

Metal Seated Solid Wedge Gate Valve



Operation and Maintenance Manual

Job Name: _____

Contractor: _____

Date: _____

SAFETY MESSAGES

All safety messages in the instructions are flagged with an exclamation symbol and the word “Warning”. These messages indicate procedures that must be followed exactly to avoid equipment damage, physical injury, or death. Safety labels on the product indicate hazards that can cause equipment damage, physical injury, or death.



WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials.

PARTS

Order parts from your local Henry Pratt sales representative or directly from Henry Pratt Company. When ordering parts, please include the serial number located on the valve tag.

WARRANTY ISSUE

Seller warrants that, at its option, it will repair, replace, or refund the unit purchase price of any products which are non-conforming due to Seller’s material or workmanship during the warranty period. The warranty period shall be twelve (12) months for parts and eighteen (18) months for all other goods after date of shipment. This shall be Buyer’s sole remedy. In order to maintain this product warranty, Buyer must give written notice to Seller’s Field Service Supervisor prior to any work being performed.

IN CONSIDERATION OF THE FOREGOING, SELLER EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Seller does not warrant water operated metallic cylinders against damage caused by corrosion, electrolysis or mineral deposits. In no event shall warranty include valve removal or reinstallation.



WARNING

Read all applicable directions and instructions prior to any maintenance, troubleshooting or installation

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Metal Seated Solid Wedge Gate Valve

INSTALLATION

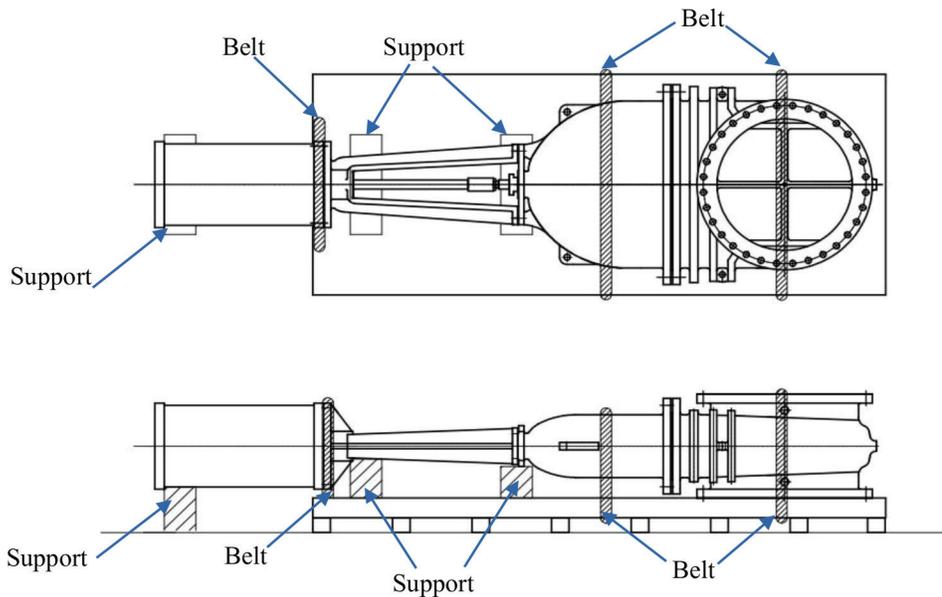
GENERAL

Valves are a significant component of any piping system. Failure due to faulty installation, improper operation or maintenance in such systems could result in damage, down time and costly repairs. In buried underground installations, problems or malfunctions can result in extensive, costly unearthing operations to correct the problem. Many problems with valves can be traced to improper installation, operation, or maintenance procedures.

UNLOADING

Inspect valves on receipt for damage in shipment and conformance with quantity and description in the shipping notice and order. Carefully unload all valves to the ground without dropping using fork trucks or slings under skids. Do not lift valves with slings or chain around operating shaft, actuator, or through waterway.

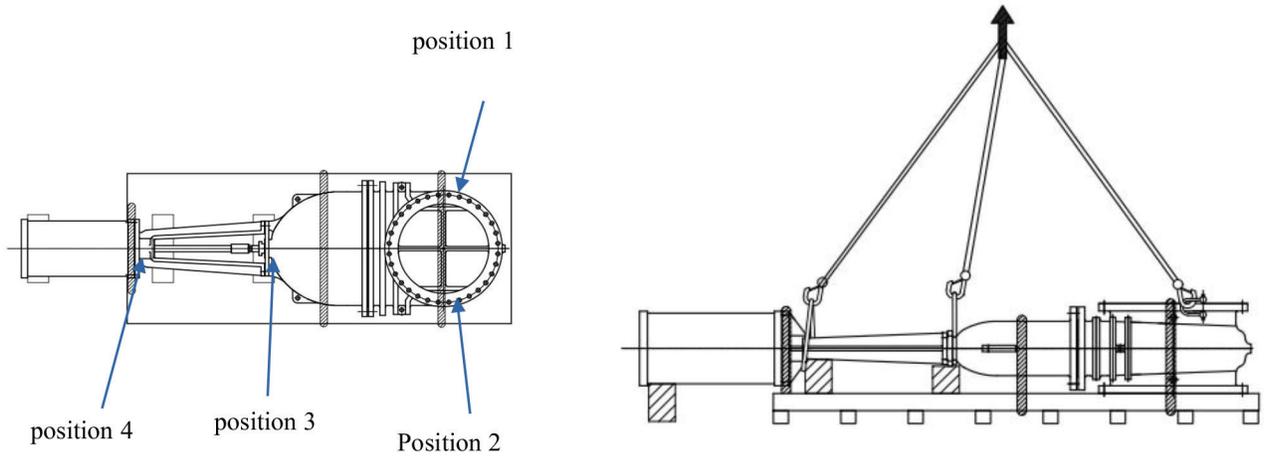
1. Put the supports under valve (3 positions), fasten valve with pallet by belt (3 belts)



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INSTALLATION (cont.)

2. Use sling + crane at specified points, then lift.



STORAGE

Whenever practical, store valves indoors. If not, protect valves and actuators from weather and accumulation of water, dirt, rocks and debris. When valves fitted with power actuators and controls are stored, energize electric actuator or otherwise protect electrical control equipment to prevent corrosion of electrical contacts due to condensation resulting from temperature variation. Valves should be stored with the valve disc or closure member slightly open.

INSPECTION PRIOR TO INSTALLATION

Make sure flange faces and joint sealing surfaces, body seats and disc seats are clean. Check bolting attaching actuator to valve for loosening in transit and handling. If loose, tighten firmly. Open and close valve to make sure it operates properly and that stops or limit switches are correctly set so that the valve seats fully.

INSTALLATION

The following items must be performed during installation to ensure proper function.

- Carefully place valves into position avoiding contact or impact with other equipment, vault walls or trench walls.
- Valves are to be installed in accordance with the General Arrangement Drawings furnished for the order.
- Foreign material in a valve can damage the seat when valves are operated. Flush with water to be sure valve interiors and adjacent piping are clear of foreign material prior to mating valve to pipe joint.
- Support and prepare pipe ends and install valves in accordance with the pipe manufacturer's instructions for the joint used. Do not deflect pipe/valve joint. Do not use valve and jack to pull pipe into alignment.
- In plant piping, install so as to minimize bending of valve connection with pipe.
- In buried applications make sure valve box does not transmit traffic loads or stress to valve. Protect exterior epoxy during back fill.

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WARNING

It is recommended that valves be installed into piping system in accordance with AWWA M-11 in order to prevent any undue piping stress, deflection or bending that may affect the performance of the valve.



WARNING

Valve disc without actuator may open or close at any time and cause injury to persons or damage to valve and other property. The shaft/disc clamping device when furnished is intended for temporary use during shipping, handling and valve installation only. Do not subject valve to flow conditions before actuator is mounted and tested for performance and clamping device is removed.



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TESTING

1. Do not backfill valves before hydrostatic system test. Leave the valves exposed while the pipeline is being pressurized. Check to see that all valve joints and pressure containing bolting, including bonnet bolts, are tight.
2. Valves can be tested (but not operated) at two times the rated pressure of the valve.
3. After testing, steps should be taken to relieve any trapped pressure in the body of the valves.
4. Seat leakage can occur due to foreign material in the line. If this occurs, open valve 5-10 degrees to get high velocity flushing action. Close and repeat several times to clear seats for tight shutoff.

RECORDS

Upon completion of installation, valve location, size, make, type, date of installation, number of turns to open, direction of opening and any other information deemed pertinent should be entered on the owner's permanent records.

OPERATION

Do not permit use and operation of any valve at pressure above the rated pressure of the valve.

Do not exceed 300 ft-lb input torque on actuators with wrench nuts, 200 lb. rim pull input torque for handwheels or chainwheels. If portable auxiliary actuators are used, size the actuator or use a torque limiting device to prevent application of torque exceeding 300 ft-lbs. If an oversize actuator with no means of limiting torque is used, stop the actuator before valve is fully opened or closed against stops and complete the operation manually. Be sure to check actuator directional switch against direction indicated on wrench nut, handwheel or records before applying opening and closing torque.

If a valve is stuck in some intermediate position between open and closed, check first for jamming in the actuator. If nothing is found, the interference is inside the valve. In this case, do not attempt to force the disc open or closed since excessive torque in this position can severely damage internal parts. Contact the Pratt Service Department.

MANUAL ACTUATOR FUNCTION AND USE:

The manually operated metal seated solid wedge gate valves are operated by rotating the handwheel or nut. The actuator is equipped with gearing to convert the many turns into full travel. Inside actuator stops that limit the travel of the valve are pre-set at the factory. Forcing the handwheel, chainwheel, or nut will not cause the valve to shut off any tighter and may cause damage to the gearing.

CYLINDER ACTUATOR FUNCTION AND USE:

The cylinder operated butterfly valves are operated automatically by directing hydraulic pressure to either side of the power cylinder. Solenoid valves by others are used to direct the fluid to the cylinder ports based on electrical power signals. In cylinder actuators, the travel stops are in the cylinder so that full hydraulic pressure can be held on the cylinder at either end of travel.

MOTOR ACTUATOR FUNCTION AND USE:

The motor actuator, if provided, is designed to open and close the valve through its full travel of gate. It contains gearing so that hundreds of turns of the motor or handwheel will slowly move the valve from open to close position or vice versa. Electrical controls are included in the motor actuator for local electrical control.

Output motion of the actuator is factory set and should not need adjustment. The actual positioning of the valve wedge gate will be done by limit switches in the motor actuator. The switches are also set at the factory but adjustment is sometimes required if the motor unit is installed on a separate mounting base or floorstand. Detailed procedures are given in the motor manual if adjustment is needed for the mechanical stops or the limit switches. The wiring and power requirements are given on wiring diagrams included in this instruction manual.



WARNING

Fluids exposed to freezing temperatures may cause valve to fail resulting in injury to persons or damage to valves and other property. Do not use in applications that are exposed to freezing temperatures unless sufficient flow is maintained through the valve to prevent freezing, or other protection is provided.



WARNING

IMPORTANT SAFETY NOTICE

All persons who will install, operate or adjust this equipment must read the instructions and drawings carefully. Injury and property damage may occur from improper use. It is understood that this equipment will be installed by individuals with knowledge and skills in electrical equipment. The manufacturer cannot be responsible for the misuse of this information or equipment, nor can it assume any resultant liability.

MAINTENANCE

Maintenance of valves by owner is generally limited to actuators and shaft seals. In some instances, valve design permits field adjustment seats when leakage occurs. Unless the owner has skilled personnel and proper equipment, any major rework will require removal of the valve from the line. Depending on condition, valve may require return to the manufacturer.

ANNUAL MAINTENANCE

1. Cycle valve to verify operation and no interference in line.
2. Close valve and check for leakage. If leakage is detected, check actuator stops to verify that disc is fully closed. If leakage persists, remove valve to inspect seat. Contact Pratt's Field Service Department for information regarding adjustment or replacement of seat.
3. Check flange connections for leakage. Tighten bolts accordingly.
4. Check top trunnion area for shaft leakage. If leakage is detected, replace valve packing.
5. If Access to the line is possible, then removal of scale that may interfere with disc travel is suggested. The seat should be inspected for wear and the taper pin nuts should be tight.

NOTE: LUBRICATION IS NOT REQUIRED.

Typical maintenance would be stem packing replacement and actuator adjustment. Seal leakage, broken parts and difficult operation should be discussed with Pratt's Service Department before valve repairs are attempted. Pratt Service Engineers are available to perform or supervise valve repairs in the field.

Stop line flow and isolate from line pressure prior to performing any corrective maintenance.

After completing repair, cycle valve through one complete operating cycle and after line pressure has been restored, inspect for leakage.



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HOW TO CONTACT PRATT

HOW TO ORDER PARTS:

To order parts, contact our Parts Department:

Write: - Henry Pratt Company
401 South Highland Avenue
Aurora, IL 60506-5563

Attn: Parts Manager

Call - (630) 844-4000

Fax - (630) 844-4191

Please include valve serial number and description of part requested.

HOW TO OBTAIN SERVICE:

To obtain further information or secure field service, contact our Field Service Department:

Write: - Henry Pratt Company
401 South Highland Avenue
Aurora, IL 60506-5563

Attn: Field Service Manager

Call - (630) 844-4163

Fax - (630) 844-4160

Please include the following with your inquiry for service:

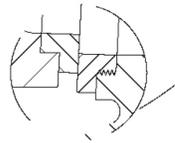
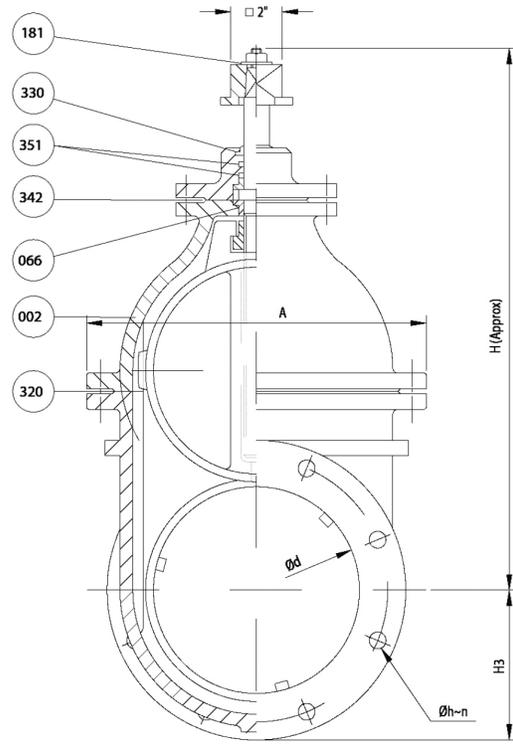
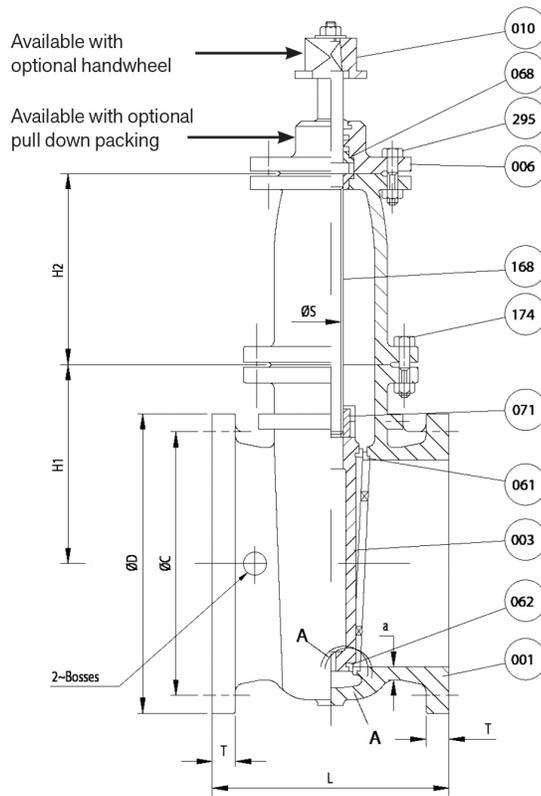
Henry Pratt Order Number:

Henry Pratt Item Number:

Valve Serial Number:

Type of Service Requested

Metal Seated Solid Wedge Gate Valve

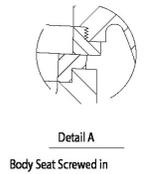
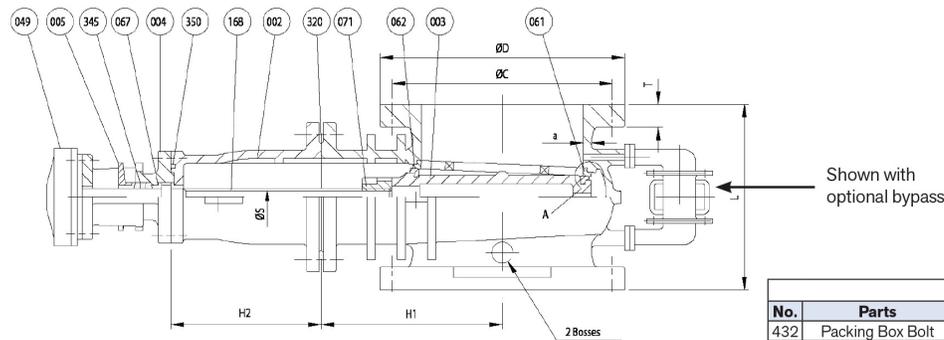
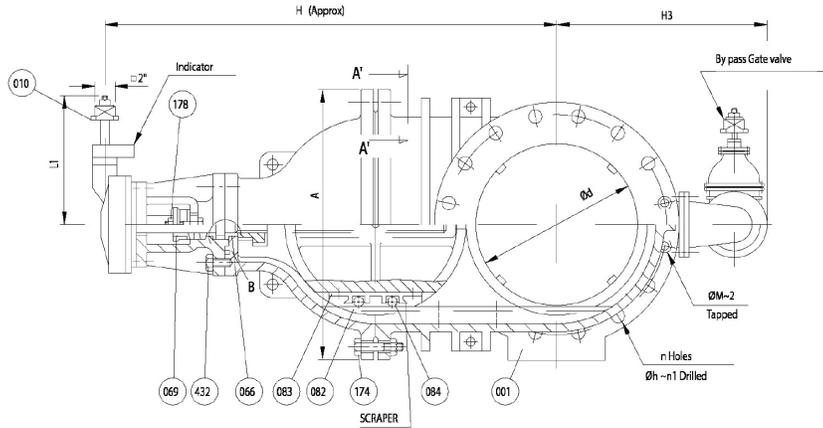


Detail A
Screwed in Body Seat

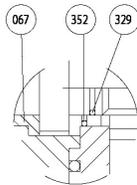
Material List					
No.	Parts	Material	ASTM.Design.	Qty	
351	O-Ring	Rubber (Buna N)	D 2000 BK 707	2	
342	Stuffing Box Gasket	Rubber (Buna N)	D 2000 BK 807	1	
330	Wiper Ring	Rubber (Buna N)	D 2000 BK 707	1	
320	Bonnet Gasket	Rubber (Buna N)	D 2000 BK 807	1	
299	Stuffing Box Bolt	Zinc Coated Steel	A 307 Grade B	1 set	
295	Stuffing Box Bolt & Nut	Zinc Coated Steel	A 307 Grade B	1 set	
181	Top Nut	Zinc Coated Steel	A 307 Grade B	1	
175	Bonnet Stud & Nut	Zinc Coated Steel	A 307 Grade B	1 set	
174	Bonnet Bolt & Nut	Zinc Coated Steel	A 307 Grade B	1 set	
168	Stem	Stainless Steel	A 276 Type 304	1	
071	Stem Nut	Bronze	B62	1	
068	Stuffing Box Bushing	Bronze	B62	1	
066	Bonnet Bushing	Bronze	B62	1	
062	Disc Seat Ring	Bronze	B62	2	
061	Body Seat Ring	Bronze	B62	2	
010	Operating Nut	Cast Iron	A 126 Class B	1	
006	Stuffing Box	Ductile Iron	A 536 Gr.65-45-12	1	
003	Disc	Ductile Iron	A 536 Gr.65-45-12	1	
002	Bonnet	Ductile Iron	A 536 Gr.65-45-12	1	
001	Body	Ductile Iron	A 536 Gr.65-45-12	1	

Size	Ød	L	ANSI B 16.1 Class 125					a (min)	A	ØS at base of thread	H	H1	H2	H3
			ØD	ØC	Øh	n	T							
3	80	8	7 1/2	6	3/4	4	3/4	0.37	7.72	0.874	13.19	4.93	3.04	3.75
4	100	9	9	7 1/2	3/4	8	15/16	0.40	8.78	0.874	14.68	5.71	3.63	4.50
6	150	10 1/2	11	9 1/2	7/8	8	1	0.43	11.11	1.034	18.70	7.49	5.44	5.50
8	200	11 1/2	13 1/2	11 3/4	7/8	8	1 1/8	0.50	14.02	1.034	22.00	9.06	7.25	6.75
10	250	13	16	14 1/4	1	12	1 3/16	0.63	16.46	1.157	25.39	10.95	8.67	8.00
12	300	14	19	17	1	12	1 1/4	0.68	18.82	1.192	28.97	11.82	11.03	9.50

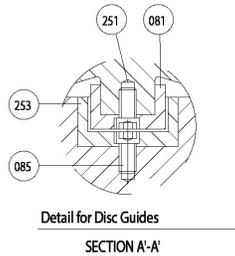
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Detail A
Body Seat Screwed In



Detail B



Detail for Disc Guides
SECTION A-A'

Material List				
No.	Parts	Material	ASTM.Designation	Qty
432	Packing Box Bolt	Stainless Steel	A 276 Type 304	1 set
352	O-Ring C	Rubber (Buna N)	D 2000 BK 707	1
350	O-Ring A	Rubber (Buna N)	D 2000 BK 707	1
345	Packing	Braided Packing Synthetic Yarn with PTFE		1 set
329	O-Ring	Rubber (Buna N)	D 2000 BK 707	1
320	Bonnet Gasket	Rubber (Buna N)	D 2000 BK 807	1
253	Disc Guide	Bronze	B62	1
251	Body Guide Bolt	Stainless Steel	A 276 Type 304	1 set
178	Gland Bolt & Nut	Stainless Steel	A 276 Type 304	2
174	Bonnet Bolt & Nut	Stainless Steel	A 276 Type 304	1 set
168	Stem	Stainless Steel	A 276 Type 316	1
085	Disc Guide Bolt	Stainless Steel	A 276 Type 304	1
084	Roller	Bronze	B62	2
083	Roller Box	Bronze	B62	1
082	Bonnet Guide	Bronze	B62	2
081	Body Guide	Bronze	B62	2
071	Stem Nut	Bronze	B62	1
069	Gland Bushing	Bronze	B62	1
067	Packing Box Bushing	Bronze	B62	1
066	Bonnet Bushing	Bronze	B62	1
062	Disc Seat Ring	Bronze	B62	2
061	Body Seat Ring	Bronze	B62	2
049	Gear Operator	See Table	-----	1 set
010	Operating Nut	Cast Iron	A 126 Class B	1
005	Gland	Ductile Iron	A 536 Gr.65-45-12	1
004	Packing Box	Ductile Iron	A 536 Gr.65-45-12	1
003	Disc	Ductile Iron	A 536 Gr.65-45-12	1
002	Bonnet	Ductile Iron	A 536 Gr.65-45-12	1
001	Body	Ductile Iron	A 536 Gr.65-45-12	1

Size	Ød	L	ANSI B 16.1 Class 125					a (min)	A	ØS at base of thread	H	H1	H2	H3	L1	ØM	n1	Gear Ratio	By pass size
			ØD	ØC	Øh	n	T												
14	350	15	21	18 3/4	1 1/8	12	1 3/8	0.78	22.76	1.398	38.58	14.59	12.68	11.50	11.18	1x8TPI (UNC)	10	2.5:1	2
16	400	16	23 1/2	21 1/4	1 1/8	16	1 7/16	0.87	26	1.556	44	16.64	14.38	25.79	14.58	1x8TPI (UNC)	14	3:1	3
18	450	17	25	22 3/4	1 1/4	16	1 9/16	0.95	29.29	1.556	47.33	18.71	15.59	27.88	14.58	1 1/8 x7TPI (UNC)	14	3:1	3
20	500	18	27 1/2	25	1 1/4	20	1 11/16	1.10	32.52	1.831	51.38	20.79	17.56	27.88	14.58	1 1/8 x7TPI (UNC)	18	3:1	3
24	600	20	32	29 1/2	1 3/8	20	1 7/8	1.18	36.54	2.028	60.24	22.05	24.73	32.63	17.32	1 1/4 x7TPI (UNC)	18	4:1	4