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DOC: SGE-EB-2026-03

E-BOOK 03 INTERMEDIATE EDITION

The Fire Pump House Manual

Installation, Operation & Inspection of Main, Jockey and Diesel Pumps



FIG 03.1 — FIRE PUMP ROOM HEADER, MAIN / DIESEL & JOCKEY ASSEMBLY

SYLLABUS
10 Structured Chapters

CALCULATIONS
Worked SI Examples & Tables

SITE READY
Forms & Hinglish Glossary

Shree Ganesh Enterprises (SGE) — AMC MEP 24x7
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1st Edition, 2026
sge.org.in/ebooks/fire-pump-house-installation-operation

The Fire Pump House Manual

Installation, Operation & Inspection of Main, Jockey and Diesel Pumps

A field-ready manual covering civil foundations, pump selection, flooded suction piping, eccentric reducer orientation, delivery header manifolds, diesel engine auxiliaries, 3-point curve commissioning, and auditing older fire pump houses for hidden failure hazards.

Intended Audience: MEP site engineers, fire pump installers, plant operators, commissioning teams, and facility managers auditing existing pump rooms.

Engineering Notice & Standards Policy

This publication is an educational and field-reference guide prepared by **Shree Ganesh Enterprises (SGE)**. It is **not** a substitute for a stamped project design, statutory approval, or the governing text of the National Building Code of India (NBC), Bureau of Indian Standards (BIS) codes, Indian Electricity Rules / CEA Regulations, or your State/Municipal Fire Service Bye-Laws. Standards are cited at document level; always verify the **current applicable edition**, manufacturer datasheets, and local amendments before design, procurement, testing, or certification.

Worked numerical examples across this book are illustrative engineering demonstrations. All design inputs, pipe friction factors, battery deratings, and protective clearances must be re-checked for project conditions by a competent licensed professional. High-voltage electrical testing, pump-room servicing, and gaseous fire suppression operations can be fatal if undertaken without qualified personnel, written Permits-to-Work, and Lockout-Tagout (LOTO) controls.

Roman-script Hindi/Hinglish site terms are included cleanly to assist execution teams; formal English engineering terminology governs contractual and code interpretations.

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Publisher: Shree Ganesh Enterprises (SGE) — AMC MEP 24x7 | **Web:** sge.org.in | **Support:** support@amcmep.in

Contents

01 Chapter 1: Pump House Location, Civil Room and Foundations

02 Chapter 2: Fire Pump Types and Main / Standby / Jockey Duty Logic

03 Chapter 3: Suction Piping — Flooded Suction, Eccentric Reducers and Vortex Plates

04 Chapter 4: Delivery Header, NRV, Relief Valves and Flow Test Arrangement

05 Chapter 5: Pump Erection, Grouting and Coupling Alignment

06 Chapter 6: Diesel Engine Systems — Fuel Day Tank, Batteries, Exhaust and Cooling

07 Chapter 7: Commissioning and Pump Curve Testing (Churn, 100%, 150%)

08 Chapter 8: Auditing an Old Fire Pump Room (Hidden Hazards)

09 Chapter 9: Weekly / Monthly Test Schedule, Templates and Safety Rules

10 Chapter 10: Cheat Sheet, FAQ and Bilingual Pump House Glossary

What You Will Learn

- Inspect pump-room civil drainage, inertia plinths, ventilation, and headroom prior to equipment lowering
- Build air-pocket-free flooded suction headers using flat-on-top eccentric reducers and vortex plates
- Specify every essential valve, NRV, air release, test line, and pressure relief on delivery headers
- Execute laser/dial alignment and pipe strain checks before grouting pump baseplates
- Verify diesel engine dual-battery health, 8-hour fuel day tank sizing, and cooling loops
- Run 3-point pump curve commissioning tests and inspect aging pump rooms for critical red flags

Chapter 1: Pump House Location, Civil Room and Foundations

The Heart of Fire Protection Needs a Clean Home

Every hose reel, wet riser, and sprinkler head on a 20-storey tower depends entirely on the fire pump house. Yet on many construction sites, the pump room sits in the dampest corner of a basement, cramped under drainage pipes, lacking sump dewatering, and crowded with scrap material. Fix civil readiness before a single pump arrives on a flatbed truck.

> **NOTE**
> Fire pump room dimensions, fire-rated walls, and access doors must align with National Building Code of India 2016 Part 4, NFPA 20 principles, and local Fire Service approvals. Always confirm current rules for underground vs above-ground pump-house locations.

Essential Pump Room Civil Checklist

- ☐ **Independent Fire Access:** Direct access from exterior open ground or fire staircase without passing through high-fire-load storage rooms.
- ☐ **2-Hour Fire Separation:** Masonry walls and rated fire doors separating the pump room from general electrical or basement parking areas.
- ☐ **Flooded Floor Drainage & Dewatering Sump:** Floor sloped cleanly to trench drains leading to a reliable sump pit with automatic float-controlled dewatering pumps. Never let floor flooding submerge electric pump motors.
- ☐ **Dedicated Ventilation & Exhaust:** Fresh air louvers (sized for diesel radiator combustion air plus cooling) and unobstructed insulated diesel exhaust routed safely outside—never near fresh-air intakes or escape stairs.
- ☐ **Maintenance Clearances & Lifting Beam:** Minimum 1.0 m clear walking aisle around all pumps and panels, plus overhead I-beam / chain-hoist eye above heavy split-case pump motors.
- ☐ **Emergency Battery Lighting:** Dual LED fixtures wired to an automatic battery inverter inside the pump room and near the door.

> **HINGLISH**
> Pump house = aag bujhane wale pumps ka kamra. Plinth = concrete ka uncha chabutra jis par pump rakha jata hai. Dewatering sump = kamre ka paani nikalne ka gaddha.

Chapter 2: Fire Pump Types and Main / Standby / Jockey Duty Logic

Understanding the Pump Line-Up

Standard installations combine three distinct pump roles so normal pressure leaks never slam large motors on/off while true fire flows receive instant power.

Pump Role	Driver Type	Typical Selection Logic	Stopping Mode
Jockey Pump	Electric (small kW)	~3–5% of main flow; shut-off slightly above main churn/normal static	Auto start & Auto stop
Main Fire Pump	Electric (TEFC squirrel cage)	100% design fire flow & duty head	Auto start / **Manual stop only**
Standby Fire Pump	Diesel Engine (compression ignition)	100% backup flow & head; independent of grid power	Auto start / **Manual stop only**

Where systems require separate sprinkler and hydrant headers, provide dedicated electric + diesel pairs or confirm permissible shared-header rules per governing code.

Comparing Fire Pump Casings

- **Horizontal Split-Case Pump:** Preferred heavy-duty fire pump for larger flows (e.g., 1,620 to 4,500+ lpm). Top half casing unbolts cleanly without disturbing suction/delivery flange alignments.
- **End-Suction Centrifugal Pump:** Compact, lower initial cost for smaller jockeys, terrace boosters, and moderate main duties; requires spacer coupling so motor doesn't move during seal servicing.
- **Vertical Turbine (VT) Pump:** Mandatory whenever the water source lies *below* the pump centreline (negative suction lift)—for instance deep underground sumps or open reservoirs where positive flooded suction cannot be achieved.

WARNING

Never install a standard horizontal centrifugal fire pump with suction lift (water level lower than pump eye). Trapped air locks break prime within seconds during an emergency start.

HINGLISH

Split-case pump = beech se khulne wala bada pump jiski repair bina pipe khole ho sakti hai. Negative suction = jab paani ka level pump se neeche ho (isme Vertical Turbine pump hi lagta hai).

Chapter 3: Suction Piping — Flooded Suction, Eccentric Reducers and Vortex Plates

90% of Cavitation Starts Within One Metre of the Pump Flange

Water behaves differently on the suction side of a pump than on the delivery side. While delivery piping pushes water out at 7–10 bar, suction lines pull or flow gently near atmospheric pressure. Even minor air bubbles, turbulence, or partial valve throttles inside the suction header collapse vapor bubbles violently against impeller vanes (**cavitation**), destroying brass/bronze impellers and crashing delivery head.

Non-Negotiable Suction Rules

1. **Positive Flooded Head:** Pump impeller eye must stay below the lowest possible operational water surface of the fire tank (except approved VT pumps).

2. **Vortex Plate at Tank Wall / Pit:** Fit a horizontal anti-vortex baffle plate across the tank suction bellmouth to prevent whirlpool air ingestion when tank levels fall.
3. **Straight Run Before Pump Nozzle:** Maintain at least 5x to 10x pipe diameters of straight unobstructed pipe immediately ahead of double-suction split-case pump inlets (never attach a sharp 90-degree elbow horizontally straight onto a split-case suction flange—it feeds uneven flow to the impeller halves).
4. **Eccentric Reducer Orientation — Flat Side UP:** When reducing from a larger 200 NB header down to a 150 NB pump flange, use an **eccentric reducer with the flat edge on top** (belly downward). Putting a concentric reducer or sloping upward creates a permanent trapped air bubble pocket directly before the impeller!
5. **Gate / OS&Y Valve Only — Never Globe or Butterfly Close to Impeller:** Use full-bore Rising Stem (OS&Y) gate valves locked/monitored open on suction lines. Strainers if fitted must be oversized basket strainers monitored continuously so debris cannot starve the pump.

> **HINGLISH**
> Cavitation = hawa ke bulbulon ka pump ke pankhe se takra kar dhatu ko todna. Eccentric reducer flat-on-top = oopar se seedhi reducer fitting taaki hawa na phanse.

Chapter 4: Delivery Header, NRV, Relief Valves and Flow Test Arrangement

Building a Bulletproof Discharge Header

On the high-pressure discharge side of each pump, install components in strict logical order:

1. **Flexible Connector / Spool (if specified for vibration)**
2. **Eccentric / Concentric Increaser** up to header size
3. **Non-Return Valve (NRV / Swing Check or Silent Spring Check Valve):** Stops high header pressure spinning idle pumps backwards and isolates operating pumps from standby ones.
4. **Isolation Valve (OS&Y Gate or Wafer/Lugged Butterfly with tamper switch)**
5. **Pressure Gauge with 3-way isolation cock** + **Automatic Air Release Valve** on pump casing top (essential on vertical/split-case).
6. **Casing Circulation Relief Valve (on Electric pumps):** Bleeds a small stream back to drain or tank during churn (zero hydrant flow) so trapped water inside the casing does not boil into steam.
7. **Main Pressure Relief Valve (especially on Diesel / VFD / excessive churn pressure):** Required whenever pump churn pressure plus static suction exceeds system pipe working rating.
8. **Flow Test Header & Bypass Meter Loop:** Dedicated line routed safely back into the underground fire tank equipped with an annubar/orifice/ultrasonic flowmeter and throttling gate valve so engineers can conduct full 100% and 150% pump tests without flooding the basement or parking lot!

> **FIELD TIP**
> Pipe your flow test return back below water level inside the UG fire tank (or with submerged diffuser) so re-entering high-velocity water does not aerate the tank and cause suction pump cavitation during long tests.

HINGLISH

NRV (Non-Return Valve) = sirf ek disha mein paani jaane dene wala valve. Churn pressure = jab saare hydrant band hon aur pump bina discharge ke ghoom raha ho tab ka maximum dabav.

Chapter 5: Pump Erection, Grouting and Coupling Alignment

Alignment Cannot Be Fixed After Bolts Seize

Poor alignment destroys mechanical seals, cracks flexible jaw couplings, burns motor bearings, and vibrates foundations within 50 hours of cumulative testing. Follow this verified field erection progression:

Mechanical Erection Checklist

- ☐ Roughen top of cured concrete plinth (`chipping`) and clean oil/dust before setting pump skid.
- ☐ Level pump baseplate accurately in both X and Y axes using precision machinist spirit level and steel shims beside every anchor bolt.
- ☐ Pour non-shrink epoxy/cementitious grout under baseplate ensuring zero air voids; allow full cure before final anchor tightening.
- ☐ Bolt suction and delivery pipe flanges ONLY after ensuring pipe faces meet pump nozzles naturally without pry-bars (**zero pipe strain** — verify coupling deflection gauge does not shift as pipe bolts tighten!).
- ☐ Perform rough straight-edge alignment, then final **dial-indicator / laser shaft alignment** across coupling rim (radial) and face (angular) within OEM coupling tolerances (typically <= 0.05–0.10 mm).
- ☐ Rotate pump shaft cleanly by hand through full turns to check free clearance without impeller rub.
- ☐ Install solid yellow painted **coupling safety guard** before bump-testing motor rotation!

WARNING

Bump-test electric motor rotation direction *with coupling disconnected* (or strictly following OEM verification) if three-phase rotation hasn't been confirmed with a phase-sequence meter. Running a screw/centrifugal pump backwards breaks impeller locknuts!

HINGLISH

Alignment = motor aur pump ke shaft ko ek seedh mein milana. Pipe strain = pipe ka wajan ya khinchav pump ke flange par padna (yeh galat hai). Grouting = baseplate ke neeche pakka masala bharna.

Chapter 6: Diesel Engine Systems — Fuel Day Tank, Batteries, Exhaust and Cooling

The Standby Pump Is What Saves Buildings When Utility Power Drops

During real fires, the electrical substation is often switched off by utilities or trips on ground faults. That leaves the **Diesel Engine Fire Pump** as the building's sole active water supply. Yet in real site audits, the diesel pump is the #1 unit found dead!

Critical Diesel Engine Auxiliaries

- **Dual Redundant 12 V / 24 V Battery Banks:** Two independent heavy-duty starting battery sets (Bank A & Bank B) wired to dual automatic smart chargers inside the diesel control panel. Never allow cheap maintenance-free automotive batteries with zero electrolyte checks or disconnected trickle chargers.
- **Fuel Day Tank Sizing & Placement:** Positioned slightly higher than fuel injection pump with gravity feed (check OEM max height), fitted with sight level glass (armoured), drain sludge cock, low-level float alarm, and spill bund catching 110% tank volume.
- **Exhaust Piping:** Must route cleanly outside with flexible stainless steel bellows isolating engine vibration, insulated along indoor walkways, and fitted with weather-cap flapper outdoors so rain never pools down into engine cylinders.
- **Cooling System:** Air-cooled heat exchanger loop drawing clean filtered bypass water from pump discharge header through pressure-reducing orifice, solenoid start valve, and visible open funnel sight drain (never allow raw untreated muddy river/bore water to plug narrow heat-exchanger tubes).

WORKED EXAMPLE

Diesel Fuel Day Tank Sizing for 8-Hour Run (Illustrative). Assume a diesel pump driver rated at 60 kW mechanical output has a typical full-load specific fuel consumption of 0.24 litres per kWh. Typical standard requirement specifies 8 hours continuous full-load autonomy plus 10–15% expansion/sediment ullage margin.

Hourly burn = 60 kW x 0.24 L/kWh = 14.4 litres/hour 8-hour fuel mass volume = 14.4 x 8 = 115.2 litres Add 15% safety/dead-bottom margin = 115.2 x 1.15 = 132.5 litres. Result: Select standard **150 Litre** (or 200 Litre) steel fuel day tank with low-fuel sensor triggering at ~40% drop. Never substitute plastic jerrycans!

HINGLISH

Day tank = diesel pump ke paas laga diesel ka chhota tanki. Trickle charger = battery ko hamesha full aur zinda rakhne wala charger. Exhaust insulation = garm silencer pipe par glasswool ki patti lagana taaki koi haath na jalaye.

Chapter 7: Commissioning and Pump Curve Testing (Churn, 100%, 150%)

Never Sign Handover on a 10-Second Dry Bump

Running a pump against closed valves for five seconds proves only that the motor turns. True commissioning verifies the hydraulic performance curve across three critical points through the calibrated flow test loop:

WORKED EXAMPLE

Main Pump Shaft & Motor kW Verification (Illustrative). Design required duty: Flow Q = 2,280 lpm, Total Dynamic Head H = 70 m, assumed pump efficiency = 72% (0.72).

Q in m3/s = 2,280 / 60 / 1,000 = 0.038 m3/s Hydraulic Power = (1,000 x 9.81 x 0.038 x 70) / 1,000 = 26.09 kW Required Pump Shaft Power = 26.09 / 0.72 = 36.24 kW Add 15% non-overloading motor allowance (to handle 150% overload power draw): Minimum motor rating = 36.24 x 1.15 = 41.68 kW. Selection: Standard **45 kW (60 HP)** 2900 RPM IE2/IE3 fire duty motor.

3-Point Commissioning Curve Acceptance Check

WORKED EXAMPLE

3-Point Test Curve Pass Check (Illustrative). Manufacturer datasheet rated duty for Pump #1: **2,280 lpm @ 7.0 bar**. Typical acceptance framework per NFPA 20 / industrial test practice (verify exact tolerance against contract):

Curve Test Point	Flow (lpm)	Measured Discharge (bar)	Measured Suction (bar)	Net Head Check & Acceptance Criterion	Verdict
0% Churn (Shut-off)	0 lpm	8.2 bar	+0.3 bar	Net 7.9 bar = 113% of rated (typically <= 140% max)	PASS
100% Rated Duty	2,280 lpm	7.1 bar	+0.2 bar	Net 6.9 bar (adjust suction static datum; verify >= rated curve)	VERIFY SUCTION / PASS
150% Overload	3,420 lpm	5.1 bar	+0.1 bar	Net 5.0 bar = 71.4% of rated (typical min >= 65% = 4.55 bar)	PASS

Record Voltage (R-Y, Y-B, B-R), Full Load Current (Amps per phase), bearing skin temperature, gland packing drip rate (slow cooling drip of 10–30 drops/min for packed glands, zero leakage for mechanical seals), and diesel oil pressure/coolant temperature throughout a 30-to-60 minute sustained run.

HINGLISH

Curve test = teen alag-alag paani ke bahav (0%, 100%, 150%) par pump ka pressure naap kar uski taqat check karna. Gland packing = shaft se paani tapakne ko rokne wali rassi/seal.

Chapter 8: Auditing an Old Fire Pump Room (Hidden Hazards)

What Inspectors Find in Neglected Plants

During audits of 5-to-15-year-old apartment towers, factories, and commercial plazas, mechanical hardware often looks freshly painted on the outside while critical internals have completely failed. Look past the red paint!

Hidden Hazard Observed on Audits	Why It Happens	Real Fire Consequence	Immediate Field Remedy
Manual Switch Left on 'OFF' or 'MAN'	Guard turned off pump after annoying jockey chatter and forgot	Zero auto-start when sprinkler/hydrant opens	Lock panel selector in **AUTO**; fix root leak causing jockey chatter
Dead or Sulfated Diesel Batteries	Charger MCB tripped months ago; acid evaporated	Diesel engine clicks once and refuses to crank on grid trip	Check specific gravity, load-test cranking volts, replace failed bank
Locked-Shut Suction or Delivery Valve	Previous plumber isolated header to change a gauge	Pump dead-heads into dry starvation or blocked pipe	Open full, install padlock + chain + tamper switch monitor
Jammed NRV Flapper	Silt/rust seized swing pin inside cast-iron NRV	Running main pump pushes pressure backwards through standby pump	Overhaul/clean NRV internals annually; verify pressure differential
Corroded/Burst Small Copper Impulse Line	Floor trolley hit unguarded tubing under pressure switches	Switch reads 0 bar -> pump latches ON continuously at churn	Replace with rigid SS/heavy MS manifold protected inside guard
Flooded Pump Pit / Submerged Motors	Dewatering sump pump jammed with debris during monsoon	Electric motor winding shorts out on first start command	Clear sump, wire dual float switches + high-water BMS alarm

WARNING

Never run electrical fault diagnostics inside a wet pump room standing in puddles. Isolate the main supply, verify zero voltage with an insulated tester, wear insulated boots and PPE, and follow strict Lockout-Tagout (LOTO).

HINGLISH

Old pump room audit = purane pump kamre ki chhupi hui kamiyan dhoondhna. Tamper switch = agar koi galti se valve band kar de toh alarm bhejne wala sensor.

Chapter 9: Weekly / Monthly Test Schedule, Templates and Safety Rules

Routine Testing Keeps Systems Alive

Follow a structured preventive maintenance schedule (aligned with NFPA 25 / local AMC standards):

- **Daily Check:** Log tank level, system header pressure gauge, panel power healthy LEDs, selector switches on AUTO, diesel battery charger volts (e.g. ~26–27.5 V DC for 24 V nominal bank), and fuel sight glass > 75%.
- **Weekly Churn Test:** Run electric pump for ~10 minutes and diesel engine pump for ~30 minutes (or per manufacturer guide) at no-flow churn; verify oil pressure, coolant rise, and cooling sight funnel flow.
- **Quarterly / Semi-Annual Flow Check:** Drop system pressure via test drain line cleanly to confirm exact cut-in thresholds for Jockey -> Main -> Diesel sequence.
- **Annual Full Curve Test:** Conduct 0%, 100%, 150% test via loop flowmeter and compare directly against Year-0 commissioning baseline.

Printable Pump House Daily & Weekly Log Template

Date	Shift / Tech	Main Header (bar)	Elect Select (AUTO?)	Elect Amps (Run)	Diesel Volts (Bank A/B)	Diesel Oil/Temp OK?	Fuel Level (%)	Leaks / Notes	Sign
____	_____	_____ bar	[ ] YES	_____ A	___V / ___V	[ ] YES	____%	_____	____
____	_____	_____ bar	[ ] YES	_____ A	___V / ___V	[ ] YES	____%	_____	____
____	_____	_____ bar	[ ] YES	_____ A	___V / ___V	[ ] YES	____%	_____	____

Monthly Pump Room Integrity Audit Form

- ☐ Tank suction isolation gate valves strapped & locked **OPEN**
- ☐ Jockey starts cleanly at upper cut-in (____ bar) and stops cleanly at cut-out (____ bar)
- ☐ Jockey starts less than 1–2 times per hour (if higher, inspect foot valve / NRV / header leaks)
- ☐ Diesel engine cranks within 3–5 seconds of test drop without black smoke / overheating
- ☐ Pump room exhaust fan & emergency lights tested on battery backup

Chapter 10: Cheat Sheet, FAQ and Bilingual Pump House Glossary

Pump House Golden Rules Cheat Sheet

1. **Suction Speed <= 1.5 m/s** | Eccentric reducer **Flat side ON TOP**.
2. **Panels Always on AUTO** | Never leave selector on OFF after testing.
3. **Manual Stop Only for Main & Diesel** | Only Jockey stops automatically!
4. **Diesel Batteries Need Monthly Electrolyte & Charger Voltage Checks**.
5. **Test Loop Returns Below UG Water Line** to avoid tank foaming.

Frequently Asked Questions (Site & Operations)

1. **Why must Main and Diesel pumps NEVER auto-stop when pressure recovers?** Because if one fire fighter shuts a nozzle briefly to move positions during a major fire, auto-stopping could stall/burn the pump starter during rapid re-starts; someone must verify fire out before pressing manual stop in the pump house.
2. **How fast should a packed-gland pump drip?** Slowly—about 10 to 30 drops per minute during operation—to lubricate and cool the braided packing against the bronze shaft sleeve. Zero drip burns the sleeve!
3. **Why does my Jockey pump keep running for 10 seconds every 2 minutes?** Either a pipe/hydrant/gland leak exists on the network, the Jockey NRV is passing backwards, or the air cushion inside the small pressure vessel has waterlogged.
4. **Can I connect the test return pipe straight into the storm drain?** No; discharging 2,280–3,420 lpm wastes huge static fire reserve and floods street drains. Loop it safely back to the UG tank.
5. **What happens if diesel day tank vents are blocked?** Fuel starvation creates vacuum lock in the fuel tank and stalls the diesel engine mid-fire. Ensure breather vent has flame-arrestor screen cleanly clear.
6. **Why are two batteries fitted on every diesel fire engine?** If Battery Bank A fails, Battery Bank B independently cranks the starter motor via manual/auto changeover contactor.
7. **Is a flexible bellows required on the suction header?** Keep rigid well-aligned steel spools on suction where possible unless high thermal/seismic movement demands reinforced short bellows; cheap unrestrained rubber bellows collapse inward under suction vacuum!
8. **How often should pump shaft alignment be re-checked?** Annually, and immediately after any major valve replacement or baseplate bolt work.
9. **Can we use domestic pump foot-valves below the fire reserve?** No; place domestic suction feet strictly above the top datum of the reserved fire storage volume.
10. **How do I know if an NRV is stuck closed?** Running pump pressure gauge reads full churn while header pressure downstream shows zero rise and water stays hot in the casing.
11. **What oil and filter interval applies to standby fire diesels?** Typically once per year (or every 100–250 running hours per engine manual), even if total hours look low, because moisture degrades idle engine oil.
12. **Who is authorised to work on pump starters?** Only a licensed electrical technician after isolating main breaker, locking/tagging out (LOTO), and verifying zero volts across all three phases.

Hindi–English Bilingual Glossary

English Term	Hinglish / Site Hindi	Field Meaning
Flooded suction	Hamesha bhara suction	Positive water head above pump eye
Eccentric reducer	Ek-tarfa reducer (upar seedha)	Transition fitting preventing trapped air pockets
Cavitation	Pani mein hawa ke bulbule tootna	Destructive vapour collapse inside pump impeller
Anti-vortex plate	Bhanwar rokne wali plate	Tank baffle preventing air whirlpools
Gland packing	Dori / shaft seal rassi	Braided rope ring sealing shaft sleeve
Mechanical seal	Spring wali pakki seal	Zero-drip precision rotating shaft seal
Shaft alignment	Shaft ko ek seedh mein karna	Matching pump and motor centerline axes
Pipe strain	Pipe ka khinchav / dabav	External force distorting pump nozzles
Non-Return Valve (NRV)	Ulta bahav rok valve	Check valve allowing flow one way only
Rising Stem Gate Valve (OS&Y)	Bahar aane wale screw ka valve	Valve whose external stem clearly shows OPEN vs SHUT
Butterfly Valve	Chakri wala valve	Quarter-turn wafer/lugged isolation valve
Tamper Switch	Valve band hone ka alert sensor	Microswitch warning panel if valve moves
Pressure Relief Valve	Zyada dabav nikalne wala valve	Protects headers from over-pressurisation
Circulation Relief Valve	Pump thanda rakhne wala valve	Bleeds small stream at churn to stop boiling
Churn Pressure	Band hydrant par pressure	Maximum zero-flow discharge pressure
Flow Meter / Annubar	Bahav naapne wala meter	Instrument reading lpm during curve test
Day Tank	Diesel engine ki chhoti tanki	Dedicated fuel tank holding minimum 8h diesel
Trickle Charger	Battery chalu rakhne ka charger	Smart automatic battery maintenance unit
Heat Exchanger	Engine thanda karne wala cooler	Jacket water cooling tube bundle
Solenoid Valve	Bijli se khulne wala valve	Electrically operated cooling water valve
Jockey Pump	Dabav banaye rakhne wala pump	Small electric pump compensating tiny drips
Horizontal Split-Case	Beech se khulne wala pump	Double-suction heavy duty main fire pump
Vertical Turbine (VT)	Zameen ke neeche utarne wala pump	Submerged bowl assembly pump for negative lift
LOTO (Lock Out Tag Out)	Suraksha tala aur tag	Physical energy lock preventing accidental start
Impulse Line	Patli pressure pipe line	Thin sensing line feeding pressure switches
Air Release Valve	Hawa nikalne wala valve	Bleeds air pockets at high casing points
Grouting	Baseplate ke neeche masala bharna	High-strength cement filling anchoring pump frame
Sump Dewatering	Niche jama paani nikalna	Automatic drainage pump preventing motor flooding

English Term	Hinglish / Site Hindi	Field Meaning
Crank / Start Relay	Engine chalu karne ka relay	Heavy DC solenoid engaging diesel starter
Hydrostatic Test	Paani dabav parikshan	Pressure testing header integrity before service

The Fire Pump House Manual

A field-ready manual covering civil foundations, pump selection, flooded suction piping, eccentric reducer orientation, delivery header manifolds, diesel engine auxiliaries, 3-point curve commissioning, and auditing older fire pump houses for hidden failure hazards.

COMPLETE 12-VOLUME SGE ENGINEERING LIBRARY

01 Fire Fighting System A to Z
02 Fire Protection Design Handbook
03 **The Fire Pump House Manual**
04 Pressure Switch & Pump Controller Field Manual
05 Sprinkler System Design Workbook
06 Fire Alarm Design & Cable Calculation Guide
07 Special Hazard Suppression Guide
08 Fire NOC & Building Approval Playbook
09 Fire Extinguishers, Home & Office Safety
10 Cable Sizing, LT Panel & Short-Circuit (kA) Guide
11 HT Cable Hi-Pot Testing & Fault Location
12 The Site Engineer's Calculation Handbook

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