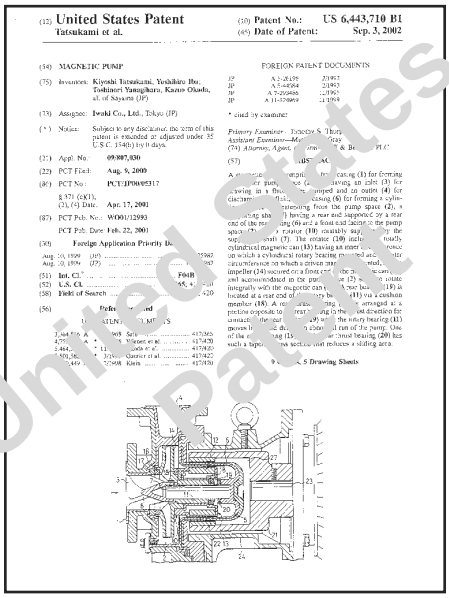
IWAKI AMERICA

MDM Technical Solutions

Dry Run! Dry Run! Dry Run!



(12) **United States Patent**
Tatsukami et al.

(10) Patent No.: US 6,443,710 B1
(45) Date of Patent: Sep. 3, 2002

(54) MAGNETIC PUMP

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(73) Assignee: Iwaki Co., Ltd., Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/807,030

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(30) Foreign Application Priority Data

(51) Int. Cl.[7] F04B

(52) U.S. Cl. 55, 4

(58) Field of Search 420

(56) Refe... Cited

U.S. PATENT ... MENTS

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(57) ...US...AC...

A ... pump ... casing (1) for forming ... having an inlet (3) for ... pump ... and an outlet (4) for discharging ... casing (6) for forming a cylin... ...receiving from the pump space (2), a ...ing sha... having a rear end supported by a rear end of the ...ing (6) and a front end facing to the pump space (2) ... rotator (10) rotatably supported by the ...ansmitting shaft (7). The rotator (10) includes ... cylindrical magnetic can (13) having an inner ... on which a cylindrical rotary bearing member ... circumference on which a driven ... impeller (24) secured on a front ... and accommodated in the pump ... integrally with the magnetic can ... located at a rear end of ... member (18). A ... ...ing ... arranged in a position opposite to ... ...ing to the ... rotation direction of ... the ... (9) with the rotary bearing (11) moves ... during ... run of the pump. One of the ... ing (13) ... ...ound bearing (20) has such a ... ...ross sectional ... reduces a sliding area.

... Claims; 5 Drawing Sheets

United States Patent

Patented Non-Contact Design!

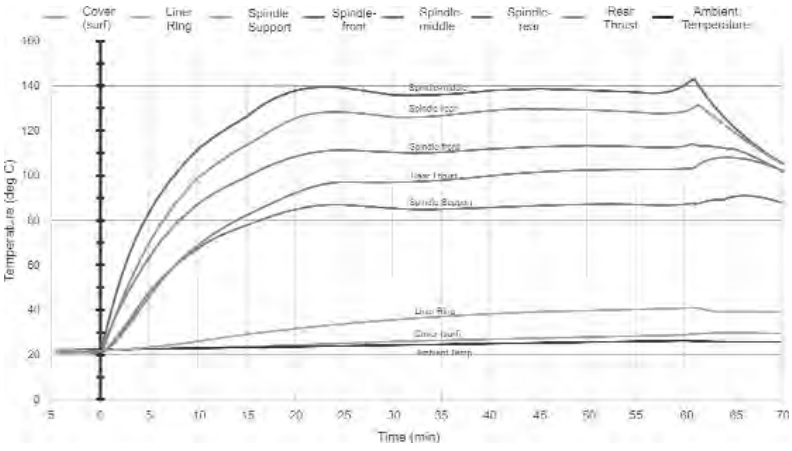
Internal bearing system and magnet positioning eliminates contact of axial thrust bearing surfaces in dry run situations. Bearing passages remain open, allowing air circulation through the radial bearing, maintaining a steady state temperature. This prevents localized frictional heat buildup in the bearing system and damage to the surrounding material. All MDM dry run designs are rated for up to one hour at a time and repeatable, even up to 25 HP!

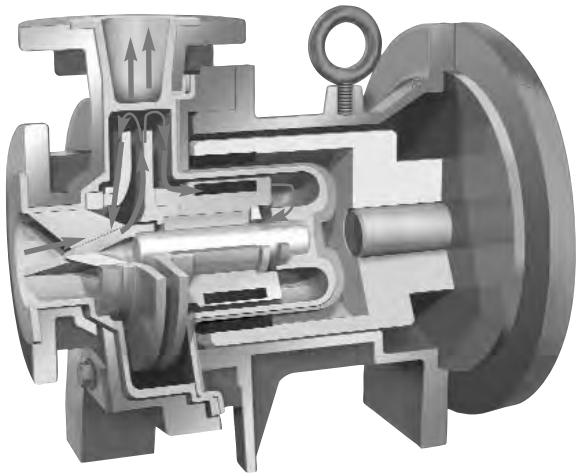
Inner Magnet Design

All MDM pumps use Samarium Cobalt drive magnets in the inner magnet capsules. This not only gives MDM inner magnets superior resistance to chemical attack from permeation, it also provides the strength, even at elevated temperatures experienced during dry run operation, to ensure the inner rotating assembly is kept in a neutral position. This keeps the bearing paths open, preventing catastrophic damage to the pump.

Bearing Design!

Using the inherent self-lubricating properties and thermal stability of our high-density carbon radial bearings, our MDM series can run dry with minimized frictional wear and temperature rise eliminating the concerns over fracturing from differential expansion of the surrounding molded materials.





Air Circulation through Bearing System

Two-Year Warranty

All the benefits of superior engineering and a dry run rated design along with a two-year warranty. MDM is the right choice for your tough applications!

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