

Guardian G2
Safety Chucks



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The Montalvo Guardian Safety Chuck

Emphasis on design, flexibility, technology and quality.

- The journal insert and jaw are the only wear parts and are quickly and easily removed using only two wrenches!
- The standard chuck journal seat is hardened to Rc = HRC 48-50.
- The steel handwheel has a black oxide finish.
- Within maximum and minimum limits the shaft end may be customized.
- All shaft ends are drilled, tapped and machined with keyway.
- All housings are pre-drilled and tapped to accept a Montalvo brake.
- Mounting holes on flange mount chucks are counter bored.
- DXF files and 3D models are available for all sizes.

Guardian safety chucks are designed with flexibility in mind to meet specific customer needs. Montalvo engineers can assist you with the proper technical solution for your web winding application.

Standards

The Montalvo Corporation, world renowned supplier of quality web control products and services, offers a full line of safety chucks as part of an ongoing effort to supply customers with a total web control package.

The Guardian (G2) includes a series of four different chuck sizes (500, 1000, 1800 and 3000). They allow customers to axially align a shafted roll to a web guide or a trimmer on either unwind or rewind operations. The journal seat/handwheel assembly bolts to the shaft with five bolts and is easily serviced.

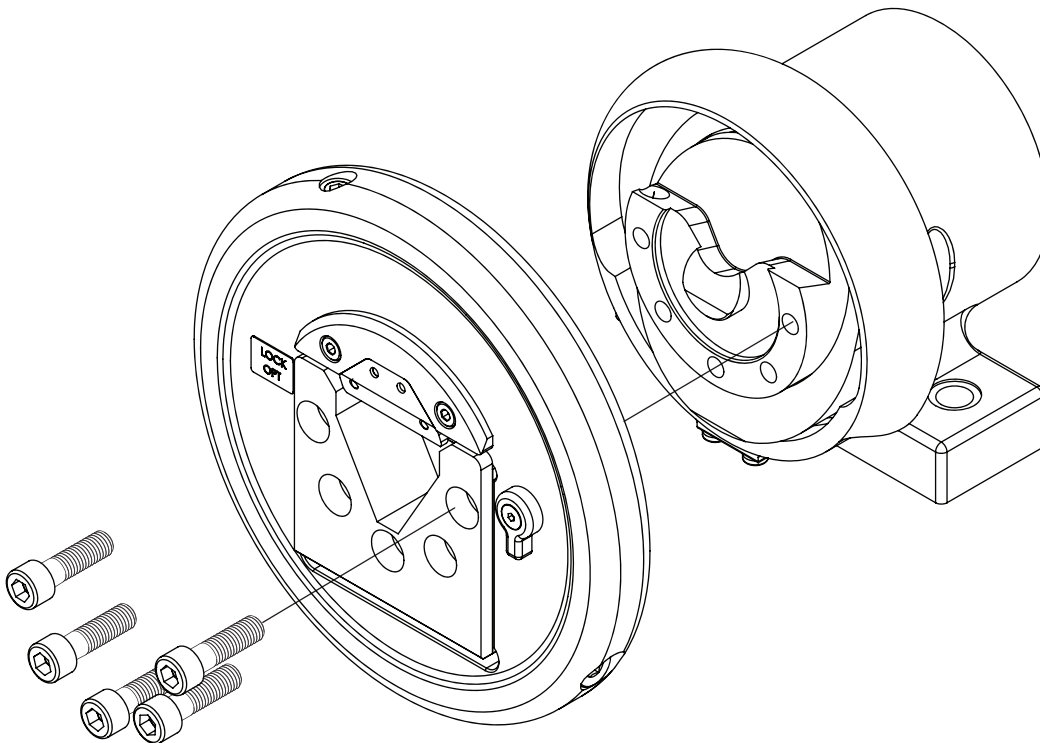
Guardian chucks provide a safe and effective way of coupling torque devices to shafted unwinds or rewinds. Heavy duty bearing design ensures maximum load and speed capacities for most converting applications. The easily replaceable journal seat / handwheel assembly supports a variety of shaft journal configurations without modification. Tightly held journal seat tolerances also provide superior roll winding / unwinding concentricity.

Shaft lengths are available to correspond to all Montalvo brakes and a wide variety of applications. Montalvo application engineers are available to assist customers with new installations or retrofit applications.

Check out Montalvo's wide range of web control products for the converting, paper, composites, nonwovens and plastic film industries. These include brakes, clutches, electronic tension controls and indicators, load cells, safety chucks and core chucks.

The Difference

Handwheels and journal seats are critical parts of a safety chuck and subject to wear. That is why all Guardian chucks are equipped with easily replaceable journal components or complete handwheel assemblies.



- The tilting handwheel/chuck journal seat assembly is interchangeable as a unit.
- The journal seat is available in the types - A1*, A2 or A3 (*G2-500 available in A1 only).
- The replacement handwheel/chuck journal seat assembly is mounted concentrically to the shaft and is attached using high tensile strength bolts.
- The finger guard covers the gap between handwheel and housing.
- Our modular design is not only maintenance friendly but also minimizes inventory of spare parts.

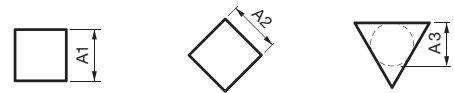
Product Overview

Features

- Pedestal and flange chuck mounting options
- With and without shaft end
- Square dimensions 0.75in (19mm) to 2.00in (50mm)
- Roll weights to 6,744lb (30,000N)*

Consider using Montalvo Tension Control Brakes and Clutches

- High Thermal Capacity
- Multiple Torque Range
- Easy Maintenance



Model	Max. Roll Weight* lb (N) (per pair of chucks)	Max. Torque** in-lb (Nm)	Standard Shaft Extension in (mm)	Max. Shaft Diameter in (mm)	A1 (Square)*** Journal Seat A1 = in (mm)	A2 (Diamond) Journal Seat A2 = in (mm)	A3 (Triangle) Journal Seat A3 = in (mm)
G2-500***	1,124 (5,000)	1,151 (130)	2.75 (70)	1.18 (30)	1.000 (25)	–	–
G2-1000	2,248 (10,000)	1,770 (200)	3.54 (90)	1.378 (35)	1.000-1.25 (20-30)	1.000-1.25 (20-30)	0.787-1.181 (20-30)
G2-1800	4,047 (18,000)	3,363 (380)	3.94 (100)	1.96 (50)	1.25-1.50 (30-40)	1.25-1.50 (30-40)	1.260-1.496 (32-38)
G2-3000	6,744 (30,000)	10,621 (1,200)	5.51 (140)	2.55 (65)	1.50-2.00 (40-50)	1.50-2.00 (40-50)	1.575-1.850 (40-47)

* Max. Roll Weight must be reduced for A2 (Diamond) Journal Seat by 25 to 30% depending on torque, speed and deflection of winding shaft. Consult a Montalvo Application Specialists for assistance.

** Max. Torque must be reduced for A2 (Diamond) Journal Seat by 40 to 50% depending on torque, speed and deflection of winding shaft. Consult a Montalvo Application Specialists for assistance.

*** G2-500 available in A1 (Square) Journal Seat only.

Deflection, Torque and Winding Speed

Deflection

Roll weight is the first consideration in the selection of a chuck.

The maximum permissible roll weight given in the catalog and data sheet refers to shaft journal design A3.

Chucks with A2 journal seats are required to have safety locks if roll weights exceed 70% of maximum roll weight.

The information given in this catalog refers to the load capacity of our chucks. You must consider the design, size, stability and hardness of the shaft journal as well (see below).

Torque

The maximum permissible roll weight given in the data sheets refers to shaft journal design A3.

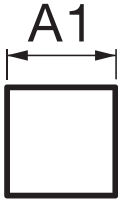
Winding Speed

“Standard” chucks may be used up to 980 ft/min (300 m/min) winding speed.

For winding speeds over 980 ft/min (300 m/min), “high speed, dynamically balanced” chucks should be used (see “Options”).

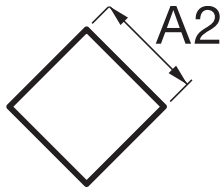
If your application requires combining maximum rated roll weight, torque and winding speed, please contact Montalvo for technical support.

Shaft Journal Designs



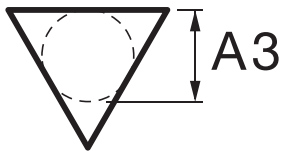
A1 (Square)

- Cost Effective
- Max. roll weight
- Max. torque capacity
- Tolerance 0.004 in (0 / +0.1 mm)



A2 (Diamond)

- Easy loading of the winding shaft
- Special attention to alignment and shaft deflection is required
- Reduced play between chuck seat and journal
- Tolerance H7



A3 (Triangle)

- Recommended for high rpm applications
- Easy loading of the winding shaft
- Max. roll weight
- Max. torque capacity
- Reduced play between chuck seat and journal
- Tolerance H7

Shaft End

Shaft end dimension may be specified by the customer.

If the dimensions of the shaft end are within the min./max. limits given in the data sheets and can be produced on a CNC-lathe, there is no additional charge.

- The max. shaft diameter cannot be exceeded.
- Shaft ends, shown in the part designation by the suffix -MW-(D)x(L) are machined with a parallel key to DIN 6885, part 1, and with end threaded to DIN 332, form D. Shafts may be specified to inch tolerances as well.

Dimensions in (mm)

Ø SHAFT	THREAD	DEPTH
over 0.63 (16) to 0.83 (21)	M6	0.625 (16)
over 0.83 (21) to 0.95 (24)	M8	0.75 (19)
over 0.95 (24) to 1.18 (30)	M10	0.875 (22)
over 1.18 (30) to 1.50 (38)	M12	1.125 (28)
over 1.50 (38) to 1.96 (50)	M16	1.4375 (36)
over 1.96 (50) to 2.55 (65)	M20	1.625 (42)

Winding Shaft Journal

There are min./max. limits for journal seat geometry as shown on data sheets:

- Within these limits any diameter and length may be specified.
- The published values for roll weight and torque always refer to the maximum value of the journal seat geometry A3.
- To minimize wear, maximum journal size should be chosen.

In addition to total load and winding speed, deflection of the winding shaft plays an important role in the life expectancy of the journal seat and shaft journal. Therefore, please note the following:

- Carefully chamfered edges provide for safe closing function.
- Winding shafts designed for minimal deflection should be used.
- The hardness of the shaft journals and the chuck journal seat should be made to suit each other. This means that the part which is least expensive and easiest to replace can be designed as the wear part. Expensive winding shafts should always be matched with chucks having journal seats of lower hardness.

With the exception of light applications, low winding speeds, short winding shafts or low bearing loads, winding shaft journals should conform to the specifications given in the SPECIFICATIONS chapter!

Installation

Note the following when installing chucks:

- Make sure winding shaft is designed for minimum deflection under load of full roll.
- Continuous abuse of this type leads to wear on the chuck housing.
- In cases of advanced wear to the chuck housing, the handwheel could be forced open in the downward position. This presents the risk that the winding shaft could fall out during operation.
- Wear to the chuck housing presents extreme risk of accident! (See “Maintenance” section covering possible defects and their causes!)

During installation, or before start-up, please check the following:

- Does the winding shaft load easily?
- Does the winding shaft have axial play of **0.020 in (0.5 mm)**?
- Check for proper closing function of the handwheel (it should be possible to open and close the handwheel by hand without using excessive force and without the use of tools).
- Check that the chucks are precisely aligned. Ensure that, with the handwheels closed, the winding shaft can be moved easily in an axial direction when the chuck is in loading position as well as at various rotating positions.

Please contact Montalvo in case of special situations.

Handwheel Safety Lock

Note: This option is available on the G2-1000, G2-1800 and G2-3000 only.

Specification:

RS designates **Right Side** lock (shown below)

LS designates **Left Side** lock

Safety locks prevent the unintentional opening of the handwheel during operation. It is imperative with high-speed chucks.

The safety lock system:

- A spring loaded, hardened pin indexes into a bore.
- In order to unlock the handwheel this pin must be pushed towards the center of the hand wheel (see below).
- When closing the hand wheel the pin clicks into place automatically.

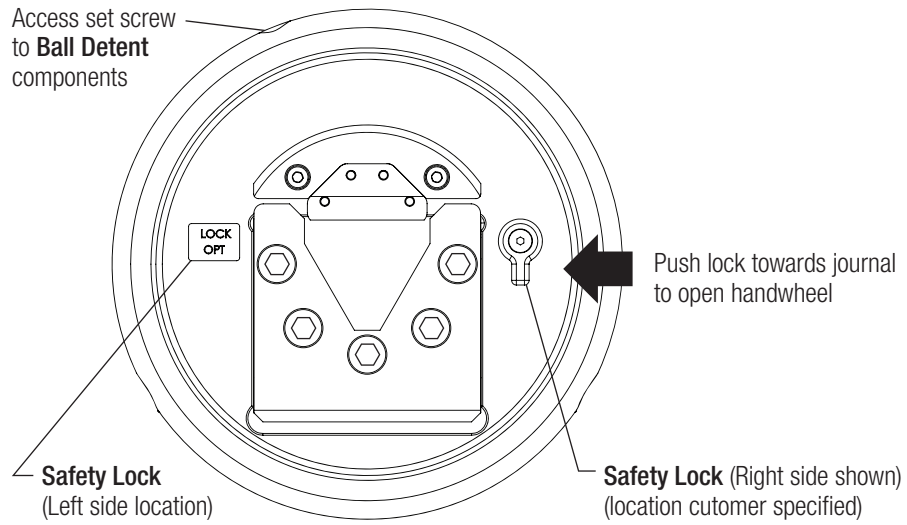
A handwheel safety lock is shown below.

- Lock installed on **RIGHT** side shown.
- Can be ordered with **RIGHT** lock or **LEFT** lock.
- Available kits allow for easy repair or installation on opposite side side.
- Chucks with A2 journal seats are required to have safety locks if roll weights exceed 70% of maximum roll weight.

Handwheel Safety Lock



Access set screw
to **Ball Detent**
components



LOCK
OPT

Push lock towards journal
to open handwheel

Safety Lock
(Left side location)

Safety Lock (Right side shown)
(location customer specified)

Axial Carrier

The use of axial carriers can be useful if the chucks are installed rigidly and a precise positioning of the winding shaft is required. In this event the winding shaft journals must be designed to suit axial carrier(s), please contact Montalvo. The Axial Carrier option is available on size 1000, 1800 and 3000 only.

High Speed Safety Chucks

High speed safety chucks should be used for web speeds over 980 ft/min (300 m/min).

High speed safety chucks offer the following:

- Handwheel safety lock
- Balanced shaft and handwheel
- Journal design A3 only
- Maximum load = 0.6 x catalog value

Note: adhere to the installation instructions and pay special attention to the journal design (tolerance, materials, hardness, etc.)

*Handwheel Open/Closed Indicator
and
Handwheel Opening Position Indicator*

Option 12h (handwheel opening position)

- Two different designs available: 12h/li (left) & 12h/re (right)
- Ensures that the proximity switch cable does not hinder operation

Both options (handwheel open/closed and opening position)

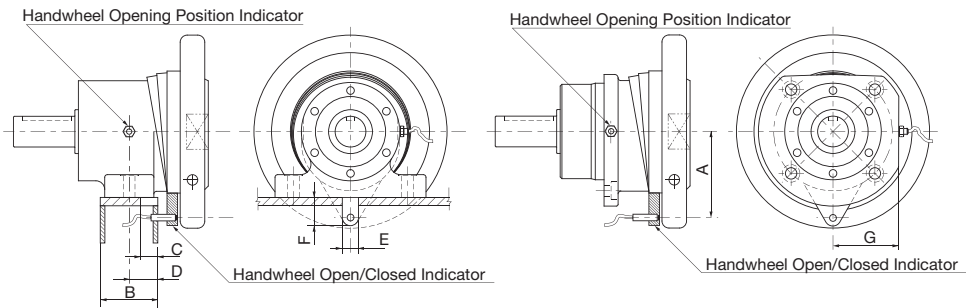
- May be installed separately or together

Definition “left / right”

- Determined by the front view of the handwheel

Available sizes in pedestal or flange mount

- G2-1000, G2-1800 and G2-3000 only



Dimensions in (mm)

SIZE	A	B	C	D	E	F	G
G1000	3.00 (76)	2.36 (60)	0.91 (23)	1.18 (30)	0.79 (20)	0.75 (19)	2.64 (67)
G1800	3.77 (96)	2.55 (65)	0.79 (20)	1.28 (32.5)	0.79 (20)	1.14 (29)	2.95 (75)
G3000	4.21 (107)	4.72 (120)	0.79 (20)	2.36 (60)	0.79 (20)	1.57 (40)	3.35 (85)

Electrical Specifications

Voltage 12-24 VDC
 Circuitry PNP (3-conductor, + switched)
 Characteristic NO
 Power..... max. 100 mA (not short circuit resistant)
 Cable..... 6.5ft (2m)

Increased Handwheel Opening Angle

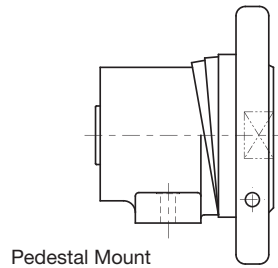
Guardian safety chuck handwheels can be fully opened within a range of +/- 10 degrees from the vertical axis.

If the shaft is turned beyond that, the handwheel begins to close and is totally closed at 30 degrees from the vertical axis.

If required, opening angle can be enlarged to customer specifications. Never use an opening angle in excess of +/- 30 degrees as this increases the risk of the winding shaft falling out of the chuck!

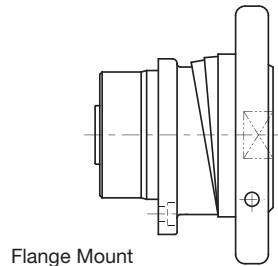
Overview

Guardian Safety Chucks shown available as pedestal or flange mount **without shaft end**.



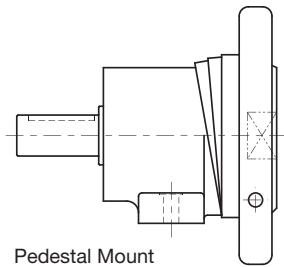
Pedestal Mount

-OW-
Without shaft end



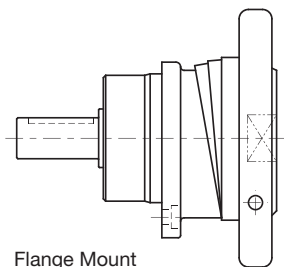
Flange Mount

Guardian Safety Chucks shown available as pedestal or flange mount **with shaft end**.



Pedestal Mount

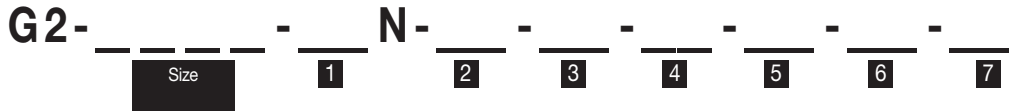
-BR-
Shaft end
Prepared for mounting a brake



Flange Mount

Order Code

The following is an explanation of the code used to describe Guardian safety chucks. At the beginning of each description is the chuck size. It indicates the maximum roll weight in kilograms.



1	Type Of Mount	SN	pedestal mount
		FN	flange mount
2	Journal Seat Design	1	A1 (Square) (500, 1000, 1800 and 3000)
		2	A2 (Diamond) (1000, 1800 and 3000 only)
		3	A3 (Triangle) (1000, 1800 and 3000 only)
3	Journal Seat Size	—	measurement of A (journal seat) in millimeters (mm)
4	Handwheel Safety Lock	RS	with Right Side handwheel safety lock
		LS	with Left Side handwheel safety lock
		OO	without safety lock (only option for 500)
5	Axial Carrier	OX	without axial carrier (only option for 500)
		MX	with axial carrier (1000, 1800 and 3000 only)
6	Type Of Chuck End	OW	without shaft end
		BR	with shaft end and bolt circle in housing or sliding sleeve (for brake mounting)
7	Shaft End / Brake		Diameter x Length (DxL) of shaft end (additional specs may be required)
		—	drawing number of special shaft
		—	Montalvo brake model number (or other brake specs)

Examples

The following examples are of typical order codes:

G2-1800-SN-1-40-LS-OX-OW

G2-1800 maximum roll weight up to 4,047 lb (18,000 N)
SN chuck in pedestal mount
1 A1 (Square) journal design
40 journal size of 40 mm (measurement A from data sheet)
LS with Left Side handwheel safety lock
OX without axial carrier
OW without shaft end

G2-3000-FN-2-50-RS-OX-BR-50k6x110

G2-3000 maximum roll weight up to 6,744 lb (30,000 N)
FN chuck in flange mount
2 A2 (Diamond) journal design
50 journal size of 50 mm (measurement A from data sheet)
RS with Right Side handwheel safety lock
OX without axial carrier
BR with shaft end and bolt circle in housing for brake attachment
50k6x110 diameter x length of shaft end (including key acc. DIN 6885, sh. 1 and thread on face acc. DIN 332, form D)

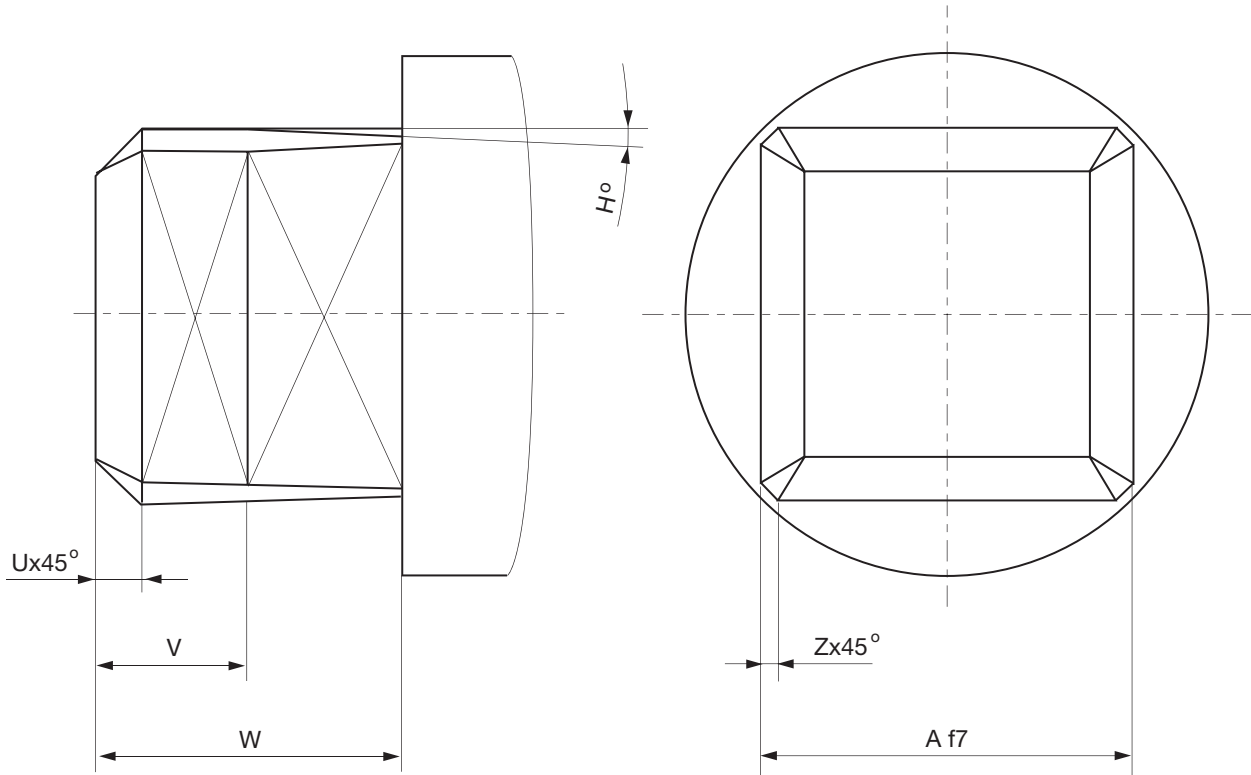
G2-1000-SN-3-30-LS-OX-BR-V300

G2-1000 maximum roll weight up to 2,248 lb (10,000 N)
SN chuck in pedestal mount
3 A3 (Triangle) journal design
30 journal size of 30 mm (measurement A from data sheet)
LS with Left Side handwheel safety lock
OX without axial carrier
BR with shaft end and bolt circle in housing for brake attachment
V300 type of brake: Montalvo V Series High Performance Single Disc

SPECIFICATIONS

Shaft Journal Prep for Chucks without AXIAL CARRIER OPTION (A1* and A2*)

* G2-500 available in A1 only



Dimensions - inch (mm)

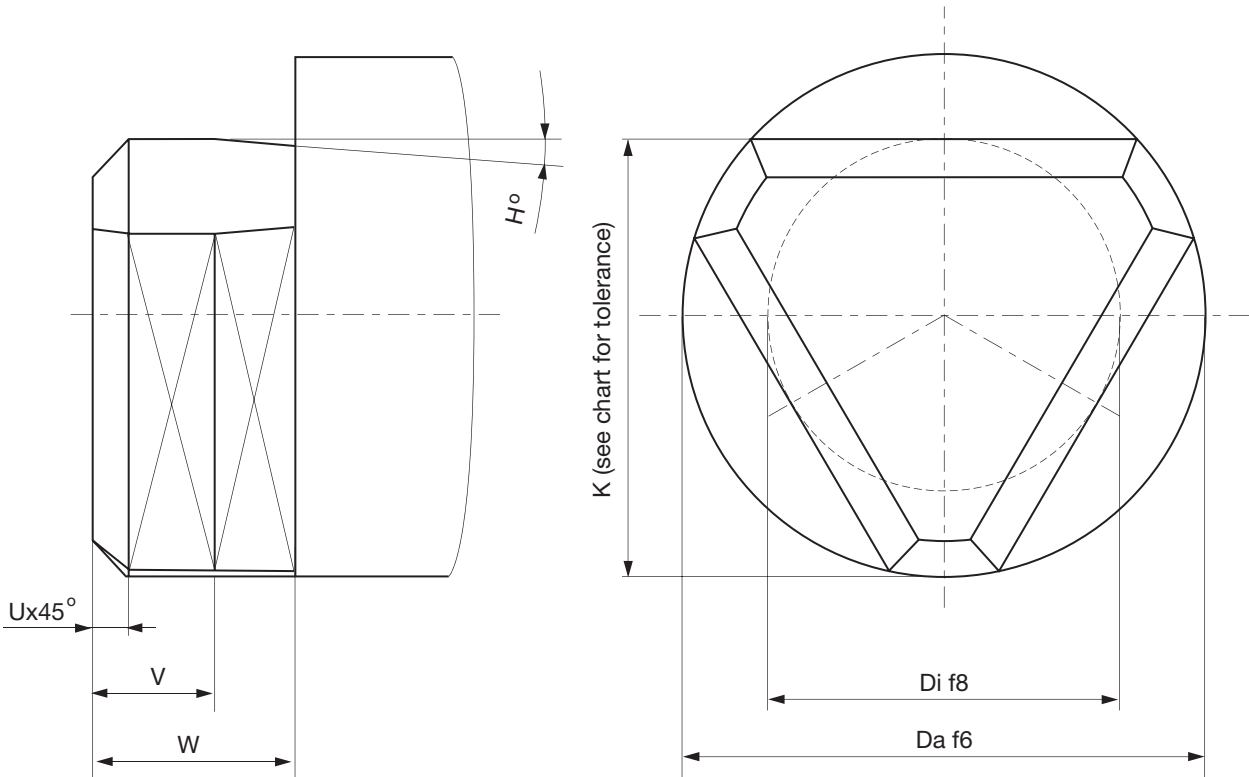
SIZE	A min.	A max.	W	V	U	Z	H°
G2-500	1.000 (25)	1.0000 (25)	0.945 (24)	0.472 (12)	0.118 (3)	0.040 (1)	0.3
G2-1000	1.000 (25)	1.25 (30)	1.063 (27)	0.551 (14)	0.157 (4)	0.040 (1)	0.3
G2-1800	1.25 (30)	1.50 (40)	1.181 (30)	0.591 (15)	0.192 (5)	0.059 (1.5)	0.4
G2-3000	1.50 (40)	2.00 (50)	1.260 (32)	0.630 (16)	0.192 (5)	0.078 (2)	0.5

Legend:

- A min.** minimum square dimension
- A max.** maximum square dimension
- W** minimum total length of the journal
- V** length of the square part of the journal
- U** front face bevel
- Z** side bevel
- H** angle for journal undercut

Shaft Journal Prep for Chucks without AXIAL CARRIER OPTION (A3*)

* G2-500 available in A1 only



Dimensions - inch (mm)

SIZE	Di (f8)	Tolerance for K	W	V	U	H°
G2-1000	0.787 (20)	-0.027/-0.036	1.063 (27)	0.551 (14)	0.157 (4)	0.3
G2-1000	over 0.787 (20) to 1.181 (30)	-0.031/-0.039	1.063 (27)	0.551 (14)	0.157 (4)	0.3
G2-1800	1.260 (32) to 1.496 (38)	-0.037/-0.047	1.181 (30)	0.591 (15)	0.197 (5)	0.4
G2-3000	1.575 (40) to 1.850 (47)	-0.037/-0.047	1.260 (32)	0.630 (16)	0.197 (5)	0.5

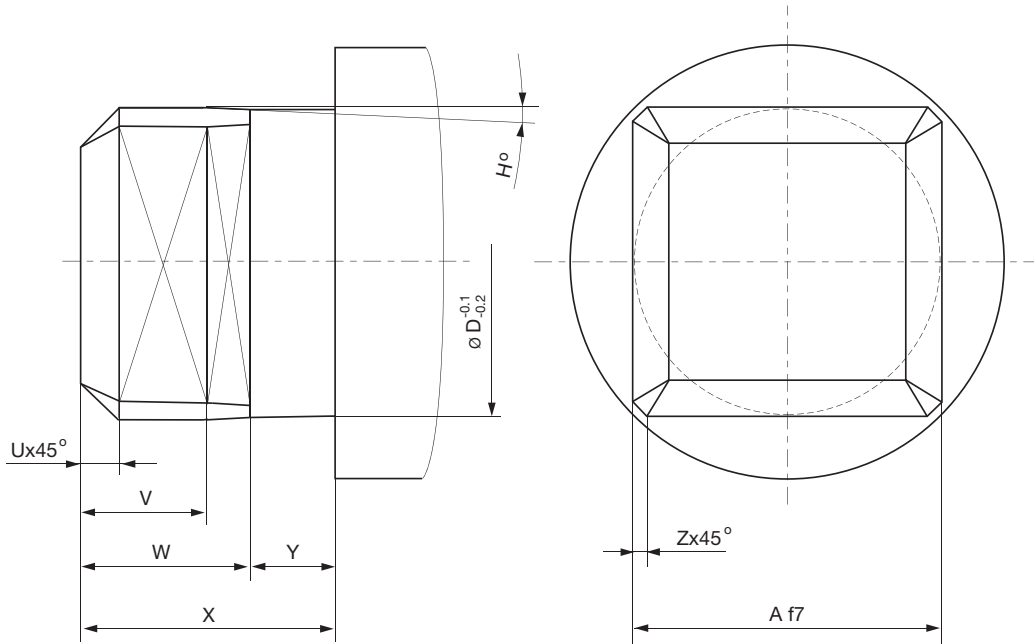
Legend:

- Di** triangle - inner circle diameter (tolerance f8)
- Da** triangle - circumference diameter (tolerance f6) **Da = Di x 1.5**
- W** minimum total length of the journal
- V** length of the triangular part of the journal
- U** front face bevel
- K** control dimension (note tolerances) **K = Di/2 + Da/2**
- H** angle for journal undercut

SPECIFICATIONS

Shaft Journal Prep for Chucks with AXIAL CARRIER OPTION (A1* and A2*)

* G2-500 not available with Axial Carrier



Dimensions - inch (mm)

SIZE	A min.	A max.	W	X	Y	V	U	Z	H°
G2-1000	1 (20)	1-1/4 (30)	0.827 (21)	1.260 (32)	0.433 (11)	0.551 (14)	0.157 (4)	0.039 (1)	0.3
G2-1800	1-1/4 (30)	1-1/2 (40)	0.944 (24)	1.457 (37)	0.512 (13)	0.591 (15)	0.197 (5)	0.059 (1.5)	0.4
G2-3000	1-1/2 (40)	2 (50)	1.024 (26)	1.614 (41)	0.591 (15)	0.630 (16)	0.197 (5)	0.079 (2)	0.5

* G2-500 available in A1 only.

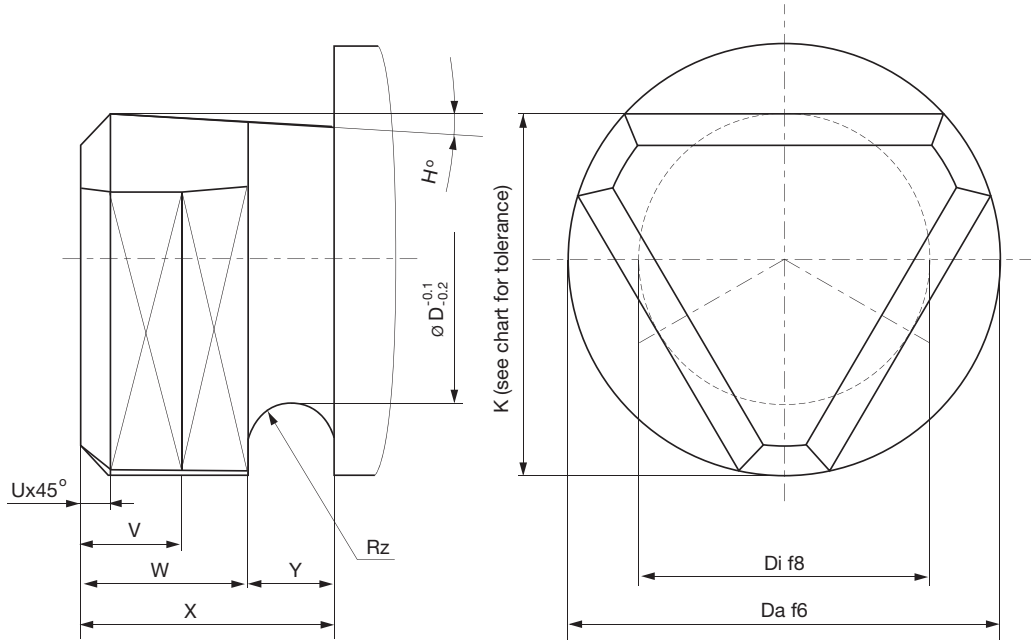
Legend:

- A min.** minimum square dimension
- A max.** maximum square dimension
- W** minimum total length of the journal
- V** length of the square part of the journal
- U** front face bevel
- Z** side bevel
- H** angle for journal undercut

SPECIFICATIONS

Shaft Journal Prep for Chucks with AXIAL CARRIER OPTION (A3*)

* G2-500 available in A1 only and not available with Axial Carrier



Dimensions - inch (mm)

SIZE	Di (f8)	Tolerance for K	W	X	Y	Rz	V	U	H°
G2-1000	0.787 (20)	-0.027/-0.036	0.827 (21)	1.220 (31)	0.394 (10)	0.197 (5)	0.551 (14)	0.157 (4)	0.3
G2-1000	>0.787 to 1.181 (>20 to 30)	-0.037/-0.039	0.827 (21)	1.220 (31)	0.394 (10)	0.197 (5)	0.551 (14)	0.157 (4)	0.3
G2-1800	1.260 to 1.496 (32 to 38)	-0.037/-0.047	0.944 (24)	1.417 (36)	0.472 (12)	0.236 (6)	0.591 (15)	0.197 (5)	0.4
G2-3000	1.575 to 1.850 (40 to 47)	-0.037/-0.047	1.024 (26)	1.575 (40)	0.551 (14)	0.276 (7)	0.630 (16)	0.197 (5)	0.5

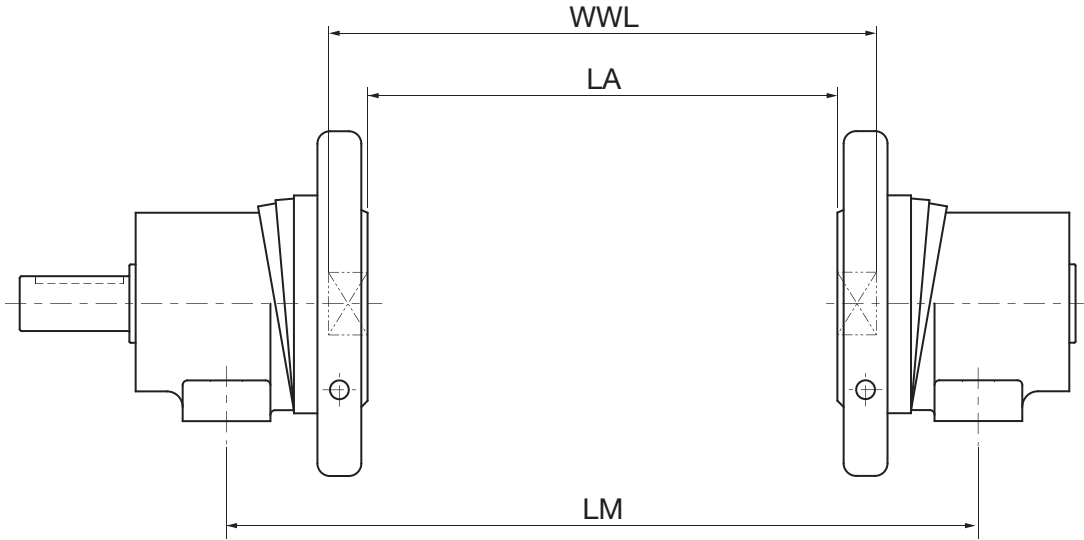
Legend:

- Di** triangle - inner circle diameter (tolerance f8)
- Da** triangle - circumference diameter (tolerance f6) **Da = Di x 1.5**
- W** minimum total length of the journal
- V** length of the triangular part of the journal
- U** front face bevel
- K** control dimension (note tolerances) **K = Di/2 + Da/2**
- H** angle for journal undercut

Winding Shaft Lengths

Calculate winding shaft lengths for PEDESTAL MOUNT (SN) chucks using the following formula:

$$WWL = LM - K - AS$$



SIZE	Dimensions in (mm)	
	K	AS
G2-500	4.016 (102)	0.020 (0.5)
G2-1000	4.409 (112)	
G2-1800	5.118 (130)	
G2-3000	7.638 (194)	

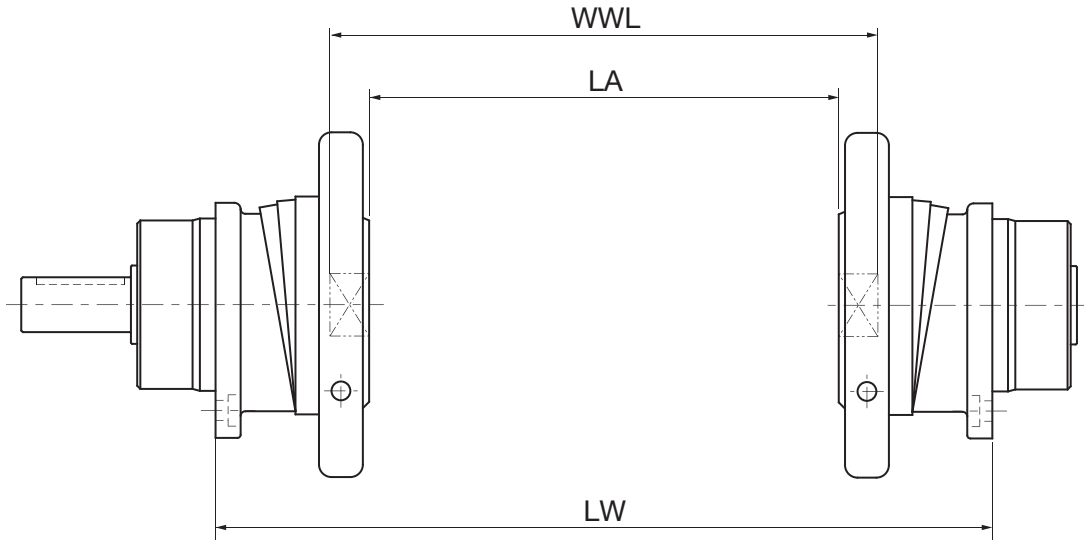
Legend:

- WWL** winding shaft length
- LA** distance between chucks
- LM** mounting distance
- K** specific constant
- AS** axial play of the winding shaft

Winding Shaft Lengths

Calculate winding shaft lengths for FLANGE MOUNT (FN) chucks using the following formula:

$$\mathbf{WWL = LW - K - AS}$$



Dimensions in (mm)

SIZE	K	AS
G2-500	4.961 (126)	0.020 (0.5)
G2-1000	5.433 (138)	
G2-1800	5.748 (146)	
G2-3000	8.110 (206)	

Legend:

- WWL** winding shaft length
- LA** distance between chucks
- LW** mounting distance
- K** specific constant
- AS** axial play of the winding shaft

Specification Sheets

The following four application data sheets will help to determine which Guardian safety chuck best meets your requirements. The information must be complete and accurate and must accompany each order. The sheets, when properly filled out, will clearly define a specific model of chuck. Remember... the most important method of identification of our chucks is the part number!

The part number will give all relevant information, e.g.:

- Design (shaft end, chuck journal seat, housing, etc.)
- Summary of all component parts used (part number = part number list)
- Options
- Finish, etc.
- Spare parts (sufficient info in part number to order spare parts)

SPECIFICATIONS

Specifications

G2-500- N-1- -00-0X- -

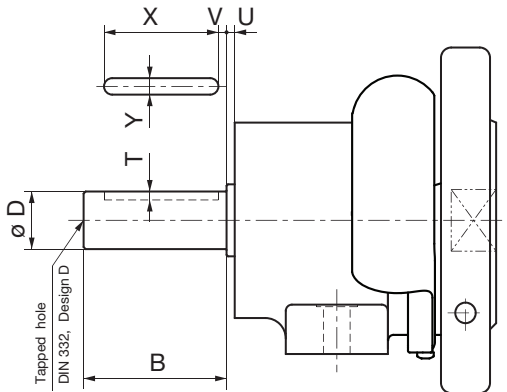
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Roll weight max.: 1,124 lb (5,000 N)

Torque max.: 1,151 in-lb (130 Nm)

1	Housing	SN	<input type="checkbox"/> pedestal mount		<input type="checkbox"/> standard as per data sheet
		FN	<input type="checkbox"/> flange mount		<input type="checkbox"/> special housing as per drawing
2	Journal Seat	1	A1 (square) <input type="checkbox"/> <i>G2-500 is available in A1 only.</i>	—	<input type="checkbox"/> Special as per drawing
3	Size of Journal Seat	20	<input type="checkbox"/> (mm) standard	—	<input type="checkbox"/> (inch) - custom - min. / max.
				—	<input type="checkbox"/> (mm) - custom - min. / max.
4	Safety Lock <i>(Not available)</i>	OO	<i>without Safety Locks (Safety locks not available for G2-500).</i>		
5	Axial Carrier <i>(Not available)</i>	OX	<i>without Axial Carrier (Axial Carrier not available on G2-500).</i>		
6	Shaft End	OW	<input type="checkbox"/> without shaft end	BR	<input type="checkbox"/> with shaft end

Shaft end to be defined when option 6 is equal to BR



<input type="checkbox"/>	std. shaft (mm)	<input type="checkbox"/>	special shaft
B	45	B	
D	Ø19 k6	D	
X	36	X	
Y	6 P9	Y	
T	3.5	T	
U	4	U	
V	4	V	
<input type="checkbox"/>	Special shaft end as per attached drawing		

Brake attachment: Type of brake _____ or define special shaft end (see above)

Further Options	Hardness	<input type="checkbox"/> 48/50 HRC = standard	<input type="checkbox"/> _____ HRC	<input type="checkbox"/> not hardened
	Seat	<input type="checkbox"/> cylindrical = standard	<input type="checkbox"/>	
	Balanced	<input type="checkbox"/> not balanced = standard	<input type="checkbox"/> balanced Q=_____ n=_____rpm	
	Indication	not available on G2-500		

Technical Data	Roll weight max.	_____ lb (_____ N)	Winding shaft diameter	_____ in (_____ mm)
	Roll diameter max.	_____ in (_____ mm)	Winding shaft length	_____ in (_____ mm)
	Roll width max.	_____ in (_____ mm)	Deflection of winding shaft	_____ in (_____ mm)
	Roll width min.	_____ in (_____ mm)	Torque max.	_____ in-lb (_____ Nm)
	Winding speed max.	_____ ft/min (_____ m/min)	Substrate:	
	Tension max.	_____ lb (_____ N)	Additional:	

Company: _____ Name: _____ Date: _____

SPECIFICATIONS

Specifications

G2-1000- **N-**

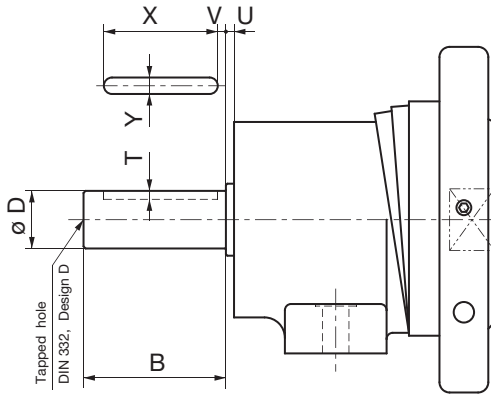
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Roll weight max.: 2,248 lb (10,000 N)

Torque max.: 1,770 in-lb (200 Nm)

1	Housing	SN	<input type="checkbox"/>	pedestal mount		<input type="checkbox"/>	standard as per data sheet	
		FN	<input type="checkbox"/>	flange mount		<input type="checkbox"/>	special housing as per drawing	
2	Journal Seat	1	<input type="checkbox"/>	A1 Square	<input type="checkbox"/>	3	<input type="checkbox"/>	A3 Triangle ▽
		2	<input type="checkbox"/>	A2 Diamond	◇	—	<input type="checkbox"/>	Special as per drawing
3	Size of Journal Seat	20	<input type="checkbox"/>	(mm) - standard		—	<input type="checkbox"/>	(inch) - custom - min. / max.
		25	<input type="checkbox"/>	(mm) - standard		—	<input type="checkbox"/>	(mm) - custom - min. / max.
		30	<input type="checkbox"/>	(mm) - standard				
4	Safety Lock	LS	<input type="checkbox"/>	safety lock - LEFT side				
		RS	<input type="checkbox"/>	safety lock - RIGHT side				
5	Axial Carrier	OX	<input type="checkbox"/>	without axial carrier				
		MX	<input type="checkbox"/>	with axial carrier plate				
6	Shaft End	OW	<input type="checkbox"/>	without shaft end		BR	<input type="checkbox"/>	with shaft end

Shaft end to be defined when option 6 is equal to BR



<input type="checkbox"/>	std. shaft (mm)	<input type="checkbox"/>	special shaft
B	70	B	
D	Ø28 k6	D	
X	56	X	
Y	8	Y	
T	4	T	
U	4	U	
V	4	V	
<input type="checkbox"/>	Special shaft end as per attached drawing		

Brake attachment: Type of brake _____ or define special shaft end (see above)

Further Options	Hardness	<input type="checkbox"/> 48/50 HRC = standard	<input type="checkbox"/> _____ HRC	<input type="checkbox"/> not hardened
	Seat	<input type="checkbox"/> cylindrical = standard	<input type="checkbox"/>	
	Balanced	<input type="checkbox"/> not balanced = standard	<input type="checkbox"/> balanced Q=_____ n=_____ rpm	
	Indication	<input type="checkbox"/> Handwheel Open/Closed	<input type="checkbox"/> 12h left	<input type="checkbox"/> 12h right
Technical Data	Roll weight max.	_____ lb (_____ N)	Winding shaft diameter	_____ in (_____ mm)
	Roll diameter max.	_____ in (_____ mm)	Winding shaft length	_____ in (_____ mm)
	Roll width max.	_____ in (_____ mm)	Deflection of winding shaft	_____ in (_____ mm)
	Roll width min.	_____ in (_____ mm)	Torque max.	_____ in-lb (_____ Nm)
	Winding speed max.	_____ ft/min (_____ m/min)	Substrate:	
	Tension max.	_____ lb (_____ N)	Additional:	

Company:

Name:

Date:

SPECIFICATIONS

Specifications

G2-1800- **N-** - - - - -

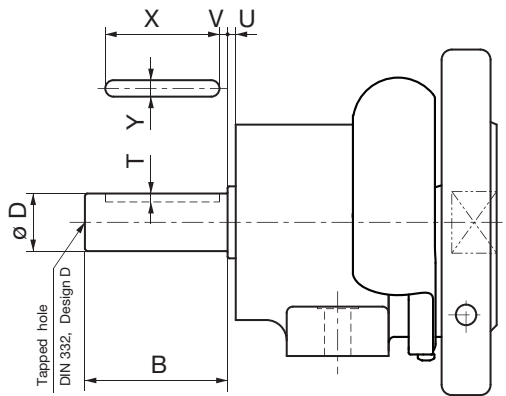
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Roll weight max.: 4,047 lb (18,000 N)

Torque max.: 3,363 in-lb (380 Nm)

1	Housing	SN	<input type="checkbox"/>	pedestal mount		<input type="checkbox"/>	standard as per data sheet
		FN	<input type="checkbox"/>	flange mount		<input type="checkbox"/>	special housing as per drawing
2	Journal Seat	1	<input type="checkbox"/>	A1 Square <input type="checkbox"/>			A3 Triangle <input type="checkbox"/>
		2	<input type="checkbox"/>	A2 Diamond <input type="checkbox"/>	—	<input type="checkbox"/>	Special as per drawing
3	Size of Journal Seat	30	<input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	36	<input type="checkbox"/>	(mm) - standard with <input type="checkbox"/>
		35	<input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	—	<input type="checkbox"/>	(inch) - custom - min. / max.
		40	<input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	—	<input type="checkbox"/>	(mm) - custom - min. / max.
4	Safety Lock	LS	<input type="checkbox"/>	safety lock - LEFT side			
		RS	<input type="checkbox"/>	safety lock - RIGHT side			
5	Axial Carrier	OX	<input type="checkbox"/>	without axial carrier			
		MX	<input type="checkbox"/>	with axial carrier plate			
6	Shaft End	OW	<input type="checkbox"/>	without shaft end	BR	<input type="checkbox"/>	with shaft end

Shaft end to be defined when option 6 is equal to BR



<input type="checkbox"/>	std. shaft (mm)	<input type="checkbox"/>	special shaft
B	70	B	
D	Ø35 k6	D	
X	56	X	
Y	10	Y	
T	5	T	
U	4	U	
V	4	V	
<input type="checkbox"/>	Special shaft end as per attached drawing		

Brake attachment: Type of brake _____ or define special shaft end (see above)

Further Options	Hardness	<input type="checkbox"/>	48/50 HRC = standard	<input type="checkbox"/>	_____ HRC	<input type="checkbox"/>	not hardened
	Seat	<input type="checkbox"/>	cylindrical = standard	<input type="checkbox"/>			
	Balanced	<input type="checkbox"/>	not balanced = standard	<input type="checkbox"/>	balanced Q=_____ n=_____ rpm		
	Indication	<input type="checkbox"/>	Handwheel Open/Closed	<input type="checkbox"/>	12h left	<input type="checkbox"/>	12h right
	Roll weight max.	_____ lb (_____ N)			Winding shaft diameter	_____ in (_____ mm)	
Technical Data	Roll diameter max.	_____ in (_____ mm)		Winding shaft length	_____ in (_____ mm)		
	Roll width max.	_____ in (_____ mm)		Deflection of winding shaft	_____ in (_____ mm)		
	Roll width min.	_____ in (_____ mm)		Torque max.	_____ in-lb (_____ Nm)		
	Winding speed max.	_____ ft/min (_____ m/min)		Substrate:			
	Tension max.	_____ lb (_____ N)		Additional:			

Company:

Name:

Date:

SPECIFICATIONS

Specifications

G2-3000- **N-** - - - - -

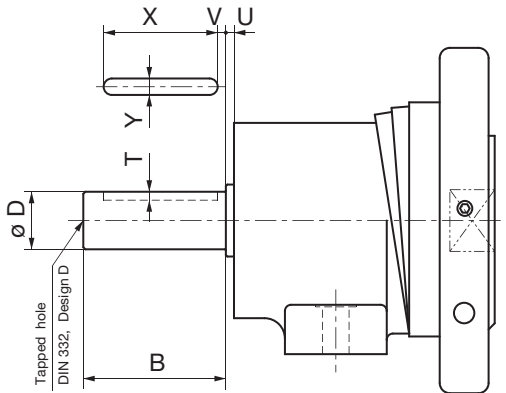
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Roll weight max.: 6,744 lb (30,000 N)

Torque max.: 10,621 in-lb (1,200 Nm)

1	Housing	SN <input type="checkbox"/>	pedestal mount		<input type="checkbox"/>	standard as per data sheet
		FN <input type="checkbox"/>	flange mount		<input type="checkbox"/>	special housing as per drawing
2	Journal Seat	1 <input type="checkbox"/>	A1 Square <input type="checkbox"/>	3	<input type="checkbox"/>	A3 Triangle <input type="checkbox"/>
		2 <input type="checkbox"/>	A2 Diamond <input type="checkbox"/>	—	<input type="checkbox"/>	Special as per drawing
3	Size of Journal Seat	40 <input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	46	<input type="checkbox"/>	(mm) - standard with <input type="checkbox"/>
		45 <input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	—	<input type="checkbox"/>	(inch) - custom - min. / max.
		50 <input type="checkbox"/>	(mm) standard with <input type="checkbox"/>	—	<input type="checkbox"/>	(mm) - custom - min. / max.
4	Safety Lock	LS <input type="checkbox"/>	safety lock - LEFT side			
		RS <input type="checkbox"/>	safety lock - RIGHT side			
5	Axial Carrier	OX <input type="checkbox"/>	without axial carrier			
		MX <input type="checkbox"/>	with axial carrier plate			
6	Shaft End	OW <input type="checkbox"/>	without shaft end	BR	<input type="checkbox"/>	with shaft end

Shaft end to be defined when option 6 is equal to BR



<input type="checkbox"/>	std. shaft (mm)	<input type="checkbox"/>	special shaft
B	110	B	
D	Ø50 k6	D	
X	100	X	
Y	14	Y	
T	5.5	T	
U	4	U	
V	4	V	
<input type="checkbox"/>	Special shaft end as per attached drawing		

Brake attachment: Type of brake _____ or define special shaft end (see above)

Further Options	Hardness	<input type="checkbox"/> 48/50 HRC = standard	<input type="checkbox"/> _____ HRC	<input type="checkbox"/> not hardened
	Seat	<input type="checkbox"/> cylindrical = standard		
	Balanced	<input type="checkbox"/> not balanced = standard	<input type="checkbox"/> balanced Q=_____ n=_____ rpm	
	Indication	<input type="checkbox"/> Handwheel Open/Closed	<input type="checkbox"/> 12h left	<input type="checkbox"/> 12h right
Technical Data	Roll weight max.	_____ lb (_____ N)	Winding shaft diameter	_____ in (_____ mm)
	Roll diameter max.	_____ in (_____ mm)	Winding shaft length	_____ in (_____ mm)
	Roll width max.	_____ in (_____ mm)	Deflection of winding shaft	_____ in (_____ mm)
	Roll width min.	_____ in (_____ mm)	Torque max.	_____ in-lb (_____ Nm)
	Winding speed max.	_____ ft/min (_____ m/min)	Substrate:	
	Tension max.	_____ lb (_____ N)	Additional:	

Company: _____ Name: _____ Date: _____

Troubleshooting

Winding shaft cannot be easily loaded/unloaded or the journals jam when the shaft is being loaded

- Journal tolerance incorrect
- Chuck not properly aligned
- Not enough axial play

Handwheel cannot be opened or closed without using undue force

- Journal tolerance incorrect
- Journal/shaft too long
- Chuck not properly aligned
- Front face bevel missing or too small
- Excessive deflection of roll shaft

Winding shaft cannot be rotated correctly

- Journal tolerance incorrect
- Journal/shaft too long
- Chuck not properly aligned
- Winding shaft journal not in alignment

Handwheel opens slightly during operation, handwheel wobbles, iron filings from the housing can be seen, wear on the housing can be seen

- Ball catch defective or dirty
- Excessive winding shaft deflection
- Load or torque too high
- Incorrect weight or torque reduction with A2 journal seat
- Journal/shaft too long
- Too much axial play

Premature wear on the journal seat or on the winding shaft journal

- Journal not cut back
- Chuck not properly aligned
- Too much load on chuck
- Incorrect weight or torque reduction with A2 journal seat
- Excessive winding shaft deflection
- Wrong material used for journal
- Journal hardness not compatible with chuck journal seat

Noise

- Handwheel/journal tolerance too loose
- Chucks misaligned or damaged

Chuck has stiff movement

- Defective bearing
- Improper installation of brake or drive to chuck shaft

Routine

Guardian standard chucks require no extensive maintenance!

The ball bearings are lubricated for life. Because operating conditions vary, chuck life cannot be easily estimated.

The following items should be checked at regular intervals:

- ease of rotation
- ease of closing movement
- make sure that the ball-detent can be moved easily and that it latches correctly in the closed position
- check the condition of the journal seat and the shaft journals
- check the play between the shaft journal and the journal seat of the chuck and for true running of the handwheel
- check the function of the handwheel safety lock
- visual check for unusual wear or damage

If the play between the handwheel and the shaft journal is outside of the limits listed below, replacement of both parts is recommended. This is especially important in the case of high loads and speeds.

Tolerance Range: Min. 0.006 in (0.15 mm) Max. 0.008 in (0.2 mm)

The following items should be cleaned and/or lubricated at regular intervals:

- all surfaces related to the ball-detent catch

Replacement Handwheel

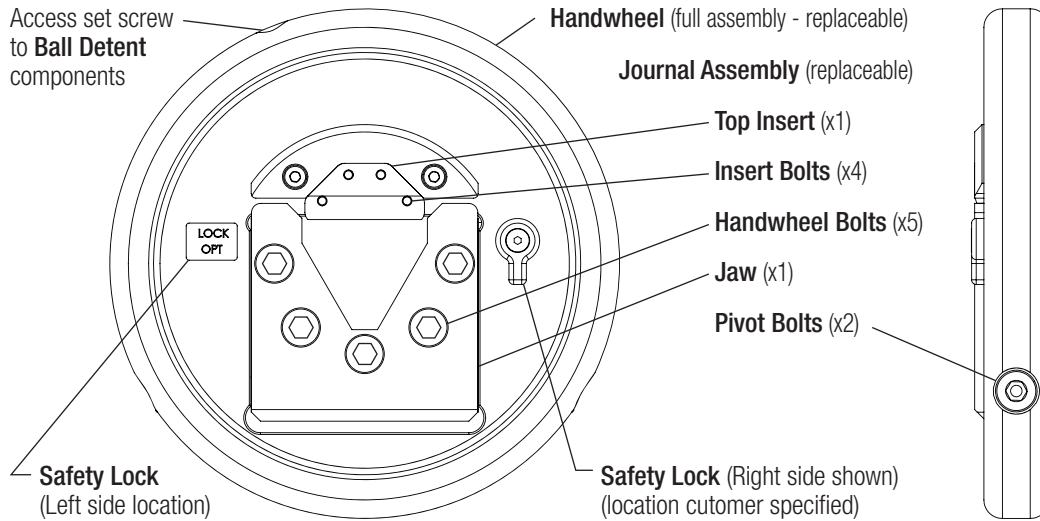
Replacement Handwheel

The Handwheel is supplied as a complete assembly unit including Jaw, Top Insert and new Handwheel bolts. Individual replacement parts are available upon request.

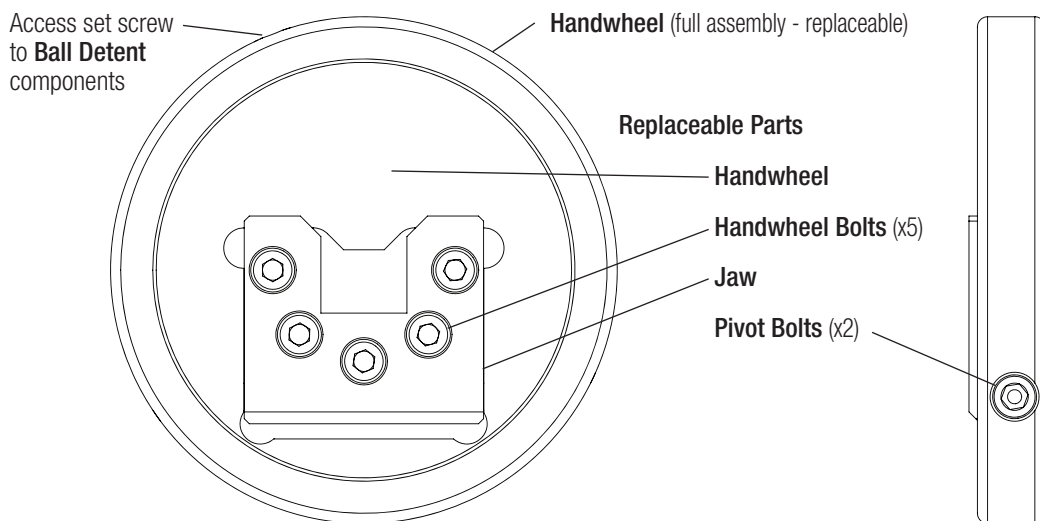


Caution - DO NOT press on jaw if handwheel is removed from chuck. Pressing jaw out of handwheel will allow parts to eject with sufficient force to cause injury!

G2-1000, G2-1800, G2-3000 Handwheel (with A1, A2 or A3 journal)



G2-500 Handwheel (with A1 journal only)



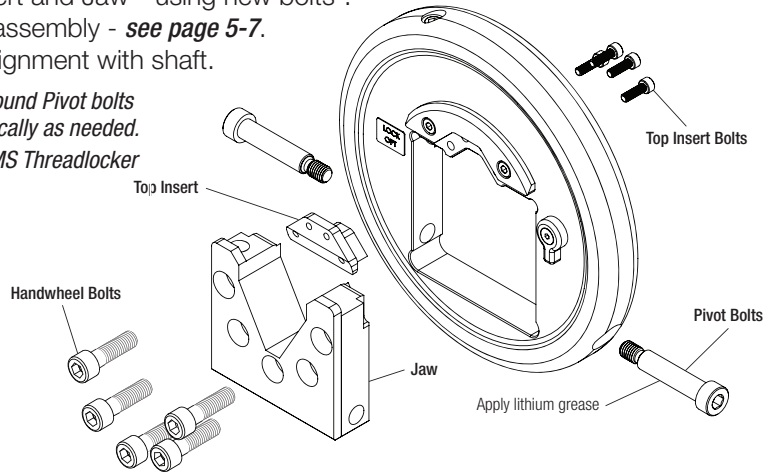
Journal Part Replacement

Journal Part Replacement of G2-100, G2-1800, G2-3000
(available in A1, A2 or A3)

- 1 Remove Handwheel assembly - **see page 5-7.**
- 2 Remove Top Insert by removing (4) Top Insert bolts.
- 3 Remove Jaw by removing (2) Pivot bolts.
- 4 Reinstall new Top Insert and Jaw** using new bolts*.
- 5 Reinstall Handwheel assembly - **see page 5-7.**
- 6 Check upper insert alignment with shaft.

* Apply white lithium grease around Pivot bolts during installation and periodically as needed.

** Use low strength Loctite 222MS Threadlocker (or equivalent).



Journal Part Replacement of G2-500
(available in A1 only)

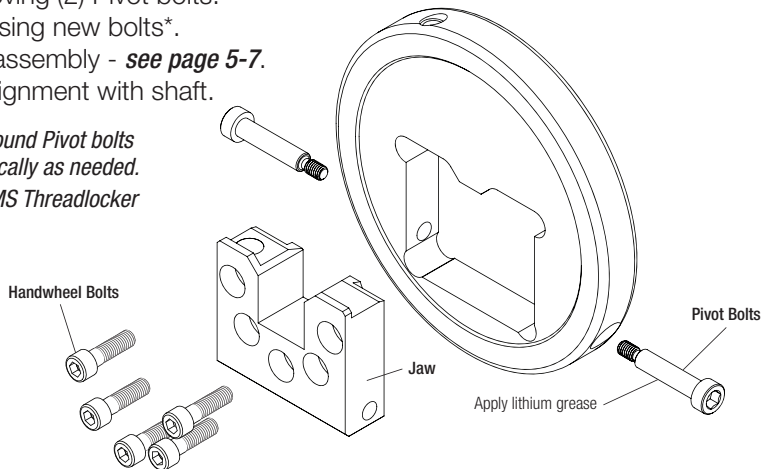
NOTE: Although the G2-500 Jaw can be replaced, it is advised to replace the entire handwheel since the Top Insert is the hadwheel itself. This will ensure that the entire Journal opening has been completely serviced - **see page 5-7.**

Follow these steps to replace the Jaw only:

- 1 Remove Handwheel assembly - **see page 5-7.**
- 2 Remove Jaw by removing (2) Pivot bolts.
- 3 Reinstall new Jaw** using new bolts*.
- 4 Reinstall Handwheel assembly - **see page 5-7.**
- 5 Check upper insert alignment with shaft.

* Apply white lithium grease around Pivot bolts during installation and periodically as needed.

** Use low strength Loctite 222MS Threadlocker (or equivalent).



Size	Handwheel Bolt		Insert Bolt		Pivot Bolt	
	Type	Torque ft-lb (Nm)	Type	Torque ft-lb (Nm)	Type	Torque ft-lb (Nm)
G2-500	SHCS M8 x 25	22 (30)	NA	NA	Custom M8 Shoulder Bolt	25 (35)
G2-1000	SHCS M8 x 30	22 (30)	SHCS M4 x 12	2 (3)	Custom M10 Shoulder Bolt	50 (70)
G2-1800	SHCS M10 x 35	40 (55)	SHCS M5 x 16	6 (8)	Custom M12 Shoulder Bolt	88 (120)
G2-3000	SHCS M12 x 45	59 (80)	SHCS M6 x 20	10 (14)	Custom M16 Shoulder Bolt	200 (270)

Handwheel Ball Detent Replacement

The handwheel ball detent provides a positive clicking action that secures the handwheel into a precise, closed position. The assembly is located on the left side of the chuck.

Follow the steps below to inspect or replace the Ball Detent Assembly for all sizes of Guardian G2 chucks. Replacement parts available as an assembly only.

Removal:

- 1 Remove set screw. Caution - parts will eject with sufficient force to cause injury! Make sure to use proper safety measures.
- 2 Remove spring.
- 3 Remove rivet.
- 4 Remove ball bearing.

Installation:

- 1 Apply lithium grease to ball bearing and install.
- 2 Apply lithium grease to rivet and spring and install them together.
- 3 Apply Loctite 222MS Threadlocker to set screw.
- 4 Screw set screw into handwheel.
- 5 Adjust set screw to achieve desired click-locking action*.

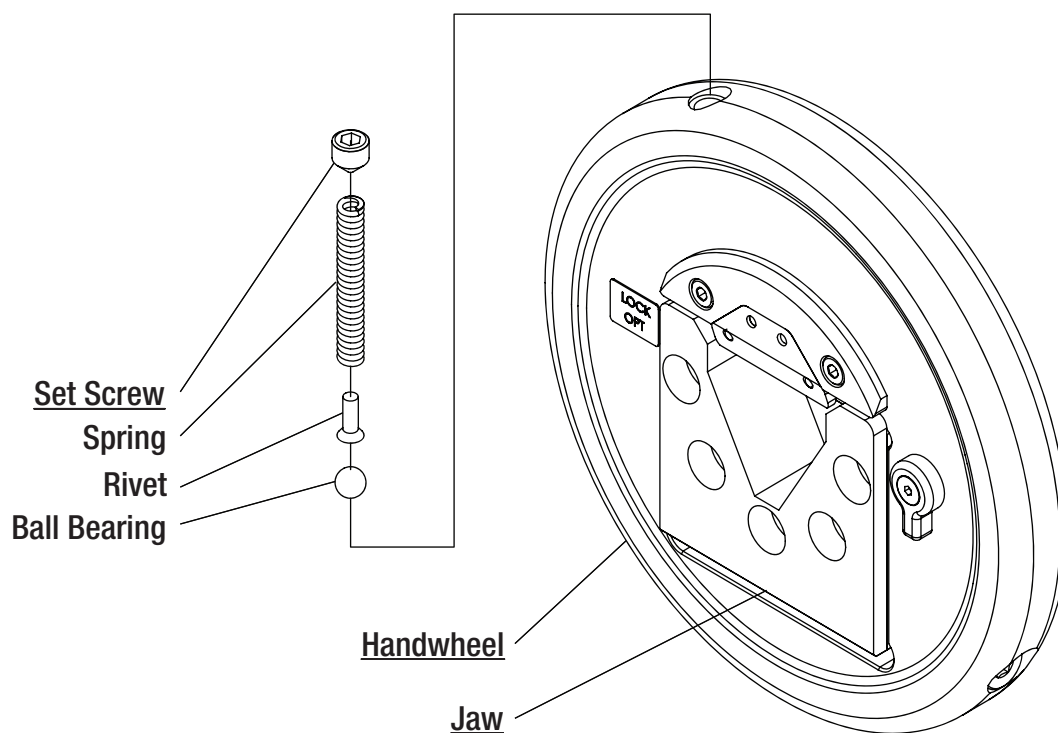
*The adjusted click locking action should require a moderate amount of hand force to open or close the handwheel. To avoid possible operator injury, the set screw should not protrude from edge of handwheel!



Caution - Removing the Set Screw will allow parts to eject with sufficient force to cause injury! Make sure to use proper safety measures.



Caution - DO NOT press on jaw if handwheel is removed from chuck. Pressing jaw out of handwheel will allow parts to eject with sufficient force to cause injury!



Handwheel Safety Lock Replacement

The handwheel safety lock prevents unintentional opening of the handwheel and is available on the G2-1000, G2-1800 and G2-3000. Locks are standard on chucks with A2 journal seats. It must be replaced when it becomes inoperable!

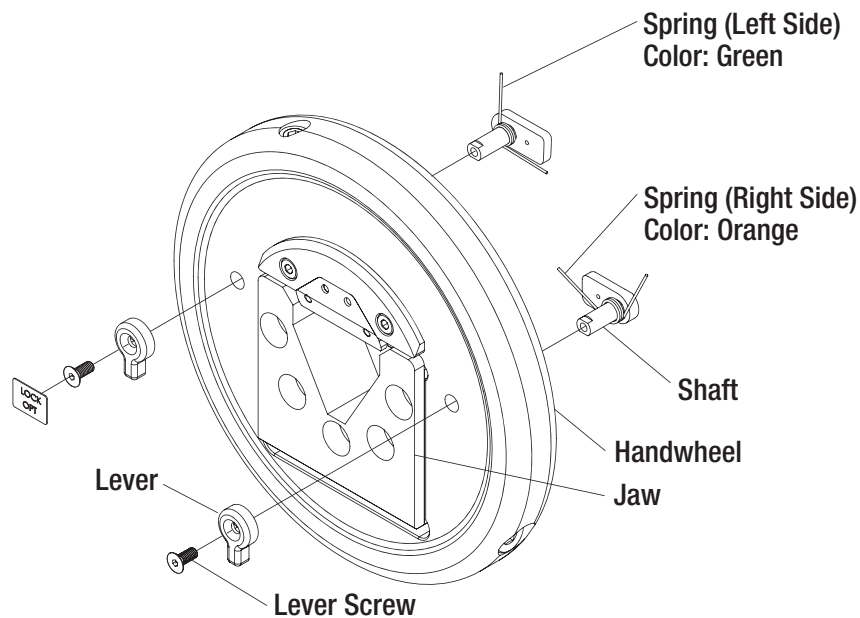
Follow the steps below. Replacing the RIGHT SIDE lock is shown. Procedure for LEFT SIDE replacement is identical.

Removal:

- 1 Remove Lever Screw.
- 2 Remove Lever and Shaft / Spring.

Installation:

- 1 Grease Shaft and reinstall Shaft / Spring.
- 2 Reinstall Lever.
- 3 Apply a drop of Loctite 222MS threadlocker to threads of Lever Screw.
- 4 Reinstall Lever Screw. Do not over tighten - Lever should slide freely!

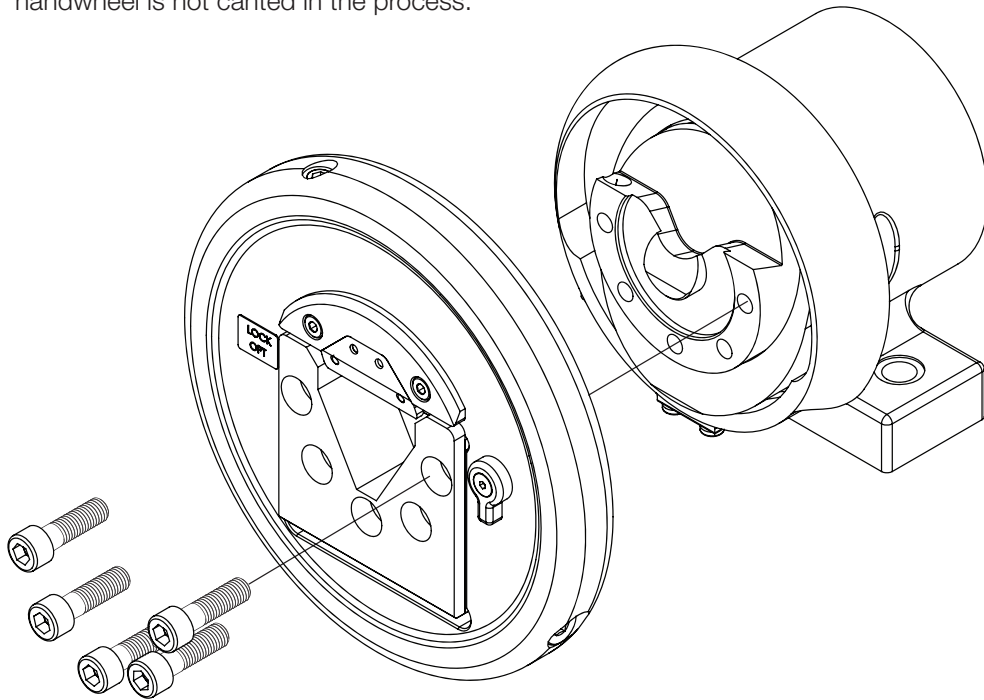


Removing / Installing Handwheels

The Handwheel is supplied as a complete assembly unit including Jaw, Top Insert (G2-500 handwheel is upper insert) and new Handwheel bolts. Individual replacement parts are available upon request.

Caution - DO NOT press on jaw if handwheel is removed from chuck. Pressing jaw out of handwheel will allow parts to eject with sufficient force to cause injury!

- 1 Loosen the socket head cap screws on the journal seat. They are secured with a thread locking compound so it may be necessary to heat the heads of the screws to loosen them. Never heat the complete handwheel.
- 2 Remove the handwheel (whether defective or worn Jaw or Top Insert).
- 4 Replace Jaw and/or Top Insert as necessary - see page 5-4
- 3 Clean the socket head cap screws and tapped holes to remove all traces of adhesive. Keep socket head cap screws and tapped holes free of grease.
- 4 Install a replacement or existing handwheel (with new Jaw and/or Top Insert), without canting it, on the pilot stub of the shaft and make sure that the inclined surface on the back of the Jaw is parallel to the incline of the shaft.
- 5 Coat the socket head cap screws with low strength Loctite 222MS Threadlocker (or equivalent).
- 6 Tighten the Handwheel bolts uniformly to specified torque making sure that the handwheel is not canted in the process.



Bolt Tightening Specifications

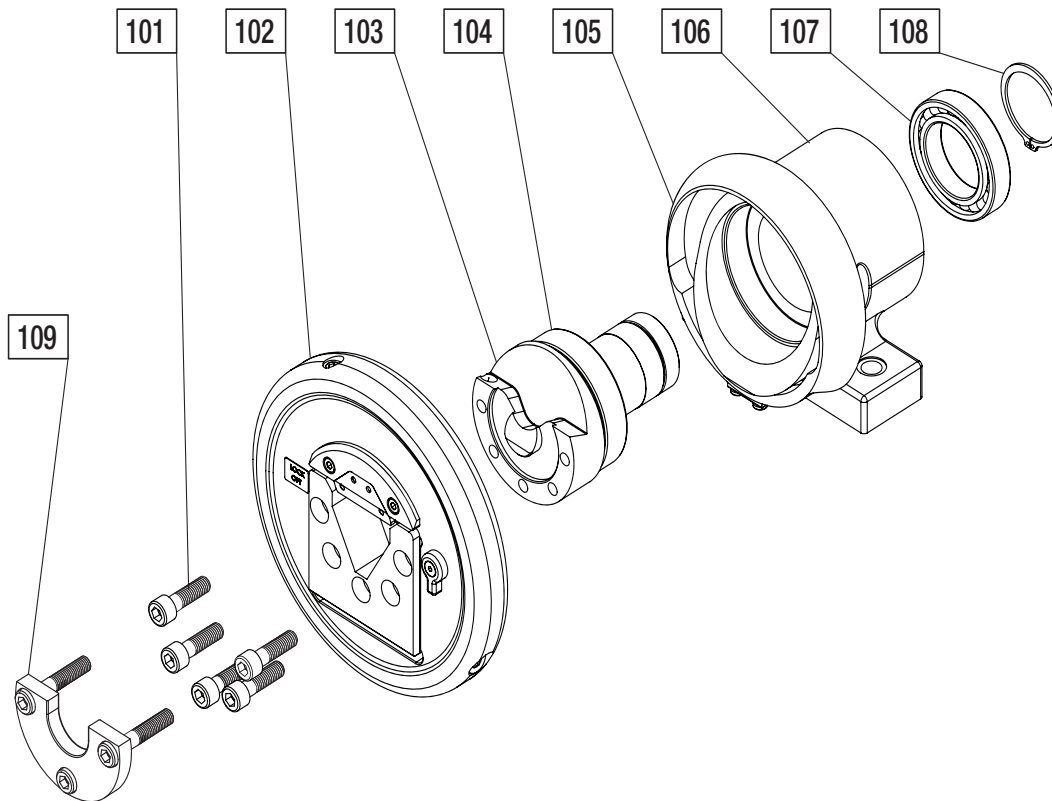
Size	Handwheel Bolt		Insert Bolt		Pivot Bolt	
	Type	Torque ft-lb (Nm)	Type	Torque ft-lb (Nm)	Type	Torque ft-lb (Nm)
G2-500	SHCS M8 x 25	22 (30)	NA	NA	Custom M8 Shoulder Bolt	25 (35)
G2-1000	SHCS M8 x 30	22 (30)	SHCS M4 x 12	2 (3)	Custom M10 Shoulder Bolt	50 (70)
G2-1800	SHCS M10 x 35	40 (55)	SHCS M5 x 16	6 (8)	Custom M12 Shoulder Bolt	88 (120)
G2-3000	SHCS M12 x 45	59 (80)	SHCS M6 x 20	10 (14)	Custom M16 Shoulder Bolt	200 (270)

Dismantling Chucks

TYPE OW + BR

- 1 Remove the handwheel assembly **102*** by removing the handwheel bolts **101** or remove axial carrier option **109** if equipped, then remove remaining handwheel bolts **101**.
- 2 Remove the retaining ring **108**.
- 3 The shaft **103** can be removed through the front end by pressing or carefully tapping it. Bearing **104** will remain on the shaft. Bearing **107** will remain in the chuck housing **106**.
- 4 Perform necessary repair work.
- 5 Assembly is carried out in reverse sequence.

Ref. #	Description	Ref. #	Description
101	Handwheel Bolts	106	Chuck Housing (pedestal or flange)
102	Handwheel Assembly*	107	Bearing
103	Shaft	108	Retaining Ring
104	Bearing	109	Axial Carrier
105	Finger Guard		



***Caution - DO NOT press on jaw if handwheel is removed from chuck. Pressing jaw out of handwheel will allow parts to eject with sufficient force to cause injury! See pages 4-4 thru 4-7 for handwheel service instructions.**

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Montalvo USA

(Corporate Headquarters)
Gorham, Maine 04038
USA
1-800-226-8710
+1-207-856-2501
info@montalvo.com

Montalvo United Kingdom

London, United Kingdom
info.eu@montalvo.com

Montalvo Europe ApS

Horsens, Denmark
+45 75 57 27 11
info.eu@montalvo.com

Montalvo Deutschland

Hannover, Germany
Tel: +49 (0)511 760 691 41
info.de@montalvo.com

Montalvo (Shanghai) Trading Co., Ltd.

Shanghai, China
+86-21-52188010
info.cn@montalvo.com



The Montalvo Corporation

EST. 1947

montalvo

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50 Hutcherson Drive, Gorham, Maine 04038 USA
Fax: 1-800-644-5097 / 207-856-2509

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