

(1) **EC Type Examination Certificate**

- Directive 94/9/EC -

(2) **Devices and Protective Systems Intended for Use in Potentially Explosive Atmospheres**

**BVS 03 ATEX H 044 X**

(4) **Device:** Rotary feeders

(5) **Manufacturer:** DMN Machinefabriek Noordwykerhout B.V.

(6) **Address:** 16, 's-Gravendamseweg, 2211 WJ, Bedrijventerrein Gravendam, P.O. Box 6, 2210 AA, Noordwijkerhout, Holland, The Netherlands

(7) The design of this device, as well as the various permitted versions, is specified in the appendix to this type examination certificate.

(8) The certification authority of Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994, certifies that this device complies with the essential Health and Safety Requirements relating to the design and the construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The test results are recorded in the test report BVS PP 1100/104/03 EC.

(9) The essential Health and Safety Requirements have been met by compliance with:

DIN EN 1127-1: 1997-10, Explosive atmospheres, explosion protection, Part 1: Basic concepts and methodology  
DIN EN 13463-1: 2002-04, Non-electrical equipment for use in potentially explosive atmospheres, Part 1: Fundamentals and requirements with corrections from June 2003 prEN 13463-5:2002-08 non-electrical equipment for use in potentially explosive atmospheres, Part 5: Protection through constructional safety  
BGR 132: Prevention of ignition hazards as a result of electrostatic charging, March 2003

(10) If the sign "X" is placed after the certificate number, it means that in the appendix to this certificate reference is made to special conditions for the safe use of the device.

(11) This EC type examination certificate relates only to the design and the type examination of the described device in accordance with Directive 94/9/EC. For the production and putting into service of the device additional requirements are required to comply with the Directive, which are not covered by this certificate.

(12) The marking of the device must contain the following information:

II 1D/2 GDc

or

II 1D/3 GDc

**Deutsche Montan Technologie GmbH**

Bochum, 17.12.2003,

(13) Appendix  
to

(14) **EC Type Examination Certificate**

**BVS 03 ATEX H 044 X**

(15) 15.1 Subject matter and Type

Rotary valves in accordance with

Table 1

15.2 Description

The operation of the rotary feeder (hereinafter referred to as ZRS) is characterized therein that, located in a fixed casing, a rotor rotates. The rotor has fixed or replaceable blades that are set with a precise gap between housing and cover. The rotor seals the area against false air inlet under different pressure ratios above and below the lock. The cellular wheel is closed by corresponding side walls. The locks are constructed in two versions blow-out and blow through. The machine is driven by chain drive or by direct drive with or without a clutch.

### 15.3 Parameters

Table 1: Compilation of the rotary feeder

Type	Size	Version			
		Standard	Quick to disassemble	MZC	Dairy Dairy MZC
AL	100-150-175-200-250-300-350-400-450-500	1 2	1D 2D 3ND 3CD 4CD	1MZC 2 MZC 3NMZC 3CMZC	DAI DMZC
BL	150-175-200-250-300-350 175/200-200/250-250/300-300/350	3N 3C 4C 4TCO 4TS	4TCOD 4TSD 5D	4CMZC 4TCOMZC 4TSMZC 5MZC	
AML	100-150-200-250-300-350-400	5			
OS	400-450-500	1 2			
GOS	400-450-500	3N 3C 4C 4TCO 4TS			
ML	100-150-200-250-300-350-400	1 2 3N 3C 4C 5			
MLD	100-150-200-250-300-350-400				
MAL	100-150-175-200-250-300-350				
MALD	100-150-175-200-250-300-350				
MGL	150-200-250-300				
MGLD	150-200-250-300				
GL	150-200-250-300-350		2 2/5 5	2D 2/5D 5D	2MZC
SAL	80-100-150	2			
DL	200-250	1			

Table 2: Utilisation key

Material designation	1	Cast iron
	2	Stainless steel
	3N	Cast iron completely nickel-plated
	3C	Cast iron completely chrome-plated
	4C	Cast iron bore completely chrome-plated
	4TCO	Cast iron - tungsten-carbide-plated
	4TS	Cast iron - tungsten-carbide-plated
	5	Aluminium
Version	-	Standard
	D	Quick to disassemble
	MZC	Quick to disassemble with an extraction device
	DAI	Dairy
	DMZC	Dairy with extraction device

Example:

Rotary feeder

The ZRS is to be operated at following ambient temperatures:

- 20 °C to + 40 °C

(16) Test report

**(17) Special conditions for safe use**

The ZRS must be grounded; that is to say, the bleeder resistance must have a value of  $< 10^6 \Omega$  opposed to earth. The circumferential speed of the rotor must be less than 1 m/s.

The drives (direct drive with or without clutch or chain drive) are not part of this test report. Suitable drives are to be used that have the same or higher-valued label like the ZRS. Devices with the designation II 1 D/2 DG c, with chain drive, need a brass chain case and a chain with chain tensioned (type: ARCO) to be used.

The maximum surface temperature of the ZRS depends substantially on the temperature of the conveyed medium. The maximum surface temperatures achieved at a given temperature of the conveyed medium and the temperature classes of the gases to be derived are to be found in Table 3:

**Table 3: Relationship between temperature of the material to be conveyed and the maximum surface temperature, that is to say, temperature class for gases**

Temperature of the material to be conveyed	Maximum Surface temperature	Explosion protection
70 °C	120 °C	T4
80 °C	130 °C	
85 °C	135 °C	
90 °C	140 °C	T3
100 °C	150 °C	
110 °C	160 °C	
120 °C	170 °C	
130 °C	180 °C	
140 °C	190 °C	
150 °C	200 °C	

The ZRS has not been tested as an autonomous protective system.

# 1. Addendum

(Supplement in accordance with Directive 94/9/EC, Annex III, paragraph 6)

## to the EC Type Examination Certificate BVS 03 ATEX H 044 X

**Device:**

**Rotary valves in accordance with Table 1**

**Manufacturer:**

**DMN Machinefabriek Noordwijkerhout B.V.**

**Address:**

**16, 's-Gravendamseweg, 2211 WJ, Bedrijventerrein Gravendam, P.O.  
Box 6,2211 AA, Noordwijkerhout, Holland, The Netherlands**

Description

The mode of operation of the rotary valve (hereinafter referred to as ZRS) is characterized therein that a rotor rotates within a fixed, stationary casing. The rotor has fixed or replaceable blades that are set with a precise gap between housing and cover. The rotor seals the area against false air inlet under different pressure ratios above and below the lock. The cellular wheel is closed in by corresponding side walls. The locks are constructed in two versions blow-out and blow through. The system is driven by chain drive or by direct drive with or without a clutch.

The rotary valves with the designation ® **IIID/2GDC**

or <g> **IIID/3GDC** or <§> **IIID/- C**

have been built in accordance with the documentation listed in the corresponding test report.

The essential Health and Safety Requirements of the versions have been met by compliance with:

- DIN EN 13463-1:2002, not electrical equipment for use in potentially explosive atmospheres, Part 1: Fundamentals and Requirements
- DIN EN 13463-1 corrigendum 1:2003, corrigendum to DIN EN 13463-1:2002
- DIN EN 13463-5:2004, not electrical equipment for use in potentially explosive atmospheres, Part 5: Protection through constructional safety

Table 1: Compilation of the rotary feeder

Type	Size	Version					
		Standard	HT250	Quick to disassemble	MZC	Dairy	Dairy MZC
AL	150-175-200-250-300-350	1 2 3N 3C 4C 4TCO 4TS 4NH 5	1HT250	ID 2D 3ND 3 CD 4CD 4TCOD 4TSD 5D	IMZC 2MZC 3NMZC 3CMZC 4CMZC 4TCOMZC 4TSMZC 5MZC	DAI	DMZC
AL	400-450-500		2HT250				
BL	150-175-200-250-300-350		3NHT250				
BL	175/200-200/250-250/300-300/350		3CHT250				
AML	100-150-200-250-300-350-400		4CHT250				
S-AL	200		4TCOHT250				DMZC
OS	400-450-500	1 2 3N 3C 4C 4TCO 4TS	1HT250				
GOS	400-450-500		2HT250				
			3NHT250				
			3CHT250				
			4CHT250				
ML	100-150-200-250-300-350-400	1 2 3N 3C 4C 5	4TCOHT250				
MLD	100-150/200-250-300-350-400		4TSHT250				
MAL	100-150-175-200-250-300-350						
MALD	100-150-175-200-250-300-350						
MGL	150-200-250-300						
MGLD	150-200-250-300						
GL	150-200-250-300-350		2 2/5	2HT250	2D 2/5D 5D	2MZC	
SAL	80-100-150						
DL	200-250	1					
AS	150-175-200-250300-350	1 •2. 3N 3C 4C 4TCO 4TS		ID 2D ..... 3ND 3 CD 4CD 4TCOD 4TSD			
GS	150-175-200-250300-350						

**Utilisation key**

<b>Material designation</b>	1	Cast iron
	2	Stainless steel
	3N	Cast iron completely nickel-plated
	3C	Cast iron completely chrome-plated
	4C	Cast iron bore completely chrome-plated
	4TC0	Cast iron - tungsten-carbide-plated
	4TS	Cast iron - tungsten-carbide-plated
	4NH	Ni-Hard
	5	Aluminium
<b>Version</b>	-	Standard with deep groove ball bearings
	HT250	High-temperature 250°C with self-aligning ball bearings
	D	Quick to disassemble
	MZC	Quick to disassemble with extraction device
	DAI	Dairy
	DMZC	Dairy with extraction device

**Example:**

	Type	Size	Material type
Rotary valve	AL	150	2 MZC

The ZRS is to be operated at following ambient temperatures:

- 20°C bis + 40°C

Test report

BVS PP 1100/104/03 EG, Stand 17.12.2003 BVS PP  
1100/104/03 EG NI, Stand 14.07.2005

Special conditions for safe use

Die ZRS must be earthed; that is to say, the bleeder resistance must have a value of  $< 10^6 \Omega$ , with respect to earth. The circumferential speed of the rotor must be less than 1 m/s.

The drives (direct drive with or without clutch or chain drive) are not part of this test report. Suitable drives are to be used that have the same or higher-valued label like the ZRS. Devices with the designation II 1 D/2 DG c, with chain drive, need a brass chain case and a chain with chain tensioner (type: ARCO) is to be used.

The ZRS with the labelling II with 1 D/2 DG C and II 1 D/3 DG C may have externally mounted rechargeable coatings and/or non-conductive coatings of not more than 0.2 mm.

The maximum surface temperature of the ZRS depends substantially on the temperature of the conveyed medium. The maximum surface temperatures achieved at a given temperature of the conveyed medium and the temperature classes of the gases to be derived are to be found in Table 2:



**Table 2: Relationship between temperature of the material to be conveyed and the maximum surface temperature, that is to say, temperature class for gases**

Temperature of the material to be conveyed	Maximum surface temperature	Temperature class
70 °C	120 °C	T4
80 °C	130 °C	
85 °C	135 °C	
90 °C	140 °C	T3
100 °C	150 °C	
110 °C	160 °C	
120 °C	170 °C	
130 °C	180 °C	
140 °C	190 °C	
150 °C	200 °C	T2
160 °C	210 °C	
170 °C	220 °C	
180 °C	230 °C	
190 °C	240 °C	
200 °C	250 °C	
210 °C	260 °C	
220 °C	270 °C	
230 °C	280 °C	
240 °C	290 °C	
250 °C	300 °C	

The locks were not tested as an autonomous protective system.

**EXAM BBG Testing and Certification GmbH**  
Bochum, 14.07.2004

Certification Authority

Discipline

## 2. Addendum

(Supplement in accordance with Directive 94/9/EC, Annex III, paragraph 6)

### **to the EC Type Examination Certificate BVS 03 ATEX H 044 X**

Device: Rotary valves in accordance with Table 1

Manufacturer: DMN Machinefabriek Noordwykerhout B.V.

Address: 16, 's-Gravendamseweg, 2211 WJ, Bedrijventerrein Gravendam,  
P.O. Box 6, 2211 AA, Noordwijkerhout, Holland, The Netherlands

#### Description

The mode of operation of the rotary valve (hereinafter referred to as ZRS) is characterized therein that a rotor rotates within a fixed, stationary casing. The rotor has fixed or replaceable blades that are set with a precise gap between housing and cover. The rotor seals the area against false air inlet under different pressure ratios above and below the lock. The cellular wheel is closed in by corresponding side walls. The locks are constructed in two versions, blow-out and blow-through. The system is driven by chain drive or by direct drive with or without a clutch.

The rotary valves with the labelling

II1D//2GDc or II 1D/3 GDc or II1D/-c

have been built in accordance with the documentation listed in the corresponding test report.

The essential Health and Safety Requirements of the versions have been met by compliance with:

- DIN EN 13463-1:2002, not electrical equipment for use in potentially explosive atmospheres, Part 1: Fundamentals and Requirements
- DIN EN 13463-1 corrigendum 1:2003, corrigendum to DIN EN 13463-1:2002
- DIN EN 13463-5:2004, not electrical equipment for use in potentially explosive atmospheres, Part 5: Protection through constructional safety "c"

Table 1: Compilation of the rotary feeder

Type	Size	Version					
		Standard	HT250	Quick to disassemble	MZC	Dairy	Dairy MZC
AL	150-175-200-250-300-350	1 2 3N 3C 4C 4TCO 4TS 4NH 5	1HT250 2HT250	ID 2D 3ND 3 CD 4CD 4TCOD 4TSD 5D	IMZC 2MZC 3NMZC 3CMZC 4CMZC 4TCOMZC 4TSMZC 5 MZC	DAI	DMZC
AL	400-450-500		3NHT250				
BL	150-175-200-250-300-350		4CFIT250				
BL	175/200-200/250-250/300-300/350		4TCOHT250				
AML	100-150-200-250-300-350-400		4NHHT250				
S-AL	200						DMZC
OS	400-450-500	1 2 3N 3C 4C 4TCO 4TS	1HT250 2HT250				
OOS	400-450-500		3NHT250 3CHT250 4CHT250 4TCOHT250 4TSHT250				
ML	100-150-200-250-300-350-400		1 2 3N 3C				
MLD	100-150-200-250-300-350-400		4C 5				
MAL	100-150-175-200-250-300-350						
MALD	100-150-175-200-250-300-350						
MGL	150-200-250-300						
MGLD	150-200-250-300						
GL	150-200-250-300350	2 2/5 5	2HT250	2D 2/5 D 5D	2MZC		
SAL	80-100-150	2					
DL	200-250	1					
AS	150-175-200-250300-350	1 2		ID 2D 3ND 3CD 4CD 4TCOD 4TSD			
GS	150-175-200-250300-350	3N 3C 4C 4TCO 4TS					
Satake F	1-3						

Utilization key

Material designation	1	Cast iron
	2	Stainless steel
	3N	Cast iron completely nickel-plated
	3C	Cast iron completely chrome-plated
	4C	Cast iron bore completely chrome-plated
	4TC0	Cast iron - tungsten-carbide-plated
	4TS	Cast iron - tungsten-carbide-plated
	4NH	Ni-Hard
	5	Aluminium
Version	-	Standard with deep groove ball bearings
	HT250	High-temperature 250°C with self-aligning ball bearings
	D	Quick to disassemble
	MZC	Quick to disassemble with extraction device
	DAI	Dairy
	DMZC	Dairy with extraction device

Example:

	Type	Size	Material	Model
Rotary valve		AL 150	2	MZC

The ZRS is to be operated at following ambient temperatures:

- 20 °C to + 40 °C

Test report

BVS PP 1100/104/03 EG, Date 17.12.2003 BVS PP  
1100/104/03 EG N1, Date 14.07.2005 BVS PP  
1100/104/03 EG N2, Date 17.03.2006

Special conditions for safe use

Die ZRS must be earthed; that is to say, the bleeder resistance must have a value of  $< 10^6 \Omega$ , opposed to earth. The circumferential speed of the rotor must be less than 1 m/s.

The drives (direct drive with or without clutch or chain drive) are not part of this test report. Suitable drives are to be used that have the same or higher-valued label like the ZRS. Devices with the designation II 1 D/2 DG c, with chain drive, need a brass chain case and a chain with chain tensioner (type: ARCO) to be used.

The ZRS with the labelling II with 1 D/2 DG c and II 1 D/3 DG c may have externally mounted rechargeable coatings and/or non-conductive coatings of not more than 0.2 mm.

The maximum surface temperature of the ZRS depends substantially on the temperature of the conveyed medium. The maximum surface temperatures achieved at a given temperature of the conveyed medium and the temperature classes of the gases to be derived are to be found in Table 2:

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Temperature of the material to be conveyed	Maximum surface temperature	Temperature class
70 °C	120 °C	T4
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85 °C	135 °C	
90 °C	140 °C	T3
100 °C	150 °C	
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120 °C	170 °C	
130 °C	180 °C	
140 °C	190 °C	
150 °C	200 °C	T2
160 °C	210 °C	
170 °C	220 °C	
180 °C	230 °C	
190 °C	240 °C	
200 °C	250 °C	
210 °C	260 °C	
220 °C	270 °C	
230 °C	280 °C	
240 °C	290 °C	
250 °C	300 °C	

Notwithstanding Table 2, rotary valves with polyurethane sheets can be used up to maximum operating temperatures of 140 degrees C in dusts with minimum ignition energies > 3 mJ. These rotary valves are used in abrasive operating mode. Therefore, the maximum surface temperature of rotary valves with polyurethane sheets due to the softening behaviour of plastics regardless of operating temperature amounts to 160 degrees C (T3).

The rotary valves were not examined as an autonomous protective system.

EXAM BBG Testing and Certification GmbH  
Bochum, 17.03.2006

Certification Authority

Discipline

Statement by the translator: The text above is certified by the translator, Dr. A.F. Conradie BA, MA, D.Litt. Hibiskusweg 2b, 13089 Berlin, Germany to be a true and literal translation to the best of my capability of an original document

Date of translation: 23 September 2014

Signature and stamp of translator:



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