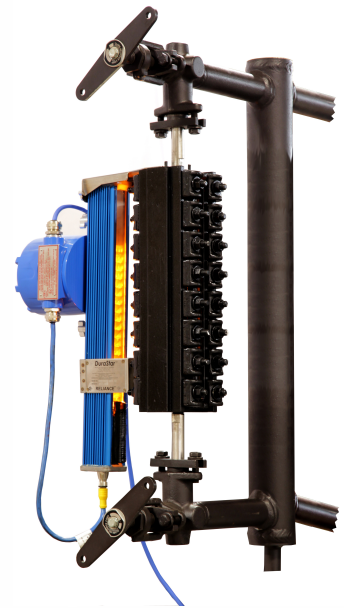


Cast Iron Water Columns Steel Water Columns and Standpipes

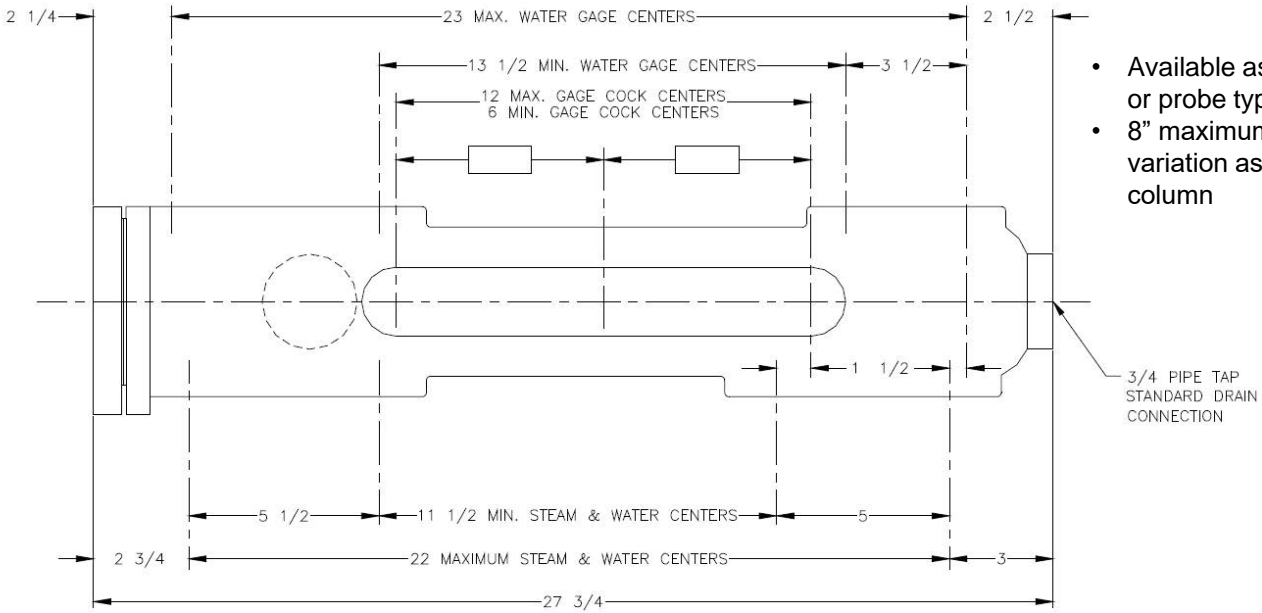


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Cast Iron Water Column W0250



- Available as float type or probe type column
- 8" maximum alarm variation as float type column

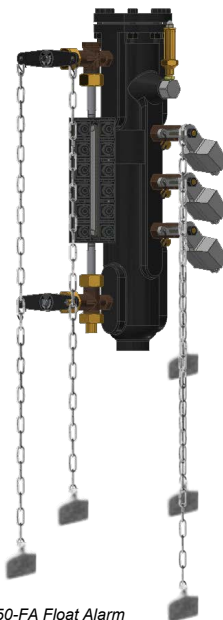
Dimension Notes: All steam and water connections on the Universal W0250 column are 1", 1-1/4" or 1-1/2". All tappings for water gages, cage cocks, and blow-offs are 3/4". All tappings for alarm valves on float types are 1" and cap tappings are 1", 1-1/4" and 1-1/2".

Float Type Column W0250-FA

- Variable gage centers
- Variable steam/water locations
- Low & high alarm functions only

Column W0250 provides water gage centers that can vary upon specification from 13 1/2" to 23". Top or side steam and water connections can vary upon specification from 11 1/2" to 22".

Conversion Columns All Reliance cast iron, float type columns serving pressures to 250 PSI can be converted to accommodate a probe cap. This conversion brings low water cut-out controls, as well as high/low alarms, to converted columns. Consult us for more details.



Model W0250-FA Float Alarm Type Water Column Assembly with Prismatic Gage and Trim

Probe Type Column W0250-EA

- Variable gage centers
- Variable steam/water locations
- Low & high alarms and low water cut-out functions

Column W0250-EA type offers the same variations in water gage centers and steam/water connections as noted for Column W0250-FA.

Model EA3 Provides on/off actuation of high and low water alarms (typically). Employs 3 probes, including one common return probe. Requires two relays.

Model EA4 Provides on/off actuation of high and low water alarms plus low water cut-out trip. Employs 4 probes. Requires 3 relays.

Model EA5 Provides on/off actuation of high and low water alarms plus high and low water cut-out trips. Employs 5 probes. Requires 4 relays.

Model EA6 Provides on/off actuation of high and low water alarms. Low water cut-out trip, plus pump control. Employs 6 probes. Requires 5 relays.



Model W0250-EA4 Probe Alarm/Controls Type Water Column Assembly with Prismatic Gage and Trim

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Cast Iron Water Columns

How to Specify and Order the Reliance Cast Iron Water Columns to Meet Your Individual Application

To select the proper water column model, first acquaint yourself with the types of columns available including a review of the Model Selection Guide presented below, and then complete the following recommended steps:

- Determine the gage glass visibility required
- Determine the steam and water center dimension
- Determine the alarm variation requirements
- List the alarm/control functions desired
- If your dimension specifications exceed the limits, we will offer a model W0250S Steel Water Column

See our water column order selection worksheet (Ref:R406.003) found on our website. If selection assistance is required, contact your local Clark-Reliance representative or a Reliance Applications Engineer (RelianceAppEng@clark-reliance.com).

Installation Notes For recommended installation, see our Boiler Inspection Guide Booklet.

Material Note The material used in Reliance W0250 water columns is ASME SA-278 CL. 30



Universal Cast Iron Water Column
W0250-FA as Float Alarm Type



Universal Cast Iron Water Column
W0250-EA as Probe Alarm/Control Type

Cast Iron Water Columns Model Selection Guide

| Cast Iron Models | | Typical Functions | | | | |
|------------------|-------------|-------------------|-----------|-------------------|--------------------|----------------|
| Float Type | Probe Type* | High Alarm | Low Alarm | Low Water Cut-Out | High Water Cut-Out | Pump Actuation |
| W0250-FA | --- | • | • | --- | --- | --- |
| --- | W0250-EA3 | • | • | --- | --- | --- |
| --- | W0250-EA4 | • | • | • | --- | --- |
| --- | W0250-EA5 | • | • | • | • | --- |
| --- | W0250-EA6 | • | • | • | --- | • |

Common Model Numbers for Assembly

| Water Gage Valve | Water Gage | Gage Cocks (*) |
|------------------|--------------------|----------------|
| BG403S | "C" Type Prismatic | GC311 |

(*) Gage cocks are not required by code

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Comprehensive Data Assures for Accurate Ordering of Reliance Steel Water Columns

The following information should be provided:

1. The arrangement of column connections
2. Maximum boiler design pressure
3. Choice of probe type alarm system, float type, or no alarm
4. The center-to-center dimension between steam and water connections
5. Size and type of steam and water connections
6. The dimension from normal water level to water connection center line
7. Distance between high and low alarm levels, and low water cutout
8. Gage visibility range



See our order selection worksheet for Steel Water Columns (Ref: R406.002) found on our website.

To discuss any water column specification data in detail, contact your local Clark-Reliance representative or a Reliance Applications Engineer (RelianceAppEng@clark-reliance.com).

Typical Connections and Sizes for Reliance Steel Columns (other connections available)

Typical Connections

| Design Pressure | Steam & Water Connections | Water Gage Valve Connections | Gage Cock Connections | Drain Connections |
|-----------------|--|---|-----------------------|-------------------|
| 350 | 1 1/2" NPT/SW Boss | 3/4" NPT Boss | 3/4" NPT Boss | 3/4" NPT |
| 450 | 1 1/2" NPT/SW Boss | 3/4" NPT Ext. Neck or 3/4" 300# RF Flange | 3/4" NPT Boss | 3/4" NPT |
| 600 | 1 1/2" Female SW or 1 1/2" 300# RF Flange | 3/4" NPT Ext. Neck or 3/4" 900# RF Flange | 3/4" NPT Boss | 3/4" NPT |
| 900 | 1 1/2" Female SW or 1 1/2" 600# RF Flange | 3/4" NPT Ext. Neck or 3/4" 900# RF Flange | 3/4" NPT Boss | 3/4" FSW |
| 1500 | 1 1/2" Female SW or 1 1/2" 1500# RF Flange | 3/4" NPT Ext. Neck or 3/4" 900# RF Flange | 3/4" NPT Boss | 3/4" FSW |
| 1800, 2500 | 1 1/2" Female SW or 1 1/2" 1500# RF Flange | 3/4" SW Ext. Neck | Not Available | 3/4" FSW |
| 3000 | 1 1/2" Female SW | 3/4" SW Ext. Neck | Not Available | 3/4" FSW |

Gage Cocks are available, but no longer required by ASME Code

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Steel Water Columns

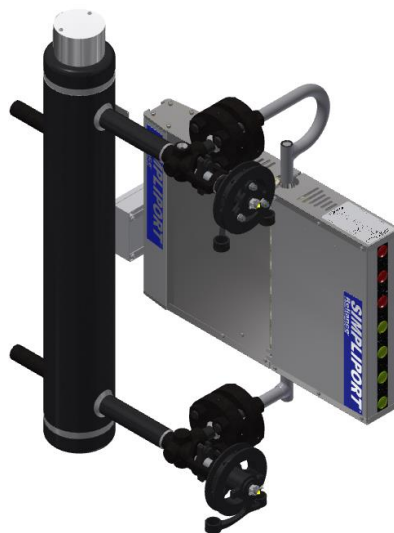


Using the Clock to Clarify Design Requirements

1. For clear communication in locating water column gages, use a clock. View the column from above and picture a clock face on the top of the column. If steam and water connections are at the three o'clock position on the imaginary clock face, the water gage valve connections are at the nine o'clock position.
2. *Where will a person stand to read the water gage – positioned at what time? And will the gage be to the right or left of the water column as viewed? Presenting this key information using a clock face frequently avoids confusion.*
3. *Actual figure arrangements are illustrated in our order selection worksheet (Ref: R406.002).*



Consider the Connections



Consider the best position to view the gage
and maintain access to drum & adjacent equipment

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COMPONENT MODEL NUMBERS AND ASSEMBLY DATA, STEEL COLUMNS

For additional information on Reliance water column trim, refer to bulletins:

Water Gage Valves.....AB5.1D

Prismatic Gages.....R100.33

Flat Glass Gages.....CLA163

Simpliport® Gages.....AB7.5

Note that Simpliport® Gages must be furnished with Hoods and Illuminators.

| Design Pressure (PSI) | Water Gage Valves | | Water Gages | | | Gage Cocks (if specified) |
|-----------------------|-------------------|---------|-------------|---------------|--------------|---------------------------|
| | Flanged | NPT/SW | Prismatic | Flat Glass | Simpliport® | |
| 350 | BG503RAS | BG404S* | "S" Series | FG400 Series | P4000 Series | 451 |
| 450 | BG503RAS | BG404S* | • | FG400 Series | P4000 Series | 451 |
| 600 | SG860S | SG854S | • | FG900 Series | P4000 Series | 302 |
| 900 | SG860S | SG854S | • | FG900 Series | P4000 Series | 302 |
| 1500 | SG860S | SG854S | • | FG1500 Series | P4000 Series | 302 |
| 1800 | SG777FS | SG777S | • | FG2000 Series | P4100 Series | • |
| 2500 | SG777FS | SG777S | • | • | P4100 Series | • |
| 3000 | • | SG677S | • | • | P4100 Series | • |

*Note - NPT only

Probe Alarm System Model Selection Guide

Model EA3 Provides on/off actuation of high and low water alarms (typically).

Employs 3 probes, including one common return probe. Requires two relays.

Model EA4 Provides on/off actuation of high and low water alarms plus low water cut-out trip. Employs 4 probes. Requires 3 relays.

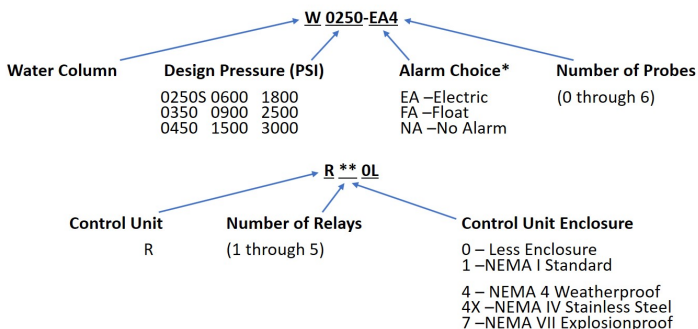
Model EA5 Provides on/off actuation of high and low water alarms plus high and low water cut-out trips. Employs 5 probes. Requires 4 relays.

Model EA6 Provides on/off actuation of high and low water alarms. Low water cut-out trip, plus pump control. Employs 6 probes. Requires 5 relays.

Model Numbering Codes

PROBE & FLOAT WATER COLUMN SAFETY SYSTEMS - RELAY CONTROL UNITS

Below are examples of typical model number which accurately specify a specific Reliance Water Column Safety System and the desired Control Unit. Use these Model Numbering Codes to determine the proper Model Numbers for your application needs. The maximum number of probes for columns above 1800 PSI is 3.



Example: R340L - 3 relay, NEMA IV enclosure
Standard controls for 120 VAC supply, unless specified.

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Relay Controls for Water Columns

Probe Safety Systems

High Technology Probes and Controls Actuate Alarms, Low Water Cut-Out and Other Controls in Systems to 3000 PSI.

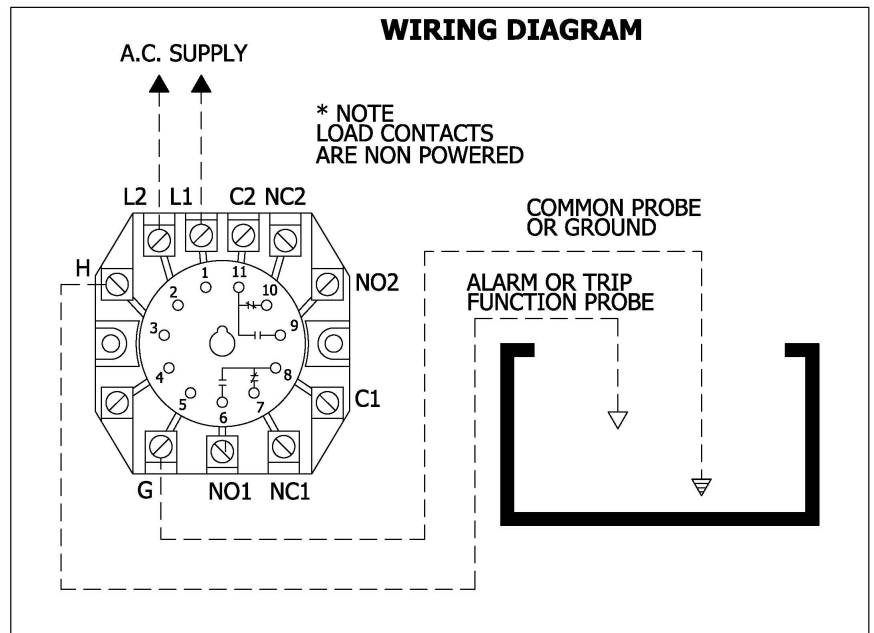
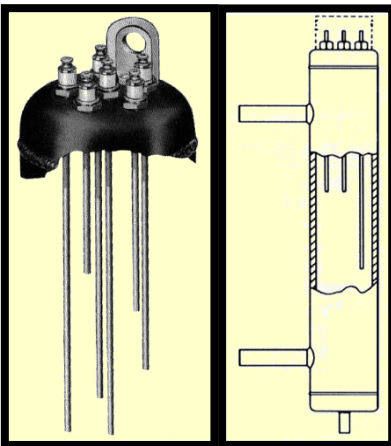
Reliance Relays Improve Reliability, offer Installation Ease and Economy

- Plug-in relays are removed by hand, no tools required
- Relays supply low voltage (12 VAC) to probes
- Relays sensitivity for extremely low water-conductivity applications, to less than 1 MMHO
- Relays improve switch contact reliability for low load applications such as computer interface control system
- Switch contacts are rated at 5 AMP 120/240 VAC or 30 VDC
- Relays use integral LED indicators to verify status
- Models available in 120 or 240 VAC Power Source

Typical Relay, Single Level Service

Direct Mode Operation When water level rises to Terminal 3 Probe, water completes circuit. Circuit signals relay to change state of load contacts, activating alarm or other equipment, while illuminating integral LED. Relay is active until water drops below probe to break circuit, turning off alarm and LED.

Inverse Mode Operation (Optional) Upon Powering Supply Terminals 1 and 2, relay energizes (LED on). When water rises to Terminal 3 Probe, probe signals relay to de-energize (LED off). Relay remains de-energized until water drops below probe. Even during momentary power failures, relay remains in "safe" mode in low level applications.

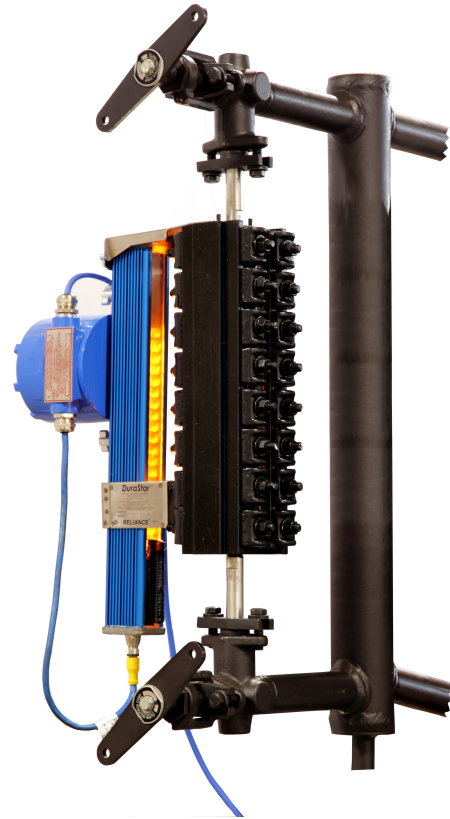


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Standpipes

- Our SP Series of Standpipes serve as a compact column to support gage glasses, when probe alarms are not required.
- Standpipes offer an economical solution for contractors by assuring the connections for the water gage connection is accurate and reduces the number of field welds.
- Reliance Standpipes are constructed from heavy wall ASME-SA106 Grade B carbon steel pipe.
- A wide variety of connections are available to meet your specifications.
- Refer to our Order Selection Sheet (Ref: R406.009) to detail your specification and one of our Reliance Applications Engineers will assist you with our recommendations for a successful result.



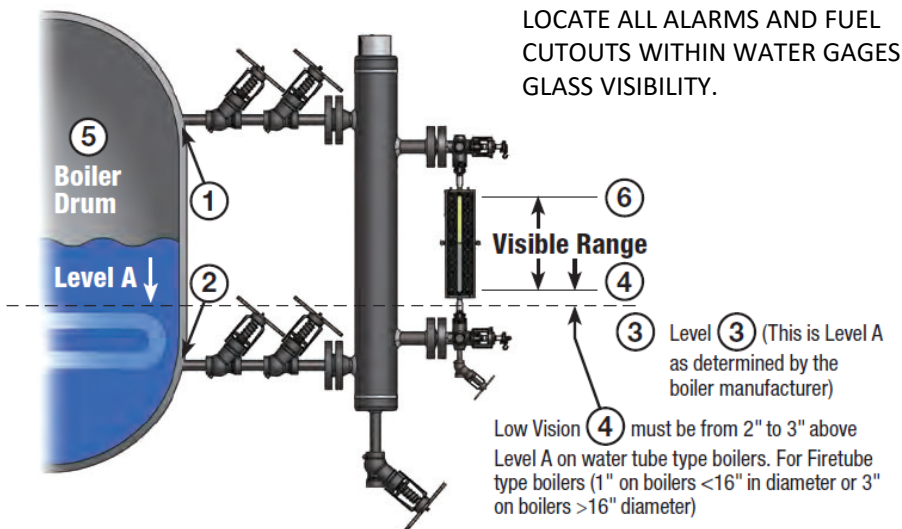
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Installation & Operations

Professional Practices Governing Water Column Installation and Operations

- Water columns should be mounted as close to the boiler drum as is practical for greatest accuracy of water level reading.
- Piping between the drum and water column causes a drop in water temperature (and increased water density) at the gage glass, with resulting lower level reading. Insulation of water columns and piping is helpful in reducing this type of water level error.
- When shutoff valves are used in the piping to a water column, they must be (1) outside screw and yoke, (2) of flow-through construction, (3) indicate open or closed position, and (4) locked or sealed open.
- Steam connection pipe should preferably slope from the drum down to the water column. Water connection pipe should be level or slope from the column down to the boiler drum.
- Provide for cleaning piping by installing crosses with plugs or blind flanges at all right-angle turns.
- No outlet connections except for water level recorder, feed water regulator, drains or steam gages shall be placed on the pipes connecting the water column to the boiler. Any device requiring a flow of steam or water, taken from the water column piping, could create a false level in the water gage glass.
- Water columns shall be fitted with a drain valve, with a suitable connection to some safe point of waste.
- If the water connection to the column has a rising bend or pocket which can not be drained by means of the water column, an additional drain shall be placed on this connection in order that it may be blown off to clear any sediment from the pipe.
- It is recommended that drain valves be operated periodically to clear all passageways. Frequency of column blowdowns depend on plant procedures. See our animation for a recommended blowdown procedure in the resources library on our website.

REVIEW OF CODE REQUIREMENTS, WATER COLUMN CONNECTION AND OPERATIONS



SHUTOFF VALVES BETWEEN DRUM AND COLUMN MUST BE OS&Y OF THROUGH-FLOW DESIGN AND ORIENTATION, SHOW POSITION AS OPEN OR CLOSED, AND HAVE LOCK-OPEN CAPABILITY.

ASME WATER GAGE REQUIREMENTS

UNDER 400 PSIG

1 Direct Reading Gage

400 PSIG AND ABOVE

2 Direct Reading Gages Or

1 Direct Reading Gage And 2 Remote Reading Gages

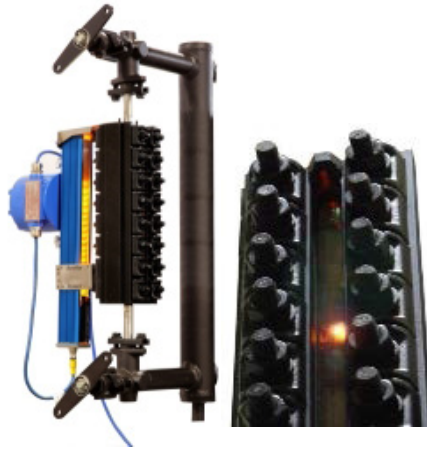
Rely on Reliance

Reliance remains the foremost name in water column design and manufacture. Since 1884, Reliance has enjoyed a reputation of leadership, assuring customers of quality materials, precision manufacturing and superior design. All columns and components are hydrostatically tested to 1 ½ times designed pressure. All products are manufactured in compliance with ASME Boiler Code provisions.

From the World's Largest Selection of Boiler Instrumentation and Control Devices



EnY!<nY# ' Ga Ufh@j Y!
@WU' UbX' FYa chY' bX]WUrcfg



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AB3.2 8/20

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