1. STANDARD, LISTING AND APPROVAL
2. NFPA 20
3. UL (UL218 and CSA C22.2 No. 14)
4. FM Global (Class 1321/1323)
5. City of New York for fire pump service
6. MANUFACTURER AND MODEL
7. Tornatech model GPD
8. SEISMIC CERTIFICATION
9. Test Criteria
	1. ICC-ES AC156
10. Building Code
	1. IBC 2015
	2. CBC 2016
	3. OSHPD Special Seismic Certification Preapproval – OSP

3. Seismic Parameters

* + 1. ASCE 7-10 Chapter 13
1. ENCLOSURE
2. NEMA 2
3. Bottom conduit entry gland plate
4. OPERATIONAL COMPONENTS
5. Hand-OFF-Auto selector switch installed behind lockable breakable cover.
6. TOUCH SCREEN OPERATOR INTERFACE
7. 7.0” LCD color touch screen (HMI technology) operator interface powered by an embedded microcomputer with software PLC logic
8. Keypad type pushbuttons:
	1. Crank from Battery #1
	2. Crank from Battery #2
	3. Stop
	4. Run test
9. On-Screen Menu:
10. Home
11. Alarms
12. Configuration
13. History
14. Service
15. Manuals
16. Language
17. Shall graphically display:
	1. AC power present
	2. Charger #1 and #2 charging mode
	3. Battery #1 and #2 voltage and amperage
	4. System pressure
	5. Cut-out and cut-in pressure settings
	6. Starter #1 and #2 rest or cranking
	7. Engine stopped / running
	8. Type of starting cause
	9. Fuel solenoid valve energized / not energized
	10. Timers counting
	11. Hand-OFF-Auto selector switch position
	12. Actuation mode
	13. Type of controller
	14. Method of shutdown
	15. Time and date
	16. Pump room temperature (⁰F or ⁰C)
	17. Digital pressure gauge
18. System pressure selectable units of measure:
	1. PSI
	2. kPa
	3. Bar
	4. Feet of head
	5. Meter of water
19. Shall allow programming and display of:
	1. Cut-In and Cut-Out pressure settings
	2. Minimum run period timer
	3. Sequential start timer
	4. Periodic test timer
20. Shall allow selection of the language of operation.
21. Shall allow on-screen viewing and downloading of the corresponding Operation Manual in the chosen language.
22. COMMUNICATION PROTOCOL CAPABILITY
23. Modbus with TCP/IP frame format and shielded female RJ45 connector
24. STATE AND ALARM VISUAL INDICATORS
25. Shall visually indicate and differentiate the criticalness by color:
26. AC fail
27. DC fail
28. Battery fail 1, 2
29. Charger fail 1, 2
30. Engine trouble
31. Pump room trouble
32. Controller trouble
33. Service required
34. Weak battery 1
35. Weak battery 2
36. Loss of continuity with Contactor 1
37. Loss of continuity with Contactor 2
38. Weekly test Cut-In not reached
39. Weekly test check solenoid valve
40. Faulty pressure transducer
41. Low raw water flow
42. Engine fail when running
43. Engine fail to start
44. Engine overspeed
45. Low ambient temperature
46. Pump on demand
47. Invalid Cut-In
48. Overpressure
49. Underpressure
50. Battery 1 overvoltage
51. Battery 2 overvoltage
52. Water reservoir low
53. Fuel tank Leak
54. Low fuel level
55. High fuel level
56. Engine ECM in alternate position
57. Engine fuel injection malfunction
58. Engine high temperature
59. Engine low temperature
60. Engine ECM warning
61. Engine ECM fault
62. Engine low oil pressure
63. High raw water temperature
64. Low suction pressure
65. Engine Run
66. Main switch AUTO
67. Pump room temperature (F or C)
68. Periodic test
69. Main switch in HAND
70. Cranking cycle
71. Main switch in OFF
72. AC Power available
73. CRANK CYCLE
74. Crank from battery 1 for 15 seconds
75. Rest for 15 seconds
76. Crank from Battery 2 for 15 seconds
77. Shall repeat 3 times. Visual alarm “Fail TO Start” shall appear if the engine does not start after the completion of this cycle.
78. PRESSURE AND EVENT RECORDING
79. Shall be capable of logging pressure data and operational events with time and date stamp.
80. Shall be able to display operational events for the life of the controller, and display the pressure data in text and/or graphic form.
81. Data shall be retrievable and downloadable to a flash memory disk via the USB port accessible to the user without having to open the controller door.

a. All time statistics

* + - 1. First start up
			2. On time
		1. First and last service statistics
			1. First setup
			2. On time
			3. Engine Statistics:
				1. On time
				2. Start count
				3. Last start time
			4. Minimum, maximum, average system pressure
			5. Minimum, maximum, average pump room temperature
			6. Jockey Pump controller
				1. On time
				2. Start count
				3. Last start time
1. PRESSURE SENSING - WETTED PARTS
2. Shall be supplied with a pressure transducer (system) and run test solenoid valve assembly rated for 500psi working pressure (calibrated at 0-300psi) and be externally mounted with a protective cover
3. Pressure sensing line connection to the pressure transducer shall be ½” FNPT
4. Provision for a redundant pressure transducer shall be provided
5. SERVICE/FLOW TESTING CAPABILITIES
6. Shall have the capability of scheduling maintenance reminders
7. Shall also have the capability of inputting pump flow test data, generate and display the pump curve and store this information in memory for the lifetime of the controller.
8. CONNECTION FOR EXTERNAL DEVICES
9. Manual remote start device
10. Automatic remote start device
11. Deluge valve start
12. DPDT DRY CONTACTS FOR REMOTE INDICATION (8A – 250VAC):
13. Engine run
14. Main switch in HAND or OFF
15. Common controller trouble (fail safe)
16. Common engine trouble (field re-assignable)
17. Common pump room alarm (field re-assignable)
18. Field programmable
19. AUDIBLE ALARM
20. 4” alarm bell rated for 85dB at 10ft (3m)