

EIM Submersible Slurry Pumps

The use of Japan's EIM SV & HS submersible Slurry pumps in mines is the best choice for Heavy Duty Applications.

**LOW
MAINTENANCE**



The EIM SV & HS submersible pumps are space saving, easy to install and no pump houses are required. Sold and supported exclusively by PumpRite, Inc. The SV & HS can be horizontally or vertically mounted. This Submersible Slurry pump, offers high efficiency, built for long service, and resist clogging.

FEATURES

- Low maintainece

- Suitable for coal chip slurries and similar media
- Double mechanical seals
- Explosion proof
- Flame proof

- Discharge of between 238 and 980 Galon per minute
- 460 volts, 60 Hz, 3 Phase

SPECS

- Suitable for environments up to 104°F
- Power rating of 7.5 to 30 HP
- Total head from 33 to 80 Feet

PumpRite, Inc.

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1-630-890-7867

www.AmericanMines.com



E.I.M. ELECTRO SUBMERSIBLE SAND/SLURRY PUMPS:

MODEL "HS" SERIES

■ WIDE APPLICATION

Pumping up and transfer of slurry and sludge from earthworks and construction work.

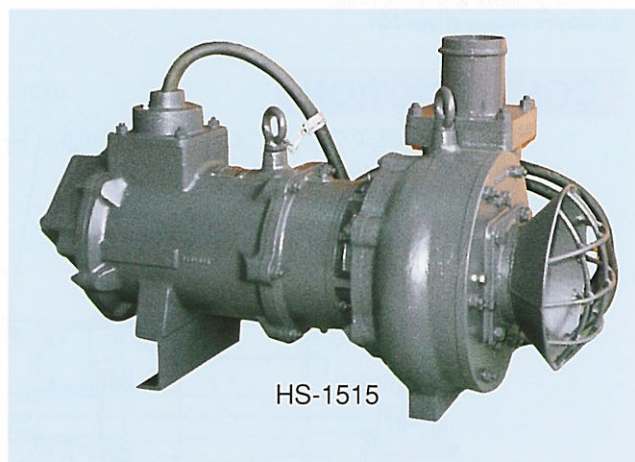
Discharge of mud and sludge from foundation boring, earthworks, tunnelling, shield work, etc.

Transfer of bentonite and fly ash

Pumping up of scale and oxidized iron powder

Pumping up and transfer of river sand and marine sediment

Other general drainage applications



HS-1515

■ PUMPS OPERATE EVEN UNDER DRY RUNNING CONDITIONS

Generally, dry running results in pump motor overheating and noise troubles. To prevent these problems, pumping sets had to be monitored continuously while in operation.

E.I.M. now has available the EIM HS Sand Pump, which can operate, even in dry running conditions, without the previously necessary monitoring system. Even if overheating should occur, the motor is protected by a motor protector.

■ CAN EFFICIENTLY HANDLE VERY DENSE SLURRIES AND SLUDGES

The heavy duty casing construction and high chrome cast iron impeller with large water passages ensure unchanged pumping performance over extended pump operation. In addition improvements in materials of construction and design have made this pump series highly efficient and reliable.



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E.I.M. ELECTRIC CO.,LTD.

TYPE SV



Non-clogging, highly efficient, horizontal type

EIM TORQUE-FLOW VORTEX SUBMERSIBLE PUMPS

For the transfer and handling of sediment, sludge, scale, slurries in various fields of Civil Engineering and Industry including the Mining, Steel, Chemical, Cement and Ceramic Industries.

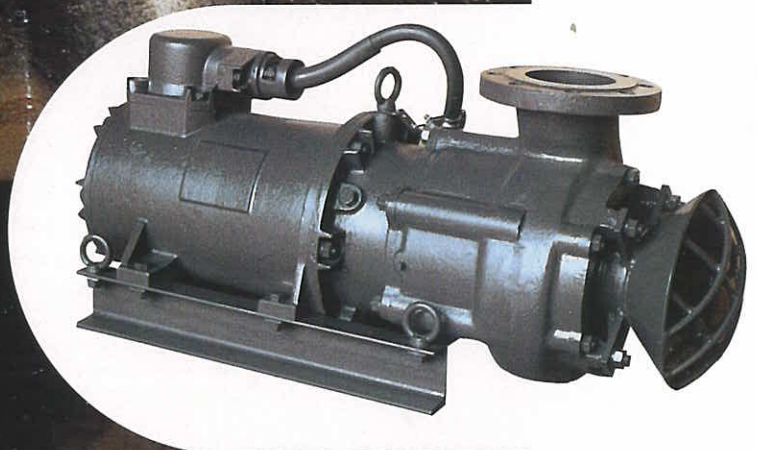
MODELS

SV-108E

SV-1010E

SV-1015E

SV-1030E



E.I.M. ELECTRIC CO.,LTD.

FEATURES

• Non-clogging

In a conventional non-clogging centrifugal pump the impeller is located in the water passage within the pump casing as illustrated in Figure 1 with only a narrow clearance C between the impeller and the suction cover increasing the risk of clogging taking place in this area. In the vortex type pump the impeller is recessed in the side of the casing as illustrated in Figure 2 and consequently most of the water containing solids has a free passage as indicated by Arrow A. This free flow is induced by the vortex B created by the impeller rotation. The gap between the impeller and the suction cover (Dimension C) is the same width as the discharge port allowing the free flow of solids.

• Minimum Wear

As is the case with the non-clogging vane, the solids being pumped do not pass through the impeller but in the vortex passage minimizing wear to the impeller.

• Non-restricting

As the clearance C between the impeller and the suction cover is large, solids cannot blockage between them.

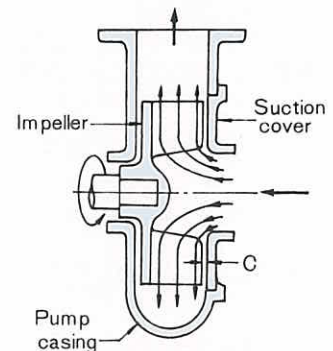


Figure 1. conventional non-clogging centrifugal pump

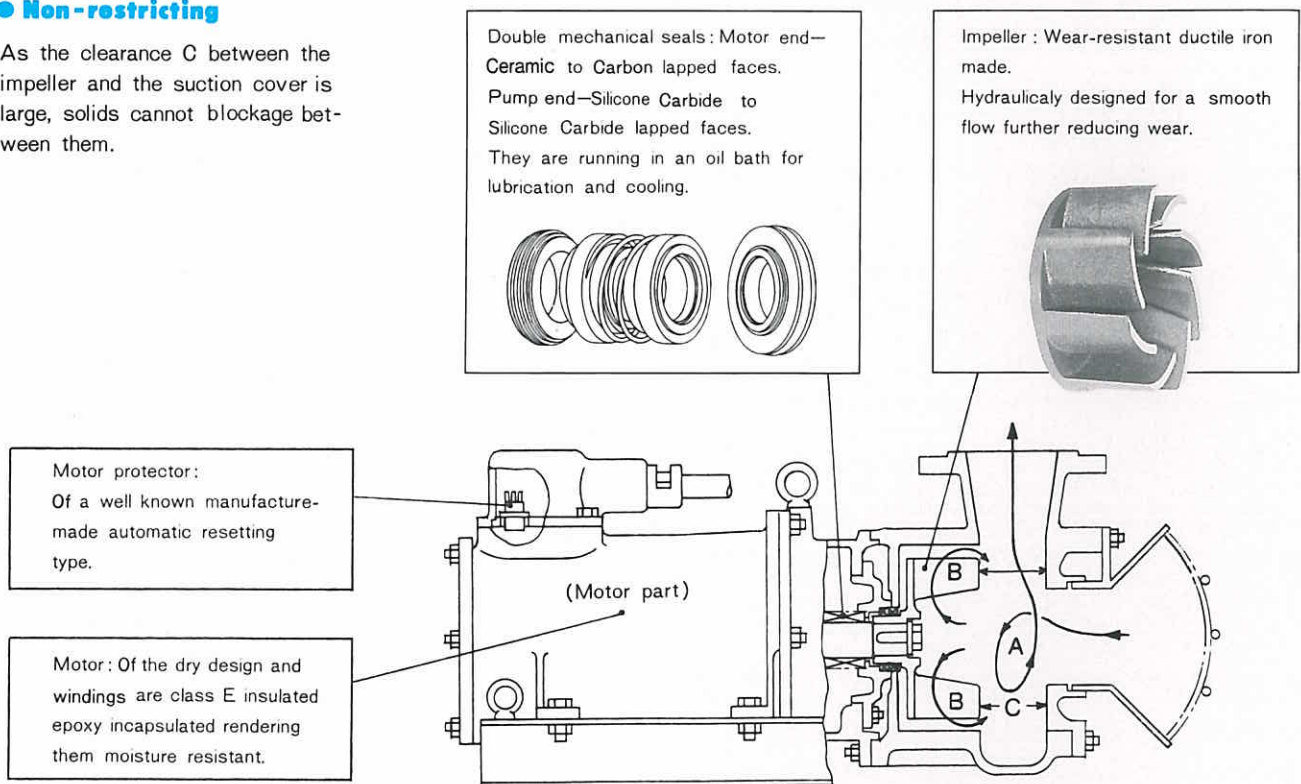


Figure 2. EIM Torque-flow vortex pump

• Highly Efficient

A concept that vortex design pumps have a low efficiency is past. Backed by many years of EIM's accumulated knowledge and engineering practices the SV range of vortex pumps have been developed to the stage that they have efficiencies equivalent to standard centrifugal pumps.

• Non-overloading and Energy Efficient

With most designs of vortex pumps the shaft power curve has a tendency not to saturate in bounds of the low head, bringing with dangerous overload, as the solid line in Figure 3.

On the contrary, the shaft power designed by EIM has a saturating characteristic, as the dotted line in Figure 3, consequently the pump is safely applicable for whole extent of the pump head, escaping from danger due to overload.

As a result of the non-overloading characteristic abovementioned, the SV range pumps can be run on a snore condition without overloading and tests have shown that when priming the shaft power, that is the power consumption is only from a third to a half of the full load requirement.

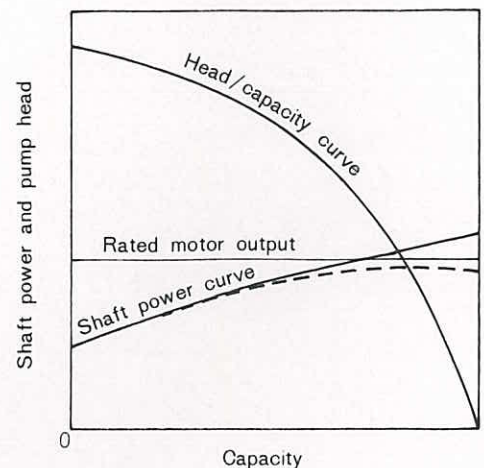


Figure 3. Characteristic curves

STANDARD SPECIFICATIONS

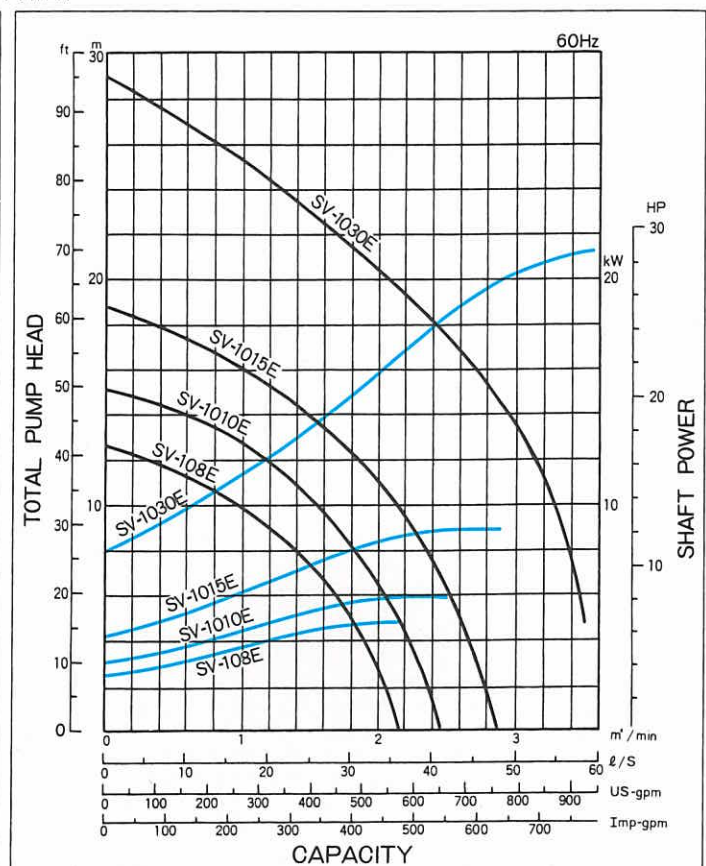
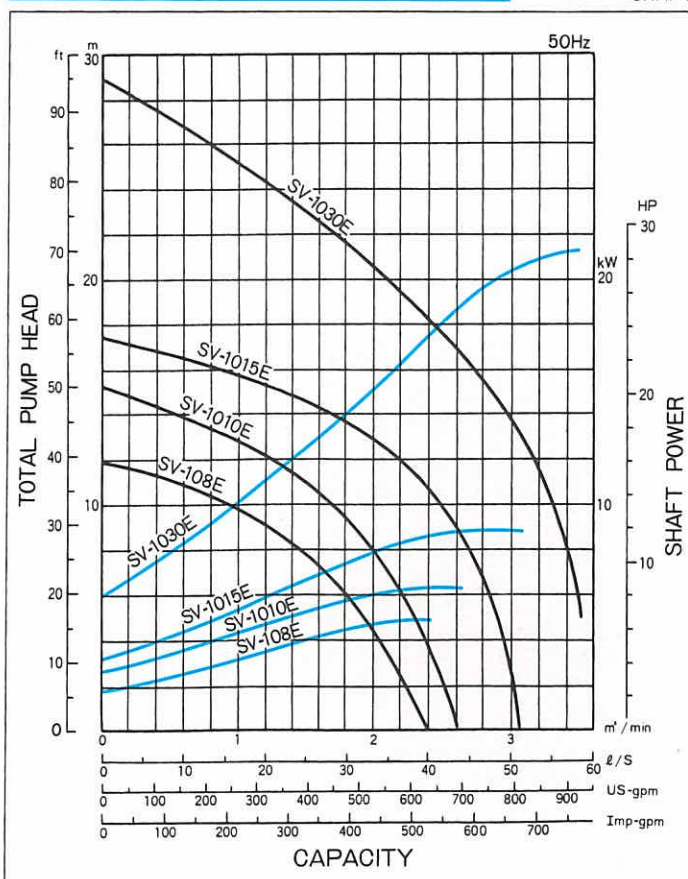
Model	Discharge mm(in)	Motor		Normal Head m(ft)	Normal Capacity m ³ /min (USgpm) (Impgpm)	Solids Handling* mm(in)	weight kg(lbs)	Cabletyre Cable Core × $\frac{\text{mm}^2}{\text{(AWG)}}$ × Length m (ft)
		Output kW(HP)	Number of poles					
SV-108E	100 (4)	5.5 (7.5)	4	10 (33)	0.9 $\frac{(238)}{(198)}$	75 (3)	160 (353)	4 × $\frac{3.5}{(11)}$ × $\frac{10}{(33)}$
SV-1010E	100 (4)	7.5 (10)	4	12 (39)	1.2 $\frac{(317)}{(264)}$	75 (3)	160 (353)	4 × $\frac{5.5}{(9)}$ × $\frac{10}{(33)}$
SV-1015E	100/150 $\frac{(4)}{(6)}$	11 (15)	4	15 (49)	1.25 $\frac{(330)}{(275)}$	75 (3)	180 (397)	4 × $\frac{14}{(6)}$ × $\frac{10}{(33)}$
SV-1030E	100/150 $\frac{(4)}{(6)}$	22 (30)	4	20 (66)	2.0 $\frac{(528)}{(440)}$	75 (3)	330 (728)	4 × $\frac{22}{(4)}$ × $\frac{10}{(33)}$

- **Adaptability:** Suitable for pumping liquids and slurries containing solids including the following:
Clay, bentonite, fly ash, coke fines, ore fines and cement etc.
Limits of solids mixing rate applicable, see the Technical Data described latter.
- **Liquid temperature:** 0~40°C
- **Power supply:** Three-phase 50/60Hz
Any voltage within range of 200-550V available. 1000V class also available on request.
- **Starting method:** Direct-on-line
- **Motor protector:** Built in all models
- **Discharge:** All models are standard fitted with 100mm (4 in) flanged discharge connections. Model SV-1015E and SV-1030E can be applied with an adapter to 150mm (6in).

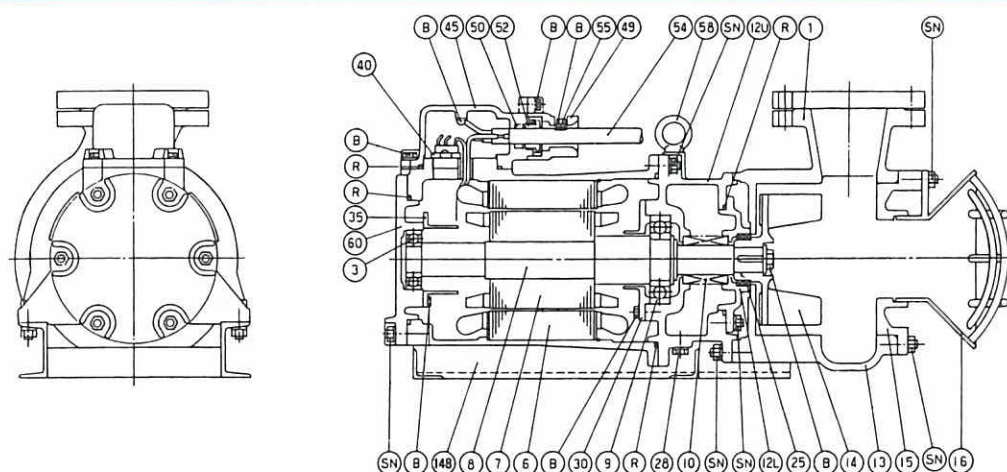
- **Special specifications:** Besides models listed in above Table, explosion-proof type, land-on type and such system device as vacuum sweeper also available.
- **Materials:** Quality materials are used throughout the construction. Details are given in the latter chapter "Construction".
- **Shaft seals:** Of the double mechanical seal type using Ceramic to Carbon lapped faces at the motor end, and Silicone Carbide to Silicone Carbide lapped faces at the pump end.

PERFORMANCE CURVES

— TOTAL PUMP HEAD
— SHAFT POWER



CONSTRUCTION



No.	PART	MATERIAL			No.	PART	MATERIAL		
		JIS	ASTM or AISI std.	BS std.			JIS	ASTM or AISI std.	BS std.
1	Discharge opening	FCD 450	A536 65-45-12	2789 420/12	30	Bearing cover	FC 200	A 48 30 A	1452-180
3	Opposite-drive-end bearing	High carbon chromium steel	AISI 52100	534 A 99	35	Lead wire retainer	SS 400	A 283 D	4360 40 A-E
6	Stator	—	—	—	40	Motor protector	Auto-cut	—	—
7	Rotor	—	—	—	45	Terminal box	FC 200	A 48 30 A	1452-180
8	Motor shaft	SUS 403	AISI A276-403	403 S 17	49	Bell mouth	FC 200	A 48 30 A	1452-180
9	Drive-end bearing	High carbon chromium steel	AISI 52100	534 A 99	50	Cable packing	Nitril butadiene rubber	—	—
10	Shaft seal	Sintered carbide	—	—	52	Cable screw gland	SS 400	A 283 D	4360 40 A-E
12L	Oil box-lower half	FC 200	A 48 30A	1452-180	54	Cabletyre cable	3CT 4-core	—	—
13U	Oil box-upper half	FC 200	A 48 30A	1452-180	55	Cable clamp	SS 400	A 283 D	4360 40 A-E
13	Pump casing	FCD 450	A 536 65-45-12	2789 420/12	58	Eyebolt	SS 400	A 283 D	4360 40 A-E
14	Impeller*	High Chromium Cast Iron	—	—	60	Bearing housing	FC 200	A 48 30 A	1452-180
15	Suction cover	FCD 450	A536 65-45-12	2789 420/12	148	Base	SS 400	A 283 D	4360 40 A-E
16	Strainer	SS 400	A 283 D	4360 40 A-E	B	Bolt or Machine screw	Rolled steel or Stainless steel	A 283 D or AISI 304	4360 or 304S15
25	Dust seal	Nitril butadiene rubber	—	—	R	O-ring	Nitril butadiene rubber	—	—
28	Oil plug	SS 400	A 283 D	4360 40 A-E	SN	Stud and Nut	SUS 410	AISI A276-410	970-410-S21

* High Chromium Cast Iron 15% Cr content is also available for more anti-abrasion.

TECHNICAL DATA

Recommendable Flow Rates

To prevent blockages in pipelines when pumping solids, it is advisable to maintain suitable velocity of flow. Listed below are various examples:

- Fine particles including mine slurries.....Over 1m/s
- Fly ash, coke fines.....Over 2m/s
- Fine sand, mud.....Over 3m/s
- Coarse sand, soft clay.....Over 3.5m/s
- Gravel, hard clay.....Over 4m/s

Maximum Recommendable Concentration

The shaft power and pump head etc. are dependent on the particle size, specific gravity and concentration. Excess of any of these above items will cause an increased shaft power and possible overload. Listed below are a few maximum concentrations in percentage solids by weight

- Sand, clay.....20-30%
- Gravel, ore grain.....5-15%
- Oremud, ash.....20-40%

APPLICATIONS

• Civil Engineering Field

For the transfer and handing of sediment, slurry, sludges, etc. in Civil Engineering works such as tunnel construction, sewage plant, dam construction and drilling and excavation works.

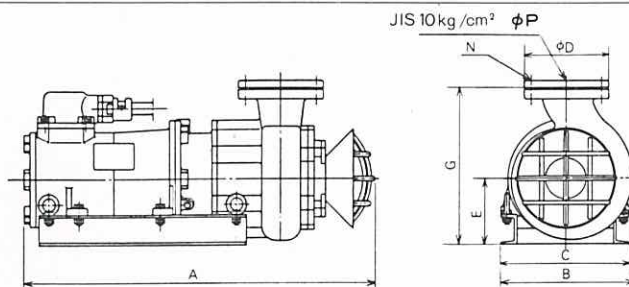
• Sewage and Waste Disposal

Purification and treatment plant, water treatment.
Settlement tanks, domestic refuse disposal and industrial refuse disposal.

• Other

Handling and transfer of product in the Mining and manufacturing field including ore fines, coak fines, treatment of sintered coke residue, ore-sorting treatment, carbide scale, fly ash, stone fines, coal chips etc.

DIMENSIONS



Unit : mm (in)

Model	Frequency Hz	A	B	C	D	E	G	N	P
SV-108E	50/60	821 (32 ³ / ₈)	325 (12 ³ / ₄)	320 (12 ⁵ / ₈)	210 (8 ¹ / ₄)	163 (6 ³ / ₈)	383 (15 ¹ / ₈)	8 - M16 (5/8)	100 (4)
SV-1010E	50	845 (33 ¹ / ₄)	371 (14 ³ / ₄)	350 (13 ³ / ₄)	210 (8 ¹ / ₄)	203 (8)	483 (19)	8 - M16 (5/8)	100 (4)
	60	864 (34 ¹ / ₈)	340 (13 ³ / ₈)	320 (12 ⁵ / ₈)	210 (8 ¹ / ₄)	163 (6 ³ / ₈)	383 (15 ¹ / ₈)	8 - M16 (5/8)	100 (4)
SV-1015E	50/60	948 (37 ³ / ₈)	371 (14 ³ / ₄)	350 (13 ³ / ₄)	210 (8 ¹ / ₄)	215 (7 ⁷ / ₈)	495 (18 ⁷ / ₈)	8 - M16 (5/8)	100 (4)
SV-1030E	50/60	1086 (42 ³ / ₄)	446 (17 ¹ / ₂)	480 (18 ⁷ / ₈)	210 (8 ¹ / ₄)	240 (9 ¹ / ₂)	520 (20 ¹ / ₂)	8 - M16 (5/8)	100 (4)

EXAMPLES OF PUMPS IN OPERATION

EXAMPLE 1 : Waste drainage of water sealing work at a tunnel construction site

Site : Kagamihara Tunnel, Gifu Pref., Japan.

Liquid handled : Mixture of bentonite and cement for sealing purposes.

Installation conditions : See illustration.

Operating conditions : The pump is run continuously and 80% of the time it operates under snore conditions in only 10–30 cm of liquid level.

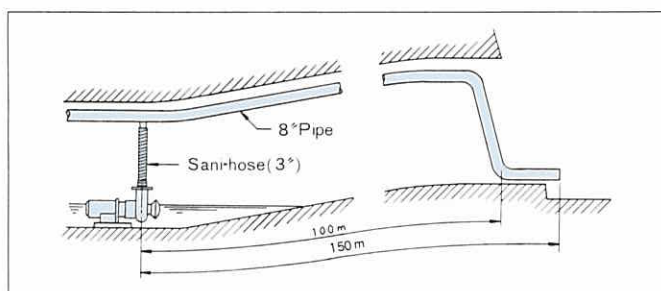
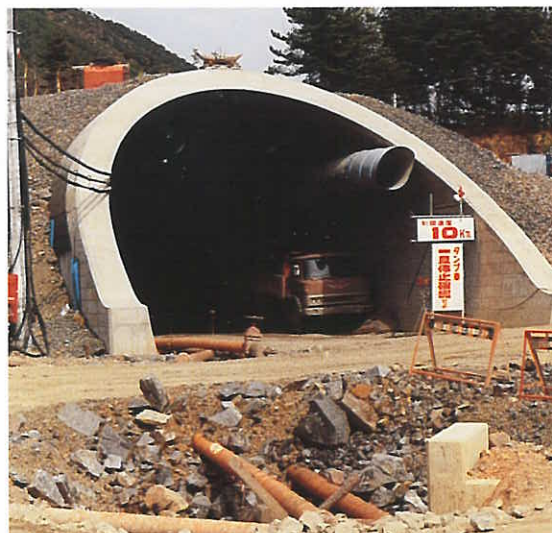


Photo upper right: Tunnel entrance showing waste pipes.

Photo lower left: Showing the pump installation with the pump operating partly submerged.

Photo lower right: Discharge pipe showing slurry pumped.

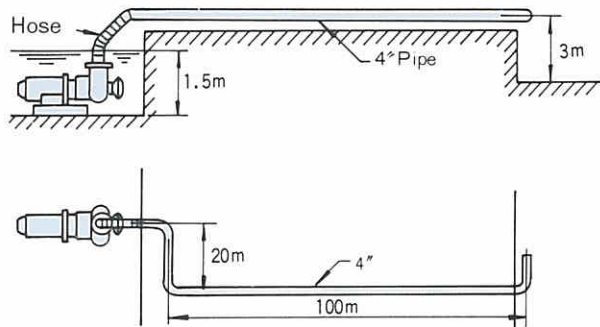


Example 2 : Slurry pumping at a coal mine

Application : For the transferring of slurry.
from a coal mine settling pond.

Liquid handling: Mixture of pulverized coal, fly
ash, sand and clay with an average concentration of 25% in
weight.

Installation
conditions : See illustration.



Part of the mine settling pond showing a float made from barrels suspending the pump below the liquid surface.



Close-up of slurry being pumped which comprises pulverized coal, fly ash, sand and clay.



Close-up view of the pump float.

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Discharge pipe showing type of slurry being pumped.

PCE-3010
04-5 2WA