



## CASE STUDY

### INDUSTRY: HOSPITALITY



**CUSTOMER:** FRHI Hotels and Resorts

**LOCATION:** Toronto, Ontario, Canada

**SCOPE OF  
AGREEMENT:**

FRHI Hotels and Resorts has selected The Brain® Digital Re-Circulating Valve from Armstrong International, as its corporate standard domestic hot water temperature control device for all FRHI branded hotels. The Brain® is designed specifically to be the primary water temperature controller in a continuously pumped recirculating hot water system. The Brain® will control within a  $\pm 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ) accuracy and provide flow capacities from 0-188 gpm (0-712 lpm). The FRHI Design Standard pertains to New Construction and Engineered Renovation projects for all FRHI brands.



**FRHI DESIGN STANDARD:**

Digital Re-Circulating Valve (DRV): Provide DRVs for the following hot water system applications; systems with a maximum simultaneous demand (MSD) less than or equal to 3.8 l/sec (60 gpm), provide one DRV40R-BS-DS, systems up to 7.2 l/sec (115 gpm), provide either two DRV40R-BS-DS in parallel or one DRV80R-BS-DS, systems up to 11 l/sec (175 gpm), provide one DRV40R-BS-DS and one DRV80R-BS-DS in parallel, and systems up to 14.5 l/sec (230 gpm), provide two DRV80R-BS-DS in parallel.

The FRHI Design Standard does not specify an otherwise approved equal and will not accept substitution within this product category.

Installation: Install valve in compliance with manufacturer's published instructions at [www.armstronginternational.com/hospitality](http://www.armstronginternational.com/hospitality).

Designer and installer may also consider a fully pre-piped "Digital Mixing Center" (DMC40-BS-DS, DMC40-40-BS-DS, DMC80-BS-DS, DMC80-80-BS-DS).

The designer and installer can also consider utilizing The Brain® to create a number of smaller loops or zones within the hot water recirculation system. This would facilitate better balancing of the system and make any thermal disinfection regime easier to manage.

Please contact the following individuals if you have questions:

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## THE BRAIN®:



DRV40



DRV80

- +/- 2°F (+/- 1°C) water temperature control at points of use 25' downstream during demand
- +/- 2°F (+/- 1°C) water temperature control at the DRV during zero system demand "idling" periods
- 2°F (-16°C) minimum valve inlet to outlet temperature requirement (system recirculation temperature loss)
- Automatic shutoff of hot water flow in the event of a power failure
- Programmable set point range of 81-158°F (27-70°C)
- Programmable thermal disinfection mode
- Programmable 1st level hi/lo temp alarm display
- Programmable temperature error level for safety shutdown
- ASSE

For Drawings, Piping Schematics, and Revit Compatible Files, please visit:  
[armstronginternational.com/brain](http://armstronginternational.com/brain)

Recirculation Systems - Digital (gpm)					
Model	Pressure Drop (psi)		Minimum System Draw-Off	Maximum Flow @7.5 ft/sec. (2.28 m/sec.)	C <sub>v</sub>
	5	10			
DRV40/R-BS-DS	48	70	0	41	22
DMC40-BS-DS	48	70	0	41	22
DMC40-40-BS-DS	96	140	0	115	44
DRV50/R-BS-DS	94	133	0	73	42
DMC50-BS-DS	94	133	0	73	42
DRV80/R-BS-DS	94	133	0	165	42
DMC80-BS-DS	94	133	0	165	42
DMC80-80-BS-DS	188	266	0	294	84
DMC80-80-80-BS-DS	282	399	0	459	126

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Dear Wayne/Ryan,

I write to confirm that FRHI Hotels and Resorts have selected The Brain® Digital Re-Circulating Valve from Armstrong International, as its corporate standard domestic hot water temperature control device for all brands of FRHI Hotels.

We have selected the Brain® since it is a fully digital recirculation valve (DRV) designed specifically to be the primary water temperature controller in a continuously pumped recirculating hot water system.

The sizing criterion, for FRHI Hotels and Resorts requires Digital Re-Circulating Valve (DRV) that meets the following hot water system applications;

For systems with a maximum simultaneous demand (MSD) less than or equal to 3.8 l/sec (60 gpm), provide one DRV40R-BS or DMC40-BS.

For systems up to 7.2 l/sec (115 gpm), provide either two DRV40R-BS in parallel, a DMC40-40-BS or one DRV80R-BS.

For systems up to 11 l/sec (175 gpm), provide one DRV40R-BS and one DRV80R-BS in parallel.

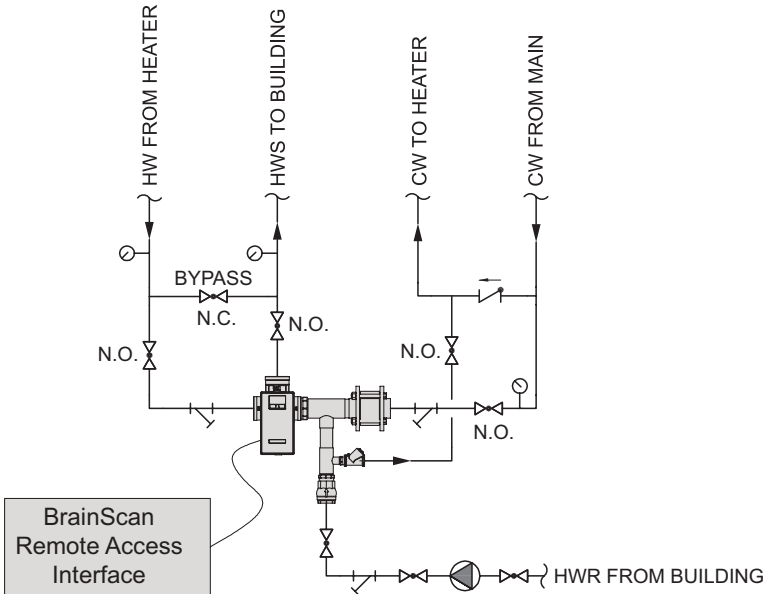
For systems up to 14.5 l/sec (230 gpm), provide two DRV80R-BS in parallel or a DMC80-80-BS

The Designer and installer can also consider utilising The Brain® to create a number of smaller loops or zones within the hot water recirculation system. This would facilitate better balancing of the system and make any thermal disinfection regime easier to manage.

Sincerely,

William Carr  
Executive Director, Engineering, Design and Construction

# Plan A - One Valve Installation Schematic



# Plan B - Two Valve Installation Schematic

