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Distribution list Jenbacher, Subsidiaries, Service Providers		
Service Technician Instruction	ST-099	24 January 2019

Engine type **J612, J616, J620 & J624 – all versions**

Subject **Prechamber gas valves and prechambers**
General view

The Service Technician Instruction ST-099 is intended to provide an overview of the versions of prechamber gas valves and prechambers in use with Jenbacher gas engines to make it easier to clearly identify and allocate parts.

AFFECTED ENGINES / SCOPE OF THIS BULLETIN

Engine types J612, J616, J620 and J624, all versions.

1. “F” cylinder head

- 1.1 Prechamber gas valve
 - 1.1.1 Valve types
 - 1.1.2 Use of prechamber gas valves
- 1.2 Prechamber and spark plug sleeve
 - 1.2.1 Current prechamber design with series spark-plug sleeve
 - 1.2.2 Prechamber design with premium spark-plug sleeve
 - 1.2.3 Old prechamber design
 - 1.2.4 Interchangeability (spare part solutions)

2. “H” cylinder head

- 2.1 Prechamber gas valve
- 2.2 Prechamber and spark plug sleeve

3. Relevant documents

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1. "F" cylinder head

1.1 Prechamber gas valve



Note: Only valves with a single part number should be installed in an engine! Using different valve types in the same engine is not permitted.

1.1.1 Valve types

Table 1: Current prechamber gas valves

Part No.	Type	Note
433894	2KJ (20278)	Manufacturing date and 3 to 5-figure serial number on the hexagon Two (2) recesses at screw fitting 
389588	ERS	Batch number and 6-figure serial number on shaft No recesses at screw fitting 
321631	4J (19152)	Special valve for O ₂ content of prechamber gas > 4% (e.g. ASPS ^(A) , mine gas) Serial number on hexagon; slim, solid shaft  ^(A) ASPS = A dvanced S cavenged P rechamber S ystem, see "Relevant documents" section for more information

Table 2: Locked prechamber gas valves

Part No.	Type	Note	Replaced by
334976	1kJ (22016)	Replaced by the ERS and 2kJ valves One (1) recess at screw fitting	433894 389588
299142	"Parker valve KRS" (series until 2000)	For 12.5 cm ³ prechamber (6-hole prechamber)	433894 ^(B) 389588 ^(B)
312845 306515 309391 321627 349057	"Maier valves" (series from 2000 until 2008)		433894 389588

^(B) Change prechamber differential pressure from +200mbar to +100mbar



1.1.2 Use of prechamber gas valves

The table below shows the prechamber gas valve types (PCGV) to be used in the various engine generations and versions. General rules are set out below the table.

Table 3: Use of prechamber gas valves

Engine generation	Engine version				BMEP ^(C) [bar]	Gas type	PCGV ^(D)
A	02						389588
B	01	02					389588
C	01	02	05	21			389588 (PC vol. < 8cm ³)
	87						
E	01	02	05	11	18-20	Natural gas	389588
	12	101	102	109			
	111	112	117	123			
	124	125	129	166			
	167	170	178	191			
	171				22	Natural gas	433894
	21	22	25	28	14-18	Biogas / sludge gas	389588
	119	122	165	176			
	198	199					
	71	73	75		20	Mine gas	321631 (O ₂ > 4%) 389588 (O ₂ ≤ 4%)
	31	40	43	45		Special gas / direct ignition	No PCGV
	51	53	55	61			
	62	90	115	139			
148	175						
F	01	02	03	05	22	Natural gas	433894 (ASPS ^(E) : 321631)
	06	09	11	12			
	101	102	109	111			
	112	171	194	196			
	200	202	203	401			
	405						
	07	17	107	117	20	Natural gas	389588
	201						
	25	28	228		20	Biogas	389588
	21	22	322		20	Landfill gas	389588
	371	375	376		22	Mine gas	321631 (O ₂ > 4%) 433894 (O ₂ ≤ 4%)
	13	23			20	Associated petroleum gas	389588
	31	33	34	40		Special gas / direct ignition	No PCGV
	41	42	51	52			
	53	55	57	58			
	61	62	63	64			
65	340						
G	Every				22	Natural gas	433894 (ASPS ^(E) : 321631)
H/J/K	Every				J: 22 H/K: 24-24.5	Natural gas	433894 (ASPS ^(E) : 321631)

^(C) **BMEP** = Break Mean Effective Pressure

^(D) **PCGV** = PreChamber Gas Valve

^(E) **ASPS** = Advanced Scavenged Prechamber System, see "Relevant Documents"



General rules and guidance notes:

- Only valves with a single part number should be installed in an engine. Different valve variants must not be mixed in one engine.
- Valve 389588 (ERS) can always be replaced with valve 433894 (2kJ).
- In exceptional situations (e.g. no spare parts available), valve 433894 (2kJ) can also be temporarily replaced with valve types 389588 (ERS) and 321631 (4J). However, you can expect an increased failure rate in this case.
- Valve 321631 (4J) must always be used where the oxygen content in the prechamber gas exceeds 4% by volume. This can occur with coal-mine gas and applies to all engines with ASPS (for details, see TA 2110-0024). Valve type 4J cannot be replaced by any other valve type.
- All engines with a break mean effective pressure (BMEP) equal to or more than 22bar must be fitted with valve type 433894 (2kJ) (except where O₂ exceeds 4% by volume). This corresponds to the following engine power outputs, see Formula (1):
 - J612 ≥ 2000kW
 - J616 ≥ 2670kW
 - J620 ≥ 3350kW
 - J624 ≥ 4000kW

$$BMEP = \frac{1200 \cdot P_{el}}{0.979 \cdot n_{cyl} \cdot 6.24 \cdot n_{Mot}} \quad (1)$$

Using J624-H as an example:

$$24bar = \frac{1200 \cdot 4400kW}{0.979 \cdot 24 \cdot 6.24l \cdot 1500min^{-1}}$$

BMEP = Break mean effective pressure [bar]
P_{el} = Electrical engine output [kW]
n_{cyl} = Number of cylinders [-]
n_{Mot} = Engine speed [rpm]
0.979 = Assumed generator efficiency [-]
6.24 = Displacement per cylinder [l]

- Please refer to Maintenance Instruction "W 0501 M6" regarding valve handling and replacement.



1.2 Prechamber and spark plug sleeve

1.2.1 Current prechamber design with series spark-plug sleeve

The current (swirl) prechamber consists of a nickel-based alloy and contains 8 holes into the main combustion chamber. It is used in Type 6-E (2001 onwards) and Type 6-F/G/H/J/K engines. A 6-hole prechamber is also available for the 6cm³ volume version.

Important: When using the 6-hole prechamber, retard the ignition point by -2°CA (crankshaft angle) (e.g. 20+3°CA instead of 20+5°CA, Parameter: Cylinder → Antiknock → IP adaption offset via knock controller). Do not install a mixture of 8- and 6-hole prechambers in a single engine.

A retrofit is possible for Type 6-C/E engines (see Table 4 & Table 5).

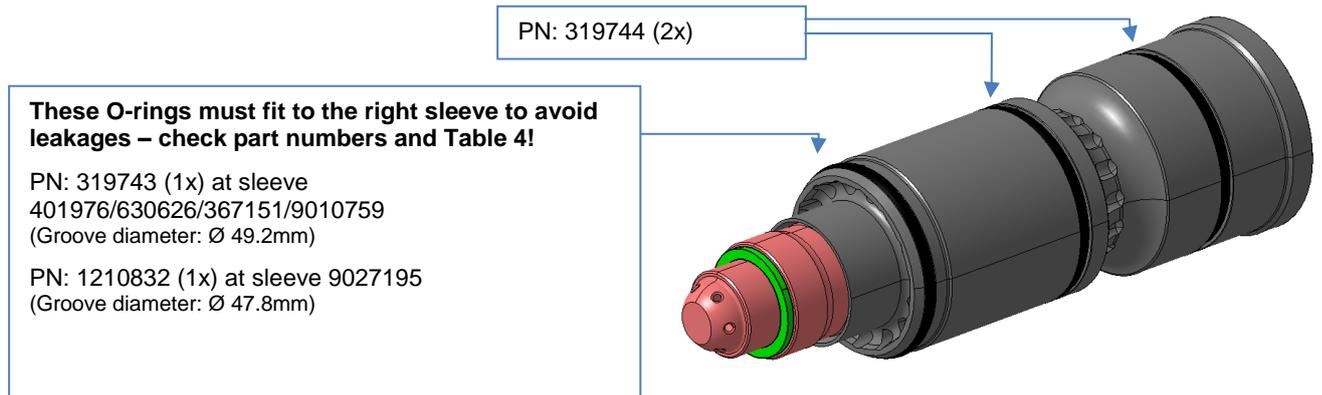


Figure 1: Prechamber/spark-plug sleeve assembly

Table 4 shows the prechambers and spark-plug sleeves currently in use with the engine types they have been allocated to. The calculation of the break mean effective pressure is shown in Formula (1).

Table 4: Prechamber/spark-plug sleeve assembly

Prechamber (vol.)	Spark-plug sleeve (material)	Spark-plug sleeve O-rings	Gas type (engine type)	BMEP ^(F) [bar]	Comments
438604 (6.0cm ³)	401976 (Ms)	319744 (2x) 319743 (1x)	Natural gas (F, G, H) Associated petroleum gas (F13)	22-24 20 (F13)	
	9027195 (CuZn alloy)	319744 (2x) 1210832 (1x)			
9010937 (6.0cm ³)	401976 (brass)	319744 (2x) 319743 (1x)	Natural gas (F, J, G, H, K) Associated petroleum gas (F, J)	22-24 20	6-hole prechamber IP retarded by 2°CA
	9027195 (CuZn alloy)	319744 (2x) 1210832 (1x)			
9003461 (7.0cm ³)	630626 (brass)	319744 (2x) 319743 (1x)	Natural gas (F, G, H)	22-24	ASPS
358461 (7.5cm ³)	401976 (brass)	319744 (2x) 319743 (1x)	Landfill gas, Associated petroleum gas, Biogas (F), Mine gas	20-22	
	9027195 (CuZn alloy)	319744 (2x) 1210832 (1x)			
358461 (7.5cm ³)	367151 (steel)	319744 (2x) 319743 (1x)	Biogas (E)	16-18	
	9010759 (CuNi alloy)				

^(F) BMEP = Break Mean Effective Pressure

^(G) IP = Ignition Point

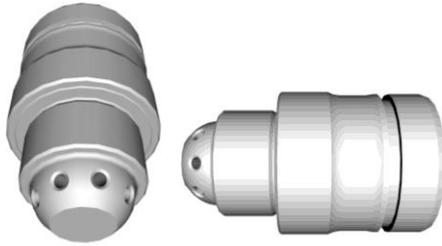


Figure 2: Prechamber, 6.0/7.0cm³ (438604/9003461)

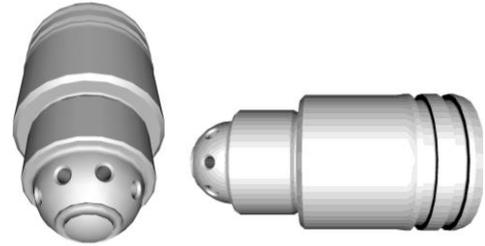


Figure 3: Prechamber, 7.5cm³ (358461)

1.2.2 Prechamber design with premium spark-plug sleeve

The premium spark-plug sleeve is available in combination with an 8-hole and a 6-hole prechamber with a volume of 6cm³. It can be used in Type 6-E (2001 onwards) and Type 6-F/J/G/H/K engines.

IMPORTANT: When using the 6-hole prechamber, retard the ignition point by -2°CA (crankshaft angle) (e.g. 20+3°CA instead of 20+5°CA, Parameter: Cylinder → Antiknock → IP adaption offset via knock controller). Do not install a mixture of 8- and 6-hole prechambers in a single engine.

A retrofit is possible for Type-6 C/E engines (see Table 4 & Table 5).

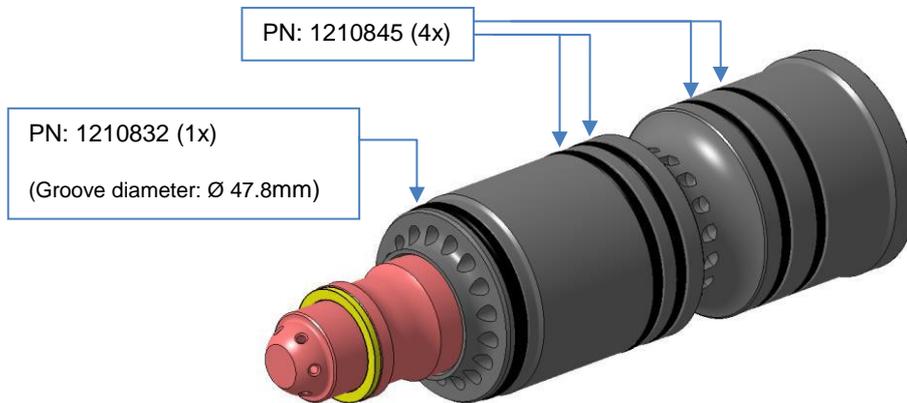


Figure 4: Prechamber/premium spark-plug sleeve assembly

Table 5 shows the 8-hole and the 6-hole prechamber and the premium spark-plug sleeve with the current engine versions they have been allocated to. The calculation of the break mean effective pressure is shown in Formula (1).

Table 5: Current prechamber/premium spark-plug sleeve assemblies

Prechamber (vol.)	Spark-plug sleeve (material)	Spark-plug sleeve O-ring	Gas type	BMEP ^(F) [bar]	Comments
9003767 (6.0cm ³)	9003850 (CuNi alloy)	1210845 (4x)	Natural gas (F, J, G, H, K), Associated petroleum gas (F, J)	22-24, 20	8-hole prechamber
8000270 (6.0cm ³)		1210832 (1x)			6-hole prechamber IP ^(G) retarded by 2°CA

^(F) **BMEP** = Break Mean Effective Pressure

^(G) **IP** = Ignition Point

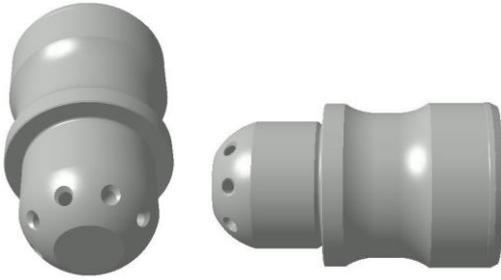


Figure 5: 8-hole prechamber, 6.0cm³ (9003767) for premium spark-plug sleeve

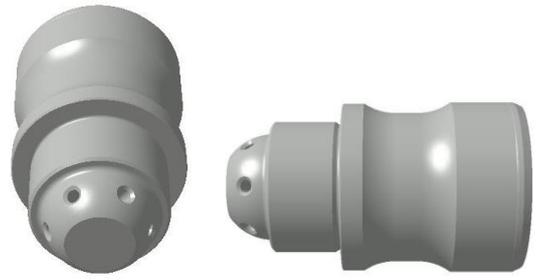


Figure 6: 6-hole prechamber, 6.0cm³ (8000270) for premium spark-plug sleeve

1.2.3 Old prechamber design

The ring prechamber was used in Type 6-C and 6-E engines (until 2000). It is now only available as a spare part. The prechamber and spark-plug sleeve are welded together (both parts are made of steel), see Figure 7.

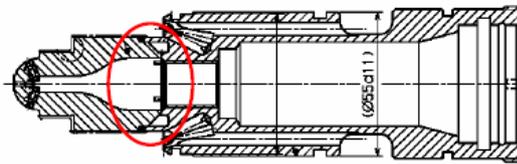


Figure 7: Prechamber/spark-plug sleeve assembly (old design)

The prechamber versions shown below were used:

6-hole, 12.5cm³ (part number 335043)

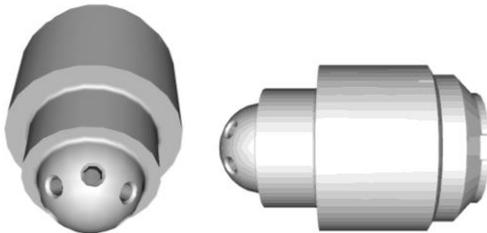


Figure 8: 6-hole/12.5cm³ (old design)

6-hole, 12.5cm³ (part number 335043)

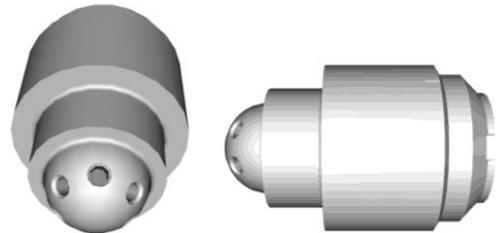


Figure 9: 6-hole/12.5cm³ (old design)

9-hole, 7.5cm³ (from 1998 until January 2000)

- Part number 266147 for landfill gas and biogas
- Part number 295784 for natural gas and others

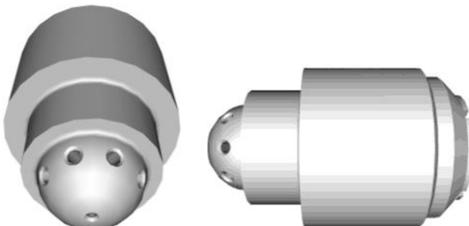


Figure 10: 9-hole/7.5cm³ (old design)



1.2.4 Interchangeability (spare part solutions)

The table below contains a comparison between the prechamber assemblies installed in field engines and currently approved prechamber assemblies. The table contains information on the spare parts that can be used as replacements.

Table 6 Part 1/2: Spare parts (prechamber/spark-plug sleeve assembly)

				Old design			Current design						
				Ring prechamber			Swirl prechamber						
							Series spark-plug sleeve			Premium spark-plug sleeve			
				Prechamber / spark plug sleeve assembly	335036	266146	295785	9027197	9027349	9010758	9027203	9003908	9003851
Prechamber types in the field	Prechamber		335043	266147	295784	438604	9010937	358461	358461	9003461	9003767	8000270	
			6-hole	9-hole	8-hole	8-hole	6-hole	8-hole	8-hole	8-hole	8-hole	6-hole	
	Prechamber O-ring		-			456735		456735 (2x)		456735		-	
	Spark-plug sleeve		184040	184040	290465	9027195	9027195	9010759	9027195	630626	9003850	9003850	
	Sleeve O-ring		2x 319744 1x 319743			319744 (2x) 1210832 (1x)		319744 (2x) 319743 (1x)		319744 (2x) 319743 (1x)		1210845 (4x) 1210832 (1x)	
	Volume [cm ³]		12.5	7.5	7.5	6.0	6.0	7.5	7.5	7.0	6.0	6.0	
	Spark plug sleeve	Sleeve O-ring	Sealing ring	188435			9029697					9029697	
173678	-	12.5	188435	X									
184041		12.5		X									
197019		12.5		X									
211724		12.5		X									
243623		12.5		X									
268763		7.5			X								
268764		12.5			X								
335036		12.5			X	(X)							
266146		7.5				X			(X)				
298407		7.5				X							
295785		7.5					X	(X)					
295915		7.5				X							
325342		7.5					X						
348504		7.5					X						
334246		7.5					X						
352848		7.5					X						
326823		7.3						X	X ^{IP}			X	X ^{IP}
326883		6.0						X	X ^{IP}			X	X ^{IP}
328414		6.0						X	X ^{IP}			X	X ^{IP}
340090		6.0						X	X ^{IP}			X	X ^{IP}
349964	6.0					X	X ^{IP}			X	X ^{IP}		
414165	6.0	402845				X	X ^{IP}			X	X ^{IP}		

1 cross indicates interchangeability

X Directly interchangeable

(X) Interchangeable with retrofitting package only

X^{IP} When changing from an 8- to a 6-hole prechamber, you must retard the ignition point (IP) by 2°C (e.g. 23°C instead of 25°C) and when changing from a 6- to an 8-hole prechamber, you must advance the ignition point by 2°C. You are not permitted to install a mixture of 6- and 8-hole prechambers in a single engine.

X^{ASPS} Replace only with complete engine retrofit kit on ASPS (Advanced Scavenged Prechamber System; for more Information, see "Relevant documents")

- The left (vertical) column "Prechamber types in the field" contains all part numbers present in the field.
- The (horizontal) line "Prechamber/spark plug sleeve assembly" contains all part numbers available.
- Old design: These parts are no longer used in new engines but are still available as spare parts.
- Current design: These parts are used in new engines and are available as spare parts.



Table 7 Part 2/2: Spare parts (prechamber/spark-plug sleeve assembly)

		Old design			Current design								
		Ring prechamber			Swirl prechamber								
					Series spark-plug sleeve				Premium spark-plug sleeve				
Prechamber types in the field		Prechamber / spark plug sleeve assembly	335036	266146	295785	9027197	9027349	9010758	9027203	9003908	9003851	7003738	
		Prechamber	335043	266147	295784	438604	9010937	358461	358461	9003461	9003767	8000270	
			6-hole	9-hole	8-hole	8-hole	6-hole	8-hole	8-hole	8-hole	8-hole	8-hole	6-hole
		Prechamber O-ring	-			456735		456735 (2x)		456735		-	
		Spark-plug sleeve	184040	184040	290465	9027195	9027195	9010759	9027195	630626	9003850	9003850	
		Sleeve O-ring	2x 319744 1x 319743			319744 (2x) 1210832 (1x)		319744 (2x) 319743 (1x)		319744 (2x) 319743 (1x)		1210845 (4x) 1210832 (1x)	
		Volumes [cm ³]	12.5	7.5	7.5	6.0	6.0	7.5	7.5	7.0	6.0	6.0	
Spark plug sleeve	Sleeve O-ring	Sealing ring	188435			9029697					9029697		
383325	319744 (2x) 319743 (1x)	7.5						X					
438603		6.0			X	X ^{IP}			X ^{ASPS}	X	X ^{IP}		
9023769		6.0			X	X ^{IP}				X	X ^{IP}		
618448		7.5						X					
9003908		7.0							X				
9010758		7.5					X						
9027197	319744 (2x) 1210832 (1x)	6.0			X	X ^{IP}			X ^{ASPS}	X	X ^{IP}		
9027349		6.0			X	X ^{IP}				X	X ^{IP}		
9027203		7.5						X					
9003851	1210845 (4x) 1210832 (1x)	6.0			X	X ^{IP}				X	X ^{IP}		
7003738		6.0			X	X ^{IP}				X	X ^{IP}		

1 cross indicates interchangeability

X Directly interchangeable

(X) Interchangeable with retrofitting package only

X^{IP} When changing from an 8- to a 6-hole prechamber, you must retard the ignition point (IP) by 2°C (e.g. 23°C instead of 25°C) and when changing from a 6- to an 8-hole prechamber, you must advance the ignition point by 2°C. You are not permitted to install a mixture of 6- and 8-hole prechambers in a single engine.

X^{ASPS} Replace only with complete engine retrofit kit on ASPS (Advanced Scavenged Prechamber System; for more Information, see "Relevant documents")

- The left (vertical) column "Prechamber types in the field" contains all part numbers present in the field.
- The (horizontal) line "Prechamber/spark plug sleeve assembly" contains all part numbers available.
- **Old design:** These parts are no longer used in new engines but are still available as spare parts.
- **Current design:** These parts are used in new engines and are available as spare parts.



2. "H" cylinder head

2.1 Prechamber gas valve



Note: Only valves with a single part number should be installed in an engine! Using different valve types in the same engine is not permitted.

In contrast to the "F" cylinder head, the prechamber gas valve "7J" of the "H" cylinder head is installed parallel to the spark plug in the spark-plug sleeve, see Figure 11 and Figure 12. In addition, the spark-plug sleeve largely replaces the valve housing. The prechamber gas is directed to the valve via the cylinder head and spark-plug sleeve.

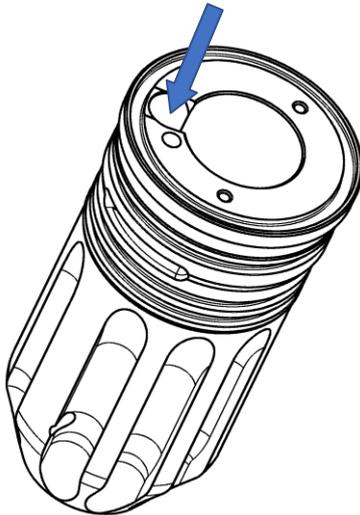


Figure 11: PCGV installation shaft in the spark-plug sleeve

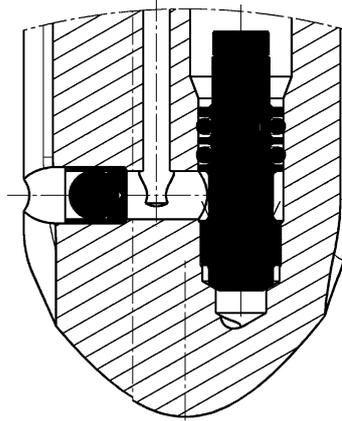


Figure 12: Sectional drawing of spark plug sleeve with installed PCGV

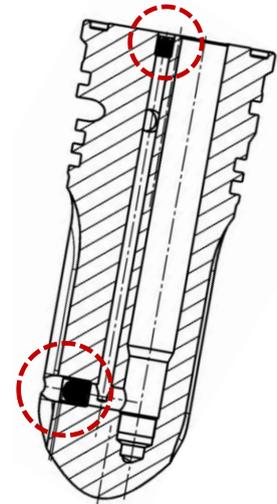


Figure 13: Cut-view of spark plug sleeve with encircled closing plugs

For the new "H" cylinder head and as regards the prechamber gas valve types, a distinction is made between the engine versions J624-H/K, J6-F/G/J (natural gas) and J6-F (biogas), see Table 8 below. In addition, the spark-plug sleeve, the position of the de-central orifice and the setting of the prechamber gas differential pressure regulator also differ. These components and settings may only be used in the combinations given here.

Table 8: Differences between J6-F/G/J and J6-H/K

Component / setting	Unit	J6-F/G/J (natural gas)	J6-F/G/J (natural gas)	J6-F (biogas)	J624-H/K
Prechamber gas valve (part number)	[-]	7J-V17 (1239066)	7J-V16+ (9029070)	7J-V10 (9018255)	7J-V10 (9018255)
Prechamber/spark-plug sleeve assembly	[-]	See Table 9			
Differential pressure pre-chamber gas pressure regulator	[mbar]	180	150	50	50
Diameter of de-central orifice (part number)	[mm]	0.5 (1223608)	0.5 (1223608)	0.9 (1211765)	0.5 (1225516)
Position of de-central orifice (marking of the screw fitting)	[-]	Prechamber gas rail (1 yellow dot)	Prechamber gas rail (1 yellow dot)	Prechamber gas rail (no marking)	Cylinder head (2 red dots)

The 7J-V17 valve is the preferred version for the J6-F/G/J engines for natural gas applications. The 7J-V16+ version is currently still in use and replaces the 7J-V16 valve used previously (part no. 8000262). The 7J-V16+ valve consists of the 7J-V16 valve with an additional metal ring pressed on. Further information on this can be found in SB-112. Make sure that the spark plug sleeve is changed as well when changing from the V16+ to the V17. The different torques for fitting the valve are given in TA 1902-0228.

Due to the higher opening pressure, the 7J-V16+ and 7J-V17 valve versions require an increased differential pressure at the prechamber differential pressure regulator, which is set in accordance with TA 1503-0047. To indicate the high opening pressure, the 7J-V16 and V17 valves have a feature which is still visible when they are fitted – a hole and a circumferential groove and hole in the body, see Figure 15. This was changed on the 7J-V17 to a circular groove in the end face to make it more distinguishable from the V16+ and V17, see Figure 16.



The production data of the prechamber gas valve is engraved on the sides of the octagon: Jenbacher part number, manufacturer's article number, serial number and production date (calendar week and year as a letter, P = 2016, Q = 2017, etc.).

The diameter of the de-central orifices has been reduced to 0.5mm in the new "H" cylinder head (exception: biogas). For Type J6-F/J engines, the de-central orifice continues to be installed at the prechamber gas rail position. It is marked with a yellow dot, see Figure 17. For Type J6-H/K engines, the de-central orifice is marked with two red dots and is installed at the prechamber gas inlet of the cylinder head.

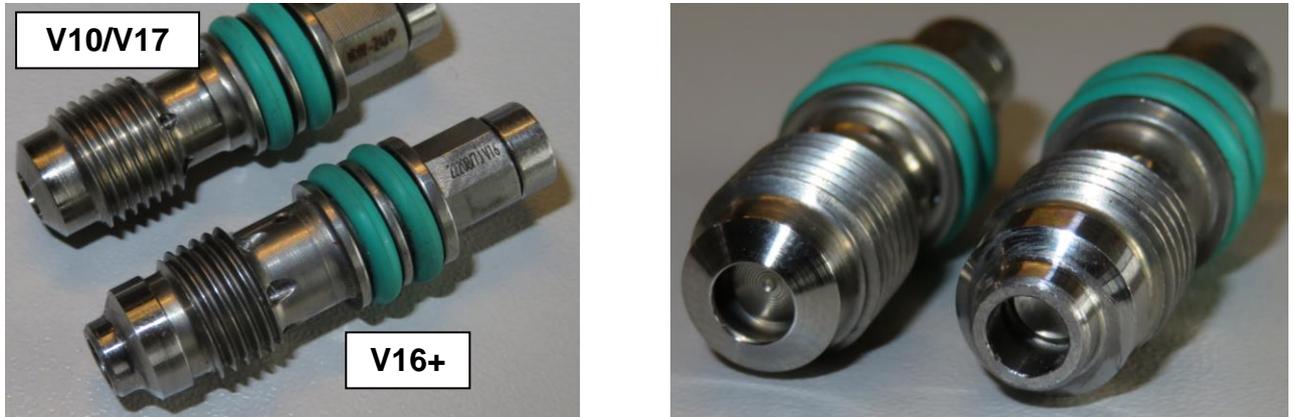


Figure 14: Photos of prechamber gas valves 7J-V10/V17 (left) and 7J-V16+ (right)



Figure 15: Circumferential groove and hole in 7J-V16 and V17 (old)

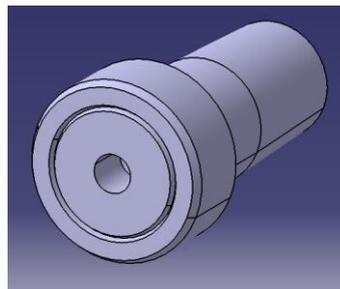


Figure 16: Groove and hole in the end face of the 7J-V17 (new)



Figure 17: De-central orifice (example with marking)



Figure 18: Photos of prechamber gas valves 7J-V10/V17 (left) and 7J-V16 (right)

Please refer to Maintenance Instruction "W 0501 M6" regarding prechamber gas valve handling and replacement.



2.2 Prechamber and spark plug sleeve

The current prechamber consists of nickel-based alloy and the spark plug sleeve is made of CuNi alloy. The standard prechamber for natural gas application (Type 6-F/J/G/H/K) has an inner volume of 6cm³ and 6 holes to the main combustion chamber. An 8-hole prechamber is also available for the 6cm³ volume version (part number 9016195).

For NNG operation (non-natural gas, e.g. biogas) a prechamber with 8 holes and an inner volume of 7.5cm³ is used. If natural gas is used as prechamber gas in NNG applications, the 6cm³ volume prechamber is used.

Important: When using the 6-hole prechamber, retard the ignition point by -2°CA (crankshaft angle) (e.g. 20+3°CA instead of 20+5°CA, Parameter: Cylinder → Antiknock → IP adaption offset via knock controller). Do not install a mixture of 8- and 6-hole prechambers in a single engine.

Important: Only the spark plug sleeve assembly part numbers shown in Table 9 (columns 4 and 5 with and without prechamber) are to be used. These assemblies contain the two closing plugs (see Figure 13) which cannot be installed in field as well as the two spring dowels. Please perform visual check of the installed plugs before sleeve installation. The assembly of the spark plug sleeve with prechamber, closing plugs, spring dowels, O-rings and prechamber metal gasket is shown in Figure 19.

Table 9 shows the prechambers and spark-plug sleeves with the engine types they have been allocated to.

Table 9: Prechamber/spark-plug sleeve assembly

Prechamber gas valve	Prechamber (vol., holes)	Gas type (engine type)	Prechamber & spark plug sleeve assembly	Spark plug sleeve assembly (without prechamber)	BMEP ^(F) [bar]	Comments
1239066 (V17)	9016196 (6.0cm ³ , 6 holes)	Natural gas (F, G, J), NNG application with natural gas as prechamber gas	9028591	1242562	22	IP retarded by 2°CA
9029070 (V16+)			9028603	1242563		
9018255 (V10)		Natural gas (H, K)	9028591	1242562	24-24.5	
9018255 (V10)	Landfill gas, Assoc. petroleum gas, Biogas (F), Coal mine gas	9028760	20-22			

^(F) BMEP = Break Mean Effective Pressure

^(G) IP = Ignition Point

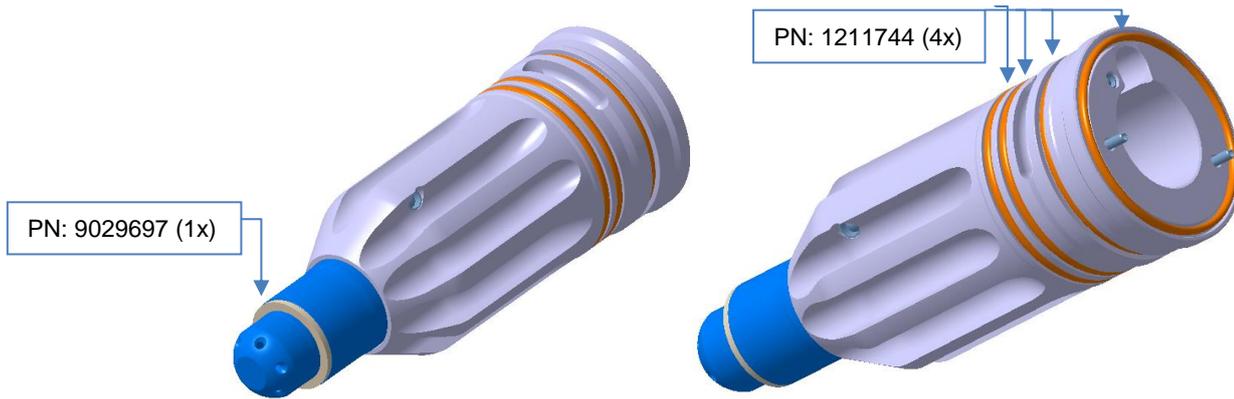


Figure 19: Prechamber & spark-plug sleeve assembly with O-rings and metal gasket

Sealing material:

For part replacement, four O-rings (part number 1211744) and one sealing ring (part number 9029697) are required for each spark-plug sleeve, see Figure 20.

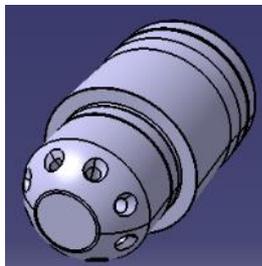


Figure 20: Prechamber, 8 holes, 6cm³ (9016195)

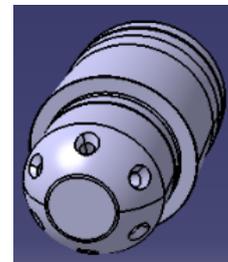


Figure 21: Prechamber, 6 holes, 6cm³ (9016196)



Figure 22: Prechamber, 8 holes, 7.5cm³ (9018802)



3. RELEVANT DOCUMENTS

When working on Jenbacher modules, all applicable local regulations must be observed in addition to our documentation. In relation to this Service Technician Instruction we stress the fact that the following documents must also be observed:

Technical Instructions:

- TA 1100-0111: General Conditions – Operation & Maintenance
- TA 2300-0005: Safety regulations
- TA 1100-0105: Engine shut-down
- TA 2300-0010: Guidelines for using the LOTO kit
- TA 1902-0228: Screw-in and tightening torques (C, E/F/J, G/H/K)
- TA 1000-0300: Fuel gas quality
- TA 2110-0023: Prechamber differential and gas pressure monitoring on Type 6 engines
- TA 2110-0024: Prechamber mixture formation system (ASPS = Advanced Scavenged Prechamber System)
- TA 1503-0047: Engine adjustment instruction - Type 6 engines (DIA.NE XT)

Field Service Manuals:

- FSM.600.14.301: Prechamber / Prechamber gas valve ("F" cylinder head)
- FSM.600.14.302: Prechamber / Prechamber gas valve ("H" cylinder head)

Maintenance Instructions:

- W 0501 M6: Prechamber/prechamber gas valve
- W 0500 M6: Prechamber mixture formation system (ASPS = Advanced Scavenged Prechamber System)
- W 0400 M6: Valve lash (cylinder head)

Service Technician Instructions:

- ST-195: "H" cylinder head – Differences compared to the "F" cylinder head and details for possible conversions

Service Bulletins:

- SB-112: Prechamber gas valves 7J-V16 – Conversion to 7J-V16+

REVISION CODE

Table 10: Revision history

INDEX	DATE	DESCRIPTION / REVISION SUMMARY
05	Jan. 24, 2019	Enhancement of the 7J-V17 prechamber gas valve and conversion to the prechamber seal 9029697
04	Jun. 04, 2018	Fundamental revision
03	Dec. 05, 2017	Enhancement of the new "H" cylinder head
02	Aug. 11, 2016	Fundamental revision
01	Feb. 18, 2010	First version of this document