



GL3 SERIES

***CAGE
GUIDED***

***GLOBE
CONTROL
VALVES***

GL3 SERIES

CAGE GUIDED GLOBE CONTROL VALVES

The GL3 Series belongs to the KG Equipments family of straightway globe style control valves and is characterized by single seat cage guide and quick-change design.

The GL3 Series can cover a wide range of applications:

Oil & Gas

- ✓ *Upstream: onshore and offshore*
- ✓ *Midstream: transportation, filtering, reduction, metering, storage*
- ✓ *Downstream: petrochemical, refineries, LNG ...*
- ✓ *Distribution networks*

Industrial applications

- ✓ *Chemical applications (nitrogen, hydrogen, urea)*
- ✓ *Power*
- ✓ *Water: potable and desalination plants*
- ✓ *Everywhere a process control is needed*



The GL3 Series offers:

High Performance and Reliability

The extremely refined cage guided design ensures optimal valve performance under the most severe process conditions.

Whenever the process may lead to cavitation issues or excessive noise KG Equipments will select the proper single or multiple cages in order to avoid them.

This, along with an accurate design and a careful materials selection, provide wear resistance and long life.

Quick Change Design

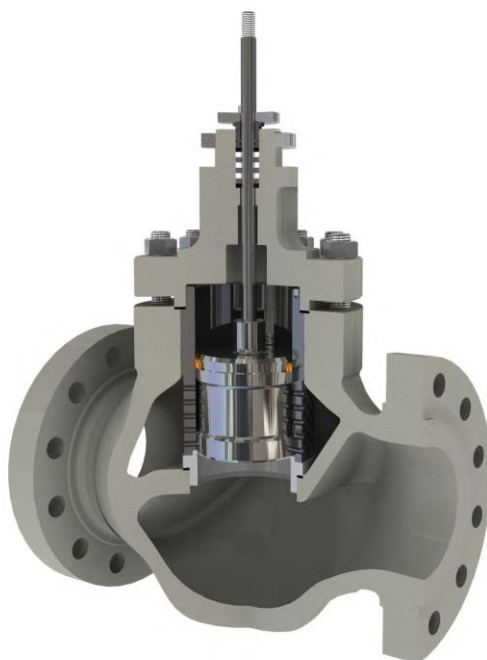
Overall costs during the valve life are greatly influenced by maintenance costs.

Maintenance costs are kept under control by the GL3 Quick Change Design that offers easy parts handling and installation, thus reducing time consuming operations and avoiding the need for dedicated special tools.

Modular Design

The GL3 Series, belonging to the globe style family of KG Equipments control valves, shares many components with other family members (AG2, GL2, AG3, TG1, TG2). This is especially true for consumable materials as seats, plugs, internal gaskets and packings.

This characteristic lead to cost efficiency and reduced delivery time. Customers that operate complex plants will surely appreciate it.



Key Features

Balanced Design

In a Balanced Design the cylindrical plug head is drilled with large balancing ports to lead pressure above the plug head.

A pressure balanced design of the plug doesn't have any practical limitation in term of pressure drop and allow a reduction of the thrust required at the actuator, that means a reduction of the actuator size.

Balanced construction makes also very smooth and efficient regulation of the controlled process.

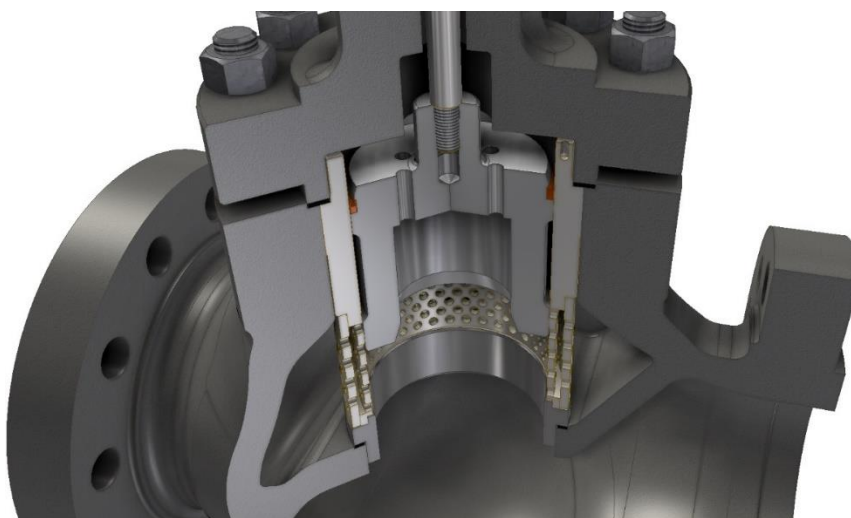
This is the reason why it can be considered the best solution in a great variety of applications

The balanced construction is a standard for flow to open application (flow toward bottom of the plug). Customized solutions can be adopted for flow to close (flow toward top of the plug) applications and, in this case a piloted plug can be adopted too for specific severe condition (high temperature and/or corrosive/erosive services).

Plug is always heavy guided and can be customized where necessary.

Plug materials of constructions depend on the combination of fluid type, pressure rating and design temperature and shall be carefully selected together with the materials of the other trim components.

KG Equipments offers a wide range of plug seals solutions based on service conditions: pressure energized PTFE seal rings (with or without back up metal ring), Graphite seal rings, Metal seal rings.



Balanced Design Construction

Wide Operating Range Cages Selection

GL3 series have been developed with specific concentric cages design in order to offer an engineered solution to face up both cavitation and noise problems, granting as well the desired flow characteristic (equal percentage, linear, modified linear)

It is therefore possible to manufacture single stage or multistage (with single or multiple passage) trims suitable to face fluid cavitation and severe noise issues.

The following cages design are available:

1) Anti-Cavitation Cages

Cavitation is a phenomenon that characterizes liquid flow behavior when pressure value becomes lower than the saturation pressure point.

This phenomenon causes vapor bubbles to collapse and release high amount of energy.

Cavitation highly affects both performances (vibrations, noise, etc) and reliability: metal surfaces undergo an inevitable pitting damage if this process is not controlled.

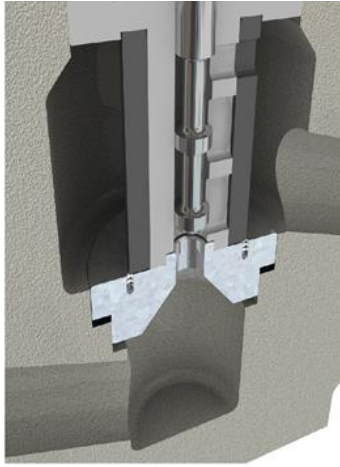
In order to face up this problem is necessary to control velocity by breaking the pressure drop into a convenient amount of smaller pressure stages.

When the process fluid has a low content of contaminant particles multistage – multi passage cages assembly can be adopted.



Two Stage- Multipassage Cavitation Control Cage

When the process fluid has a high content of contaminant particles multistage-single passage cages are the right solution.



Multistage - Single Passage Cavitation Control Cage

2) Low Noise Cages

A control valve operating with gases or vapors can be a noise source in specific process conditions.

Pressure waves produced by flow turbulences are responsible of the aerodynamic noise.

GL3 Series has been engineered to offers three type of solutions to face up efficiently noise matters. The choice of the most efficient cage type depends on process conditions.

The following noise abatement solutions are available:

Single stage – Multi Passage:

Noise attenuation is obtained by breaking the flow into a great number of multiple jets. This is a multipath approach to noise reduction.



Single Stage-Multi Passage Noise Control Cage

Multi stage – Multi Passage:

Further noise reduction can be achieved also adding a different technique: the multi-stage approach.

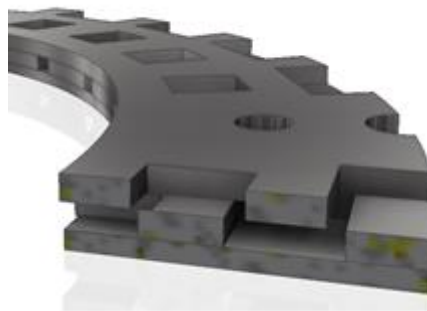
If the whole pressure drop is divided into multiple stages of pressure reduction, it is possible to increase the acoustic efficiency of the valve



Multi Stage-Multi Passage Noise Control Cage

Multi stage – Multi passage Disks Stack:

The most refined solution that incorporate multi stage and multi passage is the Disk Stack Solution. This design allows a total control of the flow for the most severe noise requirements since it allows to reach a higher number of stages than the concentric cages solution.



Disks Stack Noise Control Cage

Design Flexibility

The GL3 series can be tailored for the most various application and process conditions through the following steps:

Connection choice:

Valve bodies can have the following connection to the customer process:

- *Flanged RF connection (both ASME B16.5 and EN 1092)*
- *Flanged RJ connection*
- *Butt weld*
- *Socket weld*
- *Threaded connection*

Valve materials selection:

Bodies, bonnets and trims can be made from a wide range of carbon and stainless steels to face up every process condition.

Sour service material class are available and exotic materials can be provided if needed.

Bonnet selection:

Standard bonnet can be used, with the proper material selection, in the temperature range -196°C / 400°C.

Extended bonnet versions are available for cryogenic (up to -196°C) or high temperature (up to 565°C) applications.

Trim selection:

The trim is the heart of the valve and thus its proper selection and design is fundamental.

GL3 series valve can be provided with special trims that can manage:

- *Cavitation*
- *Noise issues*
- *Erosion*
- *Corrosion*

Packing selection:

In order to satisfy any special requirement in term of emission different suitable packing solutions are provided.

- *Standard low emission packing (PTFE or Graphite)*
- *Live loading low emission packing*
- *Bellow seal*

GL3 SERIES

QUICK PRODUCT SPECIFICATION

GL3 SERIES RATING TABLE	
SIZES*	1" up to 24" [DN25 up to DN600]
PRESSURE RATINGS*	ASME B16.34 #150 up to #2500 [PN 20 up to PN 420]
DESIGN TEMPERATURES*	-196°C up to 565°C [-320°F up to 1049 °F]

**Standard codes of reference:*

ISA 75 / IEC60534 general design code, tests and inspection

ASME B16.34 / EN 12516 strength design code

GL3 SERIES PERFORMANCE TABLE	
FLOW COEFFICIENT CV RANGEABILITY	CV 10 to 7200 according to ISA 75 / IEC 60534-2
SEAT LEAKAGE	Up to class VI according to ANSI/FCI 70-2 and IEC 60534-4
NOISE AND CAVITATION CONTROL	according to ISA 75 series and IEC 60534-8
FUGITIVE EMISSION CONTROL	Up to class A according to ISO 15848-1
OPERATING PERFORMANCES	according to ANSI/ISA 75-25 and IEC 60534-4

GL3 SERIES

RATING CONNECTION TABLES

		ASME 150 CLASS [PN 20]					ASME 300 CLASS [PN 50]					ASME 600 CLASS [PN 100]				
SIZE	DN	RF	RJ	THD	SW	BW	RF	RJ	THD	SW	BW	RF	RJ	THD	SW	BW
1"	DN25	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.5"	DN40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2"	DN50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3"	DN80	•	•			•	•	•			•	•	•			•
4"	DN100	•	•			•	•	•			•	•	•			•
6"	DN150	•	•			•	•	•			•	•	•			•
8" up to 24"	DN200 up to DN600	•	•			•	•	•			•	•	•			•

		ASME 900 CLASS [PN 150]					ASME 1500 CLASS [PN 250]					ASME 2500 CLASS [PN 420]				
SIZE	DN	RF	RJ	THD	SW	BW	RF	RJ	THD	SW	BW	RF	RJ	THD	SW	BW
1"	DN25	•	•			•	•	•			•	•	•			•
1.5"	DN40	•	•			•	•	•			•	•	•			•
2"	DN50	•	•			•	•	•			•	NO-STANDARD EXECUTION: available on request				
3"	DN80	•	•			•	•	•			•					
4"	DN100	•	•			•	•	•			•					
6"	DN150	•	•			•	•	•			•					
8" up to 24"	DN200 up to DN600	•	•			•	•	•			•					

* ASME 800 CLASS [PN 130] is available with Socket Welded connection

* Standard Flange Finish is Ra between 3.2 and 6.3 micrometers [125 and 250 micro inches]

* Customized flange faces and surface finish are available on request

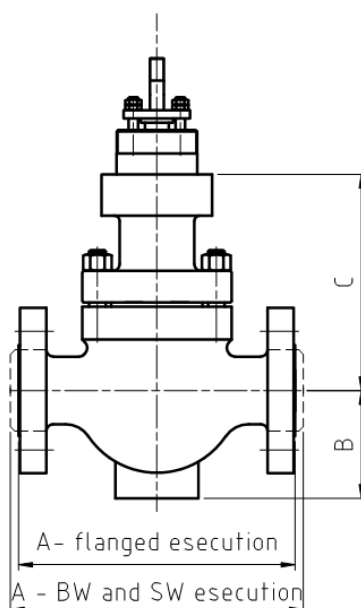
GL3 SERIES

DIMENSIONS AND WEIGHTS



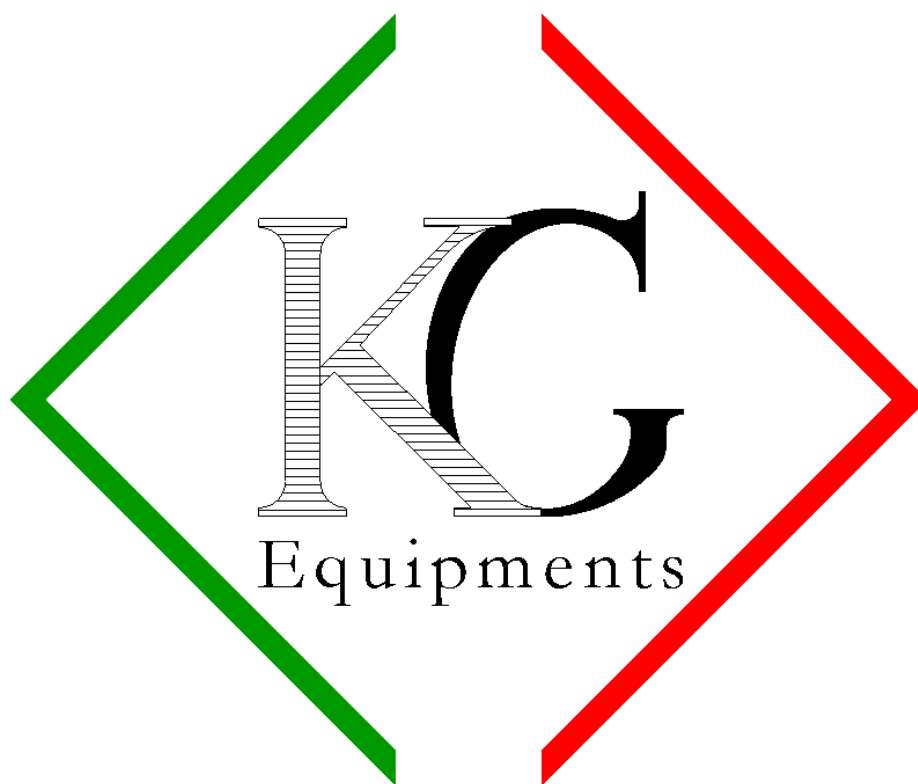
DN		A																		B max	C max	C extended (X)	
		ANSI #150			ANSI #300			ANSI #600			ANSI #900			ANSI #1500			ANSI #2500						
inches	mm	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	All Classes	All Classes	ANSI #150 ÷ #600	ANSI #900 ÷ #2500
1	25	184	197	210	197	210	210	210	210	210	292	292	279	292	279	318	318	318	318	90	225	310	350
1 1/2	40	222	235	251	235	248	251	251	251	251	333	333	330	333	333	330	359	362	359	90	250	310	350
2	50	254	267	286	267	283	286	286	289	286	375	378	375	375	378	375	400	403	400	90	260	310	350
3	80	298	311	337	317	333	337	337	340	337	441	444	460	460	643	460	-	-	-	90	310	360	420
4	100	352	365	394	368	384	394	394	397	394	511	514	530	530	533	530	-	-	-	120	335	400	460
6	150	451	464	508	473	489	508	508	511	508	714	717	768	768	774	768	-	-	-	170	395	500	500
8	200	543	556	610	568	584	610	610	613	610	914	917	832	972	982	832	-	-	-	200	520	610	665
10	250	673	686	752	708	724	752	752	755	752	991	994	991	1067	1077	991	-	-	-	245	570	700	-
12	300	737	750	819	775	791	819	819	822	819	1130	1133	1130	1219	1235	1130	-	-	-	355	640	710	-
14	350	889	902	1029	927	943	1029	972	975	1029	1257	1266	1257	1257	1276	1257	-	-	-	395	675	835	-
16	400	1016	1029	1108	1057	1073	1108	1108	1111	1108	1422	1431	1422	1422	1444	1422	-	-	-	445	725	1000	-
18	450	1200	1213	1275	1200	1216	1275	1275	1278	1275	1727	1740	1727	1727	1749	1727	-	-	-	515	850	1100	-
20	500	1250	1263	1250	1250	1269	1250	1400	1406	1400	1400	1413	1400	-	-	-	-	-	-	555	1100	1500	-

DN		Flanged connection weight (kg)					SW and BW weight (kg)			
inches	mm	ANSI #150 - #300	ANSI #600	ANSI #900	ANSI #1500	ANSI #2500	ANSI #600	ANSI #900	ANSI #1500	ANSI #2500
1	25	45	45	65	65	75	36	40	40	40
1 1/2	40	45	45	65	65	75	36	40	40	40
2	50	50	50	70	70	75	36	40	40	40
3	80	95	100	145	180	230	80	115	140	150
4	100	160	165	220	280	350	130	180	220	260
6	150	270	290	390	540	700	230	300	395	410
8	200	420	440	650	870	1250	350	510	670	850
10	250	600	650	900	1200	-	510	690	900	-
12	300	880	900	1200	1800	-	720	950	1300	-
14	350	1100	1200	1630	2550	-	960	1365	1900	-
16	400	1500	1700	2300	3300	-	1400	2000	2800	-
18	450	1750	2000	2900	3700	-	1600	2300	4200	-
20	500	1900	2200	3200	-	-	1800	2600	-	-



Notes:

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KG EQUIPMENTS

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