



# TORQUE VALUES FOR RESILIENT SEATED GATE VALVES & METAL SEATED GATE VALVES, PN16/250PSI

## Operation

To avoid increased closing/operation torque or seizure of the internal parts of the valve, it is recommended to operate the valves in a regular basis to ensure long life and durability.

AVK recommend:

- Valves for water and gas every year
- Valves for wastewater and industry every third month.

After operation, the valve must be left in fully open position with stem released from stress or in closed position with closing torque as stated in the table on the following pages. Do not over torque the valve as this may permanently damage the valve.

## Content / Definitions

AVK offers resilient seated gate valves (**RSGV**) and metal seated gate valves (**MSGV**) to different standard worldwide. Due to the different design demands, depending on the relevant standard, the characteristics of the valves are different with respect to strength, closing torque, number of turns etc.



<b>Table 1.</b>	Gate valves (RSGV) according to European standard, drinking water applications, hand wheel operation.
<b>Table 2.</b>	Gate valves (RSGV) according to European standard, drinking water applications, ring key and bar application.
<b>Table 3.</b>	Gate valves (RSGV) according to American standard, for water supply service and fire protection service.
<b>Table 4.</b>	Gate valves (RSGV) according to Australian standard, for waterworks purpose.
<b>Table 5.1 and 5.2.</b>	Service connection valves (RSGV) European design.
<b>Table 6.</b>	Gate valves (MSGV) according to European standard, drinking water applications.
<b>Table 7.1 and 7.2.</b>	Gate valves (RSGV) according to European standard, designed for gas applications.
<b>MOT:</b>	Maximum operational torque required to open/close the valve against full unbalanced pressure.
<b>MST:</b>	Minimum strength torque, the valve still being functional and complying with the standard.
<b>AVK – Open/Close:</b>	Maximum torque required to close the valve against full unbalanced pressure.
<b>AVK – Free running torque:</b>	Torque required for the spindle to rotate freely (no flow).
<b>AVK – Rupture torque:</b>	Min. strength torque, not making permanent damage to the valve.
<b>AVK – Turns:</b>	Number of turns required to completely open or close the valve.

# TORQUE VALUES, RSGV, PN16

## AVK Technical Information – Water Valves

### European Standards


**Table 1: Water – EN 1074-2 Annex A, EN 1171-Cat. 2, DIN 3352-4, BS 5163-Type A**

	Standards			AVK							
	DN [mm]	MOT [Nm]	MST [Nm]	Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns	New generation gate valve**			
								Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns
	40	40	90	40	400	6	11	25	250	3	12
	50	50	100	40	400	6	11	25	250	3	12
	65	65	130	60	400	6	14	25	250	3	17
	80	80	160	60	400	6	17	35	400	3	17
	100	100	200	80	400	6	21	35	400	3	21
	125	125	250	80	500	6	26	40	500	3	26
	150	150	300	80	600	12	26	40	600	3	26
	200	200	400	120/100 <sup>5)</sup>	800	12	33/35 <sup>5)</sup>	80	800	3	33
	250	250	500	180 <sup>7)</sup>	1000	12	37	90	1000	12	37
	300	300	600	200 <sup>7)</sup>	1200	16	44	120	1200	12	44
	350	350	700	300 <sup>1), 6)</sup>	1400	24	59	250	1400	24	59
	400	400	800	300 <sup>1), 6)</sup>	1600	24	59/50 <sup>4)</sup>	250	1600	24	59
	450	450	900	300 <sup>1)/450<sup>2)/500<sup>3)</sup></sup></sup>	1600	25	59 <sup>1)/43<sup>2)/39<sup>3)</sup></sup></sup>	450	1600	25	43
		500	500	1000	300 <sup>1)/450<sup>2)/500<sup>3)</sup></sup></sup>	1600	25	59 <sup>1)/43<sup>2)/43<sup>3)</sup></sup></sup>	450	1600	25
600		NA	1200	500 <sup>2)/700<sup>3)</sup></sup>	1600	25	53 <sup>1)/52<sup>2)/53<sup>3)</sup></sup></sup>	500	1600	25	52
700		NA	1400	850	3000	60	60				
800		NA	1600	850	3000	60	70				
900		NA	1800	800/800/1100 <sup>1)</sup>	4000	300	85				
1000		NA	2000	800/800/1100 <sup>1)</sup>	4000	300	85				

<sup>1)</sup> Series 02 & 20, <sup>2)</sup> Series 06 & 26, <sup>3)</sup> Series 55, <sup>4)</sup> Series 36, <sup>5)</sup> Series 15, <sup>6)</sup> Series 15/7X, <sup>7)</sup> Series 18/00 DN 250/300: 150Nm, <sup>\*)</sup> 6 bar/10bar/16bar

\*\* For actuator sizing on ISO-flange valves series 21/37 and 21/38 new generation gate valves type A, use torque values from Table 2.


**Table 2: Water – EN1074-2 Annex B, EN 1171-Cat. 4, BS 5163-Type B**

	Standards			AVK							
	DN [mm]	MOT [Nm]	MST [Nm]	Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns	New generation gate valve			
								Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns
	40	100	500	90	500	6	4	-	-	-	-
	50	110	550	90	550	6	5	40	550	6	5
	65	125	625	90	625	6	7	50	625	6	7
	80	140	700	120	700	6	8	60	700	6	8
	100	160	800	135	800	6	9	70	800	6	9
	125	185	925	155	925	12	12	-	-	-	-
	150	210	1050	180	1050	12	14	110	1050	12	14
	200	260	1300	210	1300	12	18	190	1300	12	18
	250	310	1550	210	1550	16	22	200	1550	16	22
	300	360	1800	210	1800	24	26	200	1800	24	26
	350	410	2050	300	2050	24	31	300	2050	24	31
	400	460	2300	450	2300	25	35	370	2300	25	35
	450	510	2550	500 <sup>1)</sup>	2550	25	39	450	2550	25	39
	500	560	2800	500 <sup>1)</sup>	2800	25	43	450	2800	25	43
600	NA	3300	700 <sup>1)</sup>	3300	25	53	500	3300	25	53	

<sup>1)</sup> Series 55

# TORQUE VALUES, RSGV, PN16/250PSI AVK Technical Information – Water Valves American & Australian Standards


**Table 3: Water – AWWA C509 & C515, UL-262**

	DN [inch]	Standards		AVK			
		MOT [ft-lbs]	MST [ft-lbs]	Open/Close [ft-lbs]	Rupture [ft-lbs]	Free running [ft-lbs]	Turns
	3"	52	250	55	294	4,5	12 <sup>1)</sup> /15.5 <sup>2)</sup> /18.5 <sup>3)</sup>
	4"	75	250	74	294	4,5	14 <sup>1)</sup> /17.5 <sup>2)</sup> /22 <sup>3)</sup>
	6"	110	350	111	441	9	21 <sup>1)</sup> /24.5 <sup>2)</sup> /27 <sup>3)</sup>
	8"	150	350	147	588	9	26 <sup>1)</sup> /27.5 <sup>2)</sup> /35 <sup>3)</sup>
	10"	185	350	184	735	12	32 <sup>1)</sup> /34.5 <sup>2)</sup>
	12"	225	350	221	882	18	38 <sup>1)</sup> /41.5 <sup>2)</sup>
	14"	225	400	221	1029	18	44
	16"	275	400	221	1176	18,5	51
	18"	NA	400	370	1176	18,5	39
	20"	NA	400	370	1176	18,5	43
	24"	NA	400	516	1176	18,5	53
	30"	NA	500	625	1838	44	60
	36"	NA	600	809	1838	220	70

Note: 1 ft-lbs = 1,36 Nm

<sup>1)</sup> Series 45, <sup>2)</sup> Series 65, <sup>3)</sup> Series 145


**Table 4: Water – AS 2638.2**

	DN [mm]	Standards		AVK			
		MOT [Nm]	MST [Nm]	Open/Close [Nm]	Rupture [Nm]	Free running [Nm]	Turns
	80	75	100	60	400	6	17
	100	100	300	80	400	6	21
	150	150	450	120	600	12	26
	200	200	600	160	800	12	33
	225	200	600	180	1000	16	37
	250	250	750	200	1000	16	37
	300	300	900	240	1200	16	44
	375	500	1500	500	1500	24	59
	400	550	1650	500	1650	24	59
	450	600	1800	450	2400	25	43
	500	660	1980	450	2400	25	43
	600	800	2400	500	2400	25	52
	750	1000	3000	850	3000	60	65
	900	NA	NA	800/800/1100 <sup>1)</sup>	4000	300	85
	1000	NA	NA	800/800/1100 <sup>1)</sup>	4000	300	85


<sup>1)</sup> 6 bar/10bar/16bar

**TORQUE VALUES, RSGV, PN16/250PSI**  
**AVK Technical Information – Water Valves**  
**European design**

**Table 5.1: Water – Service Connection Valves (RSGV)**  
**Ductile iron Series 03, Brass Series 16**


	DN [mm]	AVK			
		Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns
	25	40	200	3	7
	32	45	200	3	9
	40	50	200	4	11
	50	50	200	4	14

**Table 5.2: Water – Service Connection Valves (RSGV)**  
**POM series 16**

	DN [mm]	AVK			
		Open/Close [Nm]	Rupture [Nm]	Free [Nm]	Turns
	25	40	200	3	7
	32	40	200	3	9
	40	40	200	4	11
	50	40	200	4	14


**TORQUE VALUES, MSGV, PN16**  
**AVK Technical Information – Water Valves**  
**European Standards**

**Table 6: Water - Metal Seated Gate Valves, EN 1074-2 Annex A**

	DN [mm]	Open/Close [Nm]							
		2 bar	4 bar	6 bar	8 bar	10 bar	12 bar	14 bar	16bar
 <p>DN350-450                  DN700-1200</p>	350	50	100	160	210	270	320	380	430
	400	100	170	250	320	400	470	550	630
	450	90	190	300	400	510	620	720	830
	500	90	200	310	420	530	640	750	860
	600	230	370	500	640	780	920	1060	1200
	700	390	640	880	1120	1370	1610	1850	2100
	800	590	940	1280	1630	1970	2320	2660	3010
	900	690	1030	1370	1710	2050	2380	2720	3060
	1000	780	1260	1740	2220	2690	3170	3650	4130
	1200	1860	2850	3840	4840	5830	6820	7810	8800


# TORQUE VALUES, RSGV, PN16/250PSI AVK Technical Information – Gas Valves European Standards

**Table 7.1: Gas - RSGV – EN 13774, EN 1171- Cat. 2 (DIN 3230-5)**

	DN [mm]	Standards		AVK			
		MOT [Nm]	MST [Nm]	Open/Close [Nm]	Free [Nm]	Rupture [Nm]	Turns
	40	40	90	40	9	400	11
	50	50	100	40	9	400	11
	65	65	130	60	9	400	14
	80	80	160	60	9	400	17
	100	100	200	80	9	400	21
	125	125	250	80	9	500	26
	150	150	300	80	18	600	26
	200	200	400	120	18	800	33
	250	250	500	180	18	1000	37
	300	300	600	200	18	1200	44
	350	350	700	300	24	1400	59
	400	400	800	300	24	1600	50 <sup>3)</sup> /59
	450	450	900	300 <sup>1)</sup> /450 <sup>2)</sup>	25	1600	59 <sup>1)</sup> /39 <sup>2)</sup>
	500	500	1000	300 <sup>1)</sup> /450 <sup>2)</sup>	25	1600	59 <sup>1)</sup> /43 <sup>2)</sup>
600	600	NA	500	25	3200	53 <sup>1)</sup> /52 <sup>2)</sup>	

Series 02, <sup>2)</sup> Series 06 + Series 15 + Series 46, <sup>3)</sup> Series 36

**Table 7.2: Gas – Service Connection Valves (RSGV) – Ductile Iron Series 03**

	DN [mm]	Standard	AVK			
		MST [Nm]	Open/Close [Nm]	Free [Nm]	Rupture [Nm]	Turns
	25	80	40	3	200	7
	32	90	45	3	200	9
	40	100	50	4	200	11
	50	100	50	4	200	14