

**MODEL****VG**

## RUBBER SLEEVE KNIFE GATE VALVE

The **VG** model knife gate is a bi-directional wafer valve equipped with two rubber sleeves with metallic core designed for its use in the handling of abrasive slurries, mainly in industries such as:

- Mining
- Chemical plants
- etc.
- Power plants
- Wastewater treatment

**Sizes:** DN 50 to DN 900 (larger DN on request)

**Working pressure:** DN 50/400 10 bar  
 DN 450/600 6 bar  
 Other on request

**Standard Flange connection:** DIN PN 10 and ANSI B16.5 (class 150)

Other: (On request)

DIN PN 6

BS "D" and "E"

DIN PN 16

ANSI 125

DIN PN 25

Others on request

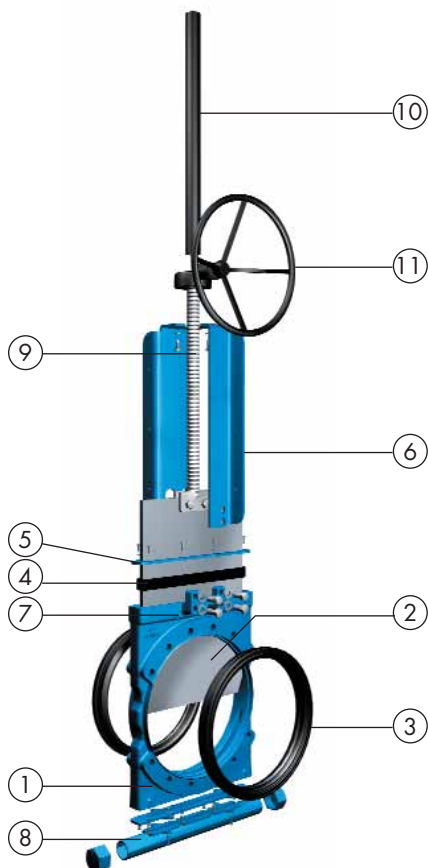
**Directives:**

DIR 98/37/CE (MACHINES)

DIR 97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)

DIR 94/9/CE (ATEX) Group II, Cat. 3: zones 2 and 22

All ORBINOX valves are tested prior to shipping.



### STANDARD PARTS LIST

Part :	Materials:
1- Body	Ductile iron GJS400
2- Gate	AISI 304 (1.4301)
3- Sleeves	Natural rubber
4- Packing	EPDM
5- Gland Follower	A570 GR.40 (1.0044) Epoxy coated
6- Cover	A570 GR.40 (1.0044) Epoxy coated
7- Grease Nipple	Zinc coated carbon-steel
8- Splash guard	A570 GR.40 (1.0044) Epoxy coated
(optional)	
9- Stem	AISI 430 (1.4016)
10- Stem protector	A570 GR.40 (1.0044) EPOXY-coated
11- Gear	

## DESIGN FEATURES

### BODY

Wafer style cast **monoblock**, for installation between flanges, with reinforced ribs in larger diameters, providing the body with extra strength.

Internal body design allows the gate to be fully guided. It is equipped with two machined lateral mouths where the sleeves fit perfectly. The grease nipples allow the gate to be lubricated, thus enhancing its capacity to slide between the sleeves. Besides, its design allows draining through the lower part, where a cover or a bottom splash guard can be installed.

### GATE

Made of **stainless steel**, polished on both sides, and of rectangular shape, the gate is machined to an edge. Besides preventing tightness and damage to the seats, this design allows to perfectly cut through the fluid. The material can be changed upon request, thus allowing greater working pressures.

### RUBBER SLEEVES

The seat is made up of two highly resistant, long-lasting sleeves, made of natural rubber with a metallic core. Its well studied and patented hollow design allows for maximum flexibility on passing through the gate, minimising the effort necessary for its operation.

The two sleeves are in permanent contact with each other, so that there is total flow. There are no seat cavities which may cause build-up, and the fluid does not come into contact with the metallic parts of the valve. This design allows for easy replacement of damaged sleeves. (See available materials on page VG-5).

### PACKING:

Made of EPDM, it eliminates possible leaks to the exterior as well as minimising the maintenance needs of traditional packings. In combination with the grease nipples, it guarantees an optimal functioning of the gate.

### STEM:

Made of **stainless steel**, which provides it with a high resistance to corrosion and a long life. Besides making the valve safe, the **stem protector** also protects it against dirt.

### EXCHANGEABILITY OF THE ACTUATORS:

All the actuators are easily interchangeable with one another.

### ACTUATOR SUPPORT or YOKE:

Made of steel (stainless steel available on request) and EPOXI coated. Its robust design provides it with great rigidity, withstanding the most adverse operating conditions. Reinforced design is standard starting from DN 200.

### EPOXY COATING:

The epoxy coating on all **ORBINOX** cast iron and carbon steel valve bodies and components is applied by means of an electrolytic process which provides the valves with a high resistance to corrosion and an excellent surface finish.

The **ORBINOX** standard colour is RAL-5015 blue.

### GATE SAFETY PROTECTION:

In accordance with **EU Safety Standards (CE certified)**, **ORBINOX** automated valves are provided with metallic gate guards along the gate, thus preventing any body or object from being caught or dragged accidentally.



MODEL

VG

## OTHER OPTIONS

### Bottom splash guard:

An accessory for this valve, the splash guard, has been designed for its installation on the lower part, where solids evacuated through the gate are collected periodically or continuously while closing.

### Other metallic materials:

Other materials may be used, such as carbon-steel, stainless steels (AISI 316, 317, 2.205...), special alloys (254SMO®, Hastelloys...) and Titanium.

### Fabricated valves:

**ORBINOX** designs, manufactures and supplies special fabricated valves for special process conditions (great sizes and/or high pressures).



We recommend consultation with our technical department.

## ACTUATOR TYPES

### Manual:

Handwheel with rising stem  
 Bevel Gear  
 Others (on request)

### Automatic:

Pneumatic cylinder  
 Hydraulic cylinder  
 Electric actuator



One of the design characteristics of ORBINOX S.A. valves is that **all actuators are interchangeable** with one another.

## FAIL SAFE SYSTEMS

### SINGLE ACTING FAIL-SAFE SYSTEMS

Used on pneumatic actuated valves, they allow the valve to remain in a predetermined position in case of failure (open/closed).

### SINGLE ACTING / SPRING RETURN

Available from DN 50 to DN 200

Supply pressure: min. 6 kg/cm<sup>2</sup>

Options:

- Air opens (spring closes)
- Air closes (spring opens)

Starting from DN 250, the volume tank is used.

### SINGLE ACTING / VOLUME TANK

Available for all diameters.

- 1.- Pneumatic Fail-safe
- 2.- Pneumatic or Electric Fail-safe

## GREAT VARIETY OF ACCESSORIES

- Mechanical stops
  - Locking devices
  - Manual override actuators
  - Solenoid valves
  - Positioners
  - Limit switches
  - Proximity switches
  - Floor stands
  - ...
- to meet all needs

*For further information, please see corresponding EX chapter.*

We recommend consultation with our technical department.

**TEMPERATURE CHART**

SEAT / SLEEVES			PACKINGS	
Material	Max. Temp(°C)	Applications	Material	Max. Temp. (°C)
Natural rubber	75	General	EPDM	120
EPDM	120	Acids and non mineral oils		
Neoprene	90	Oils and solvents		
Chlorobutyl	125	High temperatures		
Nitrile	120	Hydrocarbons, oils and greases		

All of them are reinforced with a metallic core.

**SEAT**

**RUBBER SLEEVES**

The closure of the VG valve is achieved by its two characteristic high resistance elastomers, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metallic core which provides them with a great resistance to demanding working conditions and pressures.



**OPEN**



**INTERMEDIATE**

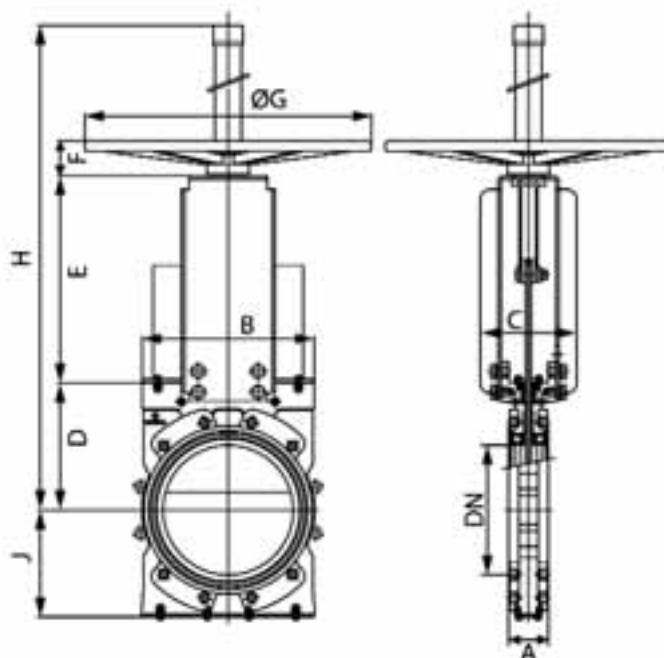


**CLOSED**

**HANDWHEEL (rising stem)**

- Consists of:
  - Cast iron handwheel
  - Stem
  - Stem nut
- It is also equipped with a stem protector.
- Available from DN 50 to DN 600
  - Greater sizes on request
- Options (on request):
  - Extensions and floor stands

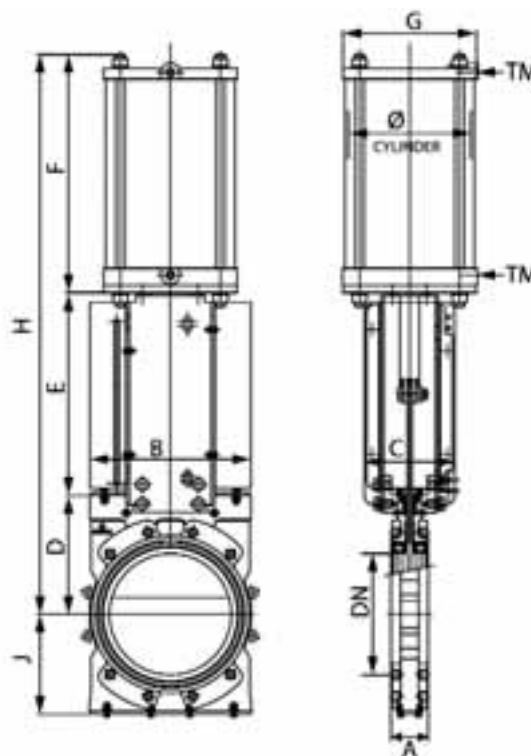
Note: use of the reductor is recommended for valve sizes greater than DN 200. Direct handwheel actuator is insufficient in these sizes for the maximum catalogue pressure.



DN	A	B	C	D	E	F	ØG	H	J
50	54	140	100	105	145	47	225	440	63
80	57	175	100	124	175	47	225	545	90
100	57	170	100	140	200	67	310	620	100
125	63,5	195	100	150	240	67	310	700	123
150	63,5	230	100	175	265	67	310	755	130
200	76	280	165	205	325	66	410	935	160
250	76	335	185	245	415	66	550	1090	200
300	82,5	390	266	280	475	66	550	1260	232
350	82,5	440	270	325	555	66	550	1410	258
400	95	505	270	350	605	74	800	1677	292
450	95,5	560	270	420	680	74	800	1905	318
500	121	620	270	462	745	74	800	2020	345
600	121	730	270	510	845	74	800	2320	400

**PNEUMATIC CYLINDER**

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - Aluminium jacket and covers
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 600
- Supply Pressure: 6 kg/cm<sup>2</sup>
- Reinforced design of support plates is standard starting from DN 200.
- Options (on request):
  - Hard anodized jacket and covers (stainless steel optional)
  - Manual override actuator
  - Fail-safe systems
  - Travel stops
- Instrumentation (on request):
  - Positioners
  - Solenoid valves
  - Flow regulators
  - Air preparation unit

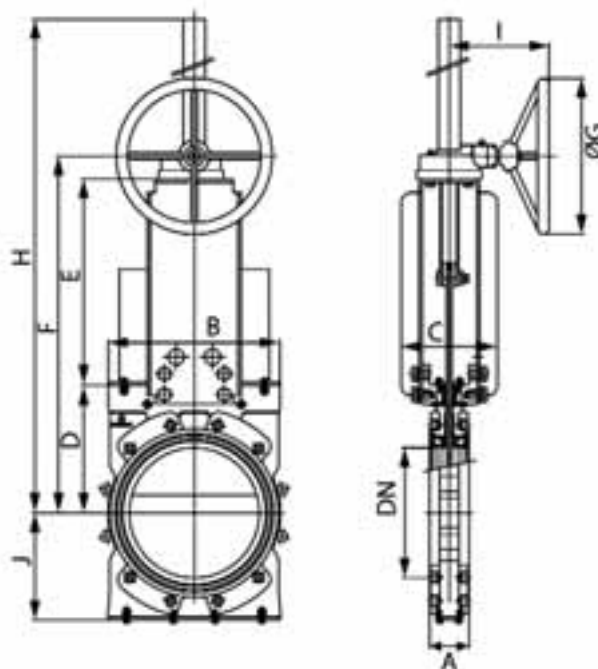


Note: in order to guarantee the correct functioning of the pneumatic cylinder for the catalogue pressures, a supply pressure of 6 bar is required. For lower pressures, we recommend consultation with our technical department.

DN	ØCYL	TM (8SP)	A	B	C	D	E	F	G	H	J
50	C100/91	1/4"	54	140	100	105	145	220	100	470	63
80	C125/121	1/4"	57	175	100	124	175	260	140	559	90
100	C125/140	1/4"	57	170	100	140	198	280	140	618	100
125	C160/168	1/4"	63,5	195	100	150	240	320	175	710	123
150	C160/194	1/4"	63,5	230	100	175	265	345	175	785	130
200	C200/252	3/8"	76	280	165	205	322	420	220	947	160
250	C250/317	3/8"	76	335	185	245	415	505	277	1165	200
300	C300/376	1/2"	82,5	390	266	280	472	580	382	1332	232
350	C350/440	3/4"	82,5	440	270	325	555	710	444	1590	258
400	C350/490	3/4"	95	505	270	350	605	760	444	1715	292
450	C400/542	3/4"	95,5	560	270	420	677	830	515	1927	318
500	C400/606	3/4"	121	620	270	462	742	890	515	2094	345
600	C400/712	3/4"	121	730	270	510	843	1010	515	2363	400

**BEVEL GEAR**

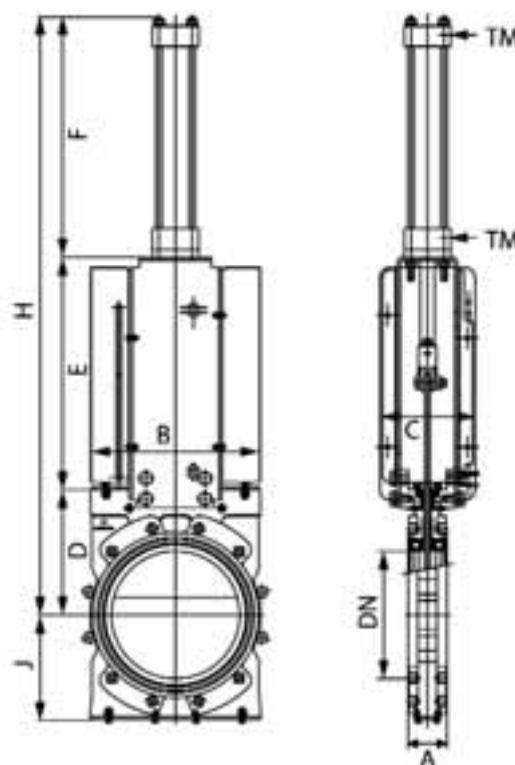
- Recommended for valves larger than DN 200
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel
- Available from DN 200 to DN 900
- Options: (on request)
  - Chainwheel
  - Locking devices
  - Extensions and floor stands
  - Non-rising stem



DN	BEVEL GEAR	A	B	C	D	E	F	Ø G	H	J	I
200	RKO.15	76	280	165	205	322	572	300	990	160	200
250	RKO.3	76	335	185	245	397	688	300	1510	200	263
300	RKO.3	82,5	390	250	280	441	767	450	1590	232	263
350	RKO.3	82,5	440	250	325	508	879	450	1700	258	263
400	RKO.3	95	505	270	350	567	963	450	1780	292	263
450	FL1.6	95,5	560	270	420	631	1155	450	2175	318	263
500	FL1.6	121	620	290	462	700	1265	650	2305	345	263
600	FL1.6	121	730	290	510	805	1420	650	2520	400	263
700	FL1.6	181	845	320	570	956	1628	650	2735	485	288
750	FL1.6	187	915	320	600	1021	1723	650	2780	510	288
800	FL1.6	206	980	320	650	1061	1833	650	2940	570	288
900	FL1.6	225,5	1074	320	700	1192	1995	650	3200	620	288

**HYDRAULIC**

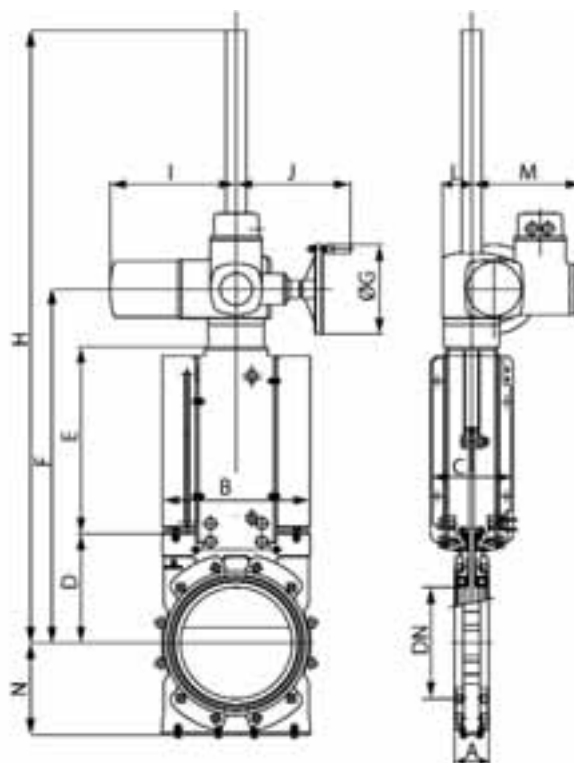
- The hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2.
- Available from DN 50 to DN 900
- Working pressure: 100 bar
- Maximum working pressure: 160 bar
- Options:
  - Pressure indicators: mechanical and inductive.
  - Position transducers
  - Hydraulic groups
  - Electrical cabinets



DN	Ø CYL.	TM (8SP)	A	B	C	D	E	F	H	J
50	C32/62	1/4"	54	140	100	105	190	205	500	63
80	C32/95	1/4"	57	175	100	124	216	230	570	90
100	C32/115	1/4"	57	170	100	140	238	248	626	100
125	C40/143	3/8"	63,5	195	100	150	283	306	739	123
150	C50/168	1/2"	63,5	230	100	175	309	338	836	130
200	C63/220	1/2"	76	280	165	205	395	375	975	160
250	C80/270	3/4"	76	335	185	245	472	465	1182	200
300	C80/320	3/4"	82,5	390	266	280	531	525	1336	232
350	C80/375	3/4"	82,5	440	270	325	595	590	1510	258
400	C100/425	3/4"	95	505	270	350	653	645	1648	292
450	C100/475	3/4"	95,5	560	270	420	708	695	1823	318
500	C125/525	1"	121	620	270	462	773	790	2025	345
600	C160/625	1"	121	730	270	510	911	940	2361	400
700	C125/730	1"	181	860	320	575	1024	1077	2676	490
750	C125/780	1"	187	930	320	605	1073	1109	2787	515
800	C160/830	1"	206	990	320	655	1123	1168	2946	565
900	C160/930	1"	225,5	1095	320	705	1206	1335	3246	615

## ELECTRIC ACTUATOR

- Automatic actuator which consists of:
  - Electric motor
  - Rising stem
  - Motor support yoke flange
- The standard electric motor is equipped with:
  - Manual emergency handwheel
  - Limit switches (open/closed)
  - Torque switches (open/closed)
- Available from DN 50 to DN 900
- Wide range of types and marks available to meet customer's needs.
- Standardised flanges in accordance with ISO 5210/DIN 3338.

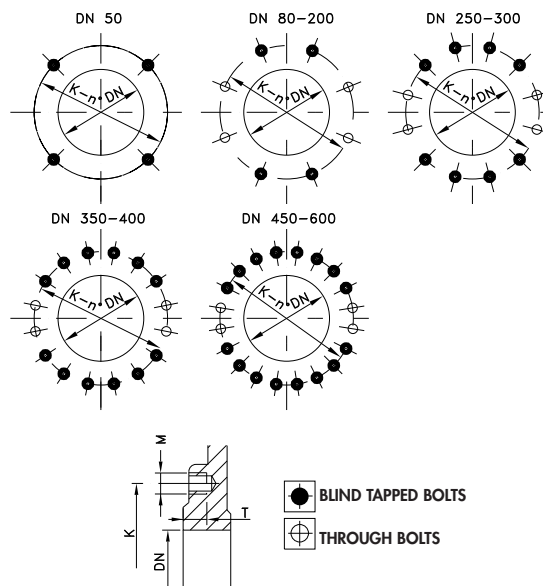


DN	ELECTRIC MOTOR	A	B	C	D	E	F	ØG	H	I	J	L	M	N
50	20	54	140	100	105	145	393	140	945	265	234	62	237	63
80	20	57	175	100	124	175	442	140	1000	265	234	62	237	90
100	30	57	170	100	140	198	481	160	1035	265	250	62	237	100
125	35	63,5	195	100	150	240	533	160	1085	265	250	62	237	123
150	40	63,5	230	100	175	265	583	160	1135	265	250	62	237	130
200	50	76	280	165	205	322	682	200	1245	282	256	65	247	150
250	70	76	335	185	245	415	790	200	1378	282	256	65	247	200
300	110	82,5	390	266	280	472	882	200	1470	282	256	65	247	232
350	120	82,5	440	270	325	555	1055	315	1657	385	325	90	285	258
400	160	95	505	270	350	605	1130	315	1732	385	325	90	285	292
450	200	95,5	560	270	420	677	1272	400	1974	385	332	90	285	318
500	300	121	620	270	462	742	1379	400	2481	385	332	90	285	345
600	350	121	730	270	510	843	1528	400	2630	385	332	90	285	400
700	450	181	860	320	575	980	1730	400	2832	385	332	90	285	490
750	550	187	930	320	605	1115	1930	500	3053	510	355	115	310	515
800	600	206	990	320	655	1220	2085	500	3208	510	355	115	310	565
900	750	225,5	1095	320	705	1370	2285	500	3408	510	355	115	310	615

**FLANGE AND BOLTING DETAILS**

**DIN PN10**

DN	K	n°	M	T	◆◆
50	125	4	M-16	10	4 - -
80	160	8	M-16	12	4 - 4
100	180	8	M-16	12	4 - 4
125	210	8	M-16	14	4 - 4
150	240	8	M-20	14	4 - 4
200	295	8	M-20	16	4 - 4
250	350	12	M-20	16	8 - 4
300	400	12	M-20	20	8 - 4
350	460	16	M-20	15	12 - 4
400	515	16	M-24	20	12 - 4
450	565	20	M-24	20	16 - 4
500	620	20	M-24	25	16 - 4
600	725	20	M-27	24	16 - 4



**ANSI B16.5, class150**

DN	K	n°	M	T	◆◆
2"	4 3/4"	4	5/8" UNC	3/8"	4 - -
3"	6"	4	5/8" UNC	1/2"	4 - -
4"	7 1/2"	8	5/8" UNC	1/2"	4 - 4
5"	8 1/2"	8	3/4" UNC	9/16"	4 - 4
6"	9 1/2"	8	3/4" UNC	9/16"	4 - 4
8"	11 3/4"	8	3/4" UNC	5/8"	4 - 4
10"	14 1/4"	12	7/8" UNC	5/8"	8 - 4
12"	17"	12	7/8" UNC	3/4"	8 - 4
14"	18 3/4"	12	1" UNC	19/32"	8 - 4
16"	21 1/4"	16	1" UNC	3/4"	12 - 4
18"	22 3/4"	16	1 1/8" UNC	3/4"	12 - 4
20"	25"	20	1 1/8" UNC	15/16"	16 - 4
24"	29 1/2"	20	1 1/4" UNC	15/16"	16 - 4

