



## Wave™, IntegraClean™ Pre-Start up Checklist

A complete review of installation and startup requirements may be found in the applicable IOM.

Panel Mounting		Y	N	N/A
A.	Wave panel, Conductivity Controller, and InstAlert: within 15' for low-voltage wiring terminations			
B.	Wave panel: Visible and serviceable location.			
C.	Blowdown Controller: Serviceable location (recommended: avoid direct sunlight on display)			
D.	InstAlert: Line-of-sight to sky to permit cellular connection (call factory re: antenna extensions)			

Electrical & Controls requirements		Y	N	N/A
A.	Power supply, Wave panel: Cord tight only; No field penetrations to NEMA panel (voids warranty)			
B.	Power supply, Wave panel: Hard wired or power cord supply is not a GFCI.			
C.	Power supply, IntegraClean skid: Penetration in upper panel (do not penetrate Wave Panel)			
D.	Power supply, Wave and Blowdown Controller: Dedicated, not interlocked with operating equip.			
E.	Wave Panel, Remote alarm: Terminated to BMS (not required)			
F.	Wave Signal Cable: No tampering, factory supplied cable length (15' standard; optional extension)			
G.	Blowdown Valve: Wired, includes male plug provided for connection to Blowdown Controller			
H.	InstAlert: Conductivity (4-20 mA analog signal) terminated at Blowdown Controller			
I.	InstAlert, standalone panel (when InstAlert not integral to Wave panel): terminated at Wave			
J.	InstAlert, standalone panel (when not integral to Wave): terminated at Blowdown Controller			
K.	IntegraClean Pump: Rotation inspected			
L.	IntegraClean Control Panel: Remote start/ stop terminated (if applicable, not required)			

Mechanical requirements		Y	N	N/A
A.	Wave: Gasket is present, bolts and washers are present			
B.	Wave: Metal has 5" clearance from shell, no metallic insulation or heat-trace present			
C.	Wave: Pipe hangers or other support present to avoid axial stress			
D.	Wave: No high energy sources, pumps or motors within 3 feet			
E.	Wave installation tip: No magnetic flow meter(s) within 4-feet (Wave may affect meter reading)			
F.	Wave: Multiple units staggered to avoid signal interference			
G.	Wave, Panel, Cable: Serial numbers match (multiple unit installations)			
H.	Signal Cable: Supported to avoid direct tension on connector(s)			
I.	Signal Cable: Connector(s) locked and no water present			
J.	Signal Cable Extension(s): Heat shrink applied to connector(s) after operation verified (if applicable)			
K.	Blowdown Controller: Piped across adequate pressure drop to induce flow > 3 gpm			
L.	Blowdown Controller: Piping includes local service valves (line strainer recommended)			
M.	Blowdown Valve: Installed in header (9 to 3-o'clock location over top); not located in stagnant zone			
N.	Blowdown Valve: Hard piped to drain and secured			
O.	Blowdown Valve: Isolation valve present for valve servicing			
P.	Blowdown Valve: Weather shield installed (Belimo, outdoor installations)			
Q.	IntegraClean (IC): Skid secured, bolted to ground			
R.	IC: Supply and Return pipe matches filter inlet/ outlet size			
S.	IC: Pipe support present			
T.	IC: Tower internals installed per factory diagram			
U.	IC: Purge piped to drain and secured (or optional surge tank)			
V.	IC: Pressure across separator vessel (psi, as applicable)	Differential:	Inlet:	Outlet:
W.	IC: Pressure each CT cell (3 – 7; 6 psi optimum)	#1:	#2:	#3:
				#4:

GWS-1137 REV D

**MAKING WATER WORK**

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GriswoldWaterSystems.com

<b>Water Treatment</b>	
Name of Certified Service Provider:	
Service Partner notified of impending startup	Completed: <input type="checkbox"/>
<b>CAUTION, AVOID WARRANTY LOSS:</b> Never startup system without complete installation of the WAVE, Automatic Blowdown Equipment, InstAlert, and Filtration Systems (if applicable).	

<b>A.</b>	<b>Water for Hydrostatic Testing (Red-Water Avoidance).</b>	<b>N/A:</b>	<input type="checkbox"/>
	Some makeup water types will cause a rapid oxidation of iron pipe. It is the responsibility of the Contractor to delay filling the system; periodically circulate; or add corrosion inhibitors to avoid flash-corrosion and “red-water”. Coordinate preventative actions with the Griswold designated Certified Service Provider to avoid an unsightly situation and a subsequent cleanup.		
	Contractor refuses: <input type="checkbox"/>	Plan in place: <input type="checkbox"/>	Water has been added: <input type="checkbox"/>
	Water has not been added: <input type="checkbox"/>		If added, water has been chemically treated: <input type="checkbox"/>

<b>B.</b>	<b>Initial Flush and Chemical Cleaning.</b>
	All systems should be flushed with clean water to remove dirt and debris. A chemical cleaning of the <u>entire system</u> will be required to further remove sediment, oxides, and oils. When a written procedure is not included in the project specification, the Griswold Certified Service Provider will supply a procedure.
	Contractor refuses: <input type="checkbox"/> Plan in place: <input type="checkbox"/> System has been cleaned: <input type="checkbox"/>

<b>C.</b>	<b>Full Startup and System Load. Plan in place:</b>
	It is important to establish a system load immediately following the Chemical Cleaning to enable the Wave corrosion inhibition and biological control mechanisms. If a load is not available, the filling and system cleaning should be delayed – Or, a temporary chemical based treatment program must be employed.
	Contractor refuses: <input type="checkbox"/> Plan in place: <input type="checkbox"/> System is operating: <input type="checkbox"/>

<b>D.</b>	<b>Galvanized Metal Conditioning/ Passivation Plan.</b>	<b>N/A:</b>	<input type="checkbox"/>
	All galvanized cooling tower sumps, hot decks, and submersed components are susceptible to a “white rust” condition. A Galvanized Metal Conditioning/ Passivation Plan must be pre-arranged with the Certified Service Provider prior to adding any water to the system. Failure to establish a Conditioning Plan can cause irreversible damage and/ or result in an expensive remediation.		
	Contractor refuses: <input type="checkbox"/>	Plan in place: <input type="checkbox"/>	System is operating: <input type="checkbox"/>
	Raw/ City water & Low conductivity is in Plan: <input type="checkbox"/>		Conditioning Plan requires acid feed <input type="checkbox"/>

<b>E.</b>	<b>Low-Load Operation.</b>	<b>N/A:</b>	<input type="checkbox"/>
	At no time should wet equipment be allowed to remain idle without flow for longer than three-days. Circulate WAVE treated system water into all standby chillers and heat exchangers at least one-hour per day or at least three-hours every three days.		
	Contractor refuses: <input type="checkbox"/>	Plan in place: <input type="checkbox"/>	System is operating: <input type="checkbox"/>
	If operating, rotation is manual (by operator): <input type="checkbox"/>		If operating, rotation is automatic (BMS control) <input type="checkbox"/>

<b>Make notes of any deficiencies and make comments here:</b>	
<b>Completed by:</b>	<b>Date:</b>

Return Form To: GWS Project Service Manager, Mike Jakubowski, [mike@griswoldwatersystems.com](mailto:mike@griswoldwatersystems.com), 386.663.3384  
**If all items are complete, take photos of the Wave, CleanSweep and all equipment panels for project records.**