

LSC

Submersible Residue Dewatering Pump

LSP

Self-Priming Residue Dewatering Pump

OPERATION MANUAL

INTRODUCTION

Thank you for selecting the Tsurumi LSC Submersible Residue Dewatering Pump and LSP Self-Priming Residue Dewatering Pump.

This equipment should not be used for applications other than those listed in this manual. Failure to observe this precaution may lead to a malfunction or an accident. In the event of a malfunction or an accident, the manufacturer will not assume any liability. After reading this Operation Manual, keep it in a location that is easily accessible, so that it can be referred to whenever information is needed while operating the equipment.

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安全须知

- 请勿在任何非规定条件下操作本产品。不遵守此注意事项可能会导致漏电、触电、火灾、溢水或其他问题。
- 如果水池或水坑中有人，切勿尝试操作本产品。如果发生漏电，则会造成触电。
- 请勿在铭牌上所示电压（电压容许限度为 $\pm 5\%$ 以内）除外的任何电压下操作本产品。如果使用发电机进行操作，强烈建议不要使用同一发电机操作其他设备。否则可能造成产品故障和损坏，从而导致漏电或触电。
- 所有电气工程（包括电缆延伸）都必须由授权电工进行，并遵照贵国的所有现行法规。切勿允许未授权人员进行电气工程，因为这不仅违法，而且极其危险。
- 请务必提供适合泵的专用接地漏电断路器（额定灵敏电流不得超过 30 mA）和热过载继电器（两者均为市售品）。不遵守此警告会在发生产品故障或漏电时造成触电或爆炸。
- 请提供本产品专用的可靠接地点。请勿将地线连接到煤气管、水管、避雷针或电话地线。接地不当会造成触电。
- 请勿使用已损坏或装配不紧密的电缆、电源插头或电源插座。损坏的电缆必须由有资格的人员进行更换。请将电缆的每根导线牢固连接至各端子。否则会导致触电、短路或火灾。
- 切勿将电缆的末端或电源插头浸入水中。这可能会导致产品损坏、漏电、触电或火灾。
- 请勿擦伤、折叠、拉扯、扭曲、改装或捆扎电缆，或将其用作吊具。否则电缆可能会损坏，因而造成漏电、短路、触电或火灾。
- 开始维护或检查之前，请务必关闭电源或断开插头，这样泵就不会意外启动。请勿湿手作业。若不遵守这些注意事项可能导致触电或伤害。

為確保您的安全請務必閱讀下列資訊

- 請勿在指定狀況之外的任何狀況下操作本產品。若不遵守本注意事項可能導致漏電、電擊、火災、溢水或其他問題。
- 若水池或集水坑中有人，絕勿嘗試操作本產品。萬一發生漏電，可能造成電擊。
- 請勿在銘牌上所述電壓（容許限度 $\pm 5\%$ ）之外的任何電壓之下操作本產品。若用發電機來進行操作，強烈建議勿以相同發電機操作其他設備。若不遵守本注意事項可能造成產品故障和損壞，進而導致漏電或電擊。
- 所有電氣工作（包括纜線延長）必須由獲授權電工依據貴國所有適用法規來執行。絕勿允許未獲授權人員執行電氣工作，因為這不僅違法，更是極度危險。
- 請務必提供適合泵的專用接地漏電斷路器（具有不超過 30 mA 的額定靈敏度電流）以及熱過載繼電器（這兩種裝置可在市面上買到）。若不依循本警告事項，產品發生故障或漏電時，可能造成電擊或爆炸。
- 請為本產品提供專用的可靠接地點。請勿將接地線連接到瓦斯管、水管、避雷針或電話接地線。接地不當可能造成電擊。
- 如果纜線、電源插頭或電源插座損壞或無法緊密吻合，請勿使用。損壞的纜線必須由合格人員予以更換。請將纜線的每一根導線安全連接到端子上。若未能遵守這一點，可能造成電擊、短路或火災。
- 絕勿將纜線末端或電源插頭浸入水中。否則可能造成產品損壞、漏電、電擊或火災。
- 請勿刮傷、折疊、拉動、扭轉、改裝或捆束纜線，或將纜線作為吊具使用。否則纜線可能損壞，進而造成漏電、短路、電擊或火災。
- 開始維護或檢查之前，請務必關閉電源或拔出插頭，以避免泵意外啟動。請勿以濕手工作。若不遵守這些注意事項，可能造成電擊或傷害。

HÃY ĐỌC KỸ ĐỂ ĐẢM BẢO AN TOÀN CHO BẠN

- Không vận hành sản phẩm trong bất kỳ điều kiện nào ngoài những điều kiện được chỉ định. Không tuân thủ các quy tắc phòng ngừa có thể dẫn đến rò rỉ điện, điện giật, hỏa hoạn, tràn nước hoặc các vấn đề khác.
- Tuyệt đối không cố vận hành sản phẩm khi có người tại hồ nước hoặc bể chứa. Nếu rò rỉ điện xảy ra, có thể gây điện giật.
- Không vận hành sản phẩm ở điện áp khác với điện áp được ghi trên tem nhãn với giới hạn dung sai điện áp trong khoảng $\pm 5\%$. Nếu vận hành với máy phát điện, chúng tôi đặc biệt khuyến cáo bạn không nên vận hành thiết bị nào khác với cùng máy phát điện này. Không tuân thủ các quy tắc phòng ngừa có thể gây ra trục trặc và hư hỏng sản phẩm, điều này có thể dẫn đến rò rỉ điện hay điện giật.
- Tất cả các công việc liên quan đến điện (bao gồm cả nối dài cáp) phải được thực hiện bởi thợ điện có chuyên môn và phải tuân thủ tất cả các quy định tại quốc gia của bạn. Tuyệt đối không được để một người thợ điện không có chuyên môn thực hiện công việc này vì điều này không chỉ trái pháp luật mà còn có thể cực kỳ nguy hiểm.
- Nhất định phải sử dụng cầu dao chống rò điện đất chuyên dụng (có độ nhạy dòng điện không vượt quá 30 mA) và rơ le nhiệt bảo vệ quá tải phù hợp với máy bơm (cả hai đều có sẵn trên thị trường). Không tuân thủ theo cảnh báo này có thể gây điện giật hoặc cháy nổ khi sản phẩm hư hỏng hoặc xảy ra rò rỉ điện.
- Sử dụng thiết bị nối đất an toàn chuyên dụng cho sản phẩm. Không gắn dây nối đất với ống dẫn ga, ống nước, cột thu lôi hoặc dây nối đất của điện thoại. Nối đất không đúng cách có thể gây điện giật.
- Không sử dụng dây cáp, phích cắm điện hoặc ổ cắm điện nếu các thiết bị này bị hỏng hay không được gắn chặt. Cáp bị hỏng phải được thay bởi thợ có tay nghề. Kết nối tất cả dây dẫn của cáp với các thiết bị đầu cuối một cách chắc chắn. Không tuân thủ các bước này có thể dẫn đến giật điện, chập điện hoặc hỏa hoạn.
- Tuyệt đối không để các đầu dây cáp hoặc phích cắm điện bị nhúng nước. Điều này có thể làm hư hỏng sản phẩm, rò rỉ điện, giật điện hoặc hỏa hoạn.
- Không làm xước, gấp, kéo, xoắn, làm biến dạng hoặc bó các sợi cáp, hoặc sử dụng dây cáp như một thiết bị nâng. Dây cáp có thể bị hư hỏng, dẫn đến các sự cố rò rỉ điện, chập điện, giật điện hoặc hỏa hoạn.
- Trước khi bắt đầu bảo trì hay kiểm tra, nhất định phải tắt nguồn điện hoặc rút phích cắm điện, tránh trường hợp máy bơm vô tình khởi động. Không làm việc với tay ướt. Không tuân thủ các bước này có thể dẫn đến giật điện hoặc bị thương.

กรุณาอ่านข้อความนี้เพื่อความปลอดภัยของคุณ

- ห้ามใช้งานผลิตภัณฑ์ภายใต้สภาวะอื่นใดนอกเหนือจากที่ระบุไว้ หากไม่สามารถปฏิบัติตามข้อควรระวัง อาจส่งผลให้เกิดไฟรั่ว ไฟช็อต เพลิงไหม้ น้ำล้น หรือปัญหาอื่น ๆ ได้
- ห้ามพยายามใช้งานผลิตภัณฑ์หากมีบุคคลอื่นอยู่ในสระน้ำหรือบ่อน้ำ เนื่องจากหากเกิดไฟรั่วขึ้น อาจทำให้เกิดไฟช็อตได้
- ห้ามใช้งานผลิตภัณฑ์ภายใต้แรงดันไฟฟ้าอื่นใดนอกเหนือจากที่ระบุไว้บนป้าย ซึ่งมีเกณฑ์ความปลอดภัยเคลื่อนของแรงดันไฟฟ้าอยู่ที่ $\pm 5\%$ หากมีการใช้งานกับเครื่องกำเนิดไฟฟ้า แนะนำเป็นอย่างยิ่งว่าไม่ให้ใช้งานกับอุปกรณ์อื่นด้วยเครื่องกำเนิดไฟฟ้าเครื่องเดียวกัน หากไม่สามารถปฏิบัติตามคำแนะนำนี้ อาจส่งผลให้เกิดการทำงานผิดปกติ และผลิตภัณฑ์พังเสียหาย ซึ่งส่งผลให้เกิดไฟรั่วหรือไฟช็อตได้
- งานด้านไฟฟ้าทั้งหมด(รวมไปถึงการต่อสายเคเบิล) จะต้องดำเนินการโดยช่างไฟฟ้าที่ได้รับอนุญาต ซึ่งเป็นการปฏิบัติตามระเบียบที่มีการกำหนดไว้ในประเทศของคุณ ห้ามไม่ให้ผู้ที่ไม่มีใบอนุญาตดำเนินงานด้านไฟฟ้าโดยเด็ดขาด เพราะไม่เพียงแต่จะเป็นการฝ่าฝืนกฎหมาย แต่ยังอาจเกิดอันตรายอย่างยิ่งได้ด้วย
- จัดให้มีการใช้เบรกเกอร์แบบมีระบบสายดินโดยเฉพาะ (โดยมีกระแสรั่วไหลได้ไม่เกิน 30mA) และใช้อิโวลต์ฟรีเลย์แบบทำงานด้วยความร้อนที่เหมาะสมกับขนาดของบีม (อุปกรณ์ทั้งสองชนิดนี้มีจำหน่ายทั่วไป) หากไม่สามารถปฏิบัติตามสัญญาณเตือนนี้ อาจส่งผลให้เกิดไฟช็อต หรือระเบิดเมื่อผลิตภัณฑ์ไม่สามารถทำงาน หรือเกิดไฟรั่วได้
- จัดให้มีระบบสายดินที่ปลอดภัยสำหรับผลิตภัณฑ์นี้โดยเฉพาะ ห้ามเชื่อมต่อสายดินเข้ากับท่อก๊าซ ท่อน้ำ สายล่อฟ้า หรือสายดินของโทรศัพท์ ระบบสายดินที่ไม่เหมาะสมอาจทำให้เกิดไฟช็อตได้
- ห้ามใช้สายเคเบิล ปลั๊กไฟ หรือเต้าเสียบที่ชำรุดหรือหลวม สำหรับสายเคเบิลที่ชำรุดจะต้องมีการเปลี่ยนด้วยบุคลากรที่มีคุณสมบัติครบถ้วน ให้เชื่อมต่อสายตัวนำทุกตัวของสายเคเบิลเข้ากับขั้วต่อให้แน่นหนา หากไม่สามารถปฏิบัติตามได้ อาจส่งผลให้เกิดไฟช็อต ไฟลัดวงจร หรือเพลิงไหม้ได้
- ห้ามจุ่มปลายของสายเคเบิลหรือปลั๊กไฟลงในน้ำโดยเด็ดขาด การกระทำดังกล่าวอาจส่งผลให้ผลิตภัณฑ์ชำรุดเสียหาย ไฟรั่ว ไฟช็อต หรือเพลิงไหม้ได้
- ห้ามครูด พับ ดึง บิด ดัดแปลง หรือมัดรวมสายเคเบิล หรือใช้เป็นอุปกรณ์สำหรับยกของ สายเคเบิลอาจชำรุด ซึ่งเป็นเหตุให้เกิดไฟรั่ว ไฟลัดวงจร ไฟช็อต หรือเพลิงไหม้ได้
- ก่อนเริ่มการซ่อมบำรุงหรือตรวจสอบใดๆ ให้ปิดแหล่งจ่ายไฟให้สนิทหรือถอดปลั๊ก เพื่อป้องกันไม่ให้บีมเริ่มทำงานโดยบังเอิญ และห้ามใช้งานขณะมีมือเปียก หากไม่สามารถปฏิบัติตามคำแนะนำเหล่านี้ อาจส่งผลให้เกิดไฟช็อต หรือเกิดการบาดเจ็บได้

PASTIKAN UNTUK MEMBACA DEMI KESELAMATAN ANDA

- **Jangan operasikan produk dalam kondisi apa pun selain dari yang ditentukan. Kegagalan untuk mematuhi tindakan pencegahan dapat menyebabkan kebocoran listrik, sengatan listrik, kebakaran, luapan air atau masalah lainnya.**
- **Jangan pernah mencoba mengoperasikan produk jika seseorang berada di kolam atau wadah minyak. Jika terjadi kebocoran listrik, hal itu dapat menyebabkan sengatan listrik.**
- **Jangan operasikan produk dalam tegangan apa pun selain yang dijelaskan pada papan nama dengan batas toleransi tegangan $\pm 5\%$. Jika dioperasikan dengan generator, sangat disarankan untuk tidak mengoperasikan peralatan lain dengan generator yang sama. Kegagalan mematuhi peringatan ini dapat menyebabkan kegagalan fungsi dan kerusakan produk, yang dapat menyebabkan kebocoran listrik atau sengatan listrik.**
- **Semua pekerjaan listrik (termasuk ekstensi kabel) harus dilakukan oleh ahli listrik yang berwenang, sesuai dengan semua peraturan yang berlaku di negara Anda. Jangan pernah mengizinkan orang yang tidak berwenang melakukan pekerjaan listrik karena tidak hanya melanggar hukum, tetapi juga bisa sangat berbahaya.**
- **Benar-benar menyediakan pemutus sirkuit kebocoran tanah khusus (memiliki arus sensitivitas terukur tidak melebihi 30 mA) dan relai kelebihan beban termal yang cocok untuk pompa (keduanya tersedia di pasar). Gagal mengikuti peringatan ini dapat menyebabkan sengatan listrik atau ledakan ketika produk gagal atau terjadi kebocoran listrik.**
- **Berikan pentanahan aman yang didedikasikan untuk produk. Jangan hubungkan kabel arde ke pipa gas, pipa air, penangkal petir, atau kabel arde telepon. Pentanahan yang tidak benar dapat menyebabkan sengatan listrik.**
- **Jangan gunakan kabel, steker listrik, atau stopkontak jika rusak atau tidak dipasang dengan erat. Kabel yang rusak harus diganti oleh orang yang berwenang. Hubungkan setiap konduktor kabel dengan aman ke terminal. Kegagalan untuk mengamati ini dapat menyebabkan sengatan listrik, hubungan pendek, atau kebakaran.**
- **Jangan pernah merendam ujung kabel atau steker listrik ke dalam air. Ini dapat menyebabkan kerusakan pada produk, kebocoran listrik, sengatan listrik, atau kebakaran.**
- **Jangan menggores, melipat, menarik, memelintir, membuat perubahan, atau mengikat kabel, atau menggunakannya sebagai alat pengangkat. Kabel mungkin rusak, yang dapat menyebabkan kebocoran listrik, hubungan pendek, sengatan listrik, atau kebakaran.**
- **Sebelum memulai perawatan atau inspeksi, matikan catu daya sepenuhnya atau lepaskan steker sehingga pompa tidak dapat memulai secara tidak sengaja. Jangan bekerja dengan tangan basah. Gagal mematuhi peringatan ini dapat menyebabkan sengatan listrik atau cedera.**

PASTIKAN ANDA MEMBACA UNTUK KESELAMATAN ANDA

- Jangan mengoperasikan produk dalam keadaan apa-apa syarat selain daripada yang dinyatakan. Kegagalan untuk mematuhi langkah berjaga-jaga boleh menyebabkan kebocoran elektrik, kejutan elektrik, kebakaran, limpahan air atau masalah lain.
- Jangan pernah cuba mengoperasikan produk jika ada orang di kolam atau baki. Sekiranya kebocoran elektrik berlaku, ia boleh menyebabkan kejutan elektrik.
- Jangan operasikan produk di bawah mana-mana voltan selain daripada yang dinyatakan pada papan nama dengan had toleransi voltan $\pm 5\%$. Jika ia dioperasikan dengan generator, sangat disyorkan untuk tidak mengoperasikan peralatan lain dengan generator yang sama. Kegagalan mematuhi amaran ini boleh menyebabkan pincang tugas dan kerosakan produk, yang mungkin menyebabkan kebocoran elektrik atau kejutan elektrik.
- Semua kerja elektrik (termasuk sambungan kabel) mesti dilakukan oleh juruelektrik yang diberi kuasa, selaras dengan semua peraturan yang berlaku di negara anda. Jangan sekali-kali membenarkan seseorang yang tidak dibenarkan melakukan kerja elektrik kerana ia bukan sahaja melanggar undang-undang, tetapi ia juga boleh menjadi sangat berbahaya.
- Pastikan untuk benar memberikan pemutus litar kebocoran bumi khusus (mempunyai kepekaan arus yang tidak melebihi 30 mA) dan relai beban lebih terma yang sesuai untuk pam (kedua-duanya terdapat di pasaran). Kegagalan mematuhi peringatan ini boleh menyebabkan kejutan atau letupan elektrik apabila produk gagal atau kebocoran elektrik berlaku.
- Sediakan grounding yang selamat untuk produk. Jangan sambungkan dawai tanah ke paip gas, paip air, tongkat cahaya, atau dawai tanah telefon. Grounding yang salah boleh menyebabkan kejutan elektrik.
- Jangan gunakan kabel, palam kuasa atau soket kuasa jika rosak atau tidak dipasang dengan teliti. Kabel yang rosak mesti diganti oleh orang yang berkelulusan. Sambung setiap konduktor kabel dengan selamat ke terminal. Kegagalan mematuhi perkara ini boleh menyebabkan kejutan elektrik, litar pintas, atau kebakaran.
- Jangan menenggelamkan hujung kabel atau palam kuasa di dalam air. Ini boleh mengakibatkan kerosakan produk, kebocoran elektrik, kejutan elektrik, atau kebakaran.
- Jangan menggores, melipat, tarik, memutar, membuat perubahan, atau mengikat kabel, atau menggunakannya sebagai peranti untuk mengangkat. Kabel mungkin akan rosak, yang boleh menyebabkan kebocoran elektrik, litar pintas, kejutan elektrik, atau kebakaran.
- Sebelum memulakan penyenggaraan atau pemeriksaan, matikan bekalan kuasa sepenuhnya atau cabut palam supaya pam tidak boleh bermula secara tidak sengaja. Jangan bekerja dengan tangan basah. Kegagalan mematuhi peringatan ini boleh membawa kepada kejutan atau kecederaan elektrik.

SIGURUHING BASAHIN PARA SA SARILING KALIGTASAN

- Huwag gamitin ang produkto sa anumang kondisyon maliban sa itinakdang gamit nito. Kapag hindi sinunod ang mga babala, maaaring maging sanhi ito ng pagkakaroon ng electrical leakage, electrical shock, sunog, pag-apaw ng tubig at iba pang mga problema.
- Huwag gamitin ang produkto kapag may tao sa loob ng pool o balon. Maaaring maging sanhi ng electrical shock kapag nagkaroon ng electrical leakage.
- Huwag gamitin ang produkto sa anumang boltahe maliban sa itinakdang boltahe na nakalarawan sa nameplate na may voltage tolerance limit na nasa loob ng $\pm 5\%$. Kapag ginamitan ng generator, mahigpit na ipinapayo na iwasan ang paggamit ng ibang kagamitan sa parehong generator. Kapag hindi sinunod ang mga babala, maaaring masira o hindi gumana nang husto ang produkto, at maging sanhi ng pagkakaroon ng electrical leakage o electrical shock.
- Ang lahat ng gawain kaugnay sa elektrisidad (pati ang cable extension) ay kailangang gawin ng isang authorized electrician, sang-ayon sa mga naaangkop na regulasyon sa sariling bansa. Huwag itong ipagawa sa isang taong walang sapat na kuwalipikasyon sa paggawa ng electrical work, dahil hindi lamang ito labag sa batas kundi masyadong mapanganib.
- Kailangang maglaan ng isang dedicated earth leakage circuit breaker (na may rated sensitivity current na hindi lalampas sa 30 mA) at may thermal overload relay na nababagay sa pump (ibinibenta sa mga tindahan). Kapag hindi sinunod ang mga babala, maaaring maging sanhi ito ng pagkakaroon ng electrical shock o pagsabog sa kapag nagkaroon ng problema sa produkto o kapag nagkaroon ng electrical leakage.
- Gumawa ng isang secure grounding para lamang sa produkto. Huwag ikabit ang ground wire sa tubo ng gas o tubig, lightening rod, o telephone ground wire. Maaaring maging sanhi ng electrical shock ang hindi pagtatag ng tamang grounding.
- Huwag gumamit ng cable, power plug, or power outlet kapag ito ay sira na, o kapag hindi maayos ang pagkakakabit nito. Ang pagpalit ng cable ay kailangang gawin ng isang taong may sapat na kuwalipikasyon. Ikabit nang maigi ang bawat conductor ng cable sa mga terminals. Kapag hindi sinunod ang mga babala, maaaring maging sanhi ito ng pagkakaroon ng electrical shock, short circuit o sunog.
- Huwag ilubog sa tubig ang dulo ng cable o power plug. Maaari itong maging sanhi ng pagkasira ng produkto, pagkakaroon ng electrical leakage, electrical shock, o sunog.
- Huwag gasgasin, tupiin, hilahin, ibaluktot, baguhin o ibigkis ang cable o di kaya'y gamitin ito bilang isang lifting device. Maaaring masira ang cable, na maging sanhi ng pagkakaroon ng electrical leakage, short circuit, electrical shock, o sunog.
- Bago umpisahan ang maintenance o pagsusuri, kailangang patayin ang power supply o tanggalin ang plug upang maiwasan ang hindi sinasadyang pag-andar ng pump. Huwag gumawa kapag basa ang mga kamay. Kapag hindi sinunod ang mga babala, maaaring maging sanhi ito ng pagkakaroon ng electrical shock, o pagkapinsala.

تأكد من القراءة من أجل سلامتك

- لا تقم بتشغيل المنتج تحت أية ظروف بخلاف تلك المحددة له. قد يؤدي عدم مراعاة الاحتياطات إلى حدوث تسرب كهربائي أو صدمة كهربائية أو نشوب حريق أو فيضان الماء أو وقوع مشكلات أخرى.
- لا تحاول مطلقاً تشغيل المنتج عند وجود شخص ما في حمام السباحة أو في الحوض. إذا حدث تسرب كهربائي، فقد يتسبب في صدمة كهربائية.
- لا تقم بتشغيل المنتج تحت أي جهد بخلاف ما هو موضح على اللوحة، على أن يكون حد تحمل الجهد ضمن $\pm 5\%$. إذا تم تشغيله باستخدام مولد، يُنصح بشدة بعدم تشغيل معدات أخرى باستخدام نفس المولد. عدم مراعاة هذا التنبيه قد يؤدي إلى حدوث خلل للمنتج وتعطله، مما قد يؤدي بدوره إلى حدوث تسرب كهربائي أو صدمة كهربائية.
- يجب أن يقوم كهربائي معتمد بتنفيذ جميع الأعمال الكهربائية (هما في ذلك توصيل الكابلات)، وفقاً لجميع اللوائح المعمول بها في بلدك. لا تسمح أبداً لشخص غير معتمد بأداء الأعمال الكهربائية ليس فقط لكون ذلك مخالفاً للقانون، بل لأنه قد يشكل خطورة شديدة أيضاً.
- قم بتجهيز قاطع دائرة تسرب أرضي مخصص (به تيار حساسية مُقدَّر لا يتجاوز 30 مللي أمبير) ومرحل حراري يعمل عند تجاوز الحمل مناسب للمضخة (كلاهما متاح في السوق). قد يؤدي عدم اتباع هذا التحذير إلى حدوث صدمة كهربائية أو انفجار إذا فشل المنتج في أداء وظيفته أو إذا حدث تسرب كهربائي.
- قم بتوفير تأريض آمن مخصص للمنتج. لا تقم بتوصيل سلك التأريض بأنبوب غاز أو أنبوب ماء أو مانع صواعق أو سلك تأريض الهاتف التأريض بطريقة غير سليمة قد يسبب صدمة كهربائية.
- لا تستخدم الكابل أو قابس الطاقة أو مأخذ الطاقة إذا كان تالفاً أو إذا لم يكن مركباً بإحكام. يجب أن يتم استبدال الكابل التالف بواسطة شخص مؤهل. قم بتوصيل كل موصل من موصلات الكابل إلى الأطراف بشكل آمن. عدم مراعاة هذا قد يؤدي إلى حدوث صدمة كهربائية أو دائرة قصر أو نشوب حريق.
- لا تعتمد مطلقاً على غمر طرفي الكابل أو قابس الطاقة في الماء. قد يؤدي هذا إلى تلف المنتج أو حدوث تسرب كهربائي أو صدمة كهربائية أو نشوب حريق.
- لا تعتمد على خدش الكابل أو طيه أو سحبه أو ثنيه أو إجراء تعديلات عليه أو تجميعه، أو استخدامه كجهاز رفع. قد يكون الكابل تالفاً مما قد يتسبب في حدوث تسرب كهربائي أو دائرة قصر أو صدمة كهربائية أو نشوب حريق.
- قبل بدء الصيانة أو الفحص، قم بقطع تزويد الطاقة بالكامل أو قم بفصل القابس حتى لا يبدأ تشغيل المضخة بشكل غير مقصود. لا تقم بمباشرة العمل حين تكون يداك مبللتين. عدم مراعاة هذه التنبيهات قد يؤدي إلى حدوث صدمة كهربائية أو إصابة.

ASEGÚRESE DE LEER LA SIGUIENTE INFORMACIÓN PARA SU SEGURIDAD

- No manipule el producto en condiciones distintas a las que ha sido diseñado. El incumplimiento de esta precaución puede ocasionar fugas eléctricas, descargas eléctricas, incendios, desbordamientos de agua u otros problemas.
- Nunca intente manipular el producto si hay alguien presente en la pileta (piscina) o sumidero. Una fuga eléctrica puede ocasionar una descarga eléctrica.
- No manipule el producto en un voltaje diferente al indicado en la placa de identificación. Utilícelo dentro del rango de tolerancia de voltaje de $\pm 5\%$. Si se manipula con un generador, se recomienda encarecidamente no operar otros equipos con el mismo generador. El incumplimiento de esta precaución puede causar el mal funcionamiento y la falla del producto, lo que podría ocasionar fugas o descargas eléctricas.
- Todos los trabajos de electricidad (incluida la instalación del cable de extensión) deben ser realizados por un electricista autorizado, en conformidad con las regulaciones aplicables en su país. Nunca permita que una persona no autorizada realice trabajos eléctricos porque, no solo es ilegal, sino que puede ser extremadamente peligroso.
- Asegúrese de instalar un disyuntor específico de fuga a tierra (con sensibilidad nominal no superior a 30 mA) y un relé de sobrecarga térmica adecuado para la bomba (ambos disponibles en el mercado). El incumplimiento de esta advertencia puede ocasionar descargas eléctricas o explosiones cuando el producto falla o se produce una fuga eléctrica.
- Instale una conexión a tierra segura y específica para el producto. No conecte el cable de tierra a una tubería de gas, tubería de agua, pararrayos o cable de tierra del teléfono. Una conexión a tierra incorrecta podría causar descargas eléctricas.
- No utilice el cable, el enchufe o la toma de corriente si están dañados o si no están bien ajustados. Los cables dañados deben ser reemplazados por una persona calificada. Conecte cuidadosamente cada conductor del cable a los terminales. De lo contrario, se podrían producir descargas eléctricas, cortocircuitos o incendios.
- Nunca sumerja los extremos de un cable o el enchufe en agua. Esto podría ocasionar daños en el producto, fugas eléctricas, descargas eléctricas o incendios.
- No raye, doble, hale, tuerza, altere ni enrolle el cable, ni lo use como dispositivo de elevación. El cable podría dañarse, ocasionando fugas eléctricas, cortocircuitos, descargas eléctricas o incendios.
- Antes de comenzar el mantenimiento o la inspección, asegúrese de apagar la fuente de alimentación o desconectar el enchufe para que la bomba no arranque accidentalmente. No trabaje con las manos mojadas. El incumplimiento de estas precauciones podría ocasionar descargas eléctricas o lesiones.

ASSUREZ-VOUS DE LIRE CE DOCUMENT POUR VOTRE SÉCURITÉ

- N'utilisez pas le produit dans des conditions autres que celles pour lesquelles il est spécifié. Le non-respect de cette précaution peut entraîner une dispersion électrique, une électrocution, un incendie, une inondation ou d'autres problèmes.
- N'essayez jamais de faire fonctionner le produit si quelqu'un est présent dans la piscine ou le puisard. Si une dispersion électrique se produit, cela peut provoquer une électrocution.
- Ne faites pas fonctionner le produit sous une tension autre que celle indiquée sur la plaque signalétique dans une limite de tolérance inférieure à $\pm 5\%$. Si vous utilisez un groupe électrogène, il est fortement recommandé de ne pas utiliser d'autres équipements avec le même groupe électrogène. Le non-respect de cet avertissement peut provoquer un dysfonctionnement et une panne de l'appareil, pouvant entraîner une dispersion électrique ou une électrocution.
- Tous les travaux électriques (y compris l'extension des câbles) doivent être effectués par un électricien agréé, conformément à toutes les réglementations en vigueur dans votre pays. Ne permettez jamais à une personne non autorisée d'effectuer des travaux électriques, car non seulement c'est illégal, mais cela peut aussi être extrêmement dangereux.
- Prévoir absolument un disjoncteur différentiel dédié (avec une sensibilité nominale ne dépassant pas 30 mA) et un relais thermique de surcharge adapté à la pompe (tous deux disponibles dans le commerce). Le non-respect de cet avertissement peut provoquer une électrocution ou une explosion en cas de défaillance du produit ou de dispersion électrique.
- Fournir une mise à la terre sécurisée dédiée au produit. Ne branchez pas le fil de terre à une conduite de gaz ou d'eau, à un paratonnerre ou à un fil de terre de téléphone. Une mise à la terre incorrecte peut provoquer une électrocution.
- N'utilisez pas le câble, la fiche d'alimentation ou la prise de courant s'ils sont endommagés ou s'ils ne sont pas bien fixés. Tout câble endommagé doit être remplacé par une personne qualifiée. Raccordez solidement chaque conducteur du câble aux bornes. Le non-respect de cette consigne peut entraîner une électrocution, un court-circuit ou un incendie.
- Ne jamais immerger les extrémités d'un câble ou la fiche d'alimentation dans l'eau. Cela pourrait endommager l'appareil, provoquer une dispersion électrique, une électrocution ou un incendie.
- Ne pas érafler, plier, tirer, tordre, modifier, mettre en faisceau le câble ou l'utiliser comme dispositif de levage. Le câble peut être endommagé, ce qui peut provoquer une dispersion électrique, un court-circuit, une électrocution ou un incendie.
- Avant de commencer l'entretien ou l'inspection, coupez impérativement l'alimentation électrique ou débranchez la prise afin que la pompe ne puisse pas démarrer accidentellement. Ne travaillez pas avec les mains mouillées. Le non-respect de ces mises en garde peut entraîner une électrocution ou des blessures.

ОБЯЗАТЕЛЬНО ПРОЧИТАЙТЕ ДЛЯ ВАШЕЙ СОБСТВЕННОЙ БЕЗОПАСНОСТИ

- Не пользуйтесь изделием в условиях, отличных от тех, для которых оно предназначено. Несоблюдение данных мер предосторожности может привести к утечке тока, поражению электрическим током, пожару, переливу воды или другим проблемам.
- Никогда не пытайтесь использовать изделие, если кто-либо присутствует в бассейне или сточном колодце. Утечка тока может привести к поражению электрическим током.
- Не используйте изделие под напряжением, отличным от указанного на заводской табличке, при допустимом отклонении напряжения в пределах $\pm 5\%$. Если он работает с генератором, настоятельно рекомендуется не использовать другое оборудование с тем же генератором. Несоблюдение данной меры предосторожности может стать причиной неисправности и повреждения изделия, что может привести к утечке или поражению электрическим током.
- Все электромонтажные работы (включая удлинение кабеля) должны выполняться уполномоченным электриком в соответствии со всеми действующими правилами вашей страны. Никогда не позволяйте посторонним лицам выполнять электромонтажные работы, поскольку это не только противоречит закону, но и может быть чрезвычайно опасным.
- Чрезвычайно необходимо предоставить специальный автоматический выключатель для защиты от утечки на землю (имеющий номинальную чувствительность тока не более 30 мА) и тепловое реле перегрузки, подходящее для насоса (оба доступны в продаже). Несоблюдение этого предупреждения может привести к поражению электрическим током или взрыву в случае выхода из строя изделия либо утечки тока.
- Обеспечьте безопасное заземление, предназначенное для изделия. Не подключайте заземляющий провод к газовой трубе, водопроводу, молниеотводу или телефонному заземляющему проводу. Ненадлежащее заземление может привести к поражению электрическим током.
- Не используйте кабель, вилку или розетку, если они повреждены или не плотно прилегают. Поврежденный кабель должен быть заменен квалифицированным персоналом. Надежно подключите каждую жилу кабеля к клеммам. Несоблюдение этого требования может привести к поражению электрическим током, короткому замыканию или возгоранию.
- Никогда не погружайте концы кабеля или вилку в воду. Это может привести к повреждению изделия, утечке тока, поражению электрическим током или пожару.
- Не царапайте, не складывайте, не тяните, не скручивайте, не вносите изменения, не связывайте кабель и не используйте его в качестве подъемного устройства. Кабель может быть поврежден, что может привести к утечке тока, короткому замыканию, поражению электрическим током или пожару.
- Перед началом технического обслуживания или проверки обязательно отключите электропитание или отсоедините штепсельную вилку таким образом, чтобы насос случайно не запустился. Не производите работу мокрыми руками. Несоблюдение данных мер предосторожности может привести к поражению электрическим током или травме.

1 BE SURE TO READ FOR YOUR SAFETY

Be sure to thoroughly read and understand the SAFETY PRECAUTIONS given in this section before using the equipment in order to operate the equipment correctly.

The precautionary measures described in this section are intended to prevent danger or damage to you or to others. The contents of this manual that could possibly be performed improperly are classified into two categories:  **WARNING**, and  **CAUTION**. The categories indicate the extent of possible damage or the urgency of the precaution. Note however, that what is included under  **CAUTION** may at times lead to a more serious problem. In either case, the categories pertain to safety-related items, and as such, must be observed carefully.

-  **WARNING** : Operating the equipment improperly by failing to observe this precaution may possibly lead to death or injury to humans.
-  **CAUTION** : Operating the equipment improperly by failing to observe this precaution may possibly cause injury to humans and other physical damage.
- **NOTE** : Gives information that does not fall in the WARNING or CAUTION categories.
- **Explanation of Symbols:**



: The  mark indicates a WARNING or CAUTION item. The symbol inside the mark describes the precaution in more detail ("electrical shock", in the case of the example on the left).



: The  mark indicates a prohibited action. The symbol inside the mark, or a notation in the vicinity of the mark describes the precaution in more detail ("disassembly prohibited", in the case of the example on the left).



: The  mark indicates an action that must be taken, or instructs how to perform a task. The symbol inside the mark describes the precaution in more detail ("provide ground work", in the case of the example on the left).

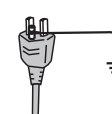
PRECAUTIONS TO THE PRODUCT SPECIFICATIONS

 CAUTION	
	● Do not operate the product under any conditions other than those for which it is specified. Failure to observe the precaution can lead to electrical leakage, electrical shock, fire, or water leakage, etc.



PRECAUTIONS DURING TRANSPORT AND INSTALLATION

 WARNING	
	● When transporting the product, pay close attention to its center of gravity and mass. Use an appropriate lifting equipment to lift the unit. Improper lifting may result in the product damage, injury, or death.
	● Electrical wiring should be performed in accordance with all applicable regulations in your country. Provide a dedicated earth leakage circuit breaker and a thermal overload relay for the pump. Imperfect wiring or neglecting the installation of proper equipment will cause electrical leakage, fire, or explosion at worst.
	● Use a power outlet that has a sufficient rating and has been exclusively provided for the pump. If the power outlet is shared with other equipment, it can lead to an abnormal heat of the outlet and can cause fire as a result.



⚠ CAUTION				
	● Be sure to provide a ground wire securely. Do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire. Improper grounding could cause electrical shock.		⊘ ● Prevent a metallic object or dust from sticking to the power plug. Adhesion of foreign object to the plug could cause electrical shock, short-circuit, or fire.	
⊘	● Do not scratch, fold, twist, make alterations, or bundle the cable, or use it as a lifting device. The cable may be damaged, which may cause electrical leakage, short-circuit, electrical shock, or fire.		⚠ ● Do not use the cabtyre cable, power plug, or power outlet if it is damaged or it is not closely fitted. Connect every conductor of the cabtyre cable securely to the terminals. Failure to observe this can lead to electrical shock, short-circuit, or fire.	
⊘	● This pump is neither dust-proof nor explosion-proof. Do not use it at a dusty place or at a place where toxic, corrosive or explosive gas is present. Use in such places could cause fire or explosion.		⚠ ● When transporting or installing the pump, bring it with the handle. When lifting the product, tie a rope to the handle tightly. Transporting or lifting the pump with its cable may damage the cable, which may cause electrical leakage, electrical shock, or fire.	
⊘	● If a hose is used for the discharge line, take a measure to prevent the hose from shaking. If the hose shakes, you may be wet or injured.			

PRECAUTIONS DURING TEST OPERATION AND OPERATION

⚠ WARNING				
	● Never start the pump while it is suspended, as the unit may jerk and could lead to injury.		● When inspecting the pump, be sure to turn off the power supply (earth leakage circuit breaker, etc.) so that the pump may not start accidentally. Failure to do so may lead to a serious accident.	
⚠ CAUTION				
	● Do not operate the product under any voltage other than described on the nameplate with the voltage tolerance limit within $\pm 5\%$. If it is operated with a generator, it is strongly suggested not to operate other equipment with the same generator. Failure to observe this caution may cause malfunction and breakdown of the product, which may lead to electrical leakage or electrical shock.		● Do not touch the product with bare hands during or immediate after the operation, as the product may become very hot during operation. Failure to observe this caution may lead to burn. Especially, when opening the priming plug, pay attention to a phenomenon that hot water may spout from the pump.	
	● Do not use the product in a liquid other than water. Use in oil, salt water or organic solvents will damage it, which may lead to electrical leakage or electrical shock.		● Do not run the product dry or operate it with its valve (sluice or gate valve) closed, as doing so will damage the product, which may lead to electrical leakage or electrical shock.	
	● Do not use the product for hot or warm liquid over 40°C , as doing so will damage the product, which may lead to electrical leakage or electrical shock.		● When operating the pump with its valve (sluice or gate valve) closed, it may become very hot. Be careful not to contact the pump accidentally to avoid being burned.	
	● Do not allow foreign objects (metal objects such as pins or wires) to enter the suction inlet of the pump. Failure to observe this caution could cause it to malfunction or to operate abnormally, which may lead to electrical leakage or electrical shock.		● When the product will not be used for an extended period, be sure to turn off the power supply (earth leakage circuit breaker, etc.). Deterioration of the insulation may lead to electrical leakage, electrical shock, or fire.	

PRECAUTIONS DURING MAINTENANCE AND INSPECTION

⚠ WARNING	
 ● Absolutely turn off the power supply before starting maintenance or inspection, and perform the work after making sure that the impeller has stopped completely. Do not work with wet hands. Failure to observe these cautions may lead to electrical shock or injury. 	● Do not disassemble or repair any parts other than those designated in the operation manual. If repairs are necessary in any other than the designated parts, consult with the dealer where it was purchased or Tsurumi representative. Improper repairs can result in electrical leakage, electrical shock, fire, or water leakage. 
 ● In case any abnormality (excessive vibration, unusual noise or odor) is found in the operation, turn the power off immediately and consult with the dealer where it was purchased or Tsurumi representative. Continuing to operate the product under abnormal conditions may result in electrical shock, fire, or water leakage. 	
⚠ CAUTION	
 ● After reassembly, always perform a test operation before resuming use of the product. Improper assembly can result in electrical leakage, electrical shock, fire, or water leakage.	

PRECAUTION TO POWER OUTAGE

⚠ WARNING	
 ● In case of power outage, turn off the power supply. The product will resume operation when the power is restored, which presents serious danger to people in the vicinity.	

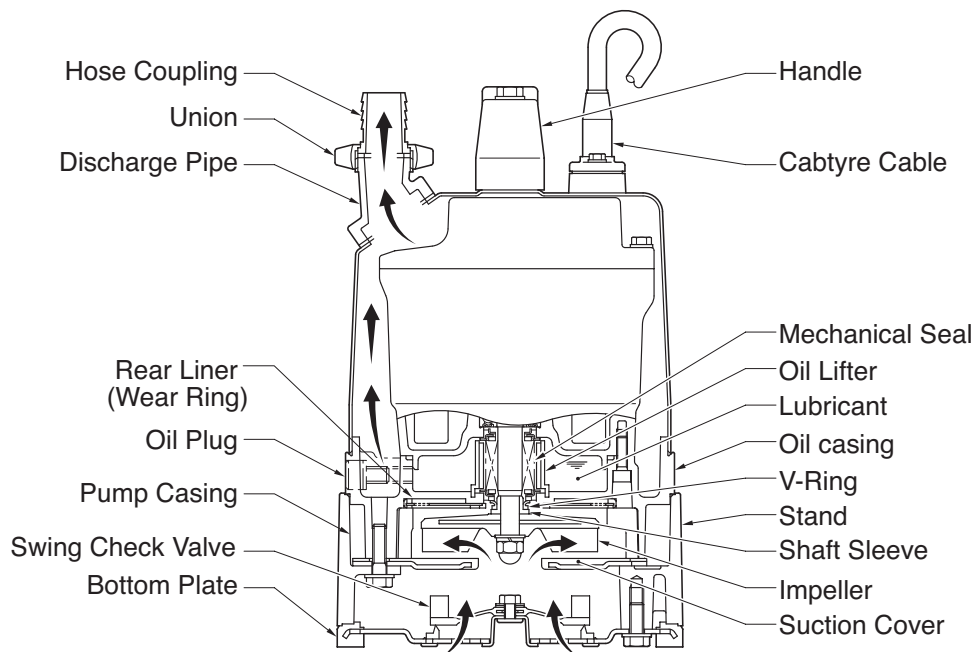
OTHER PRECAUTION

⚠ CAUTION	
 ● Never use the product for potable water. It may present a danger to human health.	

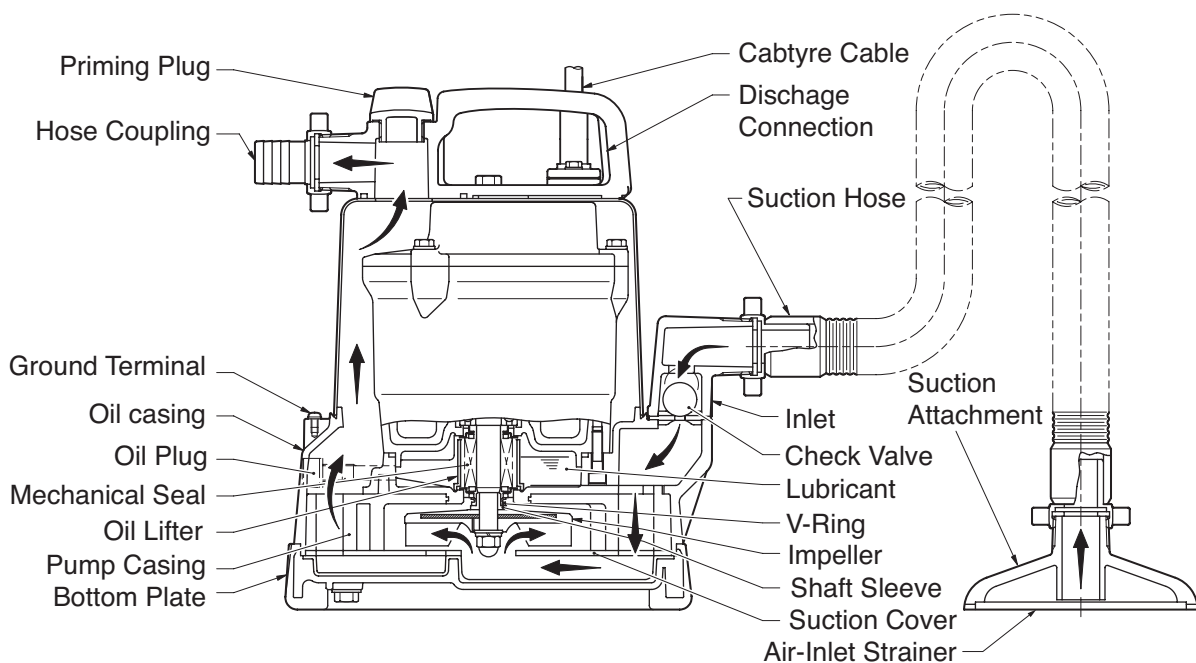
⚠ CAUTION	
 ● This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. ● Children should be supervised to ensure that they do not play with the appliance. ● If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. ● Pollution of the liquid could occur due to leakage of lubricants. ● The pump must be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.	

2 PART NAMES

■ LSC1.4S



■ LSP1.4S



3 PRIOR TO OPERATION

When the pump is delivered, first perform the following checks.

Product Inspection

While unpacking, inspect the product for damage during shipment, and make sure all bolts and nuts are tightened properly.

Specification Check

Check the model number to make sure it is the product that was ordered. Be certain it is the correct voltage and frequency.

Example of nameplate for LSC

TSURUMI PUMP				SUBMERSIBLE PUMP (Built in motor protector)				①
No.		③						②
MODEL		④		⑤		Hz		
H MAX.		⑥		m		H MIN.		⑦
Q MAX.		⑧		m ³ /min		DN		⑨
U		⑩		~		⑪		v
I		⑫						A
P ₂		⑬		kW		INS.		⑭
T MAX.		⑮		°c				⚡
Wt		⑯		kg		N		⑰
min ⁻¹		⑱		IP		⑲		m
TSURUMI MFG.CO.,LTD.								
Side View ⬅ ROTATION				Top View ⤵ ROTATION				XXXXX

②①

④				⑤		Hz		SUBMERSIBLE PUMP (Built in motor protector)		IP ⑱ ⑲ m		⚡
DN		⑨		mm		P ₂		⑬		kW		U
H MAX.		⑥		m		N		⑰		min ⁻¹		I
H MIN.		⑦		m		INS.		⑭		T MAX.		⑮
°c												⚡
Wt		⑯		kg		T MAX.		⑮		°c		
TSURUMI Mfg.Co.,Ltd.												XXXXX

1	Submersible pump	11	Rated voltage
2	Built in motor protector	12	Rated current
3	Serial number	13	Rated output power
4	Model	14	Insulation class
5	Frequency	15	Max. liquid temperature
6	Max. total head	16	Weight without cable
7	Min. total head	17	Speed of rotation
8	Max. flow rate	18	IP degree of protection
9	Discharge bore	19	Max. immersion depth
10	Phase	20	Direction of rotation

Example of nameplate for LSP

 TSURUMI PUMP		RESIDUE DEWATERING PUMP Built in motor protector		①
No.	③			②
MODEL	④	⑤	Hz	
H MAX.	⑥	m	PV MAX.	⑦ kPa
Q MAX.	⑧	L/min	DN	⑨ mm
U	⑩	~	⑪	v
I	⑫			A
P ₂	⑬ kW	INS.	⑭	T MAX. ⑮ °c
Wt	⑯ kg	N	⑰ min ⁻¹	IP ⑱ m
TSURUMI MFG.CO.,LTD.				
Side View ▲ ROTATION				
Top View ⤵ ROTATION				
XXXXXX				

1	Residue dewatering pump	10	Phase
2	Built in motor protector	11	Rated voltage
3	Serial number	12	Rated current
4	Model	13	Rated output power
5	Frequency	14	Insulation class
6	Max. total head	15	Max. liquid temperature
7	Max.vacuum (negative pressure)	16	Weight without cable
		17	Speed of rotation
8	Max. flow rate	18	IP degree of protection
9	Suction bore × Discharge bore	19	Max. immersion depth
		20	Direction of rotation

Accessory Check

Verify that all accessory items are included in the package.

LSC Type

- Hose Band 1 pc
- ø25mm Hose Coupling with Union Hose Band 1 set } Models for US are excluded
- Operation Manual 1

LSP Type

- ø25mm Hose Coupling with Union Hose Band 1 set
- Suction Hose with Union (5m)..... 1 set
- Suction Attachment 1 set
- Operation Manual 1

Note: If there is any problem with the product as shipped, contact your nearest dealer or Tsurumi representative at once.

Product Specifications



CAUTION

Do not operate this product under any conditions other than those for which it is specified. Failure to observe this precaution can lead to electrical shock, electrical leakage, fire, water leakage or other problems.

Major Standard Specifications

Fluid	Property	Cleaning Water, Water on floor Puddles (LSC1.4S). Residual water, Puddles (LSP1.4S) ; 0 ~ 40°C
Pump	Impeller	Semi-Vortex Type
	Shaft Seal	Double Mechanical Seal
	Bearing	Shielded Ball Bearing
Motor	Specifications	Dry Type Submersible Induction Motor (2-Pole)
	Insulation	Class E
	Protection System (built-in)	Miniature Protector
	Lubricant	Turbine Oil ISO VG32 (non-additive)
Discharge Connection		Hose Coupling

Standard Specifications (50/60 Hz)

Model	Bore (mm)	Phase	Starting Method	Output kW (HP)	Max. Head m(ft.)	Max. Capacity L/min(GPM)	Weight kg (lbs.)
LSC1.4S	25	Single	Capacitor Run	0.48 (2/3)	11/12(36/39)	—	12.0 (26.5)
LSCE1.4S	25	Single	Capacitor Run	0.48 (2/3)	11/12(36/39)	—	12.6 (27.8)
LSP1.4S	25	Single	Capacitor Run	0.48 (2/3)	6.9/7.8(22.6/25.6)	50/55(13.2/14.5)	16.5 (36.4)

Note: The mass (weight) given above is the dry weight of the pump itself, not including the cable.

4

INSTALLATION



CAUTION

- Do not use the pump in liquids other than plain water, such as oil, salt water, or organic solvents.
- Use with a power supply voltage within $\pm 5\%$ of the rated voltage.
- Do not use in the water temperatures outside the range of 0 ~ 40°C, which can lead to failure, electrical leakage or shock.
- Do not use in the vicinity of explosive or flammable materials.
- Use only in fully assembled state.

Note: Consult your local dealer or Tsurumi representative before using with any liquids other than those indicated in this document.

Maximum allowable water pressure



CAUTION

Do not use at greater than the water pressure shown below.

Maximum allowable water pressure : 0.2MPa (2kgf/cm²) - discharge pressure during use

Preparation for Installation

Before installing the pump at a work site, you will need to have the following tools and instruments ready.

- AC voltmeter
- AC ammeter (clamp-on type)
- Bolt and nut tighteners
- Power supply connection tools (screwdriver or box wrench)

Note: Please read also the instructions that come with each of the test instruments.

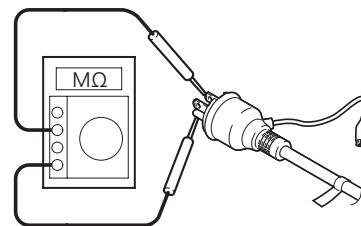
Single-phase power supply:

Use a megger to measure the resistance between the tip of the cabtyre cable plug and the ground terminal to verify the insulation resistance of the motor.

Measure twice the resistance between each of the two tips of the plug and ground.

(This diagram shows a 2-pin plug type.)

Single-Phase



CAUTION Beware that the power plug varies by country or region.

Insulation resistance reference value = 20MΩ minimum

Note: The insulation resistance reference value of 20MΩ minimum is based on a new or repaired pump. For reference values of a pump that has already been put into operation, refer to "7 Maintenance and Inspection" of this manual.

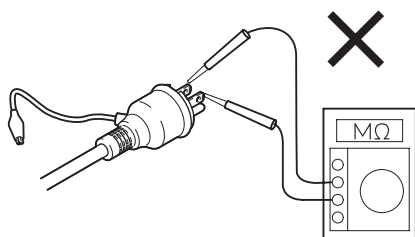
How to use level relay unit (LSCE1.4S)



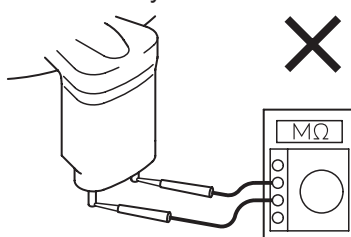
CAUTION

- Do not measure the insulation resistance with insulation resistance tester for following parts, It cause a trouble.
- Do not lift or hang the level relay unit. It will damage and cause a leakage, an electric shock, and a fire.
- In the case of the float type, do not lift it by the float cable, as it will damage the cable, and lead to a leakage, electrical shock, and fire.

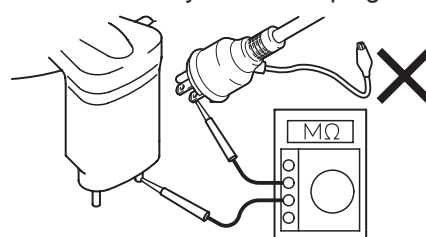
(1) between the plug



(2) between the electrode of a level relay unit.



(3) between the electrode of a level relay unit and a plug.



(4) Do not make "on" period between the other level relay unit.

Precautions in Installation



WARNING When installing the pump, pay close attention to its center of gravity and weight. If it is not lowered into place correctly, it may fall and be damaged or cause injury.



CAUTION Do not under any circumstances install or move the pump by suspending it from the cabtyre cable. The cable may be damaged, causing electrical leakage, shock, or fire.

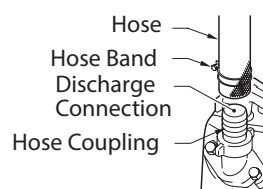
(1) •Model LSC

The discharge connection is fitted with a 25 mm diameter union hose coupling. Attach the hose coupling as far as it will go, then fasten it securely with the hose band.

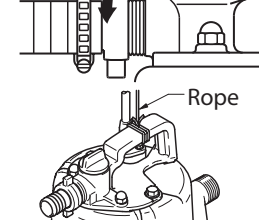
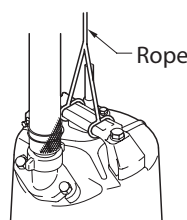
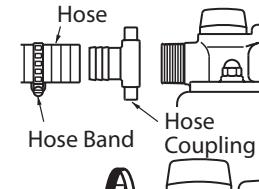
•Model LSP

Attach the hose to the hose coupling as far as it will go, then fasten it securely with the hose band. At the inlet, use the hose supplied with the pump.

LSC



LSP



Note: Before connecting the suction attachment, etc., make sure there is packing in the union at both the discharge and inlet hose ends. Even a slight amount of leakage or clogging will greatly affect performance.

- (2) Avoid dropping the pump or other strong impact. Lift the pump by holding it firmly with the hands or by attaching a rope or chain to the handle.



CAUTION

The rope for suspending the pump during its installation must be of a thickness that accommodates the weight of the pump. When using a chain, make sure that the chain does not become twisted. Failure to observe these precautions could cause the rope or chain to break and the pump to fall and break, which could lead to personal injury.

Note: *On cable handling, see at electrical Wiring.*



CAUTION

Operating the pump when the inlet is blocked with debris will result in excessive noise and vibration, which can cause the pump to malfunction, leading to electrical leakage and shock.

Note: *This pump is supplied without piping. Use it with suitable piping material.*

When used with a hose, pay attention to the following precautions.

Make sure the hose has no sharp bends, which can severely limit the flow of water. In particular, sharp bends near the base may cause air pockets to form resulting in idle operation. Lessen the degree of bedding while continuing to operate the pump. The tip of the hose (discharge end) should be located higher than the water surface. If the end of the hose is submerged, water may flow back to the pump when the pump is stopped; and if the hose end is lower than the water surface, water may overflow when the pump is turned off.



CAUTION

If large quantities of earth are sucked up, damage resulting from abrasion in the pump can lead to electrical leakage and shock.

- (3) Use the pump in the upright position and on a flat surface. If the pump is likely to suck up sand or debris, mount it in a protective box or enclose it with a screen.

Note: *In the case of the LSP, installing the pump on an incline will alter the available circulation water capacity, lowering pump performance or even resulting in a total loss of suction.*

5 ELECTRICAL WIRING

Performing electrical wiring



WARNING

- Electrical wiring should be performed by a qualified person in accord with all applicable regulations. Failure to observe this precaution not only risks breaking the law but is extremely dangerous.
- Incorrect wiring can lead to electrical leakage, electrical shock or fire.
- Absolutely provide a dedicated earth leakage circuit breaker and a thermal overload relay suitable for the pump (available on the market). Failure to follow this warning can cause electrical shock or explosion when the product fails or an electrical leakage occurs.

Provide an extra allowance in the capacity of power supply and wiring.

Grounding



WARNING

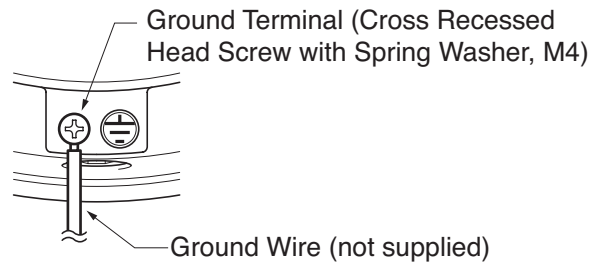
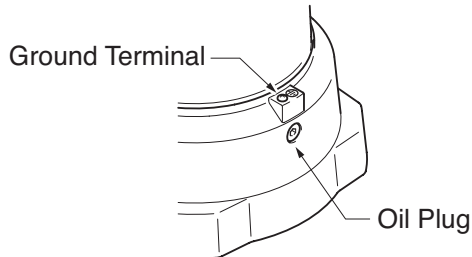
Do not use the pump without first grounding it properly. Failure to ground it can lead to electrical shock from an electrical leak or pump malfunction.



CAUTION

Do not attach the grounding wire to a gas pipe, water pipe, lightning arrestor or telephone grounding wire. Improper grounding can result in electrical shock.

Grounding of the LSP can be performed by connecting the ground wire to the ground terminal located on the body.



Connecting the power supply



WARNING

Before connecting leads to the terminal strip, make certain the power supply is turned off (circuit breaker, etc.), to avoid electrical shock, shorting, or unexpected starting of the pump, leading to injury.



WARNING

Before inserting the power supply plug, make certain the power supply is turned off (circuit breaker, etc.), to avoid electrical shock, shorting, or unexpected starting of the pump, leading to injury.



CAUTION

Do not use the product with the cable or plug connected loosely, which can result in electric shock, shorting, or fire.



CAUTION

Draw power from a dedicated power outlet having sufficient capacity for the pump. Sharing the outlet with other equipment may cause overheating at the branch outlet and could result in fire.

When using a three-prong grounded plug, connect as shown in the drawing.

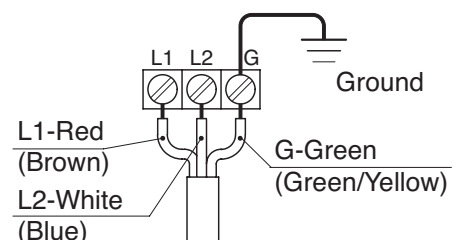
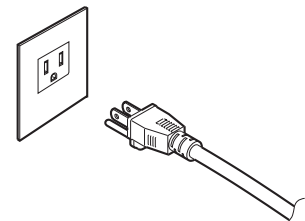


CAUTION

Be sure to use a dedicated power supply with a ground leakage circuit breaker.

When a single-phase power source is used, connect the leads to the control panel terminals as shown in the diagram, making sure they do not become twisted together.

Note: The shape of the plug may differ from that shown in the illustration.



Cabtyre cable



CAUTION

- If it is necessary to extend the cabtyre cable, use a core size equal to or larger than the original. This is necessary not only for avoiding a performance drop, but to prevent cable overheating which can result in fire, electrical leakage or electrical shock.
- If a cable with cut insulation or other damage is submerged in the water, there is danger of water seeping into the motor causing a short. This may result in damage to the pump, electrical leakage, electrical shock, or fire.
- Be careful not to let the cabtyre cable be cut or become twisted. This may result in damage to the pump, electrical leakage, electrical shock, or fire.
- If it is necessary to submerge the connection leads of the cabtyre cable in water, first seal the leads completely in a molded protective sleeve, to prevent electrical leakage, electrical shock, or fire.

Do not allow the cabtyre cable leads or power supply plug to become wet.

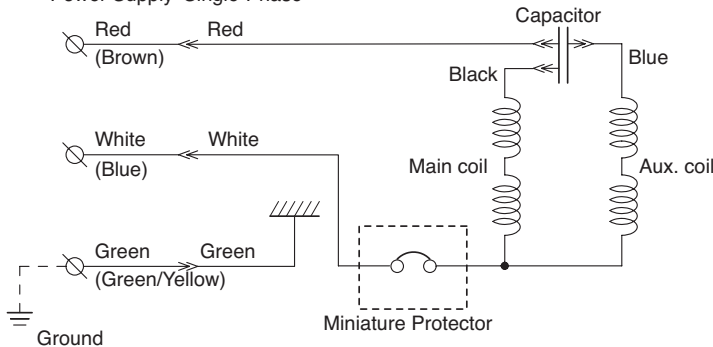
Make sure the cable does not become excessively bent or twisted, and does not rub against a structure in a way that might damage it.

Electrical Circuit Diagrams

■ Non-Automatic Circuit

LSC, LSP

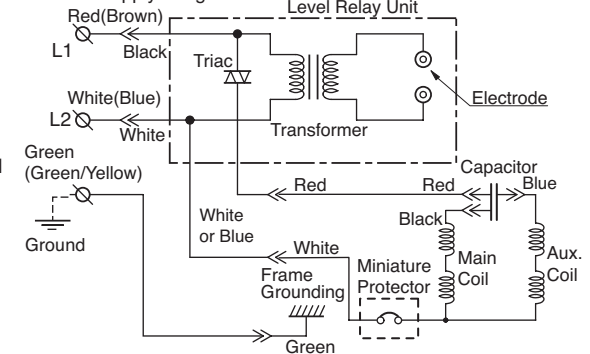
Power Supply: Single-Phase



■ Automatic Operation Circuit (Level Relay Unit)

LSCE

Power Supply: Single-Phase



Motor Protector

The pump is equipped with an internal motor protector. (Miniature Protector)

If a current overload or overheating occurs under the symptoms given below, the motor will stop automatically to protect the motor regardless of the water level at the time of operation.

In this type of motor protector, the motor will automatically restart after cooling down. If the motor is stopped by protector tripping, turn off the power supply first, and disconnect the cables from the power terminals. After this, make sure to eliminate the cause of the problem, such as the following:

- Extreme fluctuation of power supply voltage
- Pump operated under overload condition
- Pump operated at open phase or binding condition



WARNING

If repair or maintenance is attempted with cables connected to power supply, unintended automatic restarting of the motor may cause human injury.

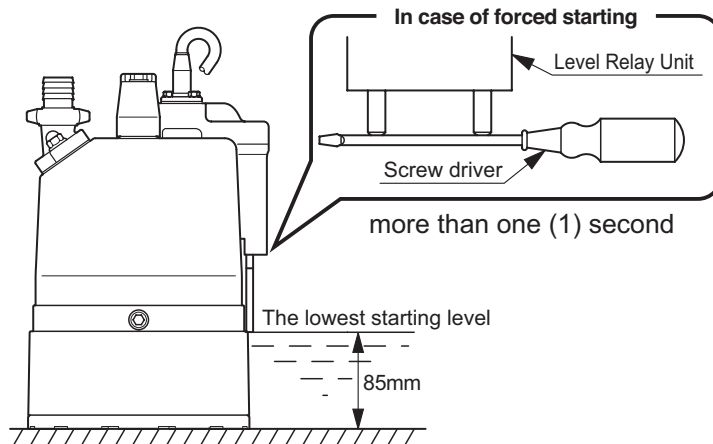
Operation Water Level (LSCE1.4S)

Start of the pump

The pump starts when the current continuously flows between the two electrodes for more than one(1) second.

Note: *The electrode may not detect the watersurface under conditions such as purified water or distilled water which the current does not flow cause of high specific resistance.*

Note: *The necessary water level to operate the pump is 85 mm from the bottom of a pump.
In case of start by racing during the trial operation, please short-circuit for more than one (1) second with exciting items (screw driver etc.) between the electrodes, and start forcibly.
Please keep away from those that may clog in a pump. (wire, nail, cord, etc.)*



Trial Operation

WARNING Never start the pump while it is suspended, as the pump may jerk and cause a serious accident involving injury.

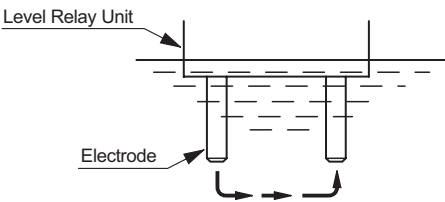
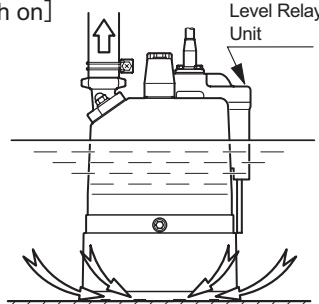
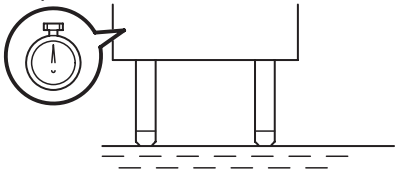
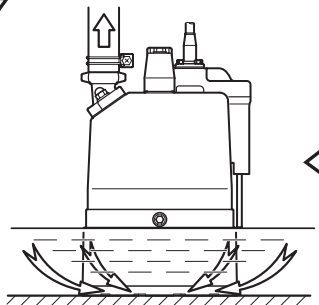
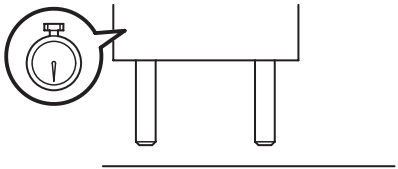
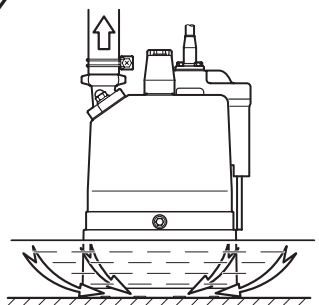
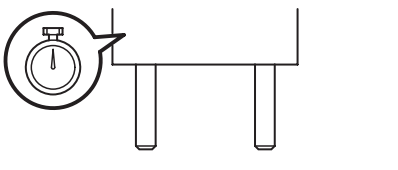
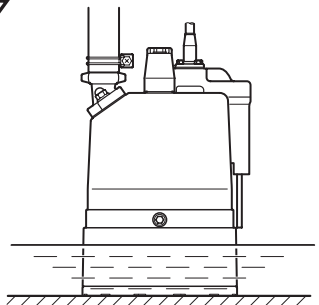
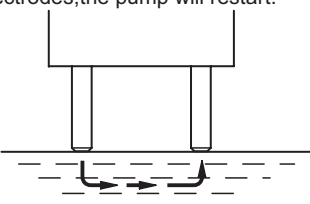
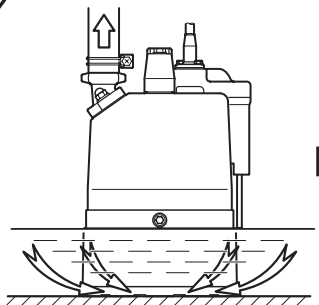
(1) Operate the pump 3 to 10 minutes to verify the conditions listed below.

CAUTION If large quantities of earth are sucked up, damage resulting from abrasion in the pump can lead to electrical leakage and shock.

(2) Proceed with the normal operation if no abnormal conditions are found during the trial operation.

Operation Water Level (LSCE1.4S)

To enable the user to bring the pumps ability into full play, this chart describes the various control modes that are made possible by the combinations of the electrode and timer functions.

Level Relay Unit	Pump	Water Level	Condition
The electrodes of the level relay unit are submerged, causing the current to operate the pump.  (Detection Time : more than one (1) second)	Start Operation (Drainage)	Drop	[Switch on] 
As the water level drops and the water surface recedes from the electrodes, the timer trips to drain water.  (Electrodes open Trips the timer)	Operation (Drainage)	Drop	
The draining of water by the timer lasts approxiamter 1 minute. ※If the water surface comes in contact for more than one (1) second with the electrodes witin 1 minute, the pump will operate continuously even though the timer has tripped. 	Operation (Drainage)	Drop	
The pump will stop 1 minute later.  ※The pump will also stop after a continuous dry run, in some cases.	Stop	Rise	
When the water level rises and the water surface comes in contact for more than one (1) second with the electrodes, the pump will restart.  (Detection Time : more than one (1) second)	Start Operation (Drainage)	Drop	

6 OPERATION

Before starting

- (1) Make sure once again that the product is of the correct voltage and frequency rating.

CAUTION Using the product at other than rated voltage and frequency will not only lower its performance but may damage the product.

Note: Confirm the rated voltage and frequency on the model name plate.

- (2) Confirm the wiring, supply voltage, circuit breaker capacity, and motor insulation resistance.

■ Reference insulation resistance = 20MΩ or greater.

Note: The reference insulation resistance (20MΩ or greater) is the value when the pump is new or has been repaired. For the reference value after installation, see below at Maintenance and Inspection (p. 11).

- (3) The setting on the circuit breaker or other overload protector should be made in accord with the rated current of the pump.

Note: See the model name plate on the pump for its rated current.

- (4) When powering the pump with a generator, do not share the generator with other equipment.

Test Operation

WARNING Never Operate the pump while it is suspended in the air. The recoil may result in injury or other major accident.
Never start the pump when people are standing next to it. An electrical leak can result in electrical shock.

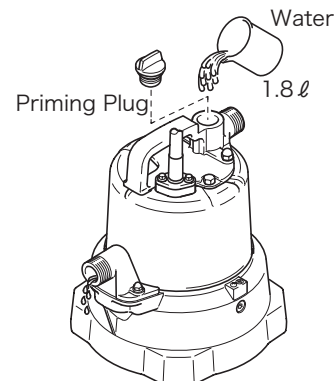
- (1) •Model LSC

The Pump will not start until the pump casing is wet. When doing a test operation or if it is desired to start the pump when the remaining water level is low, pour in clean water from the hose coupling. Approximately 2.5 liter of priming water is required.

- Model LSP

Remove the priming plug at the top of the pump and pour in clean water right up to the top: then replace the priming plug and tighten it. Approximately 1.8 liter of priming water is required.

- (2) Run the pump for a short time (3 to 10 minutes) and check its operation.



CAUTION Do not run the pump dry or with shut off condition. This condition may damage the pump or cause it to malfunction and may result in electrical leakage or electrical shock.

CAUTION In case of very excessive vibration, unusual noise or odor, turn off the power immediately and consult with your nearest dealer or Tsurumi representative. Continuing to operate the pump under abnormal conditions may result in electrical shock, fire, or electrical leakage.

Operation

WARNING The pump may become very hot during operation. Be careful not to contact the pump accidentally to avoid being burned.

Always make sure the pump is primed before starting operation.

If the motor protection system operates due to an overload or malfunction, causing the pump to stop, first investigate and remove the cause before restarting.

If LSC is used: After stopping operation, detach the hose from the discharge connector and turn the pump upside-down to remove the water inside the pump.

7 MAINTENANCE AND INSPECTION

Regular maintenance and inspections are a necessity for continued efficient functioning of the pump. If any abnormal conditions are noticed, refer to the section on troubleshooting (P.15) and take corrective measures immediately. It is recommended that a spare pump be kept ready in case of any problems.

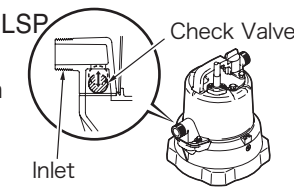
Prior to Inspecting

WARNING Detach the cabtyre cable from the receptacle or terminals, after making certain the power supply (circuit breaker, etc.) is turned off. Failure to follow this precaution may result in a serious accident from electrical shock or unexpected starting of the pump motor.

- (1) Washing the Pump
Remove accumulated matter from the surface of the pump and wash it with clean water. Take special care to remove any debris from the impeller.
- (2) Inspecting the Pump Exterior
Look for any peeling or chipped paint, and make sure the nuts and bolts are fastened tightly. Any cracks in the surface should be repaired by cleaning that area, drying it and then applying a touchup coating.

Note: Touchup is not supplied. Note that some kinds of damage or looseness may require that the unit be disassembled for repairs. Please consult with your nearest dealer or Tsurumi representative.

Regular Inspection

Frequency	Inspection Items
Weekly	Measure insulation resistance ■Reference insulation resistance = 1MΩ minimum NOTE: If the insulation resistance has become notable lower than the previous inspection, an inspection of the motor will be necessary. Measure operating current. ■Compare with rated current Measure supply voltage ■Power supply voltage tolerance (within ±5% of the rated voltage)
Monthly	Pump Inspection. ■ A noticeable drop in performance may indicate wear in the impeller, suction cover, etc., or else clogging of the impeller, etc. Remove the clogged debris, and replace any worn parts. Swing check valve inspection (LSC). ■ If the lip on the bottom plate becomes excessively rounded off, or if the rubber material of the swing check valve is deteriorated, shutoff function of the valve decrease. Replace the bottom plate and/or the swing check valve. Check valve inspection (LSP). ■ The check valve may fail to operate if sand or debris at attached to it. Wash the valve and inside the inlet at regular intervals. The check valve can be removed by removing the inlet hex.bolt. NOTE: In some case a siphon effect when the pump stops can cause water to reverse its flow or the priming water to flow out. 
Half-yearly	Oil inspection. ■Every 1,000 hours of operation or six months, whichever comes first. Inspection of lifting rope or chain ■ Replace if damage, corrosion, or wear has occurred to the rope or the chain. Remove if foreign object is attaching to it.
yearly	Changing oil. ■Every 2,000 hours of operation or 12 months, whichever comes first. Designated oil: Turbine Oil ISO VG32. Oil Quantity: 155ml (LSC) ; 150ml (LSP) NOTE: See below on OIL inspection and oil change.
Every 2 to 5 years	Change mechanical seal. NOTE: Specialized know-how is required for inspecting and replacing the mechanical seal. Consult with your nearest dealer or Tsurumi representative. Overhaul ■ This should be carried out even if there are no problems with the pump. The frequency depends on how continuously the pump is in use. NOTE: Consult with your nearest dealer or Tsurumi representative regarding overhauls.

Storage

When the pump is out of use for an extended period, wash it and dry it thoroughly, then store it indoors.

Note: *Always run a test operation before putting the pump back into service.*

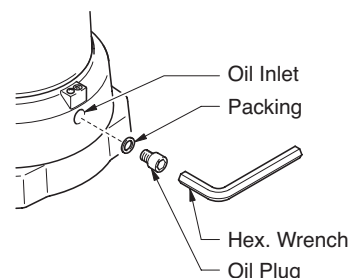
Oil Inspection and Oil change

Inspecting Oil

Remove the oil plug and tilt the pump to drain a small of oil. If the oil is milky white or has water mixed in with it, the mechanical seal may faulty . In this case the pump will need to be disassembled and repaired.

Replacing oil

Remove the oil plug and drain all the oil, then replace it with the specified amount.



Note: *Worn oil and other waste products should be disposed of by a qualified agent, in accord with applicable laws. The oil plug packing should be replaced each time the oil is inspected or changed.*

Pump Model	Oil Quantity(ml)
LSC1.4S	155
LSCE1.4S	155
LSP1.4S	150

Replacement parts

The table lists the parts that need to be replaced periodically. Replace these using the recommended frequency as a guideline.

Note: *These parts should be replaced after every 2,000 hours of operation, or when a problem is detected.*

Part	Replacement condition
Mechanical Seal	When oil is discolored.
Lubricant ; Turbine Oil VG 32 (non-additive)	Every 2,000 hours or 12 months, whichever comes first.
Packing	Each time pump is disassembled or inspected.
V-Ring	When the lip is worn, and each time pump is disassembled or inspected.
Shaft sleeve	When it becomes worn.
Swing check valve	When the shutoff function decreases

8 DISASSEMBLY AND REASSEMBLY PROCEDURE

■ Prior to Disassembly and Reassembly



WARNING Before disassembling the pump, first detach the cabtyre cable from the receptacle or terminals, after making certain the power supply (circuit breaker, etc.) is turned off. To avoid electrical shock, do not work with wet hands. Never check the operation of any parts (to check the rotation of the impeller) by turning on the power while the unit is partially assembled. Failure to observe these precautions may result in serious accident. Do not disassemble or repair any parts other than those designated here. If repairs are necessary in any other than the designated parts, consult with your nearest dealer or Tsurumi representative. Improper repairs can result in electrical leakage, electrical shock, fire, or water leaks. After reassembly, always perform a test operation before resuming use of the pump. Improper assembly will cause the pump to malfunction, resulting in electric shock or water leaks.

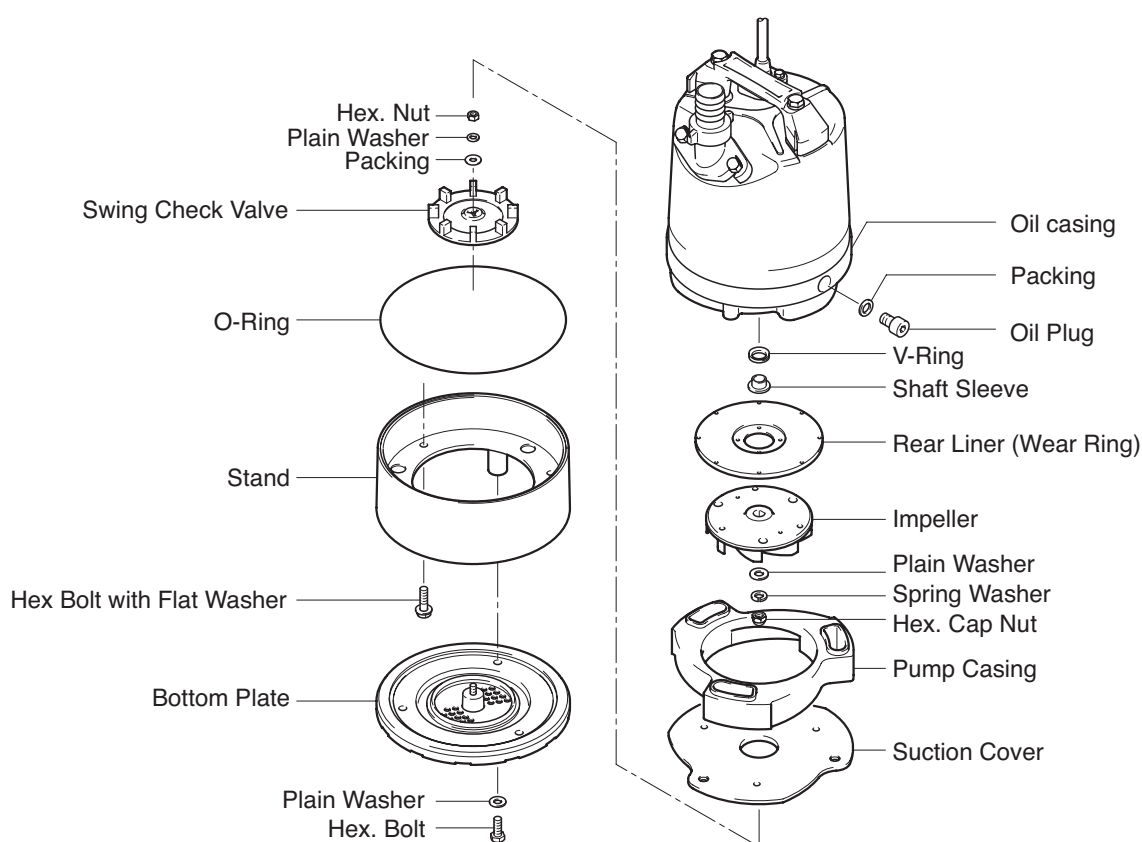
The procedure for disassembly and reassembly is shown here to the extent necessary for impeller replacement. A specialized environment and facilities are necessary for work on the mechanical seal and the motor parts. Contact your nearest dealer or Tsurumi representative in the event such repairs are necessary.

Disassembly Procedure

Note: *Before disassembling, be sure to drain the oil.*

- (1) Removing the suction cover and the pump casing
Remove the hex bolts and the sealing washers from under the bottom plate and remove the bottom plate from the pump unit. Then, use a wrench to remove the hex bolt with flat washer to remove the stand, O-ring, suction cover, and the pump casing from the pump unit.
- (2) Removing the impeller
Using a box wrench, remove the hex cap nut, spring washer, and flat washer, to remove the impeller, shaft sleeve, and the V-ring from the main shaft.
- (3) Removing the rear liner
Remove the rear liner from the oil casing.

Disassembly Diagram (LSC1.4S)



Note: *When replacing the check valve, be careful not to overtighten the hexagon nut. Doing so may result in the decrease in its shutoff function.*

Reassembly Procedure

Observe the precautions given below and reassemble the unit in the reverse order of disassembly.

Note: *The packings must be replaced with a new part. If any part is worn or damaged, make sure to replace it with a new part.*

Remove sand or debris from rubber parts (rear liner, impeller, pump casing, and suction cover) before reassembling them.

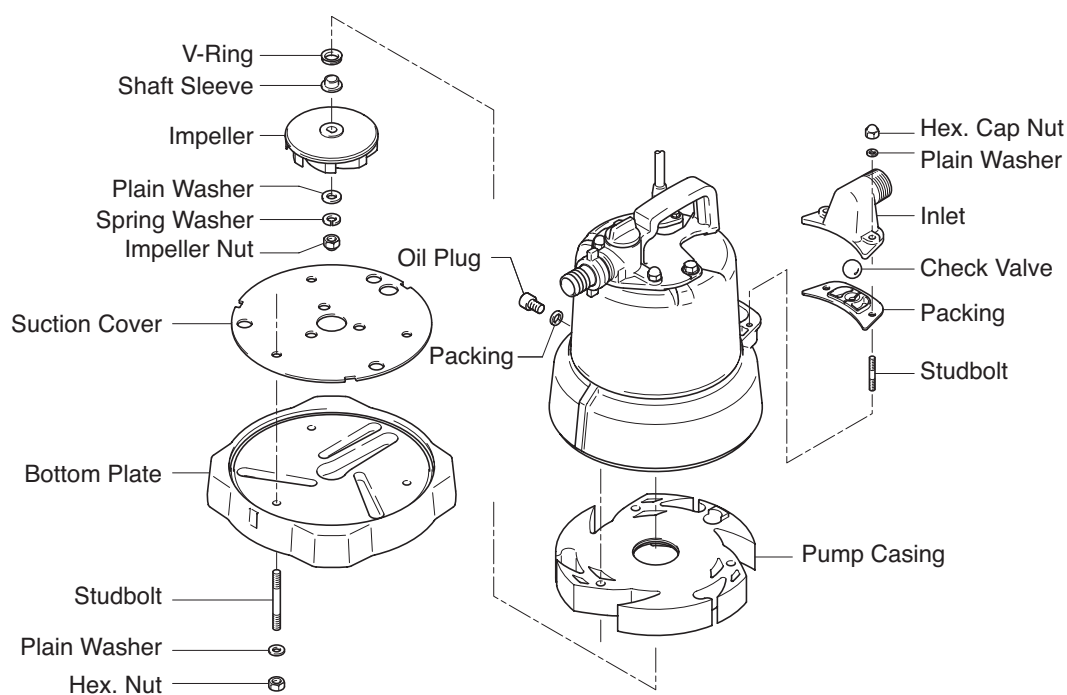
After installing the impeller and the suction cover, make sure that the impeller rotates smoothly and that it does not interfere with the suction cover.

Disassembly(LSP)

Note: Before disassembly, drain the oil from the pump.

- (1) Remove the Bottom Plate and Suction Cover
Remove the Hex. Bolt and Plain Washer under the Bottom Plate, then remove the Bottom Plate and Suction Cover from the Pump casing.
- (2) Remove the Impeller
With a box wrench or other tool, remove the Impeller Nut, spring washer and Plain Washer, then remove the impeller, Shaft Sleeve and V-Ring from the Shaft. Next, Remove the Pump Casing from pump.

Exploded view(LSP1.4S)



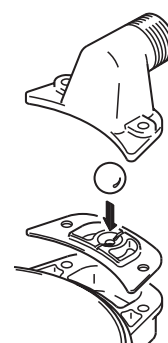
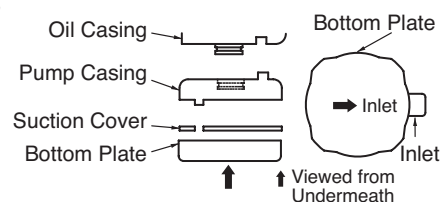
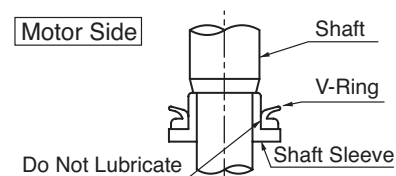
Reassembly

Reassembly can be performed by reversing the steps for disassembly, paying attention to the following points.

Note: Replace the packing each time this operation is performed Replace any other worn or damaged part as well.

- (1) Mount the V-Ring on the Shaft Sleeve as shown in the diagram. Do not lubricate the surface where the V-Ring contacts the Shaft Sleeve.
- (2) The Pump Casing, Suction Cover and Bottom Plate must be oriented correctly. Use the inlet position as a guide to line up the parts properly, as shown in the diagram.
- (3) When the pump Casing and Bottom Plate are mounted, the air-tightness will greatly affect pump performance. Make sure there is no sand or other debris on the rubber parts.
- (4) When attaching the Check Valve at the Inlet, Make sure the Check Valve lines up with the center of the packing as shown.

After attaching the Impeller, and again after mounting the Suction Cover, Check to make sure the Impeller rotates smoothly.



9 TROUBLESHOOTING



WARNING Always turn off the power before inspecting the pump. Failure to observe this precaution can result in serious accident.

Before ordering repairs, carefully read through this instruction manual, then repeat the inspection. If the problem remains, contact your nearest dealer or Tsurumi representative.

■ LSC

Problem	Possible cause	Countermeasure
Pump fails to start; or, starts but stops immediately (within 10 seconds).	(1) (No proper power is supplied (power outage, etc.) (2) Pump is jammed with debris, causing the motor protector to trip.	(1) Contact the electric power company or an electrical repair shop to take action. (2) Inspect the pump unit and remove the debris.
During operation, the pump stops automatically due to the tripping of the motor protector.	(1) The pump casing is filled with mud. (2) The voltage is too low. (3) The pump was operated dry for a prolonged length of time as a result of the clogging of the suction strainer of the bottom plate. It pumps too much mud. (4) A 50Hz pump is operated at 60Hz.	(1) Disassemble and clean the pump. Detach the suction cover, remove the mud, and manually turn the pump. (2) Raise the voltage to the rated voltage. (3) Remove debris. (4) Check the nameplate and replace the pump.
The pumping head and volume are small.	(1) The impeller or the suction cover is significantly worn. (2) The drain hose is kinked or clogged. (3) The suction strainer of the bottom plate is clogged. (4) The suction inlet is clogged with debris. (5) A 50Hz pump is operated at 60Hz.	(1) Repair or replace the affected part. (2) Straighten the curved or kinked part as much as possible. (3) Remove debris. (4) Remove the bottom plate to remove the debris from the inside of the suction inlet. (5) Check the nameplate and replace the pump.
Does not draw water at low water level.	(1) There is no water in the pump.	(1) Prime the pump.
After the pump stops, the priming water flows out.	(1) The swing check valve and/or the lip on the bottom plate is worn.	(1) Replace the swing check valve and/or the bottom plate.

■ LSP

Problem	Possible cause	Countermeasure
Pump fails to start; or, starts but stops immediately (within 10 seconds).	(1) No proper power is supplied (power outage, etc.) (2) Pump is jammed with debris, causing the motor protector to trip.	(1) Contact the electric power company or an electrical repair shop to take action. (2) Inspect the pump unit and remove the debris.
Pump operates but does not draw water.	(1) There is no priming water or is insufficient. (2) The bottom plate is installed incorrectly. (3) The suction hose or the sweeper suction attachment is not securely connected.	(1) Pour fresh water (approximately 1.8L). (2) Re-install the bottom plate with its arrow facing the suction inlet. (3) Connect it securely.
The pump stops after operating for a predetermined length of time.	(1) The voltage is too low. (2) A 50Hz pump is operated at 60Hz.	(1) Raise the voltage to the rated voltage. (2) Check the nameplate and replace the pump.
The pumping head and volume are small. Its suction performance is poor.	(1) The impeller or the suction cover is significantly worn. (2) The drain hose is kinked or clogged. (3) The suction hose or the sweeper suction attachment is clogged or submerged in sand. (4) The suction inlet is clogged with debris. (5) A 50Hz pump is operated at 60Hz.	(1) Repair or replace the affected part. (2) Straighten the curved or kinked part as much as possible. (3) Clean the suction hose and the suction attachment. (4) Remove the suction inlet to clean the suction inlet and the check valve. (5) Check the nameplate and replace the pump.
Pump vibrates or makes abnormal sounds.	(1) The motor bearings are damaged.	(1) Replace the bearings.
After the pump stops, the priming water flows out.	(1) The check valve does not function properly because it is stuck with mud.	(1) Clean the check valve and the inside of the suction inlet.

The following information is required when ordering repairs or making other inquiries.

Product model	
Manufacturing number	
Purchase date	
Remarks	

Disposal of Product

Properly dispose of the product by disassembling it, presorting the contents, and sending them to the waste material treatment site.