

AS2941-2013 Fire Pumpset Systems Checklist				
Clause No.	Item Check List	Inspection Report		Compliance ( Please ✓ )
2.4	Flooded Suction to pump intake port	<i>Height Min Effective Water level to Centre line of Pump Suction</i>		
		Port:	+/- _____ m	
2.5.1	Check $NPSH A \geq NPSHR + 1m$ Calculated at 130% Flow $NPSH A = 10.1m(ATM) + \text{static height} - \text{friction loss}$	NPSH A	_____ m	
		NPSH R	_____ m	
2.5.2 & 3.7.2	Check No Prohibited devices (e.g - Check, Butterfly or Globe Valves & Flow switches) on Pump Suction Pipe manifold. If strainer fitted check - Free area > 4 times pump suction entry area & Individual strainer opening < 8mm x 8mm	<i>Pump Suction Valve</i>		
		Listed OS&Y gate valve Type?	YES <input type="checkbox"/> NO <input type="checkbox"/>	
3.1	Check fire pump performance curve satisfies: <i>Shut-off Pressure &lt; 140% of duty head.</i> <i>Max Flow capability = 130% duty flow @ &gt; 80% duty head.</i>	Pump Duty	Flow _____ LPS @ Head _____ KPa	
		Shut-off Pressure/Duty Head	_____ < 1.40	
		Max Flow/Duty Flow	_____ > 1.3	
3.1 & 3.6.1	Check Pump Casing & System Component (pipe work, valves, flanges, roll groove couplings etc.) pressure rating greater than Pump Shut-off pressure + Suction pressure.	Casing Pressure Rating	_____ KPa	
		System Component Pressure Rating	_____ KPa	
		Shut-off + Max Suction Pressure	_____ KPa	
3.6.1.2	Request Hydrostatic Pressure test certificate - Pump & Pipework (1.5 times working pressure)	Tested Pressure	_____ KPa	
3.6.2	Check Suction & Discharge Pipe work sized for < 4m/s velocity (at Maximum flow)	Max flow (= Duty Flow x1.3)	_____ LPM	
		Suction Pipe & Valves Diameter	_____ mm	
		Discharge Pipe & Valve Diameter	_____ mm	
3.6.7	Check pipe Flexible connections if fitted are metallic Braided type	Flexible connection is metallic braided?	YES <input type="checkbox"/> NO <input type="checkbox"/>	
3.6.8	Check no pipe loads acting on pump casing – Supports provided	Piping supported?	YES <input type="checkbox"/> NO <input type="checkbox"/>	
3.7.3	Check automatic air release valve fitted for horizontal split case & vertical turbine type pump sets (Not a screwed type plug)	Automatic air release valve fitted?	YES <input type="checkbox"/> NO <input type="checkbox"/>	
3.7.4.1 3.7.4.2	Check Circulation Relief valve (CRV) fitted & sized as below Size = 19mm for pump flows to 9,500 LPM Size = 20mm for pump flows 9,501 to 19,000 LPM	Pump Minimum Flow	_____ LPS	
		Circulation Relief Valve Size	_____ mm	

<b>3.7.4.3</b>	Higher Flow/Pressure Pumps & Vertical Turbine type Pumps CRV Pressure Set point = < Shut-off + Min Suction Pressures	<b>Pumps Manufacturer's recommend</b>	_____ mm	
		<b>CRV Pressure Set point</b>	_____ KPa	
<b>3.7.5.1</b>	<b>Pressure Relief Valve (PRV)</b> if required per Table 3.1 shall be sized as per Figure 3.6 Pressure relief Valve operates within a ±5% set point. Multiple PRV installations shall not be manifolded.	<b>Is PRV required per Table 3.1?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.7.5.2</b>		<b>Is PRV Sizing Chart (Fig 3.6) provided?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.7.5.5</b>		<b>PRV Pressures @ Open/Close</b>	± _____ %	
		<b>PRV's separate discharge points?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.8</b>	Check CRV & PRV discharge is visible at pump set	<b>Discharge Visible @ CRV ?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Discharge Visible @ PRV ?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.9.2</b>	Check Discharge Pressure gauge 100mm Dial face, kPa units; Scale 1000 Kpa or minimum 2xDuty head,; Located min 2 diameter straight pipes upstream & 1 diameter downstream of gauge point.	<b>Face Diameter</b>	_____ mm	
		<b>2xDuty Head</b>	_____ KPa	
		<b>Scale:</b>	0 to _____ KPa	
		<b>Gauge Pt Pipe Diameter</b>	_____ mm	
		<b>Gauge Pt: 2D upstream &amp; 2D downstream</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.9.3</b>	Check Suction Pressure gauge 100mm Dial face, kPa units, Compound ± ve scale, Located min 2 Dia. straight pipe upstream & downstream of gauge point	<b>Face Diameter</b>	_____ mm	
		<b>Scale</b>	_____ to _____ KPa	
		<b>Gauge Pt Pipe Diameter</b>	_____ mm	
		<b>Gauge Pt: 2D upstream &amp; 2D downstream</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.10.1</b>	Flow measuring means provided & separate for each pump. Flow Measuring capacity 110% of Maximum flow Flow device does not discharge into pump suction pipe work.	<b>Flow measuring means installed to Fig 3.11?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.10.2</b>		<b>Flow measure capacity ≥ 1.1x1.3xDuty Flow?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>3.10.3</b>		<b>Outlet connected to:</b>	Drain <input type="checkbox"/>	Tank <input type="checkbox"/>
<b>3.11.2</b>	Fire Pump Automatic start via single or duplicate Pressures switches or Transducers.	<b>Hydrant fire systems – Single Sensor?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Single sprinkler installation – Single sensor?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>

		<b>Multiple sprinkler installation – Duplicate sensors each pump set?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>3.11.3</b>	Check warning sign affixed to pump set	<b>“DANGER THIS PUMP STARTS AUTOMATICALLY” sighted?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>3.13.2 to 3.13.5</b>	Check individual <b>identification plates</b> affixed to Pump set, Pump, Driver & Controller per clause 3.13.2 through to 3.13.5	<i>Manufacturer’s Identification Plates</i>			
<b>3.13.6</b>	Check Identification plate & Warning Label (fig 3.9) affix to Battery Enclosure/Cover as per clause 3.13.6	<b>Pump Set</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Pump</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Driver</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Controller</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Battery</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Battery Warning Label Fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>Fig 3.10 to Fig 3.13</b>	Check following: Separate Flow Test pipe work supplied Separate PRV pipe work to drain or tank & flow visible Separate CRV pipe work to drain or tank & flow visible Suction OS&Y Valves monitored Class “A” or “B” Discharge & Test Valves monitored Class “A” or “B”	<b>Flow Test Pipe Work Supplied?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>PRV Pipe work Separate &amp; Visible?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>CRV Pipe work Separate &amp; Visible?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Suction Monitored Valves Class ?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Monitored Valve Class</b>	Discharge <input type="checkbox"/>	Test <input type="checkbox"/>	
<b>4.1.8 (a)</b>	Verify Pump Bearings rated > 5,000hrs @ Minimum Continuous Flow (MCF) or Maximum load. Request manufacturer’s computation.	<b>MCF</b>	_____ LPS		
		<b>Rated Bearing Life</b>	_____ Hrs		
		<b>Computation sighted?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>4.2.1</b> <b>4.2.4</b>	<b>End Suction Pump</b> to International Standard, Back Pull out Spacer coupled & 1600KPa Working Pressure rated.	<b>Compliant Standard?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Spacer Coupling</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Working Pressure</b>	_____ KPa		
<b>4.3.1</b>	<b>Axially Split Case Pump</b> fitted with renewable casing Ring and Plugged Tapping for Air Release & Drain	<b>Check Casing Wear Ring Fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Tappings for Air Release</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Tappings for Drain</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>4.4.2</b>	<b>Multi-stage Multi-outlet Pumps</b> - Threaded hole in each individual casing section for air release	<b>Threaded hole at each casing section</b>	Quantity: _____		
			YES <input type="checkbox"/>	NO <input type="checkbox"/>	

<b>4.5</b>	<b>Vertical Turbine Pump</b>	<b>Automatic Air Release valve size:</b>	_____ mm	
<b>4.5.10</b>	Automatic Air Release Valve fitted – Size 32mm and greater.	<b>Non-Reverse Ratchet fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>4.6.3</b>	Vertical Turbine Drivers - Non-Reverse Ratchet fitted to electric driver or Right Angled Gear Drive or Motor Stool assembly	<b>Max Pump Power</b>	_____ KW	
<b>4.6.4</b>	Right Angled Gear Drive rated greater than max pump power required	<b>Right Angled Gear Drive Rating</b>	_____ KW	
<b>4.7</b>	<b>Positive Displacement Pumps or Foam Pumps</b>	<b>Pump max Flow</b>	_____ LPM	
<b>4.7.4</b>	Pressure Relief Valve (PRV) provided to relief whole pump flow & set at a pressure less than system component rating.	<b>PRV Size</b>	_____ mm	
<b>4.7.5.1 to 4.7.5.3</b>	Pressure Unloader Valve (PUV) if fitted shall be in addition to PRV and operate Automatically & Manually.	<b>PRV Max Flow</b>	_____ LPM	
<b>4.7.6</b>	Pressure relief & Unloader discharge shall not be return to suction of pump.	<b>PUV Fitted?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>4.7.7</b>	Check NPSHA > NPSHR + 1m	<b>Capable of operating:</b>	Automatic <input type="checkbox"/>	Manually <input type="checkbox"/>
<b>4.7.10</b>	Suction Strainer fitted 10 pipe diameters from pump flange and mesh suit Pump & System requirements.	<b>PRV &amp; PUV Discharge back to Tank</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>4.7.11</b>	Driver power sized for all design duties & Drive train loss.	<b>NPSHA</b>	_____ m	
<b>4.7.12</b>	Controller shall comply to Section 8 Electric or Section 9 Diesel Elec Driver shall be Close, Flexible or Timing Gear coupled.	<b>NPSHR</b>	_____ m	
<b>4.7.14</b>	Diesel driver shall be coupled via centrifugal clutch	<b>Suction Strainer location</b>	_____ m	
	Flow Measuring Device shall be provided.	<b>Suction Pipe Diameter</b>	_____ mm	
		<b>Mesh Size</b>	_____ mm x _____ mm	
		<b>Pump Power Required</b>	_____ W	
		<b>Driver Power</b>	_____ W	
		<b>Controller Complies to Section 8 or 9?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Elec Coupling - Close/Flexible/Timing gear coupled?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Diesel driver coupled via centrifugal clutch?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Flow Measuring Device fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>5.2</b>	<b>Jockey Pump</b>	<b>Check orifice or flow control fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<b>5.2 (b)</b>	Flow not to exceed 10LPM	<b>Max Suct. Press + Pump Shut Head</b>	_____ KPa	
<b>5.2 (f)</b>	Fit Pressure Relief valve if shut off head (Max Suction pressure + Pump Shut Head Pressure) exceeds system pressure.	<b>Pump Working Press Exceeds above</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>System Pressure Exceeds above *</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Separate Control panel</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>

5.2 (g)	Separate control panel that includes:- Lockable Isolation switch Selector switch – Auto/Manual (spring return) Indicators - Pump Run, Overload & Power “on” Non-resettable Start Counter	<b>Lockable Isolation switch</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Selector switch (Spring Return)</b>	Automatic <input type="checkbox"/>	Manual <input type="checkbox"/>
		<b>Pump Run, Overload &amp; Power “on”</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Non-resettable Start Counter</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Power supply Independent</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.2 (h)	Power supply independent of Main Fire Pump power supply	<b>Power supply Independent</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.2 (i)	Hydro-pneumatic accumulator marked Air Charge Pressure	<b>Air Charge Pressure</b>	_____ KPa	
5.3	<b>Manual Jacking Pumps (Sprinkler Alarm Valve Jacking Pump)</b>	<b>Independent Power Supply</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (b)	Independent Power supply – maybe GPO	<b>Check Orifice or Flow control fitted</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3	<b>Automatic Jacking Pumps (Sprinkler Alarm Valve Jacking Pump)</b>	<b>Separate Control panel</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (c)	Flow not to exceed 4 LPM	<b>Lockable Isolation switch</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (d)	Automatic Type Separate control panel that includes:- Lockable Isolation switch Selector switch – Auto/Manual (spring return) Indicators - Pump Run, Overload & Power “on” Non-resettable Start Counter	<b>Selector switch (Spring Return)</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (e)	Power supply independent of Main Fire Pump power supply	<b>Pump Run, Overload &amp; Power “on”</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (f)	Hydro-pneumatic accumulator marked Air Charge Pressure	<b>Non-resettable Start Counter</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
5.3 (i)	Fit Pressure Relief valve if shut off head (Max Suction pressure + Pump Shut Head Pressure) exceeds system pressure.	<b>Power supply Independent</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Air Charge Pressure</b>	_____ KPa	
		<b>Max Suct. Press + Pump Shut Head</b>	_____ KPa	
		<b>Pump Working Press Exceeds above</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>System Pressure Exceeds above</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>

8.1.3	<b>Electric Motor</b> Power rating $\geq$ 115% power required for all flows from shut head to 130% of duty flow.	<b>Min Motor KW =</b> <b>Pump Max Power Rqd. to 130%</b> <b>Flow X 1.15 =</b>	_____ KW X 1.15 = _____ KW
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<p><b>8.2</b> <b>Electric Fire Pump Controllers</b></p> <p><b>8.2.1</b> Degree of Protection Minimum IP54</p> <p><b>8.2.2</b> Location within sight of driver</p> <p><b>8.2.3</b> Control Cabinet minimum 300mm clearance from floor level and any current carrying parts. High impact resistance viewing panel if provided shall be &lt; 40% of door area.</p> <p><b>8.2.4</b> Pump circuit fitted with lockable isolator and overcurrent protected by a circuit breaker on supply side to AS/NZS3000</p> <p><b>8.2.5</b> Fire pump motor shall attain full speed within 15s of start signal</p> <p><b>8.2.6</b> Check Variable speed controller, if fitted, limits discharge pressure Set Point to 110% duty pressure.</p> <p><b>8.2.8</b> Touch screens shall not be used for primary operations – start, stop or reset.</p> <p><b>8.2.9</b> All indicator lights shall be accessible for replacement. Check following indicator provided – Power On; Power Fail; Pump Run; Battery Charge Supply Fail; variable Speed Control Malfunction &amp; Aural Alarm Silenced</p> <p><b>8.2.10</b> Individual Volt Free contacts for Power On, Pump Run &amp; Common Fault provided.</p> <p><b>8.2.11</b> Aural alarm Integral or Remote to panel provided to operate simultaneously with lights indicating Power Fail, Phase Fail &amp; Pump Run Indicator &amp; Aural Alarm power supply via monitor Battery</p> <p><b>8.2.12</b> Test facility provided for testing indicator lights &amp; Aural Alarms</p> <p><b>8.2.13</b> Ammeter provided to indicate motor current for each phase.</p> <p><b>8.2.14</b> Conductors &amp; Terminal Blocks shall be numbered.</p> <p><b>8.2.15</b> Monitor Battery - installed outside control panel on frame 150mm above floor, Terminals covered, 2 years' service life, 72h capacity, AGM sealed type &amp; identification plate fixed.</p> <p><b>8.2.16</b> Battery Charger – 3 stage type – Boost, Absorption &amp; Float Charger complete with Ammeter &amp; Voltmeter.</p> <p><b>8.2.17</b></p>	<p><b>Lockable Isolator</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>Located within sight of driver</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Floor to Cabinet clearance</b></p> <p>_____mm</p>	<p><b>Ratio Viewing Panel/Door Area</b></p> <p>_____ %</p>
	<p><b>Controller Protection</b></p> <p>IP <input type="checkbox"/> NEMA <input type="checkbox"/></p>	<p><b>Circuit Breaker Rating</b></p> <p>_____ Amps</p>
	<p><b>Time to full speed from signal</b></p> <p>_____s</p>	<p><b>Variable speed controller fitted</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Ratio Set Point/Duty Pressure</b></p> <p>_____</p>	<p><b>Touch screen not for primary functions Start, Stop or Reset - Via push buttons only</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Access to indicator lights available</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>Six Indicators listed provided</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Three Volt Free Contact provided</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>Aural alarm operates simultaneously with indicator lights</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Monitor Battery Provided</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>Test facility provided</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Read Phase current - L1/L2/L3</b></p> <p>_____ Amps</p>	<p><b>Numbered Conductors &amp; Blocks</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Battery Location</b></p> <p>_____</p>	<p><b>150mm High</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>Terminal Covers</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>Two Yrs. Life</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>
	<p><b>72Hr Capacity</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>	<p><b>72Hr Capacity</b></p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>

		<b>AGM Type</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Identification Plate affixed</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Three Stage Charger</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		<b>Read Battery Ammeter &amp; Voltmeter</b>	___ Amps	___ V	
<b>9.1</b>	<p><b>Compression Ignition Driver (Diesel Engine)</b> Starts without the use of wicks, cartridges, heater plugs or other starting devices. Engine Block Heater &amp; Thermostat control fitted with 240V warning. Engine Power = Fuel Stop rating <math>\geq</math> 115% max power required at all flows - shut head to 130% duty flow at duty speed. Engine "Fuel Stop" Power deduct: 3% for every 300m above 90m above sea level (ASL) 1% for every 5.6°C above 25°C Service Life minimum 2,000 h between overhauls or 5 years. Diesel Engine shall attain full speed within 15s of start signal Diesel Engine mounting arrangement shall provide Maintenance Access for Checking, Draining &amp; Replenishing lubrication oil. Engine cooling system shall be fitted with Multiple V-belts or single Multi-rib belt. Primary cooling loop flexible connection to be reinforced type. Secondary cooling raw water outlet pipe from heat exchanger shall be at least one size larger than the inlet. Heat Exchanger Main &amp; By-Pass cooling lines shall each include a pressure reducing (regulating) valve &amp; Indicating isolating valves as per figure 9.2 Outlet pipe from Heat Exchanger shall have visible discharge. Heat exchanger inlet Flexible Hose shall be rated for &gt;1000KPa, withstand a temperature of -10°C to +60°C, fire resistant, have reinforced inner braid and resistant to oil, mildew and abrasion. Fuel system shall be provided with a sludge &amp; sediment trap</p>	<b>Check Cold Start C.I Driver – 1<sup>st</sup> Crank</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.1</b>		<b>Warning Label 240V affixed</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.2.2</b>		<b>Engine "Fuel Stop" power</b>	___ KW		
<b>9.2.2</b>		<b>Pump Max Power X 1.15</b>	___ KW @ ___ rpm		
<b>9.2.3</b>		<b>Does Engine "Fuel Stop" Power require site Altitude or Temperature corrections?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.2.4</b>		<b>Power Deration required</b>	___ %		
<b>9.3.1</b>		<b>Certificate Service Life provided</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.3.1</b>		<b>Time to full speed from signal</b>	___ s		
<b>9.3.2.1</b>		<b>Access to check, drain and replenish engine lubrication oil available</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.3.2.2</b>		<b>Quantity of Belts</b>	___		
<b>9.3.2.2</b>		<b>Type of Belt</b>	"V" <input type="checkbox"/>	Multi-Rib <input type="checkbox"/>	
<b>9.3.2.2</b>		<b>Reinforced primary flexible connection</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.3.2.2</b>		<b>Heat exchanger outlet one size larger</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.3.3.3</b>		<b>Pressure Reducing valve – 2 Quantity</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<b>9.3.3.3</b>		<b>Lock Open Isolating valve - 2 Quantity</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

9.3.3.3 con't	<p>Fuel line flexible hose shall be suitable for temperature range of -10°C to +60°C, be fire resistant, have synthetic rubber inner tube, a reinforcing inner braid and be resistant to fuel, oils, mildew and abrasion.</p> <p>Fuel lines in trafficable areas shall be mechanically protected.</p> <p>Fuel piping shall not be Galvanised steel or copper type.</p> <p>Fuel cooler shall be installed on return fuel line for all electronic engines.</p> <p>Fuel Tank sized for 6 hour running</p> <p>Level indicator and low level fuel alarm at 2/3 capacity fitted</p>	Lock Shut Isolating valve – 1	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		Quantity				
		Heat Exchanger Discharge visible	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		Checked flexible hose certificate for compliance to pressure, temperature, fire rating, braided type and resistant to oil	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		Fuel Sludge & Sediment trap fitted	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		9.3.3.4	<p>Exhaust piping shall be fitted with a flexible connection, guarded, lagged or shielded.</p> <p>Exhaust piping low point fitted with condensate drain valve/plug</p>	Checked flexible hose certificate for compliance to temperature, fire rating, inner rubber tube, inner braided type and resistant to oil, mildew & abrasion	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		9.3.5	<p>Starting system to include Automatic &amp; manual start Batteries.</p> <p>Starting system to operate from either of two battery banks and capable of 3min cycle (10s intermittent cranking with 20s rest).</p>	Fuel lines in trafficable area protected	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		9.3.6.1	<p>An auto start isolation switch with aural &amp; visual alarm provided</p> <p>Automatic &amp; Manual Batteries - installed on frames 150mm above floor, Terminals covered, 2 years' service life, 72h alarm and monitoring capacity, AGM sealed type &amp; identification plate fixed.</p> <p>Batteries shall not be installed in fire pump control panels, below fuel tanks or on base frame (unless fitted with vibration mounts).</p> <p>Engine alternator shall be regulated for charging batteries.</p> <p>Engine over-speed shut down mechanism set at approximately 20% duty speed shall be provide with test switch and indicating light. Engine cannot be restarted until manual reset of over-speed condition is returned to normal</p> <p>Over-speed test switch revert to normal condition after operation.</p> <p>Following Engine instruments shall be provided – Tachometer, Hour Meter, Oil Pressure, Engine Temp &amp; Ammeter</p>	Fuel Piping material	_____	
		9.3.6.2		If Electronic engine is Fuel cooler fitted	YES <input type="checkbox"/>	NO <input type="checkbox"/>
				Engine fuel consumption	_____ Tank size _____	
				Fuel tank level indicator fitted	YES <input type="checkbox"/>	NO <input type="checkbox"/>
				Low fuel level set at 2/3 capacity	YES <input type="checkbox"/>	NO <input type="checkbox"/>
				Check Exhaust system includes flexible connection, guarding or lagging	YES <input type="checkbox"/>	NO <input type="checkbox"/>
	Condensate drain point provided	YES <input type="checkbox"/>		NO <input type="checkbox"/>		
	Identical Auto/Manual start batteries	YES <input type="checkbox"/>		NO <input type="checkbox"/>		
	Check 6 number 10s crank & 20s rest cycle on each battery bank	YES <input type="checkbox"/>		NO <input type="checkbox"/>		
	Isolate auto start switch & check manual/auto start function/alarm operate correctly	YES <input type="checkbox"/>		NO <input type="checkbox"/>		



9.3.7 9.3.8 9.3.10	Engine governor shall maintain the engine speed to not more than 10% above the nominated speed when operating between maximum load condition and pump shut-off. Guards fitted to belt drives, couplings & fans are tight fitting & heavy duty. Markings provided on manual start switches as Manual Start: Start Battery” & “Manual Start: Control Battery”	<b>Battery Location _____ 150mm High</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Terminal Covers</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Two yrs Life</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>72Hr Capacity</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>AGM Type</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Identification Plate affixed</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Regulated alternator provided</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Markings affixed on both manual start battery switches</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Operate over-speed test switch – check switch return to normal and engine cannot be started until manual reset button operated</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Instruments provided Tachometer, Hour Meter, Oil Pressure, Temp &amp; Ammeter</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>From Factory test data check speed ratio at Shut head/Max Load = _____ &lt; 1.1</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
9.4 9.4.1 9.4.2 9.4.3 9.4.4 9.4.6	<b>Compression-Ignition Driver Controllers</b> Fire pump controller Minimum IP54 protection rating Controller Located within sight of driver Control Cabinet minimum 300mm clearance from floor level and any current carrying parts. High impact resistance viewing panel if provided shall be < 40% of door area. Lockable power isolator, operable externally to control panel complete with protective cover, boot or warning label “LIVE”. Control Function shall incorporate Automatic Starting (cyclic cranking), Manual Starting, Speed sensing, Auto rest to stand-by position on	<b>Check no access to fingers &amp; heavy duty construction</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Controller Protection type</b>	IP <input type="checkbox"/>	NEMA <input type="checkbox"/>
		<b>Located within sight of Driver</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Floor to Cabinet clearance</b>	_____ mm	
		<b>Ratio Viewing Panel/Door Area</b>	_____	
		<b>Lockable Externally operable Isolator</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		<b>Protective Cover, boot or “LIVE” label</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>

9.4.7	shutdown, Control-Circuit isolation, Battery low voltage indication & Alarm test facility.	<b>Auto/Manual Start functions correct</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
	<p>Touch screens shall not be used for primary operations – start, stop or reset.</p> <p>Filament lights shall be twin metal filament type or two individual lights. LCD, Plasma or other displays shall operate in temperature range of 0 to 55°C and life in excess of 50,000 hours. LCD display shall use LED backlighting</p> <p>Indicators permanently displayed &amp; Colour coded as below Power ON (green) Power Fail, Engine Fail to Start, Pump Run, Charger 1&amp;2 fail, Battery 1 &amp;2 Low, Low Fuel, Variable speed malfunction, ECM fault, Alarm silenced, Over-speed shutdown, High Temp, Low pressure, Low Oil pressure &amp; Jacket heater fail (Red). Remote individual Volt Free Contacts available for Power supply present, Common Fault &amp; Pump Run Aural alarm Integral to panel or Remote provided</p> <p>9.4.7 con't</p> <p>Aural Alarm operates simultaneously with indicators for Power Fail, Fail to start, Pump Run, Battery Volt Low, Auto start isolated &amp; low fuel condition. Alarm &amp; Indicator power supply shall be from the Manual battery bank of 72 hour capacity.</p> <p>9.4.8</p> <p>Conductors &amp; Terminal Blocks shall be numbered. Supply shall be from dedicated Main switchboard or distribution board and marked Fire Pump not to be switched OFF.</p> <p>9.4.9</p> <p>Dual Constant potential Battery Chargers – 3 stage type for Boost, Absorption &amp; Float Cycle - complete with individual transformers, Ammeters &amp; Voltmeters.</p> <p>9.4.10</p> <p>9.4.11</p> <p>9.4.12</p> <p>9.4.14</p>	<b>Speed sensor terminates starter motor crank on engine start-up</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Manual stop return to standby mode</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Start Isolate operates correctly –</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Low battery volt test OK</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Indicator/Alarm test switch operates</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Touch screen not for primary functions Start, Stop or Reset - Via push buttons only</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Filament Lights – Twin Metal or Two lights?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<i>LCD, Plasma or other request certificate of compliance</i>				
		<b>Temperature &amp; Life Hr</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>LCD back lighting via LED</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Power ON indicator Green</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>All Faults listed Red</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
		<b>Check wiring diagram - Individual VFC available minimum 3 status conditions</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>		
<b>Aural alarm On Panel or Remote Wired?</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>				
<b>Aural alarm operates simultaneously with indicators for all status listed</b>	YES <input type="checkbox"/>	NO <input type="checkbox"/>				

<p><b>9.4.16</b> <b>9.4.17 &amp; 20</b> <b>9.4.18</b></p>	<p>External Automatic mode position switches shall be lockable Operation instruction &amp; wiring diagram shall be mounted inside control panel Access clearance for panel Front=1.0m, Sides=0.6m &amp; Rear if required=0.6m Markings shall be “Fire Pump Controller”, Manufacturer’s name, Model, Serial No &amp; Rating Test facility provided for testing indicator lights and aural alarms</p>	Isolate power to check manual Battery is alarm/indicator power source	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Numbered Conductors & Blocks	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Power Supply form _____ switchboard & labelled not to be switched off	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Dual Chargers & Transformers	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Three Stage Charger	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Manual Battery Amp & Volt	_____ A	_____ V	
		Automatic Battery Amp & Volt	_____ A	_____ V	
		Automatic selector switches lockable	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Instruction & Wiring diagram mounted	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Check controller access space OK	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Check markings affixed	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Check & Test indicator/Alarm	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
<p><b>10.1</b> <b>10.2.1</b> <b>10.2.2</b> <b>10.3.1</b> <b>10.3.3</b> <b>10.3.4</b></p>	<p>Shop Testing Hydrostatically Test each Fire pump to 1.5 times maximum working pressure or 2,400KPa for minimum 5mins – Report per Figure F3. Ancillary equipment (pipe work &amp; Valves) tested to above. Main Fire Pump sets with driver &amp; Controller shall be performance tested to AS2417, Grade 2 as a complete assembly and certificate similar to Figure F1 &amp; F2 provided. Electric Fire set tested 15mins &amp; results Figure F4 provided Diesel Fire set tested 90mins &amp; results Figure F5 provided</p>	Sighted Hydrostatic Test Certificate F3 – Y/N	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Hydro Test Pressure/Period	_____ KPa	_____ min	
		Ancillary Equipment Hydro-test Certificate	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Sighted Performance test F1 & F2	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Sighted Electric additional test F4	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

10.3.5 10.4	Controller Function test carried out. Results Figure F6 &F7 provided Certificate of conformance provided for each Fire pump set with its respective serial number.	Sighted Diesel additional test F5	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Sighted Controller Function Tests	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Certificate of conformance for S/N provided	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
11.3	Clearance around pump sets > 1m Clearance between multiple pump sets > 0.6m	Check 1m or 0.6m clearance available	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
11.5	Adequate ventilation in pump room – Run pump sets for 30 mins with all doors shut - Refer Note 2 clause 12.3.3(h) If pump room temperature rises more than 10°C this could indicate inadequate ventilation.	Check pump room temperature rise after 30 mins of running < 10°C	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
11.6	Drainage provided in pump room - floor graded to drain	Check water drains towards drainage	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
11.7	Concrete Plinth to 150mm High Pump set baseplate mounted on concrete plinths with 150mm clearance all around baseplate.	Plinth Height	_____ mm		
		Plinth to base frame clearance	_____ mm		
12.1 to 12.4.3	Commissioning test report per section Electric Fire Pump set – Clause 12.2.3 & 12.2.4 Diesel Fire Pump set – Clause 12.3.3 & 12.3.4 Jockey fire Pump set – Clause 12.4.2 & 12.4.3	Sighted Electric Fire Pump Report	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Sighted Diesel Fire Pump Report	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
		Sighted Jockey Fire Pump Report	YES <input type="checkbox"/>	NO <input type="checkbox"/>	