

Installation, operation & maintenance manual - original version

Dismantling joints in ductile iron Series 873/00





1. AVK Series 873 parts list



1. Tightening rod	Steel gr. 8.8, zinc plated, passivated	4. Centre flange	Ductile iron GJS-500-7 (GGG-50)
2. Outer pipe	Ductile iron GJS-500-7 (GGG-50)	5. Inner pipe	Ductile iron GJS-500-7 (GGG-50)
3. Seal	EPDM rubber	6. Nut	Steel gr. 8.8, zinc plated, passivated



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3. Principle of operation

The dismantling joint is used to facilitate dismantling and maintenance of hydraulic equipment installed in pipelines. Its face to face dimensions can easily be set on a value between its FTF range in order to be easily removable and adaptable to any system layout.



NOTE: The dismantling joints are equipped with tie rods, bolts and nuts. During installation/dismantling operations it is not necessary to dismantle these from the joint.

4. Health and safety at work

Make sure all relevant Health and Safety issues and regulations are adhered to prior to and during installation or maintenance work carried out on this product. It is the end user's responsibility to ensure that safe working practices are followed at all times.

Whenever AVK's products are installed, operated or maintained the inherent dangers of pressurised liquids and gasses must be addressed. Before work on a valve or other piping component is undertaken, that may involve the release of internal pressure, the valve or line must be fully isolated, depressurised and drained prior to commencing the work. **FAILURE TO COMPLY WITH THIS MAY RESULT IN SEVERE INJURY OR DEATH.**

All workers handling the product must be aware of the weight of the components or assemblies to be handled and manipulated during installation and maintenance.

It is essential that staff undertaking these operations are adequately trained and it is the responsibility of the end user that only trained and competent staff undertake these duties.

This manual has been designed to assist, but it cannot replace quality training in the workplace. However, the AVK technical staff is always available and ready to answer questions relating to specific problems that may not be covered by this manual.

AVK's products are designed to be fit for purpose and to a high reliability standard. This provides a safe, low risk product when used correctly for the purpose for which it was designed. However, this assumes that the equipment is used and maintained in accordance with this manual, and the user is advised to study it and to make it available to all staff that may need to refer to it.

AVK cannot be held responsible for incidents arising from incorrect installation, operation or maintenance. The responsibility for this rests wholly with the end user.

5. Receiving and storage

The joints are generally delivered in euro pallets, alternatively, in dedicated high thickness paper boxes. In both cases, they are fastened to the pallet using bolts and covered with a polyethylene heat-shrinking film. The package depends on the dimensions.

Unloading must be carried out carefully. The load must be put gently to the ground without dropping. Lift only by means of shackles in the flange bolt holes or slings around the body casting. If a forklift is used it shall have sufficient capacity to lift the required weight and have a valid inspection certificate.

All workers involved in the unloading shall be able to perform their functions. They shall wear safety boots, safety vest, safety goggles and hard hat.

All slings used for the lifting shall be of sufficient strength. A record shall document that they have been stored under cool, dry conditions away from sunlight and chemical atmosphere, and that they still perform according to their marked strength.



Immediately after unloading the item should be inspected for compliance with specifications and damage in shipment. Compliance with specification check shall as a minimum comprise size, pressure class, etc. Damage in shipment check shall as a minimum comprise: coating, seating and sealing surfaces etc. or accessories or any other evidence of mishandling during shipment.

Storage shall be under dry, cool conditions, away from direct sunlight and corrosive or otherwise chemically active atmosphere.



6. Disposal and recycling

Even though AVK dismantling joints are designed and built to be extremely long lasting, at the end of their life cycle they must be removed and replaced.

Dismantle the joint, separate its components to dispose them of and recycle them (e.g., metal parts must be separated from plastic parts etc.).

Please, always respect the directives on waste collection, disposal and recycling.

Carefully observe all steps listed in National Laws on waste disposal and recycling.



7. Dimensions 7.1 PN10



		Drill	ing	Connection rods			Nuts	Weigt	
DN	L	øK	øf	no	Μ	А	м	no	approx. kg
	Indicative dim.					Indicative dim.			
40	180	110	19	4	M16	330	M16	20	8
50	180	125	19	4	M16	330	M16	20	11
65	180	145	19	4	M16	330	M16	20	15
80	200	160	19	8	M16	350	M16	40	17
100	200	180	19	8	M16	350	M16	40	19
125	200	210	19	8	M16	350	M16	40	23
150	200	240	23	8	M20	350	M20	40	30
200	220	295	23	8	M20	380	M20	40	40
250	220	350	23	12	M20	380	M20	60	54
300	220	400	23	12	M20	390	M20	60	62
350	230	460	23	16	M20	400	M20	80	89
400	230	515	28	16	M24	410	M24	80	113
450	250	565	28	20	M24	430	M24	100	132
500	260	620	28	20	M24	450	M24	100	146
600	260	725	31	20	M27	460	M27	100	184
700	260	840	31	24	M27	460	M27	120	226
800	290	950	34	24	M30	500	M30	120	308
900	290	1050	34	28	M30	500	M30	140	350
1000	290	1160	37	28	M33	510	M33	140	419
1100	290	1270	37	32	M33	560	M33	160	560
1200	320	1380	41	32	M36	600	M36	160	632
1400	380	1590	44	36	M39	630	M39	180	836
1500	400	1700	44	36	M39	665	M39	180	899
1600	400	1820	50	40	M45	700	M45	200	1248
1800	420	2020	50	44	M45	730	M45	220	2350
2000	440	2230	50	48	M45	730	M45	240	2650
2200	400	-	-	52	M52	667	M52	260	3320
2400	400	-	-	56	M52	667	M52	280	3950
2500	400	-	-	56	M52	667	M52	280	-
2600	400	-	-	60	M52	667	M52	300	4543





		Drill	ing	Connection rods			Nuts	Weigt	
DN	L	øK	øf	no	М	Α	Μ	no	approx. kg
	Indicative dim.					Indicative dim.			
40	180	110	19	4	M16	330	M16	20	8
50	180	125	19	4	M16	330	M16	20	11
65	180	145	19	4	M16	330	M16	20	15
80	200	160	19	8	M16	350	M16	40	17
100	200	180	19	8	M16	350	M16	40	19
125	200	210	19	8	M16	350	M16	40	23
150	200	240	23	8	M20	350	M20	40	30
200	220	295	23	12	M20	380	M20	60	44
250	230	355	28	12	M24	400	M24	60	63
300	250	410	28	12	M24	420	M24	60	76
350	260	470	28	16	M24	440	M24	80	107
400	270	525	31	16	M27	460	M27	80	137
450	270	585	31	20	M27	470	M27	100	163
500	280	650	34	20	M30	490	M30	100	212
600	300	770	37	20	M33	520	M33	100	288
700	300	840	37	24	M33	520	M33	120	302
800	320	950	41	24	M36	550	M36	120	399
900	320	1050	41	28	M36	560	M36	140	463
1000	340	1170	44	28	M39	600	M39	140	600
1100	345	1270	44	32	M39	560	M39	160	659
1200	360	1390	50	32	M45	650	M45	160	908
1400	380	1590	50	36	M45	630	M45	180	1114
1500	400	1710	57	36	M52	665	M52	180	1476
1600	400	1820	57	40	M52	700	M52	200	1671
1800	425	2020	57	44	M52	730	M52	220	2520
2000	435	2230	62	48	M56	760	M56	240	3168
2200	400	-	-	52	M56	667	M56	260	3750
2400	400	-	-	56	M56	667	M56	280	4345
2500	400	-	-	56	M56	667	M56	280	-
2600	400	-	-	60	M56	667	M56	300	4997





		Dril	ling	Connection rods			Nuts	Weigt	
DN	L	øK	øf	no	М	Α	м	no	approx. kg
	Indicative dim.					Indicative dim.			
40	190	110	19	4	M16	340	M16	20	8
50	200	125	19	4	M16	350	M16	20	11
65	200	145	19	8	M16	350	M16	40	16
80	210	160	19	8	M16	360	M16	40	17
100	220	190	23	8	M20	370	M20	40	26
125	220	220	28	8	M24	380	M24	40	37
150	230	250	28	8	M24	390	M24	40	40
200	230	310	28	12	M24	400	M24	60	60
250	250	370	31	12	M27	430	M27	60	82
300	250	430	31	16	M27	440	M27	80	108
350	270	490	34	16	M30	470	M30	80	158
400	280	550	37	16	M33	490	M33	80	199
450	280	600	37	20	M33	490	M33	100	227
500	300	660	37	20	M33	520	M33	100	249
600	320	770	41	20	M36	560	M36	100	348
700	340	875	44	24	M39	590	M39	120	452
800	360	990	50	24	M45	630	M45	120	629
900	380	1090	50	28	M45	660	M45	140	786
1000	400	1210	57	28	M52	690	M52	140	850
1100	420	1310	57	32	M52	670	M52	160	900
1200	450	1420	57	32	M52	780	M52	160	1300



8. Installation



WARNING! The regulations described refer to the installation and use of the joint and must be strictly observed for the functioning and safety of the system.

- 1. Compulsory checks before the installation:
 - compliance between pipes DN;
 - conformity of the flange drilling;
 - maximum pressure of the pipeline is below the joint's PN;
 - the joint's finish and coating.
- 2. We advise to clean the pipe flanges to remove deposits of sand, stones, etc. The flanges can be washed with water or pressurised air.
- 3. If the joint has been stocked for a long period before installation, carefully check the sealing gasket between the flanges. In case it is damaged, replace it.
- 4. We advise to install the dismantling joint taking in account its optimal operation face to face. Too large installation can prevent the tightness and the joint can leak from the sealing gasket. A too short installation will not help the dismantling of the hydraulic equipment for maintenance.

Installation example:



8.1 Assembly

- 1. The dismantling joint consist of two parts (inner and outer pipe) sliding one on the other. The inner pipe must be connected to the valve, the outer to the pipe.
- 2. During installation check the flange alignment. The dismantling joints do not compensate pipe misalignment. Installation on misaligned pipelines can prevent good performance of the dismantling joint.
- 3. The face-to-face dimension can be set by adjusting the internal bolts of the dismantling joints. They allow the inner pipe to slide inside/outside the outer pipe.
- 4. Due to the shape of the sealing gasket, the face to face dimension can be reduced only sliding the inner pipe into the outer pipe. The stretching can be done on both sides.
- 5. Put the flange sealing gasket (not provided) on the flanges between the pipe/valve and the joint.
- 6. Enlarge the dismantling joint until the flanges touch the pipe/valve flanges.
- 7. Tighten the flange bolts.
- 8. Tighten the internal bolts.



Tighten the bolts every 180° by steps of 30 Nm until the recommended tightening torque is achieved. This method guarantees the correct internal gasket compression on the entire circumference. To check the recommended tightening torque has been achieved use a torque wrench.

- 9. Pressurise the pipeline and check there is no leakage from the dismantling joint.
- 10. Check again the tightening torque of the bolts.

NOTE: The dismantling joint face-to-face cannot be modified when the pipeline is pressurised.

8.2 Dismantling

- 1. Empty the pipeline before dismantling.
- 2. Remove all the bolts.
- 3. Lift the dismantling joint according to the recommendations in chapter 1 of this IOM.

8.3 Tightening torque

	Bolt clases (V-thread - wide pitch - according to ISO standard)											
	Frict	cl. 4.8 ion coeffic	cient	cl. 5.8 Friction coefficient			cl. 6.8 Friction coefficient			cl. 8.8 Friction coefficient		
	0.1	0.15	0.20	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2
M16	81	105	123	100	130	152	115	148	174	153	198	232
M18	113	145	169	139	179	209	159	205	239	220	283	330
M20	159	206	241	196	254	298	225	291	341	311	402	471
M22	217	283	332	269	350	411	307	400	470	424	552	648
M24	274	354	415	338	438	513	387	500	586	534	691	809
M27	403	525	617	498	649	762	569	741	871	784	1022	1201
M30	548	712	835	677	880	1032	773	1005	1180	1067	1387	1628
M33	741	968	1138	915	1195	1406	1046	1366	1607	1442	1884	2216
M36	953	1242	1459	1177	1534	1803	1346	1754	2060	1855	2418	2840
M39	1233	1614	1900	1523	1994	2348	1741	2279	2683	2399	3139	3697
M42	1527	1995	2346	1887	2464	2898	2156	2816	3312	2965	3872	4554
M45	1905	2497	2943	2353	3085	3635	2690	3525	4154	3698	4847	5712
M48	2303	3013	3548	2845	3722	4383	3251	4254	5009	4470	5849	6887
M52	2955	3882	4579	3651	4795	5657	4172	5480	6465	5737	7535	8889

Values expressed in Nm

The values showed have been calculated according to the following constraint:

- The gasket hardness is below 70 Shore A.
- The fastening tie rods and bolts are nickel plated and lubricated.
- There is no misalignment between the installing flanges.



9. Maintenance

- 1. If properly installed the dismantling joints do not require any maintenance.
- 2. In case the internal gasket must be replaced, the tie rods must be removed, and the inner pipe disconnected from the outer pipe. After this operation it is possible to install the new gasket, reassemble the dismantling joint and install it following directives in 8.1 "ASSEMBLY".
- 3. The coating can be fixed using epoxy and paint. Before, to carry on this operation, clean the damaged parts from rust, oil and impurities.

10. Troubleshooting

Problem	Cause	Solution		
Leakage	The dismantling joint is installed with a face to face larger than the maximum tolerance.	Change installation.		
	The internal gasket is damaged.	Replace the internal gasket.		
	Bolts are not tightened.	Check the tightening torque.		

