

ENERGY SERVICES VALVE SELECTOR GUIDE



 **Bray**[®]

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THE HIGH PERFORMANCE COMPANY



At Bray our business is helping our customers with their flow control requirements. Our modular product line offers the best compatibility, economy and quality performance in the flow control industry.

Through years of field application experience, research and development, Bray has designed products that meet the stringent requirements of today's flow control industry. We have earned a reputation for excellence by creating products of superior value and quality, providing personalized customer service and emphasizing on-time deliveries. Our success has always been the direct result of our fully integrated range of valve, actuator and control products. Rugged and reliable, our products are engineered to provide years of trouble free service.

Bray manufacturing facilities are certified to ISO 9001 quality standards, assuring product quality, precision manufacturing and internal process integrity.

Bray is committed to customer support. Our extensively trained staff is knowledgeable in all aspects of Bray's products and their applications and provide personal attention to every customer. To serve you locally, each region maintains a factory certified sales and service network for all Bray International products.

Bray recognizes that "our customers make us successful" and they have a choice of many manufacturers when selecting valves, actuators and accessories for their applications. Since many manufacturers have access to the same materials of construction for these products, Bray believes that a customer's purchase decision is heavily influenced by the following key factors:

- > Trust in the Manufacturer
- > Confidence in the Quality Assurance and Integrity of the Manufacturer
- > Proven Industry Experience
- > Features and Benefits of the Product
- > Delivery
- > Customer Service
- > Cost of Ownership



Control system for blow-out preventers at a drill pad in the Fayetteville Shale gas play in Arkansas.

A blowout preventer is a valve or similar mechanical device used to seal, control and monitor oil and gas wells.

Blowout preventers were developed to cope with extreme erratic pressures and uncontrolled flows that could erupt from a well reservoir during drilling.

Photo Credit
Bill Cunningham, USGS

Acid Transports / Tanks / Acidizing Units

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator	Application Notes
2"	Wafer	Cast Iron	FKM	Halar/DI	316	175 PSI	300200-11010691	010200-21100007	920630-11300532	930834-11300532	Direct Acid Shutoff
3"	Wafer	Cast Iron	FKM	Halar/DI	316	175 PSI	300300-11010691	010200-21100007	920830-11300532	931193-11300532	Direct Acid Shutoff
4"	Wafer	Cast Iron	FKM	Halar/DI	316	175 PSI	300400-11010691	010400-21100007	920930-11300532	931194-11300532	Direct Acid Shutoff
6"	Wafer	Cast Iron	FKM	Halar/DI	316	175 PSI	300600-11010691	010500-21100007	921190-11300532	931604-11300532	Direct Acid Shutoff
2"	Wafer	Cast Iron	FKM	Alum/ Bronze	416	175 PSI	300200-1101013N	010200-21100007	920630-11300532	930834-11300532	Flush and Washout Shutoff
3"	Wafer	Cast Iron	FKM	Alum/ Bronze	416	175 PSI	300300-1101013N	010200-21100007	920830-11300532	931193-11300532	Flush and Washout Shutoff
4"	Wafer	Cast Iron	FKM	Alum/ Bronze	416	175 PSI	300400-1101013N	010400-21100007	920930-11300532	931194-11300532	Flush and Washout Shutoff
6"	Wafer	Cast Iron	FKM	Alum/ Bronze	416	175 PSI	300600-1101013N	010500-21100007	921190-11300532	931604-11300532	Flush and Washout Shutoff
2"	Wafer	Cast Iron	PTFE/ EPDM	PTFE/ 17-4	17-4	100 PSI	02399722F650	D400-237-23-10L	DA/02399FDA76xxxxx	FC/02399FFC76xxxxx	Direct Acid Shutoff
3"	Wafer	Cast Iron	PTFE/ EPDM	PTFE/ 17-4	17-4	100 PSI	03399722F650	D400-237-23-10L	DA/03399FDA76xxxxx	FC/03399FFC76xxxxx	Direct Acid Shutoff
4"	Wafer	Cast Iron	PTFE/ EPDM	PTFE/ 17-4	17-4	100 PSI	04399722F650	D400-237-46-10L	DA/04399FDA76xxxxx	FC/04399FFC76xxxxx	Direct Acid Shutoff
6"	Wafer	Cast Iron	PTFE/ EPDM	PTFE/ 17-4	17-4	100 PSI	06399722F650	D400-237-46-10L	DA/06399FDA76xxxxx	FC/06399FFC76xxxxx	Direct Acid Shutoff
2"	Wafer	Cast Iron	PTFE/ FKM	Halar/ A351	316	175 PSI	200200-11010XXX	010200-21100007	920630-11300532	930834-11300532	Direct Acid Shutoff >10% Acetic
3"	Wafer	Cast Iron	PTFE/ FKM	Halar/ A351	316	175 PSI	200300-11010XXX	010200-21100007	920830-11300532	931193-11300532	Direct Acid Shutoff >10% Acetic
4"	Wafer	Cast Iron	PTFE/ FKM	Halar/ A351	316	175 PSI	200400-11010XXX	010400-21100007	920930-11300532	931194-11300532	Direct Acid Shutoff >10% Acetic
6"	Wafer	Cast Iron	PTFE/ FKM	Halar/ A351	316	175 PSI	200600-11010XXX	010500-21100007	921190-11300532	931604-11300532	Direct Acid Shutoff >10% Acetic

Assumptions:

- Class C torque for S.30 valves and Service Factor 3 torque for S.399 valves
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply



A typical drill pad in the Marcellus Shale gas play of southwestern Pennsylvania.

Pictured here are pumps, generators, fuel, chemicals, sand, pipes, service trucks, and other infrastructure required for the involved process of hydraulic fracturing.

Photo Credit
Doug Duncan, USGS

Sand Trailers

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
2"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	2-400-001500	400-206-23-5	100-080	100-094
3"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	3-480-001500	400-206-23-5	100-080	100-123
4"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	4-480-001500	400-206-46-5	100-090	100-124
5"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	5-480-001500	400-206-46-5	100-120	100-134
6"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	6-480-001500	400-206-46-5	100-120	100-164
8"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	8-400-001500	400-206-810	100-160	100-213
10"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	10-400-001500	400-206-1010	100-160	100-214
12"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	12-400-001500	400-206-1210	100-210	100-263
3"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	3-780-001500	400-206-46-5	100-080	100-123
4"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	4-780-001500	400-206-46-5	100-090	100-124
5"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	5-780-001500	400-206-46-5	100-120	100-134
6"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	6-780-001500	400-206-46-5	100-120	100-164
2"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	02400169U500	400-237-23-10L	DA/02400UDA66xxxxx	FC/02400UFC66xxxxx
3"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	03400169U500	400-237-23-10L	DA/03400UDA66xxxxx	FC/03400UFC66xxxxx
4"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	04400169U500	400-237-46-10L	DA/04400UDA66xxxxx	FC/04400UFC66xxxxx
5"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	05400169U500	400-237-46-10L	DA/05400UDA66xxxxx	FC/05400UFC66xxxxx
6"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	06400169U500	400-237-46-10L	DA/06400UDA66xxxxx	FC/06400UFC66xxxxx
8"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	08400169U500	400-237-810L	DA/08400UDA66xxxxx	FC/08400UFC66xxxxx
10"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	10400169U500	400-237-810-10L	DA/10400UDA66xxxxx	FC/10400UFC66xxxxx
12"	Wafer	CI	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	12400169U500	400-237-1210L	DA/12400UDA66xxxxx	FC/12400UFC66xxxxx

Assumptions:

- Service Factor 3 torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed



The hydraulic fracturing process also involves a suite of chemicals, in addition to sand and water.

These chemicals perform tasks like lubricating the pipes, preventing the mixture from coagulating, and helping the sand keep the fractures open.

Photo Credit
Bill Cunningham, USGS

Frac Blenders and Pumpers

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
2"	Wafer	Cast Iron	FKM	316	316	150 PSI	300200-11010639	010200-21100007	920630-11300532	930833-11300532
3"	Wafer	Cast Iron	FKM	316	316	150 PSI	300300-11010639	010200-21100007	920830-11300532	930934-11300532
4"	Wafer	Cast Iron	FKM	316	316	150 PSI	300400-11010639	010400-21100007	920930-11300532	931193-11300532
6"	Wafer	Cast Iron	FKM	316	316	150 PSI	300600-11010639	010500-21100007	921190-11300532	931603-11300532
8"	Wafer	Cast Iron	FKM	316	316	150 PSI	300800-11010639	010800-21100007	921600-11300532	932103-11300532
2"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300200-11010622	010200-21100007	920630-11300532	930833-11300532
3"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300300-11010622	010200-21100007	920830-11300532	930934-11300532
4"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300400-11010622	010400-21100007	920830-11300532	931193-11300532
6"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300600-11010622	010500-21100007	921190-11300532	931284-11300532
8"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300800-11010622	010800-21100007	921280-11300532	931605-11300532

Assumptions:

- Class B torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed



Water storage tanks at a drill pad in the Fayetteville Shale in Arkansas.

Water is pumped from an impoundment into these tanks, which supply the hydraulic fracturing operation.

Photo Credit
Bill Cunningham, USGS

Fracking Manifold

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
4"	Wafer	Cast Iron	FKM	316	316	150 PSI	300400-11010639	010400-21100007	010400-21100007	931193-11300532
6"	Wafer	Cast Iron	FKM	316	316	150 PSI	300600-11010639	010500-21100007	010500-21100007	931603-11300532
8"	Wafer	Cast Iron	FKM	316	316	150 PSI	300800-11010639	010800-21100007	010800-21100007	932103-11300532
4"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300400-11010622	010400-21100007	010400-21100007	931193-11300532
6"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300600-11010622	010500-21100007	010500-21100007	931284-11300532
8"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300800-11010622	010800-21100007	010800-21100007	931605-11300532

Assumptions:

- Class B torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed



Well heads (numbers 6 and 7) at a drill pad in the Fayetteville Shale gas play of Arkansas.

Photo Credit
Bill Cunningham, USGS

Fracking Cement

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
2"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	2-400-001500	400-206-23-5	100-080	100-094
3'	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	3-480-001500	400-206-23-5	100-080	100-123
4"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	4-480-001500	400-206-46-5	100-090	100-124
5"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	5-480-001500	400-206-46-5	100-120	100-134
6"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	6-480-001500	400-206-46-5	100-120	100-164
8"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	8-400-001500	400-206-810	100-160	100-213
10"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	10-400-001500	400-206-1010	100-160	100-214
12"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	12-400-001500	400-206-1210	100-210	100-263
3'	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	3-780-001500	400-206-46-5	100-080	100-123
4"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	4-780-001500	400-206-46-5	100-090	100-124
5"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	5-780-001500	400-206-46-5	100-120	100-134
6"	Wafer	Aluminum	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	6-780-001500	400-206-46-5	100-120	100-164
2"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	02400169U500	400-237-23-10L	DA/02400UDA66xxxxx	FC/02400UFC66xxxxx
3'	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	03400169U500	400-237-23-10L	DA/03400UDA66xxxxx	FC/03400UFC66xxxxx
4"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	04400169U500	400-237-46-10L	DA/04400UDA66xxxxx	FC/04400UFC66xxxxx
5"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	05400169U500	400-237-46-10L	DA/05400UDA66xxxxx	FC/05400UFC66xxxxx
6"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	06400169U500	400-237-46-10L	DA/06400UDA66xxxxx	FC/06400UFC66xxxxx
8"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	08400169U500	400-237-810L	DA/08400UDA66xxxxx	FC/08400UFC66xxxxx
10"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	10400169U500	400-237-810-10L	DA/10400UDA66xxxxx	FC/10400UFC66xxxxx
12"	Wafer	Cl	Carboxylated Nitrile	Ductile Iron	17-4	50 PSI	12400169U500	400-237-1210L	DA/12400UDA66xxxxx	FC/12400UFC66xxxxx

Assumptions:

- Service Factor 3 torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed



Equipment set up to pump water from a lake to an impoundment for hydraulic fracturing in the Fayetteville Shale of Arkansas.

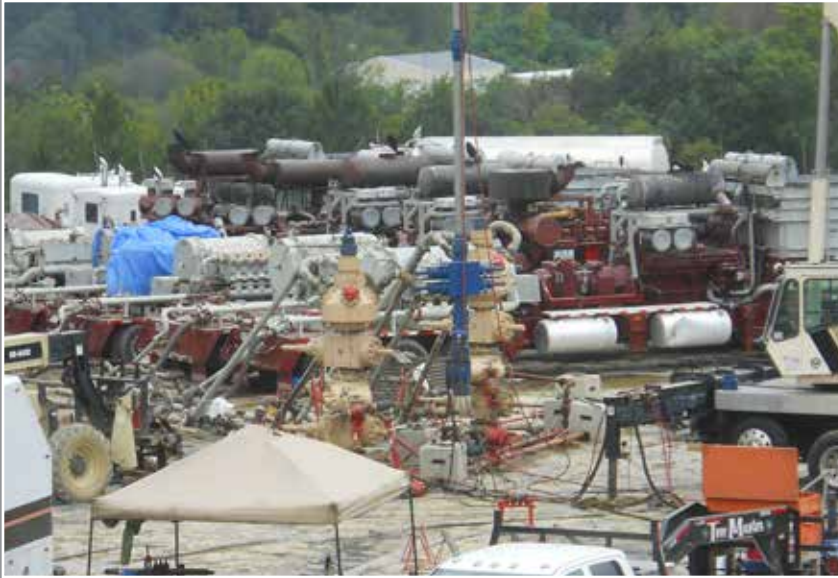
Photo Credit
Bill Cunningham, USGS

Fracking Fresh Water

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
4"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300400-11010622	010400-21100007	920830-11300532	931193-11300532
6"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300600-11010622	010500-21100007	921190-11300532	931284-11300532
8"	Wafer	Cast Iron	Buna	DI	416	150 PSI	300800-11010622	010800-21100007	921280-11300532	931605-11300532
10"	Wafer	Cast Iron	Buna	DI	416	150 PSI	301000-11010622	011000-21100007	921600-11300532	932104-11300532
12"	Wafer	Cast Iron	Buna	DI	416	150 PSI	301200-11010622	011000-21100007	922100-11300532	932553-11350532

Assumptions:

- Class B torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed



A hydraulic fracturing operation is underway at this drilling pad in the Marcellus Shale gas play of southwestern Pennsylvania.

The two beige-colored structures in the middle are well-heads, with pipes coming into them bringing the pressurized water, chemical and sand mixture that is pumped into the well to create the fractures in the rock. The motors in the background can be seen emitting exhaust, indicating a fracturing operation is underway.

Photo Credit
Doug Duncan, USGS

Fracking Produced Water

Size	Body Style	Body Material	Seat	Disk	Stem	PSI Rating	Valve Only Part Number	Handle/Gear Part Number	Double Acting Actuator	Spring Return Actuator
4"	Wafer	Cast Iron	FKM	316	316	150 PSI	300400-11010639	040200-21202002	920930-11300532	931193-11300532
6"	Wafer	Cast Iron	FKM	316	316	150 PSI	300600-11010639	040200-21202002	921190-11300532	931603-11300532
8"	Wafer	Cast Iron	FKM	316	316	150 PSI	300800-11010639	040300-21202002	921600-11300532	932103-11300532
10"	Wafer	Cast Iron	FKM	316	316	150 PSI	301000-11010639	040300-21202002	921600-11300532	932104-11300532
12"	Wafer	Cast Iron	FKM	316	316	150 PSI	301200-11010639	040300-21207002	922100-11300532	932553-11350532
14"	Lug	Cast Iron	FKM	316	316	150 PSI	301400-11010639	040500-21202002	922100-11300532	932554-11350532
16"	Lug	Cast Iron	FKM	316	316	150 PSI	301600-11010639	040800-21206002	922550-11350532	S.98 45E2-10-SR1-C
18"	Lug	Cast Iron	FKM	316	316	150 PSI	301800-11010639	040800-21202002	922550-11351532	S.98 45E2-12-SR2-C
20"	Lug	Cast Iron	FKM	316	316	150 PSI	302000-11010639	040800-21204002	922550-11351532	S.98 45E2-14-SR3-C

Assumptions:

- Class B torque
- Actuation sized to full rated pressure
- Actuation sized with 60 psig air supply
- Spring return actuation sized to fail closed
- Rimp pull values up to 119 lbs



The red installation in the center of the image shows a gas/mud separator. During drilling, the drilling fluid used to cool the bit and bring rock cuttings to the surface may contain natural gas.

Equipment such as this gas/mud separator are used during drilling to separate the gas from the other materials before safely burning or flaring it onsite. After completion of the well, permanent separators are installed so that only gas is introduced into pipelines for transport to gas processing facilities.

Photo Credit
Doug Duncan, USGS

Nitrogen Pumpers with Ball Valves

Size	Body Style	End Connection	Body Material	Seat	Ball	Stem	PSI Rating	Manual Valve With Handle	Valve With Double Acting Actuator	Valve With Spring Return Actuator	Valve With 24 VDC GP Actuator
.5"	3 Piece	Socket Weld	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	WOR-C4466PMSW-.5	WOR-C4466-.5/92-63	WOR-C4466-.5/93-634	WOR-C4466-.5/EOM2
.75"	3 Piece	Socket Weld	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	WOR-C4466PMSW-.75	WOR-C4466.75/92-63	WOR-C4466-.75/93-834	WOR-C4466-.75/EOM2
1"	3 Piece	Socket Weld	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	WOR-C4466PMSW-1	WOR-C4466-1/92-63	WOR-C4466-1/93-834	WOR-C4466-1/EOM2
1.5"	3 Piece	Socket Weld	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	WOR-C4466PMSW-1.5	WOR-C4466-1.5/92-83	WOR-C4466-1.5/93-935	WOR-C4466-1.5/EOM3
2"	3 Piece	Socket Weld	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	WOR-C4466PMSW-2	WOR-C4466-2/92-83	WOR-C4466-2/93-1194	WOR-C4466-2/EOM3
3"	3 Piece	Flanged	316 S/S	Polyfill	316 S/S	316 S/S	1500 PSI	TBV-3-30F2V1506L36-14	TBV-3-30F2V-150/92-119	TBV-3-30F2V-150/93-1604	TBV-3-30F2V-150/EOM4

All actuators sized at 80 PSI.
Spring return actuators are sized for fail closed



BRAY FLOW CONTROL SOLUTIONS ARE AVAILABLE FOR A VARIETY OF INDUSTRIES.

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Transportation
Heating, Ventilation & Air Conditioning (HVAC)



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