
8 mm THREADED INDUCTIVE PROXIMITY SWITCHES

PART NUMBER	DESCRIPTION
51422-005-02	NPN (Sink), 2 meter cable
51422-006-02	PNP (Source), 2 meter cable

8 mm & 12 mm THREADED INDUCTIVE PROXIMITY SWITCH TARGET KIT
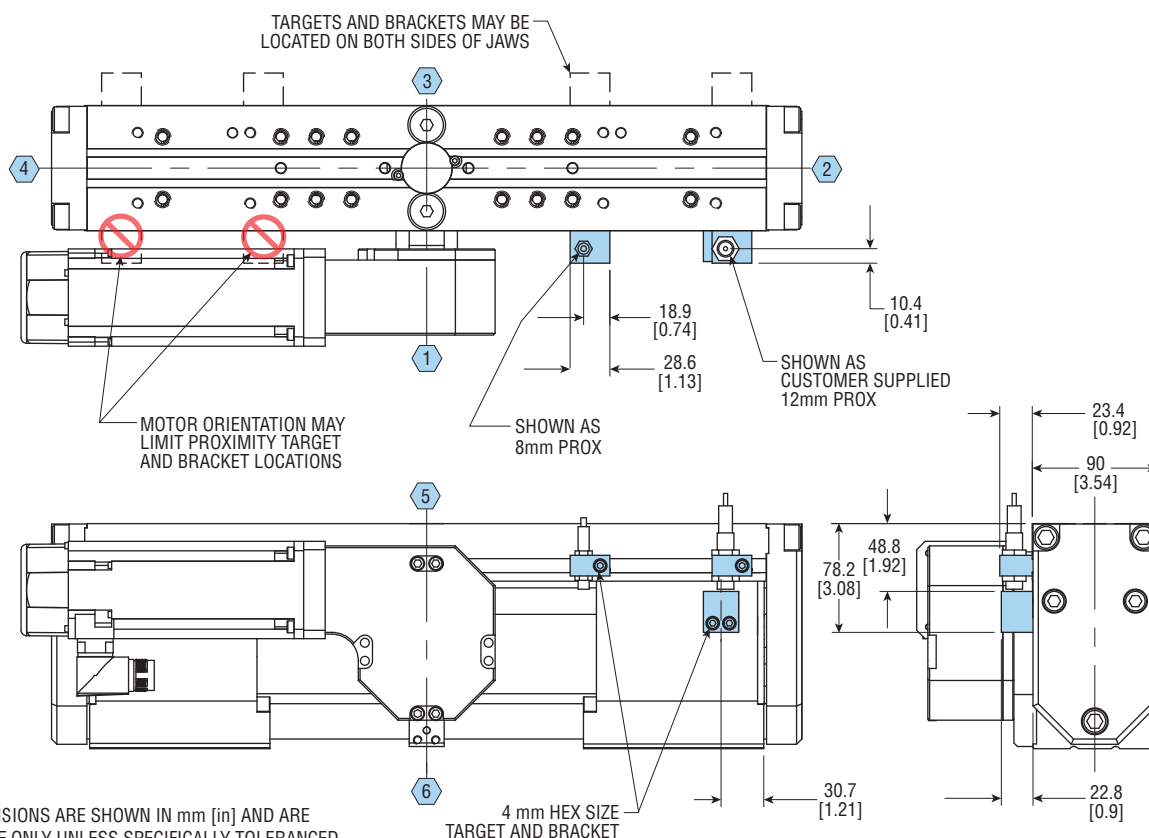
CORROSION-RESISTANT
74994-33

Kit includes 1 proximity switch target and 2 target mounting screws

THREADED INDUCTIVE PROXIMITY SWITCH MOUNTING BRACKET KITS

CORROSION-RESISTANT FOR 8 mm SWITCH	CORROSION-RESISTANT FOR 12 mm SWITCH
74992-33	74993-33

Kit includes 1 proximity switch mounting bracket, 1 mounting nut, and 1 mounting screw

TARGETS AND BRACKETS MAY BE LOCATED ON BOTH SIDES OF JAWS

MOTOR ORIENTATION MAY LIMIT PROXIMITY TARGET AND BRACKET LOCATIONS

18.9 [0.74]
28.6 [1.13]
10.4 [0.41]

SHOWN AS CUSTOMER SUPPLIED 12mm PROX

SHOWN AS 8mm PROX

4 mm HEX SIZE TARGET AND BRACKET

30.7 [1.21]

23.4 [0.92]
90 [3.54]
48.8 [1.92]
78.2 [3.08]
22.8 [0.9]

NOTES:
1) ALL DIMENSIONS ARE SHOWN IN mm [in] AND ARE REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED
2) DESIGNATED ℄ IS CENTERLINE OF UNIT
3) NUMBERS IN ⬡ INDICATE POSITIONS