



# Operating Instructions for PEI & PEO SERIES EXTRA HEAVY DUTY MANUAL LATHE CHUCKS FORGED STEEL BODY

## A2 SPINDLE NOSE DIRECT MOUNTS

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Read this instruction before unpacking and using this chuck.  
Please read and keep this manual for future reference.

# Introductory

- 1.0 Read these operating instructions before unpacking and using Gator 4-Jaw Independent (PEI Series) and 3-Jaw scroll (PEO Series) heavy duty chucks and observe all these instructions strictly.

This operating manual contains the information required for the correct use of the PEI & PEO manual heavy duty chucks. Both 4-jaw, 3-jaw chucks and adapter plates can be installed, operated and maintained by only qualified personnel who have been instructed and especially trained for this purpose and or have many years of experience and who are familiar with the contents of this manual.

- 1.1 Please note that Gator factory accepts no liability or any damage and or breakdowns resulting from the failure to observe these operating instructions.
  - 1.2 Any mode of operation detrimental to the safety of the manual chuck must be avoided.
  - 1.3 In the case of any chuck defects or problems which may reduce the safety and chuck performance; the machine tool operator is obliged to stop the work and report it to the supervising personnel immediately.
  - 1.4 In the case of any technical difficulties please contact immediately Gator customer service at [info@gatorchucks.com](mailto:info@gatorchucks.com).
  - 1.5 Gator factory reserves the rights to make any technical modifications necessitated by the further development and improvement of these manual chucks. These changes may not be reflected in that data and illustrations in this operating manual.
- 2.0 All Gator chucks, adapter plates and spare parts are warranted against manufacturer defects and workmanship under normal use (single shift) according to the chuck application (listed in this manual) for one year from the date of purchase. Any chuck modifications, normal wear and tear are not covered by the Gator factory.
    - 2.1 The company, purchasing and using any Gator lathe chuck, adapter plates and parts is responsible for insuring that all personnel operating or servicing the lathe chucks read and understand the Gator manual chuck safety, installation and operating requirements.
    - 2.2 All chuck, adapter plate and spare part defect should be immediately reported to your Gator chuck distributor (or directly to Gator at [info@gatorchucks.com](mailto:info@gatorchucks.com)) in order to limit the extent of chuck, adapter plate or spare part damage and avoid compromising the safety of the operating personnel.
    - 2.3 The local safety and accident prevention regulations in their latest version must be observed at all times when working on and with the manual chucks.
  - 3.0 All Gator manual chucks, adapter plates and parts meet ANSI, DIN & ISO Standard requirements.

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## PEI Series    PEO Series

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# Safety and Operating Precautions & Warnings

## CAUTION



### Operating Personnel

All chucks and adapter plates can be installed by only qualified personnel who have been instructed and especially trained for this purpose and or have many years of experience and who are familiar with the contents of this manual.



### Turn off the lathe

Always disconnect the machine tool from power source before installation, inspection or lubrication of chuck or adapter plate.



### Chuck Wrench

Always remove the chuck wrench from the chuck body immediately after tightening workpiece with specified torque. Never use chuck wrench without safety spring.



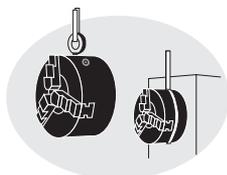
### Chuck RPM

Never exceed specified chuck maximum RPM. Chuck RPM's are listed in this instruction or stamped on the face of the chuck. Always adjust chuck RPM to the size, shape and weight of the workpiece. There is a significant drop of the chuck gripping power at the high RPM. Never spin chuck without gripping a workpiece. Installing heavier jaws than Gator original be sure to reduce the chuck RPM as well.



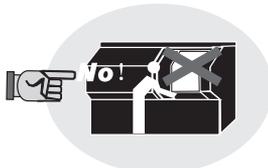
### Chuck Wrench Torque

Always apply by hand required torque (as listed in this manual) on the chuck wrench to be able to get proper gripping power. Never exceed maximum permissible chuck torque. Never use any extension tubes on the chuck wrench otherwise you will destroy precision of the chuck. Some internal parts can be broken as well. Check chuck jaw gripping power on regular basis.



### Lifting the Chuck

Always remove eyebolts (supplied by the factory) or other lifting devices from the chuck body after the chuck installation on the lathe spindle nose.



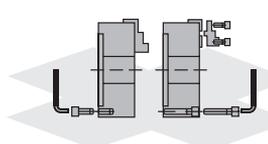
### Lathe Safety Guards

Never start the machine tool with the safety door opened or without spindle nose guard covering the chuck. Safety doors may be opened only after the lathe chuck has come to a complete stop.



### Spring Loaded Wrench

Never use chuck wrench without safety spring. Never use any extension tubes (cheater bars) on the chuck wrench to increase torque. It can cause chuck jaw or internal part damage.



### Chuck Bolt Torques

Always clamp chuck mounting bolts with specified torques. Always tight the chuck bolts and screws by hand with the proper hex key. Never use any extension tubes on any hex keys. Check tightness of every chuck mounting and jaw bolts and screws after every 24 hours of chuck operation.

# Safety and Operating Precautions & Warnings

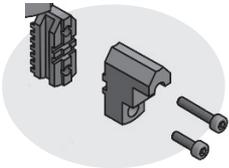
## CAUTION

### Chuck Lubrication and Maintenance



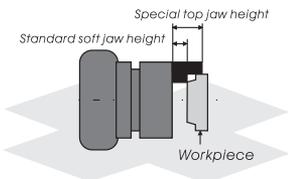
Clean and lubricate the chuck frequently. Remove chips and any dirt every time you stop the lathe. Never use compressed air to clean the chuck. Every week lubricate chuck guideways and master jaws. Also using grease gun lubricate chuck thru the grease nipple. If the coolant is used all time repeat lubrication more often. It will extend chuck life significantly. Poorly lubricated chucks will have significant drop of the gripping power. Check your chuck gripping power level at least one time per month. Proper lubrication is essential for the trouble free manual chuck operation. Do not apply to much grease on the scroll and jaw guideways - it collects chips and dirt which eventually will clog the chuck jaws and scroll.

### Hard Top Jaw Installation



Always clamp chuck top jaw mounting bolts with specified torques. Always tight the jaw bolts by hand with the proper hex key. Never use any extension tubes on any hex keys. Always use Gator original jaw bolts. Check tightness of every chuck jaw bolts after every 24 hours of chuck operation.

### Special Top Jaws



In the case where standard Gator hard top or soft top jaws are not able to grip your workpiece securely, use suitable jaws provided by the specialized special jaw suppliers. In such cases follow their and Gator jaw gripping safety rules. Installing heavier jaws than Gator original be sure to reduce the chuck RPM.

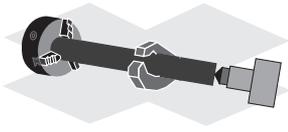
### Workpiece Max. OD



#### NEVER OVERLOAD YOUR CHUCK!

Always grip workpiece with the smaller outside diameter than the chuck body outside diameter. Insert workpiece in the chuck jaws as far as possible. To assure a firm and accurate grip rotate the workpiece during the jaw tightening process. The lathe operator must insure that the chuck jaws are tightened securely and workpiece is gripped by the chuck jaws in a proper and safe way.

### Workpiece Max. Length



When machining a long workpiece, always support it with the center, or steady rest or grip between two chucks. Check the chuck loading capacity when gripping long and heavy workpieces. Adjust chuck RPM to the workpiece size, shape and weight.

### Unauthorized Modifications



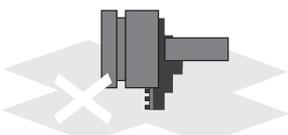
Never attempt to modify the chuck. Any untheorized chuck modification will void the manufacturer warranty.

### Small Part Gripping



Never grip another chuck with the chuck. Bigger chuck gripping power can deform small chuck body, significantly reducing its gripping and operating performance.

### Chuck Application and Gripping Ranges



Always use most suitable chuck for the workpiece. The jaws should never project over the outside diameter of the chuck body. Master jaws always should be in a full engagement with scroll or operating screw. Fine chips, dirt and coolant can easily penetrate the chuck when the chuck jaws are wide open and the scroll or operating screws are exposed. Accumulation of the chips and dirt between scroll or operating screws and master jaws can result in a complete chuck locking and damages of internal parts.

# Safety and Operating Precautions & Warnings

## CAUTION



### Improper Cloth

Gloves, ties or loose cloth never should be worn when operating the machine.

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### Drugs and Alcohol

Never operate the machine under drug or alcohol influence.

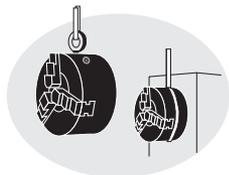
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### Keep Out Your Hands

When gripping workpiece, always make sure that your hand is out of jaw gripping area.

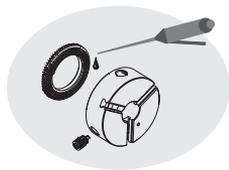
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### Lifting Devices

When lifting the chuck always use provided by factory eyebolts or weight certified lifting belts or devices. Lifting equipment should be only operated by the trained personnel.

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### Chuck Inspection and Maintenance

Detailed chuck inspection should be performed at least every 6 months. At least once a year chuck should be removed from the lathe spindle nose and disassembled. All parts should be cleaned, inspected and all worn out and damaged parts should be replaced. After the cleaning all chuck working surfaces should be regressed and chuck should be reassembled.

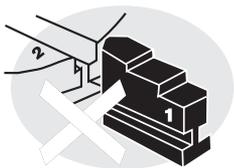
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### Never Hammer Chuck

Never hammer chuck, chuck jaws or gripped workpiece.

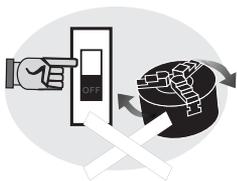
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### Jaw Installation

Always reinsert jaws in the correct sequence. Start with jaw and jaw guide number 1, than number 2, 3 & 4. For the scroll chucks turn scroll plate so that first thread beginning will be partially visible in the guideway #1, than insert jaw #1 and than turn scroll to make engagement with the jaw tooth Repeat process for jaws #2 and #3.

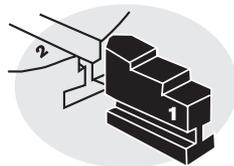
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### Chuck Start and Stop

Never apply extreme start and stop to the chuck without gripping workpiece.

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### Spare Part Inventory

Always keep inventory of the most important chuck replacement parts to keep your chuck running without any longer stops.

# Heavy Duty Chuck Installation on the lathe A2 Spindle Nose

## Warning

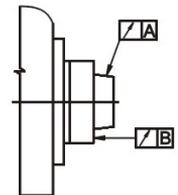
- 7.1 Chuck installation, service and operation can be handled only by qualified workers who have been especially trained for this purpose and ( or ) have many years of experience.
- 7.2 Chuck gripping performance depends on a wide range of a different factors which cannot be controlled by the Gator factory; like: turning speed, workpiece weight, workpiece dimensions, workpiece shape, workpiece unbalance, workpiece material, cutting forces, chuck gripping forces, chuck gripping range, chuck working condition and others. Each chuck application has to be very carefully evaluated by chuck user and selected chuck should meet all required safety and operating requirements.
- 7.3 **If you are unsure about safety and chuck performance, please contact your chuck supplier or Gator factory at: [info@gatorchucks.com](mailto:info@gatorchucks.com).**

## Installation

- 7.4 Remove chuck from the shipping box using provided by the factory lifting eye bolts.
- 7.5 Remove from the chuck body coat of the protective oil. Carefully clean the taper seat and contact surface of the chuck and clean machine spindle nose.
- 7.6 Disconnect the machine tool from power source before the installation.
- 7.7 Check spindle nose face and radial RUNOUT. See chart below.
- 7.8 Both independent and scroll chucks come with the spindle nose locating pin holes.
- 7.9 Mount the chuck on the spindle nose and lightly tighten chuck mounting bolts.
- 7.10 Check the gap between chuck contact surface and the spindle nose face surface with the feeler gauge.
- 7.11 Firmly tighten the chuck bolts to an even torque in diagonally opposite pairs. Both the short taper and the face of the chuck back surface must be in a full contact with the spindle nose after mounting.
- 7.12 All chuck mounting bolts should be tighten with the proper tightening torque. See chart below.
- 7.13 After chuck installation check the chuck Face and Radial RUNOUT. See page below.

## Max. Permissible A Spindle Nose Runout

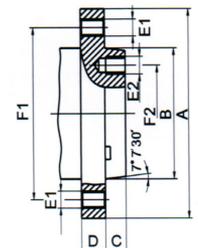
Chuck Series No.	Runout Max.	Chuck Diameter				
		20"	25"	31-1/2"	40"	50"
PEI	A	0.0004"				
	B	0.0002"				
PEO	A,B	0.0002"				



## Spindle Nose A1 & A2 Specification DIN55026

Spindle Nose	F1	F2	B	C max.	Threads* E1 & E2
A-11	9,2500	6,5000	7.75075+.0005	0,7500	8 x M20
A-15	13,0000	9,7500	11.251+.001	0,8125	11 X M24
A-20	18,2500	14,5000	16.251+.001	0,8750	
A-28	25,5000	20,8750	23.001+.001	1,000	11 X M30

\*Note: Lathes with the Spindle Noses made according to the ASA B5.9-1960 & ISO 702/1 Standards have chuck mounting bolt holes with different thread sizes.



**Type A1** has tapped holes on both inner F-2 and outer F-1 bolt circles.



**Type A2** has tapped holes on the outer bolt circle F-1 and does not have holes in the inner bolt circle F2

## Spindle Nose Bolt Tightening Torques

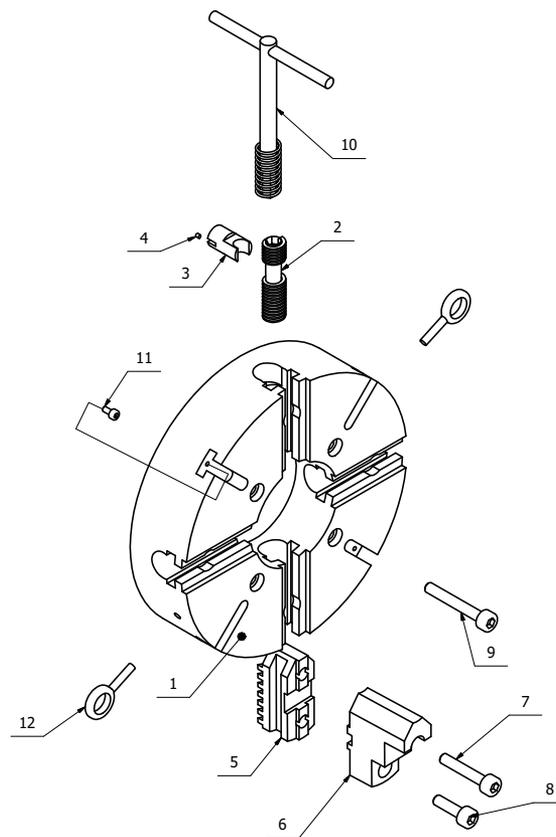
Bolt Grade	M20		M24		M30	
	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft
8,8	415	306	714	527	1420	1047
10,9	592	436	1017	750	2005	1479
12,9	692	510	1190	878	2410	1778

**Note:** Always use supplied by Gator factory original mounting bolts.

### Design and Chuck Part Listing

1. Chuck Body
2. Operating Screw
3. Thrust Bearing
4. Thrust Bearing Set Screw
5. Hard Master Jaws
6. Hard Top Reversible Jaws
7. Jaw Mounting Bolts - Long
8. Jaw Mounting Bolts - Short
9. Chuck Mounting Bolts
10. HD Spring Loaded Chuck T-Wrench
11. T-Slot Screw
12. Lifting Eye Bolts

**Note:** Each chuck comes with a/m parts. See assembly instruction on **page 13**.



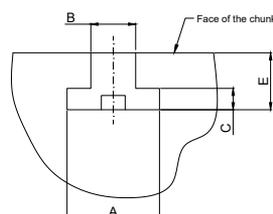
### Part Listing

Chuck Dia.	Spindle Nose Size	Hard Top Reversible Jaws 1 pc.	Hard master Jaws 1 pc.	Thrust Bearing 1 pc.	Heavy Duty Wrench 1 pc.	Operating Screw 1 pc.	Chuck Mounting Bolts 1 pc.	Top Jaw Mounting Bolts Short 1 pc.	Top Jaw Mounting Bolts Long 1 pc.
20"	A2-11	TJ-PEI-500	MJ-PEI-500	TB-PEI-500	W-PEI-500	OS-PEI-511	MB-PEI-511	MTH-J1-20	MTH-J2-20
	A2-15					OS-PEI-515	MB-PEI-515	MTH-J1-25	MTH-J2-25
25"	A2-15	TJ-PEI-800	MJ-PEI-800	TB-PEI-630	W-PEI-1000	OS-PEI-631	MB-PEI-615		
	A2-20					OS-PEI-632	MB-PEI-620		
28"	A2-15					OS-PEI-715	MB-PEI-715		
	A2-20					OS-PEI-720	MB-PEI-720		
32"	A2-15			TB-PEI-800		OS-PEI-815	MB-PEI-815		
	A2-20					OS-PEI-820	MB-PEI-820		
40"	A2-28	TJ-PEI-1000	MJ-PEI-1000	TB-PEI-1000	OS-PEI-928	MB-PEI-1028	MTH-J1-40	MTH-J2-40	
50"	A2-15				OS-PEI-1215	MB-PEI-1215			

**Note:** Always keep inventory of the most important chuck replacement parts to keep your chuck running without any longer stops.

### T-Slot Dimensions

Chuck Dia.	A	B (H7)	C	E	T-Slot Length
20"	1,4763	0,8858	0,6299	1,3779	5,807
25"					6,102
28"					7,677
31-1/2"					9,449
40"	1,8110	1,1024	0,7874	1,9685	9,252
50"					14,173



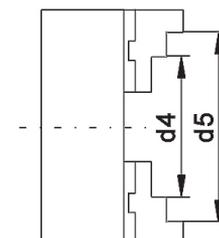
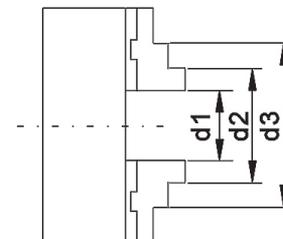
**Note:** Every T-Slot is secured by the two set screws

## Clamping Ranges

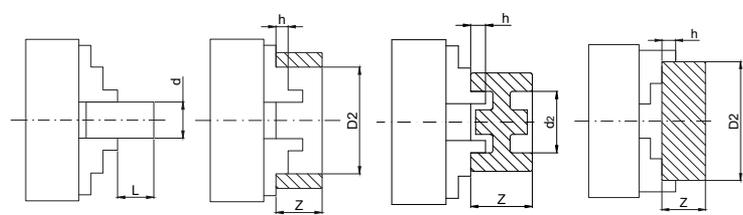
### Warning

- 9.1 Never exceed chuck max. gripping ranges. See chart below.
- 9.2 Master jaws and operating screws should be always in a full engagement.
- 9.3 Select jaws with the proper jaw gripping surfaces to fit your application.
- 9.4 Always use proper jaws for rough medium and finishing machining.
- 9.5 Check the chuck jaw gripping power on regular basis.

Chuck Dia.	Spindle Nose Size	d1 min.-max.	d2 min.-max.	d3 min.-max.	d4 min.-max.	d5 min.-max.
20"	A2-11	1.77-9.96	5.87-17.05	8.50-19.69	5.75-17.05	8.39-19.69
	A2-15					
25"	A2-15	1.97-12.05	6.06-22.17	8.70-24.80	5.91-22.17	8.54-24.80
	A2-20	3.94-12.05	8.03-22.17	10.67-24.80	7.87-22.17	10.51-24.80
28"	A2-15	2.95-15.20	7.05-25.31	9.69-27.95	6.89-25.31	9.53-27.95
	A2-20	3.94-15.20	8.03-25.31	10.67-27.95	7.87-25.31	10.51-27.95
32"	A2-15	2.95-18.90	7.05-28.86	9.69-31.50	6.89-28.86	9.53-31.50
	A2-20	4.52-18.90	8.62-28.86	11.26-31.50	8.46-28.86	11.10-31.50
40"	A2-28	13.78-20.87	18.50-36.61	21.26-39.37	18.90-36.61	21.65-39.37



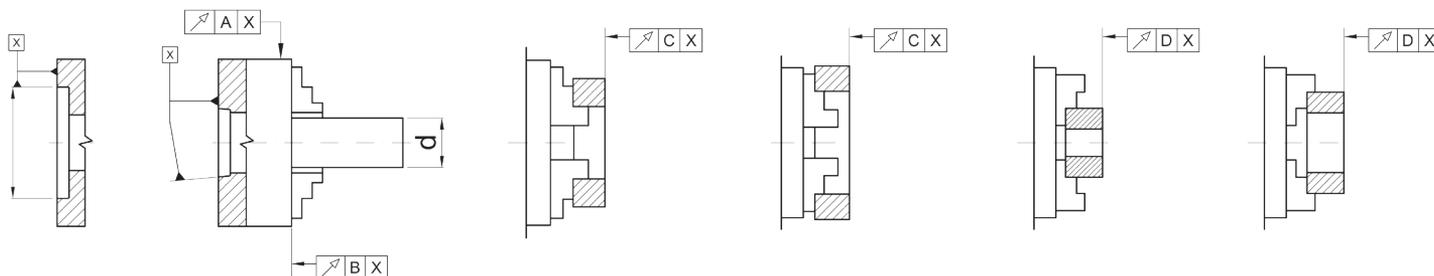
## Maximum Workpiece Gripping Diameter and Length Requirements For Unsupported Workpieces



Chuck Dia.	20"	25"	28"	31-1/2"	40"	50"
L max.	1.5 x d	1 x d			0.5d	
Z max.	4 x h					

**Note:** Never exceed workpiece max. gripping diameter or length. Always select proper chuck for your application.

## Chuck Accuracy



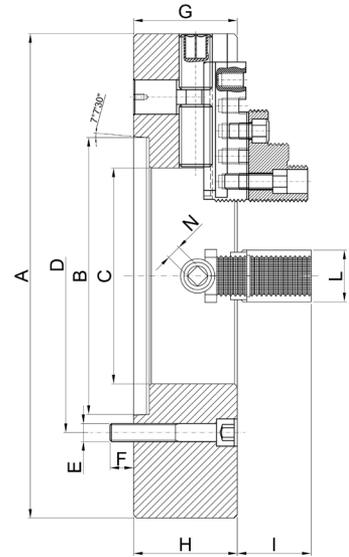
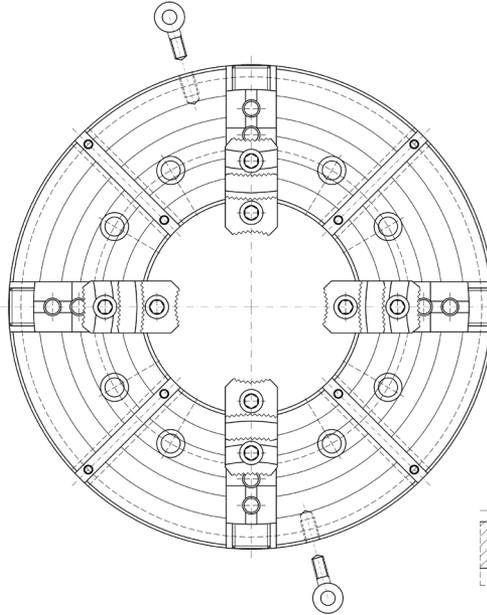
Chuck Dia.		20"	25"	28"	31-1/2"	40"	50"
A	Radial Run Out	0,0040	0,0040	0,0050	0,0050	0,0071	0,0071
B	Face Run Out	0,0020	0,0020	0,0024	0,0024	0,0031	0,0040
C	Jaw Face	0,0024	0,0024				
D							

**Note:** For chuck Radial and Face RUN OUT tests always use precisely ground test mandrels and rings. The accuracy of the test mandrels and rings should be within 0.0001".

# HD Independent Chucks

## Technical Data

**PEI** Series



## Principal Dimensions

Chuck Dia.	Spindle Nose Size	C	B	D	G	H	I	K	L	N	E	F	Chuck Model No.	Chuck Part No.
20"	A2-11	6.5	7.75075	9.2500	5.71	6.067	2.981		2.362	.748	M20x2.5	1.118	PEI4-20"A/A2-11	1-317-2011
	A2-15	8.0	11,251	13.000							6.10	6.579		.866
25"	A2-20	10.5	11,251	13.000	6.50	6.972	3.571	2.953	.866	M30x3.5				
	A2-15	12.55	16,251	18.252							6.50	6.972	3.571	2.953
28"	A2-20	10.5	11,251	13.000	6.50	6.972	3.571	2.953	.866	M24x3				
	A2-20	12.55	16,251	18.252							6.50	6.972	3.571	2.953
31-1/2"	A2-15	10.5	11,251	13.000	6.50	6.972	3.571	2.953	.866	M30x3.5				
	A2-20	12.55	16,251	18.252							6.50	6.972	3.571	2.953
40"	A2-28	20,86	23,001	25.500	6.89	7.366		1.10						
50"	A2-15	11.00	11.251	13.000							6.89	7.366		1.10

## Chuck Technical Parameters

Chuck Dia.	Spindle Nose Size	Max. RPM	Max. Load Capacity lbs.	Max. Perm. Torque on the Wrench lb. ft.	Gripping Force per Jaw lbf.	Clamping Capacity Min. - Max.	Chuck Weight lbs.	Top Jaw Mounting Bolt	Operating Screw Thread Size	Chuck Weight lbs.
		1	2	3	4	5	6	7	8	9
20"	A2-11	1000	14,900	259	7,190	1.77 - 19.68	450	3/4" - 10	Tr44 x 8LH	495
	414						456			
25"	A2-15	850	21,500	296	8,320	1.97 - 24.80	682	7/8" - 9	Tr50 x 8LH	506
	A2-20					3.94 - 24.80	649			693
28"	A2-15	750	24,800	331	9,217	2.95 - 27.95	913	7/8" - 9	Tr50 x 8LH	1008
	A2-20					7.09 - 27.95	869			927
31-1/2"	A2-15	600	28,100	368	10,116	5.12 - 31.50	1287	7/8" - 9	Tr50 x 8LH	1364
	A2-20					7.09 - 31.50	1243			1287
40"	A2-28	430	38,800	368	10,116	13.73 - 39.40	1683			1848
50"	A2-15	350	42,900	368	11,240	3.94 - 49.21	3 540			-

**Note 1:** Permissible chuck max. RPM's are calculated for the round and perfectly centered workpieces and for the chucks in perfect condition having factory original jaws and depends on many different machining factors such as cutting parameters (depth of cut & feeds), weight and balancing of workpiece, machining conditions like; smooth or interrupted cut. Workpiece material and surface finishing should be also taken into the consideration. Any workpiece and chuck imbalance will cause vibrations which have a negative impact on the workpiece machining quality and the chuck gripping performance.

**Note 2:** Max. load capacity is rated per one PEI chuck. Max. load capacity has been calculated for symmetrical workpiece SUPPORTED with the live center, steady rest or being gripped in two chucks. For the odd shape workpieces and heavy machining the workpiece weight and RPM should be reduced significantly.

**Note 3:** Always apply by hand required torque (as listed in this instruction on the chuck wrench) to be able to get proper jaw gripping power. Never exceed maximum permissible chuck torque.

Never use any extension tubes on the chuck wrench otherwise you will destroy precision of the chuck. Some internal parts can be broken as well. Check chuck jaw gripping power on regular basis.

**Note 4:** The final gripping forces depend on the number of different factors:

- The Chuck RPM level; there is a jaw gripping force reduction due to the centrifugal forces.
- The ratio between gripping diameter and cutting diameter.
- The level of friction coefficient between chuck jaw gripping surfaces and workpiece surface.
- The cutting force level applied by the cutting tool.
- Weight of the hard top jaws.

**Note 5:** Always use most suitable chuck for the workpiece. The jaws should never project over the outside diameter of the chuck body. Jaws always should be in a full engagement with scroll or operating screw. Fine chips, dirt and coolant can easily penetrate the chuck when the chuck jaws are wide opened and the scroll or operating screws are exposed. Accumulation of the chips and dirt between scroll or operating screws and master jaws can result in a complete chuck locking and damages of internal parts.

# HD Independent Chucks

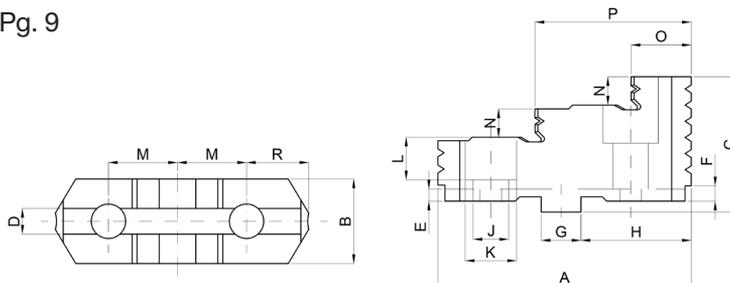
## Technical Data

**PEI** Series

**Note:** Be sure that jaws listed on this page will fit your machining applications.

### HD Hard Top Reversible Jaws

- American Standard two-piece tongue & groove jaws
- Hardened & Ground
- Jaw Clamping Ranges see Pg. 9



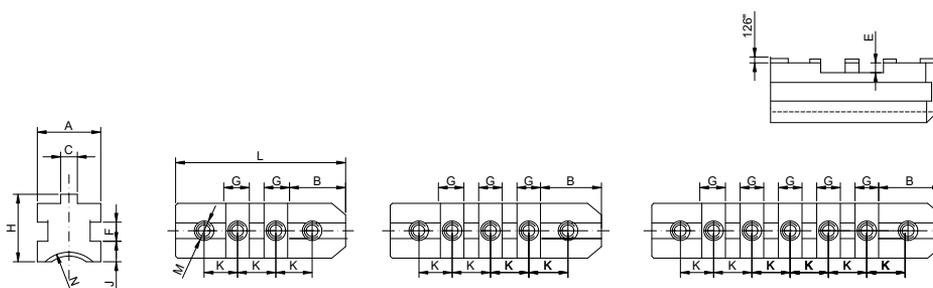
### Principal Dimensions

Chuck Dia.	M	H	G	J	K	D	E	F	N	C	B	OAL A	O	P	Weight 1Set lbs.	Top Jaw Part No.			
20"	1.5	2.248	.7496	.866	1.299	.5004	.1575	.244	.827	3.228	2.362	5.378	2.047	3.366	9.0	TJ-PEI-500			
25"				.953	1.378				1.102	3.819	2.953	5.343			12.5	TJ-PEI-800			
28"				1.181	4.213				3.346	6.299	2.362	3.740			18.5	TJ-PEI-1000			
31-1/2"																			
40"																			
50"																			

**Note:** Always use original bolts provided by the Gator factory

### HD Hard Master Jaws

- American Standard two-piece tongue & groove jaws
- Hardened & Ground



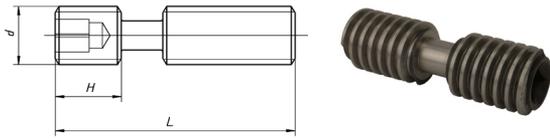
### Principal Dimensions

Chuck Dia.	A	B	G	E	F	C	H	J	K	Overall Length L	M	N	Weight 1Set lbs.	Top Jaw Part No.	
20"	2.047	2.248	0.7496	0.2835	0.7874	0.500	2.3228	0.618	1.5	6.693	3/4"-10	Tr44x8	8.50	MJ-PEI-500	
25"	2.756						2.4724			8.190	7/8"-9	Tr50x8	13.50	MJ-PEI-800	
28"							0.9843			3.0354	0.984	11.81	Tr55x8	30.00	MJ-PEI-1000
31-1/2"															
40"	3.149														
50"															

# HD Independent Chucks

## Technical Data

### HD Operating Screws



### Principal Dimensions

Chuck Dia.	Taper Size	Chuck Thru Hole Dia.	Thread Size d	H	L	Square Socket Size	Part No.
20"	A2-11	6,50	Tr44x8	2.340	6.457	.748	OS-PEI-511
	A2-15	8,00			5.669		OS-PEI-515
25"	A2-15	10,50	Tr50x8	2.362	6.988	.856	OS-PEI-631
	A2-20	12,55			5.925		OS-PEI-632
28"	A2-15	10,50		2.953	8.563		OS-PEI-715
	A2-20	12,55			7.500		OS-PEI-720
31-1/2"	A2-15	10,50		3.543	10.335		OS-PEI-815
		12,55			9.252		OS-PEI-820
		14.50	8.268		OS-PEI-821		
40"	A2-28	20,86	Tr55x8	3.225	9.646	OS-PEI-928	
50"	A2-15	11,00		3.445	8.386	OS-PEI-1015	

See Operating Screw Replacement Instruction on Page 13

### HD Operating Screws

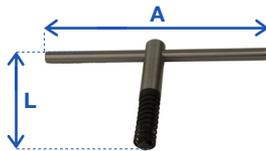


### Principal Dimensions

Chuck Dia.	Taper Size	OD Dia.	Part No.
20"	A2-11	1,7716	TB-PEI-500
	A2-15		
25"	A2-20	1,9685	TB-PEI-630
	A2-15		
28"	A2-15		
	A2-20		
31-1/2"	A2-15		TB-PEI-800
	A2-20		
40"	A2-28	2,3622	TB-PEI-1000
50"	A2-15		

**Note:** After the installation in the chuck body every thrust bearing has to be secured with the set screw.

### HD Spring Loaded Chuck T-Wrenches



### Principal Dimensions

Chuck Dia.	A	L	Square Size inch	Wrench Part No.
20"	10,27	15,35	0,748	W-PEI-500
25"	11,81			W-PEI-800
28"				W-PEI-801
31- 1/2"	17,72	0,866	W-PEI-802	
40"			W-PEI-1000	
50"				

Never use chuck wrench without safety spring. Never use any cheater bars on the chuck wrench, it can cause chuck jaw or internal part damage.

### HD A2 Spindle Nose Mounting Bolts



### Principal Dimensions

Chuck Dia.	Taper Size	Thread Size	L - Max.	Part No.
20"	A2-11	M20 x 2.5	5,9055	MB-PEI-511
	A2-15			MB-PEI-515
25"	A2-20	M24 x 3	6,2992	MB-PEI-615
	A2-15			MB-PEI-620
28"	A2-15			MB-PEI-715
	A2-20			MB-PEI-720
31-1/2"	A2-15			MB-PEI-815
	A2-20			7,0866
40"	MB-PEI-821			
	A2-28	MB-PEI-1028		
50"	A2-15	MB-PEI-1215		

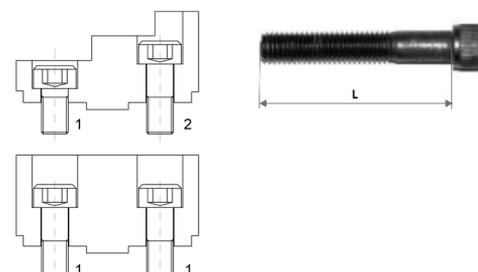
Bolts are made in a Class B12.9. See Torque max. value on Page 7. Always use supplied by Gator factory original mounting bolts.

### HD Top Jaw Mounting Bolts

### Principal Dimensions

Chuck Dia.	Taper Size	Short No. 1		Long No. 2	
		Part No.	L - Max.	Part No.	L - Max.
20"	3/4" - 10	MTH-J1-20	1,57	MTH-J2-20	2,37
25"		MTH-J1-25		MTH-J2-25	2,75
28"					
31- 1/2"					
40"		MTH-J1-40	MTH-J2-40		
50"					

Bolts are made in a Class B10.9. Always use supplied by Gator factory original mounting bolts.



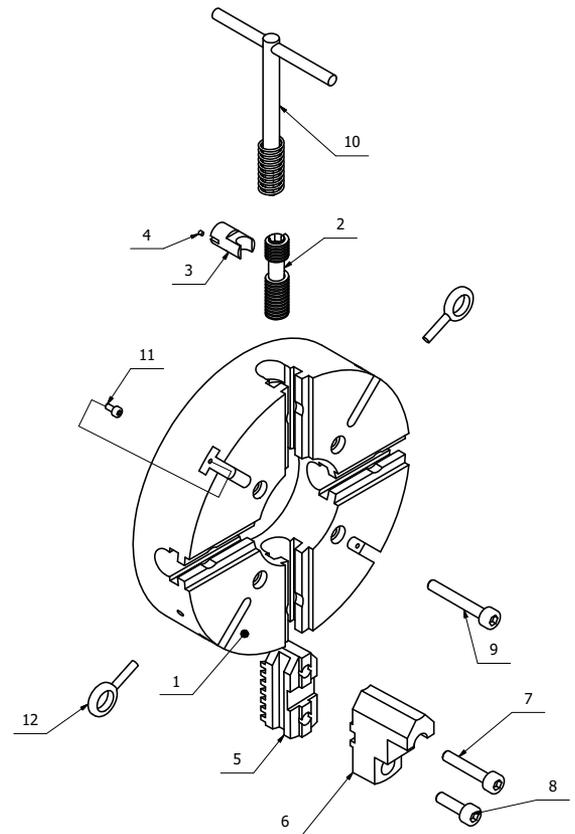
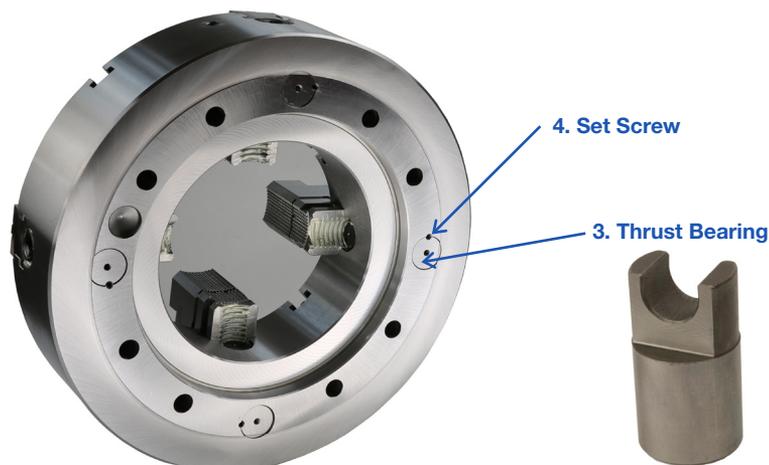
## Warning

- 13.1 Clean and inspect your chuck on regular basis.
- 13.2 Do not clean it with compressed air.
- 13.3 Always stop and completely turn of machine before any chuck inspection or service.

## Operating Screw Replacement Instruction

1. Chuck Body
2. Operating Screw
3. Thrust Bearing
4. Thrust Bearing Set Screw
5. Hard Master Jaws
6. Hard Top Reversible Jaws
7. Jaw Mounting Bolts - Long
8. Jaw Mounting Bolts - Short
9. Chuck Mounting Bolts
10. HD Spring Loaded Chuck T-Wrench
11. T-Slot Screw
12. Lifting Eye Bolts

### Chuck Back View

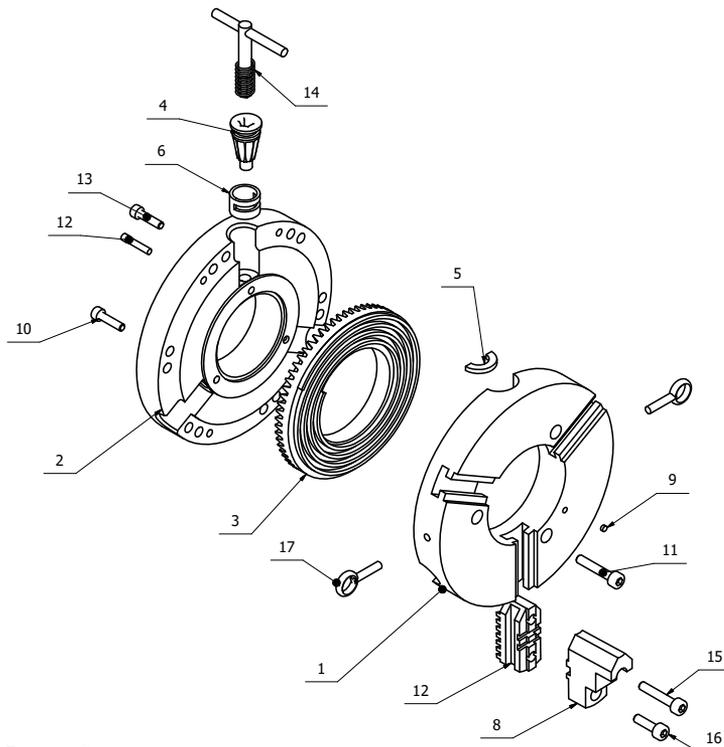


### To remove operating screw (#2) from the chuck body (#1) follow the below listed steps:

- 13.4 Completely remove chuck jaws (#5) from the chuck body.
- 13.5 Remove thrust bearing set screw (#4) from the thrust bearing (#3), holding operating screw (#2) you want to replace.
- 13.6 Lay chuck down with the face UP making a 2" gap between chuck back surface and the installation table.
- 13.7 As thrust bearing is slightly pressed in to the chuck body; knock it down (gently) from the front of the chuck to release operating screw. Do not remove it completely from the chuck body.
- 13.8 Remove operating screw from the chuck body by sliding it out from the guideway hole.
- 13.9 Insert new operating screw with the wrench socket looking out of the chuck body.
- 13.10 If you need to replace more operating screws; repeat points 4, 5 & 6.
- 13.11 Than lift the chuck and lay it on the side in a vertical position. Secure chuck against falling down.
- 13.12 Put the grease in to the thrust bearing hole than knock down thrust bearing (with the fork directed toward to the operating screw) until you get full engagement with the operating screw. Be sure that there would be a play between thrust bearing and operating screw.
- 13.13 With the chuck key turn operating screw in both direction. Both turns should be easy and smooth.
- 13.14 Secure thrust bearing with the set screw. In the case if you cannot use original set screw threaded hole, drill another one, tap it and screw in the set screw.

### Design and Chuck Part Listing

1. Chuck Body
2. Back Cover
3. Scroll Plate
4. Pinion
5. Pinion Half Ring
6. Pinion Sleeve
7. Hard Master Jaws
8. Hard Top Jaws
9. Grease Nipple
10. Back Cover Mounting Bolts
11. Chuck Mounting Bolts
12. Back Cover Mounting Pin
13. Back Cover Mounting Bolts
14. HD Spring Loaded Chuck T-Wrench
15. Top Jaw Short Mounting Bolt
16. Top Jaw Long Mounting Bolt
17. Lifting Eye Bolts



**Note:** Each chuck comes with a/m parts See assembly instruction on Page 19.

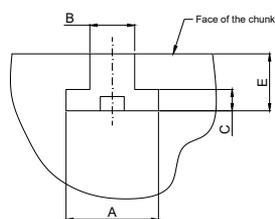
### Part Listing

Chuck Dia.	Spindle Nose Size	Hard Top Reversible Jaws 1 pc.	Hard master Jaws 1 pc.	Scroll Plate 1 pc.	Pinions 1pc.	Pinion Half Ring 1pc.	Pinion Sleeve 1 pc.	Heavy Duty Wrench 1 pc.	Chuck Mounting Bolts 1 pc.	Top Jaw Mounting Bolts Short 1 pc.	Top Jaw Mounting Bolts Long 1 pc.
20"	A2-11	TJ-PEO-500	MJ-PEO-500	SC-PEO-500	PI-PEO-500	HR-PEO-500	PS-PEO-500	W-PEI-500	MB-PEO-511	MTH-J1-20	MTH-J2-20
	MB-PEO-515										
25"	A2-15	TJ-PEO-800	MJ-PEO-800	SC-PEO-631	PI-PEO-631	HR-PEO-800	PS-PEO-800	W-PEI-800	MB-PEO-516	MTH-J1-25	MTH-J2-25
	A2-20			SC-PEO-632	PI-PEO-632		PS-PEO-801		MB-PEO-620		
28"	A2-15			SC-PEO-715	PI-PEO-715		PS-PEO-802		MB-PEO-715		
	A2-20			SC-PEO-720	PI-PEO-720		PS-PEO-803		MB-PEO-720		
31-1/2"	A2-15	SC-PEO-815	PI-PEO-815	PS-PEO-804	MB-PEO-815						
	A2-20	SC-PEO-820	PI-PEO-820	PS-PEO-805	MB-PEO-820						
40"	A2-20	TJ-PEO-1000	MJ-PEO-1000	SC-PEO-1020	PI-PEO-1020	PS-PEO-806	MB-PEO-1020	MTH-J1-40	MTH-J2-40		
	A2-28			SC-PEO-1028	PI-PEO-1028	PS-PEO-807	MB-PEO-1028				

**Note:** Always keep inventory of the most important chuck replacement parts to keep your chuck running without any longer stops.

### T-Slot Dimensions

Chuck Dia.	A	B (H7)	C	E	T-Slot Length
20"	0,9055	0,5512	0,3937	0,9055	5,9055
25"	1,4763	0,8858	0,6299	1,3779	6,122
28"					7,713
31-1/2"	1,811	1,1024	0,7874	1,9685	8,504
40"					8,661
50"					13,58



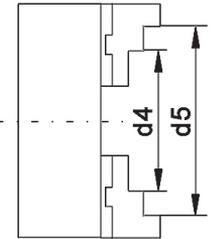
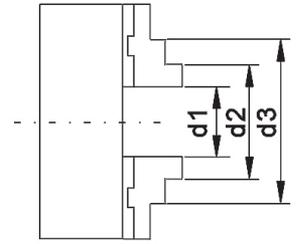
**Note:** Every T-Slot is secured by the two set screws.

## Clamping Ranges

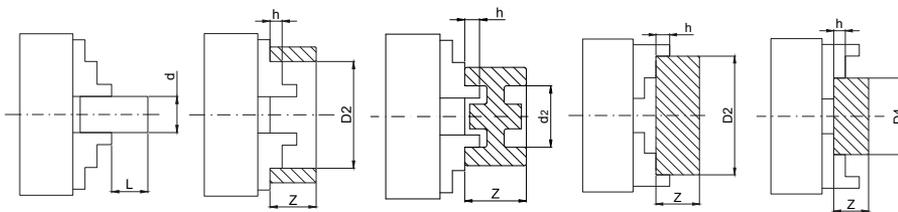
### Warning

- 15.1 Never exceed chuck gripping ranges. See charts below.
- 15.2 Master jaws and scroll should be always in a full engagement.
- 15.3 Select jaws with the proper jaw gripping surfaces to fit your application.
- 15.4 Always use proper jaws for rough medium and finishing machining.
- 15.5 Check the chuck jaw gripping power on regular basis.

Chuck Dia.	Spindle Nose Size	d1 min.-max.	d2 min.-max.	d3 min.-max.	d4 min.-max.	d5 min.-max.
20"	A2-11	1.77-9.25	6.38-17.05	8.90-19.69	5.51-17.05	8.15-19.69
	A2-15					
25"	A2-20	3.15-13.19	7.87-22.60	10.35-24.80	6.89-22.60	9.57-24.80
	A2-15	6.30-13.19	11.02-22.60	13.50-24.80	10.04-22.60	12.72-24.80
28"	A2-15	5.12-15.12	9.21-25.19	11.85-27.95	9.05-25.28	11.81-27.95
	A2-20	9.17-15.12	13.26-25.19	15.93-27.95	14.09-25.28	16.73-27.95
32"	A2-15	5.12-18.98	9.84-23.62	12.72-31.50	9.06-29.29	11.73-31.50
	A2-20	7.48-18.98	12.20-23.62	14.29-31.50	11.42-29.29	14.09-31.50
40"	A2-15	9.84-23.62	14.37-42.52	16.93-45.26	16.73-42.13	19.69-45.26
	A2-20					



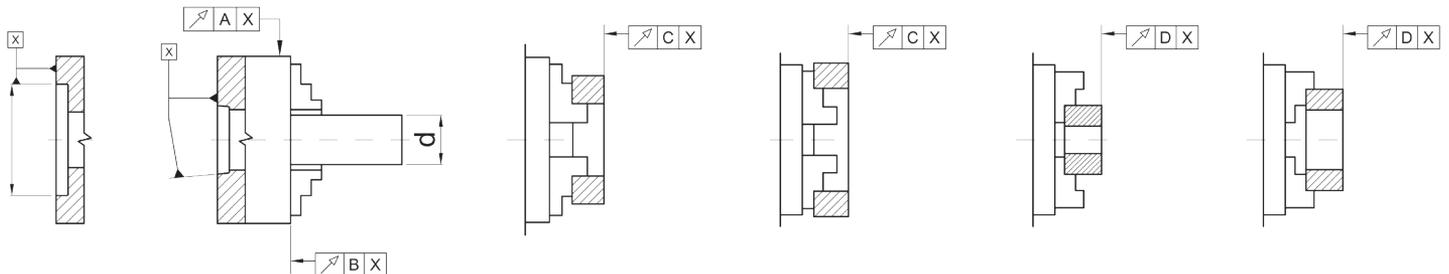
## Maximum Workpiece Gripping Diameter and Length Requirements For Unsupported Workpieces



Chuck Dia.	20"	25"	28"	31-1/2"	40"	50"
L max.	1.5 x d	1 x d				
Z max.	4 x h					

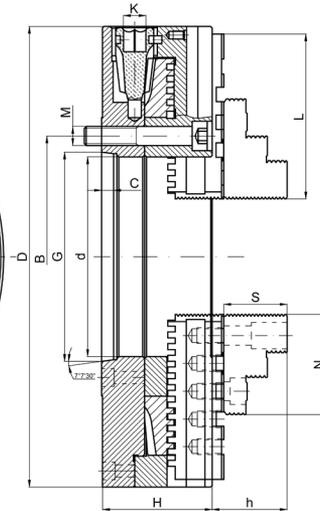
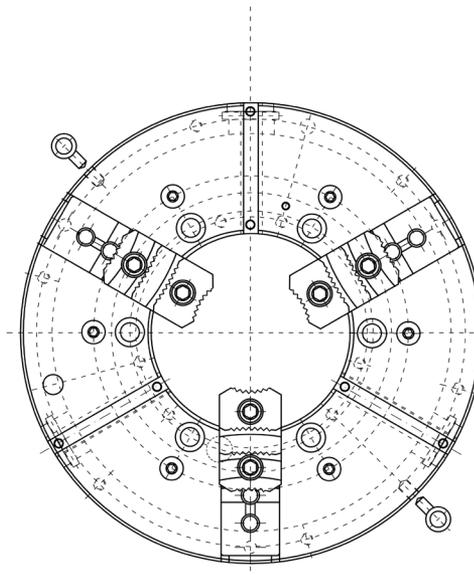
**Note:** Never exceed workpiece max. gripping diameter or length. Always select proper chuck for your application.

## Chuck Accuracy



Chuck Dia.		20"	25"	28"	31-1/2"	40"	50"
L		6,3	6,3	6,3	6,3	6,3	6,3
A	Radial Run Out	0,0040	0,0040	0,0059	0,0059	0,0071	0,0071
B	Face Run Out						
C	Axial Runout	0,0020	0,0020	0,0024	0,0024	0,0031	0,0031

**Note:** For chuck Radial and Face RUN OUT tests always use precisely ground test mandrels and rings. The accuracy of the test mandrels and rings should be within 0.0001".



### Principal Dimensions

Chuck Dia. D	Spindle Nose Size	Type of Mounting	Thru Hole Dia. D	B	G	H	h	C	S	N	K	Chuck Model No.	Chuck Part No.
20"	A2-11	Direct	7.48	9.25	7.75075	4.685	3.425	.7500	2.980	5.315	.748	PEO3-20"A/A2-11	1-119-2011
		Indirect*	8.00	13.00	11.251			.8125				PEO3-20"A/A2-15	1-119-2015
25"	A2-15	Direct	10.75	13.00	11.251	6.063	3.642	.8750	3.295	5.315	.866	PEO3-25"A/A2-15	1-119-2515
		Indirect*	12.55					18.25				16.251	.8125
28"	A2-20	Direct	10.75	13.00	11.251	6.300	3.642	.8125	3.295	5.315	.866	PEO3-28"A/A2-15	1-119-2815
			12.55	18.25	16.251			.8750				PEO3-28"A/A2-20	1-119-2820
31-1/2"	A2-15	Direct	10.75	13.00	11.251	6.063	3.642	.8125	3.295	5.315	.866	PEO3-32"A/A2-15	1-119-3215
			12.55	18.25	16.251			.8750				PEO3-32"A/A2-20	1-119-3220
40"	A2-20	Direct	12.55	18.25	16.251	7.087	4.409	.8750	4.081	8.628	.866	PEO3-40"A/A2-20	1-119-4020
			20.86	25.50	23.001			1.1023				PEO3-40"A/A2-28	1-119-4028

\*Indirect chucks can be used as a Plain Back as well and mounted with the other adaptor plates.

### Chuck Technical Parameters

Chuck Dia.	Spindle Nose Size	RPM Max.	Max. Workpiece Weight lbs.	Gripping Force lbf	Clamping Capacity Min. - Max.	Hard Top Jaw Width	Master Jaw Width	Spindle Mounting Bolts	Top Jaw Mounting Bolts	Chuck Weight lbs.
		1	2	3	4	5	6	7	8	9
20"	A2-11	1000	10,400	16,300	1.77 - 19.68	2.559	2.362	M20x2.5	3/4" - 10	460
	A2-15									415
25"	A2-20	850	15,600	18,040	3.15 - 24.80	3.346	3.150	M24x3	7/8" - 9	650
					6.30- 24.80					610
28"	A2-15	750	18,000	18,650	5.12-27.95	3.346	3.150	M24x3	7/8" - 9	979
					9.17-27.95					807
31-1/2"	A2-15	600	20,800	19,140	5.12-31.50	3.346	3.150	M24x3	7/8" - 9	1200
					7.09 - 31.50					1170
40"	A2-20	430	23,800	20,150	9.84-45.26	3.346	3.150	M24x3	7/8" - 9	1956
										A2-28

**Note 1:** Permissible chuck max. RPM's are calculated for the round and perfectly centered workpieces and for the chucks in perfect condition having factory original jaws and depends on many different machining factors such as cutting parameters (depth of cut & feeds), weight and balancing of workpiece, machining conditions like; smooth or interrupted cut. Workpiece material and surface finishing should be also taken into the consideration. Any workpiece and chuck imbalance will cause vibrations which have a negative impact on the workpiece machining quality.

**Note 2:** Max. workpiece weight has been calculated for symmetrical and balanced workpiece SUPPORTED with the live center, steady rest or being gripped in two chucks. For the odd shape workpieces and heavy machining the workpiece weight and RPM should be reduced significantly.

**Note 3:** The final gripping forces depend on the number of different factors:

- The Chuck RPM level, there is a jaw gripping force reduction due to the centrifugal forces.
- The ratio between gripping diameter and cutting diameter.
- The level of friction coefficient between chuck jaw gripping surfaces and workpiece surface.
- The cutting force level applied by the cutting tool.

**Note 4:** Always use most suitable chuck for the workpiece. The jaws should never project over the outside diameter of the chuck body. Jaws always should be in a full engagement with scroll or operating screw. Fine chips, dirt and coolant can easily penetrate the chuck when the chuck jaws are wide opened and the scroll are exposed. Accumulation of the chips and dirt between scroll and master jaws can result in a complete chuck locking and damages of internal parts.

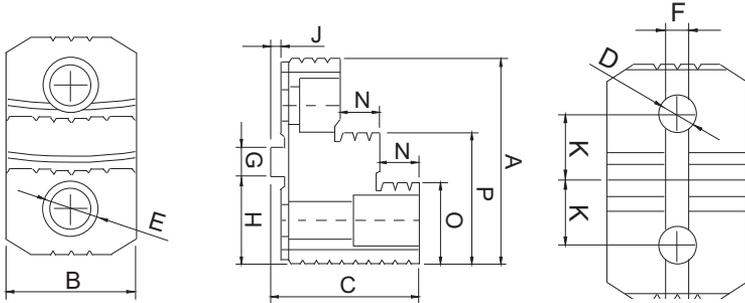
# HD Scroll Chucks

## Technical Data

**Note:** Be sure that jaws listed on this page will fit your machining applications.

### HD Hard Top Reversible Jaws

- American Standard two-piece tongue & groove jaws
- Hardened & Ground
- Jaw Clamping Ranges see Pg. 15



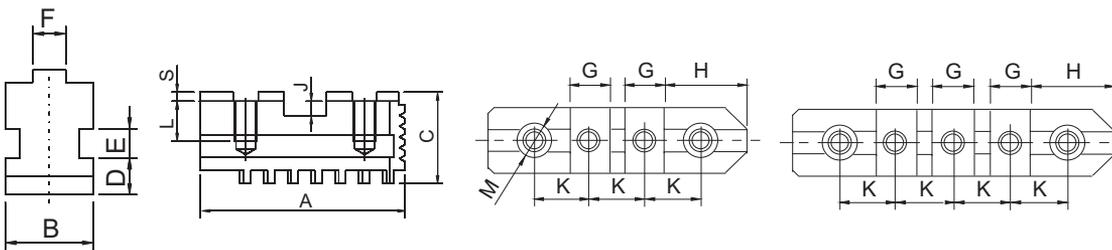
### Principal Dimensions

Chuck Dia.	A	B	K	H	G	F	J	D	E	C	N	O	P	Weight 1 Set lbs.	Part No.							
20"	5.3425	2.559	1.50	2.248	.7496	.5004	.248	.866	1.299	3.229	.827	2.047	3.366	7.28	TJ-PEO-500							
25"								.945	1.378	3.819	1.102				TJ-PEO-800							
28"	5.315	3.543						1.50	2.248	.7496	.5004			.248	.945	1.378	3.819	1.102	2.047	3.366	11.16	TJ-PEO-800
31-1/2"	5.3425																					TJ-PEO-800
40"	8.2677																					3.346
50"	8.2677	3.346						TJ-PEO-1000														

**Note:** Always use original bolts provided by the Gator factory

### HD Hard Master Jaws

- American Standard two-piece tongue & groove jaws
- Hardened & Ground



### Principal Dimensions

Chuck Dia.	A	B	K	H	G	F	J	L	D	E	C	S	M Thread	Weight 1Set lbs.	Part No.							
20"	6.5354	2.3622	1.50	2.248	.7496	.488	.283	1.417	.7874	.7874	2.559	.126	3/4"-10	10.55	MJ-PEO-500							
25"	8.858	3.150						1.50	2.248	.7496						.488	.283	1.299	.984	.984	3.079	7/8" - 9
28"											2.559											
31-1/2"											2.559		36.59	MJ-PEO-1000								
40"																						
50"																						

# HD Scroll Chucks

Technical Data

**PEO** Series

## Scroll Plates



### Principal Dimensions

Chuck Dia.	Spindle Nose Size	ID	Weight lbs	Scroll Part No.
20"	A2-11	16,42	24,64	SC-PEO-500
	A2-15			SC-PEO-615
25"	A2-20	21,34	44,66	SC-PEO-620
	A2-15			SC-PEO-715
28"	A2-20	24,33	95,7	SC-PEO-720
	A2-15	24,75	81,8	SC-PEO-815
31-1/2"	A2-15	27,40	158,62	SC-PEO-820
	A2-20	27,76	104,72	SC-PEO-1020
40"	A2-28	35,43	170,06	SC-PEO-1028
	A2-28			SC-PEO-1028

## Pinions



### Principal Dimensions

Chuck Dia.	Spindle Nose Size	OD	OAL	Weight lbs.	Pinion Part No.
20"	A2-11	1,97	3,88	1,56	PI-PEO-500
	A2-15				PI-PEO-630
25"	A2-20	2,05	4,71	1,89	PI-PEO-820
	A2-15				PI-PEO-815
28"	A2-15	2,05	5,79	2,42	PI-PEO-820
	A2-20				PI-PEO-820
31-1/2"	A2-15	2,05	7,00	3,30	PI-PEO-815
	A2-20				PI-PEO-820
40"	A2-28	2,76	7,44	5,83	PI-PEO-1020
	A2-28				PI-PEO-1028

## Pinion Sleeves



### Principal Dimensions

Chuck Dia.	ID	Pinion Sleeve
20"	1,97	PS-PEO-500
25"	2,05	PS-PEO-800
28"		PS-PEO-800
31-1/2"	2,76	PS-PEO-1000
40"		PS-PEO-1000

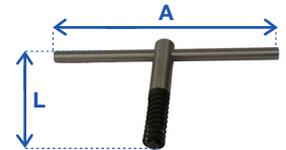
## Pinion Half Rings



### Principal Dimensions

Chuck Dia.	ID	Half Ring Part No.
20"	1,97	HR-PEO-500
25"	2,05	HR-PEO-800
28"		HR-PEO-800
31-1/2"	2,76	HR-PEO-1000
40"		HR-PEO-1000

## HD Spring Loaded Chuck T-Wrench

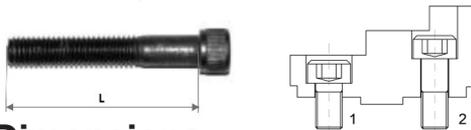


### Principal Dimensions

Chuck Dia.	Square Size inch	L	A	Wrench Part No.
20"	0,748	10,24	15,35	W-PEI-500
25"	0,866	11,81		W-PEI-800
28"				W-PEI-801
31-1/2"				W-PEI-802
40"	9,84	W-PEI-1000		

Never use chuck wrench without safety spring. Never use any cheater bars on the chuck wrench. It can cause chuck jaw or internal part damage.

## Top Jaw Mounting Bolts



### Principal Dimensions

Chuck Dia.	Bolt Thread Size	Jaw Mounting Bolts Short (1)		Jaw Mounting Bolts Long (2)		
		Part No	L	Part No	L	
20"	3/4" - 10	MTH-J1-20	1,57	MTH-J2-20	2,37	
25"		MTH-J1-25		MTH-J2-25	2,75	
28"				MTH-J1-40	MTH-J2-40	3,53
31-1/2"						
40"						

Bolts are made in a Class B10.9. Always use supplied by Gator factory original mounting bolts.

## HD A2 Spindle Nose Mounting Bolts



### Principal Dimensions

Chuck Dia.	Taper Size	Thread Size	L	Bolt Part No.
20"	A2-11	M24 x 2.5	5,118	MB-PEO-511
	A2-15		5,165	MB-PEO-515
25"	A2-20		6,299	MB-PEO-615
	A2-15		5,165	MB-PEO-620
28"	A2-20		M24 x 3	7,087
	A2-15	5,165		MB-PEO-720
31-1/2"	A2-15	7,087		MB-PEO-815
	A2-20	7,48		MB-PEO-820
40"	A2-28	7,874		MB-PEO-1020
	A2-28	7,874	MB-PEO-1028	

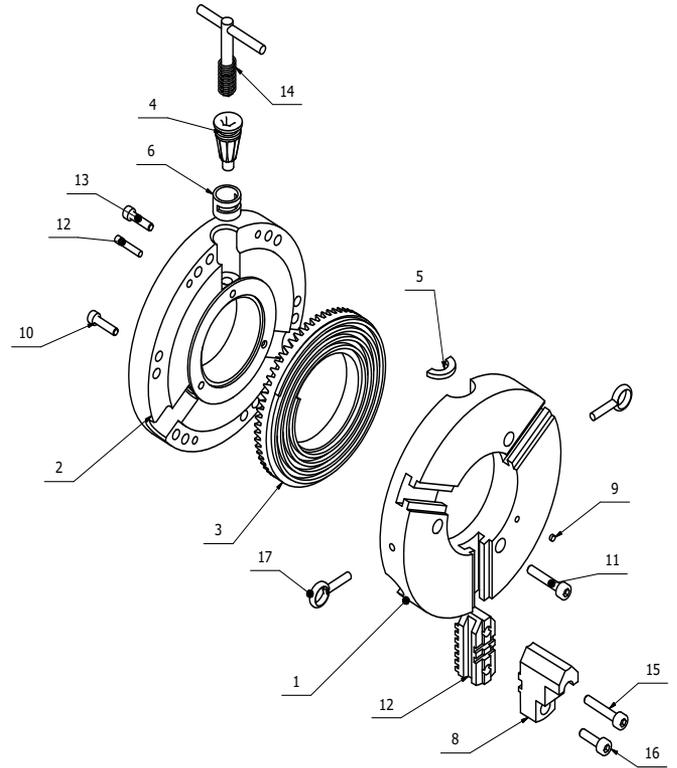
Bolts are made in a Class B12.9. See Torque max. value on Pg. 7. Always use supplied by Gator factory original mounting bolts.

Clean and inspect your chuck on regular basis.

Do not clean it with compressed air.

Always stop and completely turn of machine before any chuck inspection or service.

1. Put the chuck body (#1) face down on a leveled and flat table.
2. Insert scroll plate (#3) with the teeth side UP in a chuck body. Please be sure that chuck hub surface and scroll ID surface are free from any dirt/chips and then grease these surfaces. Apply ball bearing grease on a scroll teeth. Before fitting scroll on the hub be sure that scroll will be perfectly leveled.
3. Insert pinion (#4) in to the pinion sleeve (#6) and secure it with the half ring (#5) by inserting half ring in to the pinion groove and sleeve slot, then insert whole unit in to the pinion half hole in a chuck body. Half ring should be inserted down in a chuck body slot as well, and pinion end should be inserted in a round hole located in the chuck body half hole. Repeat the same assembly procedure for 3 pinions. Be sure that pinions turn in a sleeves freely.
4. Then lift up a back chuck cover (#2) and matching locating pin (#12) position, put it on the top part of the chuck body (#1). The back cover should be perfectly centered and leveled against the front chuck body.
5. By putting the pressure on the chuck cover (using for example rubber hummer) make the gap between both chuck body and cover as small as possible. Be sure that back cover is perfectly leveled.
6. Then insert chuck mounting bolts (#10) in a back cover holes located close to the chuck OD and bolts (#13) located close to the chuck thru hole and turning them by hand, screw them in to the chuck body to the first resistance. For some chuck sizes bolts (#13) are mounted from the back or from the front.
7. Take the hex key and still using hand turn the first bolt being close to the chuck OD making one full turn and then do the same with the opposite bolt. Going around from bolt to bolt repeat this procedure with all bolts located close to the chuck OD until you get bolt resistance.
8. Check if all 3 pinions turn without any obstacles.
9. Then repeat the same procedure with the bolts located close to the chuck ID.
10. Check again if the all 3 pinions turn without any obstacles.
11. Using the torque wrench tight up all bolts with the proper torque.
12. Apply chuck grease on a scroll thread, jaw teeth and jaw guideways. Do not apply to much grease on the scroll and jaw guideways - it collects chips and dirt which eventually clog the chuck jaws and scroll.
13. Insert master jaw (#12) with the No. 1 in to the guideway No. 1. Turn the scroll to see the beginning of thread than push the master jaw to be engaged with the spiral. Than go to the guideway No 2 and to No 3. With the chuck wrench move jaws in and out to be sure that they are moving smoothly. Than install hard top jaws (#8) with the No 1, No 2 & No 3. Tight all jaw bolts (#15 & 16) with the torque wrench. Use only factory original bolts. Move jaws in and out to be sure that they are moving smoothly.



# Quality Certification

## Quality Certification

Chuck Model \_\_\_\_\_

Chuck Size \_\_\_\_\_

Chuck Serial Number \_\_\_\_\_



This Gator chuck has been tested and inspected, and meets all DIN/ANSI manufacturing, operating and safety standards.

Inspection Supervisor \_\_\_\_\_

Inspector \_\_\_\_\_

Packaged By \_\_\_\_\_

Date \_\_\_\_\_



No. 09-2017HD