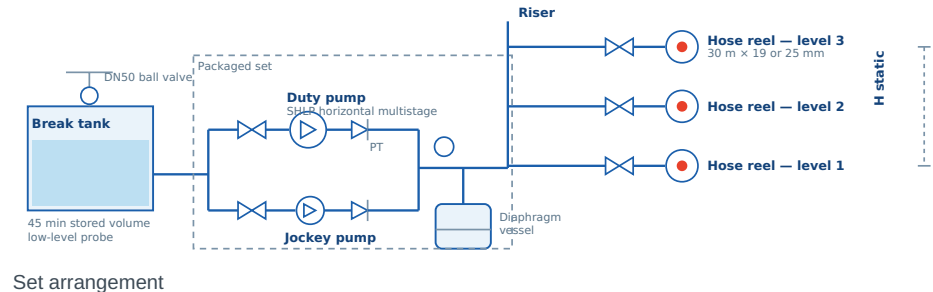


SFP

Fire Hose Reel Booster Sets BS EN 671-1 / BS 5306-1



Set arrangement

Skid-mounted booster set with diaphragm vessel, manifolds, gate valves and pressure gauge. The set shown includes an engine-driven pump; the standard SFP range is electric only.

For full details of component performance and specification refer to the individual SHLP Product Data Sheets.

Satte SFP Fire Hose Reel Booster Sets combine carefully matched quality components that give optimal operating efficiency with high levels of reliability and competitive pricing, to provide the flow and running pressure a fixed hose reel installation needs.

Benefits

- Duty point verified against the published SHLP pump curve, not assumed
- Every pump non-overloading across its full curve
- Jockey pump holds system pressure so the duty pump starts only on a real demand
- Automatic changeover to standby and weekly test run
- Dry-run protection from the suction tank level
- Volt-free alarm contacts for the fire alarm panel or BMS
- Stainless steel wetted parts, 10 bar rated

Applications

- Residential apartments and condominiums
- Hotels, guest houses and student accommodation
- Commercial and retail buildings
- Light industrial units and warehousing
- Schools, clinics and healthcare facilities

Standards

- BS EN 671-1:2012 — hose reels with semi-rigid hose
- BS 5306-1 / BS 9990 — design, water supply, commissioning
- EN ISO 9906 grade 3B — performance test
- IEC 60034-1 motors · IEC 61439-1/-2 panel
- EN 13831 / PED 2014/68/EU — pressure vessels
- EN 1092-1 flanges · BS EN 10255 tube

Technical Data

Table 1 — Duty and pump selection. Performance read from the published SHLP curves at 2900 rpm.

Model	Hose reels	Design duty			Duty pump						Jockey pump		
		Flow m³/h	Flow l/s	Head m	Type	kW	HP	Head at duty, m	Absorbed kW	NPSHr m	Type	kW	HP
SFP1	1	1.5	0.42	40	SHLP 2/50	0.55	0.75	42	0.35	1.5	Not fitted — duty pump cycles on the vessel		
SFP2	2	3.0	0.83	40	SHLP 4/60	1.10	1.5	48	0.75	1.8	SHLP 2/50	0.55	0.75
SFP5	3–5	6.0	1.67	40	SHLP 8/50	2.20	3.0	48	1.50	1.8	SHLP 4/60	1.10	1.5
SFP8	6–8	12.0	3.33	40	SHLP 12/50	3.00	4.0	45	2.30	2.7	SHLP 8/50	2.20	3.0

Design flow is 1.5 m³/h (25 l/min) per hose reel, against a BS EN 671-1 minimum of 24 l/min at 2 bar through a 6 mm nozzle. SFP5 is sized on four reels running together and SFP8 on eight; the code minimum is two. **Head at duty** is the maximum the pump will produce at the design flow and is the ceiling for a made-to-order set.

Table 2 — Ancillaries, connections and dimensions

Model	Supply	FLC A 230 V 1~	FLC A 400 V 3~	Vessel	Suction tank m³	Suction	Discharge	Riser	Set L × W × H, mm	Weight kg
SFP1	1~ or 3~	3.9	1.3	1 × 60 L	1.5	DN32	DN25	DN25	850 × 400 × 820	55
SFP2	1~ or 3~	10.7	3.6	2 × 24 L	2.8	DN40	DN32	DN32	850 × 400 × 820	75
SFP5	1~ or 3~	19.4	6.8	1 × 150 L	5.6	DN50	DN50	DN50	1030 × 500 × 900	110
SFP8	3~ or 1~	29.3	10.3	1 × 300 L	11.3	DN65	DN65	DN65	1200 × 650 × 1400	150

Full-load currents are for both pumps running, which occurs only briefly at changeover. They are calculated for cable, starter and protection sizing — confirm against the motor nameplate. Suction tank is the effective capacity above the draw-off, giving 45 minutes at the design flow as BS 5306-1 requires. Weights are calculated from the SHLP pump weights plus frame, manifolds, panel and vessel; confirm before use on a shipping document. Flanges EN 1092-1 PN16.

Supply. Pumps are built single phase or three phase to suit the installation. Up to 2.2 kW single phase is the usual build, so SFP1, SFP2 and SFP5 are supplied as 230 V single-phase sets unless a three-phase supply is specified. The SFP8 duty pump is 3.0 kW, above the normal single-phase band, so the standard SFP8 is a 400 V three-phase set; a single-phase build is available to order. State the supply with the enquiry.

Note: This table gives details of the standard product range available. Other systems can be specified to suit particular site requirements in terms of control features, flow and pressure.

Design Basis

Parameter	Value
Nozzle	6 mm equivalent, K = 17
Minimum flow per reel	24 l/min at 2 bar
Design flow per reel	25 l/min (1.5 m³/h)
Jet throw at 2 bar	≥ 10 m
Annual test flow	≥ 30 l/min
Hose	30 m, 19 or 25 mm bore
Stored water	45 min at design flow
Friction method	Hazen-Williams, C 120 pipe / 140 hose

Nozzle flow: $Q = K \sqrt{(10 P)}$ — Q l/min, P MPa

At 2.0 bar: $17 \times \sqrt{2} = \mathbf{24.0 \text{ l/min}}$ — meets EN 671-1

At 25 l/min: $(25 \div 17)^2 \div 10 = \mathbf{2.16 \text{ bar}}$ at the nozzle

Head budget:

Nozzle, 2.0 bar · · · · · 20.4 m

Hose, 30 m × 19 mm at 24 l/min · · · 4.2 m

Reel valve and branch · · · · · 1.0 m

Set manifolds and valves · · · · 1.5 m

Distribution main, 50 m equivalent · · 0.9 m

Subtotal 28.0 m — the rest is static lift

Height of the Highest Reel

Table 3 — Maximum height of the highest reel valve above the pump centreline

Model	At the standard 40 m rating	Approx. storeys at 3.2 m	Head at duty available from the pump, m	Maximum on a made-to-order set	Approx. storeys
SFP1	12.0 m	3	42	14.0 m	4
SFP2	12.0 m	3	48	20.0 m	6
SFP5	12.0 m	3	48	20.0 m	6
SFP8	12.0 m	3	45	17.0 m	5

Building height. At the standard 40 m rated head the highest hose reel can sit no more than about 11 m above the pump — roughly three storeys. High-rise buildings need a head-uprated set, a zoned system or tandem boosting; see section 5.

Pipework and Water Supply

Model	Design flow l/s	Riser and main	Bore mm	Velocity m/s	Friction m per 100 m	Branch to each reel	Tank inlet ball valve
SFP1	0.42	DN25	27.3	0.71	3.4	DN25	DN50
SFP2	0.83	DN32	36.0	0.82	3.2	DN25	DN50
SFP5	1.67	DN50	52.9	0.76	1.8	DN25	DN50
SFP8	3.33	DN65	68.9	0.89	1.8	DN25	DN65

Bores are BS EN 10255 medium grade. Add 30% to the measured run for fittings before applying the friction figure. **Loss through 30 m of hose:** 19 mm bore, 4.2 m at 24 l/min and 6.3 m at 30 l/min; 25 mm bore, 1.1 m and 1.7 m. Add 25% where the hose is used part-coiled.

Pressure Vessel

$$V_{\text{draw}} = Q \times T \div 4 \text{ — } Q \text{ l/min, } T \text{ min cycle}$$

$$V_{\text{vessel}} = V_{\text{draw}} \div [1 - (P_{\text{pre}} + 1) \div (P_{\text{stop}} + 1)]$$

Pre-charge 2.8 bar · start 3.1 · stop 4.5

$$\text{Factor} = 1 \div 0.309 = \mathbf{3.24}$$

$$\text{SFP5: } 88 \times 2 \div 4 = 44 \text{ L} \rightarrow 44 \times 3.24 = \mathbf{143 \text{ L}}$$

SFP5	SHLP 4/60	88	143	1 × 150 L	28
SFP8	SHLP 8/50	167	270	1 × 300 L	27

Flows are the jockey's mean output between the start and stop settings, read from the SHLP curve. Fitting a throttling valve on the jockey discharge to limit it to about 1 m³/h allows a smaller vessel on all models.

Operating Conditions

- Pumped liquid: thin, clean, non-aggressive, non-explosive, free of solids or fibres
- Liquid temperature 0 to +90 °C; +4 to +40 °C on potable duty
- Maximum ambient +50 °C
- Maximum inlet pressure 6 bar
- Maximum operating pressure 10 bar to 40 °C, 6 bar to 90 °C
- Maximum suction lift per the NPSH curve plus 1.0 m safety margin
- Motors IP54, insulation class F, 2900 rpm

$$\text{NPSH available} = h_{\text{atm}} - h_{\text{vap}} + h_{\text{static}} - h_{\text{friction}}$$

At 1200 m altitude, 25 °C, flooded suction +1.0 m, suction loss 0.4 m:

$$8.96 - 0.32 + 1.0 - 0.4 = \mathbf{9.2 \text{ m}}$$
 against NPSHr ≤ 2.7 m

Atmospheric head, m water:

$$0 \text{ m } \mathbf{10.33} \cdot 1000 \text{ m } \mathbf{9.18} \cdot 1500 \text{ m } \mathbf{8.64} \cdot 2000 \text{ m } \mathbf{8.12}$$

Altitude costs 1.2 m of NPSH at 1200 m and 2.2 m at 2000 m. It does not affect discharge head, but it matters where the pump lifts from a sump rather than sitting under a flooded suction. Keep a margin of 1.0 m or 1.35 × NPSHr, whichever is greater.

How to Select

Count the reels and decide how many run at once, minimum two, and read the design flow from table 1. Fix the hose bore and length. Measure the static height from the pump centreline to the highest reel valve and check it against table 3. Take the model from the flow; if the static height exceeds the standard column, order the set at the head shown in table 3 and state it in the order code. Size the suction tank from table 2 and check NPSH available.

Order code **SFP5 - 48 - 230/1/50 - VSD** model, rated head in metres, supply, options. The standard build is 40 m and is what is supplied if no head is stated.

Verification note. Pump head, absorbed power and NPSHr in table 1 are read from the curves on the SHLP 2, SHLP 4, SHLP 8 and SHLP 12 datasheets and rounded; confirm against the manufacturer's tabulated data before issue. Set weights and dimensions need factory confirmation. Everything else is calculated from the design basis above and can be re-derived from the formulae shown. This datasheet describes the water supply only and is not a substitute for a fire strategy or a hydraulic calculation for the specific building.

Performance stated at 50 Hz with clean water at 20 °C. Satte reserves the right to alter specifications without notice.