

VALVCHEQ BACKFLOW PREVENTERS

FIGURE DC03

Double check valves for medium hazard rated applications
Flanged and roll grooved end connections



FEATURES

- Compact simple design.
- In-line and on-site serviceable.
- No special tools required for servicing.
- Lifting lugs to assist with installation.
- Designed and manufactured in accordance with AS/NZS 2845.1.
- FBE coated to AS/NZS 4158.
- Straight through flow path for maximum flow co-efficient.
- Top entry allows all parts to be accessed easily.
- Stainless steel internals for superior corrosion resistance.
- Fully restrained check valve assemblies for unrivalled safety.
- Ductile Iron body for high strength and impact resistance.
- Every valve is bench tested and tracked with unique serial number.
- All internal components are repairable or replaceable.
- All internal and external bolting is stainless steel.
- Conforms to testing requirements of AS/NZS 2845.3.
- Anti-tamper test taps.
- Design conforms to all major international standards.
- Installations can be vertical and horizontal.

GENERAL APPLICATION

The DC03 provides protection from both backsiphonage and backpressure of the potable water supply from contamination in medium hazard applications.

TECHNICAL DATA

Size range: DN 200 - 300
 Temperature rating: 1 °C to 60 °C
 Working pressure: PN16
 End connections: Flanged AS 2129
 Roll grooved AS 2638
 Alternative flange drillings may be available on request

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FIGURE DC03

PRINCIPLE OF OPERATION

Double check valve consists of two independently acting non-return valves in series. They are arranged to be force-loaded in the closed position.

Under dynamic flow conditions

Water enters upstream chamber before the 1st check valves assembly. When water pressure is sufficient (minimum of 7 kPa) 1st check valve assembly will open allowing flow into and fill the middle chamber.

Once the middle chamber is full and pressurized (minimum of 7 kPa), the 2nd check valve assembly will open allowing flow though the down stream chamber.

Under the condition of backpressure

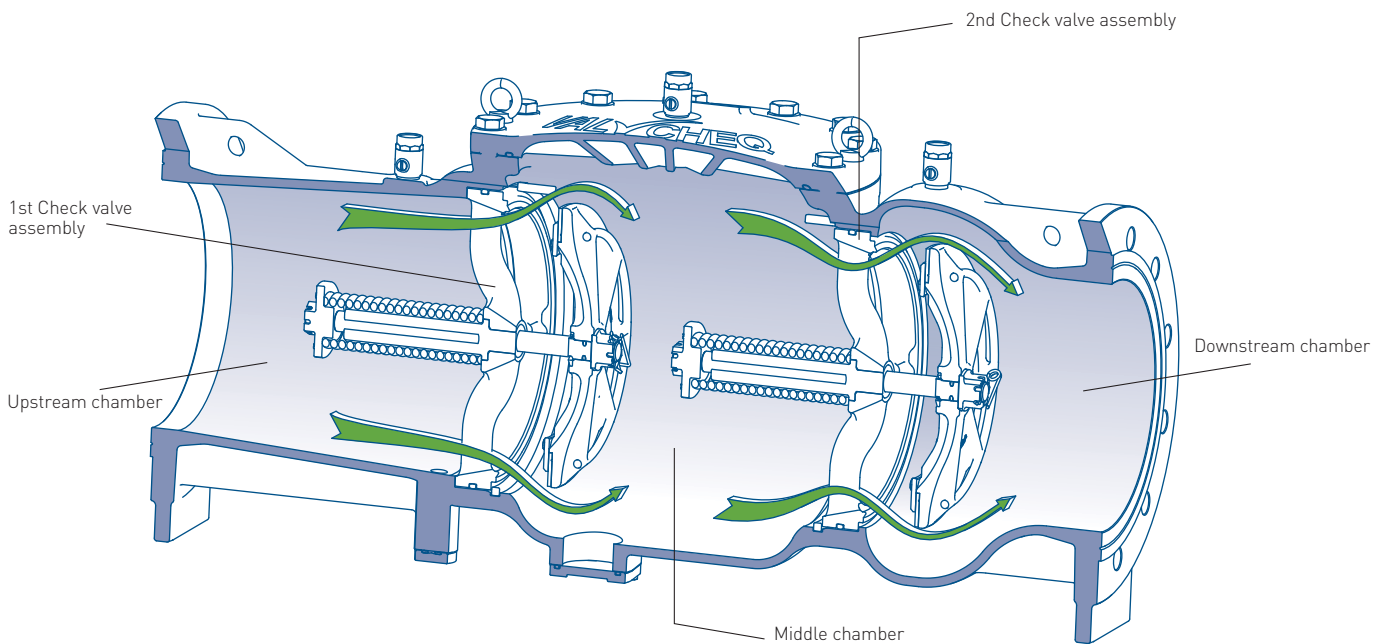
(Premises pressure is greater than supply pressure)

Water pressure in down stream chamber and spring pressure force the 2nd check valve assembly closed.

Under the condition of backsiphonage

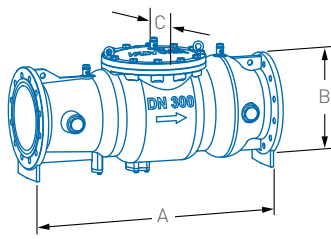
(Negative/low supply pressure in mains supply)

Water pressure in the up stream chamber before the 1st check valve assembly will dissipate and 1st check valve assembly will close under spring pressure.

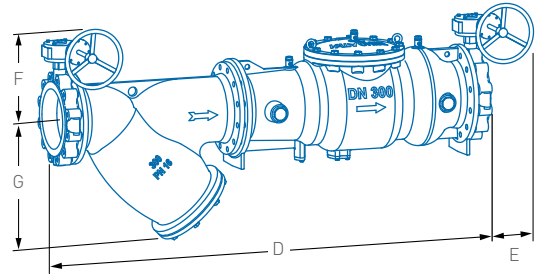


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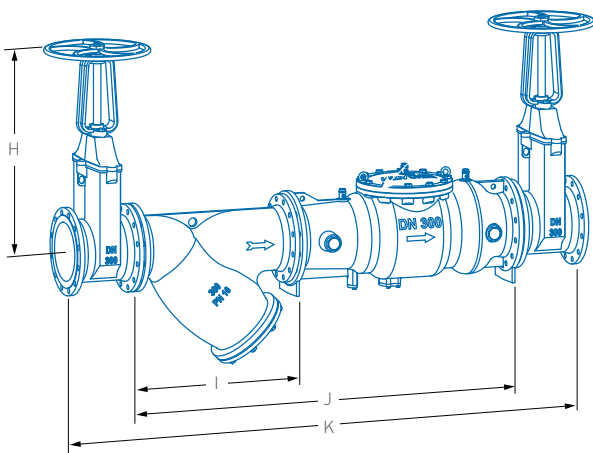
FIGURE DC03



Note: valve only (VO) illustrated.



Note: butterfly valve (BFV) arrangement illustrated.



Note: resilient seated gate (RSGV) valve arrangement illustrated.

DIMENSIONS (mm)

Valve size DN	A	B	C	D	E	F	G	H	I	J	K	Mass (kg)*		
												VO	BFV	RSGV
200	860	489	385	1525	356	272	380	930	543	1405	1992	135	274	404
250	1070	571	445	1868	356	325	480	1200	660	1732	2395	218	470	653
300	1220	638	495	2140	356	360	550	1390	762	1984	2699	322	714	966

NOTE

Dimension are nominal to ± 1 mm. Fire Service dimension subtract I from D or K.

Butterfly valve actuators come standard on valve sizes DN 200 - 300.

Lockable actuators available on request.

VO = Mass of valve only.

BFV = Mass of complete arrangement with butterfly valves.

RSGV = Mass of complete arrangement with resilient seated gate valves.

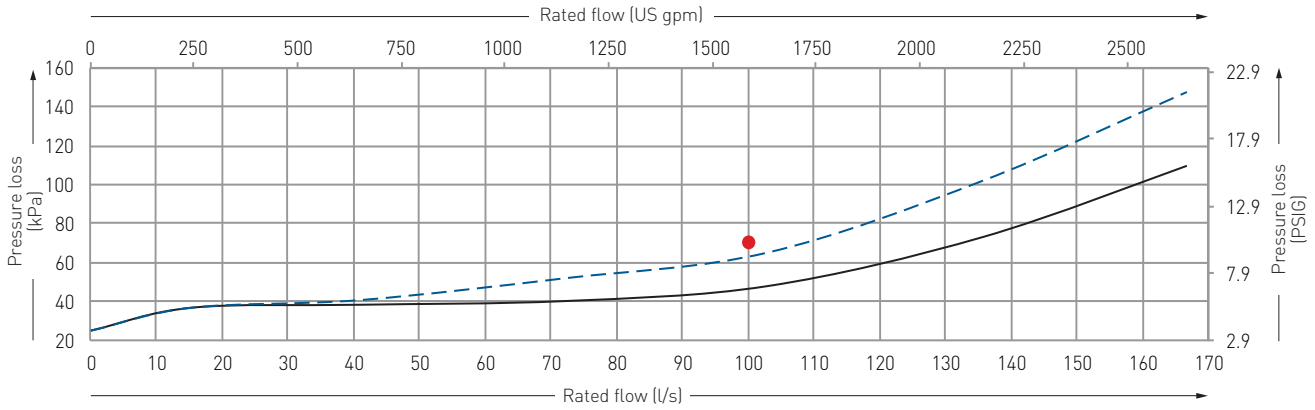
* Weight nominal

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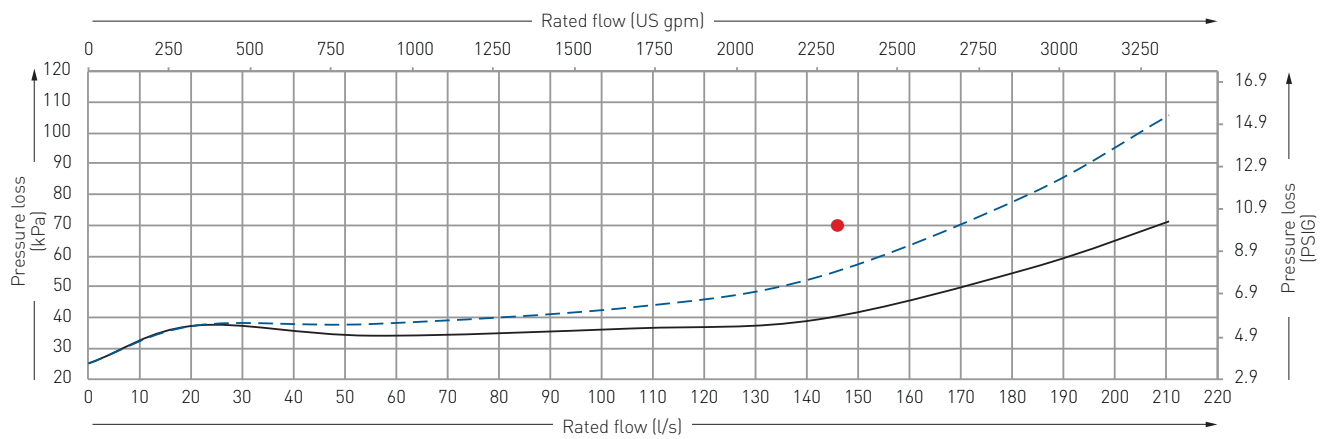
FIGURE DC03

TYPICAL FLOW CHARACTERISTIC GRAPHS

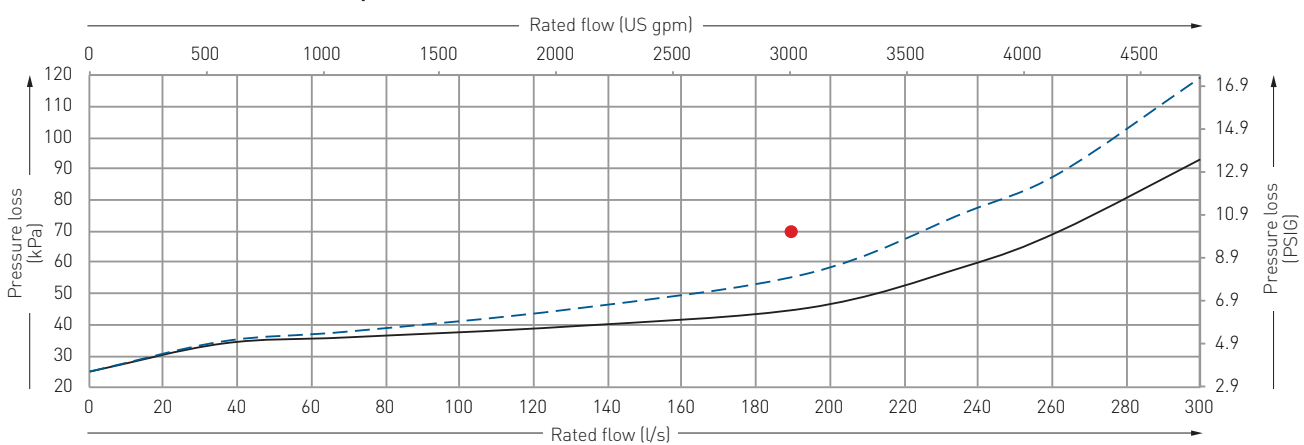
DN 200 DC03 Rated flow and pressure loss



DN 250 DC03 Rated flow and pressure loss



DN 300 DC03 Rated flow and pressure loss



NOTE

- DC03
- STD AS/NZS 2845.1
- - - C/W Y Strainer

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FIGURE DC03

SELECTION GUIDE

Example:	200	DC03	E	CO	BF
Valve size (DN)					
Figure no.					
End connections					
E	Flanged AS 2129				
R/G	Roll grooved AS 2638				
	Alternative flange drillings may be available on request				
Assembly					
VO	Valve only				
CO	Complete with isolation valves and FBE coated strainer				
FS	Fire service [supplied without strainer]				
Isolation					
BF	Butterfly valves				
BF G/Op	Butterfly valves gear actuated				
BF G/Op L	Butterfly valves gear actuated lockable				
RSGV	Resilient seating gate valves				

NOTE

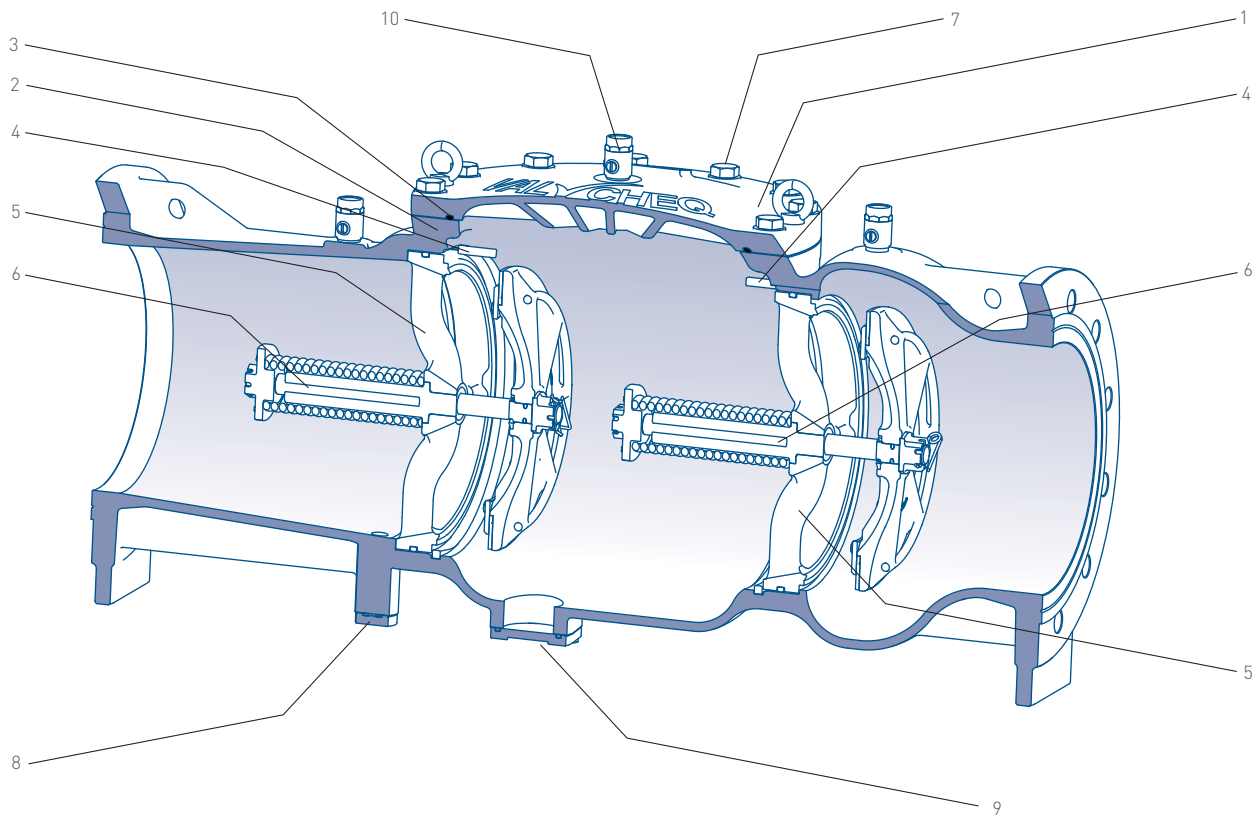
All Emerson isolation valves come with the provision for locking.
Butterfly valve actuators come standard on valve sizes DN 200 - 300.

TROUBLESHOOTING

Symptom	Cause	Remedy
1st check valve not holding tight (reading approaches zero without holding)	<ol style="list-style-type: none"> 1. Debris fouling the check valve seal 2. Check valve seal damaged or perished 3. Check valve O-ring damaged 4. Check valve stem O-ring damaged 5. Check valve seal ring damaged 	<ol style="list-style-type: none"> 1. Inspect, clean, reverse or replace check seal 2. Inspect and replace check valve seal 3. Inspect and replace O-ring 4. Inspect and replace O-ring 5. Replace first check valve assembly
1st check valve holding below 7 kPa	<ol style="list-style-type: none"> 1. Debris fouling the check valve seal 2. Check valve seal damaged 3. Check valve spring memory loss or damaged 4. Check valve stem O-ring damaged 	<ol style="list-style-type: none"> 1. Inspect, clean, reverse or replace check seal 2. Inspect and replace check valve seal 3. Replace first check valve assembly 4. Inspect and replace O-ring
2nd check valve not holding tight (reading approaches zero without holding)	<ol style="list-style-type: none"> 1. Debris fouling the check valve seal 2. Check valve seal damaged or perished 3. Check valve O-ring damaged 4. Check valve stem O-ring damaged 5. Check valve seal ring damaged 	<ol style="list-style-type: none"> 1. Inspect and clean, reverse or replace check seal 2. Inspect and replace check valve seal 3. Inspect and replace O-ring 4. Inspect and replace O-ring 5. Replace second check valve assembly
2nd check valve holding below 7 kPa	<ol style="list-style-type: none"> 1. Debris fouling the check valve seal 2. Check valve seal damaged 3. Check valve spring memory loss or damaged 4. Check valve stem O-ring damaged 	<ol style="list-style-type: none"> 1. Inspect, clean, reverse or replace check seal 2. Inspect and replace check valve seal 3. Replace second check valve assembly 4. Inspect and replace O-ring

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FIGURE DC03

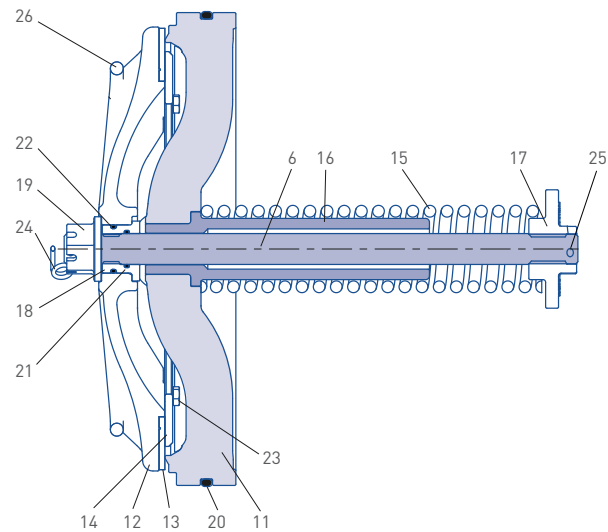


PARTS LIST

No.	Description (main valve)
1	Top cover
2	Body
3	Top cover O-ring
4	Check valve circlip
5	1st and 2nd check clip assemblies
6	Check valve stem
7	Top cover bolts
8	Sensor port plate
9	Relief port plate
10	Test taps

VALVE CHECK ASSEMBLY

No.	Description (check assembly)
11	Check seal ring
12	Check disc
13	Check seal
14	Check seal retainer
15	Down stream check spring
16	Check stem bush
17	Check stem retainer
18	Check disc retainer hub
19	Check disc retainer nut
20	Check seal O-ring
21	Check stem O-ring
22	Check hub O-ring
23	Bolt
24	Diaper pin
25	Solid pin
26	Check disc grip ring



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FIGURE DC03

Complete safety and maintenance instructions for DN 200 to 300 medium hazard devices

MAINTENANCE AND TESTING REQUIREMENTS

Test after initial installation and annually for the life of the valve or service. Maintain in a working order and inspect for operational function at intervals not exceeding twelve months. The functions are to be carried out by authorized licensed backflow testers.

DISASSEMBLY INSTRUCTIONS

As per safety precautions slowly close isolation valves and then open all three test taps (10) to release mains pressure.

Remove top cover bolts (7) and washers.

Remove top cover (1) and top cover o-ring (3).

WARNING

Middle chamber of valve will be full of water. Either work in the water or scoop out water to an acceptable level.

To remove check valve circlips (4) utilize circlip prongs, squeeze together and pull out the circlips.

To remove 2nd check assembly (5) pull check valve stem (6) out and then up bringing the check assembly through the top entry of the valve.

WARNING

Check assemblies are of the following add weights: DN 200 15 kg, DN 250 22 kg, DN 300 32 kg. Please take the necessary actions to maintain a safe work practice during these procedures.

CAUTION

1. *High spring loads are present.*

2. *Never remove check spring retainer (17), check disk retainer hub (18) and solid pin (25).*

To remove 1st check assembly (5) take hold of the check disc grip ring (26) and pull out then up bringing the check assembly through the top entry of the valve. Or slowly crack open inlet isolating valve and allow the water pressure to push the check assembly into the main valve body. Shut off inlet isolating valve and remove the check assembly through the top entry of the valve.

Both check assemblies are mechanically the same so the same procedure can be used for both assemblies.

Remove diaper pin (24) from check disc retaining nut (19). Fit spanner to check stem retaining nut (17) and to check disc retaining nut (19) turn retaining nut (19) anti-clockwise and remove. Take hold of check disc grip ring (26) and pull away from check stem (6) so both are disengaged from each other. Turn over so check disc grip ring (26) is facing downwards and fit spanner to check seal retainer bolts (23) and remove check seal retainer (14) to expose check valve seal (13) for servicing or replacement.

NOTES

When assembly takes place:

- Correctly line up holes in check disc retaining nut (19) and check stem (6) to allow securing of diaper pin (24).
- Lubricate all O-rings with approved lubricants.
- Check valve seal (13) must be clean, free of any greases, moisture and debris upon assembly for a positive seal.

SAFETY PRECAUTIONS

In every instance of installation or removal from the pipeline, ensure the line is not pressurized and any hazardous liquid is drained away. Slowly close both isolating valves and then open test taps (10) to exhausted line pressure.

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FIGURE DC03

Recommended specifications for double check valves for medium hazard rated applications



- Main valve shall be manufactured in accordance with AS/NZS 2845.1.
- Main valve shall be constructed from ductile iron and FBE coated to AS/NZS 4158.
- All internals shall be constructed from stainless steel and to have pressure rating of PN16 and a temperature rating of 60°C.
- Main valve body shall not form part of the wetted check valve sealing area or mechanism.
- All internal parts and elastomers are to be accessible through a top entry point of the main valve to allow inline maintenance.
- Valve connection to be flanged to AS 2129, roll grooved to AS 2368.
- Valve shall also be fitted with test points with BSPT threads to allow testing to AS/NZS 2845.3.

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