EGC
ENGINEERED SOLUTIONS
A Michelin Group Company

VALVE STEM BRAIDED PACKING

ADVANCED MATERIALS,
PROVEN PERFORMANCE



ENGINEERED SOLUTIONS

A Michelin Group Company, EGC has engineered advanced graphite sealing solutions since 1978. Our valve packing products help operators reduce emissions, improve reliability, and extend equipment life in demanding industrial applications.

www.egcgraphite.com

3300IV
VALVE PACKING

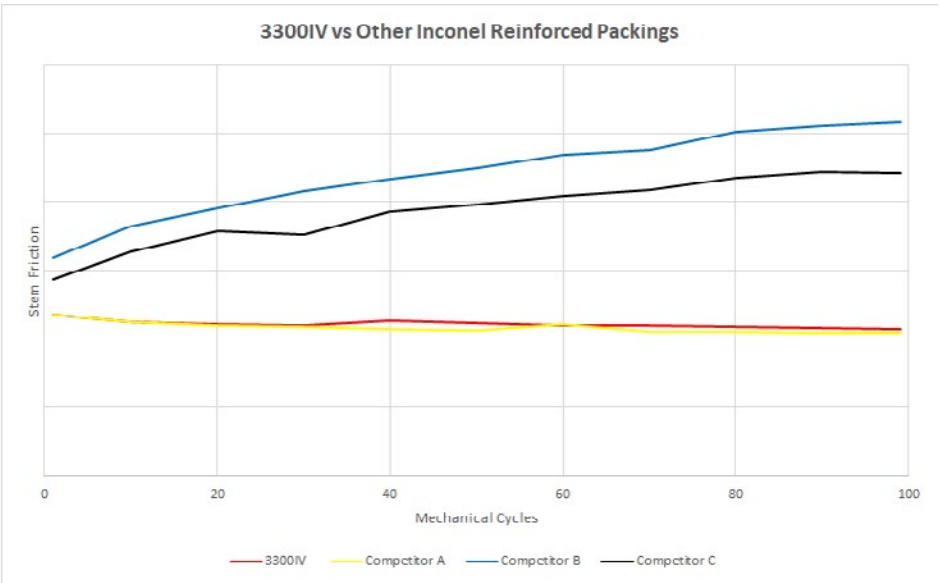
KEY BENEFITS

- **High-Pressure Performance** – Reinforced for extreme pressure
- **Corrosion Protection** – Inhibits pitting and extends service life
- **Application Versatility** – Performs in steam, chemical, and high-temperature service
- **Easy Installation** – Flexible and easy to cut
- **Superior Sealing** – 4× better sealing and 50% lower friction



SPECIFICATIONS

Standard Material	Premium Flexible Graphite Braided Packing reinforced with Inconel wire knit and blocking agents
Applications	Designed for rising and rotating valves in high-temperature service across power generation, pulp and paper, refineries, petrochemical, and chemical plants
Available Sizes	1/8” to 1”(3mm to 25mm) Cross Sections- Larger sizes available upon request
Pressure Limit	8,400 PSI (579 bar)- Consult engineering for higher pressure applications
Temp Limit	1,200°F (649°C) steam, 875°F (468°C) oxidizing environment
Chemical Resistance	PH (0-14), except strong oxidizers





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3300IVD
VALVE PACKING

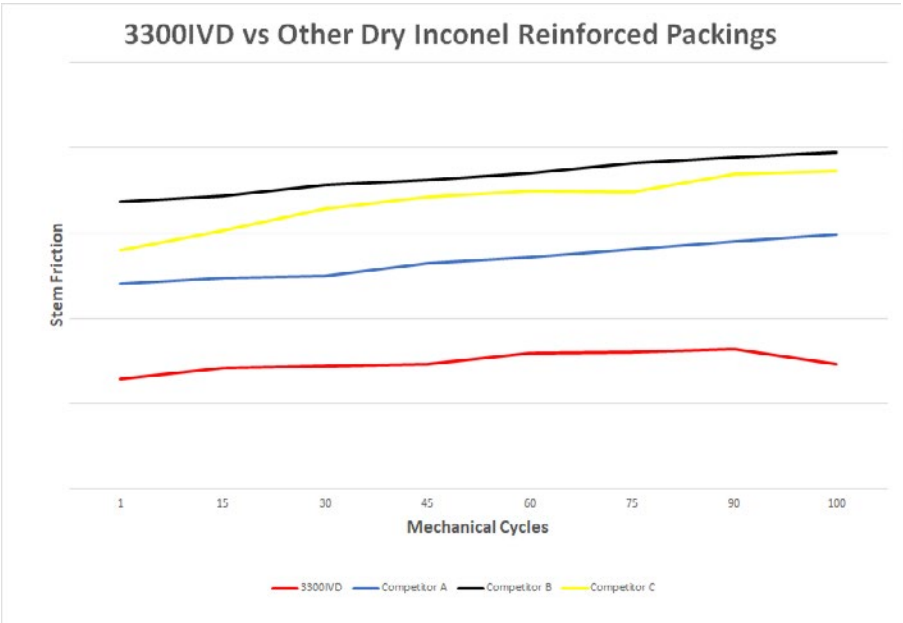
KEY BENEFITS

- Lowest Stem Friction for Inconel Reinforced Packing with no PTFE
- No PTFE blocking agents or Binders
- Great for Higher Pressure and Temperature Steam Service
- Perfect End Ring Material for Field Sets



SPECIFICATIONS

Standard Material	Premium Flexible Graphite Braided Packing reinforced with Inconel wire knit without PTFE
Applications	Rising and rotating valves in high temperature service where PTFE is not allowed to be used as a blocking agent
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	5,000 PSI (345 bar) - Consult engineering for higher pressure applications
Temp Limit	1,200ºF (649ºC) steam, 875ºF (468ºC) oxidizing environment
Chemical Resistance	pH (0-14), except strong oxidizers





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3300IV FE
VALVE PACKING

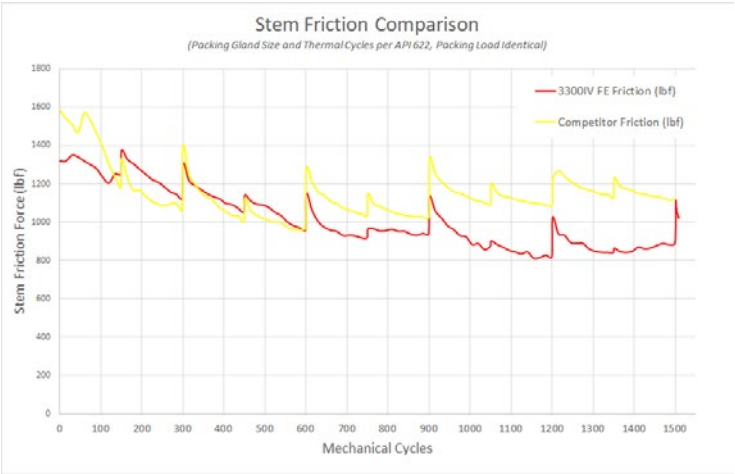
KEY BENEFITS

- **Certified for Fugitive Emissions -** Engineered to meet strict compliance and passes API 622 (3rd Ed.) including Addendum 1 (2022)
- **Ultra-Low Leak Rate -** Achieves average leak rate of just 1 ppm for 1/8" and 1/4" cross-sections
- **Custom Blocking Agent Formula -** Proprietary blend enhances seal integrity under extreme thermal and pressure conditions
- **High-Temperature Resistant -** Proven performance in Annex C high-temp testing and ideal for critical valve applications
- **Reliable, Long-Term Sealing -** Reduces emissions, downtime, and maintenance with stable, low-friction performance



SPECIFICATIONS

Standard Material	Inconel Reinforced Premium Graphite Braided Packing with a custom formulated blocking agent
Applications	Designed for rising and rotating valves in refineries, petrochemical, and chemical plants where fugitive emission compliance is critical
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	5,000 psi (345 bar) - Consult engineering for higher pressure applications
Temp Limit	1,200°F (649°C) steam, 850°F (454°C) oxidizing environment
Chemical Resistance	pH (0-14), except strong oxidizers





3300WV

VALVE PACKING

KEY BENEFITS

- Highest compression and tensile strength available
- API 607 and 589 Fire Safe
- Dimensionally stable at high temperatures
- No blocking agents or lubricants added



SPECIFICATIONS

Standard Material	Premium Flexible Graphite Braided Packing reinforced with Inconel wire in every strand
Applications	Rising and rotating valves in high-temperature service in Power, Pulp and Paper, Refineries, Petrochemical & Chemical plants
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	5,000 psi (345 bar) - Consult engineering for higher pressure applications
Temp Limit	1,200°F (649°C) steam, 875°F (468°C) oxidizing environment
Chemical Resistance	pH (0-14), except strong oxidizers



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3300CV

VALVE PACKING

KEY BENEFITS

- Reinforce with high purity carbon
- No blocking agents or lubricants added
- Superior general service packing
- Perfect center ring material for field sets when used in conjunction with 3300IVD



SPECIFICATIONS

Standard Material	Premium Flexible Graphite Braided Packing reinforced with high purity carbon fibers in every strand
Applications	Rising and rotating valves in high-temperature service in Power, Pulp and Paper, Refineries, Petrochemical & Chemical plants
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	4,000 psi (276 bar) - Consult engineering for higher pressure applications
Temp Limit	1,200ºF (649ºC) steam, 875ºF (468ºC) oxidizing environment
Chemical Resistance	pH (0-14), except strong oxidizers



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3300GV
VALVE PACKING

KEY BENEFITS

- Carbon corners for added extrusion resistance
- High-purity carbon carrier
- No blocking agents or lubricants added
- Complete packing sets for high-temperature applications
- Fixed anti-extrusion corners where wire cannot be utilized



SPECIFICATIONS

Standard Material	Premium Flexible Graphite Braided Packing reinforced with high purity carbon fibers in every strand with built in anti-extrusion carbon corners
Applications	Rising and rotating valves in high-temperature service in Power, Pulp and Paper, Refineries, Petrochemical & Chemical plants
Available Sizes	1/4” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	4,000 psi (276 bar) - Consult engineering for higher pressure applications
Temp Limit	1,200°F (649°C) steam, 875°F (468°C) oxidizing environment
Chemical Resistance	pH (0-14), except strong oxidizers



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3300M MICA VALVE PACKING



KEY BENEFITS

- Ultra High Temperature Braided Packing
- Perfect for molten salt applications, engine exhaust systems, & stem packing applications where temperatures exceed flexible graphite packing capabilities
- Can be used as an oxidation barrier in graphite packing sets
- Compatible with solvents, acids, bases and mineral oils

SPECIFICATIONS

Standard Material	Braided compression packing consisting of mica yarns jacketed with nickel alloy 625 or Inconel® wire to prevent extrusion
Applications	High-temperature sealing for industrial valves, exhaust systems, furnace doors, and gas and oil burners across power, nuclear, refining, chemical, and pulp and paper industries
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	Application dependent - Consult engineering
Temp Limit	1,832°F (1,000°C)
Chemical Resistance	pH (0-14)

3300T PTFE VALVE PACKING



KEY BENEFITS

- Extremely low coefficient of friction
- No sacrificial lubricants
- Perfect for chemical processes where extreme chemical resistance is required
- Great for pipeline valves and low temp valve applications in plants

SPECIFICATIONS

Standard Material	100% Pure PTFE filament Braided Packing thoroughly impregnated with a PTFE suspensoidal blocking agent
Applications	Rising and rotating valves in low temperature service in pipelines, power, pulp and paper refineries, petrochemical & chemical plants
Available Sizes	1/8” to 1” (3 mm to 25 mm) Cross Sections - Larger sizes available upon request
Pressure Limit	2,000 psi (138 bar) - Consult engineering for higher pressure applications.
Temp Limit	500°F (260°C)
Chemical Resistance	pH (0-14)

ENGINEERED SEALING SOLUTIONS

Complementary Solutions for Critical Valve Application



VSG Pro Graphite Pressure Seals

Advanced Pressure Seal Technology

Designed for demanding pressure seal bonnet applications, VSG Pro Graphite Pressure Seals combine high-density graphite sealing performance with enhanced anti-extrusion protection. Manufactured without production tooling, they provide a cost-effective alternative to machined metal seals while dramatically reducing lead times.

Key Benefits • Advanced anti-extrusion design • High-density graphite construction • Reduced manufacturing costs • Standard 48-hour lead times • Excellent performance in high-temperature and high-pressure service



VSG PRO PACK

Complete Engineered Packing Set

A next-generation valve stem packing system designed to function as a single sealing assembly. Featuring Inconel-jacketed end rings and a 100% pure graphite center ring, VSG ProPack delivers exceptional sealing performance in high-temperature, high-pressure, and emissions-critical applications.

Key Benefits • Up to 1,200°F service temperature • Pressures up to 10,000 PSI • Reduced stem wear and friction • No PTFE or blocking agents • Reliable fugitive emissions performance • Standard lead times as fast as 48 hours



VSG ProPack Rings

Precision-Engineered Graphite Center Rings

Manufactured using the same proprietary technology as VSG ProPack systems, VSG ProPack Rings provide custom-fit pure graphite center rings without the need for expensive die-formed tooling. Ideal for maintenance projects, field repairs, and custom valve applications.

Key Benefits • Custom manufactured in as little as 48 hours • Pure graphite construction with oxidation inhibitor • Can be used alone or with braided packing • Excellent thermal cycling performance • Reliable sealing for severe-service applications

INSTALLATION INSTRUCTIONS

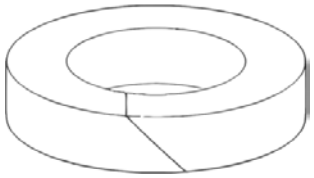
BRAIDED VALVE PACKING

Valve Packing Installation Guide

(3300IV / 3300IVD / 3300CV / 3300GV / 3300WV)

1) Loosen the gland follower nuts and remove the gland follower.
2) Remove the old packing and thoroughly clean the valve stem and stuffing box area.
3) Inspect all portions of the valve stem, stuffing box and gland follower for excessive wear, corrosion, scoring or other damage that could adversely affect packing life. The surface finish for the valve stem should be 32 RMS (24 Ra µin / 0.6 Ra µm) or smoother, while the stuffing box can be 137 RMS (125 Ra µin / 3.2 Ra µm) or smoother. Valve stems should be checked for wear and runout. Wear or runout shall not exceed 0.001 in.
4) If excessive clearances exist, bushings or other anti-extrusion components may be required. Radial clearances should be under .030" (ideally under .015"). If clearances are over 0.03", please contact EGC for the required bushings.
5) Replace or refurbish worn or damaged parts.
6) Select packing size based on stem diameter and stuffing box bore diameter. Packing Size = (Stuffing Box Bore Diameter – Stem Diameter) / 2. Note the stuffing box depth for determination of packing set height and/or number of packing rings. EGC recommends three to seven rings of packing per set. If more than 7 rings are required to fill the stuffing box, please contact EGC for the required bushing.
7) Cut a braided packing ring to length on a 45º angle, using a packing cutter tool. DO NOT butt cut the packing at 90º. The length of braided packing should be slightly long to ensure that no gaps in the packing will exist when installed in the packing gland (see diagrams "a" and "b" below). Packing ends should be cleanly cut without frayed or damaged ends. Cut angles MUST closely match. Once the packing is cut to the proper length, the following must be true:

a. Minimum Length- When wrapped around the valve stem and inserted into the stuffing box, <u>all parts of the 45º cut should overlap and rest on some portion of the 45º angled cut on the opposite end of the packing</u>.



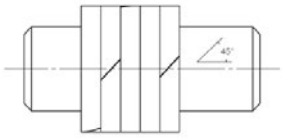
b. Maximum Length- When wrapped around the valve stem and inserted into the stuffing box, <u>some portion of the angled cut should rest on the angled cut of the opposite end</u>.

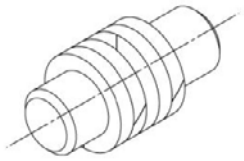


8) Cut the remaining rings, as indicated in step #7.
9) Insert the end of a cut packing length into the stuffing box with the 45º angled cut facing up/out. Work the ring into the stuffing box working from the inserted end until the ends overlap within the stuffing box. The ring should be uniformly positioned in the stuffing box.
10) Next, push the ring to the bottom of the stuffing box with an installation tool, gland follower and/or bushing.
11) Compress the packing ring fully to the prescribed torque using the gland follower and bushing/install tool (if needed). During the torquing process, the fasteners should be torqued down evenly in increments.
12) Remove the gland follower and bushing.
13) Repeat step #9 to step #12 until all rings are installed. Be sure to stagger cut joints 90º apart, as they are installed (see figures below). After installing the final valve packing ring, add Belleville Spring washers, if applicable, per the manufacturer's recommendation before torquing down the set.

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14) After all rings are installed and the appropriate torque has been applied, cycle the valve stem 6 times. Retorque the packing to the prescribed torque. The fastener nuts should not rotate more than one flat, at target torque, after cycling. If they do, cycle an additional 6 times and retorque until nut rotation is less than 1 flat or 60º. After packing is fully set, check to ensure that there is enough remaining gland follower length for future packing adjustment.





This instruction provides a general guideline for packing installation. It is intended to be used in conjunction with other siteapproved installation procedures, where applicable. All safety related protocols for valve repair should be followed before performing the steps in this document. Be advised that the overall condition of associated valve components can significantly impact fluid sealing effectiveness. Components in poor or very worn condition should be refurbished or replaced to ensure optimum sealing performance. The torque table below is to be used only as a general guideline (see notes in table).

STEM DIAMETER (INCHES)

STUFFING BOX BORE DIAMETER (INCHES)

	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13	2.25	2.38	2.50	2.63	2.75	2.88	3.00	3.13	3.25	3.38	3.50	3.63	3.75	3.88	4.00
0.75	13																												
0.88	21	16																											
1.00	31	25	18																										
1.13	42	36	29	21																									
1.25	54	48	41	33	23																								
1.38	67	61	54	46	36	26																							
1.50	81	76	69	60	51	40	28																						
1.63	97	91	84	76	67	56	44	31																					
1.75	114	108	102	93	84	73	61	48	33																				
1.88	132	127	120	112	102	91	79	66	52	36																			
2.00	152	146	139	131	122	111	99	86	71	55	38																		
2.13	173	167	160	152	143	132	120	107	92	76	59	41																	
2.25	195	189	182	174	165	154	142	129	114	98	81	63	43																
2.38	218	213	206	198	188	177	165	152	138	122	105	86	67	46															
2.50	243	237	230	222	213	202	190	177	162	146	129	111	91	71	48														
2.63		263	256	248	239	228	216	203	188	172	155	137	117	96	74	51													
2.75			283	275	266	255	243	230	215	199	182	164	144	124	102	78	54												
2.88				304	294	283	271	258	244	228	211	192	173	152	130	107	82	56											
3.00					324	313	301	288	273	258	240	222	203	182	160	136	112	86	59										
3.13						344	332	319	304	288	271	253	234	213	191	167	143	117	90	61									
3.25							364	351	336	321	304	285	266	245	223	199	175	149	122	93	64								
3.38								384	370	354	337	319	299	278	256	233	208	182	155	127	97	66							
3.50									405	389	372	354	334	313	291	268	243	217	190	162	132	101	69						
3.63										425	408	389	370	349	327	304	279	253	226	198	168	137	105	71					
3.75											445	427	407	386	364	341	316	290	263	235	205	174	142	108	74				
3.88												465	446	425	403	379	355	329	302	273	244	213	180	147	112	76			
4.00													485	465	443	419	395	369	342	313	283	252	220	187	152	116	79		
4.13														506	484	460	436	410	383	354	324	294	261	228	193	157	120	81	
4.25															526	503	478	452	425	396	367	336	304	270	235	199	162	124	84
4.38																546	521	496	468	440	410	379	347	314	279	243	206	167	127
4.50																	566	540	513	485	455	424	392	359	324	288	251	212	172
4.63																		587	559	531	501	470	438	405	370	334	297	258	218
4.75																			607	578	549	518	485	452	417	381	344	306	266
4.88																				627	597	566	534	501	466	430	393	354	314
5.00																					647	616	584	551	516	480	443	404	364
5.13																						667	635	602	567	531	494	455	415
5.25																							688	654	619	583	546	508	468
5.38																								708	673	637	600	561	521
5.50																									728	692	655	616	576
5.63																										748	711	672	633
5.75																											768	730	690
5.88																												789	749
6.00																													809

Multiply the diameter of the fastener, in inches, by the corresponding number in this table to obtain the torque (ft-lbs).

Notes:

1. This chart is intended to be an install guideline for 3300IV, 3300IVD, 3300CV AND 3300GV valve packing for valves 2500# class and below. Actual torque required will vary by depending on a number of variables including system pressure, media, stem friction limitations and other variables.

2. This chart is calculated assuming two lubricated, non-plated, carbon steel gland studs and an applied unit load of 6500 psi. If your valve has more than two gland studs, or if the studs are plated or another material, please call EGC for further assistance (440)285-5835.

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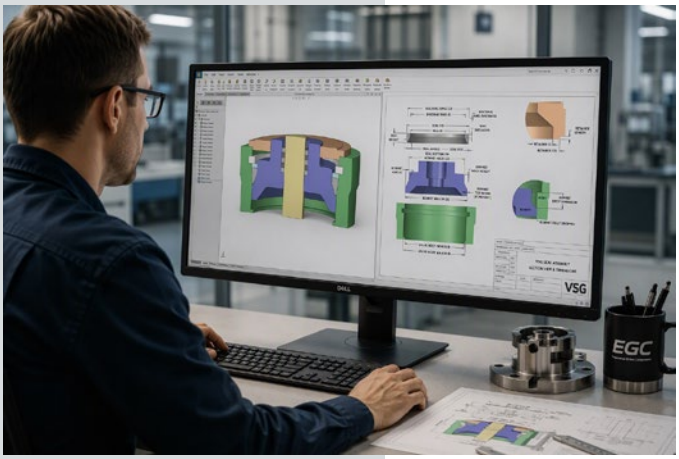
EGC: AN ENGINEERING COMPANY

Advanced Materials. Proven Performance.

Engineering is what sets EGC apart. Since 1978, we have developed graphite-based sealing solutions for severe-service applications by combining material expertise with proven engineering and manufacturing capabilities. Our team helps customers solve challenges involving temperature, pressure, emissions, reliability, and equipment performance.

Engineering Capabilities

- Application & Stuffing Box Evaluations
- Material Selection & Design Optimization
- Custom Packing Set Development
- Rapid Prototyping & Manufacturing
- Sealing Performance Testing
- Emissions Reduction Solutions
- High-Temperature & Severe-Service Engineering



Markets Served

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EGC ENGINEERED SOLUTIONS
A Michelin Group Company

Headquarters
140 Parker Court
Chardon, OH 44024

Local 440-285-5835
Toll-Free 800-342-0211
Fax 440-285-8337
Email egc@egcgraphite.com

www.egcgraphite.com

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